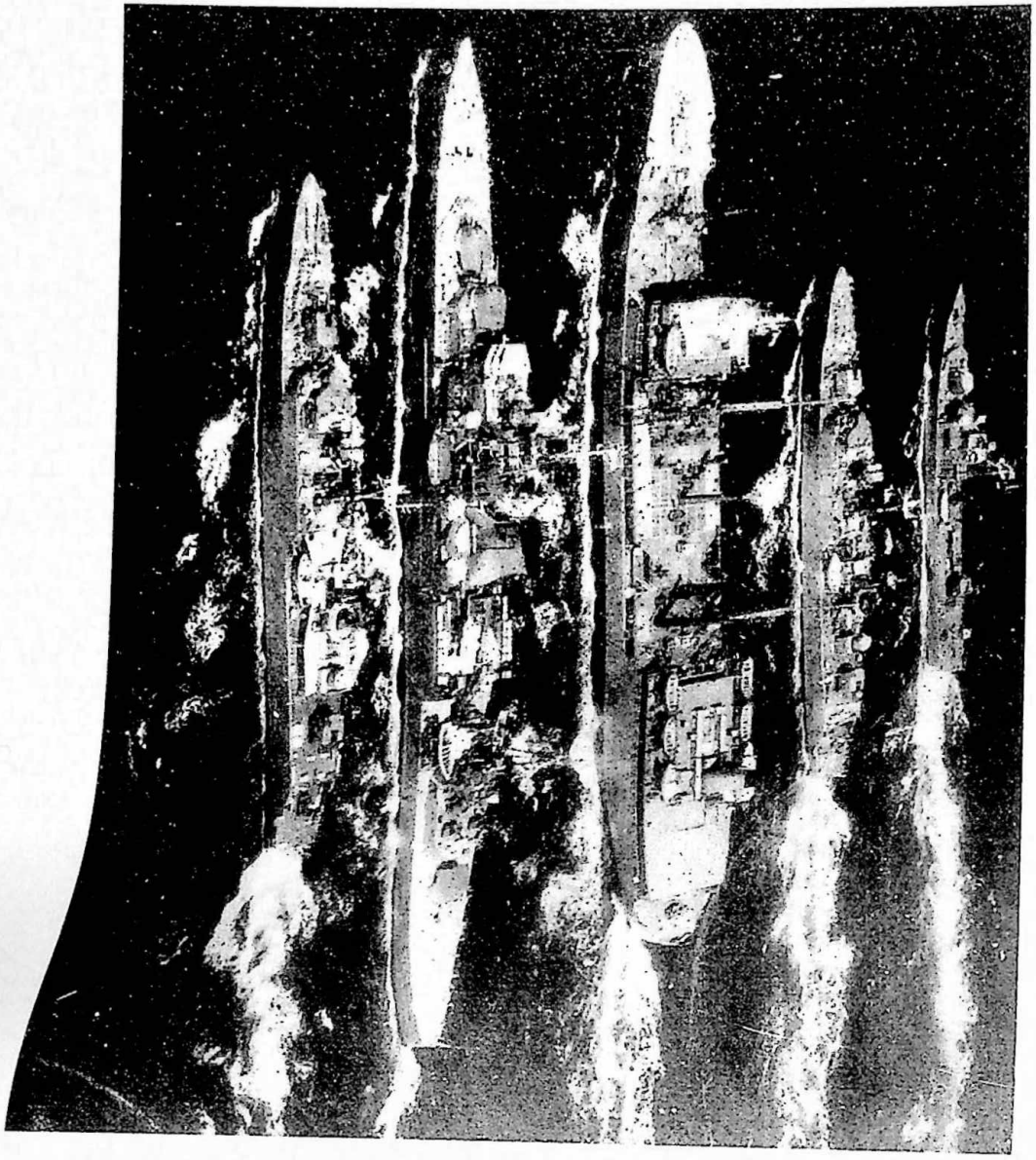
Transition to Triumph

History of the Indian Navy 1965-1975



Transition to Triumph

History of the Indian Navy 1965-1975

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GM Hiranandani
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Dedicated
to
Those
Who
Helped the Navy to Achieve What It Did
And to Those
Who Had the Vision and the Self Confidence
to
Innovate, Persevere and Prevail

एडमिरल सुशील कुमार
पी वी एस एम, यू वाई एस एम, ए वी एस एम, एन एम, ए डी सी
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Foreword

Transition to Triumph authored by Vice Admiral GM Hiranandani, PVSM AVSM NM (Retd), is the third volume that chronicles the history of the Indian Navy and covers the period 1965-1975. The earlier two volumes ("Under Two Ensigns" and "Blueprint to Blue Water") covered the period 1945 to 1965.

The period 1965 to 1975 has been an important milestone for the Indian Navy. It signified the period when the Indian Navy joined the missile league and also graduated to a three dimensional force. This was the period when the Leander Frigate programme paved the way for self-reliance through indigenous ship construction. Finally, it was during this period that the nation was called to arms and in its baptism of fire the Indian Navy covered itself with glory during the 1971 operations. Therefore, in many ways, this book 'Transition to Triumph' is a tribute to those who served in the Indian Navy during this eventful period, 1965-1975.

The Indian Navy is greatly indebted to Vice Admiral GM Hiranandani for painstakingly compiling this book with meticulous care and attention to detail. It will no doubt become an invaluable reference book for students of maritime affairs and remain a source of inspiration for future generations of the Indian Navy.

Sushil Kumar

(Sushil Kumar)
Admiral
4 Dec 1999

Acknowledgements

To obtain authentic insights of the events between 1965 and 1975, I conducted over two hundred and fifty interviews with people who were directly involved with the Navy during this period. To a large extent, these interviews are the basic source for this book. I am grateful to each of the interviewees for having spared time to interact and share their perceptions with me.

I am also indebted to the authors and other institutions from whom I have quoted excerpts to present a birds eye view of the Indian Navy during this period. These authors and their publishers have been listed in the Select Bibliography, and credits given in the footnotes.

The maps in this book have been prepared by the Naval Hydrographic Department and photographs have been culled from naval archives and the personal collection of Lt Cdr SK Sharma. Commander S Syal and the Naval History Cell assisted in the enormous task of sorting out and documenting source material. Petty Officer Writers Mangal Singh and BR Choudhary undertook the tedious task of typing and retyping the transcripts of interviews and the manuscripts of this book. I am grateful to them all and to Naval Headquarters for providing their assistance so unstintingly.

To the many who helped and who have not been mentioned individually go my heartfelt thanks.

My biggest thank you goes to my wife, son, daughter and brother-in-law for their encouragement and support, without which the long hours early every morning would have been so much harder to put in.

Preface

History is built on rational explanation. By combining published source material and memoirs with recollections of participants and my own personal knowledge, I have tried to present a reconstruction of events that is as accurate and authentic as possible. My aim has been to present the reader with a holistic overview of the events concerning the Indian Navy between 1965 and 1975, notably the 1971 War with Pakistan.

Broadly speaking, there are two approaches to understanding controversial incidents:

- One approach is to say that the participants knew perfectly well why they undertook a particular operation but did not later admit the reason, for to do so might pinpoint their responsibility. Faced with this approach, the historian must try to present a convincing reconstruction of the environment that may reveal the motives and objectives of the principal players.
- The second approach is to explain a setback in terms not of motive but rather of institutional drift. Often, a flawed idea that has been around for some time gradually acquires legitimacy because institutions and policy makers adapt to it and think it could be used to advantage.

In this context, the tragic loss of the KHUKRI will remain a vexed issue. If at all a two ship Search and Attack Unit (SAU) had to be sailed to take on a submarine whose capabilities were known to be superior to those of the ships of the SAU, then the SAU should have been closely supported by substantial anti submarine air effort like Seaking anti submarine helicopters, Alize anti submarine aircraft and Super Constellation reconnaissance aircraft, all of which were readily available. This was not done. On the other hand, had the KHUKRI been following well established torpedo counter measure procedures like high speed, zig zag courses, superimposed by random weaves, which ships of a SAU are enjoined to follow, she would never have been such an easy target. The Captain of KHUKRI took the calculated risk of overcoming the limitations of his ship's sonar by doing slow speed on a steady course, hoping that the experimental sonar modification developed by the Bhabha Atomic Research Centre Bombay would help to increase his sonar's detection range. Was this personal initiative or institutional error? It is for the reader to judge. Regrettably luck was not on KHUKRI's side.

Similarly, the initial concept for the Amphibious Operation was for landing a force in Cox's Bazar. During the war, this changed to sealing off the escape route to Burma. At the implementation level in Calcutta, it was assessed that if troops were indeed escaping to Burma, then they would ensure that Cox's Bazar was well defended. The place of landing was therefore changed from the harbour of Cox's Bazar to the beaches of Ukhia, a few miles further south, where sandbars were known to exist.

The beaches could not be reconnoitred until a few hours before the landing. The ships arrived at the landing site late. The tide had started to rise. Of the two ships carrying troops, only one beached on a sand bar - the other backed off. Short-statured Gurkhas, who had never seen the sea, jumped into the water with a full load of equipment on their backs, one hand holding their rifle and the other hand holding a rope leading from the ship to the beach. The water between the sandbar and the beach had become deeper due to the rising tide. Troops of the first wave started to founder. All were rescued, except for three who drowned. The landing ship backed out. Another attempt was made to beach on another sandbar. The ship nearly foundered. She was helped to back out and pump out her flooded compartments. The attempt to land over the beach was abandoned. After an overnight transit to Cox's Bazar harbour, troops were landed by local boats. The disembarkation completed two days after the forces in East Pakistan had surrendered. In retrospect, it is clear that the stipulated degree of

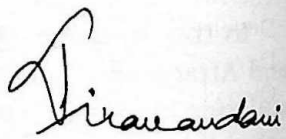
planning, of training and of rehearsing, which is enjoined in well established manuals of joint warfare, had not been done for this operation. The more pertinent question, however, is whether these could at all have been done given the compulsions of secrecy and the unpredictable speed at which events developed in this short, sharp thirteen day war.

It is not my intention to invite controversy. Without trying to vindicate or to criticize, controversial events like these have been presented dispassionately, leaving judgement to the reader. It is in this context, that the sections on the Sinking of the KHUKRI and Amphibious Operation Beaver would provide food for serious thought in these extremely intricate areas of naval operations.

Although this volume of the history has been sponsored by the Indian Navy, the views and interpretation of facts in this book are entirely my own. They do not reflect the views either of the Indian Navy or the Government.

To make it easier for the lay reader, contemporary names of countries have been used interchangeably such as Britain for United Kingdom, America for USA and Russia for Soviet Union etc.

There is a saying "The past is a work of art, free of irrelevancies and loose ends". My hope has been to recreate past events after enough time has elapsed to recollect them in relative tranquillity, but not before the "irrelevancies and loose ends", which are the spice of history, have disappeared.



New Delhi
15 October 1999

(GM Hiranandani)
Vice Admiral (Retd)

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Glossary

A

AA	Anti Aircraft
ACNS	Assistant Chief of the Naval Staff
Adm	Admiral
AHSP	Authority Holding Sealed Particulars
AIO	Action Information Organisation
am	Before midday
ANZUS	Australia, New Zealand, United States(pact)
ARD	Annual Review Demands (for stores and spares)
AS	Anti Submarine
ASD	Admiral Superintendent Dockyard
ASW	Anti Submarine Warfare
ATC	Air Traffic Control (tower)
AZ	Alize(French carrier borne aircraft)
A&N	Andaman and Nicobar (islands)

B

BARC	Bhabha Atomic Research Centre Bombay
BEL	Bharat Electronics Ltd
BHEL	Bharat Heavy Electricals Ltd
BMU	Base Maintenance Unit
BRO	Base Repair Organisation
BSF	Border Security Force
BTE	Boys Training Establishment

C

CAP	Combat Air Patrol(aircraft)
Capt	Captain(naval rank. Also Commanding Officer)
CAS	Chief of the Air Staff
CASEX	Combined Anti Submarine Exercise
CBR	Central Board of Revenue
Cdr	Commander(naval rank)
CENTO	Central Treaty Organisation (Turkey, Iran, Pakistan)
CFL	Cease Fire Line
Chennai	New name for Madras
CIA	Central Intelligence Agency (American)
CILQ	Compensation in Lieu of Quarters(for sailors)
CinC/CINC	Commander in Chief
CMD	Chairman Managing Director
Cmde	Commodore(naval rank)
CMS	Coastal Minesweeper
CNS	Chief of the Naval Staff
CO	Commanding Officer
COAS	Chief of the Army Staff
COM	Chief of Material
CONIFPO	Controller Indian Frigate Project(in Britain)
COP	Chief of Personnel
CPO	Chief Petty Officer
CRPF	Central Reserve Police Force
CRs	Current Repairs (Russian ships)

D

DCNS	Deputy Chief of the Naval Staff
DDIMS	Director of Development and Inspection, Marine Stores
Demob	Demobilisation
DG	Degaussing (reducing the underwater magnetic influence of a ships to avoid triggering magnetic mines)
DGI	Director General Inspection
DGND	Director General Naval Design
DGS&D	Director General Supplies and Disposals
DM	Defence Minister
DMO	Director of Military Operations
DNI	Director of Naval Intelligence
DNO	Director of Naval Operations
DPI(N)	Director of Production and Inspection (Navy)
DRDO	Defence Research and Development Organisation
DSSC	Defence Services Staff College
DTG	Date Time Group(indicates the time that a signal is issued) Dunking Sonar Fitted in helicopters; during hover, it enables the sonar to be lowered deep into the sea to detect submarines
DWP	Director of Warship Projects
D/F	Direction Finding

E

EDC	Estimated Date of Completion
EEZ	Exclusive Economic Zone
ER	Extended Refit (western ships)
EW	Electronic Warfare

F

F 86	Sabres/F 104 Starfighters Nomenclature of American fighter aircraft
ffe	free foreign exchange
Foxtrot class	NATO nomenclature of Russian submarine
FOCEF	Flag Officer Commanding Eastern Fleet
FOCIF	Flag Officer Commanding Indian Fleet
FOCINC	Flag Officer Commanding in Chief
FOCWEF/FOCWF	Flag Officer Commanding Western Fleet
Frogmen	Underwater Commandos
FRU	Fleet Requirement Unit

G

GED	General Engineering Department (of the Russian GKES)

GKES	State Committee for Foreign Economic Relations(Russian)
GRSE	Garden Reach Shipbuilding and Engineering Ltd
GRT	Gross Registered Tons(ship size)
GRW	Garden Reach Workshops
GSL	Goa Shipyard Limited
GTD	General Technical Department (of the Russian GKES)
GTs	Gas Turbines

H

HAL	Hindustan Aircraft Limited
HF	High Frequency (long distance communications)
HK	Seahawk(British carrier borne aircraft)
HMIS	His Majesty's Indian Ship
HMS	His/Her Majesty's Ship/Submarine(British)
HSL	Hindustan Shipyard Limited
HUK	Hunter Killer (anti submarine operation)

I

IAF	Indian Air Force
ICE	Internal Combustion Engine (eg diesel engine)
ICS	Indian Civil Service (later called IAS)
IFF	Identification Friend or Foe(identifies contacts appearing on radar)
IMS	Inshore Minesweeper
IN	Indian Navy
INAS	Indian Naval Air Squadron
INCS	Indian Naval Canteen Service
INS	Indian Naval Ship/Submarine
ITTE	Integrated Type Training Establishment
IWTA	Inland Water Transport Authority (East Pakistan)

J

JET	Joint Exercises at Trincomalee
J&K	Jammu and Kashmir

K

K 25	Senior Officer 25th Missile Boat Squadron
Kilo Class	NATO nomeuclature of Russian submarine
Kochi	New name for Cochin

L

LCU	Landing Craft Utility
Lepus	Swedish, aircraft dropped, flare bomb to illuminate a target at night to assist air attack
LMA	Laccadive, Minicoy and Amindivi (islands now called Lakshadweep)
LOC	Line of Control
LOGREQ	Logistic Requirement(signal)
LRMP	Long Range Maritime Patrol(aircraft)
LST(L)	Landing Ship Tank(Large)
LST(M)	Landing Ship Tank(Medium)
Lt	Lieutenant(naval rank)
Lt Cdr	Lieutenant Commander(naval rank)
L.O.Cs	Lines of Communication

M

MADDLs	Mirror Assisted Dummy Deck Landings (done by carrier borne aircraft on shore airfields prior to embarkation)
MATCH	Multi-role Anti Submarine Torpedo Carrying Helicopter
MCPO	Master Chief Petty Officer
MDL	Mazagon Docks Limited
MEA	Ministry of External Affairs
Met	Meteorology
MHQ	Maritime Headquarters
MLR	Money in Lieu of Rations (for sailors)
MOD	Ministry of Defence
MOR	Maritime Operations Room
MRASW	Maritime Reconnaissance and Anti Submarine Warfare(aircraft)
MRs	Medium Repairs (Russian ships)
MTE	Mechanical Training Establishment
Mumbai	New name for Bombay

N

NAD	Naval Armament Depot
NAI	Naval Armament Inspection
NAIS	Naval Aircraft Inspection Service
NARO	Naval Aircraft Repair Organisation
NAS	Naval Air Station
NATO	North Atlantic Treaty Organisation
NATS	Naval Air Technical School
NAVAC	Naval Academy
NCML	Naval Chemical and Metallurgical Laboratory
ND	Navigation (and aircraft) Direction (specialisation)
NDA	National Defence Academy
NDC	National Defence College
NEVESBU	Netherlands Warship Design Bureau
NHQ	Naval Headquarters
NOIC	Naval Officer in Charge
NPOL	Naval Physical and Oceanography Laboratory
NRs	Navigation Repairs (Russian ships)
NRs	Normal Refits (Western ships)
NSD	Naval Store Depot
NSRY	Naval Ship Repair Yard
NSTL	Naval Science and Technology Laboratory

O

OPEC	Organisation of Petroleum Exporting Countries

P

PAF	Pakistan Air Force
PCT	Pre Commissioning Training
PDRs	Pre Determined Routes (for civil airliners)

pm	After midday
PM	Prime Minister
PMO	Prime Minister's Office
PN	Pakistan Navy
PO	Petty Officer
POK	Pakistan Occupied Kashmir
POL	Petrol, Oil and Lubricants
psi	pounds per square inch(pressure)
PWSS	Port War Signal Station(at harbour entrance)

R

R Adm	Rear Admiral
Radar	Radio Detection and Ranging(above the sea)
RAF	Royal Air Force
Rating	Sailor
RCC	Recompression Chamber(divers)
RCD	Regional Cooperation for Development (Pakistan, Iran, Turkey)
Recce	Reconnaissance
RIN	Royal Indian Navy
RINR	Royal Indian Navy Reserve
RINVR	Royal Indian Navy Volunteer Reserve
RM	Raksha Mantri (Defence Minister)
RN	Royal Navy (British)
RPM	Revolutions Per Minute
RTD	Repair Technical Documentation(Russian)
R&D	Research and Development
R/T	Radio Telephony
R/V	Rendez Vous (meeting point at sea)

S

S Lt	Sub Lieutenant (naval rank)
SAR	Search and Rescue (by ships, aircraft and helicopters at sea)
SD	Special Duties (category of officers promoted from sailor cadre)
SDB	Seaward Defence Boat
SEATO	South East Asia Treaty Organisation
SFNA	School for Naval Airmen
Sidewinder	Nomenclature of American air to air missile
Skyhawk	Nomenclature of American carrier borne aircraft
SMP	Self Maintenance Period(ships)
SMU	Ship Maintenance Unit
Sonar	Sound Navigation and Ranging (under the sea)
SPDC	Spare Parts Distribution Centre
SSG	Special Services Group (elite commandos)
SSK	Hunter Killer Submarine(Submarine Search and Kill)
STE	Seaman Training Establishment
STOL	Short Take Off and Land (aircraft)
S/M	Submarine

T

TAS	Torpedo Anti Submarine (specialisation)
TG	Task Group

U

UHF	Ultra High Frequency(short distance communications)
UK	United Kingdom (Britain)
UNCLOS	United Nations Conference on the Law of the Sea
UPSC	Union Public Service Commission
USA	United States of America
USSR	Union of Soviet Socialist Republics

V

V Adm	Vice Admiral
VCNS	Vice Chief of the Naval Staff
VDS	Variable Depth Sonar fitted in ships; it enables the sonar of a moving ship to be lowered deep into the sea to detect submarines
VHF	Very High Frequency(communications)
VIP	Very Important Person
VLF	Very Low Frequency (communication with submerged submarines)
V/S	Visual Signalling
VT	Variable Time (as applicable to radio proximity fuzes)
VTOL	Vertical Take Off and Land (aircraft)

W

WED	Weapon Equipment Depot
WRINS	Womens Royal Indian Naval Service
WSAG	Washington Special Action Group
WW II	Second World War
W/T	Wireless Telegraphy

X

X Craft	Midget submarines for penetrating harbours
XO	Executive Officer (2nd in command of a ship. Also officer of the Executive Branch)

Y

YARD	Yarrow Admiralty Research & Development

1

The Growth of the Navy till 1965

The Navy's Growth During the Second World War : 1939 to 1945

Prior to the Second World War, Britain's Royal Navy was responsible for the overall maritime defence of India. For this purpose, the Royal Navy maintained:

- a Fleet based at Trincomalee in Ceylon.
- a Fleet at Singapore.
- a Squadron at Bahrein.

The Royal Indian Navy (RIN) was responsible for coastal defence only. It had one naval base at Bombay and training establishments scattered in many regions of India.

In September 1939, when the Second World War started, the Royal Indian Navy had only five sloops, one trawler, one survey ship and one patrol craft. It had 114 officers and 1732 ratings (sailors were called ratings). All the six rating training schools were concentrated inside the Naval Dockyard in Bombay - Gunnery, Seamanship, Signals, Anti-submarine, Boys Training Establishment (BTE) and Mechanical Training Establishment (MTE). There were no rating training schools for Torpedo, Electrical or Radar. Officers went to Britain for basic and advanced training in all disciplines. Eighty percent of rating recruits came from the Punjab and from the Bombay Presidency - mainly Konkan, and of them, seventy five percent were Muslim and nine percent Hindu.

During the war, the Royal Indian Navy underwent a phenomenal expansion. Thirty one small vessels were immediately requisitioned to serve as minesweepers and patrol craft until newly built ships could enter service. The first Basset class trawler built in Garden Reach Workshop Calcutta entered service in 1941 - it was followed by five more. The first Bangor class fleet minesweeper built in India entered service in 1943. Six new sloops came from Britain and were named after Indian rivers. Bathurst class minesweepers came from Australia. Numerous minor vessels like motor minesweepers, harbour defence motor launches and landing craft came from Britain, America and Australia. The naval base and Naval Dockyard at Bombay were modernised. Three new branches were created - Electrical, Education and Medical.

In 1945 when the war ended, the Navy had seven sloops, four anti submarine frigates, eight corvettes, fourteen minesweepers, sixteen trawlers, one survey ship. two depot ships, thirty auxiliary vessels, one hundred and fifty landing craft, two hundred harbour craft and forty five harbour defence launches. The number of personnel had risen to 3014 officers and 27,433 ratings, most of whom served in shore establishments. The recruiting pattern had changed noticeably - there was a large increase from the Madras and Bengal Presidencies and a steep decline in recruitment from the Bombay Presidency and the Punjab. The intake of Hindus had risen to forty two percent and that of Muslims had fallen to thirty five percent. Several new naval base establishments and training establishments had come up all along the West and East coasts.

Location	Establishments (HMIS)	Function	Trainees
Karachi	Bahadur	Basic Training	Boy stokers
	Himalaya	Gunnery Training	Officers and ratings
	Dilawar	Basic Training	Boy seamen
	Chamak	Radar Training	Officers and ratings
		Physical Training	
Jamnagar	Valsura	Torpedo and Electrical Training	Officers and ratings
Lonavla	Shivaji	Mechanical Training	Artificer apprentices
		Apprentice Training	and stokers
		Photography School	Ratings

Bombay	Dalhousie	Parent Establishment Basic Training	Boys
	Fort Barracks	Supply and Secretariat Training	Officers and ratings
Thane	Akbar	Basic Training Physical Training Cookery School	New entry officers New entry ratings Cooks
Malabar Hill	Firoze	Basic Training	Reserve officers (RINVR, RINR) and WRINS
Colaba	Talwar	Visual Signalling and Wireless Telegraphy Training	Ratings
	Khanjar	Basic Training Firefighting and Damage Control Training	New entry ratings Officers and ratings
Marve	Hamlawar	Coastal Training Centre Landing Craft Wing	Officers and ratings
Versova	Machlimar	Anti-submarine Training	Officers and ratings
	Cheetah	Motor Transport and Boat Training	Ratings
Sewree	RIN Hospital	Naval Hospital	
Bombay Central	Kakauri	Demob Centre	
Trombay	Cheetah Camp	Demob Centre	
Ahmednagar	Jahanara	Basic Training	Womens Royal Indian Naval Service(WRINS)
COCHIN	Venduruthy HMS Kaluga	Parent Establishment Airfield for Royal Naval aircraft	
Coimbatore (Peelamedu)	HMS Garuda	Naval Aircraft Repair Yard for Royal Naval aircraft	
Coimbatore (Sulur)	HMS Vairi	Naval Aircraft Depot for Royal Naval aircraft	
Mandapam	Tengra Hamla	Combined Operations Base Landing Craft Training	Officers and ratings
Madras	Adyar	Parent establishment	
Madras (Tambaram)	HMS Yalluru	Naval Air Station Fleet Requirement Unit and Aircraft Repair Yard for Royal Naval aircraft	
Madras (Sholavaram)	RAF Air Station	For Royal Naval aircraft	
Kakinada	Jahangir	Coastal Training Centre	Officers and ratings
VISAKHAPATNAM	Circars	Parent Establishment	
Calcutta	Hooghly Nalini	Parent Establishment Basic Training	WRINS
Delhi	India	Parent Establishment	

Pre-Independence Plans for the Navy's Development

British Strategic Perceptions in 1944

As Britain gradually reconciled itself to the inevitability of India becoming independent after the end of the Second World War, the Commander in Chief India assessed that the vital strategic interests of the British Commonwealth in the Indian Ocean were:

- Oil supplies,
- Control of the eastern and western approaches to India.
- Air communications to Iraq, Ceylon, Burma and Malaya.
- Control of the seas and the island territories.

In his view, should India be unfriendly or liable to be influenced by a power such as Russia, China or Japan hostile to the British Commonwealth, Britain's strategic position in the Indian Ocean would become untenable and British communications with New Zealand and Australia most insecure.

The Plans for the Navy's Development in 1944/45

As the Second World War neared completion, three separate studies emerged sequentially on the future development of the Navy.

The Godfrey Plan of 1944

This plan was prepared in April 1944 by Vice Admiral Godfrey, the Commander in Chief of the Royal Indian Navy, for submission to the Chiefs of Staff Committee. It had two phases. Phase I proposed the replacement of inefficient ships by modern frigates and sloops, acquisition of eight destroyers and training of personnel by 1947 to man a cruiser. Phase II envisaged the acquisition of aircraft carriers and submarines with associated training and maintenance facilities.

The Chiefs of Staff Committee Report of 1944 on The Size and Composition of the Post War Forces in India

This report assumed the only threat to be from Russia, that independent India would continue to remain in the British Commonwealth and that reinforcements would arrive from Britain and other parts of the British Empire to help India defend her frontiers.

The Committee viewed the Royal Indian Navy (RIN) as a 'Dominion Navy', responsible:

- Primarily for the safety of Indian and Empire shipping in the sea areas contiguous to India's coastline, their approaches and the trade routes in the Indian Ocean.
- Secondly, for the combined operational training of the Indian Army's specialist amphibious formations, providing escort and assault ships and craft for landing these formations on hostile shores, for which a nucleus force of assault ships and craft and a training organisation was to be maintained.
- Thirdly, in conjunction with the Air Force, the Navy was to ensure the timely neutralisation of any foreign invading force attempting a landing on the shores of India. It was therefore essential for the RIN to have an adequate air component for seaward reconnaissance and for air strikes in support of surface forces.

For these tasks, the Committee recommended a naval force of one Cruiser Squadron (3 cruisers), one Destroyer Flotila (8 destroyers), one Training Flotilla (8 Sloops), one General Duty Flotilla (8 frigates) and flotillas of minesweepers, motor torpedo boats and harbour defence launches, alongwith survey ships, assault ships and a depot ship for repairs.

Committee for Planning the Requirement of the Armed Forces 1945

After the cessation of hostilities in August 1945, the Government appointed a Committee to plan the requirements of India's Armed Forces, based on the Chiefs of Staff Committee Report of 1944. The gist of this Committee's Report was that by the end of the War, Japan would have been completely subdued, the principal foreign powers in the East would be the USSR, the USA and China and that India would be responsible for maintaining sufficient forces to overcome a minor power and to hold out against a major power until Imperial Forces could arrive. It did not take into account an independent India after the War. It did anticipate that India would be a member of the British Commonwealth. Since no one part of the Commonwealth could, in peace or war, be self-sufficient or independent of supplies from other parts, the economy and defence of each nation of the Commonwealth would, therefore, largely depend on the use of the sea and air routes and ports. While the main responsibility for keeping open these sea and air communications would rest with the Royal Navy and Royal Air Force under the orders of the British Government, each component part of the Commonwealth would need to be prepared to bear its

share. India, in common with other countries of the Empire, would, therefore, need to maintain naval and air forces as necessary to ensure the defence of her bases and the security of shipping within her coastal waters from submarine, mining and air attack and to assist in the protection of trade in the ocean shipping routes.

India's central position in the Indian Ocean was likely to make her particularly sensitive to the need for an increased naval force and especially for larger warships than she at present possessed. Such ships, unlike the small units which the Royal Indian Navy had, would be capable of adequately representing India in other parts of the Commonwealth, foster better understanding of India and improve relations within the Empire.

Russia was viewed as the only major power likely to seriously threaten India. Aggression by Russia was therefore taken as the basis for estimating the forces which India would require for her defence against a major power. It was not possible to forecast the strength of the forces which Russia might be able to bring to bear against India. The scale of attack would depend on conditions which would change from time to time. As these conditions changed, the scale of enemy attack would need to be reviewed and defensive measures brought up-to-date.

So long as India was connected with Great Britain, either as a Dominion or by a treaty guaranteeing assistance, hostilities between Russia and India could only be either the cause of or the result of a war between Great Britain and the USSR. Such a war would, inevitably, sooner or later, develop into another world conflict. While India's contribution to a war of this nature would depend very largely on the defence policy of the British Empire as a whole, India was likely to bear the first brunt of such an attack and would need therefore, to be prepared at all times to defend her frontiers until Imperial reinforcements arrived.

The principal responsibility of India's Navy after the war would be the safety of indian and Empire shipping in the ports of India and their approaches; India would also wish to take her share in the protection of this shipping on the trade routes within the Indian Ocean. It would be an important task of India's Navy to provide facilities for the combined operational training of the Army formations maintained in the country and to provide a share of the escorts, assault shipping and craft required to land these formations on a hostile shore, should this prove necessary. This implied the maintenance, in peace, of a nucleus force of assault shipping and craft and appropriate training organisations, as well as personnel possessing an expert knowledge of amphibious operations. In addition, the Navy, in conjunction with the Air Force, would need to be prepared to take its share in intercepting and attacking any foreign invading force which might attempt a landing on Indian shores.

The Army would be responsible for coastal defence and the Air Force for seaward reconnaissance, shipping protection and co-operation with the RIN. Naval units might be required to proceed at short notice to ports in occupied countries in case disturbances arose and to patrol the river approaches to such ports. As regards superpower aggression on Afghanistan, sufficient aircraft would need to be available to prevent the Afghans from being overawed by the Russian air strength on their border.

Naval forces to counter these threats could not be quickly improvised in times of war. The main task of the Navy in peace, in common with the other Services, would be to prepare for war but since the full strength of the naval force might be needed immediately on the outbreak of war and a long period was required both for the construction of warships and the training of naval personnel, naval forces, and air forces to co-operate with them, would need to be maintained in peace at a high standard of preparedness.

While for purposes of local defence, a number of small ships would need to be maintained, a proportion of large ships would also be necessary. The provision of such ships would produce a balanced naval force, form an added incentive to recruitment and increased pride in the service, besides assisting considerably in the training of personnel which could not be adequately carried out in small ships. In addition, great importance was attached to the formation of an adequate air component for seaward reconnaissance and a striking force and also to the maintenance of modern coast defences and material for local seaward defences such as booms, mines, nets and indicator loops.

The establishment of industries within India would tend to make her economy and prosperity more dependent on the security of her export trade and so maintain, and possibly increase, the importance of her ports and overseas communications. Therefore, India needed to maintain adequate naval forces and ensure that the ports on which she was dependent were kept up-to-date in accordance with modern requirements. The coastal trade of India was not only an essential part of her peace and war economy but

was also an important factor in her transportation system. The requisitioning of the majority of her coastal steamers at the beginning of the present war for naval purposes had greatly increased the congestion on the railways. It was, therefore, important that encouragement be given to the development of the coastal trade and the shipbuilding industry, that sufficient naval forces be maintained to avoid being obliged to requisition mercantile shipping immediately on the outbreak of war.

The Wansborough Jones Report of 1946

In 1946, an Interim Government was formed under Prime Minister Nehru. India's Independence was clearly foreseeable. The Prime Minister commissioned a British adviser, Mr Wansborough Jones, to recommend the scientific and organisational measures required to make India a self supporting defence entity. The Jones report outlined four basic roles for the Indian Armed Forces:

- To secure the land frontier against raids from border tribes or attack from a second class army.
- To support civil power.
- To provide a small expeditionary force capable of protecting India's regional interests.
- Within available financial resources, to develop a force capable of taking the field in a first class war.

Post Independence Plan for "The Reorganisation and Development of the Indian Navy"

After partition in August 1947, the RIN comprised:

- Four Sloops (KISTNA, CAUVERY, JUMNA, SUTLEJ),
- Two frigates (KUKRI, TIR)
- One Corvette (ASSAM)
- Twelve coastal minesweepers (ORISSA, DECCAN, BIJNOR, KUMAON, KHYBER, ROHILKHAND, CARNATIC, RAJPUTANA, KONKAN, BENGAL, BOMBAY, MADRAS). After the cyclone which hit Bombay in 1948, only KONKAN, BOMBAY, BENGAL and MADRAS remained in service. The remainder were so severely damaged that they had to be sold as scrap.
- One survey ship (INVESTIGATOR)
- Four trawlers, four motor minesweepers, one motor launch, four harbour defence motor launches and landing craft.

In August 1947, Rear Admiral JTS Hall, RIN, was appointed as India's first Flag Officer Commanding Royal Indian Navy. His Chief of Staff (now called the Vice Chief of the Naval Staff) was Commodore Martin H St L Nott. These two farsighted officers, guided by Rear Admiral Lord Louis Mountbatten, then Viceroy of India, and assisted by Cdr (later Admiral) AK Chatterji the first Director of Naval Plans, the Staff Officer Plans Lt Cdr (later Vice Admiral) N Krishnan and Lt Cdr YN Singh, the navy's first aviator, prepared on "Outline Plan for the Reorganisation and Development of the Indian Navy". It visualised four essential roles for the Navy:

- To safeguard Indian shipping.
- To ensure that supplies could reach and leave by sea in all circumstances.
- To prevent an enemy landing on India's shores.
- To support the Army in sea borne operations.

The minimum force recommended was two aircraft carriers, three cruisers, eight destroyers, four submarines and miscellaneous small ships to be built up in 10 years. The plan envisaged gradual development of the Navy to form two fleets, each to be built around a light fleet carrier.

The plan clearly reflected the Indian Navy's aspiration for regional pre-eminence, apart from several seminal recommendations to remedy the after-effects of the partition of the Navy, like shortages of manpower, constructing new training establishments, disposing of old ships and acquiring immediate replacements.

At the end of 1947, based on the above, a ten year plan for the expansion of the Navy was submitted to the Government and was approved in principle by the Defence Committee of the Cabinet in 1948 but without financial commitment.

The Professor Blackett Report

Whilst these proposals were being discussed, Prime Minister Nehru in 1948 sought the advice of Professor PMS Blackett. He was a renowned British physicist who had pioneered naval operational research in the British Navy during the Second World War. Professor Blackett was asked to prepare a report outlining the measures necessary for India to become near self sufficient in defence production over a period of seven years.

Whereas previous studies had assumed that in the event of hostilities, the British and Commonwealth Navies would assist India, Prof Blackett's basic premise was that a newly

independent India would wish to stand unaided where defence was concerned. In his view, a Third World War was unlikely - the immediate need was to plan and prepare for a small scale war. Professor Blackett's report on how best India should meet her defence needs within available scientific, financial and industrial resources highlighted that:

- India was economically weak. To become self sufficient, a strong economy and industrial base was essential.
- The import of sophisticated defence equipment, though inescapable, had to be minimised to conserve foreign exchange for industrialisation and for improving agriculture, on which future rise in defence expenditure would be based.
- Front line platforms which depended upon state of the art technology for optimum performance during combat, like fighter aircraft, heavy tanks and aircraft carrier task forces, could not be afforded in the quantities required to confront a major power. The major powers were, in any case, unlikely to be drawn into a regional conflict as between India and Pakistan. On the other hand, both the USA and Britain had large stockpiles of weapons and material rendered surplus after World War II which did not require optimum performance in order to be effective.
- If India bought these surplus stocks, if India avoided expensive high performance weapons and chose low performance systems relevant to local scenarios, then self sufficiency was possible.
- The import of a new and improved weapon system should only be considered if its performance was so markedly superior to its predecessor as to justify the initial cost by reduced running and maintenance costs or to provide training schools with single models to keep the services in touch with weapon developments.
- In the long run, self sufficiency would create freedom of choice in foreign policy rather than strategic isolation.

Prof Blackett made specific recommendations regarding the compositon of the three services. In his view, the Indian Navy's missions were:

- Protection of coastal shipping against mining, submarine, surface and air attack, with the capability to respond in kind.
- Escorting and protecting a small number of ocean convoys between Aden and Singapore but no further (merchant shipping was important for the development of trade and a valuable national asset).
- Co-operation with the Army and the Air Force in repelling landing operations and advances along coastlines, and to be able to undertake similar operations against the enemy.*

Developments 1948 to 1952

In 1948, Vice Admiral Sir Edward Parry succeeded Rear Admiral Hall as Commander in Chief and Chief of the Naval Staff of the Royal Indian Navy. He was able to tell the British Admiralty that India's Ministry of Defence did not want the Indian Navy to be just an adjunct of the British Navy but to be a real Navy capable of carrying out major operations of naval warfare.**

In September 1948, a 69 ship Navy was proposed. However, because of budgetary constraints, the Navy had to recast its requirements. In October 1948, a revised plan proposed a 49 ship Navy.

In December 1948, another revised plan spelt out the 'The Role of the Navy' and proposed a smaller 47 ship Navy comprising two aircraft carriers, three cruisers, eight escort destroyers, four fleet destroyers (British Battle Class/Weapon Class), four submarines, four A/A frigates, two A/S frigates, six fleet minesweepers, one LST, one survey vessel, five motor launches, seven minor landing craft and two squadrons of aircraft per carrier (one each for fighter and strike and one for SAR).

In 1949, Government approved only those proposals of the 10 year naval plan which related to the recruitment and training of personnel. The expansion of the Fleet, though restricted to one aircraft carrier, frigates, a survey ship and a landing ship, did not exclude submarines.

This setback was compounded by the difference in opinion between the Indian naval planners in Delhi and the British Admiralty. When Admiral Parry forcefully pressed the Admiralty to meet his plan requirements, the Admiralty told him that the primary function of the Indian Navy was the protection of the coastline and harbours of India and to perform specific functions in the defence of the British Commonwealth.

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* In his book on "Naval Aviation", Admiral Chatterji states that as a result of several meetings with Prof Blackett, Government accepted in principle the proposal to acquire light fleet carriers. It was envisaged that the first carrier would be purchased in 1955 and the second two years later.

** "Sea Power and Indian Security" by Rahul Roy Chaudhary, Page 29.

In 1951, Vice Admiral Sir Mark Pizey succeeded Vice Admiral Parry as the Chief of the Naval Staff. Since the Government was unable to afford large scale naval expansion and the British were not willing to give India what it wanted, Admiral Parry's plan had to be shelved. Instead, Admiral Pizey proposed a 10 year replacement program. It was carefully phrased to minimize opposition, both from the Government of India and the British Navy.

The Armed Forces Reorganisation Committee - 1952

In 1952, this Committee was constituted to reduce the expenditure on the Indian Armed Forces during the period 1952/53 to 1954/55. The Committee recommended that two cruisers be acquired in addition to INS DELHI. In due course MYSORE was commissioned in 1957. The acquisition of the aircraft carrier was deferred. It was eventually sanctioned in 1956.

The number of ships to be acquired during this period were reduced. Since destroyers were not readily available, the newest available frigates were ordered from Britain.*

Developments 1954 to 1962

In 1954, agreements were signed for the acquisition from Britain of eight new frigates (3 anti aircraft, 2 first rate anti submarine, 3 second rate anti submarine) and 6 minesweepers (4 coastals and 2 inshores).

As part of the Naval Replacement Programme, the Government also sanctioned two Fleet tankers. A second hand tanker had been purchased from Italy in 1953 and commissioned as SHAKTI in 1954. The Government sanction stipulated that the second tanker should be built in India.

In 1956, Vice Admiral Sir Stephen Carlill took over as Chief of the Naval Staff. By this time, Pakistan had joined CENTO and SEATO and had been promised substantial naval assistance. America committed to directly supply two destroyers and eight minesweepers and pay Britain for refurbishing and supplying a cruiser and four destroyers. Naval Headquarters, already preoccupied with pressing the case for the aircraft carrier, found itself compelled to propose:

- the acquisition of three destroyers from Britain to match Pakistan's acquisitions and
- the outright purchase of the three Hunt class destroyers which were on loan from the British Navy since 1952.

In April 1956, Government approved the development of combatant naval aviation. The light fleet carrier HMS HERCULES was purchased from the British Navy.

In 1957, the Navy proposed to the Government the retention of existing ships in commission. If approved, this together with the new acquisitions under construction in Britain would double the number of ships in the Fleet and enable it to cope with the increased size of the Pakistan Navy.

In 1958, the Government:

- Agreed to NHQ's proposal to keep the existing ships in commission till 1962/63 or expiry of life, whichever was earlier.
- Approved the outright purchase of the three Hunt Class destroyers that were on loan from Britain.
- Agreed in principle to the acquisition from Britain of three new destroyers in lieu of three of the six second rate A/S Type 14 frigates of the KHUKRI Class proposed in 1950. These destroyers were required to provide the aircraft carrier with anti submarine protection and at night act as VIKRANT's escorts in the event of surface action.

Pursuant to these decisions:

- The Navy floated informal inquiries to the British Admiralty regarding the availability of three Daring or Later Battle Class destroyers.
- Since the Bombay Dockyard would not be able to berth the envisaged size of the Fleet, the Navy proposed the setting up of a major naval base at Visakhapatnam and made plans for the immediate construction there of a 1120-foot jetty and a workshop.
- To establish a presence in the A & N Islands and to keep an eye on naval activity in the Bay of Bengal, the Navy proposed to Government the positioning of a Resident Naval Officer (RNO) at Port Blair.
- The Navy decided to dispose off the old minesweepers which were occupying precious alongside berths. RAJPUTANA, ROHILKHAND and two LCTs had already been disposed of in 1956. Action was now taken to dispose of BOMBAY, MADRAS and BENGAL. Only KONKAN was retained as a general-purpose vessel.

* For details of developments during this period, see "No Easy Answers" by Goldrich and "Sea Power and Indian Security" by Rahul Roy Chaudhary.

In 1958, Vice Admiral RD Katari took over as the first Indian Chief of Naval Staff. By this time, the first of the eight new frigates of Admiral Pizey's naval replacement plan had started commissioning and the aircraft carrier was being modernised. The Navy re-started its case for a submarine arm.

In 1959, Britain indicated that neither Daring nor Later Battle Class destroyers were available. The Navy then proposed to Government the acquisition from Britain of three Early Battle Class destroyers which were older than those earlier requested.

In pursuance of the decision to relieve the congestion of ships at Bombay and to ease the growing workload on the Naval Dockyard at Bombay, the Navy proposed to Government the basing of some ships at Cochin, Visakhapatnam and Calcutta.

In April 1960, Government acquired Mazagon Docks Ltd (MDL) and asked it to prepare a preliminary report on the facilities required to modernise MDL for building frigates. In November 1960, Government approved in principle that three frigates should be built in India.

The Navy's efforts to get the second fleet tanker built in India did not bear fruit. Government sanctioned the acquisition of a new Fleet Tanker to replace the old second hand tanker SHAKTI.

In January 1961, MDL submitted its preliminary report. Government deputed a team to discuss with the Admiralty, the collaborating shipbuilders and the armament suppliers the steps to be taken to execute the Frigate Project expeditiously and economically. The team recommended construction of three Leander class frigates in collaboration with Britain.

In December 1961, the Portuguese were evicted from Goa. The airfield at Dabolim was taken over by the Navy. In Delhi, there was difference of opinion between the Ministries whether Goa should be developed solely as a mercantile port or whether the Navy's requirement to have a naval base half way between Bombay and Cochin could be accommodated. This discussion continued until 1963.

Frigate Project

By 1962, in response to global enquiries, Sweden and Holland had also submitted proposals to build frigates in India. In mid 1962, a team led by the DCNS visited Sweden, Holland and Britain to make a final techno-economic assessment of the British proposal vis a vis the others. The team recommended the British Leander frigate. In view of the difficult financial position and the shortage of foreign exchange, the final decision awaited the negotiation of credit on soft terms.

When China attacked in the end of 1962, the age profile of the Navy's ships was as follows:

- *Acquisitions After 1947:* One aircraft carrier, two cruisers, six destroyers, one tanker and one stores ship, all of which were second hand. The new acquisitions were eight frigates, four coastal minesweepers and two inshore minesweepers.
- *Old Ships Pre 1947:* Six frigates and one LST.

Developments 1963 to 1965

After the military reverses during China's attacks in end 1962, India sought defence assistance from America, Britain and the Commonwealth. These countries asked for details of specific assistance. These details were sent. The requirements were phased in the form of a five-year plan and led to the formulation of the 1964 - 69 Defence Plan.

Meanwhile the American President and the British Prime Minister, who had met at Nassau in the Bahamas in December 1962, had decided that:

- America would not supply "lethal" equipment to India, except for equipping the Army's mountain divisions on the Indo Chinese border.
- Britain, the 'traditional supplier', would deal with the Navy's requirements.
- The envisaged aid to India of $120 million would be shared equally between America and Britain.

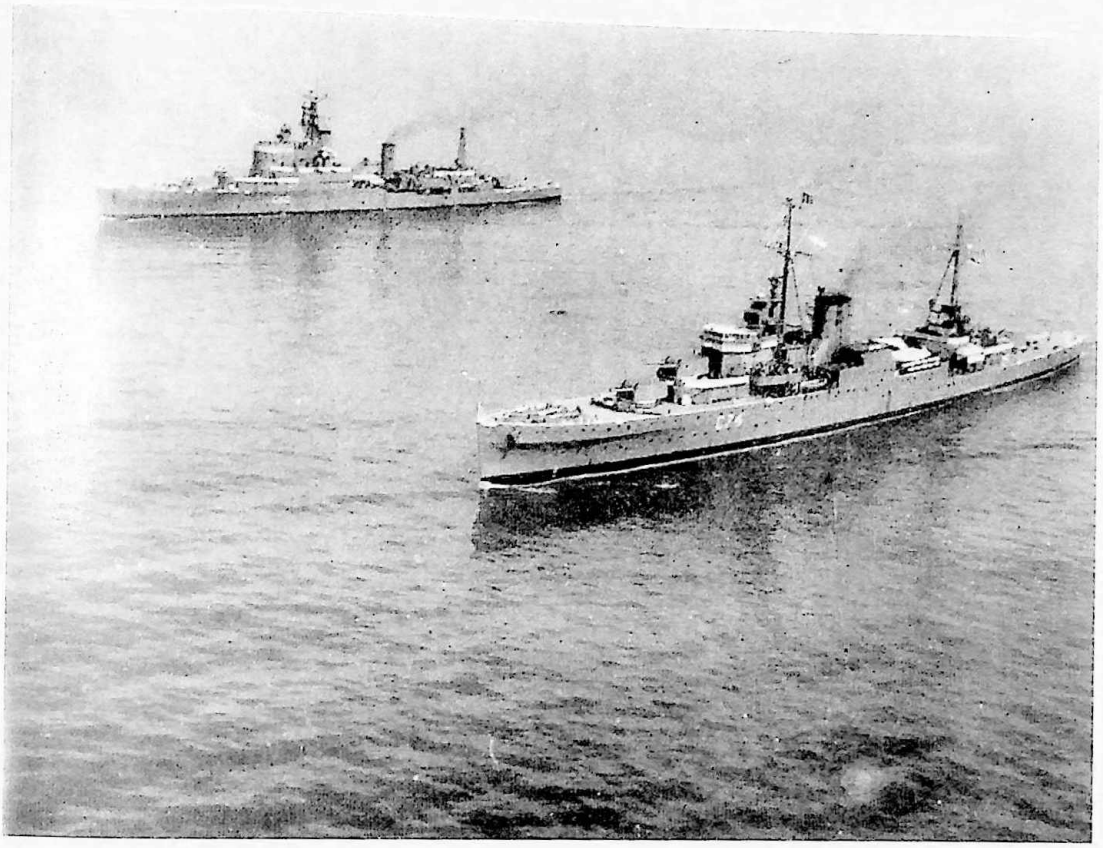
Immediately after China's attack:

- The first RNO Port Blair was appointed in November 1962.
- Government accorded sanction for the construction of the new 1120 foot wharf at Visakhapatnam.

The year 1963 was a major milestone in Indian naval planning. The Government initiated an exhaustive review of defence requirements. China was viewed as the primary threat. The Government decided that the Army's strength should be raised to 825,000 men and the Air Force's strength to 45 squadrons. The resources required to achieve this meant that the Navy could not be strengthened. Whereas the Navy had proposed a force level of 130 ships, the Defence Plan for the Navy envisaged "a phased programme for replacement of over-aged ships".

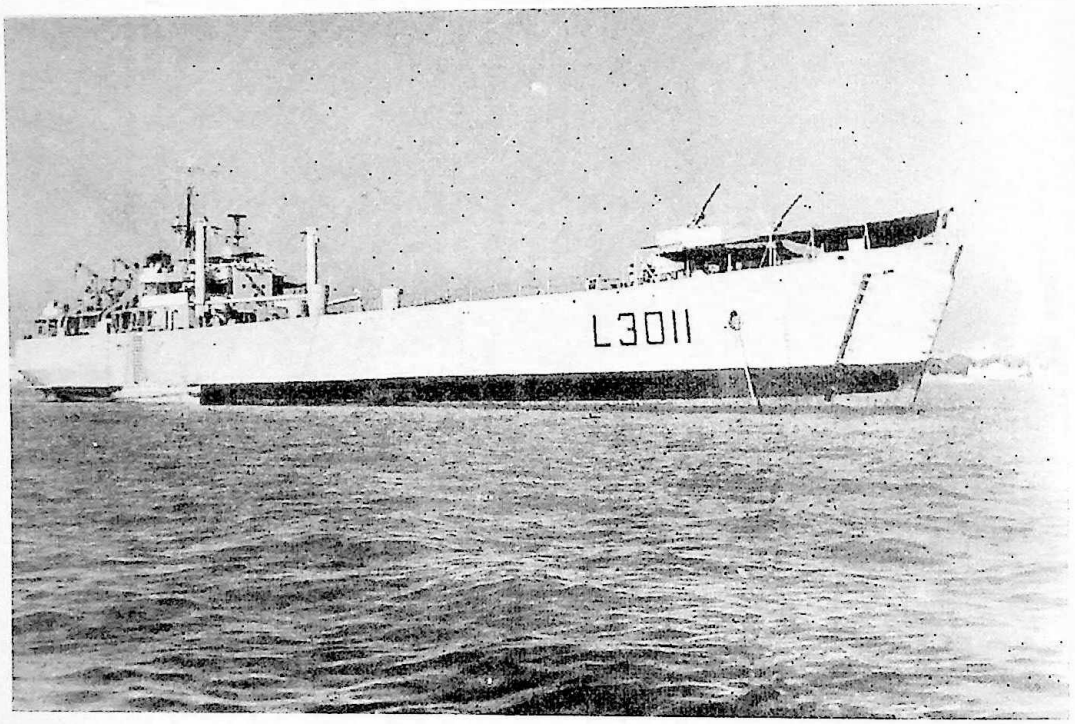
During 1963:

- With a view to take up the construction of frigates in India, a team of officers headed by the DCNS

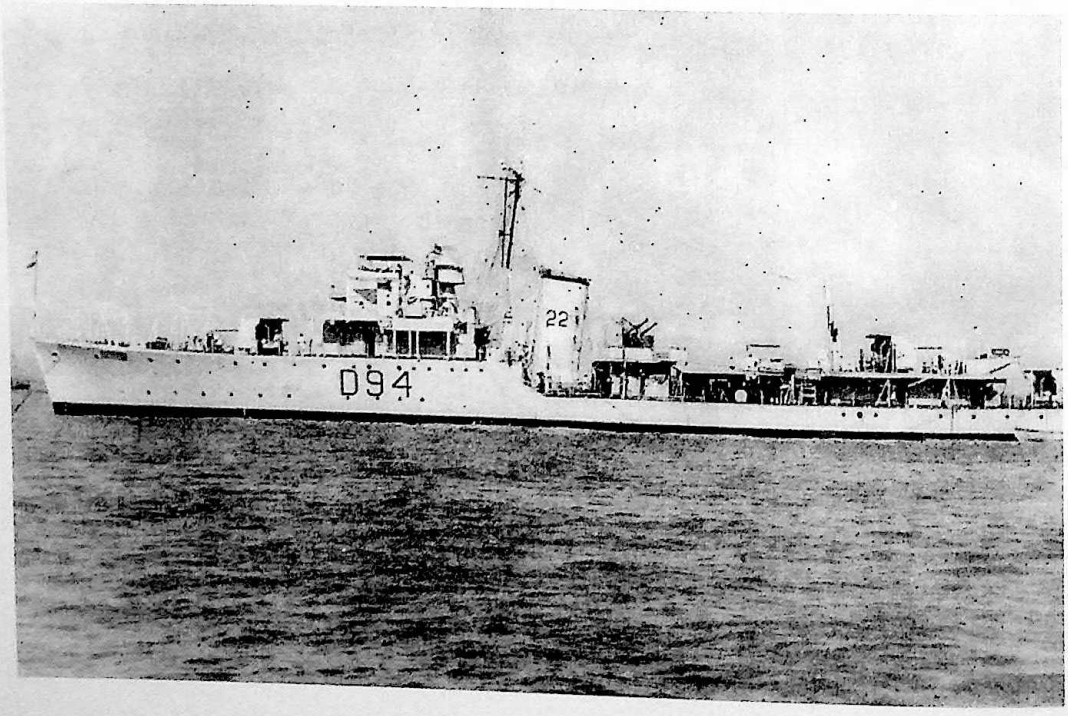


The Cruiser - INS DELHI with INS MYSORE in the backgrond

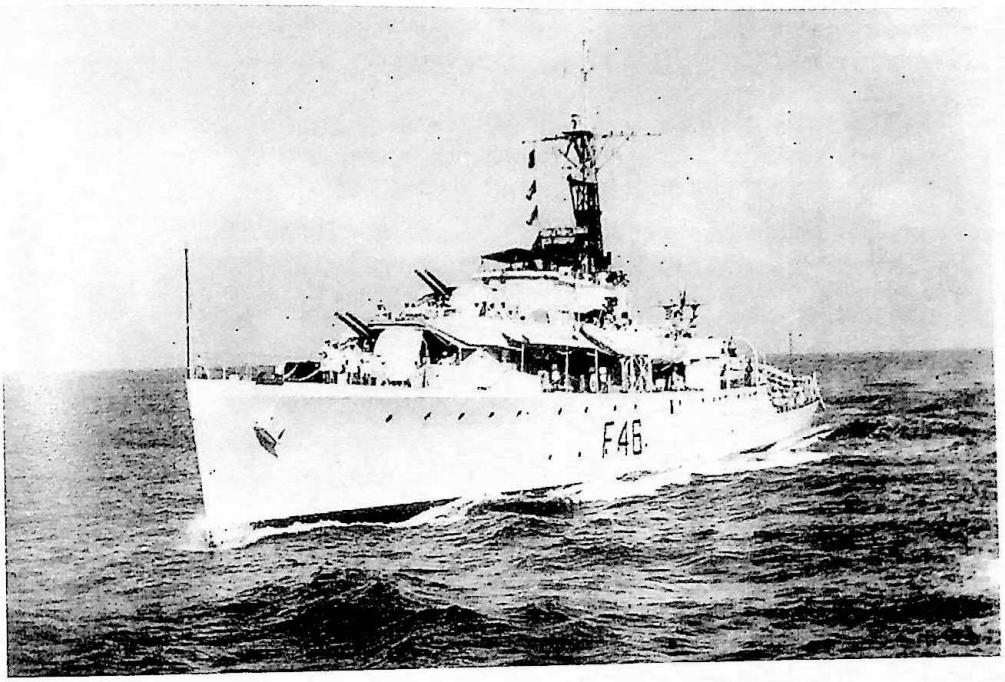
INS RANJIT (Fleet Destroyer)



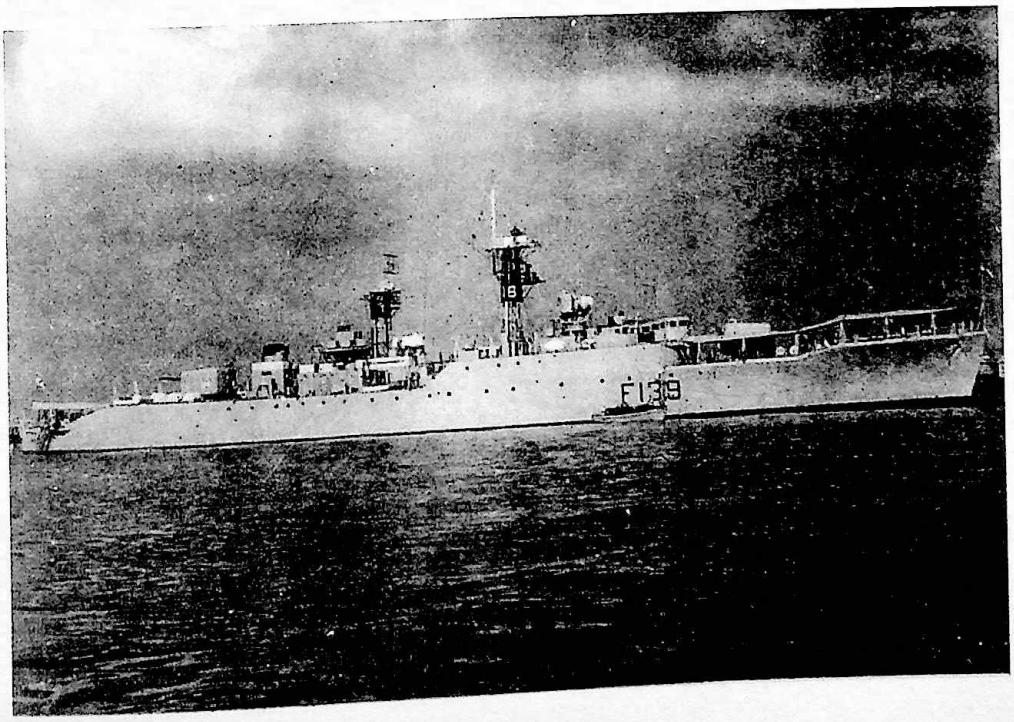
INS MAGAR (Landing Ship Tank)



INS GANGA (Escort Destroyer)

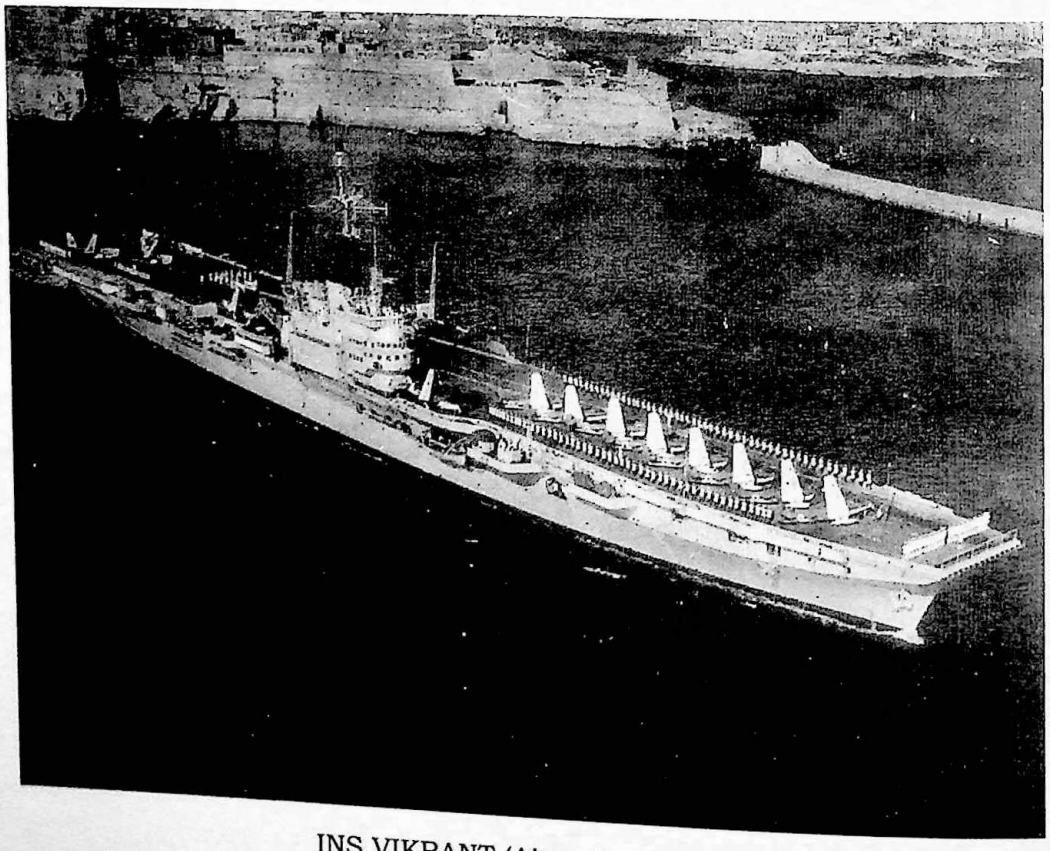


INS KISTNA (Training Ship)



INS BETWA (Anti Aircraft Frigate)

INS TALWAR (Anti Submarine Frigate)



INS VIKRANT (Aircraft Carrier)

visited Britain and Sweden to evaluate their offers of collaboration.

- The responsibility for Seaward Defence was entrusted to the Navy. The Coast Batteries which till then were manned by the Army were taken over by the Navy.
- The Navy was asked to garrison the A&N islands. INS JARAWA was commissioned as a naval establishment. A naval garrison was stationed at Port Blair and provided with vessels for moving between the islands.
- It was decided to set up at Visakhapatnam, the full fledged Naval Base and Dockyard which had been proposed in 1957.
- It was decided to develop Goa as a naval base. INS GOMANTAK was commissioned as a naval establishment. The Naval Air Station Dabolim's facilities were updated to make them capable of operating jet aircraft.

By early 1964, the Defence Plan 1964-69 had crystallised. The requirements of the Plan were discussed by the Defence Minister's Delegations during their visits to America in May 1964, to Russia in August 1964 and to Britain in November 1964. Neither America, Britain nor Russia perceived any threat to India from China's Navy. In their view, India's priority was to contain China on India's land borders by strengthening the Army and the Air Force. Russia however was willing to meet the Navy's needs.

In his book "Indian Navy's Submarine Arm", Admiral Chatterji states:*

> "From the Soviet point of view, India's naval shopping list no doubt came at a propitious time. Following the victory of the Chinese in the eastern Himalayas and Peking's sharp attacks on Soviet foreign policy in the Indian Ocean, Moscow's geo-strategic analysis of Southeast Asia welcomed a powerful Indian Navy that would associate and cooperate with the Soviet Navy to contain China in the region. Whatever may be the reasons for the Soviet Union's prompt and positive responses to India's Naval requirements, it was certainly very helpful and timely in making up the various deficiencies in the Indian Fleet".

By 1965, collaboration agreements had been concluded with Vickers Yarrow of Britain for the indigenous construction of three Leander class frigates. Britain offered a special defence credit of 4.7 million pounds to cover the external cost of the Frigate Project for the first four years, as well as for the expansion of Mazagon Docks Ltd.

Negotiations were also finalised for the Navy's tanker to be built by a public sector shipping line in a foreign shipyard and on completion, for the tanker to be chartered to the Navy.

When the Rann of Kutch incident occurred in April 1965 the position regarding the Navy's requirements was:

- America had said that Britain should deal with the Navy's needs.
- The British Navy had expressed its inability to spare either the type of destroyers or the type of submarines which the Navy wanted. British shipbuilders were willing to build a new Oberon class submarine which India wanted. India's suggestion for soft credit, as had been extended for the Frigate Project, was being reconsidered by the British Government.
- Russia had offered a variety of ships and submarines to meet the Navy's needs.

In May 1965, soon after the Rann of Kutch incident, a series of events occurred with startling rapidity.

- In April, Pakistan intruded into Kutch.
- In May, Britain informed India that they were unable to extend financial assistance for an Oberon class submarine to be built in a Britain shipyard.
- In June, there was an increase in Indonesian intrusions into the Nicobar Islands. The Navy recommended to the Government an immediate increase in naval presence in the Bay of Bengal to deter further intrusions.
- The refusal of British credit to build the Oberon class submarine and the need for increased naval presence in the A & N islands combined to precipitate the decision to accept the Russian offer of ships and submarines which they had made in September 1964.
- In September 1965, an agreement was signed for the acquisition from Russia of four submarines, a submarine depot ship, five Petya class submarine chasers, two Landing Ships Tank Medium and five patrol boats, all for deployment in the Bay of Bengal and the A & N Islands.

In a letter to Rear Admiral Sridharan in November 1965. Admiral Mountbatten wrote:**

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* Page 44.

** "Maritime History of India" by Rear Admiral K Sridharan, Page 429.

"I have a specially soft spot in my heart for the Indian Navy, having done so very much for it from the time I was the Supreme Allied Commander and had most of the Navy serving under me from 1943 to 1946 until I was Viceroy and then Governor General, when I took a great personal part in the division and reconstitution of the Navy.

"Ever since then I have been instrumental in getting almost all of the requirements of the Indian Navy met by the British Government, including the two cruisers, the aircraft carrier, the destroyers, the organisations for building the frigates at Bombay etc.

"I had even managed to get more favourable terms for the construction of a British submarine but alas it all took so long that this particular transaction fell through".

An Overview of the Navy's Growth 1947 to 1965

Viewed in retrospect, even though the allocations to the Navy were low, it was possible to gradually build up a modest force, using the sterling balances built up during World War II. Despite the disinclination to increase defence expenditure and even after meeting the pressing needs of the Army and Air Force, the Navy's percentage share of the defence budget rose from 4 per cent in 1950/51 to 9 per cent in 1956/57 and 12 per cent in 1959/60. From 1961 onwards, the Navy's allocation steadily declined to 4% in 1964/65, mainly because of the over-riding need to swiftly modernise the Army and Air Force after the Chinese aggression of 1962.

It is also interesting to note how the long awaited approval for the Submarine Arm resulted not only from a curious combination of several geopolitical and economic factors but also as part of a much larger decision to start acquiring the Navy's requirements from Russia.

As can be seen from the following table of ship acquisitions between 1947 and 1965, the Navy's growth was moderate, slow and steady, with new construction ships from the UK replacing those of World War II vintage and with indigenous construction gradually acquiring momentum.

Overview of the Navy's Growth 1947 to 1965

ACQUISITION	STANDARD DISPLACE-MENT (Tons)	NAME	VINTAGE ORDERED	YEAR	YEAR DELIV-ERED	SUPPLIER
Light Cruiser	7000	DELHI	WW2	1947	1948	Britain
Light Destroyers	1700	RAJPUT, RANJIT, RANA.	WW2	1948	1949	Britain
Landing Ship Tank	2200	MAGAR	WW2	1949	1949	Britain
Escort Destroyers	1000	GODAVARI GOMATI, GANGA.	WW2	1951	1953	Britain
Light Tanker	3500	SHAKTI	WW2	1952	1953	Italy
Inshore Mine sweepers	120	BASSEIN BIMLIPATAM	New	1952	1954	Britain
Coastal Mine-sweepers	360	KARWAR, CANNANORE, CUDDALORE, KAKINADA.	New	1952	1956	Britain
Light Cruiser	8700	MYSORE	WW2	1954	1957	Britain
Anti Aircraft Frigates	2250	BRAHMAPUTRA BEAS, BETWA.	New	1955	1958 1958 1960	Britain
Anti Submarine Frigates	2150	TRISHUL TALWAR	New	1955	1959 1958	Britain
Anti Submarine Frigates	1200	KHUKRI, KIRPAN, KUTHAR.	New	1955	1958 1959 1959	Britain
Seaward Defence Boats(for Central Board of Revenue)	63	SUBHADRA, SUVARNA, SHARAYU, SAVITRI.	New	1956	1957 1958	Italy
Seaward Defence Boats	86	SHARADA, SUKANYA.	New	1957	1959	Yugoslavia
Repair and Store Ship	4600	DHARINI	Second Hand	1958	1959	Italy
Seaward Defence Boats	120	AJAY, ABHAY, AKSHAY.	New Indigenous	1958	1960 1961 1962	Garden Reach and Hoogly Docking
Light Aircraft Carrier	18000	VIKRANT	WW2	1957	1961	Britain
Survey Ship	2800	DARSHAK	New Indigenous	1954	1964	Hindustan Shipyard

2

The International Geopolitical Web

The partition of India in 1947 was the outcome of attitudes whose historical origins went back several centuries. Starting in the 8th century, the Hindu kingdoms of India were subjugated by Muslim invaders , first from Afghanistan and then by the Mughals from Central Asia. The British East India Company stepped in as Mughal power declined. After the first Indian struggle for independance in 1857, two things happened. Britain formally took over the governance of India from the East India Company. And the British started depending more on the Hindus who for many years had been availing of English education and had been exposed to Western thought. The Muslims, having ruled India for several centuries, started resenting this rise in Hindu status. As the movement for freedom from British rule gathered headway, fears of Hindu economic domination led the Muslims to demand separate Hindu and Muslim electorates. Over time, this led to the Muslim League's demand for a separate Muslim state, to be called Pakistan, comprising the Muslim majority provinces of Baluchistan, Sind, West Punjab, the Northwest Frontier province and East Bengal. The Muslim League, led by Mr Jinnah, was able to mobilise the Muslim middle class. He played on their fears of Hindu domination and they followed him.

On the other hand, the Congress leaders of India's freedom movement, both Hindu and Muslim, were determined that independent India must be a secular state, where the pull of religion did not intrude into matters of governance. The Congress party, led by Mahatma Gandhi, Pandit Nehru, Sardar Patel, Netaji Bose, Maulana Azad, Frontier Gandhi Abdul Ghaffar Khan and innumerable other Hindu and Muslim nationalist leaders fervently believed in a composite Hindu Muslim culture and staunchly opposed the partition of India into two homelands. They were unable to allay the insecurity which the Muslim League played upon. When the Muslim League leaders were asked what would happen to the millions of Muslims who would remain in India in the provinces in which they were in a minority, their answer was that "they would have to manage". To Indian leaders, this "two nation theory" was impractical and repugnant. The history of India's freedom struggle until 1947 is a record of the failure of innumerable efforts to achieve Hindu Muslim political unity.

In April 1947, Rear Admiral Lord Louis Mountbatten was appointed as the last Viceroy of India to hand over power by mid 1948. After assessing the situation, he concluded that partition could not be avoided and the handing over would have to be preponed. He presented to the Congress and the Muslim League a plan to partition the country into India and Pakistan. The boundaries of the two countries would be demarcated by a commission. The Princely States could stay free or join either country. Power would be transferred on the basis of 'Dominion Status' and thereafter either Government could withdraw from the British Commonwealth if it wished. With rioting spreading beyond control, the date for the end of British rule and the transfer of power was preponed by nearly a year to two months hence, on 15 August 1947.

Despite serious differences of opinion on the concept and the timing, the partition plan was accepted by both parties. The enormous violence of the Hindu Muslim riots and the loss of life and property that followed, when millions of families migrated from one side to the other, left deep scars of mutual suspicion in both countries.

The 567 rulers of the Princely States were advised to accede either to India or to Pakistan. 559 states acceded to India. 5 states acceded to Pakistan. Three states were undecided — Junagadh, Hyderabad and Kashmir:

- The Muslim ruler of Hindu majority Junagadh, a small state on the Saurashtra coast, first acceded to Pakistan. The population objected. The ruler changed his mind and acceded to India. The Navy's role in this operation is recorded in the history of the Navy for the period 1945 to 1950 "Under Two Ensigns".
- The Muslim ruler of Hindu majority Hyderabad,a land locked state in the centre of India,wanted to remain free. However, the anti Hindu terrorist violence unleashed by the Razakars, an extremist Muslim organisation dedicated to maintaining the supremacy of Muslim power in the Deccan,

led to a swift police action by India to restore law and order. The Nizam accepted Hyderabad becoming a part of India.

- The third state, Muslim majority Kashmir, not only became the cause of the 1947, 1965 and 1971 Indo Pakistan wars but also the cockpit for international geo-politics. Like the Nizam of Hyderabad, the Maharaja of Kashmir wanted to remain free. This was not to Pakistan's liking. Pakistan sent into Kashmir tribesmen, followed by irregular forces, to take over Kashmir. The tribesmen entered Kashmir in October 1947 and within days had advanced to the outskirts of Srinagar. The Maharaja sought India's assistance to repel the raiders. India insisted that this could only be done after his state had formally acceded to India. This was done. The first Indian troops reached Srinagar on 27 October and the raiders were pushed back. Pakistan then sent in its regular forces in civilian clothes. They too were pushed back.

On 1 January 1948, India referred the Kashmir issue to the United Nations, stating that despite the ruler and the people having acceded to India, the Government of India, to keep the matter above board, would hold a plebiscite to ascertain the wishes of the people *after law and order had been re-established in the entire state.* The Security Council, particularly America and Britain, instead of recognising that Pakistan's aggression had created a warlike situation, passed a resolution calling on both sides to ease the tension. A few days later the Security Council passed another resolution to create a United Nations Commision to exercise a mediatory role and investigate the facts.

India was dismayed at the American and British attitude, as was the Viceroy, Lord Mountbatten, at their deliberate refusal to recognise India's transparently sincere intentions, despite the communal holocaust of partition. In later years, this American and British attitude of equating India and Pakistan, despite repeated aggression by Pakistan, became the basis of Anglo-American policy. Proposals for arms aid were assessed, not on the criterion of need but on not disturbing the military balance in the Asian sub-continent.

The Government of India told the Indian Army to clear the Pakistanis up to a point which could be militarily defensible. The Army strongly pressed for advancing farther. The Government felt that "going farther would have embroiled Indian forces unnecessarily in an area and terrain which was unfavourable, geographically as well as population wise".*

The United Nations Commission arrived in July 1948. Pakistan admitted that it had sent in three brigades of troops. The Commission made various suggestions. Negotiations followed. *The UN resolution stipulated that the very first step was Pakistani withdrawal of its forces from the areas it had occupied in Kashmir. The second step was to restore the jurisdiction of the Srinagar government over the whole of the state of Jammu and Kashmir. A plebiscite was to be held only after these two conditions were fulfilled.* A cease fire came into effect on 1 January 1949, one year after India's initial complaint to the UN. By this time, Indian troops had pushed the Pakistanis back to a cease fire line, (CFL) across which Indian and Pakistani troops faced each other to prevent intrusions.

Prior to the cease fire, India insisted upon and obtained three safeguards :

- The administration of the territory held by Pakistan (which Pakistan called Azad Kashmir) would not mean loss of sovereignty for the Kashmir Government over these territories nor recognition of the Government of Azad Kashmir.
- India would maintain its forces, not only to ensure law and order, but also to defend the state against external aggression.
- Pakistan, having no locus standi, would play no role in holding the plebiscite. In subsequent years, no plebiscite could be held because Pakistan declined to vacate the part of Kashmir territory which it had forcibly occupied in 1947.

In 1950, the Kashmir State Constituent Assembly was convened. Pakistan threatened a 'jehad' (holy war). Forces of both sides advanced to the borders. Pandit Nehru made it clear that an attack on Kashmir would mean an attack on India and would invite retaliation. Fifteen years later, in 1965, that warning was made good. Meanwhile various proposals continued to be made by the U N Commission and by others to resolve the deadlock but to no avail.

In 1949, the Communist Government of Mr Mao Tse Tung assumed power in China. The American supported Kuomintang forces under General Chiang Kai Shek fled to Taiwan (earlier called Formosa). In end 1950, Chinese troops intervened on the side of the North Koreans and inflicted reverses on the United Nations forces in Korea leading to an

* "Distant Neighbours" by Kuldip Nayar Page 71.

armistice. India sent a substantial military force to keep the peace.

The Korean war compelled America to take a wider view of the Cold War which had been going on with Communist Russia since the end of the Second World War. America started putting together a chain of military alliances, stretching eastwards from the Atlantic Ocean to the Pacific Ocean to encircle the southern flank of the Russian and Chinese landmass and contain the spread of communism.

The gist of America's geo-strategic perception of Asia at that time was that with China under communist domination and Communist Russia on India's northern border, India had become the pivotal state in non-communist Asia. If India went communist, for all practical purposes, all of Asia would be lost. President Truman approved his National Security Council's recommendation for military and economic aid to India. India received Sherman tanks for the Army and C 119 Packet military transport aircraft for the Air Force. No naval aid was either sought or offered. Even though tanks and aeroplanes were being purchased, India was not in favour of strategic linkages. In Pandit Nehru's view, it was better for India to keep aloof from power alignments and military alliances than to take sides, either with America or the Communist bloc. More was to be gained for the cause of peace by facilitating better mutual understanding.

Until the early 1950s, Russia found it difficult to understand how India could be independent while still remaining in the British Commonwealth. It viewed India's non alignment as tilted towards the Western "imperialist" bloc rather than towards the "socialist" bloc of Russia and China. When India refused to sign the San Francisco Peace Treaty with Japan (preferring to sign a separate treaty giving up reparations), Russia began to understand India's independent foreign policy. After 1952, when it first exercised its veto in the Security Council, Russia's support of India's stand on Kashmir became firm.

The NATO alliance was formed in 1949 followed by CENTO, SEATO and ANZUS. America invited India to join some of these alliances. When India declined to do so, America invited Pakistan. Pakistan responded favourably to joining a Middle East defence pact, in return for extensive military and economic aid. India pointed out to Pakistan that with American arms increasing Pakistani fighting potential, it would be ridiculous to talk of the demilitarisation of Kashmir as the first step to hold a plebiscite.

Until the early 1950's, all of India's core defence requirements like tanks, field artillery, cruisers, destroyers and frigates, bombers and fighter aircraft were being acquired from Britain. In step with their better understanding of Indian policy, the Russians started making overtures to displace Britain as the prime source for India's defence needs. Mr PVR Rao (later Defence Secretary from 1962 to 1966) was the Deputy High Commissioner in London. He recalls:

> "When the Air Force had come to England in 1952 to negotiate for the Canberra bombers, I remember the Soviet Military Attache asking me "why don't you approach us for assistance, rather than approach America and Britain?"
>
> "I also recall Prime Minister Nehru's talk to senior Indian High Commission officials in 1952 "It is all very well that Russia and China are making many overtures to us, but with America and Britain also, you never know which way these things will turn. We should be equally distant from both, just to safeguard all our interests."

In 1953, Pakistan joined the American sponsored four nation Baghdad Pact-Turkey, Iran, Iraq and Pakistan. The US-Pakistan Military Defence Agreement was signed in May 1954. This was followed by Pakistan joining the South East Asia Treaty Organisation (SEATO) comprising the Philipines, Thailand and Pakistan. America informed India of its decision to provide military aid to Pakistan. India protested. America replied that it was willing to give the same arms to India. India declined. America did however give assurances that it would not permit American arms to be used against India. American President Eisenhower wrote to Prime Minister Nehru that " — I am confirming publicly that if our aid to any country, including Pakistan, is misused and directed against another in aggression, I will undertake immediately, in accordance with my constitutional authority, appropriate action both within and without the UN to thwart such aggression."

In 1954, Pandit Nehru visited America. He found the American Government deeply involved in their Cold War with Russia and not at all interested in transfering the technological assistance which India was seeking for developing her heavy industry. When he visited Russia in 1955, he found there a much greater willingness to help India. In 1956, when the First Secretary of the Russian Communist Party, Mr Krushchev visited India, he stated categorically that Russia considered Kashmir an integral part of India. From then onwards, the relationship between India and Russia started becoming extensive. Russia stood

by India steadfastly, using its veto in the Security Council to counter American supported pro-Pakistan resolutions on Kashmir. Also from 1956 onwards, Russia started extending credits on favourable terms for India's industrial development, particularly for huge projects like the Steel Plant at Bhilai and the Heavy Engineering Corporation at Ranchi.

The mid 1950s marked a high point in India's policy of non- alignment. The Conference of Afro Asian Nations at Bandung in Indonesia, the Panchsheel Declaration and slogans of India - China friendship signalled to the developing world India's model for socio-economic development, without getting embroiled in Cold War military alliances as a precondition for aid.

By 1958, these slogans had worn thin. India and China had started to drift apart. Indian and Chinese patrols clashed in the northern Himalayas, in Aksai Chin, an area which India regarded as its own and which China found vital to control because it connected Sinkiang with Tibet. Pakistan seized the opportunity to exploit to its advantage, the widening rift between India and China. Acting on the principle that your enemy's enemy is your friend, Pakistan requested China to demarcate the border between the two countries, part of which lay in the territory of Kashmir under Pakistani occupation. China did not respond.

In 1958, there was an anti western coup in Iraq. Iraq withdrew from the Baghdad Pact and it was renamed as the Central Treaty Organisation (CENTO).

Between 1955 and 1959, the Pakistan Navy received American assistance for:*

- Acquiring eight American Navy coastal minesweepers as grant aid
- Acquiring one cruiser and five destroyers from the British Navy's reserve fleet, which were modernised in Britain with American support
- Building a new naval armament depot and a new naval stores depot
- Acquisition by the Pakistan Air Force of a squadron of twenty, twin engined Albatross aircraft for anti submarine patrols
- Jetties and wharves
- Ammunition and stores

Early in 1959, under the auspices of SEATO, America signed with Pakistan a bilateral agreement of cooperation for security and defence. Later it became known that this agreement was accompanied by a secret commitment specifically assuring Pakistan of American help if attacked by India. It was this secret commitment that Pakistan invoked and in response to which America sent a naval task force with the nuclear carrier ENTERPRISE into the Indian Ocean in the 1971 Indo Pakistan war. Pursuant to this agreement, America started using Peshawar for spying on Russia. U 2 spy planes started taking off from the Peshawar Air Force base and electronic listening posts were set up for monitoring Russia's missile tests and other electronic transmissions.

In Indonesia, the Communist Party of Indonesia (PKI) had grown in strength and established strong linkages with Russia and China. In the years after the Bandung Conference of 1955, Indonesia had distanced itself from India, and moved closer to Pakistan. Between 1959 and 1964, the Indonesian Navy had acquired an enormous fleet from Russia. It comprised one heavy cruiser, eighteen destroyers and frigates, twelve submarines, sixty seven corvettes and motor torpedo boats, twelve missile boats, twenty one minesweepers, eleven landing ships, six landing craft, four transport ships and four oilers.

In 1960, Mr Kennedy became the American President. American policy changed significantly. Instead of depending on military bases and alliances, America decided to help economically strong, free and neutral nations to contain Communism. This increased India's significance in American policy and decreased that of Pakistan. The border dispute between India and China and America's own difficulties with China over Taiwan made it pragmatic for America to join hands with India in dealing with China. 1960 was also the year that the tussle was developing between Communist Russia and Communist China on the ideological leadership of the International Communist Movement. Anticipating that President Kennedy may provide arms to India, Pakistan sought and obtained assurances from America in 1961 that 'if and when arms aid was given to India, Pakistan would be consulted'.

Sensing these shifts in geo-political alignments, Pakistan sought to improve relations with other countries. In 1960, Pakistan accepted Russia's offer for oil prospecting. President Nasser of Egypt was invited to Pakistan. Along with Iran and Turkey, Pakistan formed the Regional Cooperation for Development (RCD). Outwardly it was an alliance for economic and cultural cooperation. Years later, both Iran and Turkey gave Pakistan arms which it used to fight India.

In 1961, Pakistan repeated its earlier suggestion to China seeking demarcation of borders. Within

* Story of the Pakistan Navy, Pages 184 et seq.

weeks of the Indo China conflict in 1962, Pakistan conceded China's territorial claims in the Hunza area. In an agreement signed in 1963, Pakistan gave away to China 2200 square miles of Pakistani Occupied Kashmir bordering Sinkiang. In return, China helped to build the Karakoram Highway from Sinkiang into Pakistan.

In 1961, under Defence Minister Krishna Menon's determined drive for self reliance, an agreement was signed with Russia for the manufacture in India of Russia's latest fighter aircraft, the MIG 21. The Air Force became the first of India's armed forces to go in for Russian acquisitions. Two other major self reliance projects were the indigenous manufacture of frigates for the Navy and tanks for the Army.

When China attacked India in October 1962, India appealed to Russia, America, Britain and the Commonwealth for military aid. The immediate response was positive. A strengthened India on China's southwest border suited their interests. It could help lessen the pressure China was exerting on Taiwan, an American protege. It could help lessen China's pressure on Britain in Malaya. And it could help distract China from the pressure it was exerting on Russia's eastern border. Russia agreed to meet India's needs and to deliver before the due dates, the equipment for which contracts had already been signed.*

Soon after India's request for military assistance, President Kennedy of America and Prime Minister Macmillan of Britain happened to meet at Nassau in the Bahamas. It was agreed that the West need not be over-generous in their response as it would disturb the military balance with Pakistan. Of the total aid of 120 million dollars promised initially, 60 million each would be given by America and Britain. Emergency aid of light arms, ammunition and winter clothing was airlifted to India.

When China resumed its attack in November 1962 and advanced into Assam, India asked America to intervene militarily with air support. By the time China declared a unilateral cease fire on 22 November, America had despatched to the Bay of Bengal a naval task force which included the nuclear powered aircraft carrier ENTERPRISE. By a curious coincidence, the same aircraft carrier was sent to the Bay of Bengal during the 1971 Indo Pakistan War as a gesture of support to Pakistan.

Of the military assistance of non-lethal items such as spares for transport aircraft, communication, engineering and medical equipment and some light infantry weapons for mountain divisions, about half was delivered by mid 1965. The remainder was stopped when war broke out in September 1965.

Whilst responding to India's request for military assistance,America and Britain insisted on the pre-conditions of restarting discussions to solve the Kashmir problem, of making a formal declaration that the arms received would not be used against Pakistan and of inspection by American military officers that the arms given would only go to the forces facing the Chinese. The Indo Pakistan talks broke down in May 1963. Apart from the earlier basic differences, India was unwilling to agree to the boundary agreement between China and Pakistan over areas of illegally occupied Kashmir.

After China's attack in 1962, the Indonesian Communist Party's pro-China line further soured Indonesian relations with India. The growing size of Indonesia's Russian supplied fleet bolstered the Indonesian Navy's confidence. Bellicosity increased - claims were voiced to the Nicobar Island chain. Intrusions increased in the southernmost island, Great Nicobar, which was a mere 90 miles from the northern tip of Sumatra. Statements were made that the Indian Ocean should be renamed as the Indonesian Ocean.

From 1963 onwards, Pakistan increased its violations of the cease fire line in Kashmir. A perception grew in Pakistan that India would become too strong as a result of the major decisions being taken in India's Defence Plan 1964 - 69 and that it was best to settle scores with India sooner rather than later.

Politically, India continued its measures to integrate Kashmir into the Indian mainstream. Kashmir's representatives in the Indian Parliament, hitherto nominated, would be elected by the people. The President of India was empowered to extend President's rule to Kashmir, as he could in the other states of India,in the event of a breakdown of the constitutional machinery.

Between 1959 and 1965, America gave the Pakistan Navy a floating dock (1961), a fleet tanker DACCA (1963), and a submarine GHAZI (1964), along with equipment for training establishments and the dockyard.**

In May 1964, Prime Minister Nehru died. He was succeeded by Mr Lal Bahadur Shastri. Pakistan intensified its anti India campaign and decided that 1965 was the right year to force a settlement of the

* "Stalin to Gorbachov" by TN Kaul. Page 46.

** Story of the Pakistan Navy, Pages 204, 208, 209.

Kashmir issue that had eluded them in 1947-48.

During 1964, delegations headed by Defence Minister Chavan held discussions with America, Russia and Britain regarding assistance for India's Defence Plan 1964-69. America could not offer what India wanted. Russia offered the Army and Navy what they sought. The Army contracted for light tanks and artillery. The Navy did not want to strain its connections with the British Navy and waited for the outcome of discussions with Britain.

The Defence Minister's delegation visited Britian in end 1964. It found that Britain's decision to reduce the size of its Navy precluded it from meeting the Navy's immediate requirements of ships and submarines. However, negotiations were concluded for British collaboration in the construction in Bombay of the British Navy's latest design of Leander class frigates.

In end 1964, Britain's economy was under serious strain. A major review of defence and foreign policy had concluded that Britain could neither afford its overseas defence commitments nor the size of its Navy. It was mutually agreed that the burden of Cold War naval deployment in the Indian Ocean should be borne by America. In due course, the British withdrew from Gan in Addu Atoll and America established its presence in Diego Garcia. Likewise, the American Navy gradually replaced the British Navy's presence in Bahrein in the Persian Gulf.

By 1965, there were sharp differences in Britain about Indian Ocean policy. In one view, Britain's economic difficulties and the conclusions of the strategic defence review carried out in 1964 required that Britain withdraw from the Indian Ocean and concentrate on Europe. The opposite view was that in view of China's nuclear explosion in 1964, Indonesia's confrontation with Malaysia in the east and Egypt's 'subversion' of Aden and the Persian Gulf in the west, Britain should not withdraw from the Indian Ocean, because it would leave friends and allies in the lurch. Even though Indonesia and Egypt were not overtly communist, the British viewed their actions as serving communist objectives. In their view, the security of the Indian sub-continent was central to Indian Ocean Policy and it would not avail to stand fast on the Himalaya, if the western and eastern flanks of the area were turned.*

In May 1965, Pakistan intruded into the Rann of Kutch. At the same time, there was a marked increase in intrusions in the Nicobar Islands. The Navy recommended an immediate increase in naval presence in the Bay of Bengal. This precipitated the decision to accept the ships and submarines which Russia had offered to the Defence Minister's delegation in 1964 and to base them in Visakhapatnam.

Within a brief period of four years between 1961 and 1965, the geopolitical and economic compulsions of America and Britain had led India's Air Force, Army and Navy to accept Russia's generous offers of its latest conventional defence systems on extremely favourable financial terms. The 1956 Rupee-Ruble Trade Agreement was extended also to defence sales from 1965 onwards.

During the 1965 war, Indonesia's stance was markedly pro-Pakistan. There was an increase in the sightings of unidentified submarines and aircraft in the Andaman and Nicobar islands. In response to Pakistan's request for assistance, the Indonesian Navy sent two submarines and two missile boats to Karachi. The Indonesian Naval Chief even volunteered to distract India by making moves to take over islands in the Nicobars.** It was this vulnerability in August 1965 that impelled Naval Headquarters to keep the Indian Fleet in the Bay of Bengal for as long as possible, so as to deter adventurist Indonesian naval moves.

After the 1965 Indo Pakistan War, Russia's mediation at Tashkent helped to negotiate the postwar settlement. From 1966 onwards, Russia tried to wean Pakistan away from American and Chinese influence by offering defence assistance and economic aid. By 1969, it was clear that this had not succeeded. In the same year, discussions started on what in August 1971 was to become the Indo Soviet Treaty of Peace, Friendship and Cooperation.*** Russia offered to sign a similar treaty with Pakistan provided they got out of CENTO, SEATO and the American Military Assistance Programme. Pakistan rejected the offer.****

In the 1960's, America's naval policy in the Indian Ocean had many ingredients. The foremost was to deter Russia from interrupting the flow of oil from the Persian Gulf countries to America and Europe. Politically, this entailed American support of Iran to counter Russian influence in Iraq. It entailed maintaining a naval presence in the Persian Gulf, and wherever possible, in the countries on the rim of the

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* Letter to the London Times 29 Apr 65 by Sir Olaf Caroe and others.

** "The First Round" by Air Marshal Asghar Khan, Page 45.

*** For details see "War and Secession" by Sisson and Rose, Page 197.

**** See "My Years with the IAF" by Air Chief Marshal PC Lal page 333.

Indian Ocean, not only to secure the sea lanes of communication which criss-crossed the Indian Ocean but also to inject military force from seaward when required. By 1968, the American Navy had effected the necessary adjustments in its global naval deployments. In 1968, Britain announced its intention to withdraw from East of Suez by 1971 and generated debate on "the Vacuum in the Indian Ocean". Russia's naval presence in the Indian Ocean increased to keep pace with the American naval presence.

America felt that Russia was articulating anxiety to forestall American naval deployment. The Russians on the other hand, felt that the establishing of communication facilities in Diego Garcia and in Northwest Cape in Australia could be interpreted clearly as reflecting an intention to deploy submarines in the Indian Ocean whose ballistic missiles were targeted on Russia.

Fears of a naval vacuum in the Indian Ocean were soon overtaken by fears of the militarisation of the Indian Ocean. America neither denied nor acknowledged the deployment of submarine launched ballistic missiles. The Russian Navy started showing its flag in the Indian Ocean, partly to fill the naval vacuum, partly to counter the American Navy and partly to demonstrate to the littoral states that the Russian Navy was a force to contend with. Since Russia lacked naval bases in the Indian Ocean, an anchorage was developed off Socotra near the Gulf of Aden. Overall, there was a steady increase in the presence of American and Russian naval ships.

In 1969, American President Nixon's "Twin Pillar" strategy entrusted the security of the Persian Gulf region to the monarchies in Iran and Saudi Arabia. America started heavily arming both countries under the Nixon Doctrine. In 1970, the Russians became active in the Dhofar rebellion in Oman, which was a Persian Gulf choke-point. These moves towards militarisation of the Indian Ocean triggered countermoves to make the Indian Ocean a Zone of Peace. And both these moves and countermoves had to take into account the overall American hyper-sensitivity regarding West Asian oil supplies.

In 1971, the Indo Soviet Friendship Treaty and Russia's veto in the Security Council during the Indo Pakistan war helped India to liberate Bangladesh so that ten million refugees could return to their homes. America made its gesture of support to Pakistan by sending the ENTERPRISE carrier group into the Bay of Bengal. The Russian Navy, in an equally reassuring gesture of support to India, shadowed the American Navy's task force into the Indian Ocean. After the 1971 war, the Russian Navy worked alongside the Indian Navy to clear the mines laid by the Pakistan Navy in the approaches to Chittagong harbour.

In 1971 also, the concept of the Indian Ocean as a Zone of Peace crystallised in the UN. The original idea of the Non Aligned Movement was that the Great Powers should not enhance their military presence in the Indian Ocean area. The UN's 1971 resolution for an Indian Ocean Peace Zone was very specific about the scope of the Zone. The Indian Ocean covered not only the ocean, but also its natural extensions like the Red Sea, the Persian Gulf etc. It did not include the adjacent land mass. The main thrust of the resolution was directed against Great Power rivalry in the Indian Ocean. It did not try to find a solution to the politics of the littoral. Nor did it make the acceptance of the Zone of Peace by the Great Powers conditional upon reciprocal obligation by the littoral and hinterland states. However, since this did not suit the Cold War interests of the two super powers, the UN's Adhoc Committee attempted to reverse the priorities. The Great Powers were able to divert attention from their own obligations by demanding that the regional powers should themselves accept de-nuclearisation first. And, as usual, they were able to manipulate regional dissensions and rivalries to stall the convening of a Zone of Peace Conference.

In 1972, Iraq nationalised her oil companies. The Iraqi Navy established a naval base and positioned Russian supplied missile boats at Umm Qasr at the head of the Persian Gulf in the Shatt-el-Arab, not far from the Iranian oil fields of Abadan. America commenced the construction of naval facilities on Diego Gracia to support a carrier task force for 30 days. Three submarine pens were to be constructed for the attack submarines which accompany a carrier battle group. The runways were to be lengthened to operate B 52 strategic bombers. America indicated that it did not intend to employ nuclear weapons on these B-52's nor deploy submarine launched ballistic missiles from Diego Garcia.

In 1973, the Arab Israeli war persuaded the OPEC states to use oil pricing as a weapon against the West to offset the continued economic, political and military arms support for Israel. They raised the price of oil. The results were many and diverse. The nations of the West reacted with hysteria to start with, but soon turned it to advantage. There was a massive increase in wealth for the OPEC states, who then significantly increased their military expenditures and arms purchases. The Western banks, faced with mounting deposits of petro dollars,

increased their lending to non OPEC Third World countries. This credit boom offered an excellent opportunity to upgrade defence equipment, particularly as Western suppliers were increasingly keen to export state of the art weapons and equipment to offset domestic economic decline and balance of payment difficulties, both of which were being aggravated by rising oil prices. Concurrently, extensive plans were initiated for oil substitutes and diversification of oil supplies. The number of new producers increased. Soon supply exceeded demand, prices fell and the crisis shifted from the consumers to the producers.

In 1973 also, America decided to create a Quick Reaction Force to deal with crises in the Persian Gulf. The Russian Navy symbolised its presence when it helped to clear mines in the Red Sea. In 1974, Russian influence started building up in Somalia and the Russian Navy helped in clearing the Suez Canal of mines.

Pakistan's naval relationship with China started in September 1970 when the CinC Navy first visited there. By this time, unrest was brewing in East Pakistan and China agreed to strengthen the Navy in East Pakistan by supplying small shallow craft for riverine patrols. The patrol craft could not be delivered until after the establishment of Bangladesh, when the contract was amended. In subsequent years, China supplied the Pakistan Navy with hydrofoil torpedo boats, gunboats, missile boats and large patrol craft.*

In the years after the 1971 war, the Pakistan Navy acquired one more Daphne class submarine, two Agosta class submarines and Atlantic maritime patrol aircraft from France, frigates and anti submarine Seaking helicopters from Britain and destroyers on loan from America.

* Story of the Pakistan Navy, Page 302.

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The 1965 Indo Pakistan War

Preamble

The analyses of all wars and all naval operations invariably reveal facets which caused confusion and facets of great achievement. From the records presently available of events in 1965, two general features stand out prominently:

- 1965 was the first time after independence in 1947 that the Cabinet, the Ministry of Defence, the Chiefs of Staff Committee and the Services Headquarters came face to face with the procedural realities of war and its international implications. Every single personage and institution had to carefully feel the way forward. There were no precedents to go by. Expectedly, there was considerable confusion. Had the war been longer, many grey areas would have progressively clarified. Instead, its short duration permitted achievements to be exaggerated and shortcomings to be subsumed.
- The second feature was the clear determination of both the Indian and Pakistan Governments to localise the war, to desist from attacks on cities and non-military targets and to, anticipate reciprocity in not sinking each other's merchant ships. This too created confusion. In the doctrines prevalent at that time, the Armed Forces were trained to go all out in war. They were not accustomed to the political niceties of only one or two Services fighting and the third service being confined to defensive action within geographical limits. The media on both sides were sensationalising the achievements of their respective Armed Forces. For all practical purposes, India and Pakistan were actually at war with each other. Indeed, in his broadcast on 6 September, President Ayub Khan of Pakistan stated that Pakistan was at war. But neither the Government of India nor of Pakistan formally "declared war", thereby increasing the confusion.

With hindsight, it is clear that the interplay of factors was complex. India wanted to treat events as a local dispute over Kashmir and hence an internal affair. Pakistan wanted to internationalise the Kashmir issue. Then there was the dilemma of two members of the same British Commonwealth being at war with one another: In fact Britain, America and Canada declared on embargo on 14 September on all supplies of military equipment and stores to both India and Pakistan. Soon thereafter, France and Sweden imposed a similar embargo. In a wider perspective, declaration of war could have invited Great Power involvement and United Nations intervention.

For the Navy, the events of 1965 yielded invaluable lessons. Many of the shortcomings were remedied before the 1971 war. Many of the inherent contradictions of "being at war without formally declaring war" re-surfaced during naval operations in 1971.

The Dramatis Personae in the 1965 War

General J N Chaudhuri was the Chief of the Army Staff and Chairman of the Chiefs of Staff Committee. Vice Admiral B S Soman was the Chief of the Naval Staff. Air Marshal Arjan Singh was the Chief of the Air Staff. Rear Admiral BA Samson was the Flag Officer Commanding Indian Fleet (FOCIF).

Mr Lal Bahadur Shastri was the Prime Minister. Mr Y B Chavan was the Defence Minister. Mr Swaran Singh was the Foreign Minister.

In the Ministry of Defence, Mr P V R Rao was the Defence Secretary, Mr HC Sarin was the Secretary Defence Production, Mr GL Sheth was the Additional Secretary and Mr DD Sathe was a Joint Secretary. Mr LK Jha was the Principal Secretary to the Prime Minister. Mr CP Srivastava, the Private Secretary to the Prime Minister, published his memoirs "Lal Bahadur Shastri" in 1996. Mr RD Pradhan, the Private Secretary to the Defence Minister, published his memoirs "Debacle to Revival" in 1999.

Pakistan's Plan

The picture that emerges from published Pakistani sources and memoirs is of an aggressive plan comprising three major operations named Desert Hawk, Gibraltar and Grand Slam.

The first phase, Operation Desert Hawk, to be launched in early 1965, was a probing encounter to claim territory in the Rann of Kutch, where the boundary had not yet been demarcated. This operation was meant to serve several purposes. First to assess India's responses. Next to draw India's military forces southward to Kutch, away from the Punjab. Thirdly to give Pakistani military forces a dress rehearsal for a full scale invasion of India later in the year, initially in Kashmir and thereafter in Punjab. Fourthly to test how far America was serious in enforcing its ban on the use of American supplied Patton tanks and other military equipment for an attack on India.

Concurrently with this first phase, the training was to be started of about 30,000 men in guerrilla and sabotage activities. These men were to be formed in ten 'Gibraltar' forces, each commanded by a Pakistani Army officer and comprising six units of five companies of 110 men per company. Each company comprised regular troops of the Azad Kashmir Army, which was part of the Pakistan Army, along with Mujahid (volunteers for a jehad) and Razakar (defenders of the faith) irregulars.The Gibraltar Forces were placed under the command of a Major General of the Pakistan Army who was also commanding a division of regular troops.

The second phase, Operation Gibraltar was to commence in early August 1965 and envisioned several stages. Infiltrators would penetrate sixty locations throughout Kashmir and at each location initiate terror,arson, murder, destroy bridges, communications and government property. After a few days of large scale damage, it would be announced over a new radio station called 'Voice of Kashmir' that the people of Kashmir had risen in revolt. In due course, after describing the success of the people's uprising, the radio station would announce the formation of a National Government. Concurrently, the Pakistan Government would deny the Indian Government's allegations of infiltration and label as aggression the Indian Army's crossing the Cease Fire Line into Pakistan Occupied Kashmir to stop further infiltration.

Towards end August, the Pakistan Army would launch the third phase Operation Grand Slam. This would be a large scale attack across the India - Pakistan international boundary into the Chamb area in order to capture Akhnoor and cut India's only road link with Kashmir. Pakistan would allege that this was a response to India's aggression across the cease fire line. After the successful launch of the thrust to Akhnoor, the Pakistan Army would launch a massive attack with Patton tanks on Punjab to capture Amritsar and as much Indian territory as possible for eventual exchange after the cease fire.

Since none of the foregoing was known to India at the time, India's responses to these unfolding events provide insights into the why's and wherefore's of the Indian Navy's actions in 1965.

The Intrusion in Kutch - Operation Desert Hawk - April 1965

The Rann of Kutch is a marshy area about 300 miles long and 50 miles wide on the western seaboard of India. The incident started in January 1965 with Pakistan claiming the entire Rann of Kutch on the grounds that Sind, one of Pakistan's provinces, used to exercise administrative control over the area during the British period. This was one of the many undemarcated areas pending since partition in 1947. Pakistan was keen to have at least the northern portion of the Rann, which it had earmarked for offshore drilling with the help of an American oil company. India asserted that Kanjarkot, Chadbet and Biarbet, which Pakistan claimed, belonged to India and not to Pakistan.

Operation Desert Hawk started with skirmishes between Indian police patrols and Pakistani border guards about an eighteen mile track, a mile and a half inside Indian territory where Pakistani forces established two posts. By early April, the fighting had spread to within 10 miles of the fort at Kanjarkot. On 9 April, Pakistan forces in brigade strength attacked the Central Reserve Police manned Sardar post near the old ruined fort of Kanjarkot. The CRPF contingent was forced to withdraw. The task of sanitising the area was then taken over by the Army. The Indian Army asked the Pakistan Army to vacate Kanjarkot. The Pakistan Army refused. On 16 April, Pakistan claimed Kanjarkot to be Pakistan territory. On 24 April, Pakistan launched a division size attack, using Patton tanks and field guns. The attack was contained with considerable casualties on both sides. When the incident had started, the British Prime Minister initiated moves to secure a cease-fire. During the Commonwealth Heads of Government conference in London, he succeeded in his efforts. A simple cease fire was declared on 29 April. On 15 June fighting erupted again. On 30 June, a formal cease fire was signed in London restoring India's police control over the disputed areas while allowing the Pakistan police the use of the disputed track.

Both the national and the international press commented adversely on the performance of the

Indian troops. Though the Army did not fare as badly as Pakistan claimed, Pakistan did make local gains. Logistics favoured Pakistan. It had an airfield at Badin where it had deployed F 86 Sabre fighter aircraft. And Pakistan had deployed its Army in force - an infantry division and two regiments of tanks, including the Patton tanks recently received from America. India protested to America against the use of these American supplied arms and America protested to Pakistan. Nothing much happened.

On the naval side, no encounter occurred. Early in 1965, the Indian Fleet had visited Bahrein and Kuwait as planned. The aircraft carrier VIKRANT had carried out a routine cooperation exercise with the Army in the Kutch area. When the skirmish occurred, some ships were on routine assignments on both coasts and in the Andamans. Most ships were in Bombay undergoing maintenance in preparation for the annual exercises in the Bay of Bengal for the duration of the southwest monsoon. The aircraft carrier had disembarked her air squadrons and was on her way back to Bombay for docking. When Pakistan intruded in Kutch, she was ordered to sail back and reembark her aircraft. By the time she had done so, the cease fire had been declared. This delay in her docking was to result in the carrier not being available for operations later in the year.

The official history of the Pakistan Navy titled 'Story Of The Pakistan Navy 1947 - 1972' states:*

> "In March 1965 the Indian Navy, having completed a series of exercises off Bombay and Cochin, sent their aircraft carrier and a number of destroyers and frigates on a goodwill visit to the Gulf ports. On their return, they joined up with other units from Bombay and carried out extensive exercises off Kutch. These exercises included anti submarine, anti aircraft, strike and photo recce missions by carrier borne aircraft. This appears to have been a prelude to the Kutch operations in which the aircraft carrier played an important role in transporting men and material to the port of Kandla, which was being used as a support base for operations in the area.
>
> "In Karachi, COMPAK arrived suddenly one afternoon and enquired how soon ships could proceed to sea. All available ships were made ready and proceeded to sea a few days later for the Rann of Kutch operations which was a prelude to the September 1965 War.
>
> "A notable feature of the 1965 war was that both its genesis and its outcome have remained largely unstated, but it was caused by frictions generated by the gradual change in India's stance over the Kashmir issue. In Pakistan, it was becoming increasingly evident that India wanted to do a volte face on its commitment to a plebiscite in Kashmir. This was clear from the pronouncement of its leaders and by the practical steps initiated for the incorporation of the disputed territory in the Indian Union. The predominant view in Pakistan was that if nothing was done to thwart India's efforts, she would be emboldened to proceed ahead with her plans for the assimilation of the state into its territory. Lack of any response on Pakistan's part, it was feared, would enable the Indians to strengthen their claim over the State as time passed."

In June, a formal cease fire agreement was arrived at, effective from 1 July. It provided for ministerial level talks which, if they did not produce a compromise, would be followed by reference of the Kutch issue to a tribunal to demarcate the boundary. The ministerial meeting never took place - Pakistan did not reply to India's communications -so a tribunal was appointed. The tribunal upheld by 2 to 1 Pakistan's claim to the northern half of the Rann and awarded 10 percent of the disputed territory to Pakistan.

Mr Pradhan's memoirs state:**

> "After the cease-fire on the Rann of Kutch, the Indian army had started moving troops to their battle locations with the object of restraining any Pakistani adventure in the Punjab or in Jammu and Kashmir. However for want of intelligence assessment, the movement was considerably slow. During March and April 1965, the Kashmir valley was simmering with anti-India propaganda. In May 1965, the Indian government was forced to rearrest Sheikh Abdullah. There were protests and agitations and the Pakistani hawks decided that the time was ripe to launch a guerrilla type operation in Jammu and Kashmir named 'Operation Gibraltar'."

Pakistan's incursion into Kutch roused strong feelings amongst the people of India. They had vivid memories of the humiliation India had suffered at the hands of the Chinese in 1962. The opposition parties alleged that Prime Minister Shastri had not acted firmly enough.Several considerations appear to have weighed with the Prime Minister in handling the

* Page 214.
** Page 250.

Kutch crisis. Mr C P Srivastava was the Private Secretary to the Prime Minister in 1965. His memoirs "Lal Bahadur Shastri", state:*

"At the back of his mind was always the firm advice of the Army Chief that an escalation of fighting in the Rann of Kutch area was, tactically, not in the country's interest and that if there had to be a trial of strength between India and Pakistan, it should be elsewhere."

Mr L K Jha, the Principal Secretary to the Prime Minister in 1965, recalls:

"I was involved with some of the overall considerations which were guiding the war effort and meetings of the Emergency Committee of the Cabinet as well as the Secretaries where some aspects were viewed largely from the political point of view but equally from an operational point of view.

"Now, first of all, the attempt on our part was to keep the whole thing confined, territorially as well as otherwise, to a local conflict, rather than allow it to assume the character of an Indo -Pak War. This was the prime objective of our policy - it had been in the past also. But at the same time, we had come to realise that fighting on terrain chosen by the enemy would always leave you at a disadvantage. This came out very, very vividly during the Rann of Kutch affair when Pakistan had all the logistic advantage and we had a tremendous problem in getting men, material and supplies moving to the front.

"At that very time, a political decision had been taken that we would not fight with our hands tied behind our backs and therefore a plan for opening a second front in the Punjab by marching into Lahore had been drawn up and perfected. But it was not launched because a cease fire came into existence, and we naturally hoped that some peaceful way of resolving the Rann of Kutch dispute would be evolved and in fact it went to an international body to settle.

"But even when there was the state of uncertainty, a kind of simple cease fire without any formal agreement, the Commonwealth Prime Minister's Conference was taking place in London. Shastriji went to London and I went with him. And when going, there was concern - supposing things hotted up in our absence, should the operation to march into Lahore be launched or not? The arrangement I made with Shri Y B Chavan, who was then the Defence Minister, was that if such a contingency arose, he would send me a message indicating the date by which the Prime Minister must get back because we were about to move forward. However the contingency did not arise.

"In fact I recall, and it might be useful for the record, a meeting between Prime Minister Shastri and President Ayub during the Commonwealth Conference session. It was a private meeting and I was there. Ayub said somewhat patronisingly " You know, your chaps tried to commit aggression on our territory, our chaps gave them a few knocks and they began to flee". Then Shastriji said "Mr President, you are a General. I have no military knowledge or experience. But do you think if I had to attack Pakistan, I would choose a terrain where we have no logistic support and you have all the advantages? Do you think I would make such a mistake or any of my Generals would allow me to make that mistake?" And one could see from the face of President Ayub that this thought startled him. Because quite obviously he had been led to believe, in my judgment by Bhutto, that the Indians had attacked in the Rann of Kutch. And he was firmly of that view until this question was posed by Shastriji. I could see him visibly pause and not pursue the point any further".**

Mr C P Srivastava's memoirs state:***

"Why was air power not deployed in the Rann of Kutch conflict? Air Chief Marshal Arjan Singh told me the reason. He said that soon after the commencement of hostilities in the Rann of Kutch region, he received a telephone call from Air Marshal Asghar Khan, his counterpart in Pakistan, suggesting an informal agreement that neither side should employ the Air Force in the conflict. Arjan Singh himself agreed on the wisdom of this proposal but he confirmed the arrangement after receiving political clearance from the Defence Minister and the Prime Minister. Arjan Singh was also of the opinion that the Rann of Kutch was not a suitable area for large-scale operations by India.

"Shastri was a man of peace and he was determined to go to the farthest extent possible,

* Page 198.
** Blueprint to Bluewater page 420.
*** Page 199

consistent with national security and honour, to maintain peace with Pakistan."

Another consideration seems to have been Prime Minister Shastri's belief that it would be easier to make up with Pakistan, the people of which were of the same stock as Indians, than to make up with China. He was in favour of peace. And if war was forced upon India then, whilst reacting in whatever manner India thought fit, the conflict should be localised as far as possible.

Yet another consideration seems to have been the international political climate. After Russia's open clash with China, Russia began to be more friendly with her neighbors Turkey, Iran and Pakistan, who were still members of American led military alliances directed against Russia. In trying to woo Pakistan, Russia appears to have been influenced by the prospect of Pakistan getting closer to China. Russia invited President Ayub Khan. He visited Moscow in April 1965 during the Rann of Kutch conflict and India noticed that Russia tended to take a neutral position in the conflict. It was reluctant to say anything in public when it was trying to woo Pakistan. India also came to know that Russia was considering President Ayub Khan's request for arms. Prime Minister Shastri visited Russia soon after President Ayub Khan. Russian leaders reassured him that they were trying to wean Pakistan away from military pacts as well as from China and if they were successful, India would benefit more than Russia.

There was also the lurking threat from China. After the Sino Pakistan border treaty in 1963, China's Prime Minister Chou En Lai had made a state visit to Pakistan in 1964.This was followed by a state visit by President Ayub Khan to China in March 1965.

And there was Indonesia, whose relations with India had deteriorated after the Bandung Conference of 1955. The Communist Party of Indonesia had come to power and had close links with Communist China. In the end 1950's, the strength of the Indonesian Navy had increased substantially. Between 1959 and 1965, Russia gave Indonesia one cruiser, fourteen destroyers, fourteen submarines, eight anti submarine patrol vessels, twenty missile boats and several motor torpedo boats and gunboats. Indonesia had arrived at a mutual defence arrangement with Pakistan. Indonesian leaders started voicing claims to Great Nicobar which was closest to Sumatra and wanting the Indian Ocean to be renamed as the Indonesian Ocean.

After China's attack on India's northern frontiers in 1962, the Army's hands were more than full and the Indian Navy had been charged with the garrisoning of the Andaman and Nicobar islands. In 1965, the Navy was responsible for the defence of these islands.

Not the least of Prime Minister Shastri's worries was the internal situation - the likelihood of Hindu - Muslim riots, the differences of opinion, between political parties and within the Cabinet, on how to deal with Pakistan's bellicosity and the no - confidence motions in Parliament at a time when there was a pressing need for greater unity.

Naval Movements Between May and August 1965

The 'Story of the Pakistan Navy' states:*

> "After the Rann of Kutch operations, the Pakistan Navy's ships went to sea frequently and carried out intensive maneuvers. Changes of formation from surface to anti aircraft disposition were carried out while long periods were spent patrolling off Karachi. Exercises continued throughout the monsoons. In August, all leave was stopped in the fleet and preparations were made for possible hostilities".
>
> The Indian Fleet sailed for the Bay of Bengal in end June. No directive had been received from Government to prepare for war. It had been arranged for a British submarine to be available off Madras in July for anti submarine training, after which it was planned that ships of the Fleet visit the Andamans, Calcutta and Visakhapatnam.

The Intrusions in Kashmir - Operation Gibraltar - August 1965

It is clear from Pakistani published sources that in mid May, six weeks before signing the formal cease fire in London, President Ayub Khan was given a military presentation on Operation Gibraltar. During the presentation, at his behest, the assault on Akhnoor was included in Operation Grand Slam. He accorded approval for Operation Gibraltar to be launched. In end July, he addressed the Force Commanders of Operation Gibraltar.

The first infiltration across the Cease Fire Line (CFL) started on 1 August over a 700 kilometer front from Kargil to Chhamb. The Indians as well as the local Kashmiris were taken by surprise.

* Page 215.

Operation Gibraltar commenced on 5 August. Sixty companies of Pakistani armed personnel in disguise, armed with modern weapons and explosives, infiltrated across the cease fire line to blow up strategic bridges, raid supply dumps, kill VIP's and cause arson. On 5 August itself, some infiltrators were apprehended.

In his foreword to Air Marshal Asghar Khan's book 'The First Round', Mr Altaf Gauhar, then Pakistan's Secretary of Information and Broadcasting states:*

> "The truth is that the first four volunteers who were captured by the Indians described the whole plan in a broadcast on All India Radio on 8 August 1965, nearly a month before India crossed the international boundary".

On hearing these broadcasts, Pakistan realised that their secret plan was now open knowledge.

Mr C P Srivastava's memoirs state:**

> "It was only on 8 August 1965 that more detailed information about extensive infiltration by armed men from Pakistan was provided to Prime Minister Shastri. He immediately summoned a meeting of the Emergency Committee of the Cabinet. The Chief of Army Staff attended this meeting. He assured the Prime Minister that the Army and the police were in control of the situation, the raiders were being rounded up but further sabotage could still occur by the raiders not yet captured. The Prime Minister asked the Chief of Army Staff to take whatever action he considered necessary to prevent new infiltrations."
>
> "On 9 August, as per its pre-arranged plan, Pakistan announced a rebellion in Kashmir and the heroic exploits of the freedom fighters who were helping them. It also reported receiving a broadcast, by a secret radio station calling itself as the 'Voice of Kashmir', of the setting up of a Revolutionary Council to take over all authority in Kashmir. Within days however, it became clear to the world that this was a propaganda hoax. Soon even Pakistani newspapers ceased further propaganda. By 11 August, the Pakistan Army realised that Operation Gibraltar had flopped. From 15 August onwards, the Pakistan Army stepped up its violation of the cease fire line on the Srinagar - Leh road".

Mr PVR Rao, the Defence Secretary in 1965, stated in his 1972 USI Lecture:

> *"The firm decision that the Army should cross the Cease Fire Line to root out the infiltrator's bases and, in case Pakistan regular forces intervened, our forces should be free to retaliate at any suitable place of their choice was taken on the night of the 13th August by the Prime Minister, when the Defence Minister and certain officials, including the Chief of the Army Staff were present. These decisions were taken on the request of the Chief of the Army Staff that to check infiltration, the infiltrators' bases should be destroyed and in any fight between regular forces, the Services should not be restricted.* Shri Lal Bahadur Shastri was anxious to avoid any extension of the conflict but was determined that measures to liquidate infiltrators should be pursued vigorously. The Prime Minister gave expression publicly to the decision taken at his speech from the Red Fort on the 15th August, when he declared that ``resort to the sword will be met with the sword'. And even as the speech was being made, our troops occupied certain posts across the Cease Fire Line near Kargil and, in the following days, occupied various places across the Cease Fire Line, including Haji Pir and destroyed the infiltrators' hideouts. After giving the broad directive on the 13th August, the Prime Minister did not concern himself with the details of the operations. He left all operational decisions to be supervised by the Defence Minister, but I used to report to the Prime Minister at his residence every evening the progress of the operations".

In Naval Headquarters in Delhi, the situation had become quite vexed. With all the operational ships of the Indian Fleet away in the East, the resources available in Bombay were meagre. The frigate TALWAR, which had been carrying out essential maintenance was hurriedly boxed up and sent for investigating the presence of possible enemy vessels in the Kori Creek, a few miles southwest of the Indo Pakistan border in the Gulf of Kutch.Her first patrol was for 5 days from 12 to 16 August, then again from 24th to 28 August. No encounter occurred.

From the East, the Flag Officer Commanding the Indian Fleet (FOCIF), Rear Admiral B A Samson, reading of the increasing tension in Kashmir, rang up the Chief of the Naval Staff (CNS), Vice Admiral

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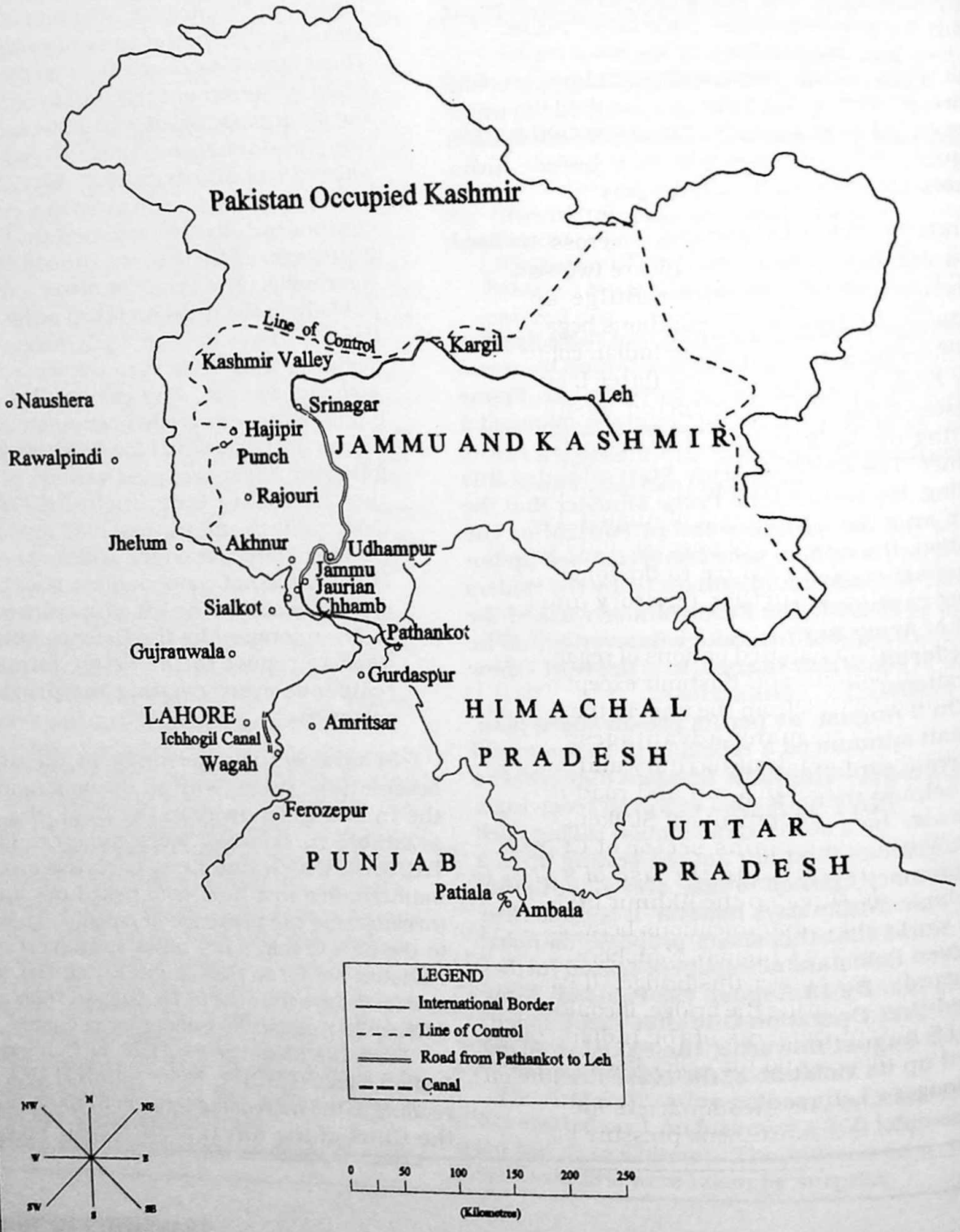
* Page xii.

** Page 208.

JAMMU AND KASHMIR



Soman, on more than one occasion and suggested that the Fleet return to Bombay. He was told that the Fleet should adhere to its programme of visiting the Andamans and Calcutta.

Operation Grand Slam - September 1965

Mr Pradhan's book states:*

"By the first week of August, the infiltrators had not achieved their objective. In order to raise the guerrilla's morale and spark the support of the local population, Pakistan undertook a limited offensive against Chhamb in the Jammu area. As a counter offensive, in the northern sector, Indian troops crossed the CFL and captured Kargil Heights thus securing the safety of the Leh-Srinagar road. Further, in order to hit the infiltrators' bases, India decided to cross the CFL on the western sector and capture two strategic areas in POK, the Hajipur Bulge and the Kishanganga Bulge. The operations began on 23 August and four days later, an Indian column led by Major Ranjit Singh Dayal (later Lieutenant General) made a final heroic assault and captured the 18,600 feet high Hajipur pass. The Pakistanis were ill-prepared to defend these strategic areas in POK and the Indian offensive unnerved them. By the end of August, Pakistan had failed to achieve any success and President Ayub was under pressure to do something to check the loss of further territory and avoid military humiliation.

"Pakistan had limited options of regaining the initiative in Jammu and Kashmir except perhaps by crossing the CFL from the west in the Chhamb area. It offered many advantages. It was contiguous to Pakistani territory and was well connected to Pakistan's rail and road network and the nearby cantonments of Sialkot, Kharian and Jhelum. The plains sector of Chhamb-Akhnur, being suited to the use of armour, Pakistan could threaten the Akhnur bridge over the Chenab. All communications between India and its garrisons in Chhamb, Naushera, Rajauri and Poonch passed over this bridge. If Pakistan succeeded in capturing the bridge, it could cut off the logistic requirements of the Indian troops west of the Chenab and the valley itself".

When Pakistan Army Headquarters found that the tide was turning against them, pressure began to build up to retrieve the situation by launching the third phase - Operation Grand Slam - to capture Akhnoor and Amritsar. One major problem, which could only be resolved with the approval of President Ayub Khan, was that this operation would require the Pakistan Army to move across the international frontier between Sialkot and Jammu. President Ayub gave his approval on 29 August. On 1 September, after heavy preparatory artillery fire, a column of seventy tanks and two brigades of troops drove towards Akhnoor bridge to cut off the supply line from Punjab to Kashmir.

The Developments in Delhi

Mr Pradhan's memoirs state:**

"On 30 August, General Chaudhuri went to Srinagar for an on-the-spot assessment. He was due to return to Delhi on 1 September. That very morning at 3.45 am, Pakistan started the bombardment of India's front positions. The blitzkrieg offensive was planned to exploit Pakistani superiority in armour and heavy artillery. 'Operation Grand Slam' caught the Indian commanders by surprise - a full scale war had erupted".

"In the morning meeting on Wednesday, 1 September 1965, General Kumarmangalam said 16-days is the least (period) before Pak should retaliate.

"The VCOAS's assessment that sixteen days would be the minimum period before Pakistan launched an attack showed how faulty both military assessment and intelligence were".

Air Chief Marshal Arjan Singh recalls:

"In the Air Force, we were aware of the seriousness of what was happening. We had thought it out. In my opinion and the Army may not accept it, the attack on Chamb Jaurian took the Army by surprise. It was a very strong attack by the Pakistan Army. As far as I know, we only had a Brigade plus. The main purpose of the Pakistan Army was to capture Akhnoor Bridge, the vital link between Jammu, Rajouri and Poonch. If the Pakistanis had captured or destroyed Akhnoor Bridge, they would have cut the LOC and then there was no way of supplying that area except by air. That was their main aim initially. After that, probably their attempt would have been to cut the Jammu, Udhampur and

* Page 251.
** Page 252 et seq.

Srinagar road or interrupt the road traffic to the valley.

"It was a big attack and our Army was quite overwhelmed by it. The Pakistanis kept advancing the whole day. General Chaudhuri came to me first and said that he would like the Air Force to participate. I said "We have discussed it. We will participate but I cannot do it unless it is a decision of the Government. Once you use the Air Force, then it widens the scope of war and that means all out war". Then he and I went to Mr Chavan. At that time it was perhaps an hour and a half before sunset. Things were getting bad there and the Army were very concerned that during the night, Pakistan might do much damage and advance further and probably even capture Akhnoor. I must also say that I was very keen and the Air Force was very keen that we should participate, otherwise, we felt, why have an Air Force? And I must say to his credit, Mr Chavan did not take more than five minutes to tell me to go ahead. He did not say what should be done but he said "I leave it to you, you do it the way you like. Attack where you like, the way the Army wants it".

"We had only one air station at Pathankot which was nearest to Chamb-Jaurian, the scene of fighting, and we put up everything we had readily available over there, about 20 aircraft or so. We lost four aircraft, all Vampires. Vampires were a bit out of date. However, though I felt sorry to have lost them, but I thought the air attack was worth it because otherwise the Pakistan Army's attack would not have been halted. It is recognised by the Army also that from the time we attacked, the Pakistan troops did not move forward. We probably did not do extensive damage, but it put the fear of God into them, that they were attacked from the air and probably would be again attacked at night. We were not very good in attacking at night, but PAF may have thought it otherwise. That attack was absolutely essential and very useful in the whole operation because it stopped the Pakistan Army advancing on to Akhnoor and cutting the only LOC to the Northern area.

"It was at about that time that we decided to react at a place of our choice. Pakistan has been always keen to fight a war at places of its choice. That is obviously the right thing to do. Everybody wants to fight a war at his own safest choice. Pakistan's endeavour has always been to get the Army involved in a big way in Kashmir, in the Valley and in the mountains. They have the advantage over there. Our endeavour has been, and it had been clearly and openly stated even before 1965, that any attack by the Pakistan Army on Jammu and Kashmir will be considered as an attack on India. This was repeated by Prime Minister Shastri even during August when attacks were going on in J&K. Somehow the Pakistan Army did not quite take it seriously. They thought that because they had attacked Chamb Jaurian which was a part of Jammu and Kashmir, India's reaction will be only there and not somewhere else. But even for our own sake, thank God we decided that Pakistan should be attacked somewhere else and not in Jammu and Kashmir. You cannot tie the Army in a limited and difficult maintenance area and fight the war against Pakistan at places which are more favourable to them. Chamb Jaurian is near Gujranwala and Gurdaspur and not far from Rawalpindi and Lahore. All the forces kept there could help the Pakistan thrust. In our case, all our troops were sitting around Pathankot, Amritsar, Ferozpur and Ambala. They were involved in Kargil area and other high places, and could not be withdrawn easily. So that is how the decision to attack on the Lahore and Sialkot front was taken".

In his 1972 USI National Security Lecture 1972, Mr PVR Rao states:

"The attack by Pakistan at Chamb on the morning of the 1st September came as a surprise in its exact location and intensity. From about the 26th August, there were heavy Pak troop movements in this area under our continuous observation, but the Army had concluded that the attack would come further north. Because of this, though there was already a clearance for use of the Air Force, there were no coordinated plans. When the Pak attack came through, Gen Chaudhuri was in Srinagar. He returned to Delhi at about 4.30 p.m. and came straight to the Defence Minister's room, where a meeting was in progress. As he walked in, the General asked for immediate air support, stating that he had just come from Pathankot and the Air Officer there was having the aircraft ready. Air Marshal Arjan Singh agreed without hesitation to go to army support, only pointing out that in attacks launched without adequate preparation, losses must be accepted and that pilots may make mistakes between friend and foe. The Defence

Minister agreed that the attack may go in forthwith".

Mr C P Srivastava's memoirs state:*

"Shastri received information about the Pakistani invasion by about midday over the telephone from General Chaudhuri, who was then in Srinagar and immediately convened a meeting of the Emergency Committee of the Cabinet. While the Cabinet Committee was considering the situation, General Chaudhuri reached New Delhi with the latest information and made an important proposal for the Prime Minister's approval. General Chaudhuri reported that although available Indian forces were putting up resistance, the Pakistan Army, which had Patton tanks, was pushing ahead. Indian units did not have matching armour and were thus not in a position to stop the invasion. He said the situation was hazardous and requested immediate support from the Air Force.

"A similar situation had arisen in 1962 at the time of the Chinese invasion, when the question of the use of the Air Force had been considered in order to halt the forward rush of the Chinese Army. At that time the Government had decided against the use of the Air Force. On this occasion however, Prime Minister Shastri decided that the Air Force should immediately go into action. He was conscious of the danger that the Pakistan Air Force might bomb Indian cities or vital installations but this was a danger that had to be faced. The Cabinet Committee concurred. Defence Minister Y B Chavan conveyed the decision to the Chief of the Air Staff, Air Marshal Arjan Singh, who replied that the Indian Air Force was ready"

Air Chief Marshal P C Lal was the Vice Chief of the Air Staff in 1965. His memoirs "My Years with the IAF" state:**

"The IAF was kept informed of what was happening and was more or less ready for ground support but they could not give it till asked to do so by the Government and by the Army. Vampire aircraft had been moved up from Poona to Pathankot on the Air Force's own initiative on 30 August.On the afternoon of 1 September, the Army Chief, General Chaudhuri, asked the Defence Minister to request the Indian Air Force for ground support. The DM's request came at 4 p m. By 5.19 p m the Vampires at Pathankot were airborne".

Intense air battles took place over the next few days between India's Vampire, Mystere and Gnat aircraft and Pakistan's American supplied Sabre and Starfighter aircraft. The Pakistan Army had achieved initial surprise at Chamb. By 2 September, they had occupied areas up to a depth of five miles. By 5 September, they were at a village called Jaurian, only 20 miles from Jammu, on their way to the crucial Akhnoor bridge over the River Chenab. The Air Force halted the Pakistani columns at Jaurian.

Regarding the developments on 4 September, Mr Pradhan's book states:***

"The loss of Akhnur would be a major disaster and Chavan decided to go ahead with an operation that had been planned after the Rann of Kutch incident. On 20 April, Shastri had declared before Parliament "If Pakistan continues to disregard reason and persists in its aggressive activities, our Army will defend the country and decide its own strategy and employment of its manpower and equipment in the manner it deems best." General Chaudhuri, with the approval of the Defence Minister, had worked out a plan code-named 'Operation Riddle' to launch an offensive action to secure the eastern bank of the Ichhogil Canal. It was felt that the mere presence of the Indian troops on the canal opposite Lahore would draw Pakistani forces from Sialkot and other areas and thus reduce its offensive capabilities in other sectors. Moreover, if India could establish a bridgehead over the canal, the Pakistan army would be forced to fight there and that would lead to the attrition of her smaller army. By basing the defence line along the canal, India would confine the war to Pakistani territory in addition to acquiring a large chunk of Pakistani territory. Operation `Riddle' was planned to meet an eventuality like the one the Indian's were facing on 4 September".

The entry in Defence Minister Chavan's diary on Tuesday, 7 September 1965 reads:****

"Morning Meeting-Army is doing well according to plans. CAS gave further bad news of losses at

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* Page 224.
** Page 127.
*** Pages 265 et seq.
**** Pages 272 et seq

Kalaikunda and over a base in West Pakistan.

"Bombing by both sides in East Pakistan has created a problem. I told CAS to hold his hand in East Pakistan. We do not want any wasteful escalation there. Politically also, it would be unwise to do anything which might provoke China at this moment. He (CAS) agreed".

Mr Pradhan's amplifying note states:

"A difficult situation had arisen when the Pakistan Air Force attacked Kalaikunda in West Bengal. They also dropped some paratroops between Gauhati and Shillong in Assam. All of them were captured.

"Chavan did not want any escalation in the east and had advised CAS not to initiate any action on that side. However due to some misunderstanding, the same day Canberras of the Eastern Air Command attacked Chittagong and Dacca airfields. In retaliation, the Pakistan Air Force attacked Indian bases at Kalaikunda, Bagdogra and Calcutta hitting a number of aircraft on the ground".

Mr L K Jha recalls:*

"When the conflict started in the Jammu area of Kashmir and their tanks came into our territory where our tanks could not easily go because the bridges were not strong enough, there was a real dilemma. Air Marshal Arjan Singh and General Chaudhuri were present at a meeting to discuss things where we all turned to Arjan and asked him whether he could take on the Pak tanks from the air. *Now there was a great deal of hesitation, again on the basic policy of keeping the conflict as narrow-based as possible and in not involving the Air Force. Whether to bring in the Air Force was a matter where a very crucial decision was involved but there seemed to be no other alternative.* Arjan agreed to take the Pak tanks on at very short notice without any prior preparation and even in the late afternoon.

"It was still being thought of as a local battle. But we realised that the terrain where we were fighting was one where we were much more vulnerable and communication depended on a couple of bridges - if they were blown up, we just would be completely cut off. *And therefore thought turned to using the plan which had been earlier evolved for marching into Lahore. But even then it was a very firm decision that we would not allow things to escalate into a full scale war - I mean war in the legal sense - between India and Pakistan.*

"Admiral Soman had in the meantime - ever since the involvement of the Air Force - been straining at the leash, saying 'look, let me go into action'. But again the same consideration which was acting as a restraint - on using the Air Force or going into Lahore - prevailed. It was felt that if we now opened up another front off Karachi, it would become a major engagement and would no longer be a matter of localised conflict. So the decision was taken that the operation to march into Lahore would be launched but that the Navy would not be involved.

"The Indian Army crossed the international border at Wagah on the morning of 6 December and headed for Lahore. President Ayub went on the air. It was a very, very strong and angry broadcast. Admiral Soman thought that the opening of the Lahore front meant that a no holds barred situation had come and he, I think, issued a signal that we were at war with Pakistan. This signal had to be countermanded, because we did not want to go to that stage so soon. But still we realised that the Navy had the capability and if the events so necessitated, I don't think there would have been too long a hesitation to use it. But the feeling was strong that if we could contain the Pakistani forces and hold them on land, then perhaps it would be wiser not to get the Navy involved. I knew that the Navy was not happy with this decision because they were very anxious to go into action."

Admiral Soman recalls the details of the constraint placed on the Navy and what he did about it:**

"One morning, I received a file signed by HC Sarin, ICS, (then Secretary Defence Production) saying "the Navy is not to operate north of the latitude of Porbandar, and is also not to take or initiate offensive action at sea against Pakistan unless forced to do so by offensive action by the Pak forces.' If I remember correctly, both the Defence Secretary, Shri P V R Rao, ICS, and the Defence Minister, Shri Y B Chavan, were out of Delhi at that time. I rang up Sarin and told him that I could not accept that order and was seeing the Defence Minister as soon as he returned, which was the very next day.

* Blueprint to Bluewater Pages 460 et seq.
** Ibid. Pages 457 et seq

"When I saw Chavan he said that he was sorry that even after the Chinese debacle in 1962, the Navy had continued to be overlooked and as such it would perhaps be better if the Navy did not go looking for trouble. I said that while I was most grateful to him for having appreciated that we were at that time the stepchild of the Government, non participation by us in an aggressive manner in this war would not only adversely affect the morale of the service but the Navy's image in the public would go down the drain. *He mentioned the fact of the aircraft carrier being in the dock and the responsibilities assigned to the Navy for the defence of the Andaman and Nicobar Islands from a possible and probable attack from Indonesia which, in the Government's order of priorities, was more crucial than naval operations against Pakistan.*

"I assured him that I was fully aware of these implications of the Navy's operations and responsibilities. MYSORE had already been deployed in that area and all that I was asking for was to leave the Navy to plan and do what it can in an active manner instead of remaining passive. Finally the Defence Minister said that even the Prime Minister, Shri Lal Bahadur Shastri, did not want the conflict to escalate at sea and that was that. I requested him for permission to see the Prime Minister so that I could convince him of what I felt strongly about and he readily agreed.

"When I called on the Prime Minister, he brought up the same two points - the Navy had not been strengthened since the Sino Indian conflict and its responsibilities in the Andaman and Nicobar area were more important than in the Arabian Sea. I told him that it was wrong in principle to tie down one arm of the Defence Services to passive action in a war situation. It should have the freedom to act offensively so long as it did not bite off more than it could chew. When he brought up the question of the undesirability of any escalation of the war at sea , I reminded him of what happened to Germany on a few occasions in the two World Wars when they kept their fleets bottled up. I added that I was sure that had they used their Navy fully, from the start of the wars, the history of the world would have been different, however much the rest of the world disliked this possibility. On this he seemed to be annoyed and told me ' You have no choice '. I then asked him whether he had any objection to my seeing the Supreme Commander of the Armed Forces meaning the President. He smiled and politely said " No, you do not have to see him".

Mr PVR Rao, the Defence Secretary, recalls:

"I was Secretary at the time and have not signed any such order. The Additional Secretary was not concerned with operational matters. What the Admiral has stated was substantially the Government decision. It was communicated in writing at best in the minutes of the Defence Minister's morning meeting, which were issued by Shri DD Sathe, Joint Secretary, after the minutes were approved by me."

Mr Pradhan's memoirs reproduce the entry in Defence Minister Chavan's diary on 11 September 1965:*

"Morning meeting gave some hopeful and encouraging glimpse of the situation on the front. "Had discussions in the presence of the PM with CNS (Admiral SM Nanda). Necessary orders were given.

"Had a talk with CNS about his plans. He is rather too keen to do something. I had to restrain him".**

Naval Operations in September 1965

The Pakistan Navy's Role and Deployments

The Pakistan Navy comprised one cruiser (BABUR), one submarine (GHAZI), seven destroyers/frigates (KHAIBAR, BADR, JAHANGIR, ALAMGIR, TUGHRIL, SHAHJAHAN, TIPPU SULTAN) and one tanker (DACCA). Of these, one destroyer (TUGHRIL) was under refit. The remaining ships comprised the Pakistan Flotilla. The Pakistan Air Force had B 57 Canberra bombers, F 86 Sabre fighters and maritime reconnaissance aircraft operating from Karachi.

The Story of the Pakistan Navy' states:***

"The role assigned to the Pakistan Navy was the maritime defence of Pakistan. This included the following tasks - the seaward defence of the ports of Pakistan, keeping the sea lanes of communication open, escorting merchant ships, protection of coasts against amphibious assaults,

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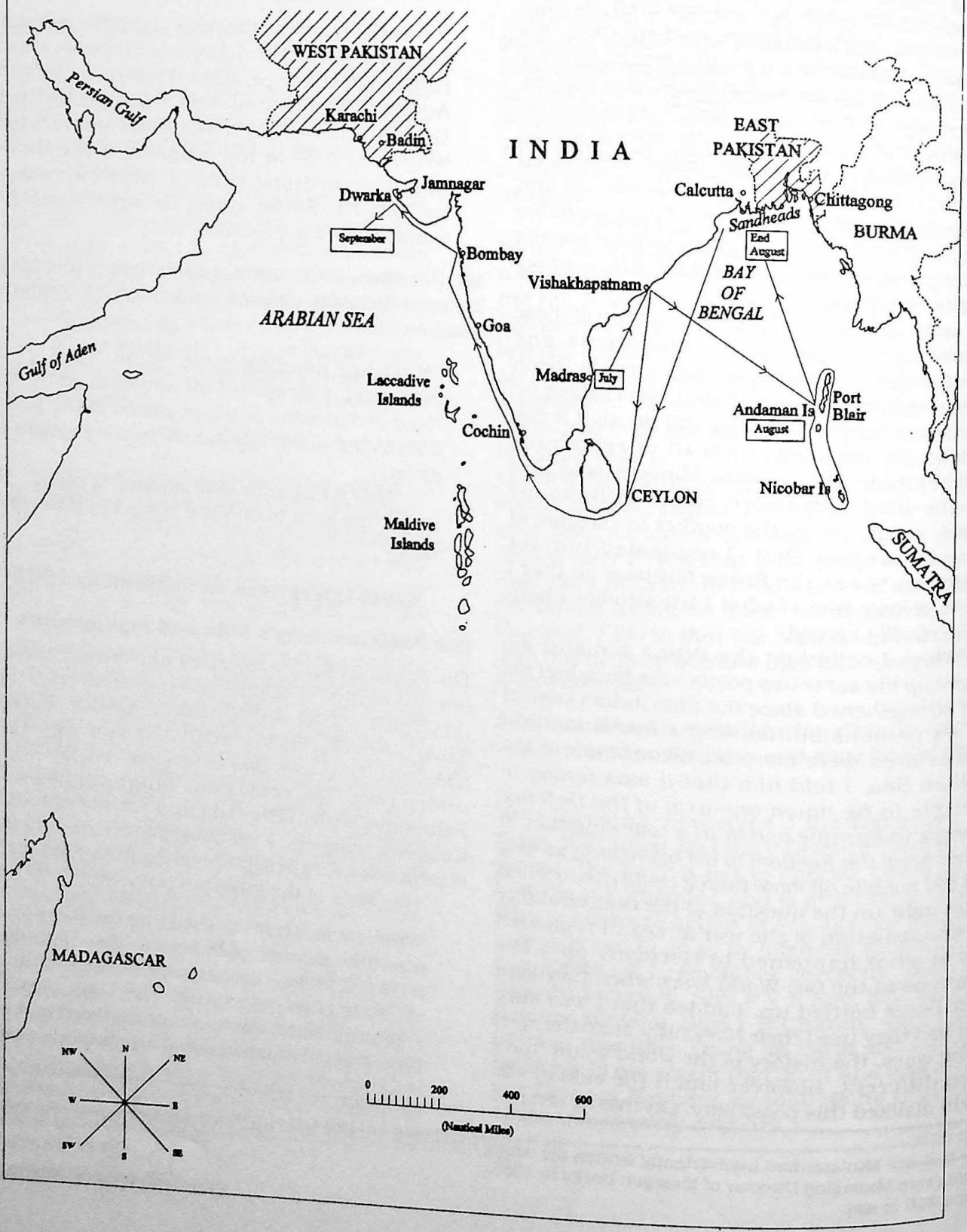
* Page 277.

** The Defence Minister had inadvertently written the wrong name. The CNS in 1965 was Vice Admiral Soman. Rear Admiral Nanda was Managing Director of Mazagon Docks in 1965.

*** Pages 216 et seq.

RECONSTRUCTED TRACK OF INDIAN FLEET
JULY TO SEPTEMBER 1965



interdiction of shipping and assisting the army in the riverine operations in East Pakistan".

"The surface units were deployed as one force to patrol on an arc 100 miles from Karachi to achieve concentration of force, provide seaward defence and attack the enemy as one group".

"The submarine GHAZI was sailed on 2 September to patrol off Bombay and instructed to attack only the heavy units of the Indian Navy i.e. VIKRANT, MYSORE and DELHI. She was in position by the morning of 5 September."

'The Story of the Pakistan Navy' states the following reasoning for the Dwarka operation:*

"The Indian Navy, with considerable numerical superiority, was bottled up in harbour due mainly to our submarine's presence in their waters. This situation afforded an opportunity to the Pakistan Navy to carry out an offensive action against Dwarka without any hindrance from the Indian Navy. The Dwarka bombardment was undertaken for the following reasons - to draw the heavy enemy units out of Bombay for the submarine to attack, to destroy the radar installation at Dwarka, to lower Indian morale and to divert Indian air effort away from the north".

"On 6 September, the Pakistan Flotilla received the news that the Indian Army had attacked across the international border in the Lahore area and ships sailed for their pre-assigned war stations. Thereafter, they remained at sea almost continuously till 27 September. Simultaneously the Naval Control of Shipping Organisation was activated which took effective control of Pakistan merchant ships. An embargo was declared on all merchant ships carrying warlike stores for India. The C in C directed the Chairman IWTA to seal off all river routes used by Indian steamers transiting through East Pakistan and to seize all such vessels and their cargo. All these measures, implemented without delay, caused severe losses to the enemy in valuable cargo, ships and river craft".

"On the afternoon of 7 September, Pakistan Naval Headquarters directed a task group, comprising the cruiser (BABUR), five destroyers (KHAIBAR, BADR, JAHANGIR, ALAMGIR and SHAHJAHAN) and a frigate(TIPPU SULTAN), to bombard Dwarka the same night and added that one or two enemy frigates may be encountered in the area in addition to enemy air threat. The task group refueled from their tanker and arrived off Dwarka at midnight. Dwarka was blacked out and could only be identified on radar. Bombardment commenced at 0024 at ranges between 5 and 6 miles and finished four minutes later, each ship having fired 50 rounds. Shortly thereafter, Pakistan Air Force aircraft attacked Dwarka after receiving clearance by a green Verey's light. The task group withdrew at full speed. During the withdrawal, BABUR picked up several aircraft contacts on her surface radar. Ships were ordered to engage any aircraft that came within gun range and some ships did open fire. The task group resumed patrol on the 100 mile arc by sunrise".

"After the Dwarka operation, the Pakistan Flotilla continued patrolling the 100 mile arc. Very little happened. On one occasion, on 20 September, five radar contacts were seen near Kori Creek and ships were detached to investigate and take action. Later the five ships retreated southwards."

The Indian Navy's Role and Deployments

The Indian Navy comprised one aircraft carrier, two cruisers, nineteen destroyers /frigates and one tanker. Of these 23 ships, 10 were under refit at Bombay - the carrier (VIKRANT), one cruiser (DELHI), three destroyers (RAJPUT, RANA and GANGA), two frigates (TRISHUL and BETWA), three ships (the training frigate KISTNA and survey ships DARSHAK and SUTLEJ). The tanker (SHAKTI) was barely servicable. Training frigate TIR was in the Andamans. Survey ship INVESTIGATOR and landing ship MAGAR were in Visakhapatnam. Two Hunt class destroyers (GODAVARI and GOMATI) were at Cochin. One cruiser (MYSORE), one destroyer (RANJIT), and six frigates (BRAHMAPUTRA, BEAS, TALWAR, KHUKRI, KUTHAR and KIRPAN) comprised the Indian Fleet. The Seahawk and Alize air squadrons, which had disembarked from the aircraft carrier for the duration of her refit, were distributed between Bombay, Goa and Cochin. Indian Air Force Liberator aircraft were available for maritime reconnaissance.

The Indian Navy's role was the maritime defence of the Western and Eastern coasts and the island territories. The tasks envisaged were first to carry out sweeps off the west coast of Pakistan to disrupt the port of Karachi and inflict vital damage on port installations if ordered, next the destruction of

* ibid.

Pakistan naval forces if ordered, third provision of general support for the defence of the major ports on the west coast and fourth, the provision of general cover and protection to our merchant ships in the Arabian Sea, especially those plying to and from the Persian Gulf and the Red Sea. After the Government's directive to abstain from offensive action, these tasks boiled down to defending territory in the Andaman, Nicobar, Laccadive and Minicoy groups of islands and defending the major ports of Bombay, Goa and Cochin on the west coast of India.

On 1 September, when the Pakistan Army crossed the international border and advanced towards Akhnoor, the Seahawk aircraft had already moved to the Air Force Station at Jamnagar for an armament work up which had been previously planned. Naval Headquarters immediately recalled the Indian Fleet to Bombay from the Bay of Bengal and moved the Alize aircraft to Bombay for reconnaissance and anti submarine patrols. Some ships were in Calcutta and some were in Visakhapatnam. The ships comprising the fleet had various speeds and were not in good material state having been away from Bombay, their base port, for over two months. MYSORE, with only half of her boilers functioning,had her maximum speed reduced from 31 knots to 18 knots. BRAHMAPUTRA and BEAS could only do 15 knots while their rated speed was 24 knots. All ships headed for Bombay at best speed.

Meanwhile the Navy's Seahawk aircraft, which had moved to Jamnagar on 1 September for armament workup, were placed under the operational control of the Western Air Command on 3 September. They were tasked to prepare for an air strike on the radar installation at the nearest Pakistan Air Force station at Badin. On 5 September, the Seahawks came to immediate state of readiness and the strike on the Badin radar installation was scheduled to be launched at dawn on 7 September.

On 6 September,when the Indian Army crossed the international border and advanced towards Lahore, the Pakistan Air Force attacked Indian airfields. On the evening of 6 September, the Indian Air Force station at Jamnagar was bombed by Pakistani B 57 Canberra bombers. Bombing continued throughout the night. IAF aircraft, the air traffic control tower and the runway were damaged. The Seahawks were lucky - they escaped damage. On 7 September, the strike on Badin was abandoned and all the Seahawks were withdrawn from Jamnagar to Bombay. The air defence of Bombay, which was an Air Force commitment, was entrusted to the Navy's Seahawks because the Air Force had become fully committed in the air battles in the North.

After the Indian Army crossed the international border on 6 September, a signal was intercepted from Pakistan Naval Headquarters to all Pakistan naval units to execute Operation Response, which apparently referred to instructions to commence hostilities. The CNS, Admiral Soman, issued a signal to all naval units and formations stating that war had broken out with Pakistan and all measures were to be immediately adopted for neutralising any misadventure on the part of the Pakistan Navy. Within 10 minutes of this signal being issued, the Government directed the CNS to cancel this signal, thereby causing him considerable personal embarrassment. The Government's view was that although hostilities had commenced with Pakistan and the Army and Air Force had been fully committed to the operations, no declaration of war had taken place. In a letter to the Times of India on 29 November 1978, Admiral Soman stated that the Ministry of Defence directed Naval Headquarters in writing that the Navy was not to operate in a threatening or offensive manner north of the latitude of Porbandar and that nowhere on the high seas was the Navy to initiate any offensive action against Pakistan unless forced to do so by their action.

FOCIF, in his flagship, the cruiser MYSORE, was the first to arrive in Bombay on 7 September. The same day, Pakistan Radio announced "Our Army and Air Force have already acquitted themselves creditably in the defence of Pakistan. The Navy will not lag behind". Action by the Pakistan Navy seemed imminent. Naval Headquarters informed Bombay of the likelihood of a naval raid on Bombay that night. FOCIF sailed the same evening with one cruiser and three escorts. Nothing suspicious was detected. The very same night, the Pakistan Flotilla bombarded Dwarka.

TALWAR, which had been carrying out an independent patrol off Kori Creek from 28 August, had been directed by Naval Headquarters on 2 September to carry out a barrier patrol off the north-west tip of the Saurashtra coast, 30 to 80 miles west of Okha, to provide advance warning of the approach of the Pakistan Flotilla. On 6 September, TALWAR developed leaks in her condensers resulting in a serious problem of boiler feed water contamination and had to put into Okha to effect temporary repairs. Okha, being only a few miles from Dwarka, TALWAR detected the transmissions of the passing Pakistani warships. She also heard the gunfire of the bombardment. Next morning, she was directed to

send a team to Dwarka to assess the damage. The team found that most of the shells had fallen on the soft soil between the temple and the railway station and had failed to explode. The air attack had damaged a railway engine and blown off a portion of the Railway Guest House.

FOCIF and his ships returned to Bombay on 8 September. By 9 September, all ships had arrived from the Bay of Bengal. TALWAR also arrived from Okha after temporary repairs. All Fleet ships were now in Bombay, having their urgent operational defects attended to and getting ready to sortie out. The dilemma was for what task? On the one hand were the restrictions imposed by the Government that to localise the conflict, the Navy was not to go beyond Porbandar. On the other hand, Dwarka had just been bombarded and needed to be avenged. Within the Navy, the lower levels were itching for action.The higher levels were grappling with the problem of how to bring the Pakistan Flotilla to action without violating the spirit of Government's directives. And in the Indian Parliament, a member acidly enquired 'What was the Indian Navy doing when the Pakistan Navy bombarded Dwarka?"

Some Tactical Considerations in the North Arabian Sea

For the lay reader, it would be useful to be aware of some of the phenomena which affect naval operations in our waters. It would help to understand better the actions of the Pakistan Flotilla and the actions of the Indian Fleet during these naval operations:

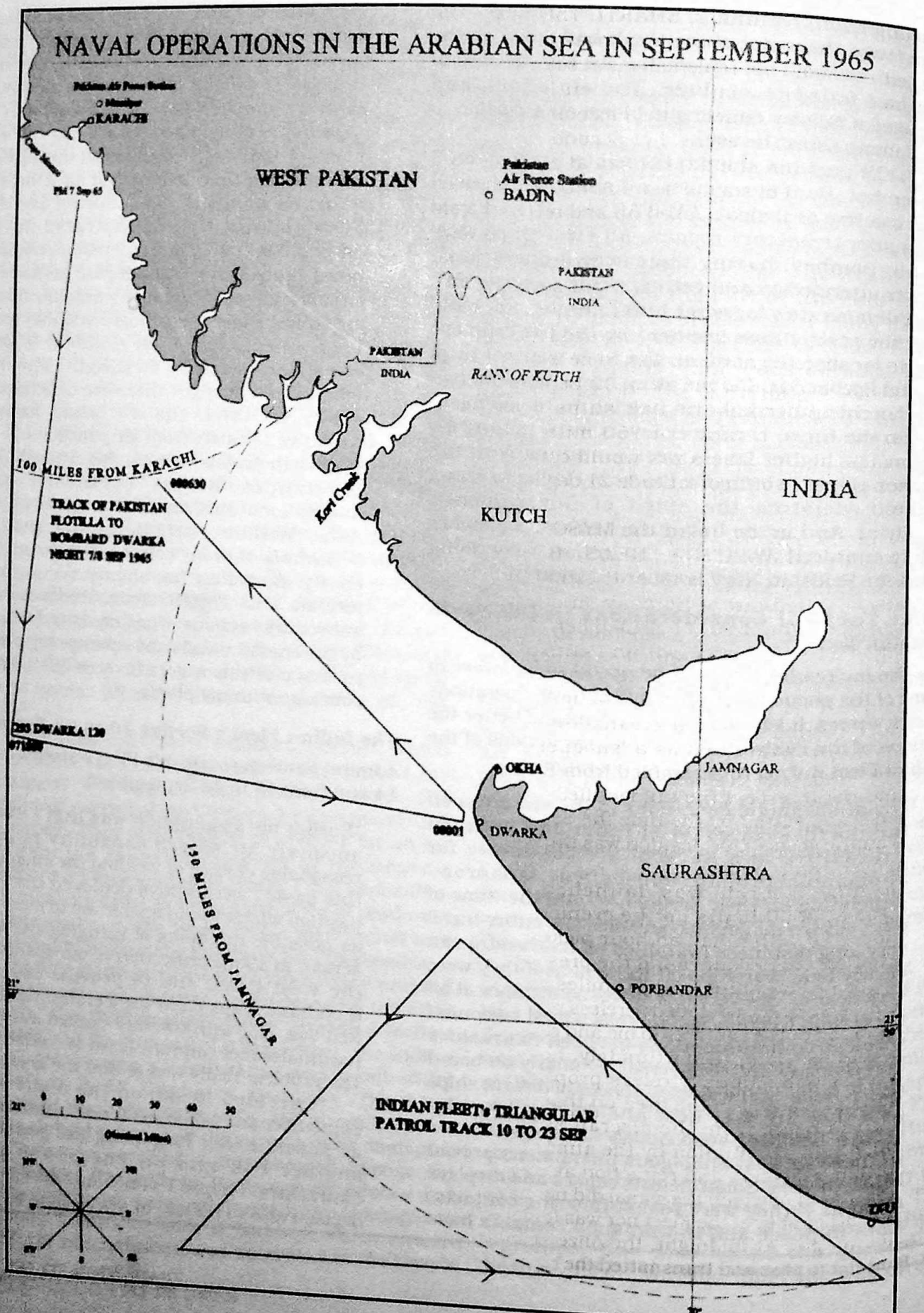
- The atmospheric conditions in the sea areas off the north-west coast of India and between Saurashtra and Karachi are conducive for anomalous propagation called 'anaprop.' Depending on their 'frequency' and the 'time of day', electro magnetic transmissions either travel very long distances (warships off Saurashtra can clearly hear warships off Karachi as if they were very near or vice versa) or travel no distance at all (on certain frequencies, there is a total fadeout of wireless communications between Saurashtra and Bombay and vice versa). Similarly on board ships, radar scans display echoes of distant ships as if they are very near and display spurious echoes behaving suspiciously like ships.
- In these waters, analogous phenomena prevail below the sea. Sonar detects echoes and displays them as if they were real submarine contacts. Both in peace and in war, such contacts have been attacked and 'kills' claimed of submarines sunk, only to find that the contacts could not have been submarines at all, because no evidence of damage floated to the surface.
- Both the Indian Fleet and the Pakistan Flotilla were aware of the hazards of being found within reach of opposing strike aircraft during day time. The damage that determined air attacks could inflict on warships at sea during day time had been abundantly demonstrated during the Second World War. No responsible commander of naval forces at sea would expose his force to such risk. A force would venture within the other side's air strike radius only at night and that too only to such a depth as would enable it to be out of enemy air reach by first light. The depth of penetration at night therefore depended on the speed at which the intruding force could withdraw to safety from air attack.
- The North Arabian Sea is criss crossed by the Pre Determined Routes (PDR's) used by international airliners between Bombay and West Asia. Without height-finding radars, the behaviour of radar echoes of these aircraft are easily mistaken for enemy reconnaissance aircraft. This triggers tactical reflexes that affect subsequent actions - "has my force been detected by the enemy and should I change my plan or is it just a civilian aircraft in a PDR and I can continue with my plan".

The Indian Fleet's Sorties 10 to 23 September

Admiral Samson recalls his Fleet's sorties from 10 to 14 and from 18 to 23 September:*

> "Earlier my assumption was that I would have adequate air search capability to provide a reasonable chance of locating the enemy, and on this basis I would have deployed the Fleet to a position which would enable me to meet as much as possible the tasks of bringing the enemy to action, to afford protection to our major ports on the West Coast and to provide cover to our merchant ships from the Persian Gulf and the Red Sea. But with the very limited availability of reconnaissance aircraft, I had to revise my plan. The problem really was to find the enemy.
>
> "I decided to sail on the night of 10/11 September and probe as far north and north-west as possible, not forgetting the possibility of another Pak raid on one of the ports in Saurashtra. I hoped I would find the enemy and I decided also to remain at sea as long as possible,

* Blueprint to Bluewater Pages 443 et seq.


NAVAL OPERATIONS IN THE ARABIAN SEA IN SEPTEMBER 1965
KARACHI
WEST PAKISTAN
Pakistan
Air Force Station
BADIN
PAKISTAN
INDIA
PAKISTAN
INDIA
RANN OF KUTCH
100 MILES FROM KARACHI
TRACK OF PAKISTAN
FLOTILLA TO
BOMBARD DWARKA
NIGHT 7/8 SEP 1965
Kori Creek
KUTCH
INDIA
OKHA
JAMNAGAR
DWARKA
SAURASHTRA
150 MILES FROM JAMNAGAR
PORBANDAR
INDIAN FLEET's TRIANGULAR
PATROL TRACK 10 TO 23 SEP

refueling from the tanker, SHAKTI. This ship, having only one engine operational, was partially disabled and could not replenish me at sea and so I planned for her to sail independently to be anchored at Diu for refueling the Fleet on 13 and 14 September. In the event, her second engine also packed up and she did not sail at all, thus limiting my period of stay at sea. RAJPUT, one of the two destroyers, also packed up and returned to Bombay.

"As regards air cover, I decided to stage two Alizes from Jamnagar and to carry out searches north of latitude 21 degrees 30 minutes from 2000 hours on 11 September onwards and to arrange for six to eight Seahawks to be available at Jamnagar from 0600 hours on 12 September for launching strikes on Pak ships or the submarine up to a range of 150 miles from Jamnagar. The IAF Liberators would carry out searches in areas south of latitude 21 degrees 30 minutes.

"Flying my flag on board the MYSORE and with the BRAHMAPUTRA, BEAS, BETWA, KHUKRI, KIRPAN, KUTHAR and TALWAR in company, I sailed out of Bombay on our first sweep on the night of 10/11 September. On the morning of 11 September, within hours of our departure from Bombay, BEAS reported an unidentified aircraft at a range of 42 miles. The aircraft appeared to have been shadowing our forces and was evaluated as a 'snooper'. Two Seahawk aircraft were scrambled from Bombay but could not intercept the unidentified aircraft as it had disappeared by the time the Seahawks arrived on the scene. Our position was thus likely to have been compromised.

"An Alize search was launched from Jamnagar at 2000 hours on the evening of 11 September and within half an hour picked up a number of contacts confirming the presence of two groups of Pak ships only 50 miles west of Okha and soon made a detailed wireless report on the disposition of the contacts to me and repeated it a few minutes later. Unfortunately, however, due to freak anomalous wireless propagation conditions prevailing in the area on that night, the wireless beam from the aircraft suffered unusually high attenuation by the atmosphere and multiple reflection and refraction at varying levels as a result of which the signal did not reach me or any other ship of the Fleet nor was it picked up by Jamnagar. At midnight, the Alize aircraft landed at Jamnagar and transmitted the report to the Maritime Operations Room at Bombay on land line, but even the rebroadcast of the signal by the Naval Signal Centre, Bombay at 0200 hours did not reach the Fleet owing to the anaprop conditions still prevailing west of Saurashtra on that night.

"At 0300 hours on 12 September, another Alize took off from Jamnagar, established wireless contact with the flagship and, after carrying out a search, reported a few surface contacts about 90 miles north of the Fleet but, not being able to investigate them further because of lack of endurance, returned to base. A third Alize sortie was airborne at 0400 hours on 12 September and searched the area, without success, as by this time the Pak warships had retreated to their own waters.

"There was no doubt about the identity of these ships as when the first Alize was flying over them, they had switched on their lights and fired green Verey's flares for purposes of identification but when the Alize did not respond with light signals, they had quickly realised that the aircraft was not their own and had then quickly switched off their lights and steamed towards the Pakistan coast at full speed to be in safe waters before daybreak. Thus 'anaprop' conditions had deprived the Fleet of a rich haul that was there for the asking. By 0700 hours on 12 September the Pak warships, whose presence within 90 miles of our Fleet had been detected and reported at 2030 hours the previous night, had disappeared.

"The Fleet continued to proceed north until it reached the northern limit of its search after which it turned southwest. Eight Seahawks which had come from Bombay to Jamnagar and two Toofanis (erstwhile Ouragons) of the Indian Air Force also carried out a sweep in the area after refueling but without success.

"On the morning of 12 September, TALWAR had another machinery breakdown and when efforts to rectify the defects failed, she was detached from the Fleet to limp back to Bombay.

"Towards sunset on the same day, the remaining force proceeded northwards once again and continued its sweep till the early hours of 13 September when it intercepted two merchant ships laden with arms bound for Pakistan, SS Steel Vendor and SS Steel Protector. The ships had to be forced to stop under threat of fire but could not be captured in the absence of clearance from higher authorities, as it had been made very clear that the Indian Fleet was not to

seek action, though it was permitted to open fire in self defence. And so the Steel Vendor and the Steel Protector continued to cruise towards Karachi, 'escorted ' by the Indian Fleet at a distance of only two cables, until they reached the northern limit of the Fleet's sweep, when the merchant ships, after bidding adieu, disappeared over the horizon.

"At about 1000 hours on 13 September, KUTHAR picked up an underwater 'sonar' contact of a possible submarine and soon KHUKRI joined in the hunt. The contact was held intermittently until 1100 hours during which time KUTHAR launched deliberate attacks with full salvos from her anti submarine mortars. The contact was, however, lost and the anti submarine action terminated. The contact was assessed to be tracking at seven knots for a fairly long period and subsequent analysis led to the conclusion that it may well have been a submarine.

"Ships were now beginning to run short of fuel and the only tanker, SHAKTI, not being available, the three ships of the 14th Frigate Squadron, KHUKRI, KIRPAN and KUTHAR, and the destroyer RANJIT, were detached on the afternoon of 13 September to carry out an offensive anti submarine sweep off the approaches to Bombay. After an uneventful night, the Fleet returned to Bombay on the morning of 14 September.

"On 17 September KHUKRI, KIRPAN and KUTHAR, with gunfire support provided by RANA and GANGA, launched a thorough search of an area of about 5000 square miles off Bombay as the Pakistan submarine GHAZI was believed to be operating in the southern approaches to Bombay. On 21 and 23 September, 'sonar' contacts were picked up and attacks launched by these ships but the contacts were soon lost. The ships continued on their anti submarine patrol until 24 September, one day after the implementation of the cease fire.

"During its second sortie, the main body of the Fleet comprising the MYSORE, BEAS, BETWA, RAJPUT and RANJIT (the BRAHMAPUTRA and the TALWAR had by now developed major defects and could not sail) carried out a sweep in the Arabian Sea from 18 September to 23 September. This was originally planned to be carried out in the general direction of the Gulf of Aden to provide support for a number of ships bringing vital defence cargo from the UK. It was known that Pakistan was aware of the nature of cargo in these ships and their shipping programme and hence there was a distinct possibility of these ships being intercepted and either captured or destroyed. The distance from Bombay to Aden is 1650 miles and thus this sweep would entail operations far away from our shores but it was considered well within the capability of our whittled down Fleet. Reports indicating likely Pakistani seaborne landings on the Saurashtra coast, however, put paid to the sweep and the Fleet was promptly sailed to intercept the Pak Fleet off Saurashtra.

"I sailed in MYSORE with RAJPUT, RANJIT, BEAS and BETWA on the morning of 18 September. My intention was to reach the Saurashtra coast as early as possible to counter the landings and so proceeded at my best speed of 22 knots. I had to leave BEAS behind to follow, as she could do only 19 knots.

"That evening at abut 2015 hours, while I was on my northerly leg, an aircraft was picked up some six miles away. This aircraft was sighted by BEAS and was heard to be reporting to the Karachi transmitting station the position and disposition of our ships most accurately. The aircraft continued to shadow us and finally faded out at 2130 hours. I continued north till after midnight and then turned southwest. No enemy ships were sighted and it was evident that no landing was being attempted by the enemy on our coast. It is probable that the seaborne landing operation was cancelled by the Pak Fleet when our presence near the Saurashtra coast was compromised.

"Nevertheless, I continued to carry out sweeps in the same area on 20, 21 and 22 September. On the evening of the 20th, we intercepted wireless transmissions which were obviously from Pak ships and indicated that they had contact of an 'enemy' on a south-westerly course at 10 knots. These transmissions were picked up by several of our ships and we were convinced that we were in close proximity of the enemy. However, it was not possible without direction finding equipment to gauge the direction of these transmissions but they appeared to be northerly and so we continued in this direction. Despite the fact , however, that we continued in this direction for several hours at our best speed, we did not make any contact with the enemy. Bearing in mind that the intercepted message indicated that the contact they had was proceeding in a south-westerly direction, it was

obvious that this contact could not be the Indian Fleet and in all probability was some merchant ship proceeding out of Karachi or the Gulf of Kutch. I therefore turned towards the Gulf in case the enemy was attempting to intercept one of our merchant ships from this area. I found nothing and it was clear that this was another incident of 'anaprop' electromagnetic conditions and that these intercepted messages were being transmitted by local patrol vessels outside Karachi Harbour. Thereafter, despite repeated high speed sweeps as far north as Mandvi, no contact of any Pak ships was gained.

"However, we continued to intercept Pak wireless transmissions and it was clear that our forces were being continuously shadowed more or less throughout this operation. It was also clear from these transmissions that air strikes were on call for Pak surface ships. Unfortunately our Alizes or Seahawks could not operate from Jamnagar after 12 September as repeated air attacks had rendered the airfield untenable. The Liberator maritime reconnaissance aircraft of the IAF, however, continued to carry out reconnaissance sweeps of the northern part of the Arabian Sea but failed to pick up any Pak surface or air contacts. In fact, on two occasions our forces were reported by them as enemy and on one occasion the position of our force was reported in plain language!

"On the morning of 22 September I had to detach the RAJPUT and RANJIT as they were running short of fuel. Meanwhile I had received a further signal concerning the merchant ships arriving from the Gulf of Aden bringing vital defence cargo and so I altered course with the MYSORE, BEAS and BETWA towards the central Arabian Sea to try and escort them to safety. But within a few hours of our sailing on our new mission, we received a message from Naval Headquarters conveying our Government's acceptance of the United Nations' cease fire proposal from 0330 hours on 23 September. So I decided to return to the Saurashtra coast to forestall any attempt by the Pakistan Navy to create mischief in that area in a last minute bid to gain propaganda value. I returned to Bombay with the regret that I had missed an opportunity to try and engage the Pakistan Navy in battle, despite waiting just outside its lair for nearly two weeks."

Submarine and Anti Submarine Operations in September 1965

The Story of the Pakistan Navy states:*

"Just after the Dwarka attack on night 7/8 September, the Pakistan submarine GHAZI had been patrolling off the Saurashtra coast. She tracked 4 to 5 escorts on passage from Bombay proceeding up the coast but did not attack them as her orders were to attack only heavy ships."

While on return passage to Bombay from the East coast, BEAS picked up a submarine contact at 1230 on 9 September about 45 miles south of Bombay. She carried out an urgent attack, followed by a deliberate attack half an hour later.Thereafter contact was lost. GHAZI makes no mention of this attack.

On 11 September, there were intensive anti submarine air patrols off Bombay. One Alize aircraft flew over GHAZI while she was snorkeling but failed to detect her. GHAZI returned to Karachi thereafter to rectify her defective electronic counter measures equipment and resumed patrol on 15 September.

Between 7 and 10 September, the Indian Fleet was in Bombay. When GHAZI was in Karachi from 12 to 14 September to effect repairs, the Indian Fleet was operating off the Saurashtra coast. When GHAZI resumed patrol on 15 September, the Indian Fleet was in Bombay from 14 to 17 September, in between sorties.

On 17 September, FOCIF sent out five escorts for an anti submarine search in the southern approaches to Bombay. They searched an area of 5000 square miles between 17 and 23 September. Several sonar contacts were picked up. On two occasions, 21 and 23 September, contacts were attacked for several hours. GHAZI makes no mention of these two attacks. Presumably she was nowhere near.

GHAZI's 'Record of Service', retrieved from the sunken hull in 1972, indicates that "In 1965, while on war patrol off the port of Bombay, GHAZI encountered three frigates. She fired four torpedoes and scored three hits on the British Type 41 frigate INS BRAHMAPUTRA".

'The Story of the Pakistan Navy' mentions that:**

"Off Bombay, on 22 September, GHAZI gained a firm contact. After tracking the zig-zagging contact all day, GHAZI fired four torpedoes at an ' A A frigate ' in the evening. After one and a half

* Page 222.
** Ibid.

minutes, the first torpedo was heard to hit, followed five seconds later by another hit. GHAZI's sonar reported patterns of explosions being fired . After this attack, GHAZI returned to Karachi on 23 September where the Captain was decorated for having sunk the Indian Navy's anti aircraft frigate INS BRAHMAPUTRA".

After the cease fire, FOCIF invited the foreign naval attaches from New Delhi on board the BRAHMAPUTRA in Bombay to remove any doubts that the ship was afloat and fighting fit.

Overall, the above account provides a glimpse of the complexity of submarine and anti submarine warfare and the difficulties of predicting, with any degree of certainty, the outcome of submarine and anti submarine operations in the North Arabian Sea.

Other Minor Incidents

There were two other incidents which to this day remain unexplained:

- On 11 September, an unidentified aircraft was reported over Visakhapatnam. Fire was opened by the ack ack guns of the Naval Coast Battery. The History of the Pakistan Air Force makes no mention of any attack on Visakhapatnam on 11 September.
- On 15 September, unidentified aircraft were reported over Cochin. Fire was opened by the ships patrolling off Cochin and by the Naval Battery located at the harbour entrance. Some shells fell into the populated areas adjoining Ernakulam. Some shells, which fell into the water near the harbour entrance were mistaken for air dropped mines. A minesweeper was rushed from Goa to Cochin to sweep the mines - no mines were found. A Seahawk aircraft got airborne from Cochin airfield to intercept the aircraft - no encounter occurred. The History of the Pakistan Air Force makes no mention of any attack on Cochin on 15 September. A post war analysis suggested that the jet aircraft could have been from a British or American aircraft carrier task force which might have been operating in the area. The reminiscences of some participants at Cochin indicate that there were no echoes of any aircraft on the scans of the warning radars being manned in the ND School.

Analysis of the Reasons for not Using the Navy Offensively

In considering the reasons why the Navy did not achieve anything significant, several basic questions arise. Was there any flaw in the higher direction of war? After the Rann of Kutch incident, why was the Fleet sent to the Bay of Bengal? When the intrusions started in Kashmir in early August, why wasn't the Fleet immediately recalled to the West Coast? Given the constraints imposed by the Government, could the Navy have done better than it did?

The Higher Direction of War

There were two aspects of the higher direction of war in 1965 which created confusion. The first was the Government's genuine and sincere belief that in modern warfare, it was meaningful to engage in warlike activity without formally declaring war. The second was that once the Government had decided to counter hostile acts by Pakistan, it was reasonable that activity be selectively confined to only one or two of the Armed Forces. As regards the first aspect, the extracts quoted above from Mr PVR Rao, the Defence Secretary in 1965, the memoirs of Mr C P Srivastava, the Private Secretary to Prime Minister Shastri in 1965, the recollections of Mr L K Jha, the Principal Secretary to Prime Minister Shastri in 1965 make it clear that the Government was determined not to enlarge the scope of the conflict beyond the minimum required to safeguard its position in Kashmir and to prevent any escalation of the conflict beyond this objective. It will also appear from the extracts given below that the Chief of the Army Staff, who was the de facto Chairman of the Chiefs of Staff Committee, excluded the Navy from participation in the contingency plan in case Pakistan attacked Kashmir.

In the 1971 National Security Lecture of the United Services Institution of India, General Chaudhuri stated:

> "Now that both Mr Bhutto and Air Marshal Asghar Khan have publicly claimed that they were responsible for planning and instigating Pakistan's attack on India in 1965, I think I could interpolate here a footnote from history. In 1964, when we were revising military plans to defend ourselves in case of an attack from our neighbor, the troops available on the Western Front were roughly equivalent to those of Pakistan. Our rapid expansion had meant some dilution. In the limited advance which must form the fulcrum of any defensive plan, we were faced with three

alternatives. The first one was the occupation of some unguarded territory. This seemed unproductive and non -permanent. The second was the occupation of and probably substantial destruction to a big city. For this there were insufficient troops. Anybody who has studied the capture of a big town, will realise how expensive this operation is in manpower. The resistance put up by beleaguered Berlin in 1945, defended only by the remnants of a defeated army, against overwhelming odds, is a good example of what I mean. In dealing with this alternative, there was also the political view that any substantial destruction of a major population and historical centre would leave a raw wound between two neighbors, delaying unduly the eventual aim of living in amity together. The third alternative was the destruction of equipment, cheaply obtained but if destroyed, expensive in every way to replace. This third alternative seemed the correct choice. I would submit that we were successful in the pattern we adopted and the ensuing heavy economic and political disturbances in Pakistan certainly contributed to the downfall of the Ayub Government and perhaps to the democratisation now pending.

"Incidentally, Pakistan's own plan for 1965 was based on first getting us to panic and move down heavy reinforcements from the main Punjab theatre to Kutch. Once they had got us there, then the so called raiders would have gone into Kashmir, supported by the Pakistan regular army capturing the key point of Akhnur. Though the first part of the Pakistani plan misfired, the originators were so intrigued with the ingenuity of the second part, that they put it into action anyway. Operations by emotion are always incorrect and the second part also failed. *It was on the 5th May 1965 that the larger pattern of Pakistan's intentions to seize Kashmir before we got too strong became apparent, though the actual details of how they would do it were not clear at that time, for the initiative lay, as it always does, with the aggressor.*

"Previous to 1965, it had always been said by our political leaders that any attack by Pakistan against Kashmir would be construed as an attack against India. Consequently India would then be at liberty to attack Pakistan in order to improve her own defences. This statement of policy, however, was never incorporated into any military plan. The explanation for this omission was that a decision would only be taken at the time and the military would then be duly informed. Despite the public political statement, the military were always in great doubt as to whether at the appropriate time any such permission would really be given. They were also aware that if a positive decision was made at this late stage, then it would be most difficult, if not impossible, to finalise the operational plans, make the necessary concentration of units - always a long and complicated business - brief the commanders at all levels fully about the tactical picture and then launch a successful operation. The troops were fully convinced that at this last moment, the Government could have a drastic change of mind and militarily the final result might then be a fiasco.

"After the 5th May 1965, when it appeared that an attack on Kashmir or India later that year was a distinct possibility, the first matter that needed clearance was this ability to retaliate. In my discussions with both the Prime Minister and the Defence Minister after the pros and cons had been fully discussed, the necessary sanction was obtained. Consequently, we had plenty of time to work out the appropriate moves. The day Pakistan moved her regular troops,infantry and armour into the Jammu sector, I was in Kashmir. As I was coming back in the plane to Delhi, the Director of Military Operations, who was in the aircraft with me, started writing out the required signals to go to the formations concerned. On landing, he went straight off to send them out and I immediately went to see the Defence Minister who formally confirmed my action. He then informed the Prime Minister and that evening the PM asked me to see him, discussed a few details and further approved the action taken. The PM might then have informed some of his close colleagues, but this was not my concern.

"As a number of other broad policy points connected with the operations had also been cleared in this same manner, I feel it is desirable to mention the mechanics by which these clearances were given. In 1965, somehow in a rather unconventional, unplanned way, a series of informal meetings started up between the PM, the DM, the PS to the PM and myself. A little later on, my very esteemed and valuable colleague, Air Marshal Arjan Singh, joined us, for obviously the Army and the Air Force were closely linked together in any defence role. *The Naval Chief did not come, for the Navy's role did not look like being a very big one.* At these meetings, there was a free

interchange of views and the many implications of the various actions which might be taken in a variety of circumstances were discussed in detail. No formal notes were kept for very often it was only a clearing of minds. When however, a certain policy matter was accepted, it was noted and put up for clearance later in a more formal manner. *During these meetings, it was intrinsically understood that I would keep my colleagues, and particularly the Naval Chief, informed of the more important decisions*, that Mr L K Jha would similarly keep the appropriate members of the Civil Services informed and, of course, the PM and the DM would keep their political and Ministerial colleagues informed as they thought fit. As Chief of Army Staff, I found these meetings extremely valuable, for not only was I quite sure of the parameters within which I could work but I was also well briefed on the possible political, domestic and economic implications. This saved a lot of time later in more formal discussions and also, when I was discussing plans for the future war with the PSO's and the Army Commanders, I was in a position to give them a good deal of background information which they, in their turn, found useful. These meetings with the PM and the Defence Minister also gave me the opportunity to put my view point directly to the two people who would ultimately play the largest part in making the final overall decisions.

"In this particular case, these informal, 'clear the air' meetings seemed to have worked very satisfactorily and advantageously. There were no personality clashes, while the small numbers concerned seemed to keep discussion down to essentials. Everyone present was fully aware of the security implications and so there were no leaks or fear of leaks. An air of informality and, I might add, good humour allowed a great deal of freedom in speaking and thinking, while a mutual confidence was built up which was most important then and later. I am not saying that this particular method of discussion could have worked equally well or at all, with another group of people in the same position. But it does emphasise what I consider to be the second important point in organisation for defence. This is the need for a free interchange of views between the various sections of the decision making authorities concerned and then enough liberty given to each one to work within his own sphere with a minimum of interference."

In the 1972 National Security Lecture of the United Service Institution of India, Mr PVR Rao, who was the Defence Secretary from 1962 to 1966, stated:

"After November 1962, the Defence Committee of the Cabinet was revamped into the Emergency Committee. But the major change was in the working of the Defence Minister's Committee. This Committee, less the Finance representative, met daily except when the Defence Minister was out of Delhi and was effective in ensuring better coordination amongst the Services and in speeding the build up of the forces. But the system underwent a change as the crisis mounted in August 1965. There have been various claims about the decision-making at that time. One claim is that a small group, with the Prime Minister at its head, took all decisions and the whole process functioned very smoothly. There are, on the other hand, complaints that there was unnecessary political interference, with the result that achievement fell short of what was feasible and desirable".

Mr PVR Rao also recalls:

"The idea that there was no communication between the Chiefs and the Government is quite incorrect, because communications can be either oral or in writing. After Mr Chavan became the Defence Minister, there used to be a meeting every morning at 9.30 in the Defence Minister's room, attended by the three Chiefs of Staff and the Defence Secretary. The Cabinet Secretary used to come sometimes but he was not a regular visitor. Regular minutes of meetings were kept which were circulated to all concerned.

"As regards written Directives, the Navy, and particularly the Army, are very fond of saying that there were no written directives. I think it is a very ridiculous thing. In my view, decisions were not taken by the Cabinet. The decisions were always taken at the Defence Minister's morning meetings. If the decisions required further written authority, then only would they go to the PM and Defence Committee of the Cabinet. So, for operational purposes and that is what I am concerned with, all three Chiefs were in the picture every day of what was happening in the Government. It is not correct to say that the Service Chiefs were isolated or insulated and they wanted written orders that were transparent.

"Mr Shastri was staying at the relevant time at 4 Motilal Nehru Place and he had his office at

the adjacent interconnected building at 10, Janpath. From about the 6th August 1965, I was asked to go to his office and I used to go there after office on my way home to report to him about the events of the day. As the situation in the valley vis a vis the infiltrators continued unabated and to drift, Shastri was clear that the troops should go across the Cease Fire line and wipe out the infiltrator's bases in POK. This became an issue for regular discussion at the morning meetings, one or two of which Shri Shastri also attended. It was Government's policy that if our action across the CFL brought out the Pak regular forces into the open, we would not confine ourselves to operations in Kashmir but be free to respond wherever we thought best on the West Pakistan Front. In this situation, General Chaudhuri demanded that if operations became necessary against West Pakistan, the whole might of the Indian Armed forces (all the three arms) should be thrown in and asked for a written directive from Government in this regard. This developed into a tussle of wills between General Chaudhuri on the one hand and the PM/DM on the other. As things continued to drift, I drafted, on Shri Shastri's instructions, a directive to the Chiefs of Staff accordingly. This was about the 10th or 11th August. There was, even then, never any question of extending the operations to the eastern sector. When I took the draft directive to 10 Janpath, Shastri took it from me and kept it, saying he would read through it. On the 11th, 12th and 13th, every evening, I asked for the paper back but he would just smile. The Indian Army crossed the Cease Fire Line on the 13th, destroyed the infiltrator's bases and in the process, captured Haji Pir by a brilliant operation. The operation was wholly Army; the IAF was not used. On the 14th or 16th August, Shastri returned to me my draft directive, saying that it was no longer necessary. No written directive (apart from the minutes of the morning meetings) were issued to any of the Chiefs of Staff. Incidentally, General Chaudhuri also did not further pursue the matter and *he was in full agreement that the Navy had no role at that stage in the operations and that the operations should not be extended to the Eastern sector.*

"The absence of a written directive and the see-saw that went on in this respect resulted in a curious incident. The Chief of Air Staff had apparently given standing instructions to his field commanders that if open hostilities broke out, they should spring into action without further orders. As news came out of the Pak attack on the Chamb front, the IAF on the night of 1/2 September, attacked Lalmanirhat and other targets in the East and the Pak Air Force, on its part, attacked Kalaikunda airbase near Kharagpur. Evidently, the Chief of Air Staff had not been able to countermand his earlier instructions to his field officers in the East in time. General Chaudhuri was very upset and protested to CAS/DM. The situation was rectified and the incident smoothed over.

"I have no knowledge of the happenings in the meetings between PM/DM and a Chief of Staff. Chiefs of Staff have direct access to the President, the PM and the DM. However, the P.M. and the D.M. were very punctilious and, if any action was required, the material would usually come down for suitable action. The DM would normally mention the point requiring action in the morning meeting; or, as in one or two cases, where personalities were involved, he mentioned the problem privately. *That the Naval Chief remained uninformed at any stage about Government policy is just shibboleth.*

"With regard to the 1965 war, it should be realised that the Government of India, that is the civil Government, wanted to keep the operations at as low a key as possible. Kashmir had to be defended and, to the extent that Pakistan was creating trouble there, it had to be faced. But it was the determined policy of Prime Minister Lal Bahadur Shastri and the Indian Government not to allow the operations to escalate.

"It is correct that the Navy was told not to approach Pakistan or threaten it. There is no question of going to Shastri or anything of the sort. But the Navy is quite correct in saying that they were asked not to escalate the fighting. They are absolutely correct. And India did not want to escalate the war. In point of fact, even in the east we did not take any action. In 1965, we wanted to limit the fighting as much as possible".

In the 1973 National Security Lecture of the United Service Institution of India, Air Chief Marshal Lal, who was the Vice Chief of Air Staff in 1965 (and subsequently Chief of Air Staff in 1971) stated:

"Early in 1965, Pakistan attacked us in Kutch, in Western India. The attack caught the armed forces unawares. The Army took the field without any prior planning or preparation. Its reaction was fast but there was no joint Army-Air Force

plan, and all that the Air Force could do was to provide logistic support with light aircraft. The possibility of tactical support was considered after the fighting began. It was then realised that our bases were so far from the battle zone that our aircraft would have to operate at extreme range with reduced weapon loads while Pakistani aircraft could dominate the entire combat area from bases close by. Given time, we could also have improvised an airfield or two in or near Kutch, but the fighting ended before that. The incident was soon defused but, apparently, not before it had encouraged Pakistan in the belief that the time had come to settle the Kashmir dispute by force of arms.

"Then in August and September 1965 came the second Kashmir War. It began with skirmishes in the valley by so-called freedom fighters, in reality agents of Pakistan. These were followed, towards the end of August, by an all-out attack by Pakistani armour in the Chamb area of Jammu province, with the obvious objective of cutting the Jammu-Srinagar highway. Our Army, working under the restrictions of the Cease Fire agreement, was lightly equipped in that sector and though it fought valiantly, its AMX tanks were no match for the more powerful Pakistani Pattons. While there was some hope of the Army holding the Pakistani attack on its own, there was no talk of bringing the Air Force into the conflict. But on 1st September, with the Pakistanis pressing forward from Jaurian, General Chaudhuri, the Army Chief, was compelled to ask for air support.

"There had been no prior joint planning for such an eventuality. Air Marshal Arjan Singh, the Air Chief, had on his own alerted the air bases in the Punjab. When the call came, a force of fighter bombers from Pathankot mounted a strike on the Pakistanis within minutes of being ordered to do so. It was a touch-and-go affair, because the demand for air support came late in the afternoon and the strike had to be mounted in an area with which our pilots were not familiar. With only a few minutes of daylight left, they could have missed the battle zone or attacked the wrong targets. Fortunately they did neither and so helped to bring the Pakistani force to a halt.

"At this point, it is interesting to consider in somewhat greater detail why there was no prior planning of Army -Air operations even though, as General Chaudhuri said in his 1971 National Security lecture, he expected the Pakistanis to attack in Kashmir after the Kutch incident. Basically, I think, it was because he and his commanders were wedded to the idea that military operations were principally an Army affair and that the other services could only operate on the fringe, as it were, with an occasional bonus from the Air Force. This was compounded by a big-brother attitude towards the Air Force which led to its being treated with a certain amount of indulgence but prevented it being accepted as a vital and equal partner in war. Matters were further complicated by the belief that if the Indian Air Force took part in the fighting then the Pakistani Air Force would do likewise, thus increasing the likelihood of a general war between the two countries instead of a localised conflict in J & K. There was a good deal of truth in this, of course, but this was a possibility from which there was no escape. Indeed, this was a possibility that could not be ignored for Pakistan had already been warned that any attack on Jammu and Kashmir would be treated as an attack on India. With a political direction as clear as that on the record, it was incumbent on the Chiefs of Staff to have their plans ready for such a contingency. The fact that they did not is indicative of the thinking at the time.

"The events in the Chamb-Jaurian sector leading to the call for air support took matters out of the Army's hands. At that stage the Government had to decide whether to enlarge the area of conflict, and it did so without hesitation. That, indeed, appeared to be the only way to divert Pakistani forces from the vulnerable Jammu-Srinagar highway, the loss of which would have jeopardised the defence of the Valley. With the decision to fight Pakistan outside J & K, the Army had to move up forces from peace time stations, some from the Deccan and further south, and formulate an operational plan at short notice.

"During the five days that elapsed between the Government decision and the date set for implementing it, there was some discussion of how the Army and the Air Force should operate. On the Army side, the notion persisted that it would fight on its own, with the Air Force providing an occasional bonus; and in the Air Force, where I was Vice-Chief, we thought of fighting mainly an air war against the PAF and what we considered to be strategic targets, assigning relatively low priority to support the

Army. Separate plans were hastily drawn up by each Service with no joint consultation worth the name. And again, no tasks were envisaged for the Navy.

"Please note that in 1965, the higher defence organisation was functioning and the Chiefs of Staff Committee met regularly under the chairmanship of General Chaudhuri. Officers in positions of authority had read and studied and taught the procedures for inter-service co-operation. It was not realised, however, that even when the general drill is known, each particular task still requires a great deal of preparatory work, that the persons taking part need to be trained for it, that supporting facilities have to be arranged for in advance, and this has to be done for every contingency that can be envisaged. Flexibility in battle is gained only through long and arduous preparation.

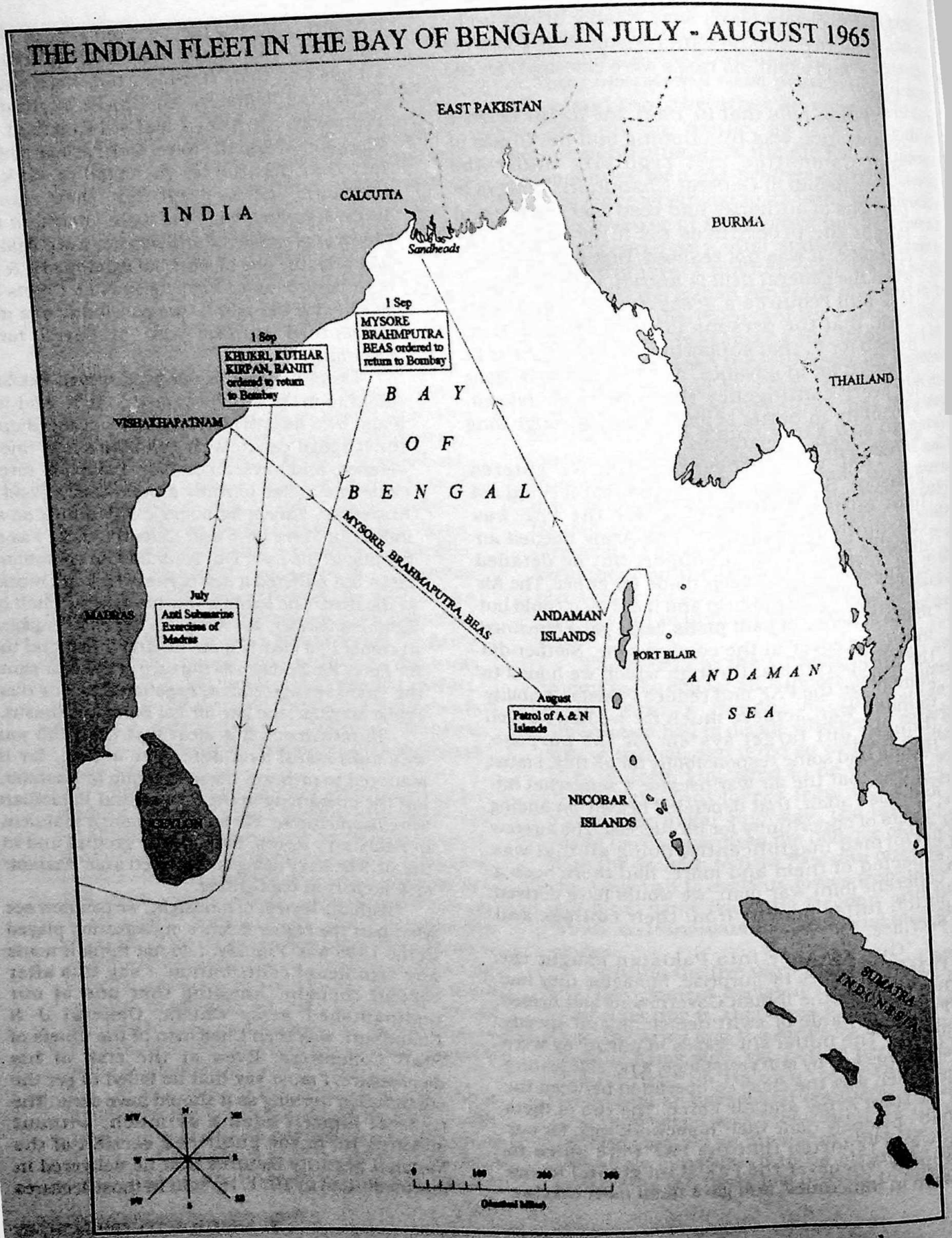
"That we discovered when we entered Pakistan. Soon the Army found that it could not fight entirely on its own, for the PAF was constantly harassing it. The Army needed air defence and tactical support but no detailed arrangements had been made for either. The Air Force was willing to help and it did all it could but in the absence of joint plans, large gaps remained in the air cover in the combat zone. Neither did the air operations, through which we hoped to immobilize the PAF and reduce Pakistan's ability to make war, achieve much for we had no well thought out target system for the purpose. Having had some responsibility for all this, I must confess that the air war became a somewhat hit-and-miss affair, that depended heavily on finding targets of opportunity for its success. The aircrew performed magnificently, doing all that was expected of them and more; had there been a coherent joint war plan, we would have derived much fuller benefit from their courage and sacrifice.

"Our advance into Pakistan caught the Pakistani forces by surprise. I imagine they had not thought the Indian Government and Armed Forces capable of swift decisions and speedy action. The initial successes of our Army were soon checked by stiff resistance, a notable feature of which was the close co-operation between the Pakistani Army and Air Force. The two of them had obviously done their homework well, for our jawans reported that the PAF were quick to appear whenever the Pakistani ground forces were in difficulties, and gave them most effective support. This was the more remarkable because unlike our set-up, in which all three Service Chiefs and their Headquarters were based at Delhi, the Pakistani Air Chief was located at Peshawar, the Army Chief at Islamabad, near Rawalpindi, and the Naval Chief at Karachi. The fact that their forces managed to work well together speaks well for their mutual understanding, which is more important than physical proximity..Furthermore, since Pakistan had been the one to start the fighting in J & K, it is to be presumed that its Service Chiefs had given some thought to the possibility of a more widespread conflict and prepared for it accordingly.

"Despite its preparations, however, Pakistan failed to make any inroads in J & K and just about held its own elsewhere. We advanced up to the Ichhogil canal, West Pakistan's first line of defence, and towards Sialkot. Pakistani forces came into Indian territory around Gadra Road in Rajasthan. Except for a single PAF attack on an Indian Air Force base near Calcutta, there was no fighting in the east. Our Navy had no operational tasks but suffered a sea-borne attack at Dwarka in the west. The fighting was brought to a halt by 22nd September, the Army having been engaged in combat for nearly a month and a half and the Air Force for 22 days. At the turn of the year came the Tashkent agreement, negotiated by our then Prime Minister, the late Mr Lal Bahadur Shastri.

"In retrospect, it is clear that the 1965 war was successful as a defensive action, for it managed to preserve the status quo in Kashmir, but the operations in the Punjab and Rajasthan were inconclusive. We failed to make a real dent in Pakistan's forces, both on the ground and in the air. The Navy being far removed from Kashmir took no part in the fighting.

"With the benefit of hindsight, we can now see what part the higher defence organisation played in the 1965 war. Frankly, I do not think it made any significant contribution. I say this after careful thought, knowing that one of our distinguished Army Chiefs, General J N Chaudhuri, was then Chairman of the Chiefs of Staff Committee. Even at the risk of his displeasure, I must say that he failed to get the organisation working as it should have done. The General himself admits as much, without meaning to, in the published version of the National Security lectures that he delivered in this institution in 1971. He said in those lectures


THE INDIAN FLEET IN THE BAY OF BENGAL IN JULY - AUGUST 1965
EAST PAKISTAN
INDIA
CALCUTTA
Sandheads
BURMA
THAILAND
1 Sep
MYSORE
BRAHMPUTRA
BEAS ordered to
return to Bombay
1 Sep
KHUKRI, KUTHAR
KIRPAN, RANJIT
ordered to return
to Bombay
BAY
OF
BENGAL
VISHAKHAPATNAM
MYSORE, BRAHMAPUTRA, BEAS
July
Anti Submarine
Exercises of
Madras
MADRAS
ANDAMAN
ISLANDS
PORT BLAIR
ANDAMAN
SEA
August
Patrol of A & N
Islands
NICOBAR
ISLANDS
CEYLON
SUMATRA
INDONESIA

that *he saw the Kutch incident as a prelude to an attack by Pakistan in Jammu and Kashmir, and he therefore began the Army's preparations well in advance. He omits to mention that the Air Force and the Navy were kept in the dark about this.* He goes on to say that he often discussed the threat with the Defence Minister and the Prime Minister and that, once in a while, he took the Air Chief along with him. The impression conveyed is that he looked upon the impending conflict as an Army affair, in which the use of the Air Force would be incidental. To my mind, this reflects an attitude long prevalent in the Army, and only recently dissipated, to the effect that its larger size and greater age gave it a commanding superiority over the other services and invested it with the sole right to decide how wars should be fought. I may be reading too much into a single statement, but to me it is axiomatic that effective co-operation between the Services can grow only out of mutual trust and full understanding of each others capabilities and limitations. I think that was lacking in 1965.

"In any case, *the Air Force and Navy, not having been alerted about the possibility of another war over Kashmir, no inter-service contingency plans were drawn up,* nor was any course of action agreed upon with the Air Force in the event of its being called out to support the Army. This mental block against consultation and joint planning continued right through the phase of guerrilla activity and was only partly removed when Pakistani armour threatened to cut the Jammu-Srinagar highway. It was at that critical stage, on 1st September 1965, that the Air Force was asked for air support, which it gave at short notice. Complaints from our forward troops about the limited extent of air cover in the war that followed were well-founded, for in the absence of precise plans the Air Force had simply maintained its normal forces at its bases in the Punjab and in Jammu and Kashmir. To do its job properly, some redeployment of squadrons and of logistic and communication facilities should have been effected before the commencement of hostilities. Had the joint planners been able to do their work in advance, I am certain more positive results would have been achieved in 1965. However, apart from preserving the status quo in Kashmir, the 1965 war was valuable for the many practical lessons it taught us in the conduct of operations from the highest level to combat in the field. In the years that followed these lessons were absorbed and applied."

The above excerpts indicate that until early August 1965 the Chief of the Naval Staff, Vice Admiral Soman, was unaware of two things - that information was available to the Chief of Army Staff that Pakistan may attempt to seize Kashmir later in the year and that the Chief of Army Staff had obtained the Government's approval in principle for the Army to counter attack Pakistan, if Pakistan attacked Kashmir.

Why was the Indian Fleet Sent to the Bay of Bengal

Admiral Soman recalls:*

"After the Indo Chinese conflict in 1962, the defence of the Andaman and Nicobar islands was left entirely to me. The Army refused to send even a platoon there and we had to raise our own land force with sailors in khaki uniform to man the various stations in these islands. So far as the Navy was concerned, as soon as Pakistan started the trouble in Kutch, I had felt that my first priority would be these islands because while talking to various people during my visit to Indonesia as the Fleet Commander a few years earlier, and having been briefed on the developments since then, I felt a little nervous about these islands. This was because when the Army refused to send any units for their defence, I had taken on the responsibility of doing so with sailors with no experience in landfighting. But I had also placed MYSORE and two major ships in the area till the very last minute. It was only after the war had started and I was permitted to bring the Fleet back to the West Coast that I brought the ships across to the Western theater because I wanted to ensure that no opportunity was given to Indonesia to start anything at the same time. Whether eventually it proved itself I do not know but prior to that, Soekarno was reported to have been keeping an eye on the Bay islands.

"The Fleet, when it reached Bombay, had to be given this thoughtless order from the 'higher authorities' of not operating north of the latitude of Porbandar. Nothing else could be done except to try and see that the Pakistani ships did not move towards the Andaman and Nicobar islands to hold hands with the Indonesians.

* Blueprint to Bluewater Pages 456 et seq.

"I also had some intelligence on the presence of some Indonesian ships at Karachi and knew that any operation undertaken by the combined naval forces of Pakistan and Indonesia would neither be against the Indian Fleet nor the Indian mainland. It was most likely to be for the capture of the Andaman and Nicobar Islands. I was quite convinced in my mind that the Indonesian Navy, knowing full well that only a small force of sailors in khaki uniform was present on these islands, could make an attempt to capture the Nicobar Island despite the then pretty poor state of Indonesia's Navy."

Was there any threat from Indonesia? Air Marshal Asghar Khan, who had been the Chief of the Pakistan Air Force during the Rann of Kutch incident, retired in July 1965. Soon after India crossed the Wagah border on 6 September, he was sent to China, Indonesia, Turkey and Iran to seek aid. In his memoirs, 'The First Round", he recounts his discussions with President Soekarno and Admiral Martadinata of Indonesia:*

- President Soekarno said that India's attack on Pakistan was like an attack on Indonesia and they were duty bound to give Pakistan all possible assistance. President Soekarno told him to take away whatever would be useful to Pakistan in this emergency. Two Russian supplied submarines and two Russian supplied missile boats were sent to Pakistan post haste.**
- Admiral Martadinata asked Air Marshal Asghar Khan "Don't you want us to take over the Andaman Islands? A look at the map will show that the Andaman and Nicobar Islands are an extension of Sumatra and are in any case between East Pakistan and Indonesia. What right have the Indians to be there? In any case, the Indonesian Navy will immediately commence patrols of the approaches to these islands and carry out aerial reconnaissance missions to see what the Indians have there".

In hindsight, it would appear that the concern voiced to Admiral Soman by the Prime Minister and by the Defence Minister and Admiral Soman's own concern at that time about the security of the Andaman and Nicobar islands was not entirely unfounded. Indeed, as will be seen in the Chapter on Russian Acquisitions 1965 to 1971, it was this concern in May 1965 at the rise in Indonesian activity that precipitated the decision to acquire Russian ships and submarines. It helps to understand one of the reasons for delaying the recall of the Indian Fleet to Bombay till 1 September, when the Pakistan Army crossed the international border to attack Kashmir.

Another reason for sending the Indian Fleet to the Bay of Bengal seems to have been not to forego the opportunity for exercising with a submarine, particularly since the Pakistan Navy had received the submarine GHAZI from the American Navy in 1964.

Admiral Soman recalls:***

"After the fizzle-out of the Kutch affair, for which the Fleet ships had been hurriedly brought out from their refit and periodic maintenance, we had the Hobson's choice of either committing them back to their refit and maintenance,or of continuing to keep them operational in order to make full use of the (already projected) live anti submarine training with a Royal Navy submarine which was due to arrive in India shortly. It had been our experience in the past that no amount of simulated training on attack teachers in anti submarine training schools ashore can ever make anti submarine teams fully efficient.

"It was decided, therefore, that the live target hunting and tracking opportunity was too valuable to be missed even if, during the period, the ships were not in as good a shape in their material state as they should be, so long as their anti submarine searching, hunting and attacking equipment and personnel were effective and efficient. In making this decision, I had assessed that we perhaps had time till about November 1965 before things might get hot again.

"In the context of this assessment, I must point out that while MYSORE and the anti submarine frigates were sent out to the East Coast for anti submarine exercises with the British submarine Astute, VIKRANT was put into the dry dock for her normal but long overdue periodic maintenance, particularly the repairs to her flight deck machinery, malfunctioning of which would have endangered valuable lives of pilots and caused losses of aircraft. Another consideration in committing VIKRANT to her refit during this period was that the weather and visibility conditions during the monsoons do detract somewhat from the full operational value of such a ship. All ships from the East Coast were

* Page 43 et seq.
** They reached Karachi only after the cease fire.
*** Blueprint to Bluewater Pages 421 et seq.

due back from the anti submarine exercises in early September 1965 and, after normal maintenance, would have been operational again by November 1965, by which time VIKRANT was also scheduled to get ready.

"As it happened, events forestalled our calculations. MYSORE and the first pair of frigates to complete their exercises with the submarine carried out such normal periodic maintenance as possible with the limited resources available at Visakhapatnam, and were deployed in the Andaman and Nicobar area from where, during the monsoon period, smaller patrol craft are withdrawn. This was in accordance with the normal operational programme of the ships and was necessary, as there had been reports of surface and submarine (of unknown nationality) activity in this area. It was virtually in the middle of this deployment and before the second group of ships exercising with the submarine had finished their periodic maintenance, that all these ships had to be deployed to the West Coast to cater for any Pakistan naval activity. Needless to say, therefore, the material state of the ships, so far as their propulsion systems were concerned, was by no means at the optimum, as it perhaps could have been had we foregone the anti submarine exercise. I have no doubt, however, that the anti submarine exercises carried out with the submarine ASTUTE stood our ships in very good stead.

"From intelligence available prior to the end of August, it was known that the Pakistan Fleet was in Karachi carrying out maintenance and various exercises throughout the months of July and August 1965, while ours was on the East Coast. Being away from their homeport, Bombay, our ships had to continue to do with very meagre maintenance and repair facilities and resources, which had yet to be developed on the East Coast.

"A warning on the worsening situation was sent to the FOCIF on 31 August, but it was not till the next day, 1 September 1965, that the Fleet ships were ordered to rush back to the West Coast, and operational directives to the Fleet and Commands were issued two days later."

Why wasn't the Fleet Recalled to Bombay Earlier

Air Chief Marshal Arjan Singh, the Chief of the Air Staff in 1965 recalls:

"Fairly early during August, General Chaudhuri and I went to Kashmir, we heard all the Commanders, we discussed the situation and felt that the Army would be able to handle the situation. One did not really think at that time that it could result into a bigger, full scale war, mainly because the Army was absolutely certain that this situation will not go out of hand. We thought that the Army, assisted by the Air Force purely in logistic operations, could tackle the situation. And I think it was managed very well, because the Army regained control over the situation. There was no danger of it becoming a bigger war."

Vice Admiral N P Datta, then a Commander serving in Naval Headquarters, recalls:*

"Around the middle of August, I had gone to the Naval Chief, with whom I had earlier served as the Fleet Operations Officer. I gave him my view that if the Fleet was to be recalled, it would take a week or longer for them to get back to the west coast, after which they would require another week or so to effect necessary repairs and maintenance before they could be operational.

"Admiral Soman said that this was the very point that he had made to the Chiefs of Staff Committee but had been overruled by the Army Chief, General Chaudhuri, as the Chairman of the Committee, who had said that if any alterations were made in the disposition of the Indian Fleet, if the ships were hurriedly recalled from Calcutta and sent back to Bombay, it would create a furore in the press and it would forewarn the Pakistani General Staff of the Indian Armed Forces' knowledge of their plans and hence their reaction would be severe."

This remark of Admiral Soman suggests that by mid August, General Chaudhuri had informed him of the Army's intentions to cross the cease fire line and of the need to avoid any action which might forewarn Pakistan.

As regards the ambiguity as to who was the Chairman of the Chiefs of Staff Committee in 1965 and the interaction between the Chief of Army Staff and the Chief of the Naval Staff, Shri PVR Rao, the Defence Secretary recalls:

"The Chiefs of Staff Committee is presided over by the longest serving service Chief and not by rank. In my time (1962 to 1966) it was first presided

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* Blueprint to Bluewater Page 424.

over by Air Marshal Engineer, then by Vice Admiral Soman and then by General Chaudhuri. In 1965, Vice Admiral Soman was its Chairman. The Chief of Army Staff was not the Chairman of the Chiefs of Staff Committee. In any event, the Chairman of the Chiefs of Staffs Committee has no authority to over-rule any Chief of Staff. It is of course different if one Chief acceded to the view point of another".

In another interview, Admiral Soman stated that when the war began, he was the Chairman of the Chiefs of Staff Committee but as the Navy was not given any offensive role, he left the Chairmanship in favour of the Chief of the Army Staff, General Chaudhuri.

Air Chief Marshal Arjan Singh recalls:

"I do not remember and I do not think there was discussion amongst the Chiefs of Staff on the Navy's participation. I do not think so. Every time there was a discussion amongst the Chiefs of Staff, records were kept. And if you look at the records, I do not think you will find any record of discussions at all on this. *I do know there was never any discussion by Admiral Soman with me whether the Navy should participate or not.* The Navy is closer to the Air Force and if any operation has to be planned, it's got to be a joint operation. And there was not a single discussion between Gen Chaudhuri and Admiral Soman and myself on the participation of the Air Force in naval operations.

"Secondly somehow at that time everybody was talking about one thing, everybody at that time thought that the aircraft carrier was the main weapon against Karachi. They said that the Navy could not fight without the aircraft carrier actually participating and that the carrier was not available because it was being refitted. I have a feeling, without any positive proof, that there was not enough pressure from the Navy to participate. I think a lot depends on the Chief. A Chief can convince the Government to do certain things in war. The Government is very receptive during a war where the services are involved. I remember that everything I recommended was agreed to by Prime Minister Shastri, except our plan to attack the PAF around Dacca. That was probably wrong on my part even to suggest it. He was not in favour. He said "why extend the war"?

"So I think there was not enough pressure built up. *Perhaps the Government was not convinced that the Navy was fully prepared to participate in the operations.* And that impression might have been conveyed by the man concerned. On the Navy side, I really cannot say what happened because there appeared to be no adequate pressure to participate in the 1965 war.

"We used to meet for long periods in the Chiefs of Staff Committee and I remember that the Navy's participation was not discussed over there. Whether it was raised within the inner structure of the Navy or in the MOD is a different matter of which I would not know. I think the general impression was that there was no great keenness on the part of the Navy to go to war. That was the impression I had got, but I do not remember Admiral Soman or anybody else actually discussing with me that he would do this or that".

In an interview, the FOCIF, Rear Admiral Samson stated:

"A very important limitation in the tasks assigned to the Navy was that any conflict with Pakistan would not mean a total war involving all three services but to be limited only to action on the borders. I and my colleagues were aware of this, that this understanding between the two countries was to limit the extent of the war, to avoid civilian casualties as well as destruction of one another's industries etc. So far as the Navy was concerned, this limitation was known to all, though never spelt out in writing" .

From the foregoing, it emerges that:

- by end August, after the cease fire line had been crossed, Admiral Soman had reconciled to the Government's decision not to enlarge the scope of conflict beyond that required to restore the status quo in Kashmir, leaving the Navy with only a defensive role. The non availability of the aircraft carrier VIKRANT may have been supportive of a defensive mindset.
- In September, immediately after the Government asked the Chief of the Naval Staff to withdraw his signal to the Navy that India was at war with Pakistan, the Ministry of Defence sent the written directive to Naval Headquarters, not to operate in a threatening or offensive manner north of Porbandar and forbidding offensive action against Pakistan unless forced to do so. This formalised the Navy's defensive role.
- The Fleet Commander was aware of the Governments reasons for constraining the Navy to defensive action.

Could the Navy Have Done More

Both in the press and within the Navy, there was criticism of the Navy for not going into action and doing something noteworthy, as had been done by the Air Force's successes in the air battles over Kashmir and by the Army's decimation of Pakistan's American supplied Patton tanks in the Punjab. Indeed, in response to a suggestion from Rear Admiral Nanda, then in Mazagon Docks (and later CNS in the 1971 war) that the Navy's non-participation was affecting the morale of officers and men and that the CNS should come and speak to them, Admiral Soman came to Bombay and told them "We all have to do what we are told to do". This did not assuage their frustration. Admiral Soman remained circumspect about the Government's directive that the Navy desist from offensive action.

After the 1965 operations, Admiral Soman , addressing the senior officers of the Navy, said:*

> "Notwithstanding our initial disadvantage of the location of the Fleet on the East Coast at the time of the commencement of the undeclared war, and the material limitations of the ships after three months of exercises away from base, the Fleet, with the help of the valiant efforts of the Dockyard, took the initiative to seek the enemy and bring him to battle. Although this was not achieved, I am sure it had placed itself in a position to contain the enemy in his waters if he had ventured out, which I know was all that was expected of the Fleet.
>
> "It is indeed a great pity that the role assigned to the Navy was mainly a defensive one. History has proved over and over again that at sea, more than perhaps on land and in the air, offense is the best form of defence. In the days of old, when there was no wireless communication, Nelsons could put their telescopes to their blind eyes and get away with it as heroes on top of their respective columns. It indeed took courage to put the telescope to the blind eye and win laurels. But it takes equal, if not greater, courage (perhaps of a different kind) to play the tethered role and curb the offensive spirit of a fighting force in the greater national interest as claimed by the authorities.
>
> "The implications of a war at sea did not seem to have been fully understood in the Government agencies at many levels, but when some of these agencies talked glibly of blockade, contraband control, seizing enemy merchant ships and attacking enemy warships at sea and their ports without a proper formal declaration of war, one wondered whether they realised that any such action on the high seas, without the declaration of war was liable to be branded as piracy, especially if any neutral ships became involved.
>
> "The need for a 'rethink' on the question of the operation and control of maritime reconnaissance has also become apparent. Intelligence is vital for the Navy in planning its operations and executing them. While the Air Force, with their meagre resources and preoccupations with other commitments, valiantly tried to give the limited cover agreed upon, it was disconcerting to comprehend the fact that of the 13.5 lakh square miles of coverage required for the operations undertaken by the Fleet, a bare one lakh square miles could actually be covered. This too was achieved in 24 sorties of 188 hours by the IAF with its Liberators and Super Constellations, augmented by 60 sorties of 160 flying hours of the Alizes. This meant that the Fleet ships' endurance, limited as it was due to the lack of a replenishment tanker, had to be devoted to searching for enemy ships, hoping for a chance contact, which was a terrible waste, quite apart from its ineffectiveness, particularly with our meagre resources."

As can be seen from the foregoing reconstruction of events, the Navy went beyond the constraints imposed by the Government. Although instructions had been received not to seek action at sea outside our territorial waters, all ships were directed to hunt and destroy submarines whenever and wherever they were detected. The Seahawk aircraft of the Navy, which coincidentally arrived in Jamnagar on 1 September for its annual armament work up, were specifically tasked to put out of action, the high-power radar installation at Badin in Pakistan, which is only 135 nautical miles away from Jamnagar. Events precluded this operation but the offensive spirit was there. The Indian Fleet, despite the restriction of not operating north of Porbandar, had no hesitation in planning the first sweep with Alizes searching well north of Porbandar in the hope that contact would be made with the Pakistan Flotilla. When this did not happen, FOCIF had no hesitation on subsequent nights of proceeding northwards whenever he thought he might catch the enemy.

* Blueprint to Bluewater Pages 463 et seq.

Given the Government's determination to limit the scope of the conflict as much as possible (and the resultant restrictions of 'no offensive operations' and 'do not proceed north of Porbandar'), given the Chief of Army Staff's desire of not giving Pakistan any inkling of the Army's plans (not agreeing to the Fleet being brought back to Bombay earlier) and given the ambiguities that arise when there is no formal declaration of war (trade warfare and contraband control when neutral ships get involved), it is difficult to see what more the Navy could have done.

Post War Naval Reactions

That the Government was aware of the Navy's frustration at having been restricted to defensive operations can be discerned from the letter written to the Navy by Shri Y.B. Chavan, the then Defence Minister:

> "I greatly appreciated the silent but efficient role which the Navy played in the defence of the country. The Navy protected islands which were vital to our security, guarded our ports and the long Indian coast-line. All merchant ships destined for our ports reached safely and our international trade was not permitted to be interfered with by the Pakistan Navy. I take this opportunity to emphasise again that the Navy has done and achieved all that the Government desired of it, within the bounds and compass allotted to it".

Within the Navy, there were two distinct reactions. One was to decry the Pakistan Navy's raid on Dwarka. The other was a determination not to be humiliated again.

In the prologue to his book, 'We Dared", Admiral SN Kohli states:

> "During the 1965 war between India and Pakistan, the main task force of the Pakistan Navy, including the cruiser BABUR, sneaked out of Karachi harbour in the dead of night and made its way to holy Dwarka which it proceeded to bombard. The bombardment lasted half an hour or so. PNS BABUR fired several six-inch shells and then the Pakistani ships withdrew to the safety of their heavily defended harbour of Karachi well before the Indian Navy could intercept or even contact them. It is obvious that a sneak raid of this type can be undertaken by any force anywhere, to convey an impression to their Government and their countrymen that they are supreme and unchallenged on the seas and that the enemy territory is at their mercy. The Pakistani naval raid on Dwarka left the officers and men of the Indian Navy infuriated and somewhat humiliated. This was particularly true of the senior echelons of our Navy on whom devolved the responsibility for the maritime defence of India. I was then the Deputy Chief of Naval Staff (now Vice Chief of Naval Staff) and I vowed to myself that if ever there was another round involving naval forces and I was in any kind of position of responsibility, I would go to the farthest extremes to teach the enemy a lesson and to avenge this dastardly act. This opportunity was to come in 1971 when I was Flag Officer Commanding in Chief, Western Naval Command in Bombay.
>
> "In 1965, the Indian Navy had gone to war with their hands tied behind their backs and all but immobilised. A Government instruction under the signature of a Joint Secretary, Ministry of Defence, laid down that the Indian Navy was not to proceed more than 200 miles beyond Bombay nor north of the parallel of Porbandar. This meant a fettering of the Navy's mobility. The Joint Secretary's communication was given to the then CNS, Admiral BS Soman. When he told me about it, I was naturally most upset and told my Chief that if I were in his position, I would protest vehemently; for the Government decision and its import and implementation would have a most demoralising effect on the Navy as a whole.
>
> "Admiral Soman, on being asked by me recently, gave his version of what transpired then, in his characteristic forthright manner. Here it is in his own words:
>
> "As far as I remember, it was the morning after the start of the war that I got a file from the Ministry signed by Sarin, who was then Joint Secretary,* saying that the Navy is not to initiate any offensive action against Pakistan at Sea and is not to operate above the latitude of Porbandar except in pursuit of any Pak Navy offensive action. I immediately contacted the Minister, Mr YB Chavan, and asked to see him; at our meeting I strongly protested against this order and said in any case I cannot accept it from a Joint Secretary in the Ministry. If I remember correctly, Mr Chavan initialed the directive and asked me if that would do. I replied that in that case I would like to see the Prime Minister.

* There was no Joint Secretary named Sarin in 1965. Mr. HC Sarin was the Secretary Defence Production.

"Arrangements were made for me to see the Prime Minister, Shastriji, the next morning, and I had about twenty minutes with him. On his assurance that it was a Cabinet decision - I am not sure whether he too initialed the file - I accepted it on the understanding that should I consider it necessary, I may be allowed to see the President of India, as the Commander-in-Chief".

"It was often derisively asked by civilians and officers of the other two services why our Navy could not do anything in retaliation against the raid on Dwarka. The question was asked even by those who knew that our coast is such that a sneak raid on a remote part of it is possible. But it is not surprising that our reputation plummeted; more so because our aircraft carrier VIKRANT was in dry dock undergoing routine maintenance: it was openly called a 'white elephant'. Many rude remarks were made about our smart uniforms, foreign jaunts, and the proverbial girl in every port, all amounting to a 'big cipher when it came to fighting'. Few knew that all this obloquy was brought on the Navy by a dictat of our own Government.

"It was difficult for the Navy to understand the reason for such an order. Maybe it was to limit the scope of the 1965 operation against Pakistan, maybe the Government thought that our old ships might not be able to make a good showing. The Pakistan Fleet then consisted of ships of much the same vintage as ours - or perhaps just a little newer.The reason will no doubt come out when the official history of the 1965 and 1971 wars is published".

In his memoirs of the 1971 war, 'No Way But Surrender', Vice Admiral Krishnan states:*

"I thought of the previous round of aggression by Pakistan, the 1965 war, in which, much to everyone's disgust and consternation, the Navy played little or no part. I remember the hurt and humiliation one felt over the fact that even a Pakistani frontal attack on one of our ports had not brought forth any retribution. (Reference is to the successful but futile attack by units of the Pakistan fleet on Dwarka on the Saurashtra coast.)"

Afterword

The discerning reader will have sensed that there remain some points which are serious enough to require a final effort at clarification. The above account was forwarded to Mr PVR Rao who was the Defence Secretary in 1965. The queries and his replies leave no room for doubt regarding the Government's intentions.

- *Was there a written directive from the Government/ Ministry of Defence to the CNS not to take offensive action?*

  Mr Rao states:

  "There is no dispute that the Government directed, as a matter of policy, the Navy not to play any role in the 1965 conflict. Whether there was a written directive from the Defence Ministry, as claimed by the CNS, can only be checked from the NHQ records. The least one can do is to publish an extract from the NHQ records from the alleged written order of the Defence Ministry".

  In the records presently available, no such written directive has yet been located.

- *Was the Government right in deciding to localise the conflict?*

  Mr Rao states:

  "This was the Government of India's limited objective and it was achieved. Whether the Government should have embarked on a wider operation can be debated, but it was not the Prime Minister's idea".

- *After the Kutch incident, did the Chief of the Army Staff inform the Ministry of Defence of his assessment that Pakistan would attempt to seize Kashmir later in the year?*

  Mr Rao states:

  "After the Kutch cease fire, none in the Government expected trouble until it erupted on 4th August".

- *Had the Chief of Army Staff received the Government's approval in principle for the Army to counterattack in a place of its choice if Pakistan attacked in Kashmir?*

  Mr Rao states:

  "Rather, the Government pressed the Army to attack. The Chief of the Army Staff wanted all the three services to participate. In my opinion, he was never serious about this but was trying this gambit to support his inaction".

In this connection, Mr Pradhan's memoirs state:*

"(On 4 September) The situation was getting desperate. The loss of Akhnur would be a major disaster and Chavan decided to go ahead with an operation that had been planned after the Rann of Kutch incident. On 20 April, Shastri had declared before Parliament "If Pakistan continues to disregard reason and persists in its aggressive activities, our Army will defend the country and decide its own strategy and employment of its manpower and equipment in the manner it deems best." General Chaudhuri, with the approval of the Defence Minister, had worked out a plan code-named 'Riddle' to launch an offensive action to secure the eastern bank of the Ichhogil Canal. It was felt that the mere presence of the Indian troops on the canal opposite Lahore would draw Pakistani forces from Sialkot and other areas and thus reduce its offensive capabilities in other sectors. Moreover, if India could establish a bridgehead over the canal, the Pakistan army would be forced to fight there and that would lead to the attrition of her smaller army. By basing the defence line along the canal, India would confine the war to Pakistani territory in addition to acquiring a large chunk of Pakistani territory. Operation 'Riddle' was planned to meet an eventuality like the one the Indian's were facing on 4 September"

Finally Shri Rao states:

"Notwithstanding Government's directive in the Defence Minister's morning meetings to the CNS about his role thereafter, he seems to have embarked on certain actions on his own. The account speaks for itself. The Fleet was in a poor state. This was not the Navy's fault. It had got only measly funds. Whatever resources Government could spare for defence was given in 1962 - 1965 to the Army and the Air Force. Going by the account of the 1965 war as written above, I would consider the decision of the Government to restrict the Navy to a low key was fully justified!"

In hindsight, three points of the 1965 war bear noting:

The first was the determination of the Governments of both India and Pakistan not to escalate the conflict.

- Mr PVR Rao, the Defence Secretary in 1965 has stated that it was the determined policy of Prime Minister Lal Bahadur Shastri and the Indian Government not to allow operations to escalate. There were no Army or Navy operations against East Pakistan.

The IAF attack on Lalmanirhat was the result of a communication gap of Air HQ not informing the Air Station in time. The IAF did not retaliate against the PAF's subsequent attacks on Kalaikunda on 7 September, on Bagdogra on 10 September and on Barrackpore and Agartala on 14 September.

In the Arabian Sea, GHAZI did not attack merchant shipping nor did the Indian Navy seize Pakistani merchant shipping on the high seas.

In his book, "The First Round" Air Marshal Asghar Khan has stated:

"President Ayub Khan said that since East Pakistan had not been attacked, it would be better not to launch strikes against enemy airfields in that area. He felt that considering our difficulties there, it was not in our interest to start hostilities on the Eastern front.

"Our Navy was keen to intercept on the high seas the merchant ships taking supplies to India but was stopped from doing so by our Foreign Office for fear of international opinion. However within East Pakistan, Admiral Ahsan, then Chairman of the Inland Water Transport Authority in East Pakistan, in a lightning action captured the entire fleet of more than one hundred Indian coastal shipping vessels along with their valuable cargo."

The second point is the maritime recce capability of the Pakistan Navy. In view of Pakistan's reluctance to escalate naval conflict, the approaches to Karachi seem to have been well covered. The Pakistan Air Force's No 4 Squadron comprised American supplied SA 16 Albatross aircraft. The History of the Pakistan Air Force states:

"The SA 16's of No 4 Squadron were given the maritime role of detecting and reporting the movement of ships, particularly the enemy aircraft carrier VIKRANT.

"Within the first 14 days, SA 16's flew 72 hours with only two qualified operational pilots. The total operational flying during the month was 98:35 hours, the maximum flying during any single month. Hundred percent serviceability of

* Pages 265 et seq.

both the SA 16 and helicopters was maintained throughout the month."

The third point is that the raid on Dwarka seems more to have been a reaction to India's crossing the Indo Pakistan border on 6 September, than a preplanned action to provoke the Indian Fleet to join battle. The post war rhetoric in Pakistani (and Indian) literature that the Indian Fleet was bottled up for fear of the GHAZI is the result of widespread ignorance of the decisions of both Governments to minimize the scope of conflict.

Lessons Learnt

Several lessons were learnt from the 1965 operations. Foremost was the need for a fleet tanker which would increase the sea-keeping endurance of Fleet ships and the urgent need for more ships to have one Fleet each in the Arabian Sea and the Bay of Bengal. If the Pakistan Navy had deployed one or two of their destroyers to operate from Chittagong in East Pakistan and raided our ports and sea lanes in the Bay of Bengal, the Indian Fleet would not have had enough ships to cope with this contingency. These and many other important requirements were taken in hand from 1966 onwards like augmenting the naval maintenance and repair facilities and depots at selected bases and reorganising the command and administrative structure in the light of the 1965 war. These were to stand the Navy in good stead in the 1971 war.

4

The Russian Acquisitions 1965 to 1971

Preamble

Until the early 1950s, Russia found it difficult to understand how India could be independent while still remaining in the British Commonwealth. It viewed India's non alignment as tilted towards the Western "imperialist" bloc rather than towards the "socialist" bloc of Russia and China. When India refused to sign the San Francisco Peace Treaty with Japan (preferring instead to sign a separate treaty giving up reparations) Russia began to understand India's independent foreign policy. After 1952, when it first exercised its veto in the Security Council, Russia's support of India's stand on Kashmir became firm and steadfast.

Until the early 1950's, all of India's core defence requirements like tanks, artillery, cruisers, destroyers and frigates, bombers and fighter aircraft were being acquired from Britain. In step with the better understanding of Indian policy, the Russians started making overtures to displace Britain as the prime source for India's defence needs. Mr PVR Rao (later Defence Secretary from 1962 to 1967) who was the Deputy High Commissioner in London recalls:

> "When the Air Force had come to England in 1952 to negotiate for the Canberra bombers, I remember the Soviet Military Attache asking me "why don't you approach us for assistance, rather than approach America and Britain?"
>
> "I also recall Prime Minister Nehru's talk to senior Indian High Commission officials in 1952 "It is all very well that Russia and China are making many overtures to us, but with America and Britain also, you never know which way these things will turn. We should be equally distant from both, just to safeguard all our interests."

Prime Minister Nehru first visited Russia officially in 1955. The Russians offered their latest aircraft for the Air Force.

Air Chief Marshal Moolgavkar recalls:

> "Nehru was the first leader of a non communist country to be invited to the Soviet Union. I think he was asked a question "You call yourself non-aligned but you buy all military equipment from the West." Perhaps Nehru had no real answer to give except that "Well, nothing has been offered to us". So he was told that "we will give you anything that you want". Nehru sent a cable to New Delhi to say that a top level Air Force team should get ready to come to Moscow and that he would personally brief this team on his return from Moscow.
>
> "So the late Air Marshal Mookherjee, then Chief of the Air Staff, Air Cmde Arjan Singh, my humble self as a Gp Capt and a couple of others were made to form a team. We were briefed by Nehru before departure. If I recall right, Nehru said that during his visit to Moscow he felt a visible, positive change in the governance and the attitude and approach of the Soviet leadership compared to what he had known in the Stalin era. "But", he said, "we have to be careful, we are not very sure. So you go there and try whatever they offer you, except no intercontinental bombers".

In 1956, Mr Krushchev visited India. His forthright description of Kashmir as "the northernmost state of India", his offer to assist the development of Indian heavy industry and the Rupee-Ruble trade agreement laid the foundation for further Indo-Soviet political, economic and technical cooperation. During his visit, he openly suggested that Russia would be happy to meet the Navy's needs. Rear Admiral (then Cdr) Kirpal Singh was on Mr Krushchev's liaison staff. He recalls:

> "During his visit, Krushchev made repeated offers to India to acquire more arms from Russia. He kept saying that the large ships like cruisers were sitting ducks because Russia had developed weapons which could destroy them in the open sea. He made a strong plea that India should get its ships from Russia".
>
> The Navy did not respond, partly because it lacked the confidence to shed its dependence on the British Navy and partly because the Russian Navy had yet to develop vessels of the kind the Navy wanted.

In 1957, the Russian Defence Minister, Marshal Zhukov, visited India. In Cochin, Rear Admiral RD Katari, the Fleet Commander, invited him to a banquet on board the flagship. In his memoirs, "A Sailor Remembers" he recalls:*

> "From the moment Marshal Zhukov, stepped on board, he virtually impaled me against the centre-line capstan and demanded to know why we were acquiring an aircraft-carrier. Resisting the temptation to tell him that it was none of his business, I tried to explain to him the reasons which induced us to do so, but he could not, or would not, accept them.
>
> "The discussion was obviously reaching a point of exasperation to both sides but the climax came when Zhukov made the provocative observation that we were buying the carrier at the behest of the British and to please them. That was too much to accept, and I was provoked into saying "Marshal Zhukov, you are a renowned military leader and one of Russia's heroes in the last war. I, therefore, consider it a great honour that you should have deigned to discuss military matters with humble me. But you must concede that I would advise my Government in a manner that I feel is best for my country and not at the behest of any foreign power". That, regrettably, brought the conversation to an abrupt halt. Zhukov marched straight to his place at the dinner table (the dinner itself was not quite ready to be served). The meal was a near silent affair with the silence of tension".

During Mr Krishna Menon's tenure as Defence Minister from 1957 to 1962, a landmark defence agreement was concluded for the supply of the latest Russian MIG 21 fighter aircraft to be followed by their progressive production in India.

After China's attack in 1962, India urgently needed aircraft, helicopters, tanks, arms and ammunition. Britain and America had limited themselves to supplying mainly weapons for the mountain divisions facing China and minor equipment. Russia's response was positive and they agreed to meet India's needs.

Marshal Zhukov was not alone in his views on the Navy's acquisition of an aircraft carrier. In 1963, India's ambassador in Moscow asked the Russian Defence Minister, Marshal Malinovsky, what sort of defence preparedness India needed against the Chinese threat. He replied that what India needed was a strong, mobile, Army, Navy and Air Force, well equipped with the latest weapons. Instead of a prestigious, overhauled, old British aircraft carrier (which he called the fifth leg of a dog and an easy target), India should go in for a submarine fleet to guard her long coastline.**

The strategic defence review undertaken by India in 1963 viewed China as the primary threat. To cope with a combined threat from China and from Pakistan, the requirements of the Army, Navy and Air Force were quantified in the 1964-69 Defence Plan. The gist of the requirements were sent to America, Britain and Russia in advance of Defence Minister Chavan's visits to these countries in 1964.

1964

Defence Minister Chavan's Delegation to Russia

In Russia, the Defence Minister's delegation were shown a submarine, a submarine depot ship, and small craft like a missile boat, a torpedo boat and a patrol boat.

The assessments of the naval members of the delegation were that while the submarines were suitable, the smaller craft might not be suitable during monsoon conditions. As regards missile boats, it was felt that even though their mobility made them very effective for coastal defence of ports, their acquisition should receive lower priority than the acquisition of submarines.

Mr RD Pradhan, IAS, was the Private Secretary of Defence Minister YB Chavan from 1962 to 1965. He accompanied the Defence Minister in 1964. In his memoirs "Debacle to Revival", he states:***

> "The fact that the Defence Minister of India was visiting the Soviet Union, at that point of time, was itself of great political significance. Chavan had already visited the United States and was scheduled to visit the United Kingdom. It was known that India had not received the expected aid and assistance from the United States and it was clear that as far as the Indian Air Force was concerned, India would have to depend only on the Soviets. They had already agreed in principle to supply MIGs and also help to set up factories to manufacture MIG-21s in India.

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* Page 83.
** Stalin to Gorbachov by TN Kaul Page 57.
*** Pages 211 et seq.

"Knowing his closeness to Khrushchev, Chavan was conscious that the success of his mission greatly depended on his talks with Marshal Malinovsky.

"An unexpected result of the Soviet authorities' offer to meet India's defence requirements was the perceptible change in the attitude of our Army and Navy top brass towards Soviet-made equipment and armaments.

"Until that time, Soviet assistance was envisaged only for the Air Force for which Krishna Menon had worked hard and had come under political attack. By the time Chavan visited Moscow, the Indian Navy, which had refused so far to look for their requirements outside the United Kingdom, was receptive to a suggestion to at least consider the possibility of Soviet assistance. Till that time, right from top to bottom, the Navy appeared to be so strongly pro-British that no one could imagine acquiring anything outside the United Kingdom. It was fortunate that Rear Admiral SM Nanda, Deputy CNS, was a member of Chavan's earlier delegation to the United States. He knew where we stood vis-a-vis the Western countries and came to Moscow with an open mind.

"Chavan was looking forward excitedly to visiting the Naval Headquarters in Leningrad. The Soviets had promised to take us aboard one of their submarines.

"Just before we entered the submarine, the Naval Commander-in-Chief of the USSR Fleet in the Gulf of Leningrad told Chavan that it was perhaps for the first time in their naval history that foreign civilians were being invited to come aboard a Soviet submarine. Soon the submarine was racing away from the coast. Except for our unsteady feet, we did not realise that the submarine was being subjected to tremendous pressure on the outside and we were rapidly going several hundred feet down. After two hours of cruising under water, during which we were given a demonstration of its maneuverability and the lethal power of its torpedoes, we returned to the port.

"Chavan's meeting with the Chairman of the USSR Council of Ministers, Nikita S Khrushchev had been fixed for 9 September 1964. After the usual courtesies, Chavan conveyed Prime Minister Lal Bahadur Shastri's greetings to Khrushchev and talked about his impressions of the visit to Leningrad, Volgograd and Yalta. He elaborated on India's need to strengthen its defence efforts and thanked the Soviet Union for the positive response he had received. He placed before Chairman Khrushchev `the only issue' that had remained unresolved.

"Khrushchev spoke eloquently of the economic cooperation between the two countries. He regarded Bhilai as only a sample of fruitful Indo-Soviet cooperation that should be further expanded. He renewed the offer made by Marshal Malinovsky to give all the arms and equipment that India needed and added that according to his information, there was a gap between what had been offered by the State Committee and what Chavan wanted, regarding the period of credit. He had decided to be a good arbitrator and divide the difference exactly midway between the Soviet offer and Chavan's expectations!"

Admiral Nanda recalls:

"There was a farewell party in the Kremlin given by the Soviet Defence Minister Marshal Malinovsky. The Defence Minister and the Defence Secretary were discussing the final requirements of what the three services wanted. Now unknown to me, that day they had received instructions from the Government in Delhi to say you may acquire Army and Air Force equipment, but not any naval equipment at all from Russia.

"Before the party finished, about five or six Russian Admirals got around me and said "Admiral Nanda, tell us what is wrong with our ships?" Now I didn't know about these instructions from our Government. So I said "Nothing wrong". They thought that I was not telling them the truth. So they said "We are signing tommorow for the Army equipment and for the Air Force equipment but not for any naval equipment. You are the Naval member of the team. You must have advised your Minister against the purchase of naval equipment". I had to think very fast as to what could have gone wrong. I said "This has happened again. Obviously the Army and Air Force have taken all the money and there is no money left for the Navy. I am sure the same thing happens with you. You too must be finding it difficult to get money for your Navy. We are told that against China, our problem is on our land frontier and not at sea. Therefore as far as our Navy is concerned, it has a very low priority".

"When we came back, I got to know what had happened. The instructions had come from the Government, under instructions from our Prime

Minister, who had been influenced by the British and the American Governments, that we should not go to the Russians. And so in 1964, we did not take the Russian ships and submarines that were being offered to.us".

Defence Minister Chavan's Delegation to Britain

In his book, Mr Pradhan states:*

"On Chavan's return from Moscow in mid September, where he had been assured of a supply of frigates and even submarines if India so desired, there was rethinking in the Navy. Until that time, Britain had been the sole supplier of naval equipment.

"Lal Bahadur Shastri felt that before making any commitment to the Soviets, the Defence Minister should visit Britain to find out the attitude of the British Government. Apparently, the situation had become favourable with the advent of the Labour Party in 1964 under Prime Minister Harold Wilson. Chavan was not too enthusiastic since he had formed his own assessment. He had witnessed the close coordination between the USA and the UK on the quantum and scope of military assistance. During his discussions in Washington, he had been told that they would not consider military assistance in the naval field. However he reluctantly agreed to visit London and make an effort, especially when Mountbatten urged him to do so, since acquiring naval craft from the USSR would have far-reaching implications for the age-old relationship between the British and the Indian navies.

"The previous Conservative Party government had indicated its willingness to collaborate in the financing of three Leander class frigates. India wanted Daring class destroyers. Denis Healey, the Defence Secretary explained to Chavan their difficulty in offering any sizeable assistance since Britain was facing a serious balance of payments crisis. The new Labour Government was making a fresh assessment of its defence requirements and was not in a position to make a firm commitment. So far as the Indian Navy's requirements for the Daring class destroyers were concerned, he bluntly said no. Instead, they could make an offer of older destroyers which were eventually to be phased out in the British Navy. In the case of the "Oberon" type submarine, Chavan was told not to make even a formal request.

"During our stay in London, Lord Mountbatten monitored the talks closely. I guess he suggested that Chavan make one last effort to appeal to the old links between UK and India, to see if Harold Wilson and his government would relent on assistance to India.

"The communique issued at the end of the talks papered over the failure. It emphasized the British ministers' awareness of the fact that Britain had in the past been the main supplier of military equipment to the Indian defence forces. Their anxiety at India's recent efforts to cast her net further afield for defence supplies was subtly referred to. The last paragraph of the communique reaffirmed the importance which they (the Indian and British Ministers) attach "to the closest possible cooperation between the services" and expressed the hope that within the spirit of the Commonwealth partnership, close liaison would continue to be maintained between them. It was clear that while Britain could or could not assist, India was not expected to seek help elsewhere".

There were two basic reasons why Britain was unable to meet the Indian Navy's needs for destroyers and submarines. These were:

- The British Navy itself was being down-sized due to cutbacks in their budget. It was short of the type of destroyers and submarines which India wanted and could not spare any for India.
- India's needs were immediate and building new destroyers would take too long.

To meet India's desire to acquire the latest submarines rather than learn on old ones, the British agreed to re-examine whether they could provide deferred credit to build a new Oberon class submarine in Britain. Till it was ready, India could take an older submarine on loan to meet immediate needs.

The Navy's Reluctance to Switch to Russian Acquisitions

In his book "The Indian Navy's Submarine Arm", Admiral Chatterji states:**

"The Navy was reluctant to go in for Soviet ships/ submarines on several counts. All ships and

* Page 229 et seq.
** Page 42.

craft of the Navy were of British origin. Spares held in ships and depots were for the British ships. There was much commonality of equipment between various ships originating in the same country which minimise the holdings of spare-part inventories. The dockyards and shore maintenance facilities were geared up for looking after British ships. All officers and large percentage of men had received their technical training, and in many cases initial training also, in the UK and were very familiar with British equipment and the philosophy and routine for their operation and maintenance. There were no language problems for training Indian personnel in the UK on ships/submarines and in their training establishments".

The basic question now became whether or not to switch over from British to Russian acquisitions. Several objections had to be overcome. The Navy's entire administrative, training, maintenance, logistic, technical, operational and tactical procedures and systems were wholely based on those of the British Navy. All naval personnel were familiar with these aspects in the English language. Changing over to the Russian system would entail enormous change. There was considerable diffidence whether the Navy would be able to manage so extensive a change.

There was apprehension also of severance of feedback, both technical and tactical, regarding the existing British acquisitions.

Last but not least, there was the anti Russian mindset of an English speaking naval officer corps trained by the British Navy, whose impressions of Russia derived solely from what was published in England and America who were engaged in a Cold War against Russia.

There were prolonged discussions on all the implications. Even though by early 1965 it was clear that only Russia was agreeable to meet the Navy's immediate needs, the Navy remained reluctant to sever connections with the British Navy.

1965

The Decision to Acquire Russian Vessels

In 1965, Mr K Subrahmanyam was the Deputy Secretary Budget and Planning in the Ministry of Defence. He recalls:

"In March 1965, the British told us that they will not be able to give us a credit for building an Oberon class submarine.

"In early April, there was a meeting of the Secretary's Committee in which the activities of the Indonesians around the Andamans and Nicobars were discussed. The Navy stressed the need for maintaining a naval presence there to deal with this situation. On the basis of that discussion, the Navy prepared a draft paper in which it recommended that we again approach the United States, UK and Russia for naval vessels. This paper was passed through the Defence Minister who approved it and then it went to the External Affairs Minister and the Finance Minister. It came back by the end of April/early May, by which time the Rann of Kutch operations had started.

"During the Kutch incident, we found that we did not get enough sympathy from the West. In spite of our pointing out to the Americans that the use of Patton tanks was a violation of the assurances given to India by President Eisenhower and Secretary Dulles, the Americans remained unmoved.

"When the Navy's original paper was converted into a Cabinet Paper and came back to the Ministry of Defence, I happened to see it. I went through the file and felt that this was not the right approach. So I wrote a note pointing out that going back to the Americans, British and Russians was not going to give us any additional benefits because:

The Americans had already told us that they will not give us naval equipment and

The British had already told us that they couldn't give a credit for the Oberon class submarine.

"Therefore the best course was not to delay any further but to accept the Russian offer which had been pending since August 1964.

"Mr Chavan read that note and said that he fully agreed and that is the course India should pursue. Once Mr Chavan gave that decision, the file was sent back to Naval Headquarters asking them to put up definite proposals for acquisition of Soviet ships and submarines."

With the Navy's primary concern having now become the defence of the Andaman and Nicobar Islands and in view of the concern voiced by the Indian Delegation in August 1964 regarding the operability in monsoon conditions of the small ships then offered, the Russian side now offered the larger Petya class anti submarine vessels and Landing Ships.

Mr Subrahmanyam accompanied the delegation to Russia in August 1965. He recalls:

"We stayed in Russia for 15 days from Aug 15 to 01 September. We went to Sevastopol and the Black Sea Fleet. We also went to Leningrad and went to sea in a F Class submarine.

"The discussions with the Soviets were very tough. Our side put them through rigorous questioning on every aspect. At the end of it, the Russians themselves said that they were now glad that they were going to give ships to the Indians. They were confident that these ships would get looked after better and would also be more effective than those they had sold to the Indonesians and the Egyptians."

On 1 September 65, the Delegation signed an agreement for:

- The acquisition of:
  - Four submarines
  - Five Petya Class anti submarine vessels
  - a submarine depot ship. It could support submarines at anchorages in the A&N Islands, distant from the main base. And until facilities were set up ashore, it could also assist in the maintenance and repairs of submarine and Petya equipment, recharge submarine propulsion batteries, prepare submarine torpedoes, impart combat training on simulators to submarine and Petya sonar operators and attack teams on submarine and anti submarine tactics.
  - Two Polish built medium size landing ships of Russian design to carry men and material to the A&N Islands.
  - Five small 90 ton patrol boats for the Custom Department's anti smuggling patrols in the A&N Islands.
- A Russian Design Team to visit India and prepare a Project Report for setting up a new Naval Dockyard in Visakhapatnam, together with a Naval Base, a Submarine Base, a Submarine Headquarters and an Integrated Training Establishment for the ships and submarines being acquired.
- The Russian side to consider the construction in India of 500 ton patrol craft based on the specifications handed over by the Indian side.

Security of Information Regarding Russian Equipment

In view of the Cold War between the West and Russia, the Russian side was especially concerned that information regarding the capabilities and limitations of the equipment being supplied to India should not leak to the West. Assurances regarding security of information had already been conveyed to the Russian side by the other two services.

In 1965, the Russian side desired that no undue publicity be given to the naval acquisitions. The Navy enforced, thereafter, very strict security of information in Visakhapatnam.

Over the years, this unavoidable restriction led to three unforeseen and unfortunate results:

- The "need to know" criteria effectively prevented the dissemination of knowledge of Russian equipment in the remainder of the Navy.
- The annual transfers of officers and men into and out of Russian ships to give them "sea time" did not give enough time for meaningful understanding of the Russian concepts for operation and maintenance of equipment, of spares provisioning and indenting, and of technical documentation.
- Foreign warships and foreign naval visitors were not permitted to visit Visakhapatnam. The Western powers suspected that a Russian naval base was being set up. The presence of Russian guarantee specialists compounded this misconception. In Western naval and military magazines, Visakhapatnam had a red star over it, implying that it was a support facility for Russian naval ships deployed in the Indian Ocean.

1966

Indian Technical Delegation to Russia

The first Russian acquisitions to arrive in India were the Landing Ships Gharial and Guldar. Both the LSTs sailed home through the Suez Canal and were based in Visakhapatnam. They commenced ferrying construction material, equipment and stores to the A&N Islands immediately after arrival.

After seeing the first LST, it was realised that before the construction of the submarines and Petyas became too advanced, every effort should be made to try and modify them to suit Indian hot and humid climatic conditions.

The outcome of discussions was that the Russian side were unable to make any major modifications as the vessels were already under construction. The Russian side stated that the experience of Russian submarines operating in the tropics was sufficient to dispel Indian apprehensions. However, the Russian side would welcome the Indian Navy's feedback of operations in the tropics to help improve design.*

Discussions were also held on numerous technical issues like equivalence of fuels, oils, lubricants and paints, de-rating of machinery performance due to tropical conditions, supply of drawings, standardisation of engines, stowage and preservation of ammunition, manufacturing details of submarine batteries, tropicalisation etc.

Two problem areas became clearly discernible during this first technical interaction in 1966. These were to recur repeatedly in subsequent years. These were the "Indenting of Spares" and the supply of "Repair Technical Documentation" in English. The Russian side explained in detail how the Russian Navy's system worked and the Indian side tried to determine how best the Russian spares replenishment procedure could be dovetailed into the British naval procedure prevailing in the Indian Navy. From the very outset, these two problem areas - one logistic and the other technical-became vexatious. They remained so for the next ten years.

1967

Russian Naval Staff Delegation to India

In 1967, a Russian delegation headed by a submariner Admiral visited Visakhapatnam. The delegation gave detailed advice on setting up the interim facilities for:

- A submarine base, submarine headquarters, submarine exercise areas, communications with submarines at sea, submarine rescue procedure in case of accident etc.
- The maintenance of one submarine and two Petyas until the submarine depot ship arrived in 1969.
- The storage, preparation, maintenance and practice firing of submarine and Petya torpedoes.
- The training of subsequent submarine and Petya crews in India.
- The annual de-preservation and re-preservation of the growing volume of machinery, equipment, spares and stores which had already started arriving from Russia.

Interim Repair Facilities

Since the new Naval Dockyard would take several years to come up, it was decided to meet interim requirements by expanding the existing Base Repair Workshop.

Commissionings in 1967

- The five patrol boats were loaded on to Russian heavy lift merchant ships, off-loaded in Visakhapatnam and commissioned in February and March 1967.
- The first submarine, KALVARI was commissioned in the Baltic in December 1967. After the 1967 Arab Israel war, the Suez Canal had closed. The frigate TALWAR was sent to the Baltic to escort KALVARI back to India via the Cape of Good Hope. KALVARI arrived in Visakhapatnam in July 1968.

Revival of Interest in Russian Missile Boats

Russia had given missile boats to the Indonesian and Egyptian navies in the early 1960s.

The Russian side had first shown the missile boats to the Defence Minister's Delegation in August 1964. At that time, the Navy had shown no interest in these boats, mainly because no Western Navy had such boats and it was not clear how useful they would be in rough weather.

After the 1965 war, two major considerations led to the Navy's acquisition of missile boats from the Soviet Union. The main one was that these boats could deter hit and run raids on the Saurashtra coast of the type that Pakistan Navy had so successfully done at Dwarka.

In his book, Admiral Kohli states:**

"At one time, intelligence had suggested that the Pakistan Navy was considering the acquisition of missile fitted frigates. In order to forestall the dangers of a missile attack by Pakistan on Bombay, I had, on one of my visits to Russia, enquired from Admiral of the Fleet of the Soviet Union Gorshkov whether they had a mobile missile battery which could be deployed for the defence of Bombay. He replied in the negative. He was later able to persuade the Indian Navy that for the defence of Bombay and other major ports,

* Typical of the officer corps mindsets in those early years, the efforts of guarantee specialists to make notes and send feedback to the Russian factories of equipment performance in Indian conditions was viewed as spying.

** page 41.

the small Osa class of missile boats would be ideal. Their mere presence would prove a great deterrent to the enemy embarking on an attack."

The second consideration was the pressure from the Navy's young gunnery specialists to acquire missiles. Russia had already supplied missile boats to Indonesia and to Egypt. In June 1967, during the 6 day Arab Israeli War, an Egyptian missile boat sank an Israeli frigate, the EILATH, at a range well beyond the frigate's own guns. Navies all over the world woke up with a start to the effectiveness of this new Russian weapon - the surface to surface, anti ship, homing missile - which enabled a small boat to sink a ship several times its size within a matter of minutes. At one stroke, this new weapon altered the centuries old concept of prolonged gun battles between opposing warships.

The significant characteristics of the boat were an extremely thin skinned 200 ton hull, propelled by very high power engines to give a high speed of 34 knots. Being small, the boat had a very small radar cross section. Its sophisticated radar was more advanced than any other known radar - it enabled the missile boat, with its low radar reflectivity, to detect a larger ship well before the latter was even aware of its presence, to fire its missiles and to speed away faster than any other ship. The Russian naval architects had deliberately designed these characteristics, so as to give the small boats this advantage against much larger American naval ships attempting to attack the Russian coast. Basically, the boats were designed for, and had limited endurance for, only coastal operations.

In December 1967, Vice Adm Krishnan took over from Vice Admiral Kohli as the Vice Chief of the Naval Staff. In his book "No Way But Surrender", Admiral Krishnan states:*

> "To me, the acquisition of these missile boats had become an obsession. The CNS, Admiral Chatterji, was a forward looking man and it was easy to convince him that we must, under every circumstance, buy at least six boats.
>
> "When Admiral Gorshkov, the five star Supreme Commander-in-Chief of the Soviet Navy visited Delhi, we included in our discussions the question of acquiring the improved version, OSA class, missile boats for the Indian Navy. (The improved class was fitted with four missiles instead of two).These discussions gave an indication that the original offer was still open and that three boats was the minimum for a viable attack unit".

1968

The Visakhapatnam Project

In January 1968, the Navy received the Report prepared by the Russian Design Bureau on the Visakhapatnam Project. After the Report had been studied, Russian specialists arrived to clarify queries. After detailed discussions, an Inter Governmental Agreement was signed on setting up a new Naval Dockyard, a Naval Base, a Submarine Base and an Integrated Type Training Establishment for the four submarines, five Petyas, submarine depot ship, landing ships and patrol boats which had been contracted for in 1965.

To maximise indigenous content, it was agreed that a sizeable proportion of the designing effort would be undertaken in India and that a large proportion of equipment and machinery would be of indigenous origin. Later, this was to become one of the many factors which delayed the completion of the project by several years, because technically equivalent indigenous machinery was not always available.

The Missile Boats

In his book Admiral Krishnan states: (ibid)

> "We decided that we should press for the purchase of eight such boats. There followed the intense activity of preparing the ground for selling the idea to the Government. Fortunately, our Defence Minister, Mr Jagjivan Ram had taken kindly to the idea of our acquiring these boats. We got Cabinet approval for further negotiations with the Soviet Government".

Submarine Rescue Vessel

In 1968, Government approved the acquisition of a submarine rescue vessel.

Commissionings in 1968

Two Petyas, KAMORTA and KADMATT, the submarine KHANDERI and the submarine depot ship AMBA were commissioned in December 1968. The Petyas sailed for home from Vladivostok. KHANDERI and AMBA returned via the Cape of Good Hope.

By this time, the Russian Navy had come to realise that the Indians were diligent learners and

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* Page 3 et seq.

professionally far more confident than the navies they had earlier helped to train.

1969

Acquisition of Missile Boats

In January 1969, a delegation went to Moscow to discuss and finalise the acquisition of missile boats. Visits were arranged to the Russian naval base at Baku in the Caspian Sea to go to sea in a missile boat and visit a submarine rescue vessel. The Delegation signed an agreement for the acquisition of a squadron of missile boats and Technical Positions for storing and preparing their liquid fuelled missiles.

In his book Admiral Krishnan states: (ibid)

> "A team consisting of the Additional Secretary, a gunnery specialist* and some technical officers and myself proceeded to Moscow.We returned from Moscow after a successful mission. At Naval Headquarters, the operational staff were jubilant and wanted to name this secret project as 'November Kilo', after my initials.However I vetoed this in favour of 'Alpha Kilo', the initials of Admiral AK Chatterji. We plunged into a hectic programme of selection of personnel to proceed to the Soviet Union for training and manning the eight boats, their base facilities and the 'Technical Positions' which stored and prepared the missiles."

Training of Crews in India

As soon as the first two Petyas, KAMORTA and KADMATT arrived in Visakhapatnam, they started being used as "floating classrooms" so as to minimise the duration of training in Russia of the subsequent crews.

The crews of KAVARATTI and KATCHALL, the fourth and fifth Petyas, which had been trained in Visakhapatnam, were deputed to Russia for just 6 weeks to take over the ships and sail them back to India. The Russians were impressed with their efficiency and professional knowledge, considering that they had neither received any training in Vladivostok nor had adequate training facilities been set up in Visakhapatnam.

Commissionings in 1969

The last three Petyas KILTAN, KAVARATTI and KATCHALL, and the last two submarines KARANJ and KURSURA commissioned in end 1969.

The last of these commissionings completed the acquisition programme of the ships and submarines contracted for in 1965.

1970

The Induction of the Missile Boats

During 1970 and 1971, extensive infrastructure was set up at Bombay. The headquarters of the Missile Boat Squadron was set up temporarily in INS TRATA in South Bombay as 'TRATA II', which was later to become INS AGNIBAHU. The Technical Position was set up temporarily in a secluded World War 2 camp known as Cheetah Camp near Mankhurd in north Bombay. Siting boards were finalised for locating the permanent Technical Positions.

No consensus could be found on how best to protect the thin skinned hulls from the rapid bottom fouling and corrosion which affected all ships hulls in tropical waters. One view was that they should not be left in the water until actually required to go to sea - they should be hauled up on slipways and stowed on concrete hards. Since these hards would be both expensive and time consuming to construct, and would also entail dredging, the idea had to be given up. Eventually, they were berthed in the Wet Basin of the Naval Dockyard Bombay. And the bottom fouling, which over time had begun to seriously reduce their speed by as much as 10 knots, was removed just before the commencement of the war in 1971.

Personnel completed their training in Russia in March 1970, and acceptance trials of the boats started in mid 1970. To conserve their machinery, the boats were lightened and loaded on to heavy lift merchant ships and transported to India. Since unloading the boats required a 200 ton crane and the only such crane in India at that time was in Calcutta, all the boats were unloaded at Calcutta, depreserved and prepared for being towed all the way from Calcutta, around Ceylon to Bombay. This towing task was given to whichever ship was conveniently available for towing at the time that a boat was ready for tow.

Repair and Refit Facilities

In 1968, it had been agreed that till the new Dockyard was ready in the mid 1970s, the Base Repair Workshop in Visakhapatnam would be expanded to provide the minimum essential facilities for carrying out normal maintenance and annual repairs.

* The author was the gunnery specialist.

By mid 1970, an enormous backlog of problems had built up, caused by defects in the functioning of equipment, lack of spares and technical documentation and inadequacy of repair facilities ashore. With increasing slippage also being anticipated in the completion of the Dockyard and with major periodic refits becoming due from 1970 onwards, concern began to mount.

In 1970, the Russian side sent a Technical Delegation to resolve the problems caused by snags experienced in operating the Russian acquisitions, inadequate availability of essential oils and lubricants, non-availability of essential spares, difficulty in obtaining vital technical data and drawings, practical difficulty experienced in identification of spare parts, and the delays in the construction of the Naval Dockyard. Interim solutions were agreed upon.

1971

Acquisition of More Petyas and Submarines

In mid 1971, it was decided to acquire five more Petyas and four more submarines because the series production of these vessels in Russia was coming to an end. The Navy wanted these acquisitions to incorporate the additions and alterations which had been identified for improving their performance. A delegation went to Moscow to discuss these issues and also discuss how to cope with the major refits of the earlier vessels, since the new Dockyard was delayed.

Technical discussions were held with the designers to increase the endurance of equipment by augmenting air-conditioning capacity, improve the performance of equipment and incorporate the improvements considered necessary in the light of experience gained in operating in tropical conditions. The Russian side agreed to supply three Petyas ex stock of 1968/1969 vintage and to build two new Petyas. In both cases, the modifications suggested by the Indian side would be incorporated to the maximum extent possible.

In the case of the submarines, all four would be newly built, be fitted with the latest available equipment and incorporate all the modifications which the Indian side had suggested.

In view of the Petyas and submarines being fitted with new types of equipment, it was agreed that all the repair facilities being created in the Naval Dockyard, Visakhapatnam would be augmented.

As regards coping with the foreseeable backlog of major periodic refits, the most that could be achieved was a consensus on expediting the completion of the new workshops and phasing out the forthcoming refits to avoid bunching.

The Induction of the Missile Boats

Until early in 1971, a number of boats were towed, one at a time, by a variety of towing ships, using the conventional towing hawser -anchor cable method of towing large ships at sea. Unfortunately, these time-tested methods had not been designed to tow thin skinned boats, whose towing bollards were welded to equally thin decks and whose anchors and anchor chains were light in weight and where the space on the foxle could not accommodate all the men required to pass and slip the heavy, all weather, towing gear. The Russians had fitted a necklace, which went all the way around the hull, and which was kept above the water by brackets welded to the hull. This eased the stress on the thin skinned hull, but the cumbersome heaviness of the conventional towing gear still remained a serious problem.

In early 1971, two training ships, KISTNA and TIR, were nominated for towing duties.* TIR, on her way up to Calcutta, encountered KISTNA on her way down from Madras. KISTNA's tow had parted in heavy weather and her anchor cable, piled up on the bottom of the sea, was being laboriously hauled up manually. It was clear that some solution had to be found for this seamanship problem. On arrival at Calcutta, TIR scoured the merchant navy's ship chandler market and found that large size nylon hawsers were available, which merchant ships were using as berthing hawsers. Each such nylon hawser cost over Rs one lakh. TIR managed to persuade Headquarters Western Naval Command to sanction two such hawsers for towing two boats to Bombay.

TIR set off from Calcutta one day, using nylon hawsers to tow two boats simultaneously, one on each quarter. Fortuitously, the Squadron Commander of the missile boats was embarked in one of the boats under tow. An article in the naval magazine Quarterdeck 1996 recounts the subsequent events on passage to Bombay:

"The nylon tow from Sandheads to Visakhapatnam was uneventful and trouble free despite inclement weather. The nylon floated on water and was therefore easily grappled by the men on the missile boat's foxle. As speed was

* The author was the Commanding Officer of TIR.

slowly and steadily increased, the nylon rope stretched and became bar taut like a steel wire rope. Lt Cdr (later Vice Admiral) SK Chand, TIR's XO, was able to provide Cdr (later Commodore) BB Yadav and his missile boat crews with hot meals and even medical supplies by sliding them along the tow ropes to and fro. Soon a telephone line was passed the same way for round the clock two-way communication. Every morning at 0800 hrs Cdr Yadav would come up on the line and say "Allah be praised for another incident free night". Both missile boats kept their engines and machinery switched off to conserve running hours.

"In Visakhapatnam, one boat was detached and the tow was to be continued with Cdr Yadav's boat. Both ships agreed that it would be worthwhile determining the maximum safe towing speed with this nylon arrangement. Careful precautions were taken to pad both ends of the towing nylon which might chafe with the towing fairleads and bullring. This was because once the nylon was bar taut, chafing instantly caused individual nylon strands to part and continued chafing would part all the strands. These precautions proved their worth. Ten to twelve knots were made good from Visakhapatnam to Cochin. All non-watchkeeping officers of TIR were put into an organised watch system on the quarterdeck to keep an eye on the tow. This paid rich dividends as they were able to take timely action to avoid chafing of the rope.

"As a result of the steady confidence now built up in towing by nylon, it was agreed that we should try and do better but safely. With the confident seamanship and alertness of both towing ship and towed missile boat crews, it became possible to achieve a towing speed of 16 knots. This speed was nearly the maximum that TIR's reciprocating steam engines could do. With repeated drills and good seamanship the boat could be taken in tow and slipped in minutes. The engine room crews of both ships became eager to determine if we could safely achieve even higher speeds, because by now the tactical possibilities of using nylons to tow missile boats during combat were becoming increasingly apparent. On the last night before entering Bombay, TIR doing full power, towed the missile boat at 17 knots without any adverse effects on the shaft locking arrangements of the missile boat.

"After securing alongside, the Co TIR handed over to the C-in-C, a two foot length of six inch nylon rope with the formal report on the towing speed achieved and recommending that the towing of missile boats using nylon ropes be accepted as a practical proposition during war.

"Later that year, the missile boats led by Cdr Yadav were to achieve spectacular results in their missile attacks on Karachi".

Commissionings in 1971

All eight missile beats were commissioned in Calcutta, after being unloaded. They arrived in Bombay by mid 1971.

The submarine rescue vessel NISTAR arrived in Visakhapatnam in the autumn of 1971.

5

Mazagon Docks and the Leander Frigate Project

Preamble

Until the 19th century, Mazagon Docks (MDL) used to build wooden hulled warships for the British Navy. In 1929, the 18 gun frigate "Tigris" and the 6-gun schooner "Shannon" were launched from MDL. As steel hulls gradually replaced wooden hulls, warship building in Bombay declined. The last warship to be built by MDL was the 80 gun ship "Madras", (renamed "Meanee"), in 1848.

Meanwhile the British Peninsular and Orient Company, (P&O) started a passenger ship service in 1842 from Suez to the Indian peninsula, initially to and from Calcutta and later to and from Bombay. This was the first of P&O's three main imperial routes - the others being to the Far East and Australia.

In 1914, P&O acquired the British India Steam Navigation Company (BISN) which was managed by Mackinnon Mackenzie of Calcutta. This 'P&O Group' became the main operator for India's coastal passenger traffic. Its services linked India with the Persian Gulf, the Far East and East and South Africa. Mazagon Docks Ltd (MDL) at Bombay and Garden Reach Workshops (GRW) at Calcutta were developed by the P&O Group to maintain their ships in Indian waters. For many years, the P&O Group held a controlling interest in the Mogul Line. After Independence, from the early 1950's onwards, MDL, GRW and the other small construction yards started meeting the nation's need for small vessels and harbour craft.

During the Second World War, an urgent need had arisen to build merchant ships in India to replace Britain's wartime losses. The Scindia Steam Navigation company was given a site at Visakhapatnam. The first Indian built merchant ship was launched in 1948. In due course this yard was taken over by the Government and renamed Hindustan Shipyard Limited (HSL).

Acquisition of MDL and GRW

In 1956, the P&O group offered to sell MDL to the Government of India. The Planning Commission's reaction to this offer in July 1956 was "the demand for ships of 4000 GRT and below, especially for new ships, and the demand for old harbour craft are so small that it would not be advantageous for Government to consider taking over Mazagon Docks merely for the construction of smaller vessels" (Material from MDL).

In 1957, Mr Krishna Menon became the Defence Minister. He was determined that India should be self reliant for its basic defence requirements like tanks, warships and aircraft. It was clear that HSL would be overloaded if given the task of warship building and that only MDL and/or GRW could build large warships. He appointed a committee to look into MDL's capabilities and limitations, with a view to build frigate sized warships in India.

After protracted negotiations under Mr Krishna Menon's forceful leadership, the Government of India in a package deal purchased MDL and GRW for 12.1 million pounds (approx Rs. 3.85 crores) on 19 April 1960. The package deal provided for part of the payment to be adjusted towards repairs of P&O Group ships after take over.

Modernisation of MDL

In November 1960, Government approved in principle that three Leander class frigates should be built in India. Soon thereafter, MDL submitted a preliminary report on the facilities required to modernise MDL for building frigates.

MDL was a 35 acre site, needing extensive modernisation and expansion before it could build frigates. On its northern boundary was Kasara Basin, a low lying, neglected wharf belonging to the Bombay Port Trust, and occupied mostly by fishing vessels which rested on mud at low water. On MDL's southern boundary was the jeep assembly plant of Mahindra and Mahindra, on lease from the P&O Group since 1949 until 1962. Under Mr Krishna Menon's nudging, Mahindras vacated the South Yard in 1962 and the Bombay Port Trust leased Kasara Basin to MDL in 1963.

MDL had two medium size dry docks - one for seagoing ships and one for harbour craft - and a number of slipways which could accommodate

coasters and lighters up to 150 tons. Though MDL's primary activity was ship repair, it did not have any alongside berths. Repairs had perforce to be undertaken in Bombay Port Trust berths.

After receiving MDL's preliminary report on its requirement for additional facilities, the Government retained the British firm of Alexander Gibbs and Partners (who were also consultants for the Expansion Scheme of Bombay Naval Dockyard) to advise and prepare plans for expanding MDL's facilities, both for ship repair and ship construction. Keeping in view the imminent construction of frigates, their major recommendations were to:

- Convert the Kasara tidal basin into an impounded wet basin for fitting out three to four ships at a time after they had been launched.
- Construct the first long slipway on the south side of MDL, together with ancillary fittings like cranes etc.
- Create fitting out berths, fitting out shops, prefabrication shops, etc.

By end 1963, the plan for impounding the Kasara Basin had been approved and the construction had started of the 450 foot slipway in the South Yard. Since the collaboration for the Frigate Project was still under discussion, the final layout of the yard and the siting of shops were kept pending till the finalisation of the frigate building contract.

By 1968, most of the civil works for MDL's modernisation had been completed. The Kasara Basin was flooded on 23 August 1968 in time for NILGIRI, the first frigate launched on 23 October 1968, to be towed into the new impounded wet basin and secured alongside for fitting out.

Goa Shipyard

Immediately after Goa was liberated, the Government of India directed MDL to take over responsibility for the Estaleiros Navais de Goa (Goa Shipyard) on 19 December 1961. In April 1962, Goa Shipyard Ltd (GSL) was leased to MDL. This lease was terminated on 30 September 1967 and GSL made a subsidiary of MDL. GSL undertook ship repair, built barges and fishing trawlers to start with and started building warships in the 1980's.

MDL Starts Warship Refits

From 1963 onwards, the Navy started off-loading its ships to MDL for major refits, involving overhauls of boilers and extensive hull renewal. By this time, the first Warship Overseeing Team had been appointed.

Selection of Shipbuilders for Collaboration

On 25 November 1960, Government approved in principle that three Leander Class Frigates should be built in India. MDL submitted a preliminary report on the civil works, machinery and equipment required to undertake this project. At this stage, Government deputed a team of three senior naval officers to Britain to discuss with the Admiralty, the collaborating shipbuilders and the armament suppliers, the step to be taken for building the first modern major war vessel in India. The team was to submit a project report and recommendations on the arrangements to be made by NHQ and by MDL to execute the project expeditiously and economically. The three officers were Captain (L) KR Ramnath, the Director of Stores Production (Navy), Captain (E) BP Sinha, the Director of Naval Construction and Captain (E) CL Bhandari, the Managing Director of MDL. This team's discussions and recommendations laid the foundation of the subsequent negotiations which culminated in 1964.

The overall framework of collaboration emerged as follows:

- The Admiralty, as the owners of the Leander design, would:
  - provide guidance drawings to the shipbuilder
  - authorise the supply of working drawings to MDL
  - vet the line plans produced by the shipbuilder
  - keep the shipbuilder and NHQ informed of all modifications and Alterations & Additions envisaged by the Admiralty for their own Leanders during construction
  - inspect all machinery and equipment ordered, on payment of agency charges
  - supply armament and Admiralty items on the usual Government to Government contract
  - advise on the terms of collaboration and the contract with the shipbuilder
  - train Indian naval and civilian personnel in overseeing and testing and tuning of armament
  - provide security clearances
- The Shipbuilder's responsibilities would be :
  - supply of working drawings, lists of machinery equipment, copy orders for all materials, and fitting lists for the construction of the ship in India and assist ance with technical know-how and advice
  - supply of main machinery and boilers. The main engines to be built in India under license from the English Electric Company

- ordering of special 'B' quality steel and sections required for the Leander
- ordering of auxiliary machinery and equipment required for the ship, subject to the usual conditions of inviting multiple tenders where appropriate or proof of economical prices from nominated contractors
- assistance to Mazagon Dock with technical personnel, on terms to be negotiated, to ensure completion of the ship according to programme
- assistance in training of personnel from the Mazagon Dock in their yard in the United Kingdom
- provision of facilities to the Indian Naval Overseeing Team for training in their shipyard
- supply of shipbuilding stores, advice and active collaboration as regards suitability and necessary modifications to indigenously produced stores and equipment to be incorporated in the ship
- to seek and provide the necessary guarantees for machinery and equipment built on sub-contract and for the general performance of the ship as a whole
- to arrange for ordering, packing and despatching of all machinery, equipment and stores, according to a phased programme to fit in with the construction programme in India

• The armament supplier would supply the weapons and associated control systems.

Summary of the Team's Report and Recommendations

'As a result of our discussions with the various departments of the Admiralty, Messrs Yarrow and Co, M/S Vickers Armstrong Ltd. and other parties in the United Kingdom, we have reached the conclusion that the construction of Leander Class Ships in Mazagon Dock in collaboration with Shipbuilder/ Shipbuilders is a feasible proposition.

'The immediate requirement for undertaking this project is to begin the construction of the slipway and pre-fabrication shop in Mazagon Dock and to conclude a collaboration agreement, so that the forward planning, examination of building drawings, investigations in regard to indigenous materials and the like can proceed. It is estimated that two years would be necessary to provide the additional facilities in Mazagon Dock, but the keel can be laid as soon as the slipway and the pre-fabrication shop are ready. The cost of the additional facilities is estimated at Rs 2.25 crores and the detailed project report is being prepared by Sir Alexander Gibbs & Partners.

'The Leander is the most modern warship of its class under construction in the United Kingdom. The design is a proven one and its construction is well established. We consider that the specifications of the ship to be built in Mazagon Dock must generally conform to the existing Leander. There is no scope for any major alterations, particularly in respect of armament and speed. It was stated by the Admiralty that a slight sacrifice of speed has been deliberately accepted in order to improve the sea-keeping qualities, put in a much greater amount of sophisticated equipment such as a helicopter, improve the endurance, reduce maintenance problems and ensure a longer useful life than a faster ship of the same displacement. It is obvious that to obtain greater speed for the same displacement, the machinery would take up much greater weight and space, and this can only be done at the expense of equipment and endurance.

'To complete this project economically, efficiently and in good time and to produce ships of a high standard, the closest co-operation would be necessary between Naval Headquarters, Admiralty, Mazagon Dock and the collaborating firm/firms in the United Kingdom. In this respect, we consider that the co-operative attitude of the British Admiralty and the interest shown by two well established firms, namely Vickers and Yarrows, promises well for the project. Both these firms are deeply conscious of their world wide repute and appear to be anxious to ensure the success of the project in keeping with their reputation.

'We consider that there is considerable scope for incorporating indigenously produced equipment and materials in the ships to be built in India. We estimate the Rupee element of the first ship to be about 50% of the total cost. This will progressively increase for the second and the subsequent ships. In this respect, we feel that a great deal can be learnt from the experience of Australia and Canada. Australia has achieved considerable progress in manufacturing turbines, boilers, gearing, guns and armament for the Type 12 Frigates being built in Australia.

'In order to ensure the efficient maintenance and operation of the advanced mechanical and electrical equipment fitted in these vessels, the Training Schools of the Indian Navy and the Naval Dockyard would have to be provided with proper shop equipment and facilities. Naval Headquarters would

also have to take on the preparation of ship maintenance schedules, provision of Base and Depot spares and make arrangements for the commissioning and putting into service of these vessels.

'Naval Headquarters would also be required to set up an organisation for undertaking most of the functions of the Admiralty vis-a-vis a private shipbuilder in the United Kingdom. These can be summarised as Headquarters, Overseeing and the liaison in the United Kingdom. A number of technical personnel, both naval and civilian, would have to be deputed abroad for specialised training in overseeing and fitting out of the equipment.

'The order of cost for the construction of a Leander Class Frigate in the United Kingdom is estimated to be 5.25 million pounds. The estimated cost of building the first ship in Mazagon Dock is Rs 8.5 crores, i.e., 20% above the U.K. cost. It is anticipated that the cost of the subsequent ships will decrease. The total cost of the project is estimated to be Rs 24.8 crores. The foreign exchange requirement is estimated at Rs 12.7 crores.

'The extension of facilities at Mazagon Dock by way of Capital improvements e.g. New Slipway, Prefabrication Shop, equipment and the like is estimated at Rs 2.25 crores, out of which Rs 65 lacs will be required in foreign exchange.

'Allowing 2 years from end 1961 for completion of work in Mazagon Dock, the first ship is expected to be available in end 1967, the remainder at 18 month intervals. The programme of 3 ships will thus extend to end 1970.

'The team recommends:

- That approval be accorded to the construction of three Leander Class Ships at Mazagon Dock, Bombay in collaboration with Messrs Yarrow & Co Ltd, and Vickers Armstrong Ltd on terms to be negotiated. Messrs Vickers Armstrong Ltd have undertaken to forward technical proposals in collaboration with Messrs Yarrow & Co.
- That the Civil Engineering works, namely the construction of the slipway, pre-fabrication shop, fitting out basin and other works required in Mazagon Dock, Bombay, should be put in hand as soon as possible. The keel of the vessel cannot be laid till at least the slipway and the pre-fabrication shop is completed. It is obvious that the capital improvements of the facilities in Mazagon Dock will be of great benefit to the Yard and the country, quite apart from the Leander Project and these will be available in the future for other constructions.
- That subject to the report being accepted by the Government, the next step of drawing up the contract with the collaborating firms should be tackled in two stages:
  - The contract be drawn up by the Ministry of Defence, Finance in consultation with Naval Headquarters and Mazagon Dock and
  - The draft contract be discussed jointly with the Admiralty and the representatives of the collaborating firms. It is recommended that for this purpose representatives from Ministry of Defence, Finance, Naval Headquarters and Mazagon Dock visit U.K. to finalise the contract on the spot. The scope of modifications to the Leander to meet Indian requirements should also be finalised during this visit.
- That Government approval be accorded for the required personnel and their training. We have limited our recommendtions in regard to the personnel to the bare minimum consistent with the work load of the first ship. As the programme gets underway and the second and third ships are taken in hand, further increases in personnel must be provided. However, as experience is gained and a trained cadre is built up, economies in the use of technical manpower would be possible in relation to the total programme. It is considered essential that the cases for personnel for setting up the various teams should be processed as quickly as possible as and when put up.
- That at every stage of progressing the case through the Governmental machinery, the need for quick decision be kept firmly in mind. We would like to place it on record that the whole project lasting over several years has to be executed in a phased programme and if there are administrative delays in financing, placing of contracts, giving approval for essentially required personnel, the whole project may be thrown out of gear and its completion date and ultimate cost may become unpredictable. In our discussions in U.K, it was made clear to us that in shipbuilding, a critical hump is reached after launch, when fitting out begins. If delays occur in fitting out, due to the equipment or personnel not being available at the appropriate stages of the fitting out, a vicious circle of deterioration of the equipment already installed begins at one end while, new equipment is being fitted at the other end.

Vickers/Yarrow Report on Facilities Required in MDL

From the British side, a team of officials from Messrs Vickers Ltd and Messrs Yarrow Ltd conducted an extensive survey of the facilities available in India and produced, in 1962, their proposal to build Leander class frigates in Mazagon Docks.

Final Technical - Economic Assessment of Frigate Design Options

In mid 1962, a delegation was sent to make a final technical-economic assessment of the Vickers/ Yarrow proposal vis-a-vis collaboration proposals subsequently received from Sweden and Holland. Rear Admiral (later Admiral) SM Nanda, who was Deputy Chief of the Naval Staff, led this delegation.

Admiral Nanda recalls:

"We went to Sweden first, then Holland and then to UK. We visited the shipyards and saw their facilities. The facilities of all three shipyards were good.

"The next consideration was the equipment that was going to go into the ships. Where was the equipment going to come from? The third consideration was what support could we expect for spare parts during the ship's life? What interaction could we have on the usage of the ships as well as the equipment and weapon systems fitted on the ships with the other Navies who were going to use these ships.

"The Swedish shipyard was very keen to assist us. However, I was informed that Sweden was not interested in this type of ship at all because the Swedish Navy's requirements were different - their environment was different, their seas were narrow and their area of operations very limited as far as their maritime boundaries were concerned. I felt that if their Navy was not interested, it was obvious that we could not depend on Sweden for lifetime support of the equipment and the weapon systems that were going to be fitted in the ship. Nor could we have interaction with them as to their experience or any problems that may arise in the operation or maintenance of these ships. The choice narrowed down to either UK or Holland.

"We found that Holland was getting their technical inputs from UK. The Leander, which was designed by UK, was going to be built under license in Holland with the designs which were going to be acquired from the United Kingdom. They were going to make certain changes and they were going to put in radars and associated equipment built in Holland in place of what was being fitted in the UK ships. Holland too, was extremely keen to collaborate and transfer technology to us.

"Then we visited UK and held discussions with Yarrow who were building a large number of Leanders for the British Royal Navy. After the Second World War, the Leander was the first standard, frigate-sized ship that the Royal Navy had designed and they were going to have several ships of this class. The UK too were very keen to help our frigate project.

"I came back and I recommended that we should negotiate with the United Kingdom, because it gave several advantages, in as much as the language problem was not there, which was going to be a problem, both with Sweden and with Holland. Secondly the equipment that was going to be used was British equipment, which we already had, because all ships of our Navy were of British origin. Thirdly that as the Royal Navy was going to acquire a number of these ships, we could depend on support for spare parts during the lifetime of the Leanders that we were going to have in our Navy. Overall, it was in the Navy's interest to collaborate with the UK, with whose Navy we could discuss problems experienced in operation, maintenance, indigenisation, modernisation and so on. This recommendation was finally accepted by the Government.

"There were a lot of questions raised in Parliament after this recommendation was made, as to why we had gone to the British. I was sent for by Defence Minister Chavan to explain to him the reasons why we were recommending the British option and not the Swedish option. The Defence Minister mentioned that there was a lot of lobbying by Swedish interests who were getting our MPs to ask a lot of questions on this particular project and he needed to be fully apprised of the situation as it existed. After I gave him all the reasons, he was satisfied, he was able to answer all the questions in Parliament and the British Leander Project was approved in association with Yarrow".

The Choice of the FSA 34 Leander Design and Finalisation of Agreements in 1964

In their earlier discussions since 1961, it had been agreed that the Admiralty would give India the FSA

29 Leander design which had already been introduced in the Royal Navy. During the intervening years, whilst discussions and negotiations were going on, the Admiralty had decided to introduce for their Navy, a modified design called the "FSA-34". In this design, the beam was broader by 2 feet (0.61m). It incorporated the latest equipment modifications and made provision for incorporating future modifications.

During the Defence Minister's visit to Britain in November 1964, the discussions on the Frigate Project covered three major aspects.

- *The Choice Between the Earlier FSA 29 and Later FSA 34 Design.*

The advice of the British MOD (Navy) and Vickers Armstrong (Shipbuilders) was that:

- The FSA 29 Leander design had been superseded by the FSA 34 Leander design. India should therefore go in for the latest FSA 34 design.
- The time delay caused by the working drawings having to be redrawn would not exceed 12 months. Since MDL could only lay the keel in mid 1966, this delay would get absorbed. The cost difference would be about 200,000 pounds. The FSA 34 design gave both added stability and extra space.
- Adoption of the FSA 34 design would make it easier to obtain the latest equipment and machinery being fitted in the British Navy's FSA 34 Leanders.

- *Technical Assistance to be Rendered by the MOD (Navy) UK.*

The scope of assistance would be incorporated in an inter-Governmental Memorandum of Agreement. This would cover the design fees of 50,000 pounds per ship for the hull and 20,000 pounds per ship for the main machinery to recover the costs incurred by the Admiralty for research, development and design of new equipment.

- *Technical Aid Fees to be Paid to Vickers Armstrong (Shipbuilders).*

This fee was for providing technical assistance to enable Mazagon Docks to construct three Leander Class frigates and included elements for "on the job" training of Indian personnel in the UK shipbuilding yard and for the Indian Frigate Project Organisation (IFPO) to be set up in the UK.

A credit agreement was signed under which the British Government agreed to provide a special loan of 4.7 million pounds to meet the external costs, during the first four years of the programme, for expansion of MDL's facilities to construct three Leander Class Frigates.

By end 1964, all the major aspects of the collaboration had been finalised. In addition to the technical aid fees, an annual amount 40,000 pounds was to be paid for the Indian Frigate Project Organisation in Newcastle, whose function was to liaise with the Lead Yard, Yarrow (Shipbuilders), who were to provide the basic working drawings for the construction of the first Leander in India.

The Memorandum of Agreement for the Leander Frigate Project, known as the "Blue Book", was signed on 22 December 1964, between the Government of India and Vickers/Yarrow. The Blue Book covered three aspects:

- Technical Aid, including the provision of basic technical drawings and the placing of 60 British technical and other personnel, from Senior Managers down to Foremen level, to assist MDL in the project.
- Supplies of major items from Vickers/Yarrow and
- Supplies of material from other United Kingdom suppliers.

This Memorandum became operative on 27 January 1965, when a parallel agreement was signed between the Government of India and the Ministry of Defence (Navy) UK. The agreement authorised Vickers/Yarrow to operate the agreements in the Blue Book. The parallel agreement related to the payment of design fees of 400,000 pounds to the Ministry of Defence (Navy) UK for the training of Indian personnel in Royal Navy Dockyards, the supply of Admiralty pattern items of stores and equipment, the scrutiny of quotations and the inspection of material and equipment on behalf of the Government of India.

The Government of India then placed an order on MDL for the construction of the first frigate. The salient features of the agreement with the MDL were:

- The work was to be undertaken at cost plus a profit of 5% on the total cost of construction, provided that the profit to be allowed shall not exceed Rs. 140 lakhs.
- A Warship Overseeing Team was given the authority to monitor the work.
- Naval Headquarters was authorised to make deviations from specifications and any modification to accepted drawings.
- Strict quality control was to be exercised by the Director General Inspection (DGI) and the Warship Overseeing Team (WOT).
- The provisions of the Official Secrets Act were to be made applicable to safeguard security.

- Force Majeure clause was to be applied for unforeseen or untoward occurrence requiring revision of the date of delivery.
- The methodology of accounting and periodic payments for the work executed were spelt out and adequate provision made for advance payments.
- Basin Trials, Sea Trials and Repeat Trials for the work performed on the hull, machinery, electrical installations and other equipment were provided for and the onus of rectification placed on MDL.
- A warranty clause made MDL responsible to make good any defects onboard detected within a period of twelve months after delivery.

Positioning of Top Management

After the frigate contract was signed, the Government appointed to MDL the two key persons who had been closely associated with the Frigate Project during the negotiations. Mr HC Sarin ICS was appointed Chairman MDL on 7 November 1964, in addition to his duties as Secretary Defence Production in the Ministry of Defence. Rear Admiral (later Admiral) SM Nanda, who had been associated with the project as Chief of Material in 1961/62 and as Deputy Chief of the Naval Staff in 1963/64, was appointed Managing Director MDL on 14 December 1964. Mr Sarin remained Chairman MDL for five years till 28 Sep 1969. Rear Admiral Nanda handed over to Rear Admiral BA Samson on 3 May 1966, who later also became Chairman MDL until he retired on 15 May 1973. He handed over to Vice Admiral EC Kuruvila who was Chairman MDL until 1976. This close association of the Ministry of Defence Production, NHQ and MDL and the long tenures of the top management were to prove invaluable for the timely and successful resolution of innumerable teething problems of the Frigate Project.

The Problems to be Overcome

Whilst Naval Headquarters had the satisfaction of having signed for the latest available Leander design, the FSA 34, the first British Leander of the FSA 34 series was not expected to be commissioned in the Royal Navy before 1969. Expectedly, there was scepticism of whether MDL would be able to build in India a sophisticated warship as modern as what the British Navy would have.

The sceptics, both in India and abroad, had sound reasons. Those in Britain who had been building warships were well aware of the complexity of coordinating practically every aspect of naval architecture, marine engineering, electrical and electronic technologies. Those in India knew that the MDL faced several formidable challenges:

- The MDL's expansion scheme would have to be carried out fast enough to meet the cardinal dates of the frigate construction programme.
- At the same time, MDL's existing activities could not be slowed down. Ship repair and new construction work already contracted for had to be completed on time.
- MDL's traditional activity had been ship repair and building auxiliary vessels. This required a relatively lower order of skills than that required for warship building. MDL's workforce was not conversant with warship technologies. A massive training programme, both in India and abroad, was inescapable.
- The rigorous specifications of the materials and the equipment required for warship construction, so as to obtain absolute reliability during combat, were much higher than the equivalents commercially available in India. The range of materials required for warship building was not available in India. Moreover the small order quantities of the frigate project made it uneconomic for any Indian company to indigenise. Import substitution would therefore be a long drawn out process, entailing dependence on imports, with all its attendant delays.
- Though shipbuilding was basically assembly work, the standard of workmanship required, the special materials, the restricted space in which work had to be done and the volume of closely inter-related and inter-dependent activities would make time bound completion doubly difficult.

Delays in Construction of MDL Facilities

The basic facilities required to begin the Frigate Project started to fall behind from the outset. As mentioned earlier, the Government, while approving MDL's expansion scheme, had advised postponing the siting of the Plater & Assembly Shop (P&A Shop) until the type of warship to be built and the collaborators had been finalised. This delayed the construction of the P&A Shop. The civil works of the P&A Shop were completed only in 1967, well after the keel of the first frigate had been laid. The installation of machinery and the laying of the services in the P&A Shop continued throughout 1967 and 1968, until the first frigate was launched.

The construction of slipways in the South Yard was also delayed due to the unexpected soil conditions. The resultant re-planning upset the expansion schedule, which in turn delayed the installation of the cranes. At every step, there was some unforeseen difficulty or the other, resulting in revision of plans and compelling improvisation and innovation.

Admiral Samson, recalls:

"The Platers & Assembly Shop, the very basis for ship-building, was not ready, since that particular contractor had been unable to adhere to any schedule after several revisions. Thus the first plate for the future NILGIRI, could only be laid in the Machine Shop on May 16, 1966. This was just a simple steel plate on which a coconut was broken.

"When the three slipways in South Yard got ready, there were no cranes. When the contractor was finally given notice to quit, he promptly obtained an injunction against the work being carried out by anyone else. It is to the credit of the particular judge that we were able to vacate this injunction in an incredibly short time. Only thereafter could a new contractor be selected and engaged.

"The Platers & Assembly Shop, with all its internal facilities etc, virtually came into full being only after the first frigate was launched in October 1968. This one instance alone clearly shows how difficult it was for a young and inexperienced Yard to adhere to any kind of schedule, much less trying to complete the hull on the slipway, in what could be termed as in a reasonable amount of time.

"As an instance of making-do and improvising with such equipment and machines that were available in the old Yard, the machining of the base plate for the twin 4.5 inch gun mounting is particularly interesting. The diameter of this machine was such that we seriously considered importing a very expensive machine from Italy just for this purpose. But its purchase would have meant foregoing import of other equally vital machinery and equipment. So we improvised with an existing machine in the Machine Shop that was over 100 years old. We raised the huge machine by a couple of feet, re-set it, and then machined the circular base plate. It was an extremely slow process and required much skill by the operator to achieve the required accuracy. But we did it and saved much foreign exchange. It speaks volumes for the ingenuity of the officers and men in the Machine Shop".

Training in Britain for Constructing Frigates

Vickers made the generous gesture of starting the training of Indian personnel from the Navy and from MDL even before the contract was signed in October 1964.

The skills required for warship building were vastly different to those for construction of merchant ships and totally different to those needed for ship repairs. There were over 35 warship building trades as against only 10 merchant shipbuilding trades. A complete re-orientation of training was therefore necessary.

MDL deputed a number of its senior and junior officers for training in the shipyards of Vickers and Yarrow, for periods ranging from six months to two years. A small body of about 150 workmen of all categories were also deputed to these shipyards to observe at first hand the techniques for building and fitting-out. When these officers and men returned to MDL, they in turn trained other officers and men while actually building the first frigate.

Lt Cdr (L) (later Captain) S Prabhala was in the first team who went to Vickers for training in early 1964. He recalls:

"Since Mazagon Dock did not have qualified people in all disciplines, some of us from the Navy were deputed to Mazagon Docks. On the Construction side we had Cdr AN Thukral, on the Engineering side we had Cdr YP Batra and on the Electrical side myself. There was a civilian counterpart to each of us from Mazagon Docks. On the Construction side it was Mr Choksi, on the Engineering side it was Mr Dom Menezes and Abraham and on the Electrical side it was Mr Kharas.

"Apart from two from each of these three disciplines, we also had people from the drawing office and also some from the foreman category of technicians for electrical, shipwright engineering, plumbing and so on.

"The fact that Vickers wanted such a large number to come there for training, we realised later after we went there, was because ship building in the UK in those days was still an art rather than a science, in the sense that not much was planned in advance. People went by what they did in the past. There was'nt any formal training in the sense that this is the way you start building a ship, this is how you plan the

procurement or this is how you proceed with the construction or the fitting out. We were just left to observe what they did. It we wanted any clarifications, we were told to ask questions from the people on the berth. What we could learn was entirely on the basis of how much curiosity and how much willingness to learn we displayed. This was an eye opener.

"It was really what you call on the job training', you were just thrown into the works and you picked up whatever you could. There was no formal training, there was no formal planning system. From that aspect, it was not the best education for us because we had to do improvements ourselves. It was not as if we started with a good foundation and then we could improve upon that.

"The intention was that we should have people trained in all aspects of ship building. One of the important aspects was inspection. So while we, on behalf of Mazagon Dock, were getting trained in how to build ships, there were people from the Navy headed by Mr Dotiwala for hull construction, engineering and electrical. Mr Dotiwala, Cdr Sarkar and Lt MM Puri (Engineers) and Cdr Bhatnagar an Electrical Officer, formed the Warship Production Inspection Team. There wasn't any big team in Admiralty's design office in Bath, as far as I recollect, because we always had a liaison officer in Bath. Cdr Mohan Ram, a Constructor and Cdr Bose an Engineer and Cdr Badve came a little later, not in the period I was there, but it was for a much shorter period compared to the ship building training.

"There was no over all coordination of these activities. Basically we were seconded to the respective counterparts of the Admiralty. The warship inspection people, for instance, were being overall supervised by the Naval Adviser London. Being deputationists and being Mazagon Dock personnel, we were in contact with our own company in Bombay".

Admiral Samson recalls:

"From my discussions with those who came back from abroad after such training, it appeared to be of mixed value. Certainly they had the opportunity of watching a warship being constructed and observing the methods and systems obtaining in an experienced British yard. However, for obvious reasons, none of these persons were actually permitted to work on the warship being built. They could only watch what was happening. Watching a ship being built has limited value; there is indeed value but it is only by actually doing the job with one's own hands that one really learns.

"The three hundred odd personnel sent to the UK for training did not represent the total work force that would be involved in building a warship, which would probably be 1500 to 1800 men of all trades. The intention therefore was that this nucleus would, on their return from UK, train a selected work force in warship construction.

"It would seem on the face of it that these would be from those existing personnel with experience in different trades in the Yard. But there was a snag to this. Firstly most of our labour, except in certain technical skills, were not educated enough and would not have been able to either read the intricate working drawings or the various manuals, all of which were in English. Secondly, psychologically it is always difficult to change the thinking and attitude of people and their skills once they have got used to certain ways of thinking and doing things, even more so when they are illiterate. To change such thinking would have been a task fraught with delays, but more important, a wrong way of doing things - and we could not afford any delays, and certainly no mistakes.

"We were determined right from the beginning that every man working on the frigate, whether on the slipway, in the P&A Shop, the Machine Shop or any other shop must do the job in the correct way. Thanks to people like Shri Homi Sethna and Commander (later Commodore) A.N. Thukral who insisted on the highest standards from the very outset, we were able to ensure the right way of thinking amongst the work force on the frigate project - only one standard with no relaxation or deviation.

"In order to ensure this and to overcome the problems mentioned above, we recruited young men straight from school, having the basic knowledge of English and able to read and write. We put them to work and they learnt "on the job" very successfully.

"It was also essential that Managers, from the topmost down to the juniormost foremen/ supervisor level, should themselves gain the confidence and knowledge so essential for building a warship. The Blue Book provided for the deputation to MDL of as many as 60 managers from Vickers and Yarrow for varying

periods. These were to be in all disciplines - shipbuilding, designing, P&A Shop, welding, machine shop, everywhere. If MDL had asked for these British personnel, there would have been no objections from Government. But it was the united view of the top Managers and myself that if we really wanted to learn warship building, it was only by having not merely the responsibility but the authority as well and doing it oneself. Without authority and responsibility we would not learn warship building and develop the confidence so essential for the future.

"And so it was decided, despite the misgivings in all quarters, including NHQ and especially our collaborators, Vickers and Yarrow, who had grave doubts about everything, that we would have only a limited number of highly skilled personnel from the UK, and that too only at the Foreman level. It is a matter of great satisfaction and pride that we never had more than four such personnel on loan from Britain at any one time, for periods varying from 3 months to 3 years. We owe to these British personnel much gratitude; they worked with their own hands and set an example to our own skilled personnel at all levels. Similarly, there cannot be enough appreciation to all our Managers and Supervisors concerned who were willing to shoulder such responsibility.

"In this way, the large majority of the personnel engaged on the Frigate Project on the slipways, in the Drawing Office and in the various shops were very successfully trained `on the job' as they built the first frigate, the NILGIRI".

Training in Britain in Ship Design

Two officers, Lt Cdr (later Commodore) SC Bose (a marine engineer) and Lt (later Captain) Mohan Ram, (a naval constructor) were sent to the British Navy's Director General Ship Design Office at Bath to study the design philosophy of the Leander class frigates. Commodore Bose recalls:

"Naval Headquarters felt that it would not be proper to seek design assistance from the British MOD Navy every now and then while the ship was under construction in India using indigenous substitutes. And in any case, with the restructuring of the administration of the Royal Navy and the introduction of cost consciousness, they were not going to (unlike old times) reply to signals as before without charging for it quite heavily.

"To establish our own design set up, two officers were sent to work in MOD (Navy) UK, basically for acquiring the know-how of design and production of Leander class frigates. These two were Lt NS Mohan Ram, a Constructor officer and myself a Dagger Marine Engineer. Our job was to learn as much as possible about the design, about the modifications, about the various trials of the ship, how to conduct them, the acceptance standards etc. In other words, we would be given the know-how of construction, completion, trials of the ship and its operation in the Indian Navy.

"Whilst at Bath, I studied the reports of the Yarrow Admiralty Research and Development (YARD) leading to the finalisation of the design of the Leander class of ships and also the details of the background of the modifications which they subsequently adopted to their ships. I studied the test specifications and trials and test reports of a number of Leander class ships.

"Based on the Inspection and Trial Reports of these ships, I compiled a document of common faults that occur during construction, fitting out and installation of engineering machinery. This document subsequently proved to be very valuable to MDL, to our Overseeing Team and the ship's officers who were standing by to commission the ship, in eliminating many of these faults.

"Incidentally, the number of installation defects we had in the first and second Leanders built by Mazagon Docks were much less than in the Leanders built by British shipyards. We also compiled data sheets for the conduct of trials and the post trials analysis of the results. I also attended the sea trials of two Leander class frigates of the Royal Navy, an experience which we could never have got otherwise"

Captain Mohan Ram recalls:

"I think somebody had made a security mistake in Bath. Because, however much you may classify things, people will find out. I had some very unusual experiences. On arrival I was told "You are supposed to stick to the Leander Project Directorate; like a blinkered horse you should not look this way or that way. If you are found in some place where you are not supposed to be, you will be up for the high jump". They were very charming, very polite and very unpleasant at the same time. I got the message.

"But when one works in the Leander section of DG (Ships), one cannot but hear and see things. For example the drawing of the first Ikara conversion of the Leander was done by me because there was an easy-going Lt Cdr who liked his golf. When he found that here is a Indian Naval Constructor who was prepared to work long hours, he put me there and I did the complete layout of Ikara anti submarine missile. I also worked out the re-design of a Leander's helicopter deck and in so doing learnt how to design a helicopter deck. I pointed out to them that we don't have to make the whole deck very strong. Let's find out which are the landing points of the helicopter's wheels, that way we can save some weight. But the British made the whole flight deck of the same strength.

"In due course, I suggested that I should visit all the specialist sections where the Leander frigates were being designed. They agreed. I went to the underwater shock section. I was able to study documents which in the normal course I would not have had the opportunity to do. I saw the damage stability calculations being done for various classes of warships. I learnt everything which was there connected with ship's design and I came back with a gold mine of data. In those two years, I was like a sponge taking in information.

"Take a simple thing like galley equipment or laundry equipment. One would think a laundry equipment is easy, but when you start designing the laundry equipment in a ship, you must know what a tumbler drier is supposed to do. You must know what a press is supposed to do. I went through the files. I went through all the minuting. It was astonishing how many meetings the British had held on laundry equipment. How many meetings they had on the galley equipment. What problems they had with suppliers. In the British system, there is one person who knows all there is to know about ship's laundries. We didn't have a laundry section in Indian Navy. Similarly we didn't have an air-conditioning section in the Indian Navy. I made detailed notes and worked out a statement of requirements. By the time I came back, I probably had more information on the nitty gritty of the Leander design than any Royal Navy Officer.

"I must admit that in one aspect I got brainwashed by the British - that certain critical things have to be imported. One of them was air conditioning. In the Leander class frigate, air conditioning is very important. All the fire control systems and the entire Ops Room are dependant on efficient air conditioning. When I came back, NHQ wanted an indigenous air conditioning system. I put up a very learned note saying how important air conditioning was and why the air conditioning system had to be imported. I was sent for by the Secretary Defence Production, Mr HC Sarin. He went through my whole note and said, "You are a very clever fellow and a very stupid fellow. From this note I can see you know air conditioning inside out but I don't trust your judgment. If we can air condition five star hotels, we can air condition ships also. I am not clearing air conditioning for import. More than that, I am putting you as the project in-charge for air conditioning the NILGIRI". When I came out, I was very angry, I thought this decision might ruin the ship.

"After that, I had to sit down and design every single trunking. I learnt a lot and it was a joy to work with Voltas for air conditioning the NILGIRI. Of course there were a few places where a little moisture came out, some places got flooded and we had to put in additional drains, but the system as a whole came out beautifully. I learnt something then - that there is a wisdom which goes beyond knowledge. Mr Sarin had the wisdom. I only had the knowledge. One meets some people in the course of one's career who change one's complete mental thinking in half an hour. He opened my eyes that we Indians can do things. That pride of being Indian, I learnt from Mr Sarin".

Controller Indian Frigate Project Organisation (CONIFPO) in UK

To implement the Frigate Project, a small Frigate Cell consisting of a British Naval Architect, with a team of draughtsmen and others from MDL, was set up in 1966, initially in Vickers at Newcastle, although Yarrow, the Lead Yard, was building the first British FSA 34 Leander in Glasgow. Details were fed from Glasgow to Newcastle, where the basic drawings were to be made and then forwarded to India in accordance with a predeterminded schedule.

MDL had its own representative, Commodore (later Rear Admiral) HK Kapadia designated Controller Indian Frigate Project Organisation (CONIFPO) at Newcastle. He had a team of technical and financial managers to liaise with the Admiralty, with Vickers and with Yarrow and negotiate purchase

of equipment in Britain and to ensure its timely despatch to MDL in Bombay.

Frigate Cell/Section in MDL

The set-up in MDL was also re-organised to cater to the Frigate Project. In 1966, a Frigate Cell was established with those who had returned from UK after training. Commander(E) YP Batra, as Planning Manager, Commander(C) AN Thukral, as Officer-in-Charge Frigate (Hull), Shri J Kharas, as Officer-in-Charge Frigate (Electrical), Shri Dom Menezes, as Officer-in-Charge Frigate (Engineering). This Cell was later re-designated 'Frigate Section' and was headed by Commander (E) (later Vice Admiral) BR Choudhury, Commander (L) (later Captain) S Prabhala, Commander (E) KM Acharya and Commander (E) T Deva in succession.

The Frigate Section, among other things, was responsible for producing from the basic drawings received from Vickers, the detailed working drawings required for practical implementation in the shops and on the slipways.

Delays in Starting Construction

After a ships hull has been fully fabricated, each compartment in the ship is marked off from detailed drawings to assist the location of equipment, as also the exact positioning of electrical cables, piping systems, ventilation systems, etc. After locating the position of all these systems in each and every compartment and after making minor adjustments wherever necessary, work begins to instal various systems and equipment.

For the NILGIRI, MDL had to manufacture and instal 20 miles of ferrous and non-ferrous piping of varying sizes serving 61 systems. 180 miles of electrical cabling of different types and sizes had to be installed. Except the main machinery compartments, which were fitted with forced air supply and exhaust systems, all compartments in the ship had to be provided with air conditioning. The length of air trunking involved was approximately two miles. Specialised equipment had to be installed in a pre-determinded sequence. This required detailed coordination. If one item or system was delayed, the sequence of the entire fitting out process was delayed.

By the end of 1966, it became abundantly clear that the information and drawings from the Frigate Cell in Newcastle were coming out far too late and without the detailed information that was essential to order the many hundreds and thousands of items of various kinds in adequate time to ensure that they were available when required. This began to seriously affect NILGIRI's construction schedule. MDL began falling back at the very outset and by mid 1967 was almost two years behind schedule in respect of information and drawings from the Frigate Cell in Newcastle. All MDL's complaints and appeals seemed to fall on deaf ears. By end June 1967 the situation had become alarming.

Admiral Samson recalls:

"In regard to the delays in provision of data and information from the UK, it was quite clear that Vickers were holding back. We fell well behind schedule. In June 1967, together with Chairman MDL cum Secretary Defence Production, Mr Harish Sarin, we went to England to have a discussion with the British Admiralty. I took the opportunity to complain about the lack of cooperation from Vickers. A meeting was set up in Vicker's House to discuss this. This meeting was acrimonious. There were very heated discussions and arguments. CONIFPO, Commodore Kapadia, was there with me and MDL's Shipbuilding Manager Mr Homi Sethna as well. The meeting was most unfruitful from our point of view.

"I had finally to inform Vickers that since we were not making any progress, I would have no option but to report to my Government and recommend the cancellation of this project. It was then that Vickers decided that we would carry on in a more cooperative manner.

"It was at this meeting that we decided to move the Frigate Cell from Vickers at Newcastle to Yarrows at Glasgow where the British Leander was being built and where our personnel were seeing how Yarrow was doing it.

"The scepticism in the British was interesting. When I went to meet Sir Leonard Redshaw, the Managing Director of Vickers at Glasgow, to discuss with him the progress in the supply of information, he told me bluntly that he never really expected India's frigate project to ever be completely successful. He said that Vickers were collaborating with the Australians for building Battle Class destroyers, they had about 25 managers from Vickers there and Australia was still trying to build these Battle Class destroyers successfully. If they could not achieve it, how did India think she could? He said that Vickers were collaborating with the Spanish and nothing had happened there either. And nothing

was going to happen in the Mazagon Docks either. I took strong exception to this and invited him to the launching of the first Leander on the 23 October 1968. He said he would come if it took place. But even if it did take place, he did not consider that we would ever be able to complete fitting it out.

"After July 1967 the situation began to improve vastly. As our teams in MDL and in the UK gained experience and knowledge, we were able to get things moving satisfactorily, though we were unable to make up the time already lost. Looking back, I sometimes feel that because of the tardy information being given to our teams in the drawing office and to our representives abroad, we had willy-nilly to put in that much more extra effort to learn for ourselves. We learnt the hard way but it was we who ultimately gained"

Availability of Material Required for Constructing Frigates

One of the major bottlenecks in the Frigate Project was the non-availability of material, machinery and equipment of the required standard and quality, at the right time and in the right quantities. In the end 1960's, India's industrial base was not sufficiently developed to produce the specialised equipment and material required in shipbuilding, much less in warship building. One had to rely largely on imports. Even in the case of imports, there was the problem of ordering long lead items like weapons, main propulsion and auxiliary machinery as much as three years in advance and then have it inspected, packed and shipped to MDL.

As for the steel plates, three types were required namely mild steel, 'B' quality steel and 'A' quality super-grip plates. By the end of 1965 the Rourkela Division of Hindustan Steel had developed only mild steel. This was used in the first frigate, amounting to some 65%. The rest had to be imported. Action was later initiated to manufacture 'B' quality steel and, after considerable effort, Rourkela succeeded in 1967. The stringent tests carried out on the trial plates proved to be highly satisfactory. In addition, Hindustan Steel had also developed steel plates to specification BSS 1501-151. These plates were used for special purposes. By the time the second frigate was being built, 95% of the steel plate requirements were met indigenously.

Commodore Acharya recalls:

"I reported to Mazagon Docks in October 1966, to the Frigate Cell or Frigate Section. This was a combination of drawing office and design office. It was also initiating procurement action, making out the requisitions for items to be procured. mostly indigenous, because for whatever was needed to be imported, a request would go to CONIFPO in UK who would do all the paper work and get the items procured.

"It was a tremendously exciting experience. We were lucky to have a team of excellent personalities. Compared to my tenure later on in Mazagon Docks, this was a period of total interaction and no hang ups. For example, Mr Harish Sarin who was Secretary Defence Production would come to MDL's board room and find me waiting to see Admiral Samson who was then the Managing Director. He would know me by name and start talking to me about things happening on the ground. The team in the Ministry comprised Sarin and Podgy Nadkarni who was the Officer on Special Duty. In Mazagon Docks itself, we had quite a few luminaries in addition to Admiral Samson. Mr Dotiwala was the overseer. Mr Sethna was the ship building manager. Partly because it was a new venture and we were all very enthusiastic and partly because there was this interaction, we were able to overcome quite a few difficulties and bottlenecks.

"The technology transfer from Yarrow and Vickers was very poor. In fact Yarrow's own planning was virtually non-existent. Admittedly ours was not there either. We had expected some inputs from Yarrow but these were not coming through. A classic example was that which occurred a few months before launching the NILGIRI. From the drawing of the under water openings, I could count about 45 underwater valves. The method of procurement was that Yarrow, who were building the same Leander design ship and were a few months ahead of us, would pass on copies of their own requisitions, what they called copy orders, and that would indicate to us as to what was required to be ordered by us, which I would then either order locally or ask CONIFPO to procure. I found from these copy orders that we had ordered only 30 odd under water valves. So we sent a telex to Yarrow asking how did they manage for the remaining 15 or so valves? They said "Oh yes, we did not order them because we had them in stock". Can you imagine the consternation, a few

months before NILGIRI's launch, that we had not even ordered the underwater valves totally as required! That is just an example. But basically, as we went along, we found that we had to learn quite a few things which even Yarrow could not teach us.

"We had also to willingly take on the task of indigenising as much as possible. The organisation in Delhi, initially called DDIMS, split into DWP and DPI(N). They again took a lot of initiative. Some of them were perhaps over ambitious. But it is a matter of record that even in the very first Leander we managed to have a large number of indigenous equipments and systems. I remember a gentleman coming from Yarrow and wondering whether India which, in their perception, was still in the bullock cart or cycle stage, would be able to manufacture equipment to warship requirements. We did successfully manage to indigenise a lot of medium to high technology equipment, which was of course a very desirable thing in the long run.

"As far as the Mazagon Docks' own civilian work force was concerned, once again I know that later on they developed certain labour union problems and all that. But during my first period of six years, I have nothing but admiration for the way they put their shoulders to the wheel and proved that Mazagon Docks could build modern frigates".

Creation of Directorate of Leander Project in NHQ

In 1968, Government sanctioned the new Directorate of Leander Project in NHQ to handle all aspects of design, to coordinate with Vickers and with Yarrow, to approve drawings and generally manage all the technical activity of the Leander Project from the NHQ end.

Commodore SC Bose recalls:

"As the Deputy Director Engineering in the Directorate of Leander Project in Naval Headquarters, from 1969 to 1972, I was monitoring the first Leander's progress in Mazagon Docks with the help of the Warship Overseeing Team stationed in Bombay. I was helping in resolving the difficulties being faced, giving them guidance and also going to various industries to see the progress and the quality of the equipment being manufactured indigenously and granting deviation and concessions referred to us by the Production Inspectors. We organised Steering Committee meetings under the chairmanship of CNS, and represented NHQ in various coordination meetings under the chairmanship of the Joint Secretary (Public Sector) in the Department of Defence Production, who was also incharge of the Price Negotiating Committee. I also looked into the problems we may face during the various trials, during testing and tuning prior to manning and commissioning the ship and the various problems that the ship may encounter during Naval Service e.g. maintenance and subsequent operation, availability of fuel, lub oils, and other stores and Base and Depot spares with a view to advising timely provisioning action by the various organisations.

"To this end, it was felt that in addition to the various Indian teams engaged in the Leander Project, there should also be other units like an elaborate Inspection Organisation covering the Industries where naval items were being developed and produced, an on board Testing and Tuning Team, a Machinery Trial Unit (MTU) etc. The ship's commissioning crew could not be expected to have adequate knowledge of this class of ship, except to some extent of the Whitby class of ships, the Trishul and Talwar, which were nearest to it. So we took up a case with the Ministry of Defence to send selected officers, sailors and civilians to UK to train in various aspects of development and inspection of Naval machinery and equipment in British industries, in on board testing and tuning of weapon and electrical systems and with a Machinery Trials Unit to conduct harbour and sea trials. The proposal also included training of the officers and sailors of the commissioning crew who would be standing by the ship and operate the ship during harbour and sea trials themselves without any third party, unlike as in UK. By so doing, the ships crew would be acquiring a first hand feel of the ship and take her out to sea subsequently on commissioning without any trouble.

"All this was achieved very successfully. I recall a remark by Sir Eric Issac, the Managing Director of Vickers, who was invited to be present on board when the first Leander was undergoing sea trials. On completion of the six hours Full Power Trial, followed by the Full Astern Trials, with all machinery being operated remotely, there was nothing except a puff of black smoke from the funnel when the engines were moved from

Full Ahead-Stop-Full Astern in rapid movement, giving a shock to the boilers. Sir Eric expressed surprise at our achievement to Admiral Samson, the Managing Director of Mazagon Docks, who was also on board the ship. He said that the 20 specialists who had been nominated by the Royal Navy and Vickers/Yarrow and kept ready in UK to fly to India to help us in the trials and commissioning of the ship on receiving an SOS message, would feel frustrated at having missed a chance to visit India. I thought this was a very significant remark by a traditionally conservative British peer.

"We, in the Leander Project, kept in view the operational aspects of the ship with regard to D '787 items and other newly introduced stores consequent on the use of indigenous substitutes. We also pruned the well established list of spares and fittings. Till that time, all steam ships carried turbine lifting gear on board. This consisted of a large number of heavy parts which cannot be used when a ship is at sea. With present day communication facilities, this gear could be sent to a ship in a matter of three days, along with Dockyard specialists. We, therefore, deleted these items from the shipboard list and had only four sets, one each for the two Dockyards, east and west, one for MDL and the other for BHEL Bhopal where turbines were made. The PSOs appreciated our proposal and approved it".

Captain Mohan Ram recalls:

"The Directorate of Leander Project in 1969/1970 was very exciting. I had excellent colleagues. On the electrical side there were Commanders Baxi and Ganesh, on the engineering side there was Commander Bose. We did the very first composite layouts of compartments like the galley, the electronic warfare office, the electronic warfare equipment room etc. We did the complete air conditioning of the NILGIRI.

"I also did the collapsible hangar, which the Royal Navy did not have. We needed a hangar which could collapse like an accordion, so that when the helicopter was landing, the hangar would be closed and when the helicopter was parked, the hangar would be open. Nobody had done this in a ship of NILGIRI's size. We got a company called Dominion Aluminum Fabricating Company of Canada to do the collapsible hangar in NILGIRI.

"It was a very interesting time because we were learning on the job. And stupid mistakes used to happen also. I went to Mazagon Docks for an inspection of the helicopter landing deck. The Alouette is a three wheel helicopter, the front wheel is in the middle. The helicopter guide platforms were welded as per the original British design for the British Westland Wasp, which was a four wheel helicopter. When I went and asked the Naval Air Staff, "Why didn't you tell us earlier"? I got no reply. To rectify that mistake, we had to change the whole insulation and the wiring. We did a lot of foolish things. But we were learning all the time.

"In those four of five years, Mazagon Docks and the Navy learnt so much. I think the future of the Navy was laid in the Frigate Project. For the first time we were getting into the nitty gritty of building warships and this really culminated when the Navy put the big Seaking helicopter in TARAGIRI with a bigger extendable hangar. It was something quite phenomenal, something to be proud of".

The First Frigate - INS NILGIRI

INS NILGIRI's keel was formally laid on 15 October 1966. Inspite of all the problems, MDL bravely invited the Prime Minister to launch the NILGIRI on 23 October 1968-barely two months after the Kasara Basin was expected to be impounded.

Then MDL encountered a problem of another kind - Labour.

Admiral Samson recalls:

"The Management had been having discussions with the Trade Union Committee on the terms and conditions for the next three years. The Union made major demands and the Management too had made their own offer. There was very hard bargaining and progress was being made.

"Then suddenly, just 15 days before NILGIRI's launching, the Union gave a statutory two weeks notice to go on strike on the grounds that the Management was being totally non-cooperative in respect of their demands. In effect, on 22 October all workmen would proceed on strike.

"The launching of a major vessel is a very delicate affair, the preparation for which commences several days in advance step by step, but the 24 hours before the actual moment of launching are the most tricky. A couple of hundred men had been trained individually and collectively for their specific tasks on the slipway.

Each task had to be carried out at the exact moment and correctly; any mistake could spell disaster. The strike notice had virtually put a pistol to our heads, knowing full well that the launch might have to be cancelled without the help of trained personnel, who could not be replaced overnight.

"I then asked the MDL Managers whether they could launch the vessel without the workmen. At first they were most unhappy to take such a major risk. Mr. Homi Sethna, Commander Thukral and Mr. Victor Franklin finally agreed that they would have a try, after I told them that I would bring in as many men as possible from the Navy, who could be trained during the two weeks remaining prior to the launching.

"I then recalled the Union Committee and informed them that I would give them one more opportunity to reconsider their decision. They stated that they were not prepared to withdraw their notice. Thereupon I informed them that on the day when the ship was being launched, not one single worker from Mazagon Dock was to be anywhere near the Yard to create any problems. This launching involved the defence of the country and nothing and no one would be permitted to compromise it. I added that any agreements/concessions made so far in respect of their demands stood automatically cancelled.

"A short while later I was asked to rejoin them, when they informed me that for the sake of the country they had decided to withdraw their strike notice. It had been a calculated risk but it worked, and in the event, the launching went off very successfully".

On 23 October 1968 Mrs Indira Gandhi, the Prime Minister of India, applied *kum-kum* on the frigate's stem and launched the NILGIRI.

Fitting out and Trials

After a ship reaches an advanced stage of fitting-out, the equipment is tried and tested in 'Basin Trials'. Each and every system in the ship is thoroughly tested to the satisfaction of the Navy's Warship Overseeing Team and any adjustments required are undertaken.

After that the ship is put to sea for 'Builder's Sea Trials', also known as 'Contractor's Sea Trials'. On completion of each trial, specific items of machinery are 'opened up' for inspection, defects put right and again tried at sea. This process goes on until everything is satisfactory, after which the machinery is finally 'boxed up'.

The Final Acceptance Trials extend over a nine month period. Tests are designed to withstand severe conditions, more rigorous than what the ship would normally experience at sea. After successful Acceptance Trials, the ship is handed over to the Navy.

Admiral Samson recalls:

"The Navy was as pleasantly surprised as we were at the timely completion of NILGIRI's Contractor's Sea Trials (CSTs). It resulted in great relief and joy all round. An interesting feature was that the ship's company, which had been standing by the ship, operated the vessel during the CSTs but being responsible to Mazagon Dock and not to NHQ. The ship remained with Mazagon Dock till 2 June, 1972".

The time taken from keel laying to launching of the first frigate came to two years, but for the fitting-out of the ship, the basin trials, the sea trials and up to the commissioning, the period extended to another 3 years and 8 months. In warship building, the fitting out is always time consuming. Nevertheless, a total of 5 1/2 years from keel-laying to delivery was long, because of the teething problems.

Commissioning

INS NILGIRI was commissioned on 3 June 1972 by Mrs Indira Gandhi, the Prime Minister of India. There were 35 Leanders afloat in other Navies at the time. NILGIRI was the 36th Leander. Apart from the British Navy, the Dutch, Australian and New Zealand Navies also had Leander design frigates.

Changes in Sensors and Weapons to Improve Capability

In the first instance, the Government had ordered only one frigate to be constructed. There was delay in placing the order for the second and third frigates because India was going through a foreign exchange crisis. The special credit of 4.7 million pounds could not be stretched to include the foreign exchange requirements beyond the first frigate. The rupee was devalued in June 1966 and the Government had to resort to annual plans from 1966 to 1969. Eventually in early 1968, Government placed an order on MDL to build two more frigates. This was six months later than the original plan for commencement of the second Leander, which eventually began in May 1968.

Receiving orders piece-meal was one of the handicaps that MDL had to accept. The advantage of MDL ordering economic quantities on its suppliers had to be sacrificed. The Dutch who built the Leanders in their yards at Amsterdam and Flushing, constructed six ships of the series almost simultaneously, all of which were commissioned between March 1967 and May 1968.

Naval Headquarters took advantage of the delay in NILGIRI to improve the sensors and the AIO for the subsequent Leanders.

There were several schools of thought at that time about the desirability of changing equipment from ship to ship. MDL felt that by avoiding changes, ships could be delivered quicker and cheaper. NHQ felt that if we continued to build a series of ships with obsolescent sensors, weapons and equipment, they would not meet the staff requirement. And from the view point of indigenisation, it was not cost effective to indigenise obsolescent technology.

Commodore Acharya recalls:

"We in MDL fought quite a battle with Naval Headquarters, requesting them to place orders for at least three identical Leanders at a time. But they were already under pressure, perhaps from the Staff Branch, to change over radars and fire control systems. The second frigate in fact was already being contemplated with different weapon control equipment. This was not an easy task of integration. We were still learning how to build the first frigate, correcting mistakes and filling in gaps in information. Hopefully we would have learnt on the first frigate, improved the way of working for the second frigate and really become efficient in the modern way of warship construction, by the time we finished the third frigate. That was a better way of going about it rather than a scramble for so called improvements in fire power or capability.

"I remember mentioning this to then Chief of Material, Admiral Kulkarni, "Is it not better that we have three ships or six ships of the same identical design? This would not only mean that we could build them faster, cheaper and more efficiently, but also be more cost effective for operating and maintaining these ships. We would have identity of spares and operating experience". But NHQ's imperatives in those days were different from what we in MDL thought. Certainly as a ship builder, we would have preferred if not six, at least three of them as identical ships. I also remember saying that in case the balloon goes up, is it not better for the Navy to be able to put out six ships rather than have one ship, no matter how highly sophisticated and full of fire power it might be, because it is numbers that matter. The Leanders were by no means obsolete. I remember Admiral Nanda saying "What will I tell my young officers when they ask me why are we building these obsolete Leanders?"

Captain Prabhala recalls:

"The British fire control systems in NILGIRI were MRS 3 for the 4.5 inch guns and MRS 8 with CRBFD for the 40/60 guns. The search and navigation radars were 993 and 978. Vickers were willing to transfer the technology for the 4.5" and MRS 3. Around that time, we found that the company SIGNAAL in Holland, which supplied the fire control equipment and the radars for the Dutch Navy's Leanders, had superior equipment, superior in the sense they were already using digital electronics as opposed to the analogue electronics of the British systems. The Navy therefore, felt that if we go in for the indigenous manufacture of the analogue MRS 3 and MRS 8, we will be stuck with them for the next several years. Why should we make outdated analogue systems when digital electronics were already coming into vogue? If we were going to make anything indigenously, we should start with something technologically more up to date than the obsolescent analogue British systems then available.

"Then we found that if we were to fit the Signaal equipment, the ship would require some modifications in the hull and in the structure, related only to these equipments and not to a wholesale change of design. Therefore, we needed somebody to supply us the modified shipbuilding drawings to enable us to fit the Dutch Signaal radars and fire control in a broad beam Leander and for that we tied up with NEVESBU, the Dutch Warship Design Bureau. The Dutch fire control and radar equipment were then licensed for manufacture to Bharat Electronics, which was the only Indian company at that time which had some experience of manufacturing radars and electronic equipment for the Defence Services"

Interaction with the Netherland Warship Design Bureau (NEVESBU)

Two officers were sent to NEVESBU. Commander (L) (later Rear Admiral) JJ Baxi was one of them. He recalls:

"We were there for 18 months. Cdr (later Rear Admiral) Ranjit Whig of the Constructor Branch was my colleague. The most important thing we learnt was that once the Dutch gave us a commitment on transfer of technology, they did not withhold any single little bit of information from us. Secondly, they taught us new methods of doing a layout drawing, the systems drawing, the preliminary planning data and final planning data, what is called spatial working drawing and installation working drawings. What was most emphasised was that when a ship is built in Holland, even the final bill of material is computerised so that the shipyard is given all the ordering material from the Design Bureau. In our case, unfortunately, because we started with the British tradition of the DG Ships at Bath, we have never been able to implement this. In our case, only the preliminary and the concept design are being done in Naval Headquarters and the final working drawings are prepared by the shipyard. Not only does this lead to lack of standardisation but it leads to enormous infructuous work and expenditure, which could be avoided if we really had a component system of drawing.

"What the Dutch, the Japanese and the Americans are doing is that after the preliminary design, the people who design and work on the detailed drawings, installation working drawings and the special drawings are such experts that the last bit of lining, detail, fasteners, doors everything, is actually set up in that drawing phase. Nothing is left to chance or imagination. There is such a perfect system of dovetailing that even three parts of a ship built in three different shipyards, can be connected together in a single shipyard and you will be able to have a ship in one third the time. Unfortunately, in our case what we learn, we never do. I regret to say that it is a failure on our part. We have never been able to implement this in our Design Organisation. This is the most important thing which we have to mention in the history of the Leander Project".

Commodore Kulin Lohana (later Director General of Naval Design) recalls:

"The Navy sent its team to the Netherlands Design Bureau, Nevesbu, to be involved with the design changes. They came back and helped Mazagon Docks to modify the workshop drawings. In fact a large number of them were already modified by the Navy's Design Cell with the help of our people. I think that reduced the fear of the MDL to some extent and also made the task of change over that much easier. Also, this exercise was the first step in building up the confidence in MDL to not just take the drawings received from the UK and implement them, but to generate new sets of drawings as the workshop drawings, based on a conceptual detailed design given by somebody else. We saw its ultimate application in the construction of the Project 16, GODAVARI class frigates, where the NHQ's Directorate General of Naval Design produced the detailed design and the MDL translated them into working drawings, consistent with the specifications".

Eventually, HIMGIRI and the subsequent Leanders were fitted with the following Signaal equipment:

- The VM 45 fire control system for the 4.5" gun.
- Two VM 44 fire control systems for two sided Seacat anti aircraft guided missile launchers.
- Long range Air Warning Radar LW 04, Surface Warning Radar DA 05 and Navigation Radar ZW 06.
- DS 22 Display Systems in the Operations Room. This system was still under development by Signaal and the Indian Navy was the first customer for it.

Similarly the British Sonar 184 was replaced by the later Sonar 184 M.

The Second Frigate - INS HIMGIRI

HIMGIRI's keel was laid on 4 November 1968. She was launched on 6 May 1970. MDL had been able to reduce the time between keel laying and launch from 25 months to 18 months. The fitting-out however was considerably delayed due to the late arrival of major items, both from abroad and India.

The machinery installation was completed in December 1973, Basin Trials were successfully completed in January 1974 and the Contractor's Sea Trials commenced on 6 April 1974. At the preliminary full power trials, the temperature of the gear box bearings was found to be rising above acceptable limits. The gear box was the first to have been made in India to the Swiss MAAG design. After detailed examination, Naval Headquarters, in consultation with Swiss designers, decided to modify the bearings and check the alignment of the turbines. The Repeat Contractor's Sea Trials in September 1974 were successful, and HIMGIRI commissioned on 23 November 1974.

On the plus side, HIMGIRI got better radars, sonars, AIO and fire control equipment and two Seacat guided missile launchers. Design changes were also made in the communication systems and the layout of mess decks to improve habitability in tropical conditions.

Captain Prabhala recalls:

"As to whether this bold decision that was taken was right, now with hindsight one can say 'Yes it was right". But I myself, being a shipbuilder in those days, was of the strong view that the primary task should be to learn how to build ships fast, quick and at the lowest cost. And I was advocating the view that if the equipment fit changes with every ship, some design changes would be involved, some proving of the new systems would be involved, which would only delay the construction programme. It would also add to the maintenance problems. Therefore, at least for a range of three ships, let us freeze the equipment package before we think of changing the equipment.

"If the indigenisation programme and the improvements which were taking place, either in the Royal Navy or in the Dutch Navy, were to be incorporated in the ship building programme, it was a balance of advantage which somebody had to decide. I think with hindsight, we can now say that it was a right decision. It enabled us to understand that if you want to take out a piece of equipment and put another piece of equipment in its place, what are all the changes from the electrical side, from the hull side, from the ship side that we had to take care of. Therefore certain capabilities were built up in the design departments, with the result that later on, when we wanted to replace the 4.5 inch gun with a missile, or take out some electronic warfare equipment and put in some Italian equipment, we were able to take it in our stride.

"In other words, if we had not made the changes, we could certainly have built the ships faster. But the simultaneous learning curve in different aspects of ship design and ship construction then would have taken longer. Between the two, I think the advantage lay, as I said with hindsight, in the course we had taken".

The Third Frigate - INS UDAYGIRI

Since orders for the second and third frigates had been received together, MDL seized the opportunity to build them faster than the first frigate. The fabrication work on the third frigate, scheduled to commence in January 1970, started in April 1970 due to late receipt of steel from Hindustan Steel Ltd.

In 1969-70 there had been an acute shortage of steel. MDL had been able to carry on production without serious dislocation as its earlier orders for steel had materialised. By 1970-71 however, the fall in steel production adversely affected MDL's work. The interval between keel laying and launching increased to 25 months. The main machinery which should have arrived at the time of the ship's launching in October 1972, was actually received in May 1974, thereby further delaying the ships commissioning till 18 February 1976.

The Fourth Frigate - INS DUNAGIRI

The fourth Leander was launched on 9 March 1974. She was on the slipway for only 14 months as compared to 18 to 25 months for the second and third frigates respectively. Fitting out was affected by delays in receipt of indigenous as well as imported equipment. The main engines and gear boxes were received in May 1975. Basin trials were carried out in October 1976 and sea trials completed satisfactorily in November/December, 1976. The final inspection of hull, weapons, radio compartments and systems was completed in early 1977. DUNAGIRI commissioned on 5 May 1977.

The time between keel laying and launching had been reduced to 14 months. The time from launching to delivery had been reduced to 38 months - the shortest period yet achieved. Nevertheless, the total of 58 months from start of production was still too long by world standards. On the other hand, the range of equipment being indigenously produced for the first time by Indian industry was impressive: main boilers, main turbines, main gearing, main circulators, turbines for turbo alternators, diesel alternators, stern tube bushes, heat exchangers, radar and fire control equipment, data processing computers, air conditioning and refrigeration machinery, broadcast equipment, telephone and teleprinter equipment, main and auxiliary switch boards, complex system valves, fire detection sensors and a host of other minor equipment. By the time the fourth Leander had been built, considerable confidence had built up at all levels.

Improvements of Anti Submarine Capability in the Fifth and Sixth Leanders

In 1972 and 1973, as operating experience was gained with the NILGIRI and the Seaking anti

submarine, dunking sonar helicopters, and in view of the continuing acquisition by Pakistan of modern submarines from France, it became clear that future Leanders would require greater anti submarine capability.

Naval Headquarters initiated studies in early 1973 to improve the anti submarine capability of the 5th and 6th Leanders. These changes crystallised in mid 1973. The major changes envisaged embarking the heavy Seaking helicopter and improving the anti submarine sonars and weapons.

Seaking Helicopter

In 1966, the Canadian Navy had pioneered the operation of a Seaking helicopter from the deck of a frigate. This entailed designing a Bear Trap Haul-down and Traversing system for moving the heavy helicopter on the small flight deck, providing a large hangar and strengthening the flight deck to bear the weight of a heavy helicopter. All these changes would affect the ships overall design, stability and seakeeping qualities.

To meet the conflicting requirement of a large hangar and a long clear flight deck, the hangar would have to be telescopic. Extra flight deck space aft could only be made available by removing the anti submarine Mortar and the Variable Depth Sonar wells.

Anti Submarine Sonars and Weapons

The changes envisaged in the ships sonars and anti submarine weapons were:

- The British Mortar MK 10 anti submarine weapon fitted aft would be replaced by the Swedish Bofors SR 375 Twin Rocket Launcher with its integral magazine and hoist, all fitted forward in the bows.
- Two sided twin Torpedo Tube Launchers would be fitted to fire the latest Italian A-244 homing torpedoes being acquired as successors to the obsolescent British Mk 44 torpedoes.
- British Graseby's 184 SS (solid state) search sonar would be fitted in lieu of the earlier valve version Sonar 184 M in the preceding three Leanders.
- French Thomson-CSF solid state search and attack sonar Diodon would be fitted in lieu of the earlier valve version attack Sonar 170 M in the first four Leanders.
- British Graseby's Sonar GI 738 Under Water Telephone would be fitted in lieu of the earlier Sonar 182.
- India's Department of Electronics would produce the ASW fire control computer to control the new SR 375 Rocket Launcher and the deck launched A 244 torpedoes.
- The latest available Italian electronic warfare equipment would be fitted.

All the above design modifications and changes were discussed with individual equipment suppliers in Canada, Sweden, Britain and Italy in 1974. By 1975, all the changes had been finalised.

Changes in Design

Rear Admiral Baxi recalls:

> "When I came back to NHQ in 1973, NHQ had decided that the design of the fifth frigate will be given to DGND and not to DLP. As DDLP, I realised that we really did not have much to do, because if the design was being done by DGND, what was going to be DLP's role? In those days, DGND had come up with a design for a new weapon package.
>
> "In the meanwhile, I went into the technical feasibility of DGND's design to see whether a large anti submarine helicopter like a Seaking could operate from a Leander. I distinctly remember we consulted some Admiralty Fleet Orders and then invited the DGND, who had earlier given an opinion that this was not feasible, to discussions with DLP. When I went into it, it was on a limited presumption that the Mortar Mark 10 was required and that it could never be removed. Then we came up with the idea that if the mortar well was covered up, the overhead space would be just enough for a Seaking to operate from there. The anti submarine mortar could be replaced by another type of forward throwing rocket launcher like the Swedish SR 375. Then I worked day and night so that no one else would come to know what we were doing. Between Constructor Capt Choudhary who was in the Directorate of Leander Project and myself, we did all the initial design work, showing the new flight deck, showing the new helicopter and showing the new weapon package which was involved. This was the most creative time of my life as a designer.
>
> "We actually came up with a new design concept. We gave a presentation to the Chief of the Naval Staff and he accepted our design. Dr Roy Choudhary was the SA to RM and he also accepted that our design will work. Even Mr Parmanandan, who had by then become the DGND, was gracious enough to accept that

operating a Seaking helicopter from a frigate was feasible. Finally the design was accepted. That is how we in DLP came back into the design of TARAGIRI. Thereafter this led to a very healthy competition between DGND and DLP. Cdr (later Captain) Mohan Ram and Lt Cdr (later Captain) Subaya, who were the two best young naval constructors which the Navy had, joined DGND. They said "If an electrical officer like Baxi can design a frigate with one Seaking helicopter, why can't we come up with a larger and better hull which can fly two Seaking helicopters?

"By that time the Directorate of Combat Policy and Tactics had suggested that Soviet weapon systems be integrated into the next design. Not only were they cheaper and more cost effective but it would enable standardisation of missile inventory. I distinctly remember that I was opposed to that idea, thinking that we will not be able to carry out the interfaces. But ultimately, history and posterity had proved that this was the right decision and we became the first Navy in the world to succeed in designing a hybrid ship, the GODAVARI of Project 16, having a mix of Soviet and Western sensors and weapon systems".

The Fifth Frigate - INS TARAGIRI

These design changes delayed the commencement of construction, which should have started immediately after the launching of the fourth frigate. Production could commence only in April 1975. The keel was laid six months later and the ship was launched on 25 October 1976. Thereafter there was a major setback in fitting-out because of a delay of one year in receipt of the main engines. This created its own chain of delays. Contractor's Sea Trials commenced in April 1979. During trials, internal vibrations were observed in the main turbines. After the defects were rectified, repeat sea trials were satisfactorily completed in December 1979, and TARAGIRI was commissioned on 16 May 1980. Whilst the time from keel laying to launch had been only 12 months, the least period so far, the time taken from launching to commissioning was 43 months, much more than the time taken for any of its predecessors.

The Sixth Frigate - INS VINDHYAGIRI

VINDHYAGIRI was identical with TARAGIRI. Construction commenced on 5 July 1976. Her keel was laid on 5 November 1976, and she was launched on 12 November 1977 after a period of 12 months, the same time as was taken for the TARAGIRI. She was commissioned on 8 July 1981, having taken 44 months from launch to delivery.

The Indigenisation of Leander Class Frigates

In 1955, the Directorate of Stores Production (Navy) had been set up under Naval Headquarters. In December 1956, it was transferred to the Ministry of Defence under the Controller General of Defence Production as part of the Director General Inspection. Its designation was changed to Directorate of Development and Inspection (Marine Stores), DDI(MS). By 1965, it had been able to:

- Develop new items (including modifications to commercially available items).
- Establish and purchase indigenous items thereby saving foreign exchange.

The major handicaps that had been encountered were:

- The reluctance of the private sector to manufacture for the Navy the small quantities of stores which had no general market in the country.
- The failure of the trade to keep up the supply of stores according to agreed specifications. Though the samples and the first one or two supplies were satisfactory, subsequent supplies were of inferior quality and failed to conform to original specifications.
- The procedure by which DGS&D had perforce to obtain supplies from the most economical source, sometimes at the expense of quality.

By the time the Leander Project got under way in the mid 1960's, the field work of the preceding ten years proved to be invaluable for the indigenisation of Leander equipment.

Commodore (E) SC Bose recalls:

"Systematic indigenisation of naval stores and material started in 1956 when a department was created by Captain (later Rear Admiral) Daya Shanker who was the Controller General Defence Production (CGDP). A new directorate in Naval Headquarters started functioning with Capt (later Rear Admiral) CL Bhandari as the Director and Commander (later Commodore) BC Chatterji, as Deputy Director and other Staff Officers. There were two inspectorates. The one in Calcutta was manned by then Lt (later Commodore) KC Chatterji. The one in Bombay was manned by me.

We had two tasks. One was to locate sources for the indigenisation of stores items. The other was to scrutinise the Naval Stores specifications and select the item susceptible for indigenisation. So this was a new outlook, a new philosophy in 1956. Later on, the Inspection Organisation under Director General of Inspection (DGI) grew, particularly with the Leander project which was our basic requirement. There were two branches. The Directorate of Warship Projects (DWP) looked after the engineering items. The Directorate of Production and Inspection, DPI (Navy), looked after the common user Naval Store items, Electrical and Electronic items and machinery spares".

As part of the Leander Frigate Project, a Study Group on Indigenisation was set up in Delhi to function in close consultation with MDL for locating capacity for indigenous manufacture. In 1966, Commander (later Admiral) JG Nadkarni, was appointed as Officer on Special Duty in the Department of Defence Production.

Admiral Nadkarni recalls :

"The agreement was for:

- The transfer of the Leander design by the MOD UK (because they were holders of the Leander design).
- All the Lead Yard services and other technical help by VICKERS and YARROW and
- Overseeing by the British Ministry of Defence (Navy).

"The agreement stipulated that at least for the first ship, we were obliged to buy a number of equipments from Vickers, including the 4.5" gun turret, the boilers, the main turbines and certain other equipment. It was obligated that we buy at least for the first ship and, if we require, we could buy these for the second and third ships also, but it was obligatory only for the first ship. This was the general agreement. All this of course had happened before I joined the Ministry in 1966.

"After I joined, for the next two and half years I was intimately connected not just with the Leander Project, but with the entire management of Mazagon Docks and the Garden Reach Workshops to start off with, and later on with the revival of the Goa Shipyard which took place in 1967.

"In India we had two very important offices. Along with building warships in India, we had also envisaged manufacturing a large amount of equipment which went into the Leander. That was the main idea behind the whole project, that it should be indigenised. For this we had the office of Commodore Paradkar, Director Warship Project (DWP) under the Ministry of Defence, whose main objective was to try and bring to fruition the trials of indigenous equipment and be the conduit or the prime mover for bringing about collaboration in India between the foreign manufacturer and the Indian manufacturer.

"That period, 1966 to 1968, under the very able and dynamic leadership of Mr HC Sarin was one of the most productive periods as far as indigenisation of Leander equipment in India was concerned. In just two years, we brought about a large number of agreements which have benefited the Indian Navy subsequently.

"For example an agreement for the manufacture of boilers was brought about between the ACC Vickers Babcock and the Naval Dockyard Bombay. To this date, the Naval Dockyard manufactures boilers for the frigates.

"An agreement for the manufacture of main turbines was brought about between English Electric Company and BHEL. Mr Sarin incidentally was extremely dynamic and pragmatic about all these things. If a particular manufacturer refused to collaborate or refused to come to India, he had no hesitation in going to somebody else.

"For example the main switch boards of the Leanders in UK were manufactured by Cromptons, who refused to collaborate or come to India. There was another manufacturer called Whip and Bourne who also had manufactured switch boards for other ships of the Royal Navy. We invited them and they had no hesitation in coming to India. An agreement was brought about between Whip and Bourne and AEI of India and switch boards have been manufactured here since then.

"Similarly for air conditioning we went to Carrier Air Conditioning who brought about an agreement between themselves and Voltas.

"The main gearing for example was David Brown's. David Brown refused to come to India for the main gearing, so we went in search of somebody else. We found a very famous company MAAG of Switzerland who had no hesitation, not only to come to India and collaborate, but also in designing a totally different main gearing for the Leanders. So to this day we have only NILGIRI with the David Brown main gearing. The frigates

from HIMGIRI onwards have the MAAG design main gearing for the main turbines.

"The final culmination of this process was the landmark agreement between the Signaal Apparaten of Holland and Bharat Electricals of Bangalore for manufacturing a whole range of radar equipment as well as the AIO equipment. That was a very major step forward and I think we have benefited a great deal from that. After that, all the radars of the Leanders have been manufactured by BEL. In this way, it was really a most productive period as far as the indigenisation of Leander equipment was concerned.

"I am sorry to say that the same dynamism and the same innovation somehow was not shown after Mr Sarin left. Our subsequent progressive indigenisation, to my mind, has not been as impressive as it was in those two early years of the Leander project.

"In Naval Headquarters, we set up a cell initially called DDLP. He was a part of the Directorate of Naval Construction. He was called Deputy Director (Leander Project). Subsequent to that, a completely new directorate was formed called the Directorate of Leander Project. In due course that became Directorate of Warship Projects. But initially it was headed by only a Commander. Subsequently a full fledged Director looked after the Naval Headquarters part of the Leander Project.

"The Naval Headquarters part basically consisted of approving various indigenisation substitutes or playing a part in the indigenisation process. Of course, the whole thing was like a team. Naval Headquarters, being the users, were part of the team.

"Another organisation which was setup was the Warship Overseeing Team. As the warship was being built, we had overseers making sure that it was being built to the correct specification and certifying the various parts of the ship being built.

"The Government also had formed a Steering Committee for the Indigenisation of the Frigate Project, with the Chief of the Naval Staff as the Chairman, with representatives from the Department of Defence Production, Naval Headquarters and MDL. Various manufacturers were invited to come and explain and suggest measures to overcome their difficulties. They were encouraged to freely interact in the common endeavor to indigenise warship building to the maximum extent possible".

Admiral Samson recalls:

"The specifications, the very fine tolerances, the performance ratios and the fact that all equipment had to be shock-proof, were parameters which Indian Industry, by and large, were totally unaware of and had never experienced. Thanks to the inspiration of Mr Krishna Menon, indigenisation was progressed relentlessly. He had always maintained that unless India was self-sufficient in major items of defence equipment, we would never be totally free and that, further if we were dependent on the West or on anyone else, we would be badly let down, in time of war when the 'crunch' came. And indeed this was proved time and again, in the conflicts with Pakistan in 1948 and 1965, when both the UK and the USA imposed embargos.

"Today looking back, the degree to which indigenisation was achieved was quite extraordinary. For instance, we are now accepting, without demur, the Main Gearing being manufactured by Walchandnagar in collaboration with MAAG of Switzerland. And yet in 1966, when this was first suggested, there was horror. The very idea of a highly sophisticated piece of equipment like the main gearing being manufactured, way out in the middle of nowhere, some 60 to 70 miles outside Poona, in what was originally a sugar factory in a little village, was unbelievable to most. And yet it did succeed.

"Another item which was the subject of much controversy was the air conditioning of the ship which was necessary primarily for the electronic equipment and computers. Voltas offered to do this and the Admiralty were aghast that we should install air conditioning manufactured locally. There was much skepticism in all quarters but we prevailed and we succeeded, even though we had teething problems.

"Fibreglass for lining the ship internally came from Fibreglass Pilkington in Bombay - what problems we had to ensure that we got the right kind of fibreglass suitable for Indian sea-air conditions but we eventually succeeded.

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"There were enormous problems, aggravated to some extent by doubts and lack of confidence,

but we won through. What is important is that it created the kind of confidence and experience, both in the Service and specially in Indian Industry who, having succeeded in producing equipment of such high specifications for the Navy, were emboldened to go in for higher technology"

Captain Prabhala recalls:

"So far as the indigenisation programme is concerned, it came about even when I was in the UK with Vickers for training. In the last six months of our training, it was realised that we would need a full fledged team in the UK for equipment procurement, for liaison with the Admiralty for the supply of drawings, for liaison with the shipyards for the supply of working drawings and all that. Therefore an office called CONIFPO (Controller Indian Frigate Project) was established, with Cmde Kapadia as the head of the CONIFPO. We were already in touch with all the major equipment manufacturers, whether it was David Brown for the gearing, or Yarrows for the boilers, or English Electric for the turbines, or Vickers for the MRS3 fire control system and so on, with the idea that we should simultaneously seek transfer of technology for the indigenous manufacture of the equipment, while the construction of the frigate goes on in Mazagon Docks.

"In these technology transfers for the equipment, the role of the Admiralty was limited. It was only to the extent that they would express no objection to it, meaning that if we wanted to make the gearing and let us say the gearing was the design of David Brown, David Brown naturally would not be able to transfer the technology unless the Admiralty gave the OK to it. So to that extent, we got the no objection certificate from Admiralty and we got the Admiralty to inform all the major manufacturers that we were interested in local manufacture in India with the help of these companies.

"The success of the indigenisation effort in building the Leanders and the machinery that came into existence with it, the organisation of DWP initially and the organisation of the DPI Navy later gave us the confidence that we can go ahead more boldly with procurement of equipment from indigenous resources. For instance, the communication equipment, ICS 3, for the Leanders was imported from the UK but we were able to get Bharat Electronics to develop it - whether it was the UHF transreceiver or the CCS equipment and the Versatile Console System - to a degree which the other two services did not indigenise. The naval constructors also rose to the occasion and came out with improved designs of the Leanders like the TARAGIRI and the Project 16, GODAVARI class frigates.

"This commitment to indigenisation, the willingness to experiment and the willingness to suffer the consequences by way of delays, by way of equipment still undergoing trials, even though the ship is complete is a tremendous plus point with the Navy. Of all the three services, the Navy had this risk taking ability, it had the internal organisational mechanisms to initiate major indigenous programs, and it had the ability to coax, persuade and control the indigenous manufacturers to also rise to the occasion. It was a tremendous experience.

"There was only one occasion when, to my mind, the Navy erred. That was in their impatience to go in for more and more indigenisation and feeling that Bharat Electronics was not responding fast enough, the Department of Electronics came forward and said that they could develop the Computer Aided Action Information System (CAAIS). The Navy, without realising that an equipment or a system for shipboard use is not something that can come out of a Government office or a laboratory, placed too much faith in that Department. It took some time for the Navy to extricate itself from that".

Commodore Acharya recalls:

"When I was in Mazagon Dock and Capt Paradkar was DWP, the main problem in indigenisation was the reluctance by NHQ to accept any change in design i.e. of a readily available Indian equipment as against the British equipment as fitted in British Leanders. This reluctance stemmed from the fact that the Naval Design Group was not strong enough. It had not really taken root at that time. There was a fear that the difference in design might have unseen or unknown consequences in performance. A typical example was that of 50 or 60 cycle AC working. For quite some time, people were not sure what would happen if we simply bought a 50 cycle commercial motor and attached it to a pump and made it run on 60 cycles AC. To this day I do not know what the answer is. Some electrical people said it will run too fast. Some people said it will run too slow. Some people said

it will over-heat. The point I am trying to make is that at that point in time, the DGND did not exist. To some extent, one could understand the fear or reluctance of the Navy to boldly accept a commercial design or the available design.

"By the time I was appointed DWP, the Directorate had handed over the electrical part of indigenisation to DPI(N) and kept for itself the engineering and hull items. I knew how hard Commodore Paradkar had worked for DWP. This had been his baby. During his time, he had one or two excellent deputies, among them the late Cdr Dilip Bhandari who, as we were doing in Mazagon Docks, had the enthusiasm and willingness to take risks. They had initiated a number of major projects for indigenisation starting off mainly with the major items ranging from main turbines, main gearing, auxiliary turbines, air conditioning machinery to underwater valves. All these were already well established. During my tenure as DWP, I had no occasion to improve upon these because by that time the indigenisation emphasis was shifting towards indigenisation of radars and weapon systems.

"As regards the design changes in the equipment fit for the later Leanders, we were also talking about gas turbine propulsion at that time, so whatever was already set in motion had just to be continued. We therefore devoted more attention to the inspection at manufacturer's works rather than initiating any fresh indigenisation processes.

"In my own tenure as DWP, whilst nothing new was initiated by me, there was no major change in the attitudes between NHQ and DWP. NHQ would gladly approve an indigenous design proposed by DWP, provided somehow DWP could confirm and prove to NHQ that the indigenous design was totally capable. Short of having a trial ship solely at DWP's disposal and with enough time available for installing it, trying it out for one year and surviving underwater explosion or whatever, there was no other way of really satisfying the Navy. On the other hand, Mazagon Docks was forever pleading to have the items cleared by the due date. We found that some of the lead times indicated by Mazagon Docks were too inflated. This tussle continued for a long time. I remember making perhaps an unfair allegation that "Only DWP seems to be interested in indigenising. Neither Naval Headquarters nor Mazagon Dock would like it. They would rather have a free hand to import everything". In retrospect, this was not a very fair statement because each side had its own limitations".

Captain Lohana recalls:

"There was an agreement with the MOD Navy UK for supplying drawings and specifications of the equipment, as well as details of the pattern number stores. These became the basis for DWP and DPI (Navy) to interact with Indian industry to motivate them to develop these products and guide them in the development in terms of inputs and drawings. A large number of these were either evolved to replace the existing ones or indigenised by way of reverse engineering.

"Here, I would draw a distinction between indigenisation and indigenous substitution. Indigenisation is when an identical product is developed to replace the existing imported item, whereas indigenous substitution occurs when a piece of equipment performs the same function to the same or higher performance criteria as the substituted equipment without being identical in appearance to the earlier one.

"These two directorates, DWP and DPI(N), who had slowly set up their outfits all over India to interact with industry to develop items as well as to inspect them and test them before acceptance, were highly motivated by the personal umbrella of Mr MM Sen, the then Secretary Defence Production. Unfortunately, as things normally go in life, over the years these became kind of routine jobs and the basic motivation was lost".

Commodore SC Bose recalls:

"We had the Department of Defence Production, Ministry of Defence, working hand in hand with Naval Headquarters and Mazagon Docks Ltd towards indigenisation. In retrospect, I would say this was the best and most systematic indigenisation effort the Navy ever had. And taking the totality into account, it was possibly the best in the country at that time.

"While the main engines of the first ship were imported, the second ship's set of main engines were made by BHEL in Bhopal, using the same English Electric drawings made in FPS System by converting the measurements to the Metric System, which had been adopted in India and in which Bhopal's machines were set. We also developed an indigenous version of Allen's steam auxiliaries with Jyoti of Baroda and BHEL

Bhopal. A steam test rig was set up in Bhopal, financed by the Navy, to give these machine a test run under steam before accepting the machinery for installation on board.

"A special weldable steel, known as Ship Building Quality Steel or Lloyd's grade A/B is used in shipbuilding. These steels were not manufactured in India till then. We had the blessings of the Ministry of Steel to undertake the project at Rourkela Steel Plant and they did a fairly successful job, though it did not meet the specification to 100%. This steel was considered acceptable under deviation and used in constructing the second Leander. Subsequently, of course, it was found that imported steel was of quicker delivery and cheaper, and was used. Having established an indigenous source of manufacture of shipbuilding quality steel, we could always revert to it whenever necessary.

"The boilers of the first Leander were erected in the Naval Dockyard Bombay. A new boiler shop was created and the boilers, with drums, tubes, mountings etc from Babcock and Wilcox of Renfrew were erected. Being very heavy and bulky, these boilers were put on trailers in the Naval Dockyard Bombay and shifted to Mazagon Dock for installation on board.

"The development of the main shafting was attempted at the Heavy Engineering Corporation (HEC) Ranchi. But HEC was experiencing serious administrative problems. As such the project did not finally succeed. They met the specifications in 50% of the items. They could have had 100% success had they carefully followed our instructions of cropping the ends of the forgings before rolling the shafts. In order to achieve good quality forgings for turbine rotors for the Navy and for Power Houses, HEC initiated action for procurement and installation of a Vacuum Degassing Plant and a 6000 ton press. Unfortunately, on installation these valuable plants were lying idle due to lack of initiative, and rotor forgings being imported by BHEL and other turbine manufacturers.

"The main gear cases, a very critical piece of machinery, were also indigenised. In the first Leander, we used imported David Brown gearing but for the second Leander we went in for ones to be produced at Walchand Nagar near Pune, under collaboration with MAAG Gearwheel Co of Zurich. Since 1966, Swiss MAAG gearing had already been fitted and was working satisfactorily in Canadian Navy frigates which were similar to the Leanders. Here again we faced many problems in conversion of CGS into FPS systems, as the terminals had to be in the FPS system to match with the turbines and shafting while the internals imported from MAAG were in CGS system. I must say that the Directorate of Leander Project (DLP), Directorate of Marine Engineering (DME) and the Directorate of Warship Projects (DWP) under the Ministry of Defence Production burnt midnight candles in Walchand Nagar in checking every dimension and the manufacturing tolerances, meeting both FPS and CGS system of the terminal components. It was a success in one shot.

"We had set up a Test Rig using a redundant cruising turbine of a Khukri class frigate for back to back test under actual steam and give both the gear wheels overspeed and overload runs of the kind it would experience in a ship for maximum exploitation. We believe that such trials were done only in Canada and in Switzerland. There were continuous trials for 72 hours. The trials runs went on as scheduled except for one incident when one set of bearings failed. We immediately knew what it was due to. The representative of MAAG Gearwheel, a renowned designer, was present at the trials. We all agreed with the corrective actions and continued with the trials. I don't think such a bold step would be taken anywhere, to introduce into service a gear case which was never tried earlier. We have been very lucky that the propulsion system with a changed component gave no problem of noise or vibration in any mode.

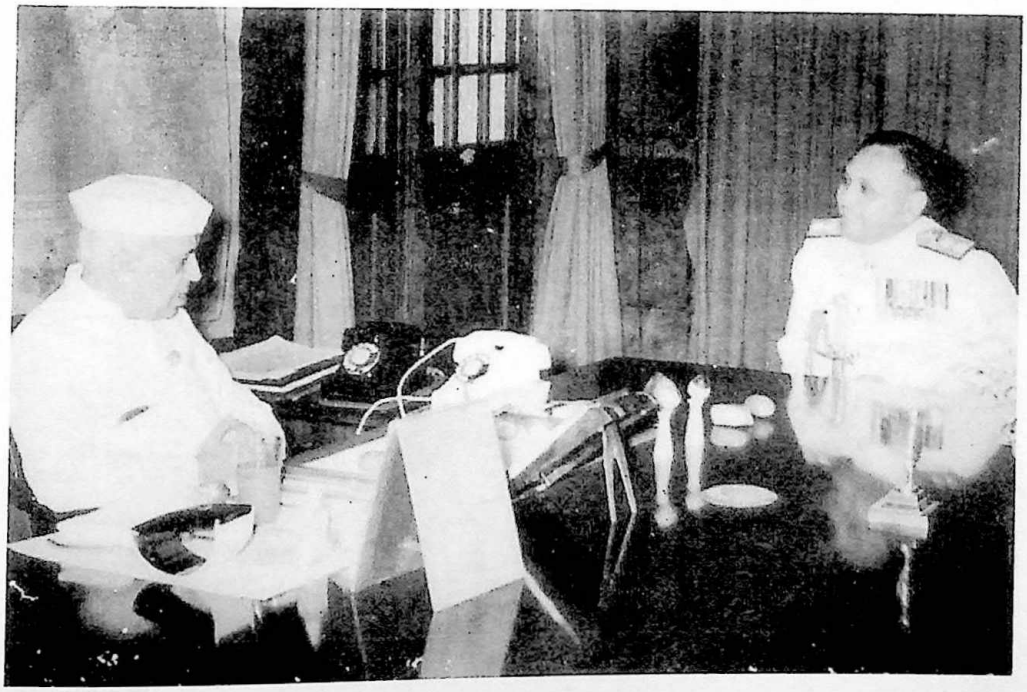
"We developed all the gun-metal valves and fittings indigenously. Similar indigenous developments or substitutes were found for electrical fittings, items of domestic and hotel services nature etc".

Reminiscences of the Leander Frigate Project

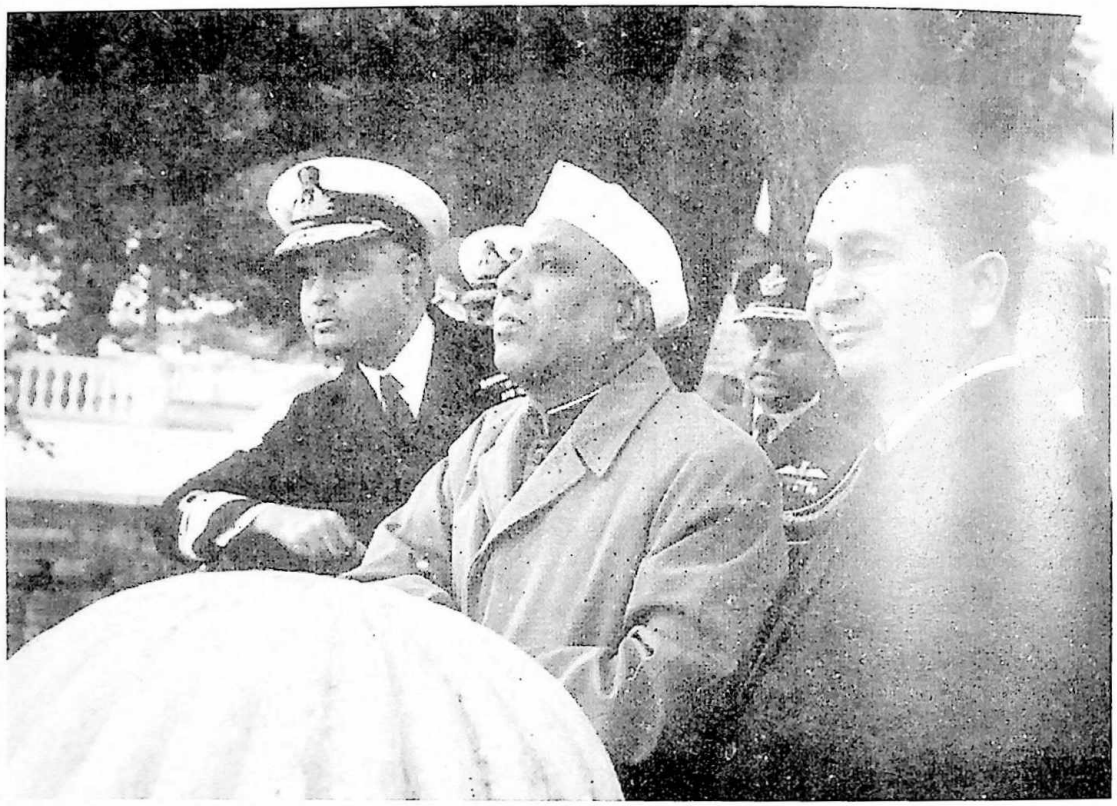
Captain Prabhala, later Chairman and Managing Director of Bharat Electronics Ltd, recalls:

"As to overall impressions and overall conclusions from my six and half years with Mazagon Docks, I think the leadership provided by Mr HC Sarin, Secretary Defence Production was of immense value. The team we had then in the Ministry of Defence Production, Mr Sarin, Secretary, Mr MM Sen as the Joint Secretary, Mr Vinod Pandey as Deputy Secretary was absolutely wonderful. At the start I was only a Lt Cdr, then I

Handing over ceremony of Mazagon Docks Ltd to the Ministry of Defence by the P&O Group (L to R) Representative P&O Group, Mr YB Chavan (Chief Minister of Bombay) & Mr Krishna Menon (Defence Minister)

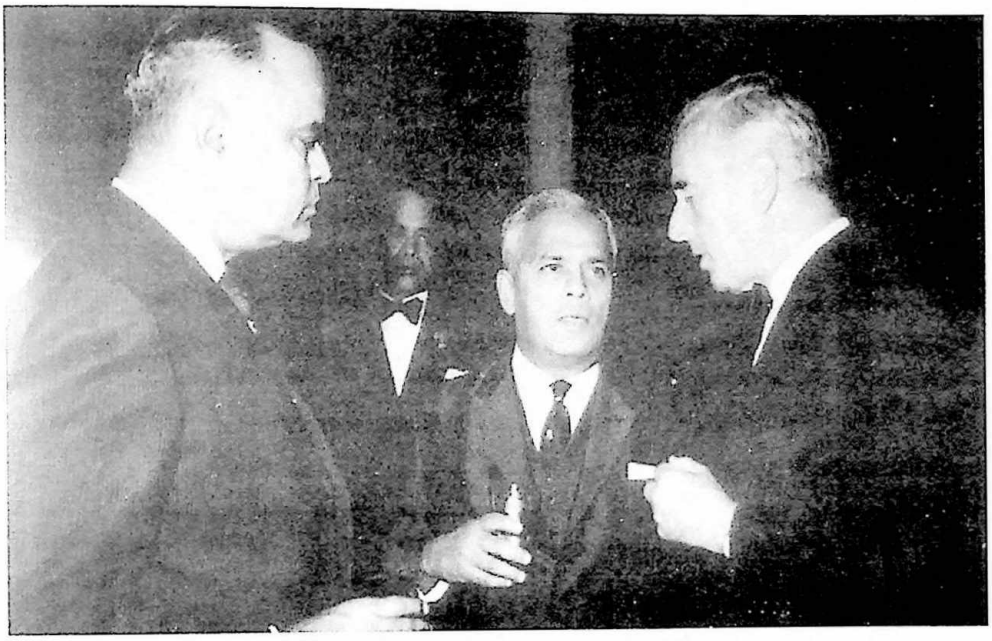


Prime Minister Nehru and the Chief of the Naval Staff Vice Admiral BS Soman - 5 June 1962



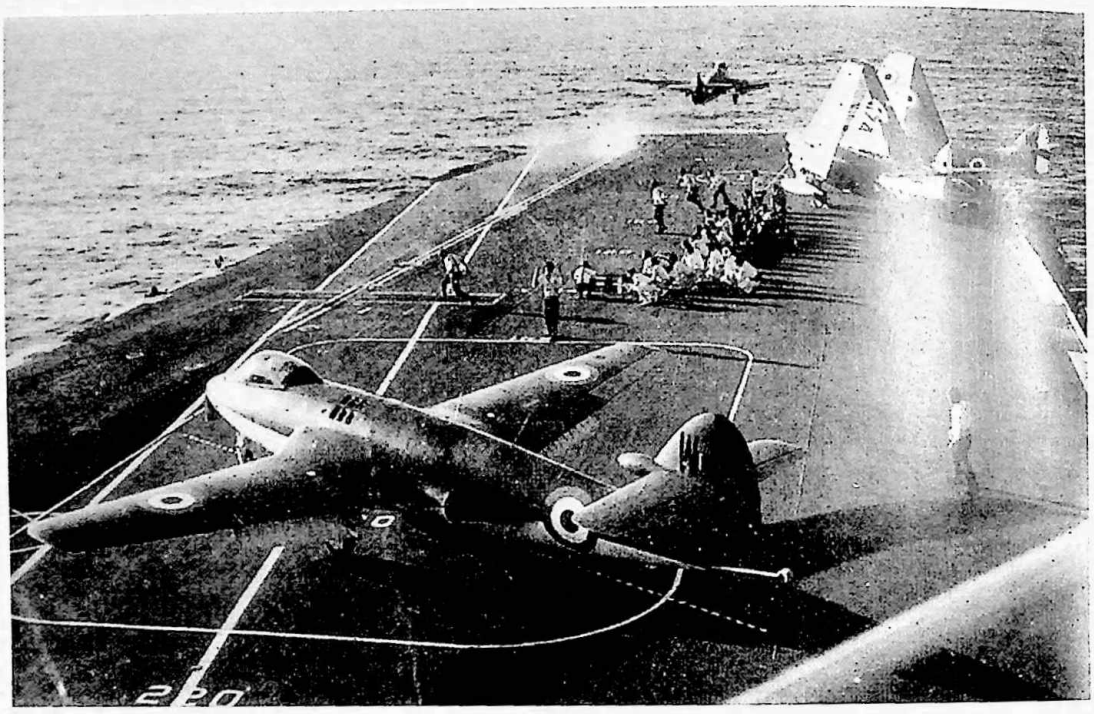
Delegation to the Soviet Union - September 1964 (L to R) Rear Admiral SM Nanda (DCNS), Mr YB Chavan (Defence Minister) and Mr HC Sarin (Secretary Defence Production)

Discussion in Mazagon Docks in 1972 on the Frigate Project
(L to R) Vice Admiral SN Kohli (FOC in C WEST), Admiral SM Nanda (CNS)
Deputy Defence Minister and Vice Admiral BA Samson (Managing Director MDL)

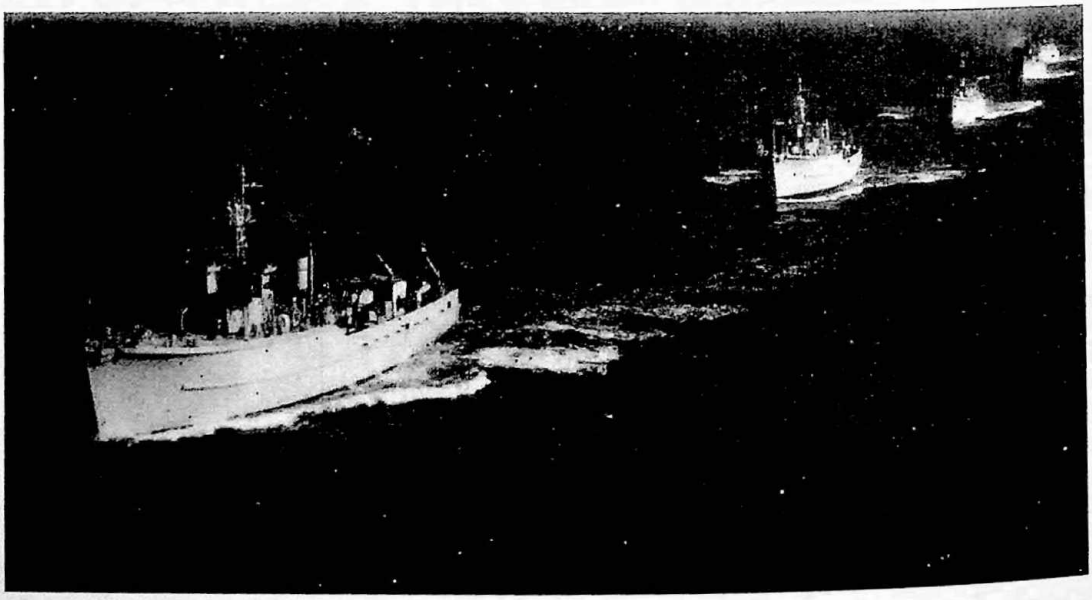


National Defence College 1965 (L to R) Rear Admiral SM Nanda, Vice Admiral AK Chatterji, Admiral of the Fleet, Mountbatten

INS KHUKRI (Anti Submarine Frigate) which was sunk in the 1971 War



INS VIKRANT launching Seahawk aircraft



Coastal minesweepers

became a Commander. The ease of access I had with these people, the quick decisions that were taken and the freedom that one had in many things, I think, today is very difficult to obtain.

"On the question of indigenisation, the amount of freedom I had was unprecedented. Almost as a one man team, I could shoot off letters to the prospective Indian companies which were operating in similar areas of products and say that look we have this requirement, we have this British company which is willing to transfer the technology, will you two get together and come out with a proposal, whether it was the switch boards, whether it was the motors. I have already talked about the fire control and the radar. It was an exhilarating period because there was complete freedom to do the best that you could and no hurdles were thrown in your way.

"I would also like to mention the generosity of the Admiralty. In the UK, lots of small fittings are supplied to the shipbuilders by small companies. These companies are so small that they do not have the ability or the infrastructure for any technology transfer. In any case, the items are simple and they do not require any elaborate technology transfer, either for training or their personnel coming to India to help initiating manufacture. So we were able to insist upon the Admiralty that these are all Admiralty Pattern items, you would have a set of drawings as the AHSP authority and you must give us those drawings so that we in turn could give these drawings to our manufacturers and get them made. I remember that soon after we started the construction in Mazagon Docks, a combined delegation of Admiralty and ship building people came to MDL and this was the point which we strongly made. The Admiralty agreed that this was important to us and they gave us the drawings.

"Again I have to say that Mr Sarin played a very important role in this because he went to the UK with Admiral Samson. With the CONIFPOs help, there were a series of meetings in UK and Mr Sarin made the point that "Look you may think that all this means that there will be less that Mazagon Docks will buy from the UK, but please remember that for certain things like the Gyro Compass and similar critical equipment, we have no other option except to import them from you. If we are able to indigenise and therefore afford more ships, you will have more business for the bits and pieces for which we inevitably have to come to you. Therefore in the long run, you will not be a loser". He was able to make this argument so effectively that as a result we got a lot of help from the Admiralty, they backed us when we had differences with Yarrows".

Rear Admiral Baxi, also later Chairman and Managing Director of Bharat Electronics Ltd, recalls:

"There were several organic elements which contributed to the success of the Frigate Project:

- First and foremost, amongst the three services, the Indian Navy has shown the greatest determination to be self sufficient and self reliant. And this was by a genre of people over generations, not merely by one individual.
- Secondly Naval Headquarters did not renounce its technical responsibilities. We had already created a Directorate of Warship Projects (DWP) and a DPI (Navy). These two organisations, although they were under the DGI, were charged with the task of developing indigenous manufacturers. The officers who were sent to the Department of Defence Production were seagoing naval officers, who were on deputation. They were not seconded to become part of the permanent cadre of DGI.
- Thirdly, the Directorate of Leander Project (DLP) was created within Naval Headquarters. This ensured complete product management. The design aspects, the coordination with the Lead Yard, the approval of the drawings and all the complete technical activity regarding ship building was handled in-house within NHQ itself.
- Fourthly, the Directorate General of Naval Design (DGND) was created within Naval Headquarters. Prior to that, Naval Design was being handled by a Deputy Director Naval Design in charge of ship building, a part of the Directorate of Naval Construction. By creating DGND, we got an agency, manned by officers on deputation, responsible for modernisation and indigenisation, under the direct control of Naval Headquarters, which slowly started to build up complete design and project management skills in-house, within the Navy.
- Fifthly because the civilian Corps of Naval Constructor officers all went away to the United States and the United Kingdom, except for three civilians Mr Parmanandan, Mr Dhumal and Mr Dotiwala, from Cmde Garg's time onwards, the Navy started

inducting naval constructors in uniform. So the uniformed constructors became a highly specialised cadre, capable of handling all aspects of naval architecture, ship design and ship construction.

"Similarly on the Mazagon Docks side, the Navy sent some of their best officers and best brains to go into shipbuilding. The best naval technical officers were placed at the disposal of Mazagon Docks to be able to build the first frigate.

"This total involvement of Naval Headquarters in ship design, ship construction, development, inspection and testing, whereby NHQ was itself the vendor and was also the customer, led to a pragmatic approach by NHQ whenever confronted with compromises in the design process.

"Unfortunately, in the Army and the Air Force, exactly the reverse happened. Because there was DRDO and there was DGI, most of the time they treated these two organisations as if they were the vendors and the Army Headquarters or the Air Headquarters were the customers. Because they themselves did not have any design or construction responsibility, they tended to treat the designer or Indian industry at that stage at par with their corresponding designer in the world market. In that mindset, if I get a MIG 21 from the world market, I want a MIG 21 from HAL. This was never possible and never feasible. And because there was no involvement on the part of the service, they were not able to succeed.

"Whereas in our case, first of all, progressive indigenisation was done. The goals and ambitions were limited. The first ship was made totally from sub systems imported from UK. The second ship had partial indigenisation, in the sense that whatever systems were available within the country or could be developed were utilised. The remaining systems were imported. And so on.

"One of the most important things which strengthened the confidence of Naval Headquarters was the transition from the first frigate to the second frigate. This was handled with a great degree of success by Naval Headquarters. I myself was the Officer in Charge of the Indian Naval Design Team at NEVESBU, the shipyard which would redesign the ship for us. At the NHQ end, the Directorate of Leander Project (DLP) was handling this. Somehow as a historical happenstance, we had the right partner in NEVESBU, we got the right amount of engineering support, the right drawings, the right type of documentation and the right Indian naval constructors, electrical officers and engineers. All of them were transferring technology within the service. That was the most important thing which created the impact.

"Then naturally the next corollary was that we re-designed the fifth Leander, the TARAGIRI, with one Seaking helicopter. Then we went on to the seventh frigate, the GODAVARI which again was designed by naval officers, with two Seaking helicopters. The Director Combat Policy and Tactics (DCPT), was the one who actually did the concept designing and asked why can't we have two Seaking helicopters on board? Right from top level decision makers like DCPT and DNP, down to a Lieutenant in the naval architecture branch, everybody learnt to take technological and professional decisions. A complete, integral, decision making process built up within the confines of NHQ.

"This is the one and only reason why, other than the Atomic Energy Commission and the Space Organisation later on, Naval Headquarters is the only service in this country which had truly succeeded in indigenisation. If you see the ingredients of Space and Atomic Energy, it is exactly the same story as Naval Headquarters. Space and Atomic Energy had nobody to fall back upon. They were the designers, they were the ones who formulated the concepts, they were the ones who did the designs, they ultimately had to see that their rocket fired and so a large amount of in-house work had to be done in developing systems, sub systems, concepts in design. These are the three services who you can be proud of, who have done true indigenisation i.e. Naval Headquarters, ISRO, and Department of Atomic Energy. In my opinion, this is the crux of the matter.

"I have always maintained that nothing succeeds like success. The indigenisation of the propulsion system, the main machinery, the auxiliaries, the switchboards, the cables, the fire control systems, including those which were manufactured by Bharat Electronics under license from SIGNAAL, all gave NHQ a lot of confidence. This confidence, of having succeeded with a concept and the feeling that we can do it, led to the design of the TARAGIRI and the subsequent design of GODAVARI and then, of Project 25, Project 25 Alpha and Project 16 Alpha, Project 15 and the Navy has never looked back. The ingredients of why NHQ succeeded, which

NHQ actually implemented, are not being replicated by many organisations in this country".

The Leander Frigate Project in Retrospect

The Leander Frigate Project, which commenced with the construction of the NILGIRI on 23 October 1966, completed with the commissioning of the VINDHYAGIRI on 8 July 1981. During these fifteen years, six frigates were delivered, an average of 30 months per ship. By the time of the 6th Leander, the indigenous content of bought out equipment had risen to 70%.

From every point of view, the Leander Frigate Project was a monumental achievement. The boldness of the naval decision makers, the enthusiasm, perseverance and dedication of the implementers in MDL, in the Ministry of Defence Production and in the Navy, the assistance by the British Admiralty, by the British shipbuilding collaborators, Vickers and Yarrow, by the Dutch Design Bureau NEVESBU, all of these were essential ingredients of success. Most valuable of all was the close and informal interaction between personages as high as the Secretary Defence Production and his team in the Ministry of Defence and Defence Finance with the bright young naval officers of the Leander Project. The elders trusted the youngsters to do what they thought was best. Likewise, the astounding success of indigenisation was a direct result of the high powered Indigenisation Committee's free, frank and helpful interaction with Indian Industry through DWP and DPI(N).

The enormous self confidence gained in this project by the Navy's weapon planners, the naval architects and the shipbuilder laid the foundation for the more audaciously designed warships that later emerged from Indian shipyards.

The table below shows the gradual diversification in combat systems from the first Leander to the sixth Leander. Equally significant changes were effected in the engineering and electrical machinery of these six ships.

	NILGIRI (First Leander	HIMGIRI, UDAYGIRI DUNAGIRI (2nd, 3rd and 4th Leanders)	TARAGIRI VINDHYAGIRI (5th and 6th Leanders)
Surface to Air Missile Launchers and Fire Control	British	Dutch	Dutch
Gun Mounting Fire Control	British	Dutch	Dutch
Ship Launched Anti-Submarine Torpedoes	-	-	Italian
Anti Submarine Weapon	British	British	Swedish
Anti Submarine Helicopter	French Alouette with British Torpedoes	Indian Alouette with British Torpedoes	British SEAKING with Italian Torpedoes
Close Range AA Guns	20 MM Oerlikon (ex stock)	20 MM Oerlikon (ex stock)	20 MM Oerlikon (ex stock)
Chaff	-	-	-
Radars	British	Dutch	Dutch
Sonars	British	British	British and French
Action Information system	British	Dutch	Dutch
Electronic Warfare	British	British	Italian

6

Indigenous Warship Design

Preamble

In the post independence Indian Navy, ship design made a modest beginning in 1962 with the setting up of a small Design Cell within the Directorate of Naval Construction (DNC). By 1965, this cell had expanded to become the DNC's "Central Design Organisation (CDO)".

Mr Parmanandan recalls:

> "There was a bid from Mazagon Dock and from the Ministry of Defence Production to take over the Design Organisation. Some senior naval officers asked me "Wouldn't you feel more comfortable working in a Public Sector Enterprise"? My answer was simple. "If the Navy is not directly involved in ship design, its building and its commissioning, we will meet the same fate as a Defence Production Unit, where the hardware is made and the Services are not accepting it, because the services are not deeply involved right from day one. The Navy's involvement should be right from the Staff Requirement, which should be refined by the Material Branch as regards our own capability. The Staff Branch and the Material Branch should work hand in hand till the design is frozen and then it can be given for production.
>
> "The second advantage is that the design period may be four years. Till the design is frozen, the shipyard does not know what to do. We can overlap the three year design period plus the production at every stage and ensure that we get the best out of the ship at the time of commissioning".

By 1968, this Design Organisation had successfully designed and handed over to the Navy numerous auxiliary vessels: 200 ton water boat AMBUDA (1966), 500 HP Tug BALSHIL (1966), Hopper Barges SEVAK and SAHAYAK (1967), Bucket Dredger NIKARAKSHA (1967), and Victualling Barges PANKAJ and AMRIT (1967/68).

Under construction were Landing Craft Utility (LCU's Mk1), an Ocean Going Tug (GAJ), Avcat Tankers (PURAK and POSHAK), HSD Tankers, 150 men Ferry Craft, Harbour Cargo Boats and diverse types of pontoons.

At the design stage were Oilers, Tugs, Ammunition and Water Barges and Diving and Water Boats. In 1966, the Design Organisation had also assisted in the construction of the new Fleet Tanker DEEPAK in Germany.

A list of Naval Yardcraft and by whom they were built during the period 1966 to 1975 is given in the table at the end of this chapter.

The Start of Major Warship Design

On 23rd October 1968, the Prime Minister, Mrs.Indira Gandhi, launched INS NILGIRI, the first of the Leander class frigates built at Mazagon Docks in Bombay. Having herself laid the keel in October 1966, Mrs Gandhi seems to have intuitively sensed the very long gestation time of naval construction. On her return to Delhi, the Prime Minister directed that urgent consideration be given to strengthen the Naval Design Office to work out the designs of future naval construction like frigates, submarines and smaller fast craft, suggested that all forms of future marine propulsion be considered, including nuclear propulsion, and stressed the need for both the ship designers and the ship builders to coordinate closely and in good time. This remarkable perspicacity of the Prime Minister was to prove momentous in the ensuing Defence Plan.

Building up the Cadre of Naval Constructor Officers

Captain Lohana recalls:

> "The Corps of Naval Constructors within the Navy was thought of and created sometime in 1951-52, when three civilian officers, Mr Parmanandan, Mr Dotiwala and Mr Dhumal were recruited. The first uniformed constructor, the late Commodore VP Garg, who was already in UK to be trained as an Engineer Officer, was asked to stay behind and convert as a Naval Constructor. This certainly was the foresight of the Naval planners

that one day the Navy will need to have Naval Architects who understand ship design and would help to maintain ships better. In the long run, it came as a blessing when we decided to design and build our own ships.

"In the initial stages, there was debate whether constructors should be a civilian cadre or in uniform. NHQ decided that they should be in uniform so that the Navy will have a hold over them, whereas civilians might leave as and when they liked. Secondly, some senior people in the Ministry did foresee that this small group of 18, which was sanctioned in the first instance, was not a sufficiently viable cadre in terms of giving adequate career prospects. So to make sure that there were adequate career prospects, they were made a part of the Engineering Branch as far as sanctions were concerned. Thus it became a kind of a separate fourth specialisation of the Engineering Branch, like Marine Engineering, Air Engineering, Ordnance Engineering and Naval Construction. To what extent this proved beneficial in the long run is a matter of debate.

"The Directorate of Naval Construction expanded as the Soviet acquisitions and the Leander Project came. At the commencement of the Leander programme, a Frigate Project Cell was also created within DNC, under a DDFP. Then as the Soviet acquisition programme came, since the DNC was the single point authority in Naval Headquarters for dealing with all ship acquisition contracts and new construction contracts, the Soviet acquisition work was entrusted to me when I returned from training in the Soviet Union. Since there was no separate sanction, I was held under the sanction of the DDFP(C) and tackled both the Frigate Project work, as well as the work connected with the Soviet Acquisitions which later on went off to other directorates, DAP, DLP and so on. Thus the DNC was the parent directorate for the present Directorate of Naval Design, the Directorate of Leander Project, as well as the Directorate of Acquisition Project. It is now called the Directorate of the Naval Architecture, which is the professional directorate in the Material Branch for Naval Architecture policy.

"The training of the naval constructors of the first few batches, including ours, was carried out in UK. When it was decided to train them in India, the faculty of Naval Architecture at IIT Kharagpur, which was the only faculty then in India for this discipline, was selected and a further two years course was given to these Naval architecture graduates to become Naval Constructors, by making them Naval Architects for warships. This was achieved by appointing two constructor officers trained in UK at IIT Kharagpur in the Naval Construction Wing set up within the Naval Architecture Department. Gradually, with the reduction in the availability of Naval Architect graduates per se from Kharagpur opting for the Navy, it was decided to recruit graduates in allied branches of engineering such as Aeronautical, Mechanical, Metallurgical etc and cross train them as Naval Constructors, which was again done by the Naval Construction Wing within the IIT. Naturally, the training load increased, because not only was it cross-training to adapt them to warships, but to Naval Architecture and ships as a whole.

"At about this time, the faculty at IIT Kharagpur did undergo some dilution and we felt that the quality of training may be adversely affected. At the same time, the available expertise within the Naval Headquarters in terms of the Material Branch as well as Staff who could be called upon to give lectures to the students and the setting up of the Design Directorate which could impart some practical training sessions to the students was the idea behind the proposal to shift the Naval Construction Wing itself from IIT Kharagpur to IIT Delhi, where the basic academic faculty in terms of maths and applied mechanics, which were essential inputs, were certainly of a very high order. It took a certain amount of persuasion within the Navy as well as with the IIT authorities and eventually it was successfully brought about around the mid 70s"

Strengthening of the Design Organisation

A major objective of the 1969-74 Defence Plan was self reliance in the field of warship design and warship production. The aim was to meet the Navy's requirements through indigenous efforts and conserve foreign exchange. Accordingly the indigenous construction of frigates, patrol craft, submarines, minor war vessels and auxiliaries had been accepted in this plan.

In 1969, Naval Headquarters proposed to the Government that a full fledged Directorate of Naval Design (DND) be sanctioned. At that stage, the Navy did not have either adequate design experience or capability. There was also an acute shortage of technical officers. Naval Headquarters had envisaged

induction of foreign designers on loan, with assurance of back up from their parent organisations. However, negotiations with the UK for the deputation of such designers did not bear fruit.

Meanwhile, soon after the start of the Leander construction programme, a choice had to be made whether the second and subsequent Leanders were to be identical to the first Leander (the advantage being standardisation and the disadvantage being obsolescence) or whether design changes should be effected from the second Leander onwards to enhance combat capability. It was decided that indigenous frigates should, as far as possible, have the latest equipment.

In 1970, the Directorate of Naval Design (DND) was approved. It started off with the design for new classes of Seaward Defence Boats (SDBs MK2), Survey Vessels, and a Landing Ship Tank (LST). The most noteworthy feature of the DND was that it was conceived and created as an integral part of the Navy, thereby enabling close interaction at all levels, while functioning under the scrutiny of the Naval Staff.

In 1973, a team of designers from the Soviet Union were invited to visit India to suggest an organisation to design frigates and submarines. They quantified a requirement of over 170 qualified designers each for tackling the design of the new frigate and the design of the new submarine. These requirements of manpower were just not implementable within available resources. The Naval Staff therefore accepted the revision of the staff requirements and approved a modified Leander hull with a different weapon package, instead of insisting on an altogether new frigate design. This decision was to result in the GODAVARI class frigates of Project 16, which retained all the indigenous propulsion machinery and other equipment already developed for the six earlier Leanders.

In early 1975, the Design Organisation commenced conceptual design work on Project 16. By end 1975, the Naval Staff and the Government accepted the design. Detailed drawing and design work started in 1976.

The Petya class submarine chasers had been acquired from the Soviet Union in the mid 1960's. They would therefore need replacement in the mid 1980's. Naval Headquarters decided that their replacement would be indigenously designed and constructed as "Corvettes" for the defence of the island territories and off shore oil rigs. In 1975, design work commenced on ships of the Corvette Project, which eventually culminated in the commissioning of the KHUKRI class corvettes of Project 25.

Throughout the decade 1965 to 1975, the non availability of sanctioned manpower constrained the balanced growth of the Design Organisation. The shortage of service officers was particularly acute. In retrospect, the successful achievements in warship design during this period can be attributed to two factors:

- Accepting an overlap between the "design" and "production" phases. This enabled a shorter time frame from the concept design stage to the completion of the first ship of the class. It minimised the obsolescence factor. And it ensured lower costs by minimising escalation.
- The team of talented young constructors built up over the preceding twelve years by the founding fathers of the Design Organisation, which included Shri S. Parmanandan, Shri Dotiwalla, Shri Dhumal, Commodore V P Garg, Captain Thukral and Captain KK Lohana.

Shri Parmanandan was awarded the PADMASHRI in 1970 in recognition of "his eminence as the leading naval architect in the country and his dynamism, dedication and drive in building up the capability of his organisation".

The Challenges Posed in Warship Design

Warship design and construction comprise five main stages:

- The first stage is the Formulation of Preliminary Staff Requirements by the Naval Staff. These are the requirements that the ship will be required to meet, based on the evaluation of future threats and the ships' role. These are first conceived as staff targets, which form the basis of the dialogue between the Naval Staff and the designers to establish that what is demanded is technically feasible and conversely, that what is technically feasible will meet the staff aspirations. A number of feasibility studies are carried out. Eventually the Preliminary Staff Requirements are generated which spell out the role of the ship, its weapons, sensors and the other major equipment which the ship is required to carry. In addition, important parameters like speed, endurance, type of propulsion, restrictions on dimensions and complement are indicated.
- The second stage is of Concept Design, which is the first interpretation of the preliminary staff requirements. During this stage, a number of design options are explored and developed up to a stage which enables comparative evaluation. The

design proceeds on the basis of inputs from similar past ships, empirical relations, past experience and the designer's judgment. The process is essentially iterative. At the end of Concept Design, the most promising of the options are compared and the one likely to best meet the staff requirements is chosen for further development, in consultation with the Naval Staff.

- The third stage is of Preliminary Design. Various aspects and parameters, provisionally determined during the concept design stage, are investigated in detail. Design proceeds along a converging spiral form, investigating various aspects of dimensions, weights, volumes, stability, speed and powering, until an acceptable compromise of all the important and often conflicting parameters is achieved. All design calculations are prepared during this stage. System schematics are generated to facilitate weight, volume, flotation and stability calculations. At the end of Preliminary Design, a presentation is made to the Naval Staff, indicating aspects/areas in which the design may entail a compromise in Staff Requirements. After the Naval Staff approve the preliminary design, the preliminary staff requirements, as modified, are promulgated as the final or frozen Staff Requirements.
- The fourth stage is of Detailed Design. Hydrodynamic model tests are carried out at the beginning of the Detailed Design stage. These validate the predictions made through the analytical processes. Shortcomings emerging out of the results of model tests are rectified by modifying the design features. During this stage, special studies are undertaken in the critical design areas. Detailed structural drawings, system details, layout and composite drawings are prepared. Comprehensive specifications are written out. A dialogue is then initiated with the ship builder and the detailed specifications and drawings are made available to him.
- For a typical warship project, nearly 2000 drawings, some running into several sheets, and over 15 volumes of specifications of nearly 2000 pages, are required to be generated and over 1000 guidance drawings supplied to the ship builder. In turn, the shipyard generates over 1500 drawings for submission to the designers for approval. These then form the basis for the shipyard to prepare its working drawings, which would number several thousands.
- The fifth stage is of Construction. On the basis of inputs from the designer, the shipyard orders long lead items and materials and proceeds with activities preparatory to commencing production in the workshops. These include faring of lines, preparation of workshop drawings and assembly of jigs and fixtures. To minimise the overall period of design and construction, the activities are telescoped and shipbuilding functions are commenced in the latter half of the detailed design phase. Throughout the construction stage, a continuous flow of drawings and information has to be maintained between the designers and the shipyard.

Project 16 Godavari Class Frigates

The lessons learnt in the 1971 Indo Pakistan War, the detailed discussions with Russia for the next series of Russian acquisitions and the progress made in the development of indigenous systems made it possible for the Naval Staff to consider major improvements in the combat capability of frigates. The Directorate of Combat Policy and Tactics suggested that the entire missile and gun package of the Soviet Nanuchka class missile corvette be installed in the frigates which would follow the VINDHYAGIRI, together with two Seaking anti submarine helicopters, the latest Indian APSOH Sonar, a mix of Soviet and Indian radars and Italian CAIO and EW systems. The Directorate of Marine Engineering suggested that steam propulsion be replaced by gas turbine propulsion.

The Naval Headquarters Technical Team which visited Canada in 1974 saw the Canadian 4100 ton Destroyer DDH - 280 which had two Seakings embarked. Naval Headquarters decided to try and embark two Seakings in the smaller Leander hull.

The Design Directorate was headed by Shri S Parmanandan. The new frigate design was entrusted to a project team headed by Commander (later Captain) NS Mohan Ram, a Naval architect, trained in the United Kingdom and who had worked in the Royal Navy's Leander Design Section. Organisational capability had to be built up concurrently with the design, as there were not enough trained draughtsmen or junior designers. Expertise too had to be developed in-house.

Mr Parmanandan who was then the DGND recalls:

> "The Navy was looking around for a cost effective option where surface to surface, air to surface and anti-air capabilities would be available from

a single ship. This naturally required the ship to have helicopter launched air to surface missiles, surface to surface missiles, surface to air missiles, a large stock of anti submarine torpedoes and two Seaking helicopters, so that at any one time you could keep one helicopter in the air be it for an anti submarine mission or an anti ship mission. The staff definitely wanted two Seakings. They were not happy with only one. With surface to surface missiles, surface to air missiles and two Seakings, it appeared to be a cost effective ship. Certainly the Leander hull was in no position to take it.

"The second problem that came up was the economics of it. We had invested more than 150 crores in the indigenous development of the steam machinery. This led to a clear decision that the propulsion package will remain the same, but the ship must have the weapon package, which meant both the L Band and the S Band radars and, to accommodate the Soviet design philosophy and their weapons, a dedicated radar for each weapon. This was too much to go into a Leander design. This naturally meant that a new frigate had to be designed from scratch, except for the propulsion package which should not change.

"Our initial check indicated that we may lose around 2 knots of speed but could provide 20% longer range, 150% more aviation fuel, all weapon packages and additional complement to man the weapons and the helo included. The staff were willing to accept the 2 knot penalty.

"From there, we proceeded to do a serious design. Half way through, we realised the ship was getting longer and thinner and if we adopted the same propulsion package, the length advantage may give an edge and we may be able to do just about half a knot less than the Leander. From that proposition, we went for a model test. Of course, we changed the fore part of the ship because the Leander fore part would have posed a lot of obstruction, both for the missile, the gun and the surface to air missile. Starting from that point, there was very little commonality between the Leander and the Project 16.

"There was another technical fineness in ship propulsion and ship model test. When at maximum speed the cut up under the stern of the ship happens to be in the trough of the bow wave, the ship loses speed. If the cut up happens to be on the crest of the bow wave, the ship gains speed. When Mohan Ram, Subaiah and I had a look at the model test results, we found that the ship was comfortably sitting on the crest and we were overwhelmed. It seemed possible that the ship may go even faster than the Leander at full power. This was amply proved during trials. Till 60%, 70%, 75% of full power, she was one and half knots slower than the Leander. But the moment she reached 85% to 90% , her acceleration was higher and she could overtake the Leander.

"We had a group of engineer and electrical officers working with us. Mazagon Dock wanted them and I gladly agreed to let them go. When the ship went out for trials, there were Soviet experts on board. They had their own misgivings about the ships speed but when they observed she was doing 29 knots, 29.5 knots and even upto 30 knots, they were surprised and equally we were surprised. The ship was keeping up with the gas turbine propelled RAJPUT. When both ships were asked to do a zig zag manouvre, the GODAVARI could do better than the RAJPUT.

"The wake of the Project 16 was classic, whereas the RAJPUT was churning the ocean. Any commanding officer would like to have a ship which has no wake at all, or at least a partially suppressed wake.

"I do not claim any credit for me or for any of my design officers. Its one of those things where fortune favours those who are willing to take the risk. And GODAVARI happened to have ended well".

Captain Mohan Ram recalls:

"All these changes could only be accommodated in a larger hull, with increased internal space for weapons and equipment and deck space for missiles.

"The evolution of the new frigate is a fascinating story of calculated risk-taking, bold innovation and extrapolation of available knowledge. The Navy's marine engineers understandably desired to introduce the latest technology gas turbines in these new frigates. The Naval Staff had specified surface-to-surface and surface-to-air missiles, larger helicopters, modern guns and sophisticated command and control systems.

"Early on, the Design Group decided that they would not change the proven steam turbine propulsion of the NILGIRI class frigates to gas turbines. Major investments had been made on facilities and tooling in Bharat Heavy Electricals Limited and Hindustan Aeronautics Limited for

the manufacture of steam turbines and auxiliaries. It was felt that it would be prudent to amortise this investment over a larger number of vessels.

"Also the new class of frigates already needed a newly designed hull. The weapon and control systems would be different. If the propulsion systems were also changed, it would lead to too high an intensity of change, which the Design Organisation and the Navy might find difficult to absorb and implement. So a sensible decision was taken to design a larger hull, using well established, conventional, steam turbine machinery and auxiliaries.

"The larger vessel would displace twenty percent more than the 3000 tons of the NILGIRI class frigate and would be about fourteen meters longer. The Naval Staff also wanted the vessel to go at least one knot faster than the NILGIRI class. As the head and naval architect in the Design Group, I serendipitously discovered that with the same capacity of steam turbines as in NILGIRI, the new design ship would go faster, due to improved hydrodynamic conditions at maximum speed. There would however, be a small penalty of fuel consumption at cruising speeds. This surprising discovery was at first pooh-poohed by many, but was subsequently verified in model tests and confirmed during sea trials of GODAVARI, the first ship of the class.

"The major change which had to be implemented in the design, was the decision of the Naval staff to use Soviet weapons and fire control systems together with Western and Indian weapon systems and propulsion systems. This entailed the use of two sets of main electrical power distribution systems, - one 440V, 3 phase, 60 cycles and the other 380V/3 phase, 50 cycles. This had never been done before in any warship, but this radical decision was also taken. For the first time, a hybrid vessel was developed, combining Western and Soviet systems in one hull.

"The decision to go ahead with the design was a bold act of faith on the part of the Navy. It reflected the confidence the Navy had in its young designers and the growing capability of Mazagon Docks. The go-ahead for the ship was given in 1975. The keel was laid in 1977. GODAVARI commissioned in December 1983. She fully met the specifications and exceeded all major performance requirements".

In recognition of this achievement, Commander Mohan Ram was awarded the Vishist Seva Medal.

Captain Lohana recalls:

"The Project 16 started with a dialogue with the naval staff on what all they could have. Many sketch design studies and concept studies were made. Ultimately what clinched the issue in favour of the Project coming to DGND was that here was a frigate which held the promise to house and operate two Seaking helicopters. I think this was the clinching point which made the Navy decide to go in for this design. At the concept stage, we were all involved but this idea probably emanated not from one individual, but instead got evolved as a result of discussions.

"There was a definite element of selling this concept to the Naval Staff, so that the Design Organisation could take on this challenge and progress it. The credit must go to Mr Parmanandan of course, who was leading the team, but there were people like then Commander Kapoor and Commander Mohan Ram who played a prominent part. Commander Mohan Ram of course then became the project in charge for the rest of the main project.

"I had one other small part to play when we were doing the upper deck layout. When the missile containers were put on either side of the superstructure which was protruding out towards the forward end from the main superstructure, there was not enough space for people to walk past the containers, after allowing for the minimum distance between the containers. My main contribution in this area was suggesting that there should be sponsons on either side of the weather deck to locally create more width to allow for the extra space required. This proved to be a successful and distinctive feature of the ship.

"After this project was finally approved for construction, Mazagon Dock wanted the Navy to send somebody who would help the shipyard in translating the Navy's design into workshop drawings. I was asked to go to Mazagon Dock as the Head of the Warship Design Section and entrusted with the task of doing that. It was a great opportunity. As the work progressed, there was constant interaction between the production side on one hand and the Naval Headquarters design organisation on the other. It was tight rope walking between the two, which we managed to do successfully.

"At the same time, the colleague who was in charge of the Merchant Ship Drawing Office also resigned and left, so I had the opportunity of heading the entire design organisation of the Mazagon Docks. And by the time I was called back to Naval Headquarters as DGND, the GODAVARI, the first ship of the class, had almost proceeded to completion. I attended her commissioning ceremony as the DGND".

Project 25 KHUKRI Class Corvettes

In the mid 1960's, Government had accepted in principle the Navy's requirements for 500 ton patrol craft. In subsequent years, various options were considered - building them in Bombay in the Gun Carriage Basin near INS Kunjali, building them in the new Naval Dockyard at Visakhapatnam etc. By the early 1970's, two schools of thought had emerged. One view was that with the cost of ships steadily increasing, the Navy had no option but to go in for small, fast, missile armed corvettes. The other view was that in view of foreseeable threats, all the staff requirements could not be met in a 500 ton patrol craft. The outcome was that the 500 ton patrol craft got renamed as the Corvette Project, to be built in two versions - anti aircraft and anti submarine. International tenders were called for and various weapon packages were considered. Eventually, in 1973 the project was dropped because of the serious shortage of foreign exchange. NHQ then decided that the corvettes would be designed and built indigenously.

Mr Parmanandan, the Director General of Naval Design at that time, recalls:

"After five or six years of working with the Petyas, the Naval Staff wanted a new generation of ships. The Corvette Project had been going up and down, with French collaboration, with international tenders and with British private companies putting in a bid. All that took very nearly three years. But nothing came out of the series of discussions we had, either with the French or with the British. The Naval staff then took a decision to go ahead and start work on a design and construct a Corvette to our own specification, which would accommodate a helo plus four Soviet surface to surface missiles and a Soviet gun mounting. After this decision was taken, the normal process of model testing, powering and general layout were all finalised as a preliminary design.

"There were a lot of discussions whether for anti missile defence we should go in for the Soviet 30 mm gun mountings or the Bofors 40/70 gun mountings. That took about six to seven months. Ultimately a clear decision was given that we should have four surface to surface missiles plus the Soviet guns. It was also decided to fit some of the Leanders' radars, sonar, communication equipment etc.

"The point where the decision got delayed was the propulsion package. There was discussion as regards a single engine room or two engine rooms, two engines per shaft or one engine per shaft etc. The gearing of two diesel engines to one shaft posed problems. Would it be better to have a single robust engine rather than two, in a small ship of this size? Should we have a fixed pitch propeller or a CPP? To settle these issued, NHQ constituted a group of officers to write a service paper. The then COM and DME produced a paper based on which the design proceeded and the final powering calculation was completed. The choice of propeller was also settled and it was decided to go in for a controllable pitch propeller (CPP). However that resulted in a slightly heavier tail shaft and propeller and a higher trim aft. The discussions over engines, and the mid course correction which some people wanted that it should not be a single engine per shaft or two engines per shaft, did push the project back by about 18 months.

"When you are working on a Naval Staff Requirement and when the total project starts sliding back 18 months, every body gets fresh ideas. Fresh weapons, fresh helicopters, fresh radars, fresh sonar and every one wants to pitch in. That has a very deleterious effect.

"By the time I left NHQ, the ship had been ordered, the design had been frozen and the model tests had been completed. But I believe the Soviets insisted that the bridge structure should go further aft. And it got shifted. I would not have permitted that to happen. It caused some trim problem and it got adjusted by other means. In my opinion, Project 25 was a fairly well thought out design, it had a well thought out weapon package which I believe is giving good service."

Warship Modifications Undertaken 1965 to 1975

Major modifications designed and implemented between 1965 and 1975 were:

- The modernisation of and fitment of Soviet surface to surface missiles in TALWAR and TRISHUL, which had been acquired in the early 1960's.
- The conversion to the training role of the British Type 41 frigates, BRAHMAPUTRA, BEAS and BETWA which had been acquired in the end 1950's.
- Phase One Modernisation of and modifications to the aircraft carrier VIKRANT.

Fitment of Surface to Surface Missiles in TALWAR and TRISHUL

In 1973, the Naval Staff commenced a study on the half life modernisation of the two Type 12 British frigates, TALWAR and TRISHUL, which had by then completed over 11 years in service. In view of the proven efficacy of the Soviet surface to surface missiles in the 1971 war, the Naval staff directed that the feasibility be examined of lifting a complete surface to surface missile system from a non operational Soviet missile boat and fit it on board TALWAR. Concurrently, it was decided to fit a modern electronic warfare system which would help in identifying enemy warships from their radar transmissions at ranges compatible with the range of the missiles.

Mr Parmanandan then the DGND, recalls:

> "The Russians were not at all in favour of putting one of the three missiles on the centre line. I did not see anything wrong in putting it, as long as the deflectors were correct and we knew the correct distances and if the flame should strike the bulkhead, there should be no damage done. So we decided to have a forward bulkhead with an air space and also have a walkway for people in case something goes wrong.
>
> "We had a group of scientists in the first firing for which we wrote down the specifications for firing the missile. That raised the eyebrows of some officers in the Material Branch, specially in the DWE. They said "who are these jokers in Ramakrishna Puram to tell us what to do with the weapon on board?" But we were worried about an accident, nothing more than that. We had asked for many measurement gadgets. One of these was to put a series of shoe strings along the deck and on the bulkhead. We knew what their charring temperature was. That would immediately indicate how far the deflectors were effective and how far they were not effective. a salvo of three missiles was fired successfully."

Captain Lohana recalls:

> "It was a very very bold step to remove the P 15 missile containers from one of the missile boats and fit them in the Type 12 frigates. Not only that, the Soviets were not particularly enthusiastic about such a proposal. It was therefore decided that we would do it on our own. Secondly, the three missile configuration, which was planned for TALWAR's foxle deck to get maximum benefit out of the deck area available, was something unique. There were definitely inherent doubts and risks as to how the flight paths would be affected and what were the clearances required and what should be the interface with the rest of the equipment and so on. This assignment became an article of faith with Mr Parmanandan, the then DGND. In the absence of clear cut documentation and data, quite a large amount of study had to be carried out of the existing fittings in the missile boats in order to decide what equipment was to be removed in addition to the containers themselves, what was the interface, how the fire control would work and so on. And I must say that the whole exercise, inspite of certain technically inspired assumptions, was something which went off very well and the Navy could well be very very proud of it".

Conversion of BRAHMAPUTRA, BEAS and BETWA for Cadets Training

With the starting up of the Naval Academy in 1971 to increase officer intake, it became necessary to increase the capacity afloat for training cadets and midshipmen at sea. The cruiser DELHI was converted to undertake the sea training of midshipmen. Thereafter the three Type41 frigates which had joined the fleet in 1958, 1959 and 1960 were converted in the 1970's for undertaking the sea training of cadets.

Phase One Modernisation of VIKRANT

After the 1971 war, VIKRANT needed a long refit to replace her cracked boilers. Since this was expected to be a long refit of about three years, it was decided to concurrently undertake as much modernisation of weapons, sensors and AIO as possible.

Mr Parmanandan, the then DGND recalls:

> "There was a serious proposal to put the large Soviet combined surface warning - height estimating - S band radar on the ship. Vikrant's masts were already saturated. We were asked to

find out some way of putting the antennae up there. We worked with the IIT Madras on the structural side and we gave a proposal which was workable. But the cost factor and the time required was such that the Staff decided to forego that radar.

"The second thing we spent a lot of money and a lot of time on was that a lot of DC/AC alternators were put on board Vikrant to create a larger AC power capacity for dedicated services. There was a proposal to fit Bofors guns and a new type of laser sensor for anti missile defence. I do not know whether it ended up as a success or not. The initial proposal was to fit the Soviet 30 mm gun mountings in lieu of the hand operated Bofors. If we had gone firm on that, probably we would have achieved it at a much lesser cost and much quicker. While the Soviet weapon systems had their own deficiencies, they had the advantage that it suited our culture and way of working and maintainability. Each 30 mm mounting had its own dedicated radar and its own display which made it autonomous for operation. So if one mounting did not work, at least the other one would be available. That philosophy was not accepted half way through. And when they changed over to the new weapon system, our Directorate was not any further involved.

During this phase of modernisation, VIKRANT was fitted out with:

- Signaal LW 04, DA 05, ZW 06 radars and DS 22 AIO system as in the Leanders.
- LIOD Optronic Sights and Bofors 40/70 gun mountings for anti missile defence.
- The main and auxiliary machinery were refurbished to the maximum extent feasible.

Indigenous Warship Design in Retrospect

As in the case of the Leander Frigate Project, the Navy's achievements in Indigenous Warship Design were astounding. the transfer of talented young officers between the Frigate Project and the Design Organisation generated enormous synergy. Soviet warship designers and the Soviet weapon system supply organisations were generous and unstinting in their help. The exchange of detailed information in the 1970's regarding the new Soviet acquisitions enabled weapon planners in the Naval Staff to suggest cost effective staff requirements which would achieve the much wished for standardisation of systems and economies in weapon inventories. The confidence built up in Mazagon Docks during the Frigate Project helped to build the ships which earned much praise from the Navies of the world.

Indigenous Naval Yard Craft Built Between 1966 and 1975

Sl.No.	Name	Type	Commissioning Date	Ship Builders
1.	AMBUDA	Water Barge	31-3-66	GRSE Calcutta
2.	BALSHIL	Tug	30-8-66	-do-
3.	AMRIT	Victualling Barge	23-5-67	Peoples Engineering works Calcutta
4.	PANKAJ	-do-	23-5-68	-do-
5.	SAHAYAK	Hopper Barge	31-12-67	GRSE Calcutta
6.	SEVAK	-do-	31-12-67	-do-
7.	NIRAJ	All weather boat	20-7-67	AFCO Bombay
8	NIKARAKSHA	Bucket Dredger	March 67	MDL Bombay
9.	PURAK	Avcat Tanker	05-6-70	-do-
10.	POSHAK	-do-	03-7-70	-do-
11.	-	Boat Pontoon	20-5-70	Andrew Yule Calcutta
12.	-	-do-	20-5-70	-do-
13.	-	-do-	20-5-70	-do-
14.	-	Berthing Pontoon	16-5-70	CIWTC Calcutta
15.	-	-do-	16-5-70	-do-
16.	LSA-1	100 ton Barge	24-7-70	Alcock Ashdown Calcutta
17.	LSA-2	-do-	07-8-70	-do-
18.	LSA-3	-do-	21-8-70	-do-
19.	ANGAD	Tug	03-3-74	MDL Bombay
20.	AJRAL	-do-	30-10-94	-do-
21.	ANJAN	-do-	16-11-73	-do-
22.	ANUP	-do-	29-6-74	-do-
23.	ATHAK	-do-	30-10-74	-do-
24.	KHADAN	Grab Dredger	30-4-75	-do-
25.	KICHODHARA	Bucket Dredger	01-5-75	-do-

THE 1971 INDO PAKISTAN WAR

7

The Events Prior to War

The Pakistan Navy's Development between 1965 and 1971

The Pakistan Navy's Interaction with the Soviet Union (1966 to 1969)

After the Rann of Kutch incident in May 1965, the US had suspended all military and economic aid both to India and to Pakistan. In July 1965, the Soviet Union offered economic and other assistance to Pakistan, in an endeavour to entice Pakistan away from its dependence on the US and on China.

In November 1965, in preparation for the Pakistan Foreign Minister's delegation to Moscow to prepare for the later discussions at Tashkent, Pak NHQ put in a requirement for six submarines, eight missile boats, twelve motor torpedo boats, maritime reconnaissance aircraft, mines and torpedoes.

In June 1966, a Pakistan naval delegation visited the Soviet naval bases in Odessa and Sevastopol in the Black Sea. They were shown a submarine, an anti submarine vessel, a missile boat, a Landing Ship Tank (LST) and a motor torpedo boat. Neither mines nor maritime reconnaissance aircraft were offered or shown.

In May 1968, a two ship Soviet naval squadron visited Karachi. It was the first ever visit of Soviet warships to Pakistan. Discussions centred on the Soviet side being able to help modernise the ships of the Pakistan fleet. The Pakistan Government also formally requested for a feasibly study of fitting Soviet surface to surface missile on the Pakistan Navy's destroyers.

In July 1968, a high powered Pakistani delegation to Moscow was offered six missile boats and associated support infrastructure. However, the Pakistan Navy's assessment was that the smallness of the missile boat would denigrate its effectiveness in rough seas, because the vertical accelerations likely to be experienced during the monsoon months would exceed the safety limits for missile firing. They therefore asked the Soviet side to either give a larger 800 ton missile boat or, if that was not possible, to study the feasibility of fitting missiles on the existing ships. In early 1969, a Soviet team studied the problem. In due course, the Soviet side informed the Pakistan Navy that they had no plans for building larger missile boats nor was it feasible to install the missile boat rockets in the existing ships of the Pakistan Navy; they advised the Pakistan Navy to go in for the missile boats which had already been offered.

"The Story of the Pakistan Navy" states:*

'After the Russian 'verdict', there was much soul searching in NHQ. Lengthy discussions eventually produced a consensus that it would not be in our interest to opt for the Osa Class missile boats. Apart from the obvious limitations of weather, there were other considerations too. Unlike the Indian Navy in time of war, the Pakistan Navy missile boats would have to look for targets in an area 500 miles or more away from their base. The range, endurance and anti-aircraft defence of Osa class boats were woefully inadequate for such operations.

'In any future conflict, Pakistan expected the main threat to emanate from Indian submarines and missile boats. The Osas would be almost irrelevant in countering the same. At best, they would give a fifty percent chance in a missile boat vs missile boat encounter, hardly worthwhile when you can destroy such a boat with impunity and at will from the air. (CNS questioned the validity of this statement as the Navy had no aircraft) Against submarines, the Osas had no role to play whatsoever. There was also the over-riding fear that having provided the missile boats, the Government, strapped for finances as it was, would be unwilling to approve the replacement of the aging and obsolete destroyers of the PN Fleet. If that happened, the PN would be reduced to being a coastal navy which would be effective only at certain times of the year.

'With due regard for all relevant factors, a case was prepared for replacing three old destroyers with Type 21 frigates to be obtained from the UK without actually rejecting the offer of

* Page 288.

the missile boats. The implication was that the Navy's primary requirement was replacement of its aged surface ships. The missile boats, if the government wished to buy them, should be in addition and not in lieu. Admiral Ahsan, while he was the Commander-in-Chief, personally took the file to President Ayub Khan. "The President," he later said "would agree to missile boats only and nothing else."

In March 1969 the Soviet Defence Minister, Marshal Grechko, led a large military delegation to Pakistan. Admiral Smirnov, the Commander of the Soviet Far Eastern Fleet based at Vladivostok, visited Karachi and held discussions with the Pakistan Naval Chief. "The Story of the Pakistan Navy" states:*

'Admiral Ahsan's impressions of the Soviet policy objective in regard to Pakistan at the time were recorded, and some of them were valid for many years thereafter. Briefly, the main points were:

- The Russians aimed to replace Chinese and western influence in Pakistan.
- Normalisation of relations could be encouraged without a serious attempt to solve the Kashmir dispute to avoid a common Indo-Pak outlook.
- The Indo-Soviet interest inhibited Soviet actions to resolve the Kashmir dispute on terms unfavourable to India.
- The stoppage of US military aid had created a problem. A Russian offer of military assistance could be irresistible if the terms were attractive.
- Military aid was the quickest and most effective means of gaining and developing powerful influence.
- The Soviets hoped to gain influence in the formation of Pakistan's foreign policy by a generous supply of military aid.
- The Russians hoped to create within Pakistan's Armed Force, a cadre of personnel oriented towards Russia.
- Gain a secure foothold on the littoral of the Indian Ocean which has a vast potential for furthering Soviet interests, and in providing enormous dispersal for maritime units in war'.

Subsequent discussions culminated in an understanding to supply Soviet military equipment to Pakistan. In preparation for the Navy acquiring missile boats, personnel were selected and given Russian language courses. And then suddenly in July 1969, a shift in policy at the political level altered the whole course of events. Although some Russian equipment was delivered to the Army and the Air Force, the chapter on naval assistance from the Soviet Union was abruptly closed.

This brief interaction between the Soviet side and the Pakistan Navy, when viewed in the context of Indo Soviet naval relations, pinpoints three aspects relevant to the events in the 1971 war:

- In 1966, after their mediation at Tashkent, the Soviet side offered and showed to the Pakistan Navy the same ships and submarines as they had done to the Indian Navy in 1964.
- Whereas the Indian Navy showed no interest in the Soviet missile boat offer in 1964 and contracted for their acquisition only in 1969, the Pakistan Navy's acquaintance with the capabilities of these boats started as early as October 1965 when due to the distance involved, the Indonesian Navy's Soviet supplied "missile boats arrived in Pakistan waters after the cease fire and then stayed on till such time as the chances of hostilities had receded". The Pakistan Navy then had detailed interaction with the Soviet side between 1966 and 1969 regarding the capabilities and limitations of the missile boats. And again in May 1971, Pakistan's C-in-C Navy visited Egypt where he was given a comprehensive briefing on the Soviet Osa and Komar Class missile boats acquired by the Egyptian Navy. All this interaction would have confirmed Pakistan naval assumptions that the missile boats were meant solely for harbour defence. This would explain the total surprise achieved during the Indian Navy's first missile action off Karachi on night 4/5 December when three ships were sunk.
- During their interaction with the Pakistan Navy, the Soviet side frankly reiterated that "Indo Soviet interest inhibited Soviet actions to resolve the Kashmir dispute on terms unfavourable to India". Indeed, when India protested to the Soviet Union about the impending military sales to Pakistan, the Soviet side told India that weaning Pakistan away from the US and China was as much in India's interest as that of the Soviet Union.
- The further development of a Soviet Pakistan military relationship is likely to have been constrained as much by US pressure as by the

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start in 1969 of discussions on the Indo Soviet Treaty of Friendship which was eventually signed in August 1971.

The Pakistan Navy's Underwater Forces Programme

In the early 1960's, the Pakistan Navy seems to have decided that in view of its inability to obtain budgetary priority for warship acquisitions, it was preferable to concentrate on building up its underwater offensive capability. This started with the acquisition on lease of an American ocean going submarine. It was to be followed by the acquisition from France of Daphne class submarines for coastal operations and from Italy of midget submarines (X craft) and chariots.

The primary targets for the Daphne class submarines were the large units of the Indian Navy - the aircraft carrier VIKRANT and the cruisers MYSORE and DELHI. The primary tasks of the X craft and the chariots were to incapacitate ships of the Indian Navy in harbour.

The GHAZI

In 1963, the US Government approved the transfer of a submarine to the Pakistan Navy on a four year lease. The US Navy's 2500 ton submarine DIABLO, after an extensive overhaul and conversion to "Fleet Snorkel" configuration, was transferred on 1 June 1964 as part of the US Military Assistance Programme. It was renamed as PNS GHAZI (SS 479) and arrived in Karachi in September 1964.

In the September 1965 Indo Pakistan war, GHAZI was deployed off Bombay with specific orders to attack only the heavy units of the Indian Navy. No encounter occurred. GHAZI's records state that she fired four torpedoes at an Indian frigate INS BRAHMAPUTRA and scored three hits. However BRAHMAPUTRA suffered no such hits.

Thereafter GHAZI's primary role was the ASW training of the Pakistani surface flotilla and the training of submarine personnel to man the new Daphne class submarines being acquired from France.

In end 1967, the Pakistan Navy applied to the US to renew GHAZI's lease. This was duly approved.

Between 1966 and 1968, GHAZI's material state deteriorated. She was due for refit but there were no facilities in Karachi. This was aggravated by the US embargo on spares for American supplied equipment. Arrangements were made for GHAZI to be overhauled in Turkey. With the Suez canal having closed in 1967, a short refit in Karachi made GHAZI seaworthy enough to undertake the long voyage to Turkey via the Cape of Good Hope. GHAZI sailed for Turkey on 6 March 1968 and arrived back in Karachi on 2 April 1970. Until November 1971, when her next refit was due, GHAZI was operational.

Daphne Class French Submarines

In 1963, the French Government agreed in principle to build three Daphne class submarines for the Pakistan Navy. However, it was not until after the 1965 war, that the French Government agreed to give a loan. The deal for three Daphnes was signed on 25 February 1966.

The first Daphne, HANGOR, was commissioned on 1 December 1969, the second, SHUSHUK on 12 January 1970 and the third, MANGRO on 5 August 1970. HANGOR and SHUSHUK arrived in Karachi on 20 December. MANGRO arrived a few months later.

X Craft, Chariots and the Special Services Unit (SSU)

In end 1965, a contract was signed with an Italian company for the acquisition of:

- Six X craft (midget submarines), armed with a conventional torpedo.
- Six chariots armed with limpet mines.

These craft were to be manned by a newly raised, elite frogman commando unit named the Special Service Unit.

By April 1968, the construction/assembly of these craft for the SSU had reached an advanced stage. However, major problems had already been experienced. The torpedo contracted for was incompatible with the X craft. Nor did the X craft design permit it to carry a torpedo. These X craft (midget submarines) were eventually commissioned without a torpedo capability. The SSU establishment was commissioned as PNS Iqbal.

Because of its elite status, SSU facilities had been accorded higher priority than the new Daphne submarine in the allocation of waterfront space for their slipway jetties, hangars and working spaces.

After March 1971, SSG (Navy) personnel were sent to East Pakistan to support Army operations. They returned to West Pakistan in September 1971 to man the X craft and chariots for which they had been trained.

Until the war started in December 1971, the problem of providing a mother ship for the support and conveyance of these underwater craft had not been solved.

The Pakistan Navy's Surface Ships

The high cost of the Daphne submarine programme and its supporting infrastructure had seriously depleted the naval budget. The cessation of the US Navy's supply of spares after the 1965 war affected the material state of the four US supplied minesweepers and the fleet tanker DACCA.

In 1966, four British, Brooke Marine, fast patrol boats were commissioned (RAJSHAHI, SYLLHET, JESSORE and COMILLA) and based in East Pakistan.

By 1968, material failures in the ex Royal Navy destroyers led to serious unreliability. In August 1968, TUGHRIL suffered a boiler explosion and was never fully operational thereafter. In August 1971, BADR's bows sheared off in rough monsoon weather in the Arabian Sea. ALAMGIR had serious defects.

Attempts to acquire new frigates from Britain and France to replace the ageing ships proved fruitless. After March 1971, the urgent need to augment patrol craft in East Pakistan was met by the transfer of two German built, Royal Saudi Arabian Navy fast patrol craft to the Pakistan Navy. These were commissioned as PNS SADAQAT and RIFAQAT. Their modification for riverine service in East Pakistan completed in May 1971, by which time the monsoon precluded their passage. They were reconverted to the fast patrol craft role and retained at Karachi.

The Indian Navy's Development Between 1965 and 1971

1969 and 1970 had been busy years for the Navy. The first series of Soviet acquisitions had arrived. These were :

- Five Petya class submarine chasers (KAMORTA, KADMATT, KILTAN, KAVARATTI and KATCHALL)
- Four submarines (KALVERI, KHANDERI, KARANJ and KURSURA)
- Submarine depot ship AMBA
- Submarine rescue vessel NISTAR
- Two Polish built landing ships LST(M)s (GHARIAL and GULDAR)
- Five Police patrol boats (PANVEL, PULICAT, PANAJI, PAMBAN and PURI)

In the preceding years, several major decisions had been taken which were later to affect operations in the 1971 War.

To minimise the cost of training in the Soviet Union, the crews of the ships and the submarines had been split into batches, according to the duration of their training abroad. Those batches which went for the longest duration came back well trained in the Soviet practice of austere equipment usage, with first line maintenance being carried out on board by the operators who used the equipment. The knowledge of the batches who went abroad for shorter periods depended on the duration of their training. The shorter their training, the less they absorbed. After arrival in India, personnel who had undergone the longest training were the first to be transferred out because they had been longest in the ship. They took their knowledge with them. This continuous bleeding of the expertise acquired at high cost in time and money, resulted in the inefficient use of Soviet weapons.

The West and the Soviet Union had been engaged in a Cold War since 1947. Until 1965, naval acquisitions were primarily from Britain. In 1964, contracts had been signed for British collaboration in the indigenous construction in Mazagon Docks Bombay of their latest Leander class frigates. In 1965, contracts had been signed for naval acquisitions from the Soviet Union. To ensure that India continued to get the best possible naval equipment from both sources, the Navy had to reassure each side that it could be trusted to safeguard the other side's naval technology. Two major decisions had therefore to be taken:

- To safeguard the security of information, the knowledge of all Soviet acquisitions was strictly controlled on a 'Need to Know' basis. Soviet equipment handbooks had security classifications which differed from those of the Indian Navy. The Navy was chary of downgrading these Soviet classifications. As a result, the Navy as a whole got to know very little about the new concepts which had arrived in the Soviet acquisitions. Tactically, operationally and technically, the Navy started over-utilising the Soviet ships which had been carefully designed only for essential usage. As a result, considerable wear and tear had taken place in the Soviet acquisitions by the end of 1971 when the war broke out.
- It was decided to physically segregate all the Soviet acquisitions by basing them on the East coast in Visakhapatnam and set up entirely new facilities comprising:
  - A new submarine base together with associated submarine headquarters, berthing pens, battery charging facilities and shore accommodation for submarine crews.

- Officers and sailors of all branches who would be manning Soviet ships and submarines would be given 'type training' (training appropriate to the type of vessel they would be going to) in a new Integrated Type Training Establishment, the ITTE, (later named INS Satavahana). The Soviet side would install in the ITTE, as per Soviet training practice, full suites of working and sectionalised weapons, systems and machinery, departmentwise for all the Soviet ships and submarines supplied to India.
- A new Naval Dockyard would be built at Visakhapatnam to maintain, repair and refit all Soviet ships and submarines.
- A new Combined Equipment Depot would be set up to stock the spare parts and spare machinery of all Soviet acquisitions.
- A Torpedo Preparation Workshop for the new torpedoes in Soviet ships and submarines.
- An enlarged Naval Armament Depot to stock, maintain and repair the new Soviet munitions.

The Navy had inherited from the British Navy, the concept of periodic transfer of officers and sailors between ships and shore establishments. Ever since the partition of the Navy in 1947, there had been a constant need to increase the number of officers and sailors and give them sufficient sea time so as to be able to man the steady inflow of new acquisitions. Whereas this had worked satisfactorily for the old World War II acquisitions like DELHI, MYSORE, the RAJPUT class destroyers, the GODAVARI class destroyer escorts and the old frigates, it proved totally unsuitable for the eight new post war frigates from Britain which brought entirely new technologies and concepts into service between 1958 and 1960.

The three new anti aircraft frigates, BRAHMAPUTRA, BEAS and BETWA, were wholly diesel propelled, with controllable pitch propellers, and had the latest available radars, sonars, fire control systems and weapons. The two new anti submarine frigates, TRISHUL and TALWAR, (designated first rate because they had back up systems and machinery to cater for battle damage) also had new sonars, radars, fire control systems and weapons, some of which were the same as in the anti aircraft frigates. The three new anti submarine frigates, KHUKRI, KUTHAR and KIRPAN had anti submarine systems identical to the 'first rate' TRISHUL and TALWAR but were designated second rate because to minimise cost, they had been fitted with only one of everything and therefore had no back up in case of battle damage. All these eight frigates operated on 440 volt 60 hertz AC power generation. There was no source of this shore supply at any port in India to meet the ships' power requirements when in harbour for maintenance. Ships generators had to be kept running all the time. This led to deferring their overhaul routines, which led to breakdowns at critical moments. The maintenance, repair and refit facilities for these ships had been slow in coming up in the Bombay Dockyard and had generally lowered the material fitness of these frigates for war.

In 1970-71, the Navy's latest acquisitions being inducted were:

- Eight Soviet missile boats which were at various stages of acceptance and delivery (NASHAK, NIPAT, NIRGHAT, NIRBHIK, VINASH, VEER, VIJETA and VIDYUT). These boats were being loaded on board heavy lift merchant ships in the Black Sea and unloaded in Calcutta which was the only port in India having a 200 ton crane. To conserve their engine hours, the boats were then being towed to Bombay, where they were to be based, and where their surface to surface missile preparation facility called the Technical Position (later named INS Tunir), was being set up. A large contingent of officers and sailors were undergoing training in the Soviet naval base at Vladivostok.
- Six British Seaking anti submarine helicopters, equipped with a dunking sonar which could be lowered to various depths, and armed with British MK 44 anti submarine homing torpedo. After acceptance trials in UK, these helicopters were utilised to train Indian aircrew. The first batch returned to Cochin in April 1971. On arrival, all access to the Seakings and their documentation was restricted on a 'Need to Know' basis. The second batch, after tactical training at the British Naval Air Station at Culdrose, reported directly to Bombay in October 1971 two months before the war started.

In hindsight, it is clear that the cumulative effect of continuous bleeding of new acquisition expertise caused by perpetual transfers, the ignorance of the capabilities and limitations of the Soviet acquisitions and the Seakings resulting from enforcement of "Need to Know" and the inescapable lag in creating new shore support facilities posed formidable difficulties. The Navy's achievements and failures in the 1971 war have to be viewed in this context.

The Dramatis Personnae in the 1971 War

The Chiefs of Staff were General S H J F Manekshaw, Admiral S M Nanda and Air Chief Marshal P C Lal.

General Manekshaw was the Chief of the Army Staff and Chairman of the Chiefs of Staff Committee. Lt Gen JFR Jacob, the Chief of Staff, Eastern Army Headquarters in 1971, published his memoirs "Birth of a Nation" in 1997.

Admiral Nanda was the Chief of the Naval Staff. Admiral SN Kohli, the Flag Officer Commanding in Chief, Western Naval Command in 1971, published his memoirs titled " We Dared - Maritime Operations in the 1971 Indo Pak War". Vice Admiral N Krishnan, the Flag Officer Commanding in Chief, Eastern Naval Command in !971, published his memoirs titled " No Way But Surrender - An Account of the Indo Pakistan War in the Bay of Bengal 1971". Rear Admiral V A Kamath was the Flag Officer Commanding Southern Naval Area in 1971. Rear Admiral E C Kuruvila was the Flag Officer Commanding Western Fleet. Rear Admiral S H Sarma was the Flag Officer Commanding Eastern Fleet.

On the political side, Mrs Indira Gandhi was the Prime Minister. Mr Jagjivan Ram was the Defence Minister. Mr Chavan was the Finance Minister (he had earlier been Defence Minister from 1962 to 1969). Mr Swaran Singh was the Foreign Minister. Mr DP Dhar headed the Foreign Policy Planning Committee. Professor PN Dhar took over as Secretary to the Prime Minister in September 1971 from Mr PN Haksar.

On the civil service side, Mr K B Lall was the Defence Secretary, Mr Govind Narain was the Home Secretary (and subsequently Defence Secretary after Mr Lall) and Mr S K Mukherji was the Additional Defence Secretary, looking after the Navy.

The recollections of Vice Admiral M K Roy, the Director of Naval Intelligence in 1971 have been published in his book "War in the Indian Ocean" published in 1996.

Air Chief Marshal PC Lal took over as Chief of the Air Staff in July 1969. His memoirs "My Years with the I A F" provide invaluable insights into the evolution of plans in 1971 and the higher direction of war.

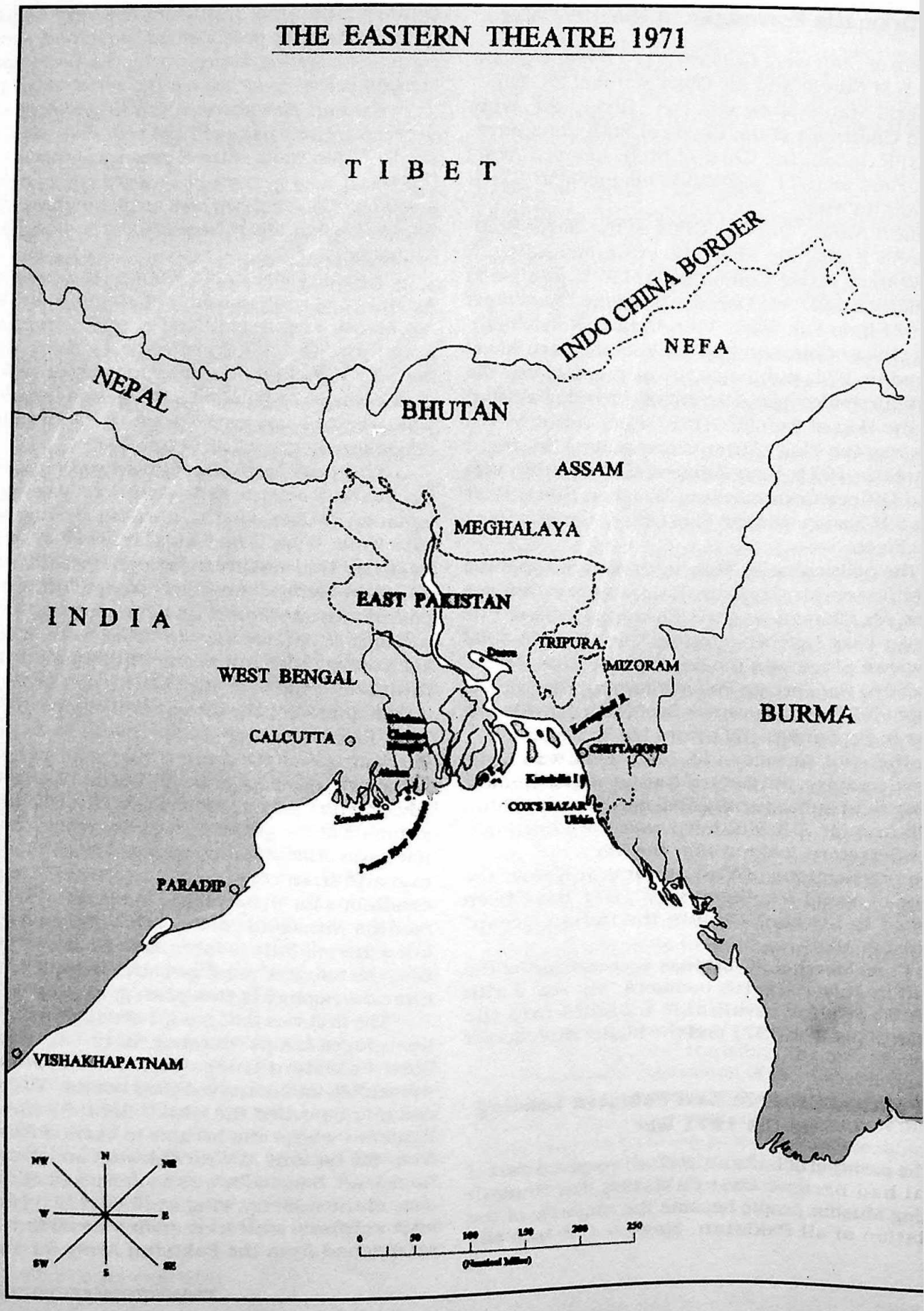
The Political Crisis in East Pakistan Leading up the 1971 War

After the partition of India in 1947, the eastern part of Bengal had become East Pakistan. Its Bengali speaking Muslim people became the majority of the population of all Pakistan. However, it had the smaller land area and, from the very beginning, always had less political, military and economic clout. The feeling of neglect by the Urdu speaking Punjabi rulers, more than a thousand miles away in Karachi and Rawalpindi, led to growing tension between the two parts of Pakistan. As early as 1969, the Pakistan Navy started preparing plans for East Pakistan and generally ensure the operational availability of whatever was available there. Chinese mines, held in stock were also to be transferred to Chittagong.

General elections in 1970 gave the eastern based Awami League an absolute majority in the National Assembly and committed it to a programme of autonomy. The military rulers and political parties in West Pakistan could not countenance this. After unsuccessful negotiations, the Awami League leader was arrested and imprisoned. A ruthless military crackdown began on 25 March 1971.

The authorities declared martial law and unleashed severe repression to suppress the agitation. Within months, the flood of refugees fleeing into India from East Pakistan swelled to several millions. This massive influx into the border districts of West Bengal created severe inflammatory complications-communal, demographic and of revenge. It became impossible for India to cope with such a vast refugee problem. The Indian Government initiated immediate diplomatic action to apprise world opinion of the atrocities being perpetrated in East Pakistan, to mobilise pressure to persuade Pakistan to stop the genocide and to create conditions for the refugees to go back. Initial responses were tardy. Eventually, the international media's poignant accounts of the genocide awakened the conscience of the world. But attention focussed more on mobilising humanitarian relief than on creating the political conditions for the refugees to return. The ensuing months witnessed considerable diplomatic activity but achieved little to meet India's basic requirement that the refugees must go back. During this period, three developments took place gradually.

The first was that groups of refugees coalesced in the refugee camps, thirsting for revenge against the West Pakistani troops who had despoiled their womenfolk and destroyed their homes. These groups came to be called the 'Mukti Bahini' - the freedom fighters - whose aim became to liberate East Bengal from the tyranny of West Pakistan and declare their homeland, Bangladesh, as an independant state. The core of the military wing were East Bengali officers and soldiers who had either deserted or been retrenched from the Pakistan Army for suspected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disloyalty. The core of the naval wing were East Bengali officers and sailors who had deserted or whose services had been dispensed with. Both wings operated from their camps in India. In the months prior to December, their guerrilla activity caused considerable dislocation by damaging power stations, bridges, communication systems, port facilities and shipping.

The second development was the evolution of contingency plans in the Indian Armed Forces for countering a military attack by Pakistan and consideration of whether and when a military operation could be mounted in the East to help the emergence of Bangladesh and thereby enable the refugees to go back. As regards the latter, no military activity could be envisaged in East Pakistan until the end of the year, well after the monsoon wetness had dried out. As regards the former, it was expected that, as in 1965, Pakistan would initiate hostilities with a preemptive attack in the West. Pakistan's strategic concept had always been that the defence of East Pakistan lay not in the East but in posing a threat on India's border in the west.

The third development was the change in geopolitical alignments. To resolve its stalemate in Vietnam, the US decided in 1971 to establish links with China. Pakistan, who was not only a CENTO and SEATO ally of America but also had close relations with China, helped the US to establish links with China. In gratitude, the US stance in the latter half of 1971 was pronouncedly pro-Pakistan and anti-India. To counter-balance this US tilt, India concluded in August 1971, a Treaty of Friendship with the Soviet Union which had been under discussion since 1969.

India's Response to the Deteriorating Situation in East Pakistan

After the hijacking and public burning of the Indian Airlines F 27 aircraft in January 1971, India banned all Pakistan International Airlines flights between West and East Pakistan from overflying India. Thereafter, communications and military reinforcements were either by sea or, if by air, via Ceylon.

The political crisis in East Pakistan climaxed on the night of 25/26 March 1971 with the imposition of military rule. On 27 March, the Indian Prime Minister met the Defence Minister and the Chiefs of Staff. The Prime Minister asked for and was given an appreciation of the military situation in East Pakistan. Air Chief Marshal PC Lal's memoirs state:*

> "While the military build up in the Eastern Wing was significant, there appeared to be no immediate danger to India from that quarter. All we could do was to wait and see how matters developed"

In April, the refugees started flooding into the border districts of West Bengal, bringing with them harrowing tales of massacre, rape and plunder. This steadily increasing influx created a serious risk of communal riots, Air Chief Marshal PC Lal's memoirs state:**

> "Public opinion in India at that time was divided as to the action to be taken. While everyone condemned the manner in which the Pakistan Government was persecuting its own nationals, there were some who thought India should take advantage of the disturbances in East Pakistan to neutralise that area militarily. Obviously such a measure would have amounted to interference in the domestic affairs of another country and our Government did not give any support to it. The official attitude was that the Pakistanis should themselves find a political solution to their dispute. But that gave way to concern and eventually alarm, with the increasing persecution of Bengalis, both Hindu and Muslim, who came pouring into India, seeking sanctuary".

Mr KB Lall, the Defence Secretary in 1971, recalls:

> "The basic problem with East Pakistan was the vast flood of refugees entering India. Both Hindus and Muslims were fleeing from Pakistani atrocities. The demographic composition of the border districts was getting altered to the extent of the majority being of foreign origin. This was viewed as dangerous, in the long run, for our territorial integrity. The problem was two fold:
>
> - Humanitarian.
> - Facilitating the repatriation of refugees for safeguarding our territorial integrity.
>
> "The Prime Minister was under popular pressure to use force to secure the repatriation of refugees to their country in safety and dignity. The Service Chiefs and the Ministry of Defence said they were

* Page 152.
** Ibid

completely unprepared for military intervention in East Pakistan because their attention had all along been focussed on the frontier with West Pakistan. If it was felt that military intervention could become unavoidable, the Defence Forces would need time to ensure that such intervention was effective and successful. In any case, no military operations were feasible during the monsoons. Hard information would also be needed of East Pakistan's rivers, bridges and roads to ensure the success of military intervention".

Lt Gen Jacob's memoirs state:*

"At the beginning of April, the Army Chief called me on telephone to say that the Government required Eastern Command to move immediately into East Pakistan. I protested that this was impractical (because troops who had earlier been trained for mountain operations would require to be retrained for riverine operations. There were large, wide, tidal rivers, there was no bridging equipment and the coming monsoons would make access to unbridged rivers extremely difficult).

"General Manekshaw then asked by what date we would be ready. Provided we got bridging and suitable weapons and equipment, I said, we could be ready earliest by 15 November. This would leave adequate time after the monsoon for the terrain to become passable. Manekshaw, upset and impatient, replied that he would get back to me.

"Gen Manekshaw called again the next day, sounding very agitated, to say that senior bureaucrats in the Government were accusing the Army of being over-cautious, if not cowardly. He said we should reconsider. I reiterated my views and suggested that he could, if he so wished, tell the Government that it was Eastern Command who were dragging their feet. This led to an outburst of invective. Even so, it is to the credit of Gen Manekshaw that he had the courage to uphold our stand and inform Prime Minister Indira Gandhi accordingly."

General Manekshaw, in an interview to the naval magazine "Quarterdeck 1996" stated:

"Sometime in April, there was a cabinet meeting to which I was summoned. Smt Gandhi was terribly angry and terribly upset because refugees were pouring into West Bengal, into Assam and into Tripura. She said to me 'Look at this - so many are coming in - there is a telegram from the Chief Minister of Assam, a telegram from ..., what are you doing about it ?'

I said "Nothing. What has it to do with me ?"

She said 'Can't you do something ? Why don't you do something ? I want you to march in !'

I said 'That means war' and she said 'I don't mind if it is war'.

So I sat down and I said 'Have you read the Bible?'

Sardar Swaran Singh said 'What has the Bible got to do with it ?'

"In the first book, the first chapter, the first paragraph of the Bible, God said "Let there be light and there was light" - so you feel that "Let there be war and there is war". Are you ready ? I certainly am not ready.'

Then I said, 'I will tell you what is happening. It is now the end of April. In a few days time, 15 to 20 days time, the monsoon will break and in East Pakistan when it rains, the rivers become like oceans. If you stand on one side you can't see the other. I would be confined to the roads. The Air Force would not be able to support me and the Pakistanis would thrash me - that's one.

"Secondly my armoured division is in the Babina area, another division is in the Secunderabad area. We are now harvesting. I will require every vehicle, every truck, all the road space, all the railway space to move my soldiers and you will not be able to move your crops and I turned to Shri Fakruddin Ali Ahmed, the Agriculture Minister and said 'if there is a famine in India, they will blame you. I won't be there to take the blame'. Then I turned around and said 'My armoured division which is supposed to be my strike force has got twelve tanks which are operational out of the whole lot'.

YB Chavan asked, 'Sam, why only twelve ?'

'I said 'Sir, because you are the Finance Minister. I have been asking, been pleading, for months. You said you have got no money that's why.'

'Then I said "Prime Minister, if in 1962, your father had asked me as the Army Chief and not Gen Thapar and your father had said "Throw the Chinese out", I would have turned around and told him "Look, these are the problems". Now I am telling you what the problems are. If you still want me to go ahead, Prime Minister, I guarantee

* Page 35 et seq.

you 100 per cent defeat. Now, you give me your orders.'

Then Jagjivan Ram said 'Sam, maan jao na'.

I said 'I have given my professional view, now the Government must take a decision'.

The Prime Minister didn't say anything. She was red in the face and said "Achccha, cabinet char baje milenge'. Everybody walked out. I being the juniormost, was the last to leave and I smiled at her.

'Chief, sit down'.

So I said 'Prime Minister, before you open your mouth, do you want me to send in my resignation on the grounds of mental health or physical ?'

She said 'Oh, sit down Sam. Everything you told me is true ?'

'Yes. Look its my job to fight. It is my job to fight to win. Are you ready ? Have you internally got everything ready ? Internationally, have you got everything ready ? I don't think so. I know what you want, but I must do it in my own time and I guarantee you 100 per cent success. But I want to make it quite clear. There must be one Commander. I don't mind, I will work under the BSF, the CRPF, under anybody you like. But I will not have a Soviet telling me what to do and I must have one political master who will give me instructions, I don't want the refugee ministry, home ministry, defence ministry all telling me. Now, make up your mind'.

She said "All right Sam, nobody will interfere, you will be in command."

'Thank you. I guarantee you accomplishment'.

In response to a query about "the other two Chiefs, where did they come in?", Gen Manekshaw said', 'They were not in on the initial meeting. I had to brief them. I had to tell them about it."

From the foregoing, it emerges that by end April 1971, the political decision had been taken to prepare for military intervention in East Pakistan in the end of 1971, in case a satisfactory political situation had not been found by then.

Another critical factor in the timing of military operations in East Pakistan was whether the Chinese would intervene. Most of the Himalayan passes would be impossible to cross in December and January. Even in 1962, the Chinese had declared a unilateral cease fire and withdrawn before the passes became snowbound. As events developed in 1971, the timing of intervention gradually narrowed down to end November - early December 1971.

The Pakistan Navy's Perceptions and Plans

"The Story of the Pakistan Navy" states:*

> 'The political deadlock over the transfer of power from the Martial Law administration to an elected government developed into full fledged insurgency in East Pakistan in early 1971. The insurgency had India's full moral and material support from the outset. It was India's strategic aim to exploit Pakistan's predicament and the growing discontent in the eastern wing to its own advantage, and cut Pakistan to size.
>
> 'In March 1971, the Government directed that all East Pakistan defence personnel were to be segregated and taken off active duties. The Pakistan Navy lost a third of its personnel, the worst affected being engine room, electrical and domestic branches. This led to numerous desertions, including those from the elite SSG group.
>
> 'India made the political decision as early as April 1971 to provide assistance to the irregulars of the Mukti Bahini who were operating frequently from bases across the border against the Pakistani forces. India was directly involved both in providing intensive training to volunteers of Mukti Bahini and in launching a campaign of sabotage against strategic facilities and installations such as power stations, communication systems and ships in Chittagong harbour.
>
> 'The success of Pakistan's counter-plans hinged largely on reinforcements and resupply of the eastern theatre of war by sea, which could only be accomplished by a strong Navy capable of breaking India's naval blockade. The possible effects of a blockade of Pakistan's seaports by the Indian Navy had all along been vigorously brought to the notice of the Government. However, such a force had not been developed although plans for a two-flotilla Navy (one each based in the two wings) had been put up to the Government as early as 1949. The plans unfortunately had become victim of seemingly endless bureaucratic indifference and of vague concepts such as "the defence of East Pakistan lies in the West" and "a short, sharp war" which stood in the way of the Pakistan Navy's

* Pages 329 et seq.

expansion and reorganisation from the early fifties.

'The Navy continued to be accorded a lower priority, and the fleet was allowed to degenerate into a shrinking force quite incapable of taking on the task of providing protection to the sea lines of communication between the two wings. The addition of three Daphne class submarines to the fleet in the late sixties was the only redeeming feature. However, their limited endurance confined them to duties in the Arabian Sea. The Navy particularly lacked an air reconnaissance capability which was to prove a significant factor in the outcome of the 1971 war.

'The mission of the Navy in the event of a war was visualised as a very limited one:

- Seaward defence of the ports of Karachi, Chittagong and Chalna.
- Limited protection of the shipping traffic from the Persian Gulf to West Pakistan.

'The entire sea-going fleet (with the exception of the submarines), under the command of the Flotilla Commander, was required to maintain maritime superiority in waters of interest to West Pakistan. The submarines were under the direct control of NHQ. In the east, only four gun boats were available for operations against the Indian carrier group in the Bay of Bengal when the war started. Thus the Indians enjoyed preponderance in the Bay.

'As the crisis deepened, the shortfall in the Pakistan Navy's manpower and operational capacity could be clearly seen as a major limiting factor. The situation became critical when Bengali personnel belonging to East Pakistan had to be assigned duties which would not place the fighting capacity of the Navy in jeopardy, and the Service was depleted by over 30 percent of its strength to all intents and purposes. The technical cadres were particularly adversely affected.

'Keeping in view the state of the fleet, even in its limited role, the Pakistan Navy was confronted with serious handicaps. Firstly, there was the preponderant strength of the Indian Fleet to reckon with. Secondly, there was virtually no defence against a possible missile attack from India's Osa boats. Thirdly, heavy reliance had to be placed on air support which in fact was not available, and in any case identifying the Osa boats from the air at great height, especially at night, was an insurmountable proposition. It was envisaged that a conventional attack on Karachi harbour would draw the fleet out into deeper waters, making it vulnerable to interception by the enemy.

'About three months before the actual outbreak of hostilities, on 15 September 1971, NHQ issued an emergency directive to the fleet placing it at a high level of operational preparedness. This meant ensuring availability of the maximum number of fighting units and putting them on high alert to go to war. The dockyard at Karachi was called upon on to provide round-the-clock refit/repair facility and mobile repair parties were detailed to provide on-the-spot repair service to ships in anchorages outside Karachi to ensure availability of alternative repair facilities'.

The Indian Army's Plan to Capture Khulna and Chittagong

In his book, Lt Gen Jacob states:*

'At the beginning of August, Gen Manekshaw, accompanied by the Director of Military Operations, Maj Gen KK Singh, came to Fort William to discuss the draft operation instruction sent a few days earlier. The aim stated therein was to take as much territory as possible, with the ports of Khulna and Chittagong as prime objectives. Dacca was not even mentioned. This implied liberating large enough areas for setting up a free Bangladesh Government.

'At the meeting, held in the operations room, Manekshaw, KK Singh, Arora and I were present. Sam Manekshaw let his DMO do all the talking. KK Singh spelt out the objectives, maintaining that if we captured Khulna and Chittagong, what he termed the entry ports, the war would come to an end. Further, Khulna was the key and the 'weight' of our main attack should be directed at Khulna. The Hardinge bridge was also to be secured. Both Manekshaw and Arora nodded approvingly but I was flabbergasted. I got up to explain that in the event of hostilities, we should utilise our naval superiority and have an effective naval blockade in place. Next, Khulna was only a minor port; the main anchorage lay several miles downstream, at Mangla/Chalna. Cargoes for Khulna were off-loaded into light river craft for transportation to Khulna. There were several

* Page 65 et seq.

tidal rivers, unbridged, between our border and Khulna. The terrain restricted manoeuvre as, intersected by several subsidiary water channels, it narrowed down considerably. As far as Chittagong was concerned, it was well east of the main centre of gravity, almost peripheral.

'I maintained that the geopolitical heart of East Pakistan was Dacca and that if we wanted to ensure control of East Pakistan, it was imperative that we capture Dacca. At this stage Gen Manekshaw intervened saying 'Sweetie' (an expression he used to precede a mild or harsh rebuke) 'don't you see that if we take Khulna and Chittagong, Dacca will automatically fall?' I said I did not and reiterated that Dacca should be the key objective. There were further exchanges between the DMO and myself. Dacca, both Manekshaw and Singh maintained, was not a priority and no troops were being allotted for its capture. Arora agreed with them and maintained this view till 30 November. Eventually, Manekshaw said he was prepared to make one change, namely that he would delete the word 'weight' in connection with the main thrust to Khulna. The meeting then ended."

During my discussions with Lt Gen Jacob, I enquired whether the Army's plan envisaged any participation by the Navy in the taking of the ports of Khulna and Chittagong. He said that no naval participation was envisaged - these ports were to be taken by the Army. In his book, General Jacob states:*

> "I had earlier asked the FOC in C Eastern Naval Command, Vice Admiral Krishnan, whether we could use his landing craft to ferry troops across the River Meghna. Krishnan and Commander Dabir, who had brought one of them (the GULDAR) to Calcutta in June, stated that the landing craft, of Russian origin, were unsuitable because of their draught. The question of crossing the River Meghna had to be shelved and we shifted our attention to the possibility of obtaining additional helicopters."

* Page 62.

8

The Evolution of the Navy's Plan of Operations

When the military crackdown occurred in East Pakistan on 25 March 1971, the Eastern Naval Command deployed a few ships on patrol across the sea lane to Chittagong and Khulna. Soon thereafter, in April 1971, Ceylon requested India's help to quell an imminent leftist uprising. It was suspected that North Korean merchant ships were ferrying arms to the insurgents. The Navy reacted swiftly and silently. Ships of the Western Fleet patrolled Ceylon's west coast remaining out of sight. A frigate entered Colombo harbour to act as communication link.* Ships from Visakhapatnam patrolled Ceylon's east coast, also remaining out of sight. After a few weeks, the crisis blew over and ships returned to their base ports. This was the Navy's first ever deployment in support of foreign policy to assist neighbours in distress. Its successful outcome made a significant impact in the Ministries of Defence and External Affairs.

From the naval side however, the ships which had participated in this operation needed several weeks in harbour to catch up on their maintenance which had been planned for the first half of 1971. In his book "No Way But Surrender" Vice Admiral Krishnan states:**

> "Our ships were in a fairly bad way, as they had to do a considerable amount of steaming at high speeds in connection with the operations off Ceylon in response to that Government's appeal for help. To get them all operational in the time available would need an all out effort".

In May, Naval Headquarters started formulating the tasks to be assigned to the Western and Eastern Naval Commands and deciding the allocation of forces. These tasks had to derive from the capabilities and limitations of the ships, submarines and aircraft at that point in time. The Navy's success in December 1971 was the outcome of the altogether unexpected way in which these tasks eventually synthesised.

Taking the Offensive

In so far as the Navy's role was concerned, Admiral Nanda recalls that in the meetings of the Chiefs of Staff with the Prime Minister, discussions mainly centred on the Army and the Air Force. After each meeting, the Prime Minister would politely ask the Naval Chief whether he had anything to say and Admiral Nanda would say no. To him, this was a clear indication that not even the Prime Minister expected the Navy to make any significant contribution to the forthcoming operations. Admiral Nanda resolved that the Navy had to prove its mettle this time.

Admiral Nanda recalls that when he asked his staff in Naval Headquarters what the Pakistan Navy was likely to do, the reply was that they would not seek action on the high seas but would remain under Pakistan Air Force air cover for the defence of Karachi, which was West Pakistan's only sea port. When he asked them what the Western Fleet should do, the reply was that it should deploy for the defence of Saurashtra and Bombay to prevent a hit and run raid of the kind that took place on Dwarka in 1965. In Admiral Nanda's view, such defensive deployment of our Navy was not acceptable. He was determined that the Navy's frustration in 1965 at not having achieved anything significant should not recur.

The basic concept that emerged was straightforward: to take the offensive, attack Karachi, entice the Pakistan fleet to battle - and cut the sea line of communication between West and East Pakistan.

The Deployment of the VIKRANT

Since June 1970, the aircraft carrier VIKRANT had been lying immobilised in Bombay due to serious cracks and leaks that had developed in the water drum of A1 boiler. Subsequent radiographic examination revealed that the water drums of the remaining three boilers also had a large number of internal fatigue cracks and fissures at each of the circumferential rivetted joints that were beyond repair by welding. It was clear that long term repairs to VIKRANT's boilers were not feasible indigenously. Orders were placed in Britain for the supply of four new water drums. Naval Headquarters directed that the boilers were not to be used till further orders. A1 boiler was blanked off.

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* Mr Inder Malhotra recalls:
"I got to Colombo with the first lot of Gurkhas that were flown in. All communications with the outside world had been cut. When the first Indian naval frigate arrived in Colombo and reestablished communications, there was great joy. Whilst the Gurkhas at the airport were not visible, the ship was plainly visible. Even in the midst of curfew and shoot at sight orders, our sailors were being hugged in the streets".

** Page 17.

Eventually, on 26 February 1971, the ship made a 'cold move' from the Ballard Pier Extension to the anchorage. The objective was to flash up each boiler at reduced steam pressure and try out the main and flight deck machinery which had been lying idle for seven months. The boilers were first flashed up on 1 March 1971 and 'Basin Trials' upto 40 RPM (ahead and astern) were carried out, after securing the ship to E1 Buoy. Fast pullout catapult trials were also completed on the same day. The catapult steam supply modification in the forward machinery room was tried out and found to be fully satisfactory. As events were to prove later in the 1971 war, without this modification the Seahawks could not have been launched at 160 RPM. The ship proceeded to sea for Preliminary Sea Trials on 18 March 1971 and returned on 20 March 1971. She went to sea again on 26 April, returning the next day.

As a result of these sea trials, it was considered technically feasible to operate the boilers at 400 psi pressure thereby restricting the ships speed to 14 knots, maximum revolutions 120 ahead and 60 revolutions astern.

In May 1971, when Naval Headquarters started working on the concept of operations, the first problem that needed decision was what to do with VIKRANT. Admiral Nanda recalls:

> "When the circumstances became clear that we may have to go to war, there was a feeling that we should leave VIKRANT in Bombay harbour. I said "No, because during the 1965 war also, VIKRANT was sitting in Bombay harbour and did not go out to sea. If in the 1971 war the same thing happens, VIKRANT would be called a white elephant and Naval Aviation would be written off. VIKRANT has to be seen as being operational, even if we do not fly the aircraft.
>
> "There has been this fear, and probably rightly so, that if the VIKRANT gets torpedoed or if VIKRANT sinks, the Navy and India will lose a lot of prestige. Therefore to send VIKRANT to sea was a difficult decision for anybody to take. One had to take cognisance of the facts. These were that VIKRANT's boiler had a crack and therefore the speed of the ship was restricted. That the ship may not be in a position to fly aircraft or operate the catapult. Then I asked the question "If we operate on three boilers, what will happen ?" The answer given was that "we may not be able to catapult the aircraft." So knowing the decision had been taken not to fly aircraft, I asked "Are we able to at least steam? Not at the speed required for catapulting aircraft, but at steaming speed ?" And I got the staff to agree that she could steam. So I said "Alright, let her steam". We sent the VIKRANT out from Bombay.

In his book, Vice Admiral Krishnan states:*

> "There were many in the service, some of them very senior officers, who considered VIKRANT a liability in any war with Pakistan. They argued that deployment of the VIKRANT involved certain inherent risks, especially from underwater threats, so considerable escort effort would be required. Many doubted her exact role in a war with Pakistan. Some even went to the extent of suggesting that the VIKRANT should take no part in the war but should be tucked away inside Cochin. I am not suggesting that the pessimists did not have sufficient grounds for their misgivings. There was an overwhelming body of professional opinion that considered that steaming the VIKRANT in her current state was not a risk worth taking.
>
> "Secondly, in any war at sea, VIKRANT would obviously be the most worthwhile target for the enemy. The three Daphne class submarines, newly acquired by Pakistan from France and fully operational, posed a great potential threat to the carrier. The sophistication of their detection capability as well as the homing devices of their torpedoes were such that once the ship was picked up and the screen of escorts pierced, the VIKRANT would stand in mortal danger. Even as many as six escorts would not guarantee any complete immunity to the carrier.
>
> "Morale and psychological factors weighed just as heavily in the minds of all of us. If VIKRANT were to be sunk, it would represent a victory of the first magnitude to the enemy, just as it would represent a national disaster to us. VIKRANT was the core round which our Fleet was built and her loss would be something too terrible to contemplate. Ever since we had acquired the carrier, she had come in for severe criticism and much controversy, invariably to her detriment. But we were not concerned at public criticism alone. Obviously as professional men in positions of responsibility, we would not send any ship into battle unless we were satisfied that it would be worth our while to do so."

A characteristic of Admiral Nanda's style of leadership was that whenever he was confronted

* Page 8 et seq.

with a vexed problem, he would go down to where the ships were, sit down with those he considered knowledgeable about the problem, listen carefully to all views, ask basic commonsense questions and gradually evolve workable solutions, making it clear that the responsibility for the final decision would be his. He would then go back to Naval Headquarters, discuss the suggested solutions with the Naval Staff and quantify the risks and the benefits on a commonsense basis. This helped to arrive at a consensus in the formulation of which each one felt that his concerns had been considered, that as much care as possible had to be taken to minimise the risks and that should things go wrong, then everyone knew that no single individual could be blamed. In May 1971, Admiral Nanda personally chaired numerous discussions on the VIKRANT problem.

After careful consideration at all levels, it was decided to auxiliary steam the remaining three boilers for 500 hours and thereafter take a further set of radiographs to study the behaviour of the cracks. This trial proved encouraging as there was no evidence of any deterioration. In June 1971, it was decided to carry out sea trials. To allay the watchkeepers' fears of the boilers bursting, heavy safety harnesses of steel were designed and strapped over the water drums of the remaining three boilers. As a further precautionary measure, observation windows were fitted to detect traces of steam leaks that could occur in the initial stages of rupturing. To balance the forcing rates of the forward boiler and minimise the pressure fluctuations when launching aircraft, a modification had been carried out on the main steam range that enabled the two boilers aft to be cross connected to the catapult steam accumulator. By end June, it was clear that the sea trials had been successful. As a measure of abundant precaution, Naval Headquarters restricted VIKRANT's speed to 14 knots.

The Evolution of Plans in Eastern Naval Command

In his book, Admiral Krishnan states:*

> "On 10 June, Admiral Nanda asked me to meet him at Bangalore where he was the chief guest at an Air Force ceremonial parade. We talked at length on the tasks ahead. All our discussions stemmed from one overriding thought, a firm conviction, bordering on an obsession, that should war come, the Navy should throw everything it had into battle and our entire strategy from the very onset of hostilities should be one of bold offensive. We must scrap, erase and wipe off from our minds any ideas of a defensive posture, we must seek action, taking any risks that were necessary and destroy the enemy in his ports and at sea. There was never any difference of opinion between us over the fact that it would be a calculated risk well worth taking in putting our only aircraft carrier to fullest use in the war. It was the pleasantest of surprises when Nanda told me that VIKRANT would be assigned to the Eastern Naval Command and deployed in the Eastern theatre, along with two gun ships of the BRAHMAPUTRA class, two ships of the Petya class and one submarine. With this was conceived the entity of an `Eastern Fleet."

The Western Naval Command did not take kindly to Vikrant being sent away to the East. In his book, "We Dared", Admiral Kohli states:**

> "The aircraft carrier INS VIKRANT and INS BRAHMAPUTRA and INS BEAS were transferred from the Western Fleet to the East Coast. The main naval battles and activity would take place in the North Arabian Sea. At the time, I felt that this depletion in the Western Command's Fleet strength and fire power was not justified and I vehemently protested in writing to my Chief of the Naval Staff."

In his book, Vice Admiral Krishnan has elaborated the thought process which led to his concept of operations which Naval Headquarters later approved. In brief, it was to strangle the Pakistan Army's supply line from West Pakistan to the East Pakistan ports of Chittagong, Cox's Bazar and the Chalna-Khulna-Mongla river port complex. This was to be achieved by attacking these ports from seaward, apprehension/destruction of Pakistan merchant ships and amphibious landings, if required. Any movements out of East Bengal by sea would be prevented.

His detailed analysis was as follows:***

> "The aim is `To destroy the enemy's maritime forces deployed in support of his military operations in East Bengal and to deny all

* Page 7.
** Page 32.
*** Pages 19, 26 et seq

sustenance from reaching the enemy from the sea. This aim would involve keeping under the most careful surveillance the area of a triangle with a base of 270 miles and two sides of 165 and 225 miles, involving 18,000 square miles. Apart from actual surveillance, each merchant ship in this area would have to be challenged, identified and boarded. If neutral and carrying contraband, the ship would have to be escorted to the nearest Indian port. If Pakistani, she would be boarded, captured and taken in as a war prize. Ships that refused to stop would have to be forced to do so. The main task would be the isolation of Chittagong. This would mean physical attack on this port from the sea and the air. The responsibility for this, it had been agreed with the Army and Air Force would be, in the main, that of the Navy.

"The forces allotted to me to carry out the tasks were pitifully limited. The VIKRANT would naturally be the core, the nucleus round which the Eastern Fleet (yet to be formed) would revolve. The surface ships allotted to me were BRAHMAPUTRA, BEAS, KAMORTA and KAVARATTI. One fleet submarine, KHANDERI was also to be mine. I felt that they were quite inadequate to fulfil the tasks ahead and also that we would be under-insuring the safety of the VIKRANT.

"The problem of VIKRANT's security was a serious one and brought forth several headaches. By very careful appreciation of the submarine threat, we had come to the definite conclusion that the enemy was bound to deploy the submarine GHAZI against us in the Bay of Bengal with the sole aim of destroying our aircraft carrier VIKRANT. The threat from the GHAZI was a considerable one. Apart from the lethal advantage at the pre-emptive stage, VIKRANT's approximate position would become known once she commenced operating aircraft in the vicinity of the East Bengal coast. Of the four surface ships available, one (the KAVARATTI) had no sonar and unless the other three were continually in close company with VIKRANT (within a radius of 5 to 10 miles), the carrier would be completely vulnerable to attack from the GHAZI, which could take up her position surreptitiously and, at leisure await her opportunity. Even assuming that no operational defects developed, it would still be necessary to withdraw ships from the area of operations for fuelling. The basic problem was that if reasonable anti submarine protection had to be provided to VIKRANT and the escort ships had to be in close company for this purpose, then how were 18,000 square miles to be kept under surveillance? We had decided to commit the entire striking power of VIKRANT's aircraft to offensive operations against enemy ships and installations and could not, therefore, afford the luxury of aerial surveillance.

"Having appreciated Pakistan's difficulties and having assessed our own, we decided that in preparing our plan, we would rely much more on deception and other measures against the GHAZI and ignore the air threat, in the hope that Pakistani aircraft would be fully committed against our Air Force and the land battle, and would be chary of operations over the sea."

The Operational Plan of Eastern Naval Command

The following tasks emerged from this analysis:*

- Attack from the sea on Chittagong harbour.
- Attack from the sea on harbours at Cox's Bazar, Chalna, Khulna and Mongla.
- Destruction of enemy shipping off the ports and on the seas.
- Subsequent and similar offensive actions on opportunity targets.
- Diversionary or real amphibious landings.

The submarine, KHANDERI, was planned to be deployed across the shipping lane from south of Ceylon to Chittagong. It would be tasked to attack Pakistani naval ships and merchant ships and provide intelligence of Pakistani maritime forces.

The three Landing Ships, the old MAGAR and the two new ones, GHARIAL and GULDAR from Russia, were formed into a logistic squadron and tasked for general support duties until required for an amphibious landing.

The old British destroyer, RAJPUT, which had been de-commissioned and sent to Visakhapatnam for disposal, had been rejuvenated locally to impart basic seamanship training to newly recruited sailors. She was made seaworthy and tasked for general patrol duties.

Of the three Russian P class patrol boats, INS PANVEL, was fitted with two 40mm guns and deployed for offensive patrols in the riverine

* Ibid Page 28.

approaches to the Khulna-Mongla-Chalna river port complex. PULICAT and PANAJI were tasked for local patrols, together with the seaward defence boat, AKSHAY.

In July, FOCINCEAST proceeded to New Delhi with his analysis and plan for detailed discussions. By and large, all his submissions found favour. The Chief of the Naval Staff gave him the go ahead to implement the plan should the need arise. He was also authorised to commence a dialogue with his opposite numbers in the Eastern theatre, the GOCINC, Eastern Command and the AOCINC, Eastern Air Command.

VIKRANT's Passage to the East Coast

On 23 July, VIKRANT sailed in company with the Western Fleet to Cochin.

Lieutenant Commander (later Vice Admiral) B Bhushan was the Senior Engineer of VIKRANT. He recalls:

> "Even our eventual sailing for Cochin was not without some 'hiccups'. Shortly after leaving harbour, we found that one of our boiler feed water tanks was contaminated and as a consequence, we were very short of usable feed water. A 'council of war' was held. The Commander (E) asked me whether we should go on, or ask the Command to go back to harbour. I reported that our seawater distilling plants were finally producing clear water and unless something drastic happened, we should be able to build up our feed water reserves in due course. It was decided to go ahead and take a final decision after a few hours. The rest, of course, is history."

After an intensive shake down en route, VIKRANT carried out Seaking landing trials before entering Cochin on 26 July. She sailed on 28 July for radar and communication trials, on completion of which she departed for Madras, escorted by BRAHMAPUTRA and BEAS.

At the very outset, a short sea trial off Madras proved that a speed of 16 knots at maximum revolutions 140 could be maintained for short periods, without causing undue strain on the three boilers. This restored confidence in the ship's machinery, which was operating under limitations.

Admiral Nanda recalls:

> "Next the question arose, was VIKRANT capable of flying? So I spoke to Vice Admiral Krishnan and told him I am going to come and see VIKRANT and I would like him to accompany me on board. We had a long discussion on board between the Commanding Officer of the VIKRANT (Capt S Parkash), FOCINCEAST (Admiral Krishnan) and myself."

Captain (later Vice Admiral) S Parkash recalls:

> "A very serious discussion took place regarding the role of VIKRANT if hostilities were to take place. I told CNS and the C in C that "My biggest concern is that we have an aircraft carrier and we cannot fly any aircraft. I have got the most dedicated aircrew on board. Can you imagine their morale if I were to just sit in Madras or show off some time at sea. How do we tackle this situation?" They said "Well, you are restricted in speed. Try and make the best of it". So I said "I have done that already. Whenever the fresh breeze in the afternoon starts giving me an extra 10 knots, I do carry out rollers with Alizes. To start with, what I want is permission for them to hook on and finally to embark the Alize Squadron, so that at least in a given period during a day, I can carry out flying which will make all the difference to the morale of the ship. Can I make a signal to Naval Headquarters asking approval to hook on an Alize"? I distinctly remember CNS' reply "Parkash, who in Naval Headquarters is going to give you permission to embark an Alize with your speed restriction? If you think you can hook an Alize on board, let me know, then I will give you permission to embark". The conversation stopped there. He flew back to Delhi.
>
> "At this point of time, it was evident that some semblance of flying operations was possible only if two factors could be resolved:
>
> - Steam the second forward boiler at full load to achieve a higher speed.
> - Accept launch and recovery of aircraft under marginal speed conditions.
>
> "Commander (E) (later Vice Admiral) BR Chowdhury, who had earlier done two stints on board the VIKRANT, was my Engineer Officer. With his past experience and professional competence, his contribution to decision-making at this crucial juncture was important. In his view:
>
> - The behaviour of the machinery on passage from Bombay to Madras had given Engine Room personnel considerable confidence to

steam the three boilers de-unitised. This alone was the deciding factor to use the remaining three boilers to full load capacity, so as to build up speed to operate aircraft under marginal conditions.

- The second and more important factor was whether flying operations should be risked under marginal conditions? This would call for extraordinary skills on the part of the pilots as a matter of routine.

"The embarked aircrew were well experienced and the willingness of the pilots, in this instance, was overwhelming and exemplary. Their professional excellence and resolution to go to war was indeed contagious and creditable. Thus the overall risks involved were calculated and a decision was taken eventually to hook an Alize aircraft on board. This was successful. In due course, NHQ signalled approval to embark more Alizes and later the Seahawk squadron".

Work up for War

Between August and October, the Captain of VIKRANT worked up his group of ships. At first, a few of the slower Alize aircraft landed and were launched. Then Seahawk fighter aircraft were landed and launched. Slowly but surely, all aircraft were worked up for operational tasks.

In mid September, FOCINCEAST embarked in VIKRANT off Visakhapatnam. His book states:*

"I took the ships out to sea and took them through a gruelling pace culminating in a simulated fleet attack on Visakhapatnam. But I was far from satisfied, either with the efficiency attained by the fleet working as a whole or with the defences of Visakhapatnam. There was a lot of leeway to be made up, so even more intensive programmes were drawn up."

On 24 September, Naval Headquarters issued its Operational Directive giving FOCINCEAST the following tasks:

- Destruction of enemy forces and shipping
- Strike enemy ports and bases and, where possible, provide support to ground forces
- Deny access to East Bengal of ships of all nations, by contraband control and/or blockade when ordered
- Secure own ports and bases, including the Andaman and Nicobar Islands.

VIKRANT and the escorts continued to work up and were in Port Blair in end September. FOCINCEAST embarked there and carried out tactical exercises enroute to Visakhapatnam. Thereafter, VIKRANT went to Madras for self maintenance and the escorts stayed on at Visakhapatnam for assisted maintenance.

Rear Admiral SH Sarma was appointed FOCEF designate and arrived Visakhapatnam on 14 October.

In mid October, Naval Headquarters signalled that Pakistan may launch a pre-emptive attack. All ships interrupted their maintenance and came to immediate readiness. The alarm receded. After further work up in October, ships participated in the second phase of tactical exercises, culminating in a mock attack on Visakhapatnam during the night of 26/27 October. VIKRANT returned to Madras to resume maintenance.

The Eastern Fleet was formally constituted on 1 November 1971. On 6 November, the Chief of the Naval Staff embarked for a day's exercises. All ships sailed from Madras on 13 November and assembled in the Andaman and Nicobar Islands. The intention was that in the final stages, when hostilities were imminent, the Fleet, and especially the VIKRANT, would be secreted away at a remote anchorage, with no means of communication with the outside world, where ships could complete their readiness. Concurrently, deception messages started being originated to give everybody the impression that VIKRANT was still operating between Madras and Visakhapatnam. The submarine, KHANDERI, was sailed for her patrol area in mid November with orders to return to harbour on 14 December.

The other measures taken to sustain operations in remote waters were:

- The ballast tanks of the old World War II landing ship MAGAR were modified to carry furnace fuel oil to supply to VIKRANT in distant anchorages.
- VIKRANT provided her escorts with fuel, water, bread and workshop facilities.

On 21 November, Indian and Pakistan troops clashed at Bayra in East Pakistan. On 22 November, FOCINCEAST proceeded to Delhi, where all the Commanders in Chief of the Army, Navy and Air Force briefed the three Service Chiefs and the Defence Minister on their Command's plan for war. That night, President Yahya Khan of Pakistan announced that he would be away fighting a war in the next ten days. On 23 November, a state of Emergency was declared in Pakistan. On 2 December, the Eastern

* Page 31.

Fleet sailed towards its patrol area in anticipation of Pakistani preemptive attack.

The Evolution of Plans in Western Naval Command

In his book "We Dared", Admiral Kohli states:*

> "The objectives of the 1971 action as defined by the Chiefs of Staff and by each respective Service Chief was to gain as much ground as possible in the East, to neutralise the Pakistani forces there to the extent we could, and to establish a base, as it were, for a possible State of Bangladesh. In the West, the objective was to hold the Pakistani forces. It was realized that the war could not go on indefinitely, not so much because of limitations of manpower or aircraft but because the UN Security Council and other influential bodies were bound to intervene. It was realized that any territories that might be gained in the West would, most likely, as earlier, have to be handed back to Pakistan at the end of the fighting."

The assessment of the naval threat in the West was straightforward. It was not expected that the Pakistan Navy would deploy its destroyers or frigates in East Pakistan because they would get bottled up. The Pakistan Fleet would therefore be deployed in defence of Karachi and the Makran coast.It was not expected that it would venture outside of the air cover provided by the Pakistan Air Force. Of their four submarines, (the older but recently refitted, American loaned GHAZI and three new French Daphne class submarines HANGOR, SHUSHUK and MANGRO), only the bigger GHAZI had the endurance to reach the Bay of Bengal and operate there. The smaller Daphne class submarines were expected to be deployed offensively, off Bombay, off the Saurashtra coast and against the Indian Fleet if they could find it.

Comparitive Strengths of Opposing Naval Forces

In his book, Admiral Kohli states:**

> "On a comparative basis the Pakistani surface units were no more modern than ours. The fire power of their destroyers could be considered to be marginally superior to ours.
>
> "Where the Pakistan Navy scored over the Indian Navy was in their submarine arm. The French Daphne class of submarines are the most modern conventional submarines with sensors and armament which are far superior to not only our submarines but also our anti-submarine frigates."

The Operational Plan of Western Naval Command

The gist of Admiral Kohli's plan, as recorded in his book was as follows:***

> "The main thrust of the Western Naval Command Plan was to engage and destroy as many Pakistani main naval units as possible. Their destruction would deny the Pakistan Navy any chance to interfere with our trade or to mount any bombardment attacks on our homeland. If the search for their units meant approaching Karachi where they would be on patrol, we would have to take the risk.
>
> "The second and complementary aim was to attack Karachi and to carry out a bombardment of Gwadar and Pasni and along the coast up to Karachi to create panic in the minds of the coastal populations and weaken confidence in their Navy and Government. A blockade of Karachi was to be instituted to prevent petroleum and petroleum products and other essential supplies needed in war from reaching Karachi.
>
> "The Western Fleet was given a broad directive to seek and destroy enemy warships, protect our merchant shipping, deny sealanes to enemy shipping and render ineffective the maritime line of communication between West Pakistan and East Pakistan to prevent any reinforcements from reaching the beleaguered Pakistani forces at that end.
>
> "A submarine patrol was to be instituted off Karachi to sink their warships and merchant ships proceeding to Karachi.
>
> "Elaborate plans were made to deal with the threat from the Pakistani midget submarines and chariots, which could be carried on board merchant ships, warships or large dhows and be released in the vicinity of Bombay harbour. Liaison was established with police, fishermen and port authorities to report any such activity. The water around our ships in the stream was floodlit to enable sentries on board to see any approaching underwater craft carrying limpet mines. To deter chariots, special two-pound

* Page 100.
** Page 33.
*** Pages 36 et seq.

charges were dropped frequently by harbour patrol boats and craft.

"To destroy the enemy's main units and harbour installations, it was intended to launch an operation to attack Karachi from Bombay on the first day of a war. The Fleet would then launch their attack with missile boats on the second day from a south-westerly direction. After observing the outcome of these attacks, a third attack would be launched from Bombay.

"The plan provided for 'War Stations' for different naval forces to which they were to proceed in time for effective offensive action as and when hostilities became imminent.

"The Western Fleet comprised the cruiser MYSORE, the 15th Frigate Squadron TRISHUL and TALWAR, the 14th Frigate Squadron KHUKRI, KUTHAR and KIRPAN, BETWA (an anti aircraft frigate) KADMATT (a Russian Petya), RANJIT (an old destroyer) DEEPAK (a tanker), SAGARDEEP (a requisitioned lighthouse tender) and two missile boats VIJETA and VINASH.

"The special task group for the missile attacks on Karachi comprised KILTAN and KATCHALL (Russian Petyas) and four missile boats. TIR (a training frigate), DARSHAK, INVESTIGATOR and SUTLEJ (survey ships) were utilised for towing missile boats to and from Saurashtra. CAUVERY and KISTNA (training frigates) were used for coastal patrol.

"All the smaller patrol craft, seaward defence boats and requisitioned dhows were used for harbour patrols and limited seaward patrol.

"Three Super Constellations were available for maritime reconnaissance. Surveillance of the coastal belt would be carried out by two IL-14 aircraft operating from Santa Cruz. The medium-range surveillance would be carried out by the Navy using Alize aircraft.

Offensive Utilisation of Missile Boats

"For the defence of Bombay and other major ports, the small Russian Osa class missile boats would by their mere presence deter the enemy from embarking on an attack. These boats had started arriving from Russia in Calcutta in early 1971 and had to be towed to Bombay.

"The idea of towing these boats to Karachi first found expression among the young officers who were involved in towing of these boats to Bombay. An important aspect which needed experiment and research was the maximum speed at which these boats could be towed. A new necklace' and towing pendant were tried out for towing fully laden boats with full fuel, armament and personnel. The Dockyard manufactured strengthened elbows on the rear struts to divide the towing strain over a wider area. Also deeply discussed was whether the propellers should be free or secured during the tow and the effect this would have on the engines.

"An advance base with fuelling facilities was set up at Okha, for use before hostilities commenced, to deter another exploit by Pakistan like the 1965 bombardment of Dwarka. It was accepted however that on commencement of hostilities, Okha would be bombed and become untenable as an advance base. A dockyard tanker, POSHAK, was therefore positioned on the Saurashtra coast near Diu as a mobile fuelling facility.

"Karachi was defended by shore based military aircraft. It was essential therefore to minimise the possibilities of the boats being attacked from the air. It was planned that the attacking force would arrive 150 miles from Karachi at sunset, go in at maximum speed during darkness, carry out the attack, withdraw at maximum speed and be 150 miles away at dawn. Darkness would make it difficult for enemy aircraft to see and attack the force.

"There were grave risks in sending the fragile boats to the heavily defended port of Karachi. Even if the element of surprise prevented the detection of these boats on the approach and whilst launching their missiles, they would most certainly be subjected to air and perhaps surface attack in the withdrawal phase. One has to imagine the dilemma of the Commander-in-Chief in Bombay. On the one hand was the tremendous danger to young naval officers and sailors and to many crores worth of ships; on the other the Navy had to show its mettle. A calculated risk had to be taken. But some losses had to be accepted. All these factors were very carefully weighed."

These apprehensions surfaced during the final presentation of operational plans in New Delhi.

23 November Presentation in Delhi of Operational Plans

On 23 November, all the Commanders in Chief of the three services made a presentation of their operational plans to the Chiefs of Staff in New Delhi.

The Defence Minister and Defence Secretary were also present. These presentations enabled each CinC to know what the others were planning to do and tie up the loose ends.

In his book Admiral Kohli states:*

> "A special feature of the preparatory stages was that, for the first time ever, the Chiefs of Staff of the three Services jointly examined in the minutest detail the plans of the various Commands of the three Services. Like the other Commanders-in-Chief, I made my presentation which was subjected to detailed scrutiny, and some very searching questions were asked about the legal aspects of blockade and contraband control and the effect it would have on neutral and friendly merchant ships and their countries. Also discussed at length was the grave risk attached to sending small boats right into the allegedly impregnable defences of Karachi."

The fallout of this presentation was serious.

In his book "Sailing and Soldiering in Defence of India", Cdr SD Sinha has reproduced an interview in which the CNS, Admiral Nanda, states:**

> "We had decided that in the event of a war, we would use the missile boats for carrying out an attack on Karachi harbour. There were, however, a lot of misgivings about this plan as it was felt by C-in-C Western Naval Command, who was assigned this task, that Karachi was a very heavily defended port with all ships of the Pakistani Navy patrolling outside the harbour, as well as availability of Pakistan air cover from the two airfields of Drigh Road and Malir, from where Pakistani aircraft could attack our forces. They also had 16 inch gun batteries at Manora and Sandspit, which could blast our ships out of the water. He also felt that Pakistan had superiority in gun power with their destroyers acquired from the British Navy and that it would be a suicidal attempt on our part to try and attack Karachi. These views were expressed by C-in-C West at a presentation of Cs-in-C of all the three services at Delhi.
>
> "I was taken aback at this performance. After the presentation, I called him and my Vice Chief and FOCINCEAST to my office and informed him that I felt it was unfair on him and the men under his Command to burden them with this responsibility if he did not believe in the success of this plan. And I said that I was going to see the Defence Minister and request him to relieve him of his Command. He replied "I have only given my views and I will of course carry out the orders given to me". I was a bit uneasy about this and felt that he was trying to evade responsibility.
>
> "After this meeting in Delhi, I was a bit worried about how things were going to work out. So I decided to go to Bombay at very short notice and called a meeting of all Commanding Officers in the Navy Office. I informed them that in the event of a conflict with Pakistan over Bangladesh, we had plans to launch an attack on Karachi. I also said that there were some misgivings in the minds of certain people about the advisability of this attack. I told them that if any Commanding Officer had any misgivings about these plans, I would be quite happy to relieve them of their Command. I told them that I wanted every ship to be ready and out for the operations, especially in view of the escalation after two of our aircraft were attacked by Pakistan on the eastern border."

In retrospect, it is to the credit of both Admirals that they let this acrimony subside. But it did affect the conduct of operations during the war on two occasions:

- When Naval Headquarters intervened on 6 Dec to cancel a missile attack when forces were well on their way towards their targets and
- In prodding Western Naval Command to do something about the submarine off Bombay.

Operational Plan of Southern Naval Area

Four tasks were given to the Flag Officer Commanding Southern Naval Area (FOCSOUTH).

- The destruction of enemy warships encountered in his area.
- The interception of Pakistani merchant shipping transiting his area, either inter-wing or bound to and from ports in East Asia and China.
- Contraband Control.
- Defence of the ports of Cochin and Goa.

For these tasks FOCSOUTH was allocated AMBA (submarine depot ship), GODAVARI and GANGA (old destroyers), CAUVERY (old frigate) KONKAN (an old coastal minesweeper), HATHI (a tug) and BASSEIN (an inshore minesweeper).

* Page 38.

** Page 229 et seq.

FOCSOUTH's plan was to deploy:

- AMBA on patrol east off Ceylon.
- GODAVARI and GANGA across the route between Colombo and the 8 and 9 Degree Channels.
- CAUVERY and BASSEIN off Goa.
- KONKAN and HATHI off Cochin.

When NHQ signalled the likelihood of a pre-emptive Pakistan strike on 14 October, three Alize anti submarine recce aircraft and four Seaking anti submarine helicopters were moved up to Bombay.

On 3 December, AMBA, GODAVARI and GANGA sailed for their initial patrol positions.

The Naval Element of the Mukti Bahini

In his book Lt Gen Jacob states:

"On the request of the Provisional Government of Bangladesh, the Govermment of India directed the Army to provide assistance to the Mukti Bahini who controlled areas of East Pakistan contiguous to our borders.* The decision made at the end of March 1971 to help the Mukti Bahini was confirmed publicly later by the Minister of External Affairs. On 29 July, in a statement to the Parliament, he said,

> "The Parliament had unanimously adopted a resolution pledging sympathy and support, and we are pursuing that resolution in the best possible manner and we are doing everything possible to lend support to the freedom fighters.**

"We had visualised training some 8000 guerillas in the border areas. Recruits were to be given three months training. An additional period of specialised training would be required for leaders. Once trained, these guerillas would penetrate deep into East Pakistan to form cells and function in the manner that guerilla forces throughout history have done."***

"Some 400 naval commandos and frogmen were trained. They were effective in attacking port facilities. Together with a Mukti Bahini gunboat mounting a Bofors 40mm gun, they captured, sank or damaged some 15 Pakistani ships, 11 coasters, 7 gunboats, 11 barges, 2 tankers and 19 river craft. These were, in fact, the most significant achievements of the Mukti Bahini.

"Since the Mukti Bahini later would need more craft to convert into gunboats in the event of full scale hostilities, we approached the West Bengal Government for assistance. They were most helpful and gave us two craft on loan, MV Palash from the Calcutta Port Trust, and MV Padma. Our workshops reinforced the decks and mounted Bofors L/60 anti-aircraft guns on them. Crews for these were to be found from amongst Bengali naval personnel of the Pakistani Navy. Commander Samant of the Indian Navy, an outstanding submariner, was assigned to assist. The Task Force was, in the event of war, to operate directly under the orders of Fort William and not Eastern Naval Command. Later when operations commenced, these two gunboats operated with considerable success."****

Vice Admiral MK Roy was the Director of Naval Intelligence in 1971. In his book "War in the Indian Ocean", he has given some details of Mukti Bahini frogmen and their achievements.***** The nucleus of riverine frogmen was initially built around a hard core of Bengali sailors who had deserted from Pakistan's third, new, French, Daphne class submarine, the MANGRO. They escaped from the submarine in France, proceeded to Spain and thence to East Bengal. The initial eight submariners were reinforced by twelve dismissed sailors and three merchant seamen. This nucleus of twenty four persons having a naval background was later joined by a large number of university students. Chittagong provided 130 , the Khulna/Chalna region 100, Narayanganj 40 and 30 each came from Chandpur and Daudkhandi. These students were highly motivated educated youth. They were given rigorous training. They were required to swim 12 miles in complete darkness, breathing through a reed while manoeuvring neutrally buoyant limpet mines, attach the mines and swim away before the mines exploded.

The frogmen concentrated on attacking ports, inland harbours, ferries, pontoons, buoyage and all types of vessels. Their aims were:

- to neutralise the main seaports of Chittagong on the Karnaphuli River and Chalna, Mongla, Khulna on the Pussur River so as to prevent supplies to support the Army being brought in by sea.

* Page 90.
** Page 42.
*** Page 90.
**** Page 91.
***** Page 151.

- to stop traditional exports of jute, tea, coir and
- to disrupt inland waterway systems and the river ports of Narayanganj, Daudkhandi, Chandpur and Barisal.

It was planned that co-ordinated attacks would be carried every month, commencing 15 August 1971, depending on the state of tide and moonrise/moonset. The frogmen carried minimum arms and used bamboo/papaya reeds when floating downstream under the surface. Their dress was lungis and banians so as to merge with the local populace near their targets. High quality frogman equipment like fins, wrist compasses and goggles were provided from abroad by non resident East Bengalis. The frogmen chosen for each target generally belonged to that particular area and hence were familiar with the local terrain, the local people and the estuarine characteristics. They carried out four major attacks before the operations started in December:

Month	Shipping Sunk	Tonnage Damaged	Frogmen	Targets Damaged
August	16,000	14,000	176	Chittagong, Chalna/Khulna Narayanganj, Chandpur, Barisal
September	6,000	17,000	160	Chittagong, Chalna/Khulna Chandpur, Barisal
October	8,000	16,000	150	Chittagong, Narayanganj Nagarbari, Barisal
November	20,000	18,000	172	Mining of Pussur River entrance, Chittagong, Khulna, Mongla, Narayanganj, Alashpur, Chandpur, Tarorhat, Mahanpur, Bhadur Ghat, Barisal

Overall, the frogmen of the Mukti Bahini sank or crippled over one lakh tons of shipping, immobilised jetties and wharves and blocked navigable channels.

In his book "Pakistan's Crisis in Leadership" written after the 1971 war, Maj Gen Fazal Muqeem Khan states:

> "Ships were attacked in Chittagong and Chalna harbours by trained frogmen. They were daring attacks. At Chalna, in three consecutive attacks on alternate nights between September 18 and 22, frogmen armed with limpet mines damaged or destroyed SS Lightning, SS Teviot Biock, SS AC Murtaza, SS Imtiaz Baksh, oil tanker Sibtadinga, one barge and two flats. Barges were set on fire, blocking the export of jute.
>
> "By mid November, the strategic and tactical mobility of the Eastern Command had been reduced to the minimum due to extensive guerilla activities in the rear and numerous road bridges, ferries, river-craft and ships, which were the sole means of transport for shifting troops and logistics from one place to another and from one geographical compartment to another across river obstacles, had been damaged."

The Escalation Towards War

From June 1971 onwards, Pakistani Army formations started moving up all along the Indo Pakistan border. In July 1971, it seemed prudent that although vigorous diplomatic efforts for a political settlement should continue, preparations should also be made to meet any Pakistani aggression. In August 1971, the President of Pakistan, General Yahya Khan, announced that India and Pakistan were very close to war.

Until mid 1971, the Mukti Bahini had not been able to prevent the Pakistani Army from regaining control in East Pakistan. Nor had it been able to establish even a tenuous authority on the East Pakistan - West Bengal border. During the monsoon months that followed, however, the Mukti Bahini were able to launch successful sabotage campaigns directed at strategic facilities like bridges, power stations, communication systems, and ships in harbour.

In his book, Lt Gen Jacob states:

> "The Army Headquarters operation instruction, based on the earlier discussions in Calcutta, was issued on 16 August. Based on this instruction, additional moves and deployments were ordered

with provisional objectives and thrust lines. Confirmatory orders, based on war games, were to be issued later.*

"By September, the operations of the Mukti Bahini were beginning to have an effect on the morale of the Pakistan Army. Raids and ambushes were carried out and culverts and bridges blown up".**

The expansion of Mukti Bahini activity alarmed Pakistan that it was a prelude to Indian military intervention to establish a "liberated zone" in which a Bangladeshi Government would be established on Bangladeshi soil. In September 1971, the Pakistani Government ordered mobilisation of reserves. India was uncertain whether Pakistan intended to attack in the West and brought its armed forces to immediate readiness.

From October onwards, skirmishes steadily increased. However, the Mukti Bahini forces rarely held their ground when the Pakistani Army counterattacked. On occasions, the Pakistani Army chased the Mukti Bahini into Indian territory to destroy the Mukti Bahini camps. And on one occasion, the Indian Army chased the Pakistani Army back across the border and thereafter withdrew. This limited Indian support of the Mukti Bahini totally perplexed Pakistan about Indian objectives. Did India have only a limited objective of establishing Mukti Bahini control over a section of East Pakistan? Or was India's objective to invade East Pakistan and help establish an independent Bangladesh?

On the Indian side, at that stage, the objective was limited to assisting the Mukti Bahini to liberate a part of East Pakistan where the refugees could be sent from India to exist peacefully under a Bangladeshi Government.

In October, Pakistan intensified its preparations for war. The skirmishes between Indian and Pakistan troops in the East became more serious. Tension rose so high that a pre-emptive Pakistani attack was thought imminent and both the Western and Eastern Fleets sailed out of harbour. By end October, Pakistan had concentrated infantry divisions and tanks on the Jammu border. In the East, heavy artillery exchanges were taking place in Agartala and Tripura.

The first military engagement between the two armies took place near Kamalpur on 30/31 October when Indian troops silenced Pakistani guns which had been shelling across the border. A similar engagement took place near Belonia on 11 November where there were heavy casualties on both sides. The confrontation reached a new peak of intensity on 21 November in the Bayra sector opposite Jessore.

Lt Gen Jacob's book states:***

"At the beginning of October, preparatory moves of the formations started in accordance with the outline tasks given to them. It was important that realistic training be given on the type of terrain on which the formations and units would be fighting. We had a pretty good idea by now of Pakistani tactics and techniques employed against the liberation forces. We had also noted the construction of defences around the main towns and the approaches to them. We trained the units to bypass the main centres of resistance and to use subsidiary approaches: movement was to be the key to the conduct of successful operations.

"The Pakistan Army's will to fight, particularly of the rank and file, progressively eroded as the effectiveness of the Mukti Bahini raids increased. The raids led to reprisals. Pakistan artillery started shelling the Mukti Bahini. Some of our border posts came under artillery fire. In November, it was decided to allow our troops to go into East Pakistan up to a depth of ten miles to silence these guns. We took advantage of these instructions to secure specific areas to improve our offensive posture.

"On 20 November, our infantry launched a preliminary operation in the area of Bayra. The Pakistan Air Force reacted but ended up losing three of its aircraft. Our infantry was supported by tanks. A Pakistani squadron of tanks charged over open ground to be met by concentrated tank and recoilless fire. In this battle at Bayra, the Pakistanis lost 14 tanks, 3 aircraft and a large number of men.****

"General Yahya Khan, the President, and General Hamid, the Army Chief, felt that India's move on 21 November was a limited action, that had India wanted an excuse for war, it had already existed for several months, that Pakistan would not benefit by declaring war and that Pakistan's strategy had been to avoid war and contain India diplomatically. The other view, held

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* Page 74.
** Page 87.
*** Page 86 et seq.
**** Page 73.

by the rest of the officer corps, was to declare war as a matter of pride, prudence and necessity".

On 23 November, Pakistan declared a national emergency and the Pakistan Navy assumed control of Pakistani merchant shipping. Very soon thereafter, FOCINCWEST was given control of Indian merchant shipping. All Indian ships were recalled from the Gulf and all merchant shipping directed not to approach the Pakistan coast.

The Pakistan Navy announced closure of Karachi port and warned merchant shipping not to approach within 75 miles of Karachi during the dark hours.

In Pakistan, events had acquired their own momentum. The Story of the Pakistan Navy states:*

"A plan for a counter offensive in the West was presented to the President of Pakistan on 30 November 1971 and the high command decided to initiate operations in the West on 3 December. Pre-emptive strikes were carried out by the Pakistan Air Force at several Indian air bases along the western border and on 3 December, Pakistan Army units launched operations in Poonch and Chhamb sectors with the objective of capturing important tactical features.

The overall objective of Pakistan's offensive plan in the West was three fold:

- Take pressure off the beleaguered Pakistani forces in the eastern theatre.
- Occupy sufficient territory in the west for possible bargaining after cease fire.
- Intensify diplomatic pressure on the United Nations to make a decisive move in view of the blatant Indian attack in East Pakistan."

In their book "War and Secession", Sissen and Rose state that:**

"Pakistan's decision to declare war derived from the military command's sensitivity to the adverse publicity Pakistan was receiving in the Western press, the incident in Boyra had not evoked an international response to force India to desist and the pressure within Pakistan to react forcefully to India's aggression. On 30 November, the D Day for declaring war on India was fixed as 2 Dec. This date was postponed to 3 December for additional preparations."

There is reason to believe that disinformation by Indian intelligence agencies was able to precipitate Pakistan's decision to launch a pre-emptive attack on 3 December. This helped the Indian Air Force to minimise damage to aircraft at the forward airfields and for the Western Fleet to avoid a pre-emptive attack by midget submarines in Bombay Harbour.

Lt Gen Jaocb's book states:***

"Our Signal Intelligence Unit was capable of limited code breaking. Even though they had only little success with critical Army codes, they were able to break the Naval code. We intercepted signals from the submarine GHAZI, off Ceylon and on her entering the Bay of Bengal. These were passed on to the Navy, both in Delhi and Visakhapatnam.

"On 1 December, we intercepted a message from West to East Pakistan advising them of the warning sent to all Pakistani merchant shipping not to enter the Bay of Bengal. We passed this on to the three Service Headquarters, Army, Navy and Air Force, as also an intercept warning civil aircraft not to fly near the Indian borders."

When Pakistan initiated the war on 3 December 1971:

- Cruiser BABUR and minesweeper MUHAFIZ were at the anchorage.
- Tanker DACCA was at Manora anchorage.
- Destroyer SHAHJAHAN and two coastal minesweepers were in harbour preparing for passage to East Pakistan. Arrangements had been made for them to refuel at Colombo.
- Destroyer BADR and the two ex Royal Saudi Navy fast Jaguar class patrol craft SADAQAT and RIFAQAT were in harbour.
- Destroyer ALAMGIR was under repair and frigate TUGHRIL was under refit.
- Destroyer KHAIBAR and frigate TIPPU SULTAN were 80 miles southwest of Karachi.
- Destroyer JAHANGIR was on patrol 60 miles south of Karachi.
- Frigate ZULFIQAR was on the inner patrol 30 miles south of Karachi.

* Page 334.
** Page 230.
*** Page 48.

9

Naval Operations in the Eastern Naval Command

This account of naval operations in the Eastern Naval Command has been reconstructed from Vice Admiral Krishnan's book "No Way But Surrender", from the "Story of the Pakistan Navy" and from discussions with the participants.

Four topics have been dealt with in separate sections:

- The Sinking of the GHAZI.
- The Commando Operation at Mongla/Khulna.
- Amphibious Operation Beaver.
- The ENTERPRISE Incident.

The ensuing account deals with the operations of the Eastern Fleet, VIKRANT's air strikes, submarine operations and contraband control.

Day to Day Events - 4 to 16 December

4 December

Having sailed from the Andaman Islands on 2 December, the Eastern Fleet was within striking distance of Cox's Bazar on the morning of 4 December. As previously arranged, the Air Force had carried out strikes on Cox's Bazar and Chittagong, after which VIKRANT was cleared to strike these ports.

Air Strikes

Time	Target	Results
AM	Cox's Bazar	Rocket and strafing attack on airfield installations. ATC set on fire. Power house and wireless station damaged. Fuel tank set on fire.
PM	Chittagong	Hanger and control tower damaged. Fuel dump set on fire. Two gunboats immobilised, one on fire. Six Pakistan merchant ships in outer anchorage attacked, two damaged heavily. Medium and heavy AA fire.

Blockade

Blockade was declared but lifted the same evening.

Contraband Control

Contraband Control was declared. Neutral ships were given 48 hours to be clear of the combat zone. Eight ships were inspected and cleared to proceed to their destinations.

5 December

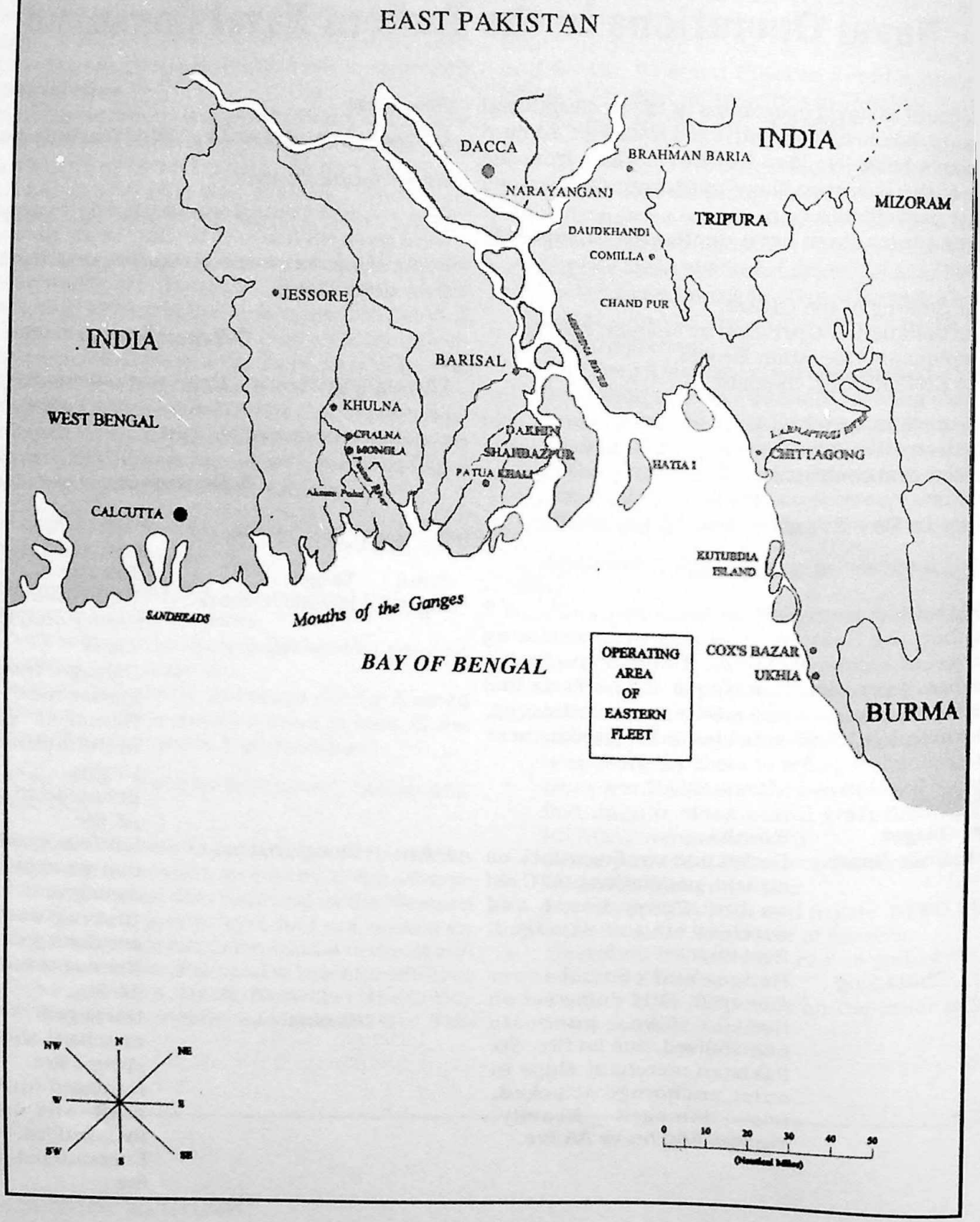
Throughout the day, there was not enough wind to launch aircraft. Contraband Control continued. Wind conditions improved at night.

6 December

Air Strikes

Time	Target		Results
Night	Mongla/Chalna	-	Night bombing and rocket attack by two Alizes.
		-	Damaged two ships in Pussur river.
		-	Damaged harbour installations at Chalna.
		-	Encountered medium AA fire.
Dawn	Mongla/Chalna	-	Hit four gunboats - two destroyed, two damaged.
		-	One tug destroyed, one damaged.
		-	Encountered heavy AA fire.
	Khulna	-	Damaged one merchant ship which opened fire.
		-	Damaged tugs, small craft and harbour installations.
		-	Encountered light AA fire.

NAVAL OPERATIONS IN THE BAY OF BENGAL IN DECEMBER 1971



	Pussur River	-	Strafed and damaged Pak cargo ship which opened fire.
		-	Pilot W/T station set on fire.
		-	Merchant ship ONDARDA sunk at entrance.
After-noon	Chittagong	-	Damaged merchant ship and gunboat which opened fire.
		-	Attacked Harbour installations and control tower.
		-	Encountered heavy AA fire over Chittagong airfield.
Night	Chittagong Airfield	-	Runway bombed by Alize.
		-	Encountered AA fire.
	Cox's Bazar Airfield	-	Runway bombed by two Alizes.

Contraband Control

Two ships were apprehended and sent to Sandheads. (Calcutta).

7 December

Air Strikes

Time	Target		Results
Dawn	Chittagong Airfield	-	Runway damaged. Hanger and vehicles destroyed. Fuel dumps set on fire.
		-	Encountered medium AA fire.
	Cox's Bazar Airfield	-	Vehicles and W/T station destroyed.
Afternoon	-	-	Recce over Mongla, Chalna, Barisal.

In the evening, FOCEF signalled FOCINCEAST that air superiority had been achieved in Eastern Fleet's area and that no enemy aircraft were to be seen in the ground or in the air. Wind conditions were inadequate to launch Seahawks armed with bombs and hence Alizes only were being used for bombing sorties at night.

Contraband Control

Six ships were apprehended and sent to Sandheads.

Replenishment. Urgently needed stores, which had been sent in an LST from Visakhapatnam, were delivered to ships of the Fleet.

Firing on United Nations Aircraft

On 6 December, NHQ had signalled that a United Nations aircraft would be transiting the Fleet's area to evacuate foreign nationals from Dacca. This aircraft was not seen on the 6th. On 7 December however, an aircraft approached to within 5000 yards. VIKRANT's close range guns fired a burst. The aircraft, which was later recognised as a United Nations C 130 Hercules, turned round and departed. Two Seahawks followed the aircraft until it crossed the coast. No prior intimation had been received of this UN flight on 7 December.

8 December

Intercepts of enemy transmissions indicated that Pakistani forces were arranging escape routes by sea, air and overland. All types of craft were being camouflaged to carry fleeing Pakistan troops down the rivers. Troop concentrations were reported at Barisal. VIKRANT was told that a large number of craft were assembling between Barisal and Narayanganj in a bid to break out and their means of escape should be destroyed.

There was not enough wind to operate Seahawks. The Alizes continued air strikes on the night of 8/9 December.

9 December

Air Strikes

Time	Target		Results
Night	Barisal Area	-	Night bombing by two Alizes.
		-	No ships or craft sighted.
		-	No AA fire.
Dawn	Barisal/ Bakarganj	-	No craft or army concentration sighted.
	Patuakhali	-	Three cargo barges and an army camp destroyed.
AM	Hatia/ Dakhin Shahbazpur	-	No craft capable of conveying troops sighted.
PM	Hatia/ Dakhin Shahbazpur	-	Two tankers attacked by Alizes and damaged.
		-	One gunboat attacked in Meghna River.
	Chittagong	-	Seahawks strafed Ordnance Factory and W/T station.

- Encountered medium to heavy AA fire.

Inadequate wind precluded further Seahawk operations.

Contraband Control

Due to shortage of ships to escort apprehended ships all the way to Sandheads, an assembly anchorage was established. Apprehended ships were made to anchor in this area and, when a sizable number had been assembled, one ship would escort them to Sandheads.

On night 9/10 December, pursuant on a report from Cdr Samant's Commando Force Alfa which was on its way to attack Chalna-Mongla, Pakistani merchant ships ANWAR BAKSH and BAQIR were apprehended whilst leaving the Pussur river. ANWAR BAKSH was masquerading as a Japanese ship and had some Pakistan troops on board disguised as civilians. In addition, one more ship was apprehended.

10 December

Air Strikes

Time	Target	Results
AM/PM	Cox's Bazar	Alizes bombed the runway. Wind conditions continued to be unsuitable for operating Seahawks.

Contraband Control

One ship was apprehended.

Replenishment. Requisitioned tanker DESHDEEP was directed to anchor in the approaches to the Matla river. Ships refuelled in preparation for the amphibious landing scheduled for 12 December.

American Intervention. Admiral Krishnan's book states:*

"At about 5.30 PM on Friday 10 December, we intercepted a signal to the effect that the US Navy was sending ships into the Bay of Bengal, for possible withdrawal of the Pakistani Army.

"I also spoke to Admiral Nanda regarding the 7th Fleet but he had heard no more than what was in the signal. We ended our conversation on the note that we should not be surprised by anything that happened from now onwards."

11 December

Admiral Krishan's book states:**

"We intercepted a signal of the utmost significance. It was a message from Commodore Chittagong to the Flag Officer Commanding East Pakistan Navy:

"Two coasters ready at Gupta Crossing. A/A defence strengthened. All foreign ships cleared of harbour. Own merchant ships disguised. Naval personnel deployed in defensive positions and integrated with fortress defence. Pilot for RK 623 will be ready by 1800 - 1900 in speed boat. Further mining of approaches will be carried out after RK 623 enters.

"By this time it was also becoming clear that the US Seventh Fleet was in fact speeding towards the Bay of Bengal and the Fleet was a large one and included the nuclear-powered aircraft carrier USS ENTERPRISE. But this Fleet was still far away and it would be at least 72 to 96 hours before they could make their presence felt in the Bay. But once the Fleet reached near enough to the operational area, the situation could well change with a dramatic suddenness that would make us lose all the initiative in the naval war.

"So it was of the utmost importance that we evaluate all available information, reappreciate the situation and take corrective and preventive action in good time.

"The reappreciation of the situation went something like this. We had complete mastery of the approaches to Bangladesh ports and nothing could go in and out of the ports without coming in for very heavy attacks and almost certain destruction. We had subjected their harbours and installations at Chittagong, Chalna, Khulna, Mongla, and Cox's Bazar to round-the-clock attention from the air. The craft that had assembled at Narayanganj and Barisal which could be used for troop transportation had been sunk or disabled. Mongla and Chalna had already been evacuated.

"If the Pakistanis wanted to try a "Dunkirk," it would have to be by ships or air from Chittagong. Cox's Bazar was too far south, could not take any large ships, her airport runway was in a shambles and in any case, we were well advanced in our plans to carry out a combined operation of landing our own troops there.

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* Page 52 et seq.

** ibid.

"By a process of elimination, therefore, Chittagong was their only hope for a getaway. From experience we knew that no harbour can be totally immobilized. A determined and desperate enemy can always get sufficient services to use the harbour in a bid to get away. And here, we had evidence that they had assembled several merchant ships, camouflaged and obviously ready to break out. Our estimate was that some 5,000 per ship making a total of 30,000 men could make a getaway. It would have been a gamble that could possibly succeed under certain circumstances.

"The enemy could easily have guessed what I certainly knew, that we could not keep VIKRANT in the area of operations much longer as she was running dangerously low on fuel and she would have to be withdrawn for at least 48 hours to replenish. The withdrawal of the VIKRANT would mean releasing the pressure on the enemy. A breakout under these circumstances had a chance of success. The courses of action before the Pakistani Naval authorities could be assessed as follows:

- Lay minefields to seaward of Chittagong, allowing themselves a narrow lane, close inshore and along the coast southwards. This lane would not be known to us and the mines would prove a deterrent to our own ships as we would not like to blunder into unknown mined waters.
- Use the cover of darkness to assemble and embark troops, wait for some relaxation in the blockade-stranglehold, and slip through the thinned out patrol lines.
- Use the runways of the airport for lifting senior officers with helicopters and light aircraft. Make efforts to repair the runway sufficiently for use of heavier aircraft.
- Use demolition charges and mines extensively as part of the "scorched earth policy" to make Chittagong untenable for as long as possible.

"The last two of the above were the key to the mystery of RK 623. It must be a convoy carrying some senior officers and also mines and other means of demolition to do a "scorched earth" on Chittagong. Later we were to learn that the Pakistan name for this operation was the "Denial Plan.

"Where, in this scheme of things would the Seventh Fleet come in? We carried out a careful study of the USS ENTERPRISE and her capabilities. This carrier of 75,000 tons tonnage (as against 16,000 tons of the VIKRANT) was the world's largest warship.

"Powered by eight atomic reactors, her four geared steam turbines could work up a speed of 35 knots. In addition to her normal complement of 2,870, she had an additional 2,000 personnel to form the attack air wing consisting of 100 aircraft of various types.

"In company with her were the amphibious assault ship TRIPOLI, the guided-missile ship KING and three guided missile destroyers, DECATUR, PARSONS and TARTAR.

"The TRIPOLI was a large 17,000 ton amphibious assault ship, especially built to operate up to 24 medium, four heavy and four observation helicopters, but she did not carry landing craft. She had a sustained speed of 20 knots. With a complement of 528, she could transport and land a marine battalion of about 2,100 officers and men with guns, vehicles and various support personnel.

"The KING, a guided missile frigate was primarily designed to screen a carrier force and besides sonar, her main armament consisted of surface to air missiles and torpedoes. Similarly, the destroyers TARTAR and DECATUR, ships of over 20 years age, were primarily fitted with surface to air missiles, but with advanced electronic equipment.

"The ENTERPRISE and her escorts posed at first glance a fantastic threat. And yet, on closer inspection, what exactly could she achieve to tilt the battle in Pakistan's favour?

"None of us ever fell for the announcement that the Fleet's object was to evacuate a handful of American subjects from Dacca. Obviously, her primary intention was to frighten us into withdrawing our forces from the operational area and let the escape ships break out. Suppose we didn't get scared that easily and persisted in our stranglehold on Bangladesh? Evacuation of any but a handful of troops was a possibility, using helicopters. Clearly the use of heavier and very powerful aircraft was quite out of the question as however thorough the temporary repairs, the runways of both Chittagong and Dacca had taken a considerable beating.

"The offensive capabilities of the American task force therefore, consisted of:

- Landing up to a marine battalion as an assault group using helicopters.

- Using the ENTERPRISE's aircraft for ground support role.
- Providing close support against aircraft attacking their fleet and
- Surface and aerial attack on Indian warships.

"We did not know if the marine battalion was carried on board the TRIPOLI at the time, but even assuming that they were, how were they going to land them ashore except by helicopters. It was quite obvious that manpower-wise, landing some 2,000-odd persons was not going to materially alter the land battle.

"It was unthinkable that they would commit their aircraft on a ground support role against our army or air force or wantonly attack our naval forces at sea.

"To my way of thinking, the most effective method of helping the Pakistanis would be to close Chittagong within range of their air-power, put up a formidable air umbrella over the merchant ships awaiting escape and actually provide air escort for them till they reached the waiting fleet. They knew that our tiny force of aircraft from VIKRANT could never hope to challenge their air cover.

"Summing up, we came to the following conclusions:

- A critical point was being reached in the war and the Pakistanis were desperate and would try to break out at the earliest opportunity.
- For this purpose, they had at least five merchant ships ready and camouflaged in Chittagong. They had made desperate attempts to make the runway at Chittagong sufficiently serviceable to take light aircraft and helicopters.
- The safe arrival of the convoy RK 623 would be the starting point of putting their "Scorched Earth Plan" into action.
- The removal of VIKRANT from the scene of operations would ease the way to a break-out.
- A break-out of ships could be facilitated by the Seventh Fleet providing an impregnable and continuous air umbrella till they joined the surface forces of the Seventh Fleet.

"Clearly, everything turned on the merchant ships assembled in Chittagong for the actual troop carrying. Not an instant must be lost in destroying or so heavily damaging them as to make them totally immobile. Time was running out.

"Having spent the whole forenoon of 11 December on the above thoughts and a series of discussions with the CNS, Admiral Nanda, as well as my Army colleague, Lt Gen Aurora, I signalled the Eastern Fleet at 1.15 PM as follows:

1. "Appreciate enemy with senior officers including FOCEF planning major breakout and will try to get away by hugging the coast. Senior officers may try to escape by air. Approaches to harbour likely to be mined.
2. "Your mission is:
   - Put Chittagong airport out of commission.
   - Attack ships in harbour by air and surface units if they break out.
3. "This is undoubtedly the most important mission of the war in the East. The enemy ships must, I repeat, must, be destroyed. Good Luck."

"The important requirement was to locate and destroy the mysterious RK 623 on which the Pakistanis seemed to be setting so much hope. The last known position of this convoy was the village of Rajapur. At 6 AM on the 11th morning, therefore, a sortie was sent to bomb and flush out the enemy from their hideout.

"Once the RK 623 realised that their day-time hideout had been discovered and subjected to attack, they would try to get away from there as quickly as possible.

"At about 10 AM, one of our Alizes looking for this particular quarry saw what looked like a small island, the tide lapping over its northern shore. Covered in thick green shrubbery, it was too tiny to bother about. A second look raised the doubt in the pilot's mind that the "island" was probably moving and what looked like the tide-wash might well be from propeller movements. He decided to have a closer look and not wanting to waste precious ammunition unless sure, made the first attack into a dummy dive. By the time he straightened out, there was no doubt in his mind that here was the precious and elusive RK 623! He saw a gun boat, a tug with a couple of barges all in close formation and within the facade of the camouflage he could see the whole "island" bristling with A/A guns. It was perhaps some forlorn hope or sudden surprise that made them hold their fire.

"On the second round, now a firing run, the Alize pressed home its attack, using rocket projectiles for this purpose. The convoy opened furious fire against the aircraft but in vain and was severely hit in turn by the rockets. Giving up the fight, the boat abandoned its charges and

made for the beach and grounded herself. A second Alize came on the scene and attacked the barges which simply disintegrated. This second Alize confirmed the beaching and abandonment of the tug and the gun boat, both out of the war forever. So foundered the Pakistani hopes from their much-vaunted RK 623! The gun boat was identified after the war as one of the "Rajshahi" class PNS JESSORE.

"This action was cause enough for some jubilation, but the main job of putting the escape fleet out of action still remained. And just as I had feared, the Wind God was not on our side on the 11th, throughout the day. As Captain Parkash put it: "Since this appeared to be one of the most important tasks of these operations, there was a feeling of helplessness in VIKRANT that the Seahawks could not be flown due to lack of wind and we had to make do with Alizes only. One could do no more than pray for a little wind in the near future... Wind conditions continued to remain poor to the extent that the sea was like a sheet of glass. It was impossible to fly off Seahawks. Moon conditions were also becoming poor and therefore even Alize sorties had to be restricted during dark hours and that too only when absolutely necessary."

"Saturday was a day of utter desolation and heart-break. Would the enemy break out under cover of darkness and make good their escape towards the Seventh Fleet speeding into the Bay of Bengal? Were we to fail, after all, in our mission of bottling up the enemy? Our ships were getting dangerously low on fuel and the fuelling programme of smaller ships meant thinning out of the patrol lines, weakening the blockade.

"I decided that if wind conditions did not improve by the morrow, we will have to send the surface ships BEAS and BRAHMAPUTRA to get within gun range of Chittagong harbour and carry out direct bombardment of the shipping inside."

Air Strikes

Wind conditions remained inadequate for launching Seahawks. Alizes could only carry out armed recce sorties to keep the movement of shipping off Chittagong, Cox's Bazar and Pussur river under surveillance.

Time	Target		Results
AM	Rajapur	-	Bombed by one Alize.
	Chittagong Airstrip	-	Recce'd by Alize. Reported that runway was unusable for flying operations.
		-	No shipping traffic sighted in Meghna river.
	Cox's Bazar	-	Alize sighted well camouflaged enemy gun boat escorting two small craft full of troops. Alizes attacked and craft beached.
	Kutubdia Island	-	Alizes depth charged two craft with concealed cargo.
PM	Coastal Recce	-	Alizes reported that there was no movement of troops by road or water in the Cox's Bazar area. No movement of craft along the coast and waterway up to five miles south of Chittagong.
	Coastal Patrol	-	Alize homed ships on to small craft proceeding south. Ships sank six craft.
	Chittagong	-	Runway bombed by Alize.
	Chittagong	-	Airfield bombed using flare bombs.
		-	Encountered heavy AA fire.

Contraband Control. One ship was apprehended.

Amphibious Operation: Postponed to 14 December.

12 December

Air Strikes

Wind conditions improved considerably after two days of no wind conditions and a number of air strikes were launched. Admiral Krishnan's book states:*

* Page 62 et seq.

"I owe it to the gallant Captain of the VIKRANT to tell the story of that day in his own words:

"VIKRANT steamed north in order to launch a Seahawk strike with optimum ammunition possible, by reducing aircraft fuel. From 0600 onwards, 29 Seahawk strikes armed with 500 pound bombs and rocket projectiles were flown against shipping and other targets around Chittagong. The very first strike made at least six direct hits on the runway and rendered it unserviceable.

"The second strike of four Seahawks armed with rockets was launched against the merchant shipping in harbour. They attacked two merchant ships leaving harbour with 6 to 8 direct hits and another two inside the harbour with 13 to 15 hits. Moderate to heavy gunfire was still being experienced from inside the harbour and although one aircraft received a direct hit on the canopy which was shattered, all aircraft returned to the carrier safely.

"Flight operations were slightly interrupted at 0945 when VIKRANT had a breakdown. The defect was however rectified most expeditiously and the ship was under way again at 1035, resuming flight operations at 1100.

"Two strikes of 4 Seahawks each, armed with bombs were launched again at 1100 and 1115 respectively. Targets once again were the airfield and shipping at Chittagong. The first strike consisted of three Seahawks. The runway was once again bombed and a hit was observed on the intersection of the runway. Gun positions on the airfield were silenced. The first strike also carried out photo reconnaissance of the area. The second division attacked three merchant ships off Gupta Point with rockets scoring direct hits on the superstructure. Medium AA fire was experienced over the target area. One Seahawk returned with a shattered wind screen.

"Another strike of four Seahawks was launched at 1315 against shipping at Chittagong. Aircraft were armed with 500 pound bombs and scored direct hits on two merchantmen of 10,000 and 15,000 tons each.

"While air strikes over Chittagong airfield and shipping were continuing, a call for air strike on troops and vehicle concentrations at Kaptai was received from the Army at about 1300. Four Seahawks were launched at 1340 for the target area.

"The last strike of four Seahawks on 12 December 1971 was launched at 1530 armed with two 500 pound bombs each. The enemy airfield and shipping was once again struck causing heavy damages."

The results of the day's work were summed up by FOCEF in a signal to FOCINCEAST as follows:

"BE PLEASED TO REPORT THAT AT THE END OF TWENTY-FOUR HOURS OF CONTINUOUS SORTIES COMMENCING 111930 INVOLVING CONSTANT ALIZE RECCE AND BOMBING AND TWENTY EIGHT HAWK SORTIES, COX'S BAZAR AND CHITTAGONG AIRFIELD HAVE BEEN RENDERED INOPERATIVE IN THE NEAR FUTURE. THERE IS NO MERCHANT SHIP OF ANY SIZE IN THE CHITTAGONG HARBOUR OR APPROACHES WHICH HAS NOT BEEN STRUCK AND INCAPACITATED. THERE IS A COMPLETE ABSENCE OF SHIPPING ALONG THE ENTIRE COAST FROM CHALNA EASTWARD THROUGH MEGHNA SANDWIP UP TO COX'S BAZAR AND SOUTHWARD."

"In addition to the air strikes, we also decided to carry out a surface bombardment of Cox's, Bazar to obviate even a marginal use of the aerodrome there by any type of aircraft.

"The frigates BRAHMAPUTRA and BEAS were cleared for this attack and commenced the bombardment from 3.50 PM onwards. The airfield installations were the principal targets. The Air Traffic Control tower got a direct hit.

13 December

Air Strikes

Time	Target		Results
AM	Cox's Bazar	-	Alize dropped bombs on runway.
		-	No contacts of shipping or craft.
	Chittagong	-	First Seahawk strike bombed two merchant ships damaged earlier.
		-	Second Seahawk strike damaged one tanker and blew up AA gun positions.
PM	Chittagong	-	Third Seahawk strike bombed runway, damaged a tanker and sank a merchant

		ship, set a warehouse ablaze and attacked the Ordnance Factory.
		- Encountered medium AA fire over port area.

Replenishment. The Fleet refuelled and prepared for the Amphibious Operation.

14 December

Air Strikes

Time	Target	Results
AM	Chittagong	- Seahawks attacked the Cantonment area. Several hits on Army Barracks.
		- Encountered medium AA fire.
	Cox's Bazar	- Beach-head area bombed by Alizes.
	Recce	- Search around Pussur area and Cox's Bazar revealed no contacts.

VIKRANT detached to Paradip for refuelling.

Contraband Control One ship was apprehended.

Amphibious Operation. All forces R/V'd, but due to delays in trans-shipment of troops from VISHWA VIJAY to the LST's, the operation was postponed to 15 December.

15 December

Amphibious landing attempted at Reju Creek. Only one platoon could be landed. One of the two LSTs was damaged. Due to difficulties experienced, the landing force moved overnight to Cox's Bazar.

16 December

Pakistan's forces in East Pakistan surrendered. Landing of troops and equipment at Cox's Bazar using local boats continued till 19 December.

VIKRANT'S Air Operations

When asked what were his greatest worries and VIKRANT's close calls during the 1971 war, Captain Parkash recalls:

- Operating Seahawk aircraft in marginal wind conditions.
- One day, the after lift got stuck because one of the twelve keeps would not retract. Two Seahawks were waiting to be recovered and were running low on fuel. A huge hammer had to be used to blunt the nose of the stuck keep, after which the aft lift unstuck and the aircraft landed just in time. Had this not been successful, both Seahawks would have had to ditch.
- The flooding of the forward machinery space. One of the turbo generators had low vacuum because its condenser needed cleaning. In peacetime, this would only have been attempted in harbour. It was decided to attempt this at sea. The inlet and outlet valves were 20 feet below the waterline and operated by rod gearing. The top plate of the turbo generator suction filter was loosened for cleaning the filter before opening the condenser door. Within minutes, water came gushing in. One of the valves had not been fully shut and the water was coming past the loosened plate. The situation was saved by the 1000 ton pump in the machinery space.

  Vice Admiral (then Lt Cdr) Bhushan was the Senior Engineer of VIKRANT. He recalls this incident:

  > "When I arrived in the Forward Engine Room, I observed nearly a foot high flow of water emerging from the turbo generator sea water strainer housing. My senior watchkeeper, Lt KS Bhasin - no lightweight himself - was actually sitting on the strainer cover in an effort to make it seat against the flow of water, but without much success. After unsuccessfully trying all other means of stopping the flow, I asked for the largest available wheel spanner to be brought. When it came, we used it to close the seawater suction and discharge valves and to our immense relief, the flow stopped."

- On 11 Dec, Lt Cdr Ramsagar's Alize, whilst attacking a camouflaged boat carrying troops was hit by small arms fire which caused a total hydraulic failure. He managed to operate the landing gear manually and land by the skin of his teeth. His was the heaviest damaged aircraft of the war.
- VIKRANT's fuel state became a cause of worry on 13 and 14 Dec, when it came below 25%.

Damage Inflicted by Vikrant's Air Strikes

Admiral Krishnan's book states:*

"The following wrecks of large merchant ships sunk, run aground or split into two were identified:

	GRT
KARNAPHULI	6876
SURMA	5890
AL ABBAS	9142
ANIS BAKSH	6273
OCEAN ENTERPRISE	5909
MATERAN	1198
UNIDENTIFIED SHIP	1800
MAIHAR	5938
RANGAMATI	5888
TWO UNIDENTIFIED SHIPS CAPSIZED - APPROX.	8000
TOTAL	56,914 TONS

"In addition to the above 57 thousand tons of merchant ships, PNS JESSORE, COMILLA and SYLHET were destroyed".

Submarine Operations

INS KHANDERI was sailed on 28 November 1971 to patrol an area across the shipping route from Ceylon to Chittagong. Her mission was:

- To destroy Pakistani naval ships.
- To destroy Pakistani merchant ships.
- To provide timely intelligence on Pakistani maritime forces.

Like her sister submarines off the West coast of India, she was also tied down to the requirements of positive identification and informed that Pakistani merchantmen were masquerading as neutrals. Like the others, she also had an uneventful patrol and returned to harbour on 14 December 1971.

The Sinking of the Ghazi

The Pakistan Navy's Deployment of GHAZI in the 1971 Indo Pakistan War

In his book, "Pakistan's Crisis in Leadership", written in 1972 soon after the war, Maj General Fazal Muqeem Khan states:**

"The submarine GHAZI was despatched to the Visakhapatnam Naval Base in the Bay of Bengal. The GHAZI's task was to carry out offensive mine laying against Visakhapatnam.

"GHAZI which had sailed towards Visakhapatnam with special instructions, had to reach its destination on 26 November 1971. She was to report on arrival but no word was heard from her. Efforts were made to contact her but to no avail. The fate of the GHAZI was in jeopardy before 3 December. The Indians made preposterous claims about the sinking of the GHAZI. However, being loaded with mines, it seems to have met an accident on her passage and exploded. A few foreign papers at that time also reported that some flotsam had been picked up by Indian fishermen and handed over to the Indian Navy, which made up stories about its sinking".

The Story of the Pakistan Navy' published twenty years later in 1991, gives a slightly different account:***

"The Navy ordered the submarines to slip out of harbour quietly on various dates between 14 and 22 November. They were allocated patrol areas covering the west coast of India, while GHAZI was despatched to the Bay of Bengal with the primary objective of locating the Indian aircraft carrier, INS VIKRANT, which was reported to be operating in the area.

"GHAZI's deployment to the Bay of Bengal must be regarded as a measure taken to rectify a strategic posture that was getting increasingly out of step with military realities. Our response to Indian military deployments around East Pakistan were a series of adhoc measures, taken from time to time, as a reaction to the Indian build-up. Despatch of GHAZI to India's eastern seaboard, not part of the original plans, was one

* Page 64.
** Page 153.
*** Pages 337 et seq

such step taken on the insistence of our Military High Command to reinforce Eastern Command. Pressure on the Pakistan Navy to extend the sphere of its operations into the Bay of Bengal increased with the growth of Indian and Indian-inspired naval activities in and/around East Pakistan.

"The strategic soundness of the decision has never been questioned. GHAZI was the only ship which had the range and capability to undertake operations in the distant waters under control of the enemy. The presence of a lucrative target in the shape of the aircraft carrier VIKRANT, the pride of the Indian Fleet, in that area was known. The plan had all the ingredients of daring and surprise which are essential for success in a situation tilted heavily in favour of the enemy. Indeed, had the GHAZI been able to sink or even damage the Indian aircraft carrier, the shock effect alone would have been sufficient to upset Indian naval plans. The naval situation in the Bay of Bengal would have undergone a drastic transformation, and carrier-supported military operations in the coastal areas would have been affected. So tempting were the prospects of a possible success that the mission was approved despite several factors which militated against it.

"Against it was the consideration of GHAZI's aging machinery and equipment. It was difficult to sustain prolonged operations in a distant area, in the total absence of repair, logistic and recreational facilities in the vicinity. At this time, submarine repair facilities were totally absent at Chittagong, the only port in the east. It was on these grounds that the proposal to deploy GHAZI in the Bay of Bengal was opposed by Captain Submarines and many others. The objections were later reluctantly dropped or overruled due to the pressures mentioned earlier.

"On 14 November 1971, PNS GHAZI, under the command of Cdr Zafar Mohammad Khan, sailed out of harbour on a reconnaissance patrol. Orders had been issued to the Commanding Officer. A report expected from the submarine on 26 November was not received. Anxiety grew with every day that passed after frantic efforts to establish communications with the submarine failed to produce results. Before hostilities broke out in the West on 3 December, doubts about the fate of the submarine had already begun to agitate the minds of submariners and many others at Naval Headquarters. Several reasons could, however, be attributed to the failure of the submarine to communicate.

"The first indication of GHAZI's tragic fate came when a message by NHQ India, claiming sinking of GHAZI on the night of 3 December but issued strangely enough on 9 December, was intercepted. Both the manner of its release and the text quoted below clarified very little: "I am pleased to announce that Pakistan Navy Submarine GHAZI sunk off Visakhapatnam by our ships on 3/4 December. Dead bodies and other conclusive evidence floated to surface yesterday - 091101 EF". Their mysterious silence for 6 days between 3 December, when the submarine was claimed to have been sunk and 9 December, when the message was released could not be easily explained. It gave rise to speculations that the submarine may well have been sunk earlier, at a time when the Indians were not ready to accept their involvement in the war. Failure of the GHAZI to communicate after 26 November strongly supported such a possibility. As it happened, the release of the message on 9 December also served to divert attention of their public from the sinking of KHUKRI on this very date, even though the claim of sinking GHAZI was apparently made a few hours before the loss of KHUKRI".

The Indian Navy's Assessments of GHAZI's Deployment

In his book 'No Way But Surrender - An Account of the Indo Pakistan War in the Bay of Bengal 1971', Vice Admiral N Krishnan, then Flag Officer Commanding-in-Chief of the Eastern Naval Command, states:*

"The problem of VIKRANT's security was a serious one and brought forth several headaches. By very careful appreciation of the submarine threat, by analyzing data such as endurance, distance factors, base facilities, etc we had come to the definite conclusion that the enemy was bound to deploy the submarine GHAZI against us in the Bay of Bengal with the sole aim of destroying our aircraft carrier VIKRANT. The threat from GHAZI was a considerable one. Apart from the lethal advantage at the pre-emptive stage, VIKRANT's approximate position would become known once she commenced operating aircraft in the vicinity of the East Bengal coast. Of the four surface

* Pages 26 et seq.

ships available, one had no anti-submarine detection device (sonar) and unless the other three were continually in close company with VIKRANT (within a radius of 5 to 10 miles), the carrier would be completely vulnerable to attack from the GHAZI which could take up her position surreptitiously and at leisure and await her opportunity.

"We decided that in preparing our plan, we would rely much more on deception and other measures against the GHAZI.

"We had to find some place to crouch in, to spring into action at the shortest notice. After embarking the remaining aircraft of Seahawks, Alizes and Alouettes, the Fleet left Madras on Saturday 13 November for an unknown destination which I shall call "Port X-Ray," for reasons of security. Port X-Ray was a totally uninhabited place with no means of communication with the outside world and it was well protected and in the form of a lagoon.

"Having sailed the Fleet away to safety, the major task was to deceive the enemy into thinking that the VIKRANT was where she was not and lure the GHAZI to where we could attack her. I spoke to the Naval Officer-in-Charge, Madras on the telephone and told him that VIKRANT, now off Visakhapatnam, would be arriving at Madras and would require an alongside berth, provisions and other logistic needs. Captain Duckworth thought I had gone stark raving mad that I should discuss so many operational matters over the telephone. I told him to alert contractors for rations, to speak to the Port Trust that we wanted a berth alongside for VIKRANT at Madras, etc.

"In Visakhapatnam, we ordered much more rations, especially meat and fresh vegetables, from our contractors to whom it must have been obvious that this meant the presence of the Fleet at or off Visakhapatnam. I was banking on bazaar rumours being picked up by spies and relayed to Pakistan. I had no doubt that such spies did exist and I hoped that they would do their duty.

"During the several weeks before the war, we had taken special pains to contact the various fishing communities in and around Visakhapatnam and motivate them to act as a sort of visual lookout for anything out of the ordinary that they may see when out fishing. This meant explaining to them all about oil slicks, what a submarine looks like, what sort of tell-tale evidence to look for and so on. They were briefed on exactly what to do with any information that they gathered.

"We decided to use INS RAJPUT as a decoy to try and deceive the Pakistanis into believing that VIKRANT was in or around Visakhapatnam. RAJPUT was sailed to proceed about 160 miles off Visakhapatnam. She was given a large number of signals with instructions that she should clear the same from sea. Heavy wireless traffic is one means for the enemy to suspect the whereabouts of a big ship. We intentionally breached security by making an unclassified signal in the form of a private telegram, allegedly from one of VIKRANT's sailors, asking about the welfare of his mother "seriously ill."

"Our deception plan worked only too well! In a secret signal which we recovered from the sunken GHAZI, Commodore Submarines in Karachi sent a signal to GHAZI on 25 November informing her that "INTELLIGENCE INDICATES CARRIER IN PORT" and that she should proceed to Visakhapatnam with all despatch!"

On the evening of 3 December, Pakistan initiated hostilities. Admiral Krishnan's book states:*

"By the time I arrived at the Maritime Operations Room, orders for commencement of hostilities had been received, the shore defences of Visakhapatnam were immediately put on alert and the Coast Battery was brought to First Degree of Readiness. I had already decided that the RAJPUT should also join the rest of the Eastern Fleet for operations off Bangladesh.

"I sent for Lt Cdr Inder Singh, the Commanding Officer of the RAJPUT for detailed briefing; as soon as she completed fuelling she must leave harbour. I had already ordered all navigational aids to be switched off, so greatest care in navigation was necessary. Once clear of the harbour, he must assume that an enemy submarine was in the vicinity. If our deception plan had worked, the enemy would be prowling about looking for VIKRANT. Before clearing the outer harbour, he could drop a few charges at random.

"The RAJPUT sailed before midnight of 3/4 December and, on clearing harbour, proceeded along the narrow channel. Having got clear, the Commanding Officer saw what he thought was a severe disturbance in the water, about half a mile ahead. He rightly assumed that this might be a

* Pages 39 et seq.

submarine diving. He closed the spot at speed and dropped at the position two charges. It has been subsequently established that the position where the charges were dropped was so close to the position of the wreck of the GHAZI that some damage to the latter is a very high probability. The RAJPUT, on completion of her mission, proceeded on her course in order to carry out her main mission. A little later, a very loud explosion was heard by the Coast Battery who reported the same to the Maritime Operations Room. The time of this explosion was 0015 hours. The clock recovered from the GHAZI showed that it had stopped functioning at the same time. Several thousand people waiting to hear the Prime Minister's broadcast to the nation also heard the explosion and many came out thinking that it was an earthquake.

"As per our arrangement with them, some fishermen reported oil patches and some flotsam. The Command Diving Team were rushed to the spot and commenced detailed investigations. The divers established that there was a definite submerged object some distance out seawards, at a depth of 150 feet of water and that it was a probable submarine. Even though there were a number of floating objects picked up, there was nothing to indicate the identity of the submarine. Everything had American markings. I told the Chief of the Naval Staff that personally I was convinced that we had bagged the GHAZI. He wanted "ocular proof" that it was the GHAZI, before authorizing the announcement. This was easier said than done. Diving operations were extremely difficult and highly hazardous as the sea was very choppy and the divers were operating some 150 feet below. The boat I had was not a suitable one to conduct such operations. By Sunday 5 December we were able to establish from the silhouette and other characteristics that the submarine was in fact the GHAZI. But there was no means of ingress into the submarine as all entry hatches from the conning tower aft were tightly screwed down from the inside.

"In the meantime, the Chief of Naval Staff had arranged for an Air Force aircraft to be positioned in Visakhapatnam so that "the ocular proof" that he insisted on could be flown to Delhi before the announcement was made.

"On the third day, a diver managed to open the Conning Tower hatch and one dead body was recovered. As the hatch was opened, it was clogged up with bloated dead bodies and it was quite a job to clear the same to make an entrance. The Hydrographic correction book of PNS GHAZI and one sheet of paper with the official seal of the Commanding Officer of PNS GHAZI were also recovered. The aircraft standing by finally took off for Delhi the next morning with the evidence".

The following four signals recovered from the GHAZI have been reproduced in Admiral Krishnan's book:

- FM COMSUBS TO SUBRON-5 INFO PAK NAVY
  DTG 221720 NOV 71
  FOLLOWING AREAS OCCUPIED.
  1. PAPA ONE, TWO, THREE, FOUR.
  2. PAPA FIVE, SIX, SEVEN, EIGHT.
  3. BRAVO ONE, TWO, THREE, FOUR, FIVE, SIX
  4. MIKE.
- FROM COMSUBS TO GHAZI MANGRO INFO PAK NAVY DTG 222117 NOV 71.
  ARM ALL TORPEDOES.
- FROM COMSUBS TO SUBRON-5 INFO PAK NAVY
  DTG 231905 NOV 71
  ASSUME PRECAUTIONARY STAGE.
- FROM COMSUBS TO GHAZI INFO PAK NAVY
  DTG 252307/NOV 71
  OCCUPY ZONE VICTOR WITH ALL DESPATCH INTELLIGENCE INDICATES CARRIER IN PORT.

Admiral Krishnan's book states:*

"The GHAZI story, as related below is pieced together from much evidence that has been collected from the sunken submarine itself, and detailed analysis of track charts of the attacking ship, INS RAJPUT as well as that of the GHAZI. From a recovered chart, it is clearly revealed that the GHAZI sailed from Karachi on 14 November, on her marauding mission. She was 400 miles off Bombay on 16 November, off Ceylon on 19 November and entered the Bay of Bengal on 20 November. She was looking for VIKRANT off Madras on 23 November.

"From the position of the rudder of the GHAZI, the extent of damage she has suffered, and the notations on charts recovered, the situation has been assessed by naval experts as follows:

"The GHAZI had evidently come up to periscope/or surface depth to establish her navigational position, an operation which

Ibid.

was made extremely difficult by the blackout and the switching off of all navigational lights. At this point of time, she probably saw or heard a destroyer approaching her, almost on a reciprocal course. This is a frightening sight at the best of times and she obviously dived in a tremendous hurry and at the same time put her rudder hard over in order to get away to seaward. It is possible that in her desperate crash dive, her nose must have hit the shallow ground hard when she bottomed. It seems likely that a fire broke out on board for'd where, in all probability, there were mines, in addition to the torpedoes, fully armed".

Analysis of GHAZI's Sinking

Two points merit analysis:

- When did the GHAZI sink?
- What caused the GHAZI to sink?

When did the GHAZI Sink

According to the 'Story of the Pakistan Navy,' GHAZI failed to make its check report from 26 November onwards.

Lt Cdr (SDG) Inder Singh was the Commanding Officer of INS RAJPUT in 1971. He recalls:

"At about 1600 hrs on 1st December 1971, I was called by the FOCINCEAST Vice Admiral Krishnan to his office. He said that a Pakistani submarine had been sighted off the Ceylon Coast a couple of days back which would be heading for Madras/Visakhapatnam. He was absolutely certain that now the submarine was expected to be anywhere between Madras and Vizag and that she was sent here to attack VIKRANT the moment hostilities were declared at a time chosen by Pakistan. Till that time, the submarine would be looking for VIKRANT and shadowing her. So the submarine would have to be prevented from locating VIKRANT at any cost before hostilities commenced.

"With this thought in mind, he wanted to hold the Pakistani submarine off Visakhapatnam till such time hostilities were declared. To achieve this, he unfolded his plan of action and said that he would like INS RAJPUT to sail out and act as decoy of VIKRANT. He wanted RAJPUT to proceed towards Madras and send some misleading signals as from VIKRANT, so that the submarine mistaking RAJPUT for VIKRANT, would be shadowing her and VIKRANT would be safe in her hiding place. FOCINC said he knew it was a suicidal mission for RAJPUT. He was sure that the Pakistani submarine would make RAJPUT a target the moment hostilities were declared and he was definite that RAJPUT would not return from this mission and that he was giving RAJPUT as a bait to Pakistan for the safety of VIKRANT. He was sorry for the move but he had no other choice. I told him that I considered myself very lucky that he had selected me for this great cause and that I was ready to take the challenge.

"On 2nd December 1971, I sailed out of harbour in the afternoon as VIKRANT and set course for Madras. I sent some telegrams through Bombay WT seeking confirmation for sickness of parents etc and other signals including a LOGREQ signal to NOIC Madras. It was considered necessary to increase the signal traffic as VIKRANT, being a large ship and a flagship, naturally was to have heavy signal traffic. Basic code was used for the signals. I later on came to know that NOIC Madras was baffled by the quantity of provisions and other items demanded at such short notice in my LOGREQ signal. He phoned up FOCINC, who showed his annoyance and asked NOIC Madras to supply whatever VIKRANT wanted.

"On 3rd December 1971, RAJPUT was asked to return to harbour, berth at fuelling jetty, top up and get ready for the next assignment. RAJPUT was secured alongside by 1900 hours. No sooner had we secured, a despatch rider came on board and informed that Pakistan had attacked Indian airfields. Before proceeding to HQENC, I left instructions to speed up fuelling, collect rations, naval stores and fresh water as required. At Command Headquarters, the Chief of Staff told me that FOCINC wanted RAJPUT to sail for Chittagong as soon as possible. I cast off from fuelling jetty at about 2340 hrs on 3rd December 1971 with a pilot on board. Scare charges were being thrown overboard whilst the ship was secured at the jetty and while leaving harbour.

"When the ship was half way in the channel, it suddenly occurred to me that "what if the Pakistan submarine which I was looking for the last two days, was waiting outside harbour and it torpedoes RAJPUT while disembarking pilot at the Outer Channel Buoy." I immediately ordered to stop engines, and disembarked the pilot. I slowly increased speed and was doing the

maximum speed I could manage by the time I reached Outer Channel Buoy.

"Shortly after clearing Outer Channel Buoy at about midnight of 3/4 December, when the Prime Minister was addressing the nation, the starboard lookout reported disturbance of water, fine on the starboard bow. As the ship was already doing maximum speed and nearing the disturbed water patch and since the ship was already closed up at action stations, appropriate depth was set on the depth charges and two depth charges were dropped at the reported position. The ship got a heavy jolt after the deafening blasts. Then the ship turned and the area was searched for any sign of a contact. Satisfied that there was no sign of any contact or anything on the surface, the ship resumed course.

"There were a few reasons which prompted me to carry out an immediate attack. First, as stated earlier, I had an intuition while leaving harbour when the ship was in mid channel. Secondly knowledge of a Pakistan submarine in the area, for which RAJPUT had been operating for the last two days to mislead her. Thirdly, plain speaking by the FOCINC to me when he had called me to his office on 1st December and told me that RAJPUT mistaken as VIKRANT, would be torpedoed by the Pakistani submarine on outbreak of hostilities. And lastly, the disturbed water patch made me to think that the submarine had just dived".

Lt (TAS) (later Commodore) KP Mathew recalls:

"I clearly recall that I was on watch in the PDHQ. We were all waiting for Mrs Gandhi's address to the nation. That was delayed by a few minutes. During that delay, we received a report from the PWSS, which was located next to the Coast Battery which overlooks Vizag Outer Harbour, that there had been a very strong explosion which rattled the window panes. When they looked out, they could see a big plume of water going up quite high into the sky at a distance from them. Though the report came in very clearly, nothing much was done about it since everybody was keen to hear Mrs Gandhi. But I think it was reported by the PDHQ to the MOR that this report had come in from the PWSS".

Cdr (E) (later Rear Admiral) GC Thadani was the Staff Officer Engineering in Headquarters Eastern Naval Command in 1971. He recalls:

"I was with the C-in-C in the MOR on the 3rd evening when CO RAJPUT was being briefed by him. As CO RAJPUT was leaving the MOR, he mentioned to me that his ship did not have wooden shores for damage control. I instantly went with him to the Shipwright Shop, gave him some shores and accompanied him to the jetty where RAJPUT was fuelling. I personally saw RAJPUT cast off. Thereafter, I went home which was on a hill which overlooked the sea. The distance from the jetty to my home was a 15 minute drive. After I reached home, whilst I was listening to All India Radio, an announcement was made that the Prime Minister's speech had been delayed. It was during this delay period that I heard a massive explosion and the windows of my house rattled.

"The next morning at 8 o' clock I went to the Jetty. The Commander in Chief and the Chief of Staff were talking about the GHAZI. The C-in-C went on board a boat and I went with him. We went to the site of the explosion where, I remember, Lt Sajjan Kumar was diving. He came up and told the C-in-C that he had put his hand on the ships side and felt the letters of GHAZI".

Capt (later Commodore) KS Subra-Manian, was the Indian Navy's seniormost submariner at that time and Captain of the 8th Submarine Squadron (Capt SM 8) in the Submarine Base at Visakhapatnam. He recalls:

"The first indication of GHAZI having sunk came in the middle of the night. A muffled but powerful explosion resembling a deep underwater explosion (distinctly different from gunfire) was heard in the naval base during the night of 3/4 Dec. The next morning (4 Dec) fishermen reported finding flotsam. It was only after this discovery that it was appreciated that possibly there had been a sinking off Visakhapatnam. The next morning (5 Dec), we went out to the spot and located the wreck. The Clearance Diving Team from Vizag was ferried across. I was there with them. They found the GHAZI sunk in fairly shallow water.

"On the day before the hostilities actually broke out, she was already in position which perhaps we didn't anticipate. She had laid mines. One of her own may have blown her up and she sank outside Vizag harbour before she could do any further damage".

Lt (later Lt Cdr) (Diving) Sajjan Kumar was the Officer-in-Charge Command Clearance Diving Team in 1971. He recalls:

"As far as I can remember, the explosion was in the middle of night of 3rd/4th Dec. I was fast asleep when I heard a very big explosion and my own window panes rattled loudly. I must have been dead tired because I fell asleep again. It was definitely on the 3rd/4th night that there was an explosion. I heard only one explosion, not more than one.

"On 5 December I embarked on board SDB AKSHAY with my Gemini dinghies. We were accompained by a number of catamaran type fishing boats to the site of the wreck. Before sailing, I was briefed to go and locate the object and was told that it may be a submarine.

"So we went and the team dived at the site, using the fishing boats as diving platforms. I anchored the fishing boats some distance apart and sent the divers down from the fishing boats. The first diver came up and reported that it is a submarine. The first message sent to the C-in-C was that we have located a submarine. I felt the urge to dive myself but had to postpone it to a more decisive moment because the decompression regime required we could not dive to that depth more than once in a day. After the first diver had reported that it was a submarine, I sent another better diver to find out what type of submarine it was and how big. The second diver came up and said that it was a big submarine. So a second message was then sent that it is a big submarine.

"At this stage I decided to dive myself. The visibility underwater was about 10 feet. At the depth of nearly 110 feet, the current was fairly strong, in the sense that it was not possible to swim against the current. But since a line had been snagged, we were able to reach the submarine. I first saw the silhouette from about 10 feet away. I caught hold of the various projections, the gratings, the railings and went round the entire submarine.

"Naval Headquarters had earlier provided us documents which included photos of the GHAZI from various angles, so I knew what GHAZI would look like. After I swam around and saw the various things, I came to the conclusion that this was the GHAZI and I came up. The third signal I sent to C-in-C was that it was GHAZI. After that signal was received in HQENC, they sent a message back to AKSHAY saying "Do not send any more signals.

"After about an hour, Capt Subra-Manian and Admiral Krishnan came on board AKSHAY and we had a meeting. I told them what I saw about the submarine, and that there was massive damage in the portion forward of the Conning Tower".

The submarine rescue vessel, INS NISTAR undocked on the evening of 5 December. On 6 December, she anchored on top of the GHAZI and commenced diving operations.

Commodore Subra-Manian recalls:

"The submarine rescue vessel INS NISTAR, which had just gone into dry dock, was hastily undocked and sent out to the area on 6 Dec. The wreck was located by sonar in about 55 to 58 metres of water. After the NISTAR had moored herself over the wreck and attached a line to it, divers who went down found that the wreck had cracked open at the top forward end of the submarine, but they couldn't get in. So they had to use plastic explosive to make an opening and enter. They then identified it as the GHAZI and recovered documents and bodies. This took about a day and probably happened on 07 Dec".

Lieutenant (later Commander) Shafi Syed, a submariner, was embarked on board NISTAR during the diving operations on GHAZI. He recalls:

"I was instructed to embark in INS NISTAR and liaise with the Command Diving Officer to guide the divers on to the GHAZI, which had sunk off the northern side of the entrance channel to Vizag. NISTAR positioned herself on top of the GHAZI, from where we could conduct diving operations. The alignment of GHAZI, as indicated by the divers, showed that it was lying on a heading which was at 90 degrees to the entrance channel. This would be an ideal aspect from which to fire a torpedo salvo at any ship coming in or going out, which would be sunk in the channel and block it. The depth of water where she was lying was around 30 meters. She was within torpedo firing range of the harbour entrance.

"By drawing a sketch of the general construction of the submarine, I explained to the diver going down, the entry point into the conning tower. The diver reported that he had gone around the conning tower and saw that the periscope was in the raised position. He also saw a gyro pelorus, which had on top a binocular of

very high magnification which could be swivelled right around. Opening the hatch the next day on 7 December, the diver entered the conning tower. He reported that there were two fully bloated bodies which were stuck in the conning tower. These were removed. Divers were then sent to recover whatever books and equipment could be brought up from the conning tower. The divers reported that there was a small plotting table in the forward end of the conning tower with some charts, GHAZI's flag and some other flags. Most of the material which was inside the conning tower was recovered".

Cdr (later Rear Admiral PP Sivamani) who was the Eastern Fleet's Navigation Officer, recalls:

"A few weeks after the hostilities ended, I was called to the Headquarters Eastern Naval Command one day and handed over GHAZI's track charts, the Navigator's Note Book and the Log recovered from GHAZI during the diving operation. I was told to analyse the track charts and submit a written report on GHAZI's movements. The salient points which emerged out of the analysis of these records indicated that:

- GHAZI left Karachi for a post refit trial around November 1971. She came back after a day, apparently to rectify the defects found in the post refit trials. Then she left Karachi on the 14th and set course South for deployment on the East Coast. She stayed between longitude 64 East and 65 East till she passed west of Mangalore and then slowly curving in, she made a landfall fix at Minicoy. She passed close to Minicoy island and gave a wide berth to Colombo. South of Ceylon she steered East North East and then on a northerly course fetched up off Madras PM 23 November.
- At snort depth, GHAZI was doing 8 to 9 knots and maybe on surface at night it was building up to 11.5 or 12 knots. That speaks very highly of GHAZI's performance capabilities at the time. The total distance from Karachi to Madras via Minicoy and south of Ceylon is about 2200 miles. To have traversed this distance, alternating day and night between surface and periscope or snort depth, would mean that she was averaging 10 knots. She must have been making good not less than 8 knots. Whatever be the speed made good, with the current or against the current, the fact remains that GHAZI fetched up off Madras on PM 23 November.
- "Off Madras she did crossover patrols between the 23rd and the 25th. The tracks were very very clear. She had a series of fixes and she was concentrating exactly at the entrance to Madras, 10 to 15 miles either side, at a distance of 12 to 15 miles.
- "She then set course for Visakhapatnam where she seems to have arrived on 27 November traversing a distance of about 340 miles. She commenced patrolling off Visakhapatnam on the 27th and did a series of crossover patrols, put out to sea eastward for a short duration, came back towards Visakhapatnam to an area 5 to 10 miles from the Entrance Channel Buoy and hung around there. The last entry made was on the midnight of 2/3 December. The chart was in fairly good condition, but the Log Book and the Navigators Note Book, written in pencil and in pen were smudged and took a little time for me to decipher.
- "GHAZI's cross over patrol off Visakhapatnam was confined to a very small area within a radius of about 2 miles centered on a position to the east of the Entrance Channel Buoy at about three to four miles. If a unit keeps on doing cross over patrols in such a small area, it will be very difficult to sift out the fixes or for that matter, translate the entries from the Navigators Note Book on to the chart and vice versa. Maybe she had put some entries or since the Navigator's yeoman knew the submarine was in the same position, he did not keep on repeating the same position over and over again".

The Sequence of Events

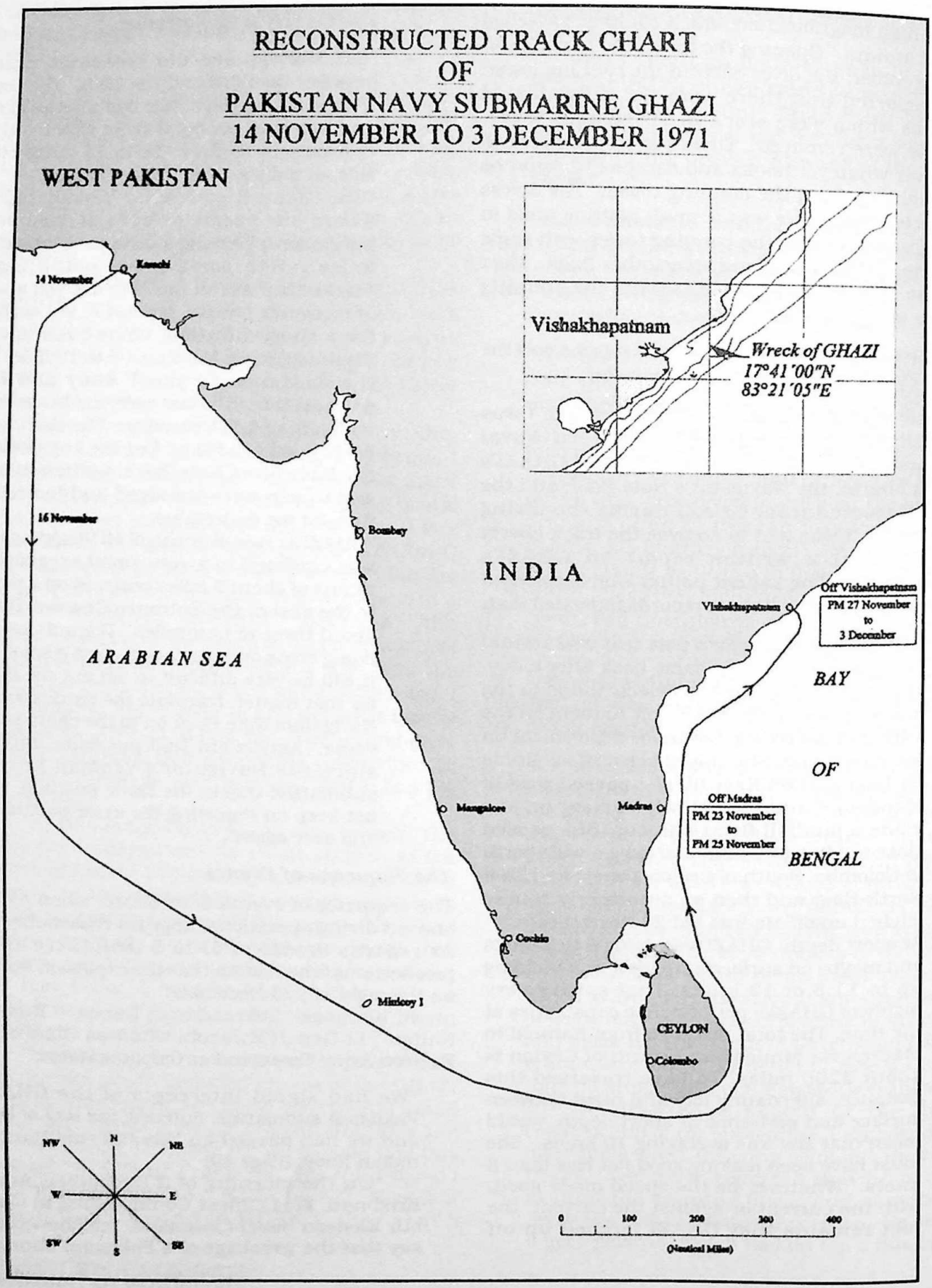
The sequence of events after 5 Dec, when AKSHAY started diving operations, appears reasonably clear. As regards events prior to 5 Dec, there are two recollections which state that the explosion occurred on the night of 2/3 December.

In his book "Surrender at Dacca - Birth of a Nation", Lt Gen JFR Jacob, who was Chief of Staff Eastern Army Command at Calcutta states:

"We had signal intercepts of the GHAZI, a Pakistani submarine, entering the Bay of Bengal and we had passed on this information to the Indian Navy. (Page 49)

"On the morning of 3 December, Admiral Krishnan, Flag Officer Commanding in Chief of our Eastern Naval Command, telephoned me to say that the wreckage of a Pakistani submarine

RECONSTRUCTED TRACK CHART
OF
PAKISTAN NAVY SUBMARINE GHAZI
14 NOVEMBER TO 3 DECEMBER 1971



had been found by fishermen on the approaches to the Visakhapatnam port. Krishnan said that the blowing up of the GHAZI, either on 1 or 2 December whilst laying mines, was an act of God. He said it would permit the Navy greater freedom of action. Next morning on 4 December, Krishnan again telephoned asking me whether we had reported the blowing up of the GHAZI to Delhi. I said that we had not as I presumed that he had done so. Relieved, he thanked me and asked me to forget our previous conversation. The official Naval version given out later was that the GHAZI had been sunk by the ships of the Eastern Fleet on 4 December". (ibid Page 104)

According to Lieutenant (later Commander) H Dhingra, who was a qualified Deep Diver serving on board the NISTAR:

"The explosion was heard a little after midnight between 1st and 2 December i.e. prior to the breaking out of war. During the night of 1/2 December itself, I received a message that an explosion had been heard and that at dawn I had to go to the jetty and report to the C-in-C. At dawn on 2 December, I, together with the C-in-C Admiral Krishnan and CO Virbahu/Captain SM8, Captain Subra-Manian, we went out of Vizag harbour in the Admiral's barge. In the barge itself I saw two life jackets which had been picked up earlier by fishermen and handed over to the Navy. We found an oil slick and a lot of flotsam. Immediately thereafter, we were told to start diving. NISTAR was floated out of dock on the 5th evening and brought to the site the next day. By that time the Command Clearance Diving Team's divers had already gone down from AKSHAY and tied a rope on to the bollard of the sunken submarine".

Two alternatives therefore present themselves:

A loud explosion was heard around midnight 3/4 December just before the Prime Minister's broadcast to the nation. It was accompanied by a flash of light. The explosion rattled several window panes in buildings near the beach. The PWSS/Naval Battery reported the explosion to the PDHQ who reported it to the Maritime Operations Room. During the night, fishermen who saw the explosion picked up two lifejackets and took them to the Navy. At dawn on 4 December, the FOCINC Admiral Krishnan, the Captain SM 8, Capt Subra-Manian and Lt Dhingra personally went to the site of a wreck after which Clearance Divers went to the scene in a Gemini dinghy on 4 Dec. The Command Clearance Diving Team dived from the SDB-INS AKSHAY, on AM 5 December and identified the GHAZI. INS NISTAR started diving operations on 6 Dec. On 7 December, divers gained access into the GHAZI's conning tower and recovered documents. On 8 December, GHAZI's artefacts were sent to New Delhi. On 9 December, Naval Headquarters announced that the GHAZI was sunk off Visakhapatnam on night 3/4 December.

- In view of Gen Jacob's recollections about Admiral Krishnan's phone calls on 3 and 4 December, Cdr Dhingra's recollection that the explosion occurred on night 2/3 December and Rear Admiral Sivamani's recollection that the last entry made on GHAZI's track chart was on midnight 2/3 Dec, an alternative sequence of events emerges as follows:
  - That GHAZI exploded at midnight on 2/3 December. Debris came to the surface, fisherman picked up and brought lifejackets to the Naval Base, which reached the C-in-C on 3 December. (On 1 December, the C-in-C was in Calcutta with General Jacob and made no mention of the GHAZI).
  - At dawn on 3 December, the C-in-C, Captain Subra-Manian and Lt Dhingra went to the site of the wreck in the Admiral's barge. The C-in-C ordered diving operations to start. Clearance divers went to the site on 3 December. The C-in-C rang up General Jacob on 3 December. On the evening of 3 December war broke out.
  - On 4 December, everybody was busy coping with the war. The C-in-C rang up General Jacob for the second time. AKSHAY embarked the diving team and its equipment during the 4th and started diving on the 5th. Thereafter the sequence would be the same as in (a) above.

Rear Admiral Thadani is absolutely certain that he personally sent RAJPUT off as she sailed from the jetty on night of 3/4 Dec and soon after reaching home heard the explosion. Available records substantiate INS RAJPUT being sailed out on 2 December, recalled on 3 December and sailed again at midnight 3/4 December. Quite clearly, if GHAZI had sunk prior to night 3/4 December, there would have been no need for RAJPUT to masquerade as VIKRANT. It is reasonable to conclude that GHAZI exploded on night 3/4 December.

What Caused the GHAZI to Sink

Commodore KS Subra-Manian recalls:

"In the course of the diving operation, I interrogated the divers to find out how exactly the damage had happened to the submarine. From what I gathered, it looked to me that there had been an internal explosion. The hull had blown outwards. That could only be attributed to an internal explosion of a mine which was still in the tubes. Again a hydrogen explosion inside could also be the cause. At that time, I put down the cause of the GHAZI's sinking as a case of internal explosion due to her own mines blowing up or due to hydrogen. Looking back now after the lapse of so many years, it seems to me that the cause of her blowing up was most probably a hydrogen explosion. I base this conclusion on the fact that the hull had blown outwards near the mid section of the submarine and not right forward near the torpedo tubes. Had a mine exploded in the tube or in the forward compartment while being handled, the damage would have been for'd.

"Moreover, if she had already laid some mines, we would have found some sooner or later. To date no mines have been found there. Secondly, a mine is safe until it is laid and arms itself after a twelve hour time delay to enable the laying vessel to clear the area. But in this case, some malfunction of the mine may have taken place inside the submarine, either while she was preparing to lay the mines or, while the mines were lying in the tube, something happened. I do not know what vintage Ghazi's mines were. Perhaps due to age, perhaps due to lack of maintenance, a mine could have gone off inside the submarine, resulting in this sort of damage. The only reason that I surmised that it was an internal explosion was the fact that the hull was blown outwards. A mine going off underneath the submarine or in its vicinity would not create this sort of damage. That led me to think that due to some malfunction of the safety mechanism, a mine inside had gone off and sunk the submarine. A hydrogen explosion is, as I have said, even more probable."

Commander Shafi Syed, the submariner embarked on board NISTAR during the diving operations, recalls:

"The diver reported that the pressure hull had been split open and was jagged. It had opened out into a sharp cut, which ran from right forward towards the conning tower. He could not progress very far ahead of the casing for'd of the conning tower.

"Ingress into the Control Room through the lower lid of the conning tower was also not possible as the diver reported that the whole hatch was a mass of pipes running right across, with jagged edges. It was very difficult to push aside any pipe. Keeping the diver's safety in mind, ingress through this route was impossible.

"Diving effort then shifted to the aft escape hatch. The diver managed to open it easily and he gained access into the submarine. The compartment was fully flooded and he found the same jagged set of pipes which he had encountered under the lower lid of the conning tower.

"The divers found another small hatch. We slid the diver into the provision room of the GHAZI and the diver sent a good amount of provisions up to the surface. Although considerable damage to steel pipe lines had been seen at the for'd control room end and the aft end, not much damage was noticeable in this compartment probably because of the lagging in the compartment. But what is surprising is that although the explosion had destroyed the for'd end of the submarine, the eggs inside the submarine were totally intact.

"In my view, the likely cause of the explosion which led to the sinking of the GHAZI appears to be hydrogen accumulation, which takes place during normal charging and discharging of submarine batteries. A submarine of the displacement of GHAZI would have something like 350 tonnes of battery. In a 1900 ton submarine having 350 tonnes of battery, a hydrogen explosion can be crippling. The effect on the hull, as described by the diver, was that the hull had split open. It had jagged ends. The split was longitudinal, running along the length of the submarine. The entire submarine, fore to aft, was intact except for the splitting open, for'd of the conning tower. The explosion did not cause the entire hull to completely break up into portions. It was fully intact. The diver described that the for'd section of the casing was unwalkable.

"I rule out the explosion being caused by an external mine because the intensity of the explosion was such that the entire length of the submarine was affected internally. There was no

external damage to the submarine casing or the conning tower. If she had gone over a mine, the conning tower, the periscope, the fin area should have completely buckled or shattered. We found that the seventh compartment aft, which was almost a 100 meters away, from end to end, was also affected in a similar manner, all the internal fittings and pipes, everything, had been smashed, ends distorted and contorted and jagged. The possibility of torpedoes exploding was also ruled out, because of the inbuilt safety arming devices. A torpedo does not get fully armed until after it runs out. Torpedoes exploding within the tubes is unlikely because there are so many in built interlocks. Unless the forward caps are open, the torpedo cannot be armed. So many interlocks exist in the configuration of the firing devices, that anything to do with impact can be ruled out. Sympathetic explosions taking place is also ruled out. If the 6 or 8 torpedoes she was carrying in the forward tubes or the torpedoes in the racks had exploded, the entire submarine would have jumped out of the water, nothing would have remained. But here was an intact submarine, lying on the seabed. Something internal had taken place.

"I recall that just before the outbreak of hostilities, I heard a BBC news item of an explosion that had taken place in a British submarine, whilst battery charging in harbour. If I recall correctly, the submarine was extensively damaged and she sank within the harbour. In my view, the most likely reason for the sinking of the GHAZI seems to be the explosion of the accumulated hydrogen gas from the batteries".

Commander Dhingra, the deep diver from NISTAR, recalls:

"The first thing that we observed was that the hull forward of the conning tower was in total debris. The entire thing was shattered. There were jagged ends around the hull. You could walk on the casing up to a certain point. Beyond that there was no way which you could get into the debris. Nothing could be seen for'd of the conning tower. It was not safe for any diver to go down into the debris in case explosives were still there. In fact, nobody dived on the debris as such. We only saw it from the top. The remaining part of the outside of the entire hull was intact.

"I have no doubt that the hull was blown outwards. I think it was due to an explosion from within the submarine. But I cannot say for sure whether it is on account of hydrogen from the batteries or from some other kind of explosion inside the compartments."

Commodore KP Mathew, who also dived on Ghazi's wreck, recalls:

"The first time I went down, I saw the submarine lying upright, as if she had bottomed there, with no tilt on either side from the normal straight bottoming position. The submarine was fully intact from the stern right up to the forward portion. In the forward portion, 10 to 15 ft or maybe upto 20 ft, there was hardly anything to see. The whole place was blasted off. The next 15 to 16 ft were split open - you could see the various air bottles and the torpedo launching tubes and all their jagged ends. It was quite clear that something had happened in the forward portion of the GHAZI, in the torpedo tube area. It definitely looked like an internal explosion, either of explosives or maybe caused by an accumulation of hydrogen. I am not sure of that, but it was definitely in the forward portion and it appeared to be an explosion which had sent it down.

"If GHAZI had been damaged from an external explosion, the damage would have been all internal and not of the kind which I saw, of the area totally split and all ripped apart. This can only happen from an explosion taking place next to the damaged portions. This leads to the conclusion that it could only have been an internal explosion that caused the damage to the GHAZI the way it did".

Lt (later Commodore) Vimal Kumar, also a deep diver embarked in NISTAR during the diving operations, recalls:

"The explosion had taken place in the forward section. All the projections were mostly outwards. I clearly remember that when this picture of the damage to the forward area was being correlated with the mine trials not having been successful, the inference that emerged was that probably the mines inside had exploded, either while laying or something had happened just before ejecting the mines.

"Somehow we were very sure from the GHAZI's signals that there was something wrong with the mines and therefore we concluded that the explosion could only be because of the mines.

"As regards to the explosion being caused by hydrogen, it is a very light gas, it is very soluble in

water and it will get dissolved. When hydrogen explodes, it will explode wherever the hydrogen is. But in this case the explosion took place only in the forward area. The compartment having the arrangement for connecting the rescue bell was totally intact and had not exploded. I therefore believe that the explosion took place because of the mines".

Commander (ND) (later Commodore) CVP Sarathy, who was in NHQ's War Room during the war, recalls analysing the problem:

"A lot of theories were going around at the time and including one that our own ship had attacked and that it was a delayed action and the GHAZI ultimately blew up. Everybody was trying to claim a little credit for this incident. The fact was that the GHAZI was approaching Visakhapatnam with the intention of attacking any ship coming out of the harbour. If it managed to sink any ship in the channel, it would take some time before the channel could be cleared and till then the naval ships which were inside would be bottled up. If that was the Pakistan Navy's plan, then I think it was a well conceived plan. The GHAZI came to do that.

"As regards how it blew up, the fact is that she had primed her torpedoes, and was cruising along just above the surface to the sea bed. There is a little ridge which runs out along the coast. It is slightly to the North of Vizag harbour. The theory is that the GHAZI did not know of the existence of this ridge and that while cruising along, she actually bumped into it and the collision triggered off the torpedoes which were already armed. One of them blew up and then subsequently all the others blew up along with it causing the GHAZI to go down. This seemed to be the theory we all ultimately believed when we were in NHQ at that time".

Rear Admiral Sivamani recalls:

"My own view is that she must have been apparently trying to shift the torpedo tubes into a weapon mode of mines or vice versa and an explosion took place resulting in her sinking. The explosion, if I remember right, having questioned some of the divers at that point in time, seems to have been from inside out, not from any external object. It could be that as the mine was being thrown out of the tube, (as you know, intelligence indicated that GHAZI was fitted with some sort of facility to spit out mines from one of her tubes) it must have hit somewhere and then exploded. The other theory was that it was a battery explosion. If a battery explosion had taken place, it could have happened only in the forward battery compartment. This possibility also certainly cannot be ruled out".

Lt Cdr Sajjan Kumar recalls:

"I personally think that the explosion was caused by build up of hydrogen gas within the submarine. In this, I am supported by a number of signals that we read in the message logs of GHAZI which said very explicitly that they have this major problem of hydrogen building up in the submarine. Probably when the build up of hydrogen was beyond limits, the explosion took place and at the same time, whatever ordnance she was carrying - mines, torpedoes everything - went off all together and that was the big bang".

Cdr (TAS) Utful Dabir, the Commanding Officer of INS GULDAR which was in Visakhapatnam in early December, recalls:

"Apparently an explosion was heard by local fishermen just off the beach, but they were not paid heed to by anyone from the Port Trust and the Coast Battery. The second explosion, a short while later (probably GHAZI's blowing up) too was not paid heed to until local fishermen found some pieces in their nets. It was only then that HQENC realised the possibility of a submarine having sunk near the channel.

"Both mines and torpedoes have fairly good safety devices to prevent their getting armed whilst inside the torpedo tubes of a submarine. Since one explosion is known to have occurred in shallow waters near the beach, the only correct surmise is that it was caused by a torpedo which missed its intended target. The approximate positions of the explosion place near Outer Channel Buoy and the location of the sunken submarine, makes it appear that the target ship must have just crossed the Outer Channel Buoy before the torpedo began its run of set range around 3000 to 4000 yards. The submarine at that point may have just been able to maintain periscope depth, making it very difficult to avoid any oncoming ship. It is likely that a second torpedo too was about to be launched and hence on impact with the sea-bottom, it got launched without the intentional firing taking place or the

launch was made while the submarine was in a steep dive.

"I had heard that GHAZI was carrying eight mines. I also heard that there were only two torpedoes in the forward tubes. Thus GHAZI hitting her own mine, launched deliberately or accidentally, is a distinct possibility. If there were mines or torpedoes in an unarmed state, either on the front racks or in the rear tubes, these would most probably have remained intact unexploded. If these could have been counted/ inspected by divers, it would have helped in arriving at a more probable cause.

"From what I remember, available evidence led to a conclusion that one torpedo from the forward tube was fired and a second one too appeared to have been launched and it is this second one which appears to have exploded, either inside the tube or just outside, after completing its set run without actually running linearly. These two fired tubes could have had mines instead of torpedoes, but it is highly unlikely for a mine to explode immediately on launching because of the much longer arming delay normally set on the clock.

"It is certain that the explosion was inside the GHAZI because the hull was splayed outward and upward. Apparently the lower side of the hull showed little damage. Whilst the mines and torpedoes would have been safe in stowage, there is the greatest possibility of a mine or a torpedo being completely readied for launch in the tube and GHAZI hitting the rocky bottom just as the weapon was about to be launched or actually launched but could not go out because the outer doors of the tubes had jammed hard against a cliff like structure. The post-launch safety devices can run out if the tubes are flooded and the holding lever is released/withdrawn. Such accidents have been recorded in the past. Torpedoes completing their entire run in the tube were not uncommon in the older submarines.

"Hydrogen explosion is unlikely to have been the cause, as the bodies and papers would have been charred badly by the almost instantaneous combustion of hydrogen and the raising of internal temperatures to charring level. Also, hydrogen explosion could have affected only one or two compartments and not the personnel in all other compartments.

"It is not possible to be comprehensive or definitive about what led to the explosion in the forward section. As far as I know, the incident was not studied in a comprehensive manner while the required evidence was still fresh".

Afterword

GHAZI's Mines

Intelligence gained after the war indicated that:

- It was unclear whether GHAZI carried the new accoustic influence mines acquired from France with the Daphne class submarines or the much older American magnetic/accoustic mines acquired during her refit in Turkey.
- Till mid 1971, GHAZI's torpedo tubes had not been modified to carry French mines and after April 1971, GHAZI was mostly at sea.
- Neither GHAZI nor the Daphnes had carried out minelaying exercises with any degree of success.
- If at all GHAZI had mines in her torpedo tubes, they were more likely to have been the older American mines.

Salvaging the GHAZI

Captain (later Vice Admiral) MK Roy, was the Director Naval Intelligence in 1971. In his book, "War in the Indian Ocean", he states:*

> "The Americans offered to raise the submarine to the surface at their own expense. The Soviets made a similar offer. The Government of India however deliberately allowed the submarine to sink into the mud off the Fairway Buoy of Visakhapatnam and marked the hazard by a buoy (which has since been removed) and where it still rests buried under the mud".

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* Page 206.

Naval Commando Operation at Mongla - Khulna
8 to 11 December

In his book. "Surrender at Dacca", Lt Gen Jacob states:*

> "Since the Mukti Bahini later would need more craft to convert into gunboats in the event of full scale hostilities, we approached the West Bengal Government for assistance. They were most helpful and gave us two craft on loan, MV PALASH from the Calcutta Port Trust, and MV PADMA. Our workshops reinforced the decks and mounted Bofors L/60 anti-aircraft guns on them. Crews for these were to be found from amongst Bengali Naval personnel of the Pakistani Navy. Cdr Samant of the Indian Navy, an outstanding submariner, was assigned to assist. The Task Force was, in the event of war, to operate directly under the orders of Eastern Command at Fort William and not Eastern Naval Command. Later, when operations commenced, these two gunboats operated with considerable success".

In his book "No Way But Surrender", Vice Admiral Krishnan states:**

> "In addition to the air strikes and the blockade, we decided to mount a special commando operation on the harbours of Chalna and Khulna. Cdr Samant was allotted PANVEL and in company with two gunboats PADMA and PALASH, manned mostly by the Mukti Bahini, they would enter these harbours and attack the ships and soldiers there. This operation took place on 9 and 10 December".

Captain MN Samant recalls:

> "After the war was declared, Lt General Arora and Major General Jacob ordered me to organise a maritime attack on Chalna and Mongla. This was because the Indian Army's 41 Brigade was directly locked in combat with its Pakistani counterpart to take over the Chalna and Khulna area, which was not falling. So the next best alternative was to mount an attack from seaward to dislocate the Pakistan troops".

Lt Gen Jacob's book states:***

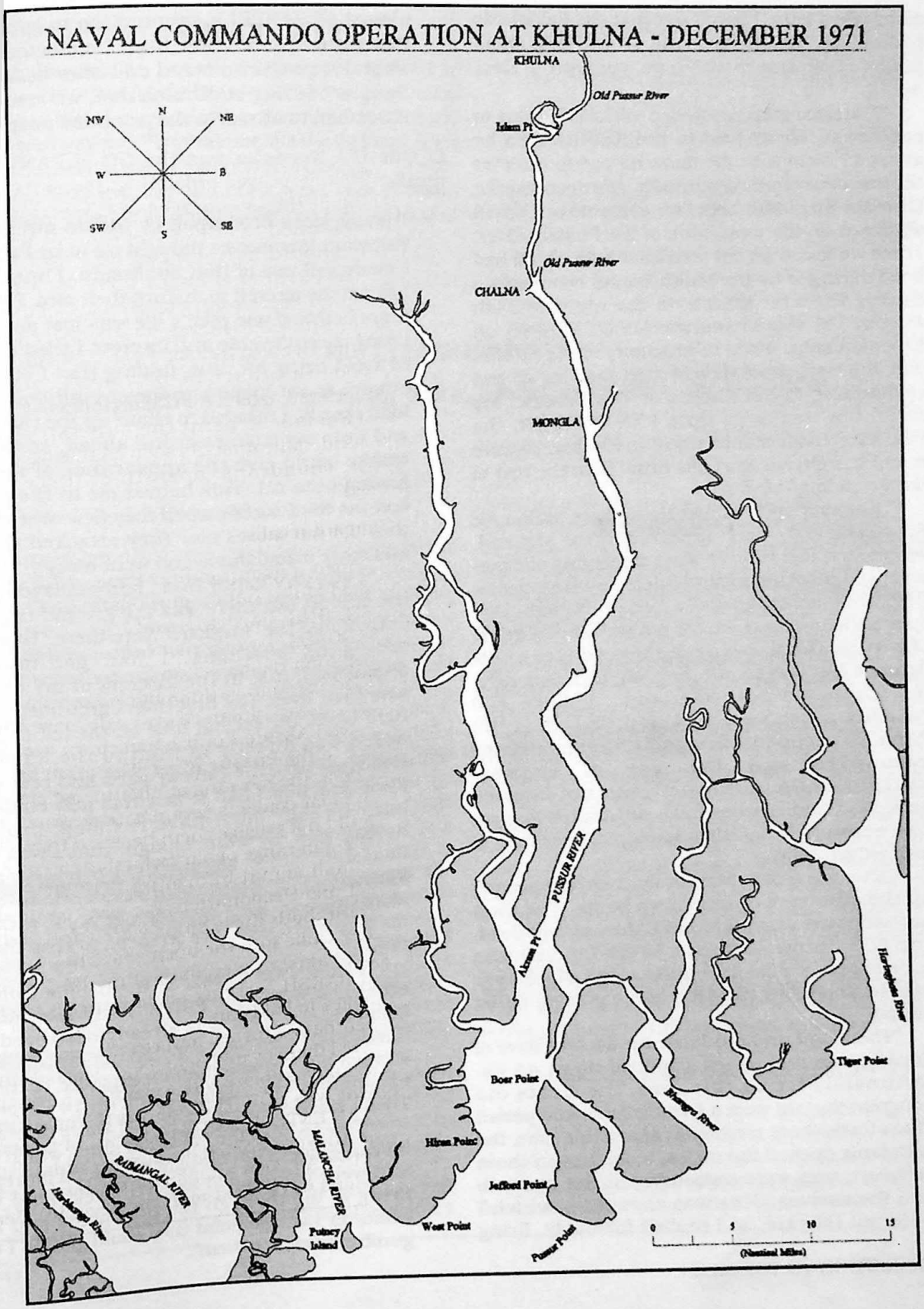
> "The Task Force was ordered to attack Pakistani shipping at the anchorages of Chalna-Mongla. Samant wanted to attack Khulna but was told that he should not proceed beyond Chalna-Mongla as our ground troops would be attacking Khulna and there were considerable Pakistani forces at Khulna. He was also apprised of the bomb line given to the Air Force. Khulna was included in that bomb line. Advance Headquarters Eastern Air Command asked me to inform Samant to paint the superstructures yellow as identification. As soon as this was done, the air squadrons operating there were informed".

Captain Samant recalls:

> "We formed a group called Force Alfa which comprised Mukti Bahini gun boats PADMA and PALASH, INS PANVEL and the BSF craft CHITRANGADA. I was Senior Officer of this force. We sailed from Hasnabad on the Indian side and proceeded through various backwaters of East Pakistan, using Indian Army Ordnance Maps, and arrived Akram Point which is just off the entrance to the Pussur River. The force arrived very early in the morning at about 2'o clock and saw two radar contacts escaping to seaward. My force could not engage them because they were out of the gun range of our Bofors 40/60 guns. I sent a flash signal informing FOCINCEAST, VIKRANT and Headquarters Eastern Command. As a result, both these ships were captured as soon they came into the open sea. They turned out to be Pakistan merchant ships BAQIR and ANWAR BAKSH carrying some Baluchi troops and families to Pakistan.
>
> "After that we turned towards Chalna-Mongla and arrived there by midnight. One could see that the harbour was ablaze with a couple of merchant ships. One was NORTH POLE and the other was the OCEAN ENTERPRISE (which was a Pakistani ship). Both were ablaze because of Indian Air Force/Fleet Air Arm attacks on the harbour in the previous days. Next morning when we went

* Page 91 et seq.
** Page 50.
*** Ibid

NAVAL COMMANDO OPERATION AT KHULNA - DECEMBER 1971



alongside a jetty, I found out that the Pakistanis had already left the harbour, except for a small pocket of resistance which we managed to clear up.

"The force then proceeded towards Khulna to capture it. We arrived in the Khulna area by about 11 o clock in the morning and found that the town was working normally. After passing the Qureshi Steel Mill area, we came near a small shipyard on the west bank of the Pussur River. There we found an old merchant ship which had been damaged by the Mukti Bahini commandos during the first attack on the night of 14th August. The ship's name was MV LIGHTNING, an Ehiopian ship. When in proximity of the Khulna Jail, the local population started cheering us and responding to our shouts of `Jai Bangla'. My intention was to go upto PNS TITUMIR, the Pakistan Naval establishment in Khulna, capture it and thereby support our Army from the rear of the defending Pak forces.

"Unfortunately at that time, three Indian Air Force Gnat fighters appeared in the sky and, despite the fact that we were displaying our pre-arranged recognition signal of a very large yellow flag, they attacked us in broad daylight. We opened fire on these Gnats, not with the intention of hitting them, because they were our own fighters, but just to put them off. Unfortunately, the Gnats got both the boats, PADMA and PALASH, which were set ablaze and sunk. INS PANVEL escaped damage by violent evasive manouvres and the use of engines. CHITRANGADA, fortunately, was not involved because I had left her back in Chalna-Mongla port because of her slow speed and her lack of manoeuverability.

"After the Gnats went away, I started picking up the survivors of these two boats. The total casualties were 4 or 5 Mukti Bahini sailors dead, one BSF Jawan who was badly injured who subsequently died and quite a few of us were injured, including myself. I had a grazing bullet wound.

"Then, half an hour later, the second wave of Gnats came and again swooped down on us. Fortunately for us this time, the Gnats did recognise that we were a friendly force and peeled off to attack shore targets. At about this time, the Pakistanis opened fire on us, including on those survivors who were swimming in the water to save themselves. This was something which I could not tolerate, so I replied furiously, firing almost all PANVEL's ammunition to subdue the Pakistani attack. After that, I collected all the wounded people on board and after hoisting the Bangladesh flag on Khulna Jail, we returned to Hasnabad to attend to the wounded people."

Lt Cdr JPA Noronha was the CO of PANVEL. He recalls:

"Having been fired upon by Indian aircraft, the Pakistani themselves thought us to be Pakistani. I made full use of that confusion. I opened fire against the aircraft to disturb their aim. I thought it preferable if one pilot's life was lost as against losing my entire ship and its crew. I tried to weave to avoid being hit. But, finding that I could not outgun or out-manouvre the aircraft doing such high speeds, I decided to climb up the river bank and keep my engines at full ahead, so that the smoke could give the appearance of the ship having been hit. This helped me in the second and the third sorties when they flew over me and they did not attack me. They attacked the port and other installations and went away".

"I was very happy that I had managed to fool the aircraft but there was the ground reality in front of me. The `razakars' were there. They were taking up positions. I had got my ship abandoned, just in the interest of my crew, to save their lives. The first time I grounded on the right bank, the second time on the left channel, which was directly in front of the Razakar's Headquarters, the railway yard and rest of the town. And now I had to face this new challenge, because they must have realised, probably having seen my white ensign, that I was not a Pakistani ship. They took up positions to apprehend me and capture my crew who had abandoned the ship. I got my men back, withdrew the ship and opened fire on them, to keep them at bay.

"I then went to rescue the people from the other two ships, the PALASH and the PADMA. One of those ships was already destroyed - its davits had flown past my ship but, fortunately, I was not hit. The ammunition exploded or the fuel caught fire. I managed to pick up 14 survivors. Then I started the attack on the shore defences.

"Now some of the Pakistani ships which were hit earlier had been brought to Khulna for repairs and were being used as fortresses. They were firing at me through the port holes and from whatever vantage point they could get. So I used gunfire to silence them".

Lt Gen Jacob's book states:*

"Cdr Samant in his overeagerness, decided to attack Khulna. Unfortunately, the Air Force failed to identify the vessels though they were clearly painted yellow. The craft were attacked and sunk in what is called in NATO terminology, 'friendly fire'. Samant and the crew were able to swim ashore. The Mukti Bahini were in control in that area and fortunately there were no casualties. Even so we at the Eastern Command recommended Samant for the award of the Mahavir Chakra for his action."

Both Commander Samant and Lieutenant Commander Noronha were awarded the Maha Vir Chakra for this operation.

The Enterprise Incident - Deployment of the American Naval Task Group into the Bay of Bengal

Preamble

By 10 December 1971, the Pakistani offensive in the West had run out of steam. The Pakistani Army in the East had made its first tentative move to obtain a cease fire. The United Nations effort to obtain a ceasefire resolution had been stalled by the Soviet veto. America was concerned how to safeguard West Pakistan from disaster.

America was faced with a complex situation. There was uncertainty in some minds whether India intended to transfer her troops from East to West and decisively defeat Pakistan. Pakistan had invoked the secret clause whereby America had promised to come to Pakistan's assistance if attacked by India. There was American determination to avoid being seen as deserting a CENTO/SEATO ally. And there was the realisation that politically there was no way of stopping East Pakistan from becoming Bangladesh.

On 10 December, America announced that American Naval Task Group 74, consisting of the aircraft carrier Enterprise, an amphibious assault ship, four guided missile destroyers, a guided missile frigate and a landing ship was heading towards the Bay of Bengal.

From 11 December onwards, the Pakistan Government and Army HQ in Islamabad started conveying to its Governor and Army commander in East Pakistan that friendly powers were coming to Pakistan's assistance.

By 12 December, British Royal Air Force aircraft had evacuated 114 US nationals from Dacca. 47 American nationals had chosen to stay behind. On 13 December, the American Defence Secretary announced in Washington that the US Government had contingency plans to evacuate these 47 American citizens. On 14 December, the Enterprise Task Group transited through the Straits of Malacca and entered the Bay of Bengal. However, instead of proceeding towards East Pakistan, it altered course away towards Ceylon. On 15 December, it was officially stated in Washington that after the ceasefire, the Task Group might help to evacuate Pakistani troops from the East. On 16 December, the Pakistani armed forces in East Pakistan surrendered.

In India, the spectrum of reactions to the Enterprise Task Group ranged from public indignation at American gun boat diplomacy, to naval perplexity regarding American motives, to poise at the highest political level. In January 1972, the Enterprise Task Group left the Indian Ocean.

The reconstruction of events yields interesting insights of how, in sensitive situations, naval deployments can convey signals of intent and how these signals are interpreted differently at different levels, nationally and internationally.

The Situation on 10 December 71

In the West, the Pakistani land offensive had come to a halt. The Indian advance in the Shakargarh bulge was drawing Pakistani forces away from Chhamb. In Punjab, Pakistani pressure across the bridgeheads had been resisted and the threat to Fazilka warded

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* ibid.

off. On the Rajasthan front, the Indian attack was penetrating deep into Sind. The Indian Air Force had established its dominance in the air. At sea, the Western Fleet's blockade was complete. Pakistan's strategy of relieving the pressure on East Pakistan by attacking India in the West had been checkmated.

In the East, the Indian advance towards the Meghna River precluded the evacuation of Pakistani forces. By the 10th, the Indian Army had reached the banks of the Meghna at three points: at Ashuganj, at Daudkandi - less than 40 air kilometers from Dacca - and at Chandpur, which dominated the route from Dacca to the sea. The Indian Air Force had grounded the Pakistan Air Force Sabres in East Pakistan by putting the Dacca airfields out of action. The Eastern Fleet had established a total blockade.

Speculation now arose as to how conclusive the Indian victory, on both the eastern and the western fronts, was going to be. For Pakistan's friends in America and for China, this question had two aspects: could something be salvaged from the debacle in East Pakistan; and more important, how to safeguard West Pakistan from being overwhelmed.

By 10 December, it was clear that the United Nations would not be able to stop the war. Russia had twice exercised its veto in the Security Council. Before 10 December, the international reaction to the war was focussed on the American attempts to secure a ceasefire through the United Nations. After the 10th, America and Russia became more directly involved on how to safeguard West Pakistan from disaster.

On 10 December, America took two actions. President Nixon ordered a Task Group of naval ships, headed by the nuclear aircraft carrier ENTERPRISE to proceed towards the Bay of Bengal. And he sent a letter to the Russian Chairman, Mr Brezhnev, urging Russia to join America in a joint appeal for a complete cease fire. He also informed the Russian leadership that America had a treaty commitment to support Pakistan against Indian aggression and that American naval forces had started moving towards East Pakistan.

In his book "Pakistan's Crisis in Leadership" Maj Gen Fazal Muqeem Khan states:

> "On 11 Dec, it was reported that the USA had ordered the 7th Fleet to move towards the Bay of Bengal. The news of this move and the adverse Indian propaganda about it again raised hopes in Pakistan. These, however, did not last long. Admiral Sharif advised the Eastern Command that if the American Fleet had been coming to help them, it would have established contact with his Headquarters by now.
>
> "On 12 December the CGS sent a telephone message in Pushto informing Niazi that friends, "yellow from the North and white from the South" were coming by midday 13 Dec. The next day a message from GHQ indicated that the friends would be delayed by 48 hours".

Sources for the Reconstruction of Events

The Washington Special Action Group Minutes

In 1971, whenever an international crisis was brewing, the American Government used to constitute a Special Action Group comprising senior officials from all concerned departments. Its task was to examine all the implications for American policy and to suggest to the President the action that could be taken.

The Washington Special Action Group (WSAG) on India - Pakistan was constituted in Aug 1971. It held occasional meetings until end November. When hostilities erupted on 3 December, it met more frequently. The "Secret Sensitive" minutes of these meetings were made public by an American journalist, Mr Jack Anderson. These minutes were published in the New York Times Paris Edition on 6 and 15 January 1972.

The Anderson Article on Naval Movements

On 10 January 1972, the Daily Telegraph of London published Mr Jack Anderson's article regarding the American State Department's apprehensions, as a US Naval Task Group steamed towards a Soviet Naval Task Group at the height of the Indo Pakistan War.

Admiral Zumwalt's Memoirs

In his memoirs "On Watch", Admiral Zumwalt, who was the Chief of Naval Operations of the US Navy in 1971, has recorded his views on the movements of Task Group 74.

Soviet Ambassador Dobrynin's Memoirs

In his memoirs "In Confidence", Mr Anatoly Dobrynin, who was the Soviet Ambassador in Washington in 1971, has recounted the interaction at the highest levels of the Soviet and American Governments.

"War and Secession" by Richard Sisson and Leo Rose

Dr Henry Kissinger's Memoirs

Mr Kissinger was the National Security Adviser to American President Nixon. In his memoirs "The White

House Years", he recalls the geopolitical compulsions which led to the despatch of the American Task Force to the Bay of Bengal.

Reconstruction of Events

The WSAG Minutes of 3 December 71 state:

> "Dr Kissinger said we need to think about our treaty obligations. I remember a letter or memo interpreting our existing treaty with a special India tilt. When I visited Pakistan in January 1962, I was briefed on a secret document or oral understanding about contingencies arising in other than the SEATO context. Perhaps it was a Presidential letter. This was a special interpretation of the March 1959 bilateral agreement".

The WSAG Minutes of 4 December state:

> "Admiral Zumwalt thought that the Paks could hold the line in East Pakistan for approximately one or two weeks before the logistic problems became overriding. He expected the Soviets to cement their position in India and to push for permanent usage of the naval base at Vizag. He anticipated that the Soviets' immediate short range objective would be to gain military advantage through their current military relationship with India".

The WSAG Minutes of 6 December state:

> "Gen Westmoreland stated there was no means of evacuating West Pak forces from the East Wing, particularly in view of Indian naval superiority.
>
> "Dr Kissinger asked about a legal position concerning the current Indian naval 'blockade'. Mr Sisco stated that we have protested both incidents in which American ships have been involved. However, no formal proclamation apparently has been made in terms of a declaration of war, that it is essentially still an undeclared war, with the Indians claiming power to exercise their rights of belligerency. The State Department would, however, prepare a paper on the legal aspects of the issue. Ambassador Johnson said that so far as he was concerned, the Indians had no legal position to assert a blockade.
>
> "Dr Kissinger asked that a draft protest be drawn up. If we considered it illegal, we will make a formal diplomatic protest. Mr Sisco said that he would prepare such a protest.
>
> "Dr Kissinger said that it is quite obvious that the President is not inclined to let the Paks be defeated. Mr Sisco said that from a political point of view, our efforts would have to be directed at Indians from "extinguishing" West Pakistan".

The WSAG Minutes of 8 December state:

> "Mr Helms (CIA) opened the meeting by briefing the current situation. In the East, the Indians have broken the line at Comilla. Only major river crossings prevent them from investing Dacca. The Indians are advancing rapidly throughout East Pakistan. All major Pak L.O.C.'s in the East are now vulnerable. In the West, the Paks are now claiming Poonch, inside the Indian border. However, the Paks are admitting fairly heavy casualties in the fighting. Tank battles are apparently taking place in the Sind/Rajasthan area. Mrs Gandhi has indicated that before heeding a UN call for cease-fire, she intends to straighten out the southern border of Azad Kashmir. It is reported that, prior to terminating present hostilities, Mrs Gandhi intends to attempt to eliminate Pakistan's armor and air force capabilities.
>
> "Mr Sisco inquired how long the Paks might be expected to hold out in East Pakistan, to which Mr Helms replied 48 to 72 hours. The time to reach the ultimate climax is probably a function of the difficulties encountered in river crossings.
>
> "Assessing the situation in the West, General Ryan indicated that he did not see the Indians pushing too hard at this time, rather they seem content with a holding action.
>
> "Dr Kissinger asked how long it would take to shift Indian forces from East to West. General Ryan said it might take a reasonably long time to move all the forces, but that the airborne brigade could be moved quickly, probably within a matter of five or six days.
>
> "Dr Kissinger suggested that the key issue if the Indians turn on West Pakistan is Azad Kashmir. If the Indians smash the Pak air force and the armored forces, we would have a deliberate Indian attempt to force the disintegration of Pakistan. The elimination of the Pak armored and air forces would make the Paks defenseless. It would turn West Pakistan into a client state. The possibility elicits a number of questions. Can we allow a US ally to go down completely while we participate in a blockade? Can we allow the Indians to scare us off, believing

that if US supplies are needed they will not be provided?

"Mr Sisco stated that if the situation were to evolve as Dr Kissinger had indicated then, of course, there was a serious risk to the viability of West Pakistan.Mr Sisco doubted, however, that the Indians had this as their objective. He indicated that Foreign Minister Singh told Ambassador Keating that India had no intention of taking any Pak territory. Mr Sisco said it must also be kept in mind that Kashmir is really disputed territory.

"Mr Helms then stated that earlier he had omitted mentioning that Madame Gandhi, when referring to China, expressed the hope that there would be no Chinese intervention in the West. She said that the Soviets had cautioned her that the Chinese might rattle the sword in Ladakh but that the Soviets have promised to take appropriate counter-action if this should occur. Mr Helms indicated that there was no Chinese build-up at this time but, nevertheless, even without a build-up they could 'make motions and rattle the sword'.

"Dr Kissinger stated that what we may be witnessing is a situation wherein a country equipped and supported by the Soviets may be turning half of Pakistan into an impotent state and the other half into a vassal. We must consider what other countries may be thinking of our action.

"Mr Helms asked about our CENTO relationships with Pakistan. Ambassador Johnson stated we had no legal obligations towards Pakistan in the CENTO context. Dr Kissinger agreed but added that neither did we have legal obligations toward India in 1962 when we formulated the air defense agreement. We must consider what would be the impact of the current situation in the larger complex of world affairs.

"After discussing various possible commitments to both Pakistan and India, Mr Packard stated that the overriding consideration is the practical problem of either doing something effective or doing nothing. If you don't win, don't get involved. If we were to attempt something it would have to be with a certainty that it would affect the outcome. Let's not get in if we know we are going to lose. Find some way to stay out.

"Turning to the question of the blockade, Ambassador Johnson said that both India and Pakistan have taken blockade action, even though the Pak blockade is essentially a paper blockade. Dr Kissinger said that we should also protest to the Paks. Ambassador Johnson indicated we do not have a legal case to protest the blockade. The belligerent nations have a right to blockade when a state of war exists. We may think it unwise and we may question how it is carried out. We have, in fact, normally expressed our concern. On the other hand we have no problem in protesting the incident of the SS Buckeye State which had been strafed in a Pakistani port.

"Dr Kissinger said that we are not trying to be even-handed. There can be no doubt what the President wants. The President does not want to be even-handed. The President believes that India is the attacker. We are trying to get across the idea that India has jeopardized relations with the United States. Dr Kissinger said that we cannot afford to ease India's state of mind. 'The Lady' is cold-blooded and tough and will not turn into a Soviet satellite merely because of pique. We should not ease her mind. He invited anyone who objected to this approach to take his case to the President".

Admiral Zumwalt was Chief of Naval Operations of the American Navy. In his memoirs "On Watch", he states:*

"The Naval situation in the Indian Ocean just then was complicated and confusing. Quite by chance, a large British Navy task group, including two carriers, the last ships of the British Fleet to remain East of Suez, was on its way home through the Indian Ocean at the time India marched into East Bengal. Two days after that invasion, a Soviet destroyer and a minesweeper came through the Malacca Straits whose mission had been to relieve the destroyer and minesweeper that had been on station (in the Indian Ocean) for 6 months. In view of the war, the relief became a reinforcement; the original contingent stayed on. Furthermore on 6 or 7 December, the Russians detached a cruiser armed with cruise missiles, and escorts for it, from their Pacific Ocean Fleet and sent them towards the Indian Ocean. They were sighted by the Japanese in the Straits of Tsushima on 9 December. Though these ships did not reach the Malacca Straits until 18 December, we of course knew they were on their way".

* Pages 360 et seq.

Mr Jack Anderson's article states:

"On 7 December a top secret warning was flashed to Washington that three Soviet naval ships, a seagoing minesweeper and a tanker have begun to move northeastward into the Bay of Bengal. The units entered the Indian Ocean from the Malacca Straits on 5 December and were located approximately 500 nautical miles east of Ceylon on 7 December.

"Urgent huddles in the White House led to a decision on 10 December to assemble in the Malacca Straits a United States task force, spearheaded by the aircraft carrier Enterprise, the Navy's most powerful ship. The primary purpose was to make a `show of force' and to divert Indian planes and ships from Pakistan.

"As the task force moved into position, Admiral John McCain, our Pacific commander, inquired on 11 December about `the feasibility of aerial surveillance of a Soviet task group located approximately 180 nautical miles south-west of Ceylon'. Authorisation was flashed back the same day `in the event Task Force 74 is directed to transit the Straits of Malacca, at that time appropriate screening-surveillance flights are authorised".

Mr Anatoly Dobrynin was the Russian Ambassador in Washington in 1971. In his memoirs "In Confidence", he states:*

"On December 10, Nixon asked us to join him in a joint appeal for a complete ceasefire. In a clear attempt to pressure both the Soviet Union and India, Nixon made an extraordinary disclosure to the Soviet leadership. In strict confidence, he had Kissinger inform us that there was a secret protocol in the agreement between the United States and Pakistan (drafted under the Kennedy administration and handed to then President, Ayub Khan, by the US ambassador on 5 November 1962) saying that the American government would support Pakistan against Indian aggression.

"To build American pressure, Kissinger told Yuli Vorontsov, our able charge d'affairs during my absence in Moscow for consultations, that the American military had already been ordered to start preparations for assistance to Pakistan under the cover of tactical redeployment of its naval forces, including the despatch of an aircraft carrier task force from Southeast Asia. In response, a number of warships from the Soviet Indian Ocean Fleet were sent northward.

"Kissinger made it clear to us that the United States was mostly concerned about the western section of the India-Pakistan front which, Washington feared, would collapse after Pakistan's defeat in the East. As Kissinger later wrote, he believed Mrs Gandhi was planning to attack the Pakistan-held portions of Kashmir, recover them for India, and thus precipitate through a humiliating defeat, the disintegration of what remained of Pakistan in the West. (In the East, the White House had to accept that the war was as good as won by India.) As part of his maneuver, Kissinger then asked Vorontsov to assure Moscow that the White House was not in contact with Beijing over the conflict, even though Pakistan was close to China. He simultaneously proposed referring the matter to the United Nations".

Admiral Zumwalt's memoirs state:**

"On 10 December, a Presidential order that was not discussed with the Navy in advance, created Task Group 74, consisting of the nuclear carrier Enterprise and appropriate escorts and supply ships and sent it steaming from the Gulf of Tonkin, where the ships had been on station, to Singapore. The order did not specify what TG 74's mission was, nor could anyone, including the Chairman of the Joint Chiefs tell me. I sought to be sure that these ships either had a mission or were not sent in harms way. The ships were held off Singapore for two days. On 12 December they were ordered through the Malacca Straits into the Indian Ocean. Within an hour, that order was rescinded. Next day it was reissued with the additional proviso that as much of the passage through the Straits as possible be in daylight, ie in full view of the world. At the same time "sources" in Washington let it be known that the object of the exercise was covering the evacuation of American civilians from Dacca in East Bengal.This clearly was a cover story since that evacuation, after having been impeded by the fighting for a week, was successfully completed two days before TG 74 entered the Indian Ocean".

Mr Jack Anderson's article states:

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* Pages 236 et seq.

** Ibid.

"As the American warships moved through the Straits and headed into the Bay of Bengal, even more ominous reports reached Washington from the Defence Intelligence Agency.

"Recent indicators have been received which suggest the People's Republic of China may be planning actions regarding the Indo-Pakistan conflict'.

"A top secret message reported tersely: 'According to a reliable clandestine source, (Pakistan's) President Yahya Khan claimed ... today that the Chinese Ambassador in Islamabad has assured him that within 72 hours the Chinese Army will move towards the border.

"And from New Delhi, the CIA reported: 'According to a reliable clandestine source, Prime Minister Gandhi told a leader of her Congress party that she had some indications that the Chinese intend to intervene along India's northern border. Mrs Gandhi said that the Chinese action might be in the Ladakh area.'

"Russia's Ambassador to India, Nikolai M Pegov, however, promised on 13 December that the Soviets 'would open a diversionary action' against the Chinese and `will not allow the Seventh Fleet to intervene.'

"According to Pegov, the movement of the Seventh Fleet is an effort by the US to bully India, to discourage it from striking against West Pakistan, and at the same time to boost the morale of the Pakistani forces.

"Pegov noted that a Soviet fleet is now in the Indian Ocean and that the Soviet Union will not allow the Seventh Fleet to intervene".

Mr Anatoly Dobrynin's memoirs state:*

"The tension was broken upon my return on December 12. Moscow sent a particularly important message to Nixon: "Our contacts with Prime Minister Indira Gandhi suggest that the Indian government does not intend to take any military action against West Pakistan". With noticeable relief, Kissinger said that was good news. At the same time, he complained that Indian assurances lacked clarity and called upon us to continue close consultations in the confidential channel. But what really mattered was that, after taking Pakistan's side as a payoff for helping open up China, Nixon and Kissinger had to rely on Moscow's word that India would not attack West Pakistan".

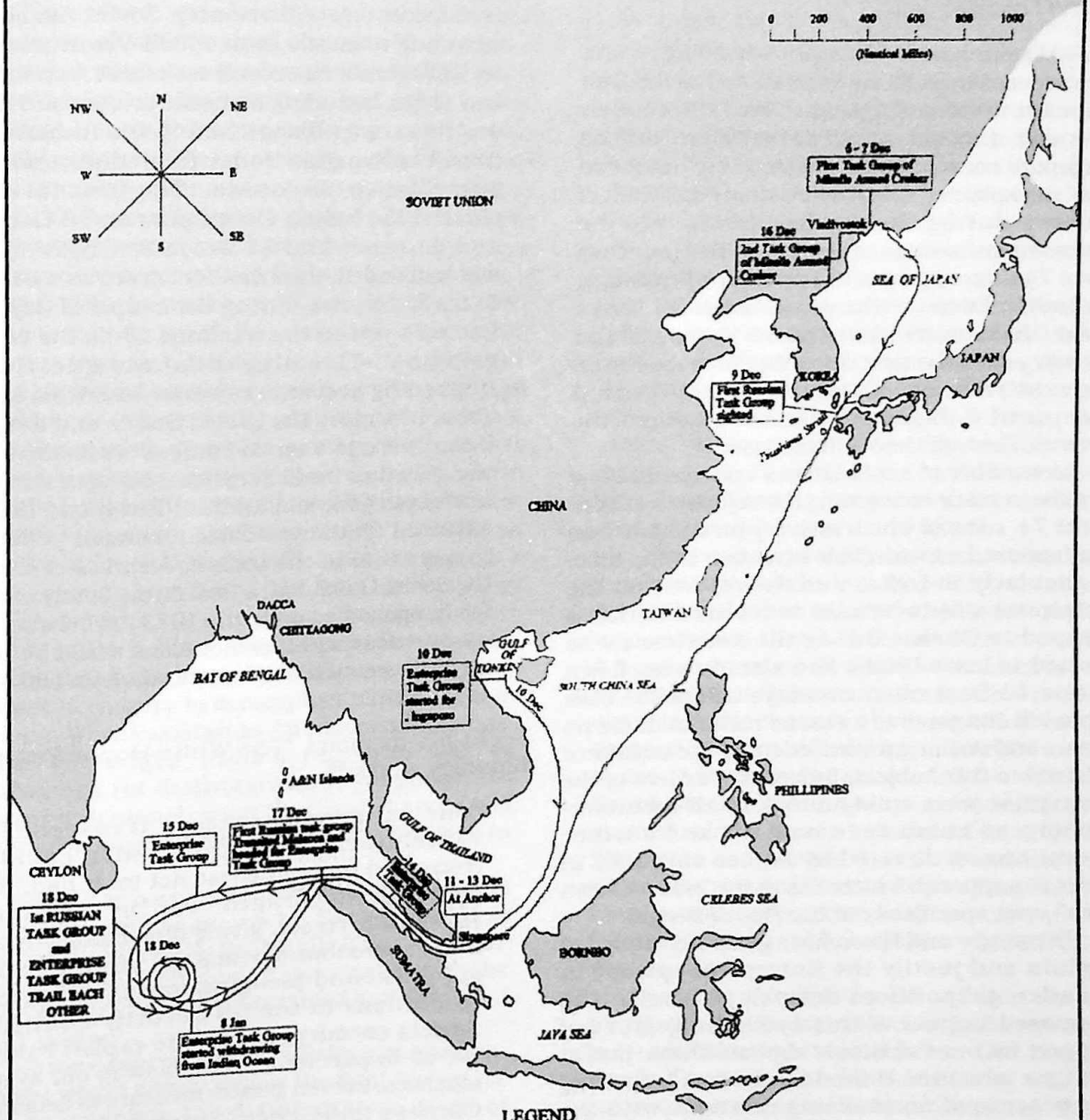
Admiral Zumwalt's memoirs state:**

"The first orders to TG 74 had been to go on station in the Bay of Bengal, off the East Bengal coast. I argued against stationing the ships there. I felt it was taking an unnecessary risk to put a task group without a stated mission in precisely the place where harm was most likely to befall it. I won my argument and the group was sent south of Ceylon, where the Russians, when they arrived, promptly began trailing it. Meanwhile, a second Russian task group, similar in composition to the first - a cruiser with escorts- was sent to the scene, obviously in reaction to TG 74's appearance. What prompted the despatch of the first Russian group is unclear. The best guess is that it was the presence, fortuitous though it was, of so many British ships in troubled waters. In any case, by the first of the year when the second Russian group arrived, the American ships were put at a disadvantage by the Russians. While Soviet ships were in close trail of US ships, the British were no longer on the scene. As soon as Dacca had been evacuated successfully, they had continued on their homeward journey. For the first week or so of 1972, the American and Russian ships circled around each other warily, much as their counterparts had been doing in the Mediterranean for years. Then on 8 January, TG 74 was ordered out of the Indian Ocean as mysteriously as it had been ordered in.

"I still do not know exactly what to think about the TG 74 episode. Obviously it could not have been intended to influence the course of the war in East Bengal. On the contrary, the task group was not formed until the outcome in East Bengal was perfectly clear. Perhaps the President and Kissinger, both of whom quite clearly were frustrated by their inability to influence events on the subcontinent, impulsively organised TG 74 and sent it on its way in a final effort to show the world that America was not to be taken lightly. More likely, they wanted to show China that the US was a relevant military actor in that part of the world and had the will to deploy military power in a situation in which a Soviet client was defeating a Chinese ally. In either case, my hunch is that the gesture was untimely and futile. But that is just a hunch. Mrs Gandhi may have had designs on West Pakistan as well as East Pakistan and the arrival of TG 74 may have caused her to think

* Ibid.
** Ibid.

RECONSTRUCTED TRACKS OF THE DEPLOYMENT TO THE INDIAN OCEAN IN DECEMBER 1971 OF THE AMERICAN NAVY's ENTERPRISE TASK GROUP AND SOVIET NAVY's AND MISSILE CRUISER TASK GROUPS



LEGEND

SOVIET NAVY TASK GROUPS

6/7 Dec First Task Group of Missile Cruiser and escorts sailed from Vladivostok

9 Dec First Task group sighted by American reconnaissance aircraft in Tsushima Strait

16 Dec Second Task Group of Missile Cruiser and escorts sailed from Vladivostok

17 Dec First Task Group transited Malacca Strait and headed for the Enterprise Group

Mid Jan Soviet Navy Task Groups started withdrawing from the Indian Ocean

ENTERPRISH TASK GROUP

10 Dec Enterprise Task Group starts moving from Gulf of Tonkin to Singapore

11 to 13 Dec At anchor off Singapore

14 Dec Transited Malacca Straits

15 Dec Entered Indian Ocean and altered course towards Ceylon

18 Dec Started being trailed by First Soviet Navy Task Group

1 Jan Started being trailed by First and Second Soviet Navy Task Groups

8 Jan Started withdrawing from the Indian Ocean

twice. In other words, the gesture may have been extremely timely and useful. Until the private papers of the "lady" are made public, no one will know for sure".

In their book "War and Secession", Richard Sisson and Leo Rose state:*

"On 10 December, the Enterprise and four escorts were ordered to sail from their station in the Gulf of Tonkin towards Singapore. On 12 December, they met another naval detachment off the Singapore coast and on 14 December, after two days' unexplained delay, sailed down the Strait of Malacca during the daylight hours into the northernmost section of the Bay of Bengal. Task Force 74 then turned south and was operating in the Indian Ocean to the southeast of Sri Lanka when Dhaka surrendered on 16 December and the war ended the next day with the cease-fire on the western front. It remained in this general area until 7 January, when it rejoined the Seventh Fleet off the Vietnam coast.

"A number of explanations and accusations have been made concerning the objectives of Task Force 74, none of which are very persuasive. One that received considerable attention at the time, particularly in India, was the report that the Enterprise was to be used to rescue Americans trapped in Dhaka. But as the Americans who wanted to leave Dhaka had already been flown out on 12 December, two days before the task force left Singapore, a rescue mission made no sense, and nothing in the orders to the task force referred to this subject. Indeed, the orders to the Enterprise were ambiguous and all-inclusive-namely, to conduct "naval, air and surface operations as directed by higher authority in order to support US interests in the Indian Ocean area" - not specifically in the Bay of Bengal.

"Kissinger and Nixon have generally tended to explain and justify the Enterprise episode in broader geopolitical terms, primarily the supposed impact of this symbolic gesture of support for our Pakistani "ally" on China, just at the time when the United States was beginning the process of normalizing relations with the People's Republic. Some others in the State Department placed greater importance on the impact of American support of a Muslim state on the international Islamic community. Both were factors that were considered, but in and of themselves would not have been decisive.

"Another important consideration for the US government was the presence of a Soviet naval force in the Indian Ocean. When the war began, the USSR had only a small force on station-two destroyers, two minesweepers, and an oiler. But on 6 December a three-ship Soviet naval force, including a missile cruiser, left Vladivostok, and on 13 December a second task force, consisting of four ships, including a missile cruiser and missile destroyer, was dispatched to the Indian Ocean from Vladivostok-under immediate American surveillance, of course. The first task force entered the Indian Ocean only on 18 December and the second on 24 December, both after the war had ended: thus neither served as a deterrent to the Enterprise during the couple of days Task Force 74 was in the war zone while the war was going on. This also calls into question the frightening accounts in some American sources about how close the United States and the Soviet Union were to a naval confrontation during the war. Whether the Enterprise task force served any useful purpose is doubtful. But it can be safely assumed that it was basic American policy that, in any crisis in the Indian Ocean area in which the Soviet Union had a fleet immediately available (as happened again in the 1973 Arab-Israeli war), an American naval detachment would be sent in as well, even if there were no obvious tasks, for it to perform".

In his memoirs "The White House Years", Dr Kissinger states:**

"Our paramount concern transcended the subcontinent. The Soviet Union could have restrained India; it chose not to. It had, in fact, actively encouraged war by signing the Friendship Treaty, giving diplomatic support to India's maximum demands, airlifting military supplies, and pledging to veto inconvenient resolutions in the UN Security Council. The Soviets encouraged India to exploit Pakistan's travail in part to deliver a blow to our system of alliances, in even greater measure to demonstrate Chinese impotence. Since it was a common concern about Soviet power that had driven Peking and Washington together, a demonstration of American irrelevance would severely strain our precarious new relationship with China. Had we followed the advice of our

* Pages 263 et seq.

** India Today November 1-15, 1979.

critics - massive public dissociation from Pakistan and confrontation with it in its moment of desperation - we would have been operating precisely as the US - Soviet condominium so dreaded by Peking; this almost surely would have undone our China initiative.

"Nor were we defending only abstract principles of international conduct. The victim of the attack was an ally - however reluctant many were to admit it - to which we had made several explicit promises concerning precisely this contingency. Clear treaty commitments reinforced by other undertakings dated back to 1959. One could debate the wisdom of these undertakings (and much of our bureaucracy was so eager to forget about them that for a time it proved next to impossible even for the White House to extract copies of the 1962 communications), but we could not ignore them. To do so would have disheartened allies like Iran and Turkey, which sympathized with Pakistan, had the same commitment from us, and looked to our reaction as a token of American steadiness in potential crises affecting them. High stakes were therefore involved. On December 5, I told Nixon that the India-Pakistan conflict would turn into a dress rehearsal for the Middle East in the spring.

"There was no question of "saving" East Pakistan. Both Nixon and I had recognized for months that its independence was inevitable; war was not necessary to accomplish it. We strove to preserve West Pakistan as an independent state, since we judged India's real aim was to encompass its disintegration. We sought to prevent a demonstration that Soviet arms and diplomatic support were inevitably decisive in crises.

"We had to become sufficiently threatening to discourage similar moves by Soviet friends in other areas, especially the Middle East. And if we acted with enough daring, we might stop the Indian onslaught before it engulfed and shattered West Pakistan.

"We were concerned that a Pakistani attack in the West would merely supply the final pretext for India to complete the disintegration of all of Pakistan.

"On December 2, Pakistani Ambassador Raza delivered a letter from Yahya to President Nixon invoking Article I of the 1959 bilateral agreement between the United States and Pakistan as the basis for US aid to Pakistan. The American obligation to Pakistan was thus formally raised.

"The treaty with Pakistan was identical to several other bilateral and multilateral agreements - all of which our pronouncements seemed to cast into doubt. And it had been buttressed in the case of Pakistan by many additional assurances of support. The fact was that over the decades of our relationship with Pakistan, there had grown up a complex body of communications by the Kennedy and Johnson administrations, going beyond the 1959 pact, some verbal, some in writing, whose plain import was that the United States would come to Pakistan's assistance if she was attacked by India. In an aide memoirs of 5 November 1962, the United States promised assistance to Pakistan in case of Indian aggression.

"Pakistan, moreover, was an ally of other allies - Iran, Turkey - and a friend of Saudi Arabia and Jordan, then isolated in a still largely radical Middle East. And it was a friend of China and in close touch with a Peking that was gingerly feeling its way toward a new relationship with us based on the hope that we could maintain the global equilibrium. A reputation for unreliability was not something we could afford.

"Pakistan was an ally to which we had treaty commitments backed up by private assurances; its fate would thus affect the attitudes of several key countries that had rested their security on American promises. It would be watched carefully by China. And those countries in the Middle East eager to settle the issue by force could easily be tempted to adopt military means. And if its policy in the sub-continent succeeded too easily, the Soviet Union might resort to comparable tactics in other volatile areas - as indeed it later did when Watergate had sapped Executive authority. The dismemberment of Pakistan by military force and its eventual destruction without any American reaction thus would have profound international repercussions.

"Because of India's access to Soviet arms and a large arms industry of its own, India was bound to crush Pakistan's armed forces. Our minimum aim had to be to demonstrate that we would not compound our weakness by fatuousness. We had to act in a manner that would give pause to potential Soviet adventures elsewhere, especially in the Middle East, where Egypt's President had now proclaimed 1972 as another year of decision.

"In foreign policy, Bismarck once said "courage and success do not stand in a causal relationship, they are identical". Nixon had many

faults, but in crises he was conspicuously courageous. An aircraft carrier task force that we had alerted previously was now ordered to move toward the Bay of Bengal, ostensibly for the evacuation of Americans but in reality to give emphasis to our warnings against an attack on West Pakistan. We held it east of the Strait of Malacca, about 24 hours steaming distance from the Bay of Bengal, because I wanted to consult the Chinese before we made our next move. In explaining the purpose of the Fleet movement to Mel Laird (American Defence Secretary), I pointed out that we recognized the Indian occupation of East Pakistan as an accomplished fact; our objective was to scare off an attack on West Pakistan. (I did not add that we also wanted to have forces in place in case the Soviet Union pressured China.) As always in crises, Laird was staunch and supportive. When I met Huang Hua, he came to the real Chinese concern - that a precedent was being set by which other countries might be dismembered by Indian-Soviet collusion. I told him that the United States would not be indifferent to further Soviet moves.

"Our Fleet passed through the Strait of Malacca into the Bay of Bengal and attracted much media attention. Were we threatening India? Were we seeking to defend East Pakistan? Had we lost our minds? It was in fact sober calculation. We had some 72 hours to bring the war to a conclusion before West Pakistan would be swept into the maelstrom. It would take India that long to shift its forces and mount an assault. Once Pakistan's Army and Air Force were destroyed, its impotence would guarantee the country's eventual disintegration. We had to give the Soviets a warning that matters might get out of control on our side too. We had to be ready to back up the Chinese if at the last moment they came in after all, UN initiative having failed. The Kremlin needed an excuse to accelerate the pressures it claimed it was exerting on India. However unlikely an American military move against India, the other side could not be sure; it might not be willing to accept even the minor risk that we might act irrationally. It was also the best means to split the Soviet Union and India. Moscow was prepared to harass us; it was in our judgement not prepared to run military risks. Moving the carrier task force into the Bay of Bengal committed us to no final act, but it created precisely the margin of uncertainty needed to force a decision by New Delhi and Moscow".

Mr Anatoly Dobrynin's memoirs state:*

"The Soviet Union's diplomatic intervention helped prevent the military conflict from spreading to the point where it would have resulted in a total defeat and breakup of West Pakistan, not just an amputation of its eastern province fifteen hundred miles away. I suspect that Pakistan's arrogant behaviour at the start of the conflict was probably to some degree fostered by manipulative American diplomacy, which left the impression that the United States would strongly be on Pakistan's side, but, if so, the Nixon administration failed to fulfill the Pakistani military regime's great expectations. Pakistan, actually an American ally, lost half of its territory.

"The final word came in January when we began work with Kissinger on the details of the summit. Admitting that he had been unduly nervous about Soviet intentions during the Indo-Pakistan War, he virtually admitted that he had taken some "unreasonable steps" at the time. He acknowledged that our assurance about India's intentions at the critical moment was a breakthrough in ending the war. For him, that was an extraordinary confession but not one that he made in public".

Indian Reactions

Mr Peter Sinai was Director (Bangladesh) in the Ministry of External Affairs in 1971. He recalls:

"On 14th December, the Political Counsellor in the US Embassy in Delhi sought an urgent meeting in MEA with me and handed over a telex copy of US Defence Secretary Melvyn Laird's statement that the Carrier Group ENTERPRISE had been ordered to proceed to the Bay of Bengal "for evacuation and other contingencies". I pointed out that all US nationals desiring evacuation had already been evacuated and demanded to know for whom "evacuation" was intended and what the "other contingencies" might be. Mr Irwin said that his instructions were only to deliver the Defence Secretary's statement.

"I rushed the message to Mr DP Dhar, who said he would inform the PM and that I should meanwhile take a copy of it to NHQ. I took the

* Ibid.

message to the South Block War Room. The immediate reaction of the naval personnel there was one of incredulity and concern. Awareness that the range of the aircraft on the ENTERPRISE posed a threat to VIKRANT and other naval vessels operating off Chittagong well before they could be in any position to retaliate was the main expression of that concern".

Captain (later Vice Admiral) MK Roy, was the Director of Naval Intelligence in 1971. In his book "War in the Indian Ocean", he states:*

"The composition of the US Task Force as seen from satellite photographs included the nuclear-propelled aircraft carrier ENTERPRISE, the amphibious assault ship, TRIPOLI with helicopters, and an escort of three guided missile ships, four destroyers, nuclear attack submarines and tankers. Prime Minister Gandhi arrived early in the Naval War Room and queried Admiral Nanda as to the implications of this US move. I was asked to give a quick appreciation of the capabilities of the US Task Force. I concluded by stating that it could be any of the undermentioned operations:

- Intervene by invitation as the ENTERPRISE could wrest aerial supremacy over the skies of East Pakistan. The marines could then be airlifted ashore by helicopters to assist the Pakistan Army. This was however thought to be impractical as the Vietnam war was not going in favour of the US.
- Interpose between the coastline and the Indian blockading forces thus breaking the ring round the East Pakistan coast particularly involving the ports of Chittagong and Chalna.
- The US Task Force possessed the vertical lift capacity to evacuate at least one Pakistani division with their personal arms to ships in international waters. It would then be possible to transport them to West Pakistan by sea to bolster their Army facing the impending attack by India after the surrender in East Pakistan. Both Pakistan and US were aware of the restrictions imposed on civilian traffic by the Indian Railways in order to expeditiously move Indian divisions from the Eastern to the Western theatre of operations".

In their book "War and Secession" Richard Sisson and Leo Rose state:**

"As several responsible Indian officials around the Prime Minister and in the Defence Ministry noted in comments to the authors, there were no apprehensions that the US Fleet would intervene in the East Pakistani campaign or indeed that it could do much in that sector. New Delhi recognised that the dispatch of the Fleet was a symbolic gesture intended to impress China and the Islamic states in Southwest Asia as well as to counter the reinforced Soviet fleet in the Indian Ocean".

In his book 'No Way But Surrender', Vice Admiral Krishnan states:***

"At about 5.30 PM on the eighth day of the war, Friday, 10 December, we intercepted a signal to the effect that the US Navy was sending ships into the Bay of Bengal, for possible withdrawal of the Pakistani Army.

"I also spoke to Admiral Nanda regarding the 7th Fleet but he had heard no more than what was in the signal. We ended our conversation on the note that we should not be surprised by anything that happened from now onwards.

"None of us ever fell for the gimmick that the Fleet's object was to evacuate a handful of American subjects from Dacca. You do not require an elephant gun to shoot at a flea. Obviously, her primary intention was to frighten us into withdrawing our forces from the operational area and let the escape ships break out. Suppose we didn't scare that easily and persisted in our stranglehold on Bangladesh? Evacuation of any but a handful of troops was a possibility, using helicopters. Clearly the use of heavier and very powerful aircraft was quite out of the question as, however thorough the temporary repairs, the runways of both Chittagong and Dacca had taken considerable beating.

"The offensive capabilities of the Fleet, therefore, consisted of:

- Landing up to a marine battalion as an assault group using helicopters
- Using the ENTERPRISE's aircraft for ground support role

* Pages 212 et seq.
** Page 217.
*** Ibid.

- Providing close support against aircraft attacking their fleet and
- Surface and aerial attack on Indian warships.

"We did not know if the marine battalion was carried on board the TRIPOLI at the time but even assuming that they were, how were they going to land them ashore except by helicopters. It was quite obvious that manpower-wise, landing some 2,000-odd persons was not going to materially alter the land battle in which some 93,000 soldiers were gasping for breath!

"It was unthinkable that they would commit their aircraft on a ground support role against our army or air force or wantonly attack our naval forces at sea. If they did, it would possibly mean war between the United States and India and, as I said to my colleagues in the Maritime Operations Room, "that might mean the end of the world or the Americans would find in us a Vietnam to end all Vietnams.

"To my way of thinking, the most effective method of helping the Pakistanis would be to close Chittagong within range of their air power, put up a formidable air umbrella over the merchant ships awaiting escape and actually provide air escort for them till they reached the waiting fleet. They knew that our tiny force of aircraft from VIKRANT could never hope to challenge the air cover and we could at best watch the trapped animals getting away from our clutches.

"Summing up the appreciation, we came to the following conclusions:

- A critical point was being reached in the war and the Pakistanis were desperate and would try to break out at the earliest opportunity.
- For this purpose, they had at least five merchant ships ready and camouflaged in Chittagong. They had made desperate attempts to make the runway at Chittagong sufficiently serviceable to take light aircraft and helicopters.
- The safe arrival of the convoy RK 623 would be the starting point of putting their "Scorched Earth Plan" into action.
- The removal of VIKRANT from the scene of operations would ease the way to a break out. The Pakistanis must have hoped that we would withdraw VIKRANT to "get out of the way of the Seventh Fleet".
- A break-out of ships could be facilitated by the Seventh Fleet providing an impregnable and continuous air umbrella till they joined the surface forces of the Seventh Fleet.

"Having thought out the various possibilities, it was necessary to plan out our line of action. Clearly, everything turned on the merchant ships assembled in Chittagong for the actual troop carrying. Not an instant must be lost in destroying or so heavily damaging them as to make them totally immobile. Time was running out.

"Having spent the whole forenoon of 11 December on the above thoughts and a series of discussions with Admiral Nanda as well as my army colleague Jagjit Aurora, I signalled the Fleet at 1.15 PM as follows:

- Appreciate enemy with senior officers including FOCEP planning major breakout and will try to get away by hugging the coast. Senior officers may try to escape by air. Approaches to harbour likely to be mined.
- Your mission (i) Put Chittagong airport out of commission; (ii) Attack ships in harbour by air and surface units if they break out.
- This is undoubtedly the most important mission of the war in the East. The enemy ships must, I repeat, must, be destroyed. Good Luck.

"The results of the day's work were summed up by FOCEF in a signal to FOC-IN-C EAST as follows:

BE PLEASED TO REPORT THAT AT THE END OF TWENTY-FOUR HOURS OF CONTINUOUS SORTIES COMMENCING 111930 INVOLVING CONSTANT ALIZE RECCE AND BOMBING AND TWENTY EIGHT HAWK SORTIES, COX BAZAR AND CHITTAGONG AIRFIELD HAVE BEEN RENDERED INOPERATIVE IN THE NEAR FUTURE. THERE IS NO MERCHANT SHIP OF ANY SIZE IN THE CHITTAGONG HARBOUR OR APPROACHES WHICH HAS NOT BEEN STRUCK AND INCAPACITATED. THERE IS A COMPLETE ABSENCE OF SHIPPING ALONG THE ENTIRE COAST FROM CHALNA EASTWARD THROUGH MEGHNA SANDWIP UP TO COX'S BAZAR AND SOUTHWARD.

"In addition to the air strikes, we also decided to carry out a surface bombardment of Cox's Bazar to obviate even a marginal use of the aerodrome there by any type of aircraft.

"There could now be no question whatsoever of evacuation of the West Pakistani Army by sea and General Manekshaw's warning: "Nobody can reach you from the sea. Chittagong, Chalna, Khulna, Mongla are all totally blocked," was entirely meaningful.

"To make absolutely sure, I thought of a deception and sent this signal to Naval Headquarters.

I SUBMIT THAT SHOULD GOVERNMENT DECIDE TO PREVENT SEVENTH FLEET APPROACHING CHITTAGONG IN ORDER TO BUY TIME SUGGEST ANNOUNCE THAT MINING OF APPROACHES HAS BEEN CARRIED OUT. FOR FAVOUR OF CONSIDERATION".

Lt Gen Jacob who was Chief of Staff, Eastern Army HQ, recalls:

"Admiral Krishnan was very worried. He rang me up on 14 December and asked "What is this about"? I told him "I am already talking to Lt Gen Niazi about his surrender. If on the 14th, the Americans are in the Straits of Malacca and the cease fire is to come on the 15th, how can the American naval task group move up to the North Bay of Bengal in time to give them any help? Why then are you worried"? He seemed to be obsessed with the ENTERPRISE Task Group. I don't know why".

In his book 'We Dared' Admiral SN Kohli states:*

"On one of my visits to the Soviet Union, Admiral Gorshkov mentioned to me that he had a "brigada" of submarines following the ENTERPRISE squadron. It is now known that Gorshkov surfaced all the Soviet nuclear submarines in the Indian Ocean when the US satellite was overhead the 7th Fleets incursion into the Bay of Bengal".

Prof PN Dhar, the Secretary to the Prime Minister in 1971, recalls:

"The impression that the ENTERPRISE was a response to the Soviet move to help us is just not correct. The ENTERPRISE group was followed by the Soviets and not the other way round. The Soviets did tell us where the ENTERPRISE was, they had their own way of checking on ENTERPRISE's progress and they did keep us informed about that. And that is why the American Embassy here was a little surprised at the nonchalant attitude of the Government of India".

Analysis and Comment

The basic issue which precipitated the despatch of the ENTERPRISE Task Group towards India was America's assessment that after completing operations in East Pakistan, India would move its forces to regain territory in Pakistan Occupied Kashmir. In the face of the Indian onslaught, the Pakistan Army and Air Force in the West would be shattered. The elimination of armoured and air forces would make West Pakistan defenceless and it would then disintegrate. America was well aware that Pakistan Occupied Kashmir was disputed territory and not recognised by India as part of West Pakistan. However, since the disintegration of West Pakistan, an American ally, was totally unacceptable, America disregarded every Indian assurance that it had no intention of attacking West Pakistan or taking any Pakistani territory. Instead America kept on seeking assurances that India would not try to regain territory in Pakistan Occupied Kashmir.

Mr LK Jha was India's ambassador in Washington in 1971. Responding to Mr Kissingers memoirs, he stated:**

"Turning now to the second charge that India was determined to dismember West Pakistan, Kissinger makes much of the fact that while I gave the assurance that we had no intention whatever of making any territorial gains in the West, with respect to portions of Kashmir under Pakistani occupation I could give no such specific assurance. Kissinger concedes, what the USA was not prepared to admit at the time, that "on December 3 he (President Yahya Khan) launched his army into an attack in the West". Then, the US asked me for assurances from India of a kind which would reward Pakistan for its attack by our agreeing to treat Pakistan Occupied Kashmir (POK) on par with the other provinces of Pakistan. Further Kissinger does not bring on record that, while giving India's answer, I also asked Under Secretary Irwin whether he was in a position to give India the counter assurance that if Pakistan succeeded in occupying any part of Jammu and Kashmir across the cease-fire line it would not annex it to POK. If not, I asked, how could India possibly give a one-sided assurance to USA on the subject? Jack Irwin admitted that he had no

* Page 21.
** India Today November 1-15 1979.

such assurance in his pocket and he could not, without asking Pakistan, give it to me. He was without a positive response from Pakistan till the day on which India declared a unilateral cease-fire".

This American uncertainty on India's intentions in Pakistan Occupied Kashmir was compounded by America's specific treaty commitments to support Pakistan against Indian aggression. In the context of the global geopolitical considerations recounted by Mr Kissinger, America's despatch of the ENTERPRISE Naval Task Group was a symbolic gesture, and Russia's sending its Naval Task Group was an equally symbolic gesture. India's unilateral offer of a cease fire reassured all concerned that India had nothing to gain from the disintegration of West Pakistan.

Dr KB Lall, who was the Defence Secretary in 1971, recalls:

"After Gen Niazi's surrender on 16 Dec, lengthy discussions were held in New Delhi regarding a unilateral cease fire. There were two schools of thought. One in favour of an immediate unilateral ceasefire. The other in favour of consolidating the gains made before declaring a unilateral ceasefire. I recall a discussion on whether the disintegration of West Pakistan was at all in India's interest. My view was and is that the disintegration of West Pakistan would only serve to bring the turmoil of Central Asia to our doorstep on the Punjab border. It was preferable by far to keep it further away on Pakistan's Western border".

It is clear from Mr Dobrynin's account that at the highest geopolitical level, both America and Russia clearly knew each others moves and were acting in concert to minimise escalation.

Whilst the gesture of sending American and Russian naval task groups towards the Bay of Bengal evoked public appreciation in Pakistan and India respectively, there were no risks of any clash between the opposing naval task groups. Indeed, there is a view that the surfacing of the Soviet submarines when a US satellite was passing overhead was to enable the American Task Group to know where the Soviet submarines were and thus avoid incidents due to mistaken identity.

In India, the political level accurately recognised the deployment of the ENTERPRISE Task Group as a symbolic gesture. At the naval level, there was considerable concern. Vigorous action was taken by the Eastern Naval Command to thwart possible attempts to evacuate troops from East Pakistan.

After the war, the ENTERPRISE incident awakened awareness at the higher decision making levels in India of the finesse with which naval forces could facilitate diplomacy. This awareness, combined with the public appreciation of the Navy's other achievements in the 1971 war, helped to reinforce naval proposals for a stronger Navy.

The Amphibious Landing at Cox's Bazar
Operation Beaver

Preamble

The Army's initial plans for military operations did not envisage the need for any amphibious operation. The Army would help in occupying territory in East Pakistan from which the Provisional Government of Bangladesh would operate. With the help of their Mukti Fauj and the Mukti Bahini, the Provisional Government would gradually enlarge the area under its control until the eventual liberation of Bangladesh from Pakistan. The ten million refugees in India could then return to their homes.

The seizure of East Pakistan's Pussur river ports of Khulna- Chalna-Mongla was to be a purely Army operation. Whilst working out their plan for the occupation of territory in East Pakistan, Headquarters Eastern Army Command in Calcutta foresaw the problem of how to ferry large numbers of troops across the River Meghna. Maj Gen Jacob, was the Chief of Staff in Eastern Command Headquarters in 1971. In his book "Surrender at Dacca", he has stated:*

"I had earlier asked the Flag Officer Commanding-in-Chief Eastern Naval Command,

* Pages 62.

Vice Admiral Krishnan, whether we could use his landing craft to ferry troops across the river Meghna. Cdr Dabir, who had brought one of them to Calcutta in June, stated that landing craft of Russian origin were unsuitable due to their draught. The question of crossing the Meghna had to be shelved and we shifted our attention to the possibility of obtaining additional helicopters".

Vice Admiral N Krishnan was the Flag Officer Commanding in Chief Eastern Naval Command (FOCINCEAST). In his book "No Way But Surrender" he states:*

"Since our aim was on all embracing one of the destruction of enemy forces, our plan required flexibility wherein several options would be individually or collectively implemented. Accordingly an omnibus plan was evolved. One of the courses of action in this omnibus plan was "Diversionary or real amphibious landings" for which elements of the Naval Garrison from the Andamans would be trained."

In September 1971, Army and Naval Headquarters studied the implications of undertaking an amphibious operation in East Pakistan in case this contingency arose. In his book 'Sailing and Soldiering in Defence of India', Cdr SD Sinha, who was serving in Naval Headquarters in 1971, has stated:**

"An operation of landing troops south of Cox's Bazar from ships had been mooted as early as September 1971. Cdr Vernon F Rebello, along with an Army Lt Col and myself were formed up as a planning group in Naval/Army HQ. However, after about a month, the operation was cancelled".

Cdr Rebello recalls:

"One of the options being considered was that an amphibious landing might be required in East Pakistan. There was concern that the United States might land an amphibious force in the vicinity of Chittagong and establish a beachhead so that Pakistan's right to the territory would be maintained.

"But the planners neither had any intelligence of the area, nor the wherewithal nor proper charts nor gradients of feasible beaches. So it was a futile exercise to plan an amphibious operation. However, certain forces were earmarked by the Army in case the eventuality arose".

Though amphibious operations were not specifically listed in the tasks which Naval Headquarters gave to Eastern Naval Command, the FOCINCEAST's plan catered for an amphibious assault. The three amphibious ships (LSTs) in the Navy were the old, Second World War, Landing Ship MAGAR and the two newer, smaller, Polish built Landing Ships, the GHARIAL and the GULDAR. All three LSTs were already in Eastern Naval Command and were constituted as the 4th Landing Craft Squadron. "4th LS."

In the months till December 1971, MAGAR was modified to carry oil for refuelling VIKRANT. GHARIAL and GULDAR continued to be deployed for logistic duties, ferrying men, rations, spares and stores to the Eastern Fleet and to the Andaman Islands.

On 1 December, Naval Headquarters informed Eastern Naval Command at Visakhapatnam and Eastern Army Command at Calcutta that an amphibious landing may be required to land a battalion of the Army and an element of the Naval Garrison at Cox's Bazar.

On 2 December, MAGAR and GULDAR were in the Andamans, and GHARIAL was enroute to Paradeep from Visakhapatnam.

In response to Pakistan's air attacks on Indian airfields on the evening of 3 December, full scale hostilities against East Pakistan commenced on 4 December. By 8 December, the Indian troops which had entered from West Bengal had captured Jessore and arrived at the ferry on the River Madhumati. The Indian troops which had advanced from eastward in Tripura were within reach of three key points on the eastern bank of the River Meghna: Ashuganj, Daudkandi and Chandpur, the capture of which would lay open the approaches to Dacca from the east. Indian troops were also advancing towards Dacca from the north.

The Eastern Army's rapid advance between 4 and 8 December led to an assessment that Pakistani troops might attempt to escape southward into Burma past Cox's Bazar.

Captain (later Admiral) Dawson, was the Director of Naval Operations in 1971. He recalls:

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* Page 28.
** Page 154.

"At the height of the land battle in East Pakistan, it became evident that the Pakistan Army, numbering about 90,000 troops would try to retreat from the area by one of the following means:

- By air through Ceylon if that country permitted the movement or by cutting across the southern peninsula of India.
- By sea in Pak merchant ships which were at that time berthed in Chittagong, Khulna and Chalna.
- By the land route into Burma.

It was assessed that it would not be possible for Pakistan to evacuate the large number of troops by air owing to its inadequate air lift capabilities. Since the sea lift capability had been neutralised by the air strikes from VIKRANT, the only other means available to the Pakistani Army was by the land route from Cox's Bazar to Burma. To prevent this from happening, it was decided, though at very short notice, to mount an amphibious landing at Cox's Bazar".

On this very same day, 8 December, an Argentinean resolution in the United Nations General Assembly, demanding a cease fire and withdrawal of troops, was passed by an overwhelming majority. The disadvantages of indefinitely defying the UN's ceasefire resolutions which had been stalled, thanks to the Soviet Union's veto, combined with the need to conclude military operations in East Pakistan as swiftly as possible.

Operation Beaver

On 9 December, the Chiefs of Staff decided to launch an amphibious operation to cut off the escape route into Burma of any Pakistani troops retreating southwards. NHQ directed the Eastern Naval Command to carry out Operation Beaver "To land and support a battalion group at dawn on 12 December to capture Cox's Bazar".

In his book, Lt Gen Jacob has stated:*

"Gen Manekshaw telephoned me on 9 December ordering us to send a force by sea to Cox's Bazar to prevent Pakistani troops escaping from there into Burma. I told Gen Manekshaw that there was no indication of this, but he was adamant. I pointed out that we had no troops trained in amphibious operations, that there were no life belts, scrambling nets or suitable landing craft and most importantly, the troops he wanted us to send (ie the Gurkhas) had never been to sea. He cut me short saying that these were the orders of the three Chiefs of Staff".

Naval Headquarters immediately deputed two officers to Calcutta. Cdr (later Commodore) RP Bhalla was nominated the Naval Force Commander. He was accompanied by Cdr VF Rebello who had recently undergone the Amphibious Warfare Course in the USA. Cdr Rebello recalls:

"Suddenly, at 3 o'clock in the afternoon of 9 December, the Director of Naval Operations came to me and said "Pack up and go to Calcutta. You have to do an amphibious landing. I have fixed up a merchant ship for you. The two LSTs will meet you at sea, you transfer the troops to the LSTs. VIKRANT will give you air cover. One of the gun frigates will give you gunfire support and will give you the communication facilities for air support.

"When we arrived in Calcutta on 10 December, the Navy was nowhere to be seen. We met only the Trade Warfare officer who had gone and requisitioned a coal carrier, Vishwa Vijay, who was carrying bulk coal from Calcutta to Tuticorin".

On 10 December, Maj Gen Jacob chaired a meeting. Cdrs Bhalla and Rebello were present. Two decisions were taken. The landing scheduled for 12 December would have to be postponed since the troops to be embarked were being pulled out from the front line and had yet to assemble in Calcutta. The second and more important decision, which changed the nature of the subsequent operations, was that instead of the force being landed in Cox's Bazar, it would land on a beach further south near the town of Ukhia. The Army felt that if Pakistani troops were escaping into Burma, they would first secure Cox's Bazar; a landing there would therefore meet with opposition. The beach at Reju Creek was closer to Ukhia town, which was located on the main road to Burma and a landing on the beach there was unlikely to be opposed.

Commodore Bhalla recalls:

"The place where the amphibious landing was to take place had not been very clearly spelt out. It was to take place south of Cox's Bazar, in the vicinity of Reju Creek, where some practice amphibious landings had taken place during the

* Page 124 et seq.

Second World War. Cox's Bazar was considered to be heavily mined and therefore unsuitable for landings. It was clear to me that we did not have any detailed knowledge about the beach conditions and also that some runnels were present."

Cdr Rebello recalls:

"The beach was selected by Gen Jacob because he had practised on that beach in the Second World War".

In his book, Lt Gen Jacob has stated:*

"At the meeting in Eastern Command with the Navy, we discussed the operation. I had taken part in several amphibious operations and was aware of the special training and equipment required. I had served in Burma during the Second World War and had trained for amphibious operations on the beaches stretching south of Cox's Bazar, I was familiar with the coastline and beaches there. The beach at Ukhia was gently sloping and there were a number of runnels on the approaches to the beaches. I brought this to the notice of the Navy.

"As life belts and other necessary equipment were not available and the troops to be used had not seen the sea, I persuaded the Navy to beach the landing craft and refloat them at high tide. The troops would then land dry shod. The Navy agreed, but later changed its plan with disastrous consequences at sea.

"The force was to be transported in a merchant ship that was to sail on 10 December and be in position by 12 December. Two LSTs were to transfer the troops from the merchant ship at sea and land them dry shod. The aircraft carrier VIKRANT was to provide air and fire support. The force, code named 'Romeo', was hurriedly assembled. We earmarked Headquarters of 8 Mountain Artillery Brigade commanded by Brig SS Rai, 1/3 Gurkha Rifles, two companies of 11 Bihar and a detachment of artillery. A naval contingent of 150, which was to participate, did not arrive. The force sailed from Calcutta on 12 December, two days behind schedule".

As a result of the Army's delay in embarking troops, Naval Headquarters had to postpone Operation Beaver by two days from 12 December to 14 December. Meanwhile on 10 December, America announced the despatch of a Naval Task Group, headed by the nuclear powered aircraft carrier ENTERPRISE, towards the Bay of Bengal. This resulted in NHQ ordering the immediate embarkation of troops so that VISHWA VIJAY, the merchant ship requisitioned for this purpose, could sail from Calcutta as early as possible and land the troops on 14 December. VISHWA VIJAY eventually departed from Sandheads, off Calcutta, in the early hours of 13 December.

The Regimental History of the 1st Battalion Gurkha Rifles states:

"On 10 December, the battalion was ordered back to Fort William to form part of a Task Force "Romeo" under Brig SS Rai which was allotted the task of moving up the coast of East Pakistan and cutting off the withdrawal routes of enemy forces. At 1830, hours that same day orders were received to move to Kidderpore Docks immediately for loading into a merchant navy ship, 'VISHWA VIJAY'.

"Romeo Force' consisted of 1/3 Gorkha Rifles, two Companies 11 Bihar, 881 Light Battery, an Ambulance Platoon and an ASC Detachment.

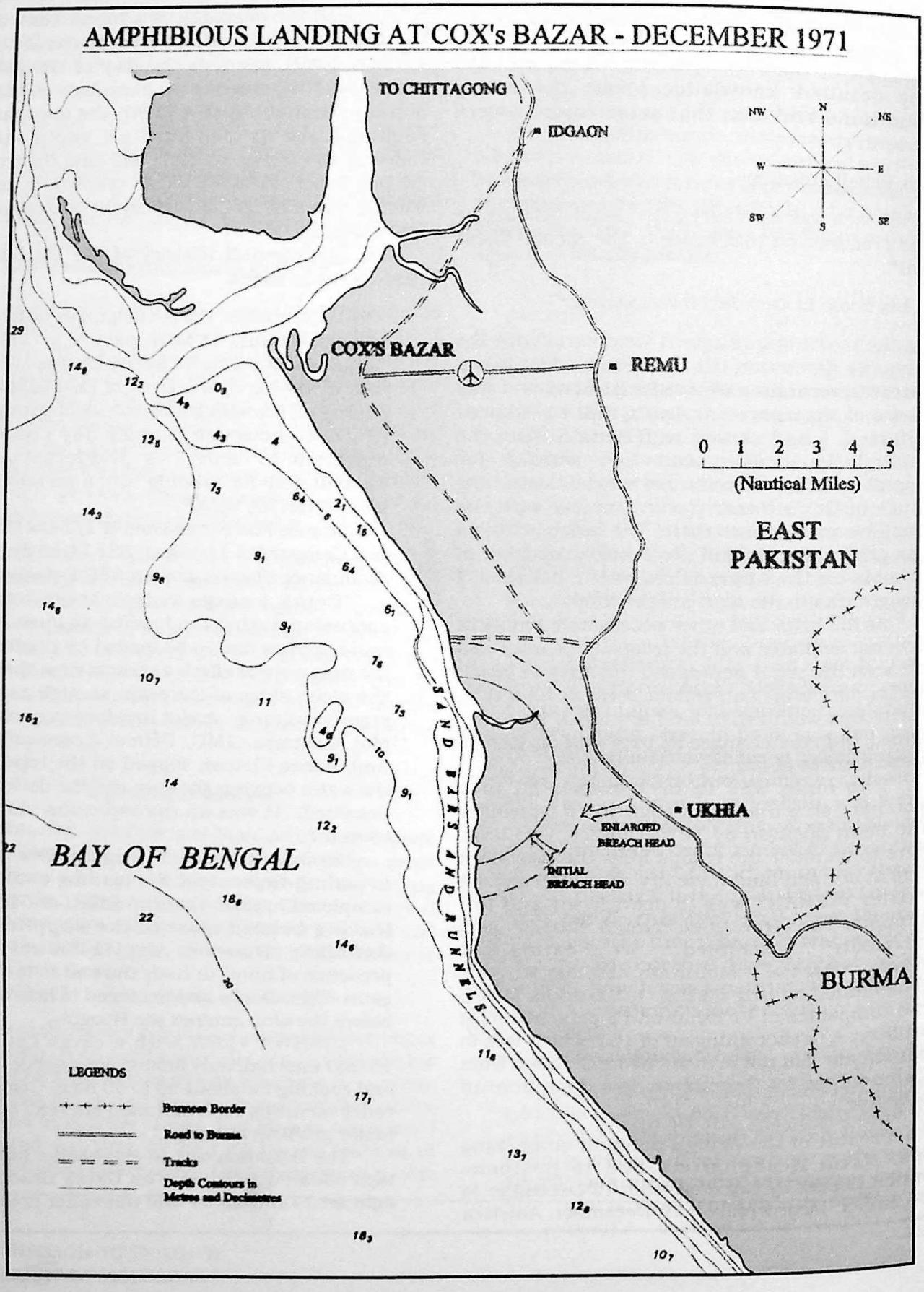
"Being a cargo vessel, there was much confusion during the loading as guns, vehicles and supplies had to be loaded by cranes, whilst the men were to climb a vertical rope gangway up the steep sides of the ship, as high as a three-storey building. A sad incident occurred when Maj Mastana, AMC, Officer Commanding the Ambulance Platoon slipped off the ropeway into the water between the ship and the dock and was drowned. It was an inauspicious start to the venture.

"As the high tide off Hooghly River is crucial to sailing times, and the loading could not be completed in time, the ship sailed at 0445 hours leaving behind most of the supplies of the Battalion. However, Maj HS Jaswal had the presence of mind to rush the stores to the flood gates of the Docks and managed to load all stores before the ship entered the Hooghly.

"VISHWA VIJAY with a cargo capacity of 15,000 tons had only limited crew space for living and cooking for about 50 to 60 men. Cooking and toilet facilities for 1500 men therefore posed a major problem onboard'

"The Battalion was to establish a beachhead near Nidania Airodrome on Ukhia Beach at first light on 14 December and thereafter erect blocks

* Ibid.


AMPHIBIOUS LANDING AT COX's BAZAR - DECEMBER 1971
TO CHITTAGONG
IDGAON
COX'S BAZAR
REMU
NW
N
NE
W
E
SW
S
SE
0 1 2 3 4 5
(Nautical Miles)
EAST PAKISTAN
UKHIA
ENLARGED BREACH HEAD
INITIAL BREACH HEAD
SAND BARS AND TUNNELS
BAY OF BENGAL
BURMA
LEGENDS
Burmese Border
Road to Burma
Tracks
Depth Contours in Metres and Decimetres

at Remu and Idgaon to prevent the escape of East Pakistan forces into Burma.

"For the initial landing, fire support was available from INS VIKRANT, INS BEAS and INS BRAHMAPUTRA. After the landing, fire support was to be given by the Light Battery and own 4.2 inch mortars.

"Sailing across the Bay of Bengal on 13 December, the Task Force reached the rendezvous with INS VIKRANT and LSTs 'GHARIAL' and 'GULDAR' on the night 13/14 December. A submarine alarm postponed the landing to 15 December.

"On night 13/14 December the Battalion was transshipped to the LSTs as follows:

A and B Companies	-	INS 'GHARIAL'
C and D Companies	-	INS 'GULDAR'
	-	with Battalion HQ

B Echelon of the Battalion remained on VISHWA VIJAY. Naval divers who had reconnoitered the beach raised an 'All Clear' flag to denote that the beaches were not mined and no enemy were present".

VISHWA VIJAY was a bulk coal carrier and urgently needed scrambling nets to assist disembarkation of troops. These were to have been delivered to her at Sandheads. The scrambling nets never arrived and this was later to delay the transfer of troops from VISHWA VIJAY into the LST's. The particulars of frequencies for communicating with VIKRANT had also been placed on board VISHWA VIJAY for VIKRANT to collect at Sandheads. This too never took place because VIKRANT was busy with air strikes. The inability to communicate delayed VISHWA VIJAY:s R/V with VIKRANT.

Meanwhile MAGAR had been sailed from Visakhapatnam on night 9/10 December with one company of the Andaman Naval Garrison embarked to rendezvous with VISHWA VIJAY. When VISHWA VIJAY's sailing got delayed from 10 December to 12 December, MAGAR was directed to proceed to Paradip and await further instructions. As soon as VISHWA VIJAY sailed from Calcutta, MAGAR was given a new position to rendezvous VISHWA VIJAY. Enroute to this R/V, MAGAR sighted a yellow object which looked like a submarine.

Lt (later Commodore) Man Singh was the Navigating Officer of MAGAR. He recalls:

> "It was in the forenoon, on an easterly course that this object was sighted on the horizon. There was no doubt in anybody's mind at that time that this was a submarine on surface. A flash signal to this effect was made to all concerned and the R/V with VISHWA VIJAY was cancelled. When we approached this object, we found that it was an abandoned boat at anchor. We suspected that this may be a ploy and that there may be some explosive charges kept in it. So we fired on this boat. After firing, we sent a few personnel to the boat. Finally we hoisted this boat on board".

As a result of MAGAR's report, VISHWA VIJAY altered course away from the submarine's reported position. By the time the confusion had cleared and VISHWA VIJAY resumed course, precious time had been lost.

Commodore Bhalla recalls:

> "When we were about six to seven hours out of Calcutta, we received a signal that there was a submarine which had been sighted right ahead of us and that we should avoid this. So we hugged the coastline and retired towards Calcutta.Some three or four hours later, we received the signal that the coast is clear. That meant that we could not carry out the landing on 14 December".

Meanwhile the Flag Officer Commanding Eastern Fleet, FOCEF, had assembled the landing force for refuelling in preparation for the operation. Whilst refuelling, the Commanding Officers of GHARIAL and GULDAR discussed the forthcoming landing and agreed that the site selected for the landing was unsuitable. GHARIAL signalled FOCEF that the LST's required a gradient between 1 to 30 and 1 to 70 and that available information indicated that the beach gradient was not suitable.

VISHWA VIJAY eventually R/V'd the Eastern Fleet on the night of 13/14 December. A meeting was immediately held on board VIKRANT the same night. It was decided that:

- The landing would take place on the 14th morning as planned.
- Troops should start transferring from VISHWA VIJAY to the landing ships GHARIAL and GULDAR as quickly as possible.
- BRAHMAPUTRA would land the divers to recce the beach gradients and place flags at the places where the landing ships were to beach.
- VIKRANT's aircraft would provide air support.
- MAGAR would go back to Calcutta to bring the petrol and medical stores which would be required by the troops after landing and which had inadvertently been left behind. As a result, the Naval Garrison personnel embarked in MAGAR would be landed later.

Without scrambling nets, the transfer of troops and their stores from VISHWA VIJAY to the LST's during night 13/14 December took longer than expected.
Cdr Rebello recalls:

"We were very lucky when we transferred the troops from VISHWA VIJAY to the LSTs. Fortunately, the wind and sea were calm, so we were able to do it without any serious problem. Even then, we had some dicy moments in landing the jeeps and ammunition boxes".

It became clear that the landing could not take place at dawn on 14 December. The Naval Force Commander therefore made a signal on the 14th morning, postponing the landing to 15 December.
Cdr Dabir, the CO of GULDAR, recalls:

"There was a briefing by Cdr Bhalla at which Cdr Rebello, Lt Cdr AK Sharma and myself were present on board VISHWA VIJAY. I expressed my anguish at being forced to undertake an operation which firstly was most likely to be a failure and secondly could have been done by other means in a surer and cleaner manner.

"I had specifically said that instead of carrying out the ill advised landing on the beach, which had two to five sand bars and a 5 to 6 knot cross current all the time except for a short period of slack water, it would be easier to land the troops in the Cox's Bazar directly on the jetty or via local dhows.

"Lt Cdr Martis came in to confirm that he would recce the beach and about 60 to 80 yards seaward of the area. The recce'd area would be marked by a set of two flags on the beach."

Cdr (later Commodore) AK Sharma, the CO GHARIAL recalls:

"The first time I had an opportunity to discuss the landing with Cdr U Dabir, who was commanding the GULDAR, was when we were both alongside the VISHWA VIJAY for embarking troops. He said to me "I don't think this beach is suitable." I said "Yes. I agree with you, the gradient of 1 in 200 is not suitable. I am making a signal to FOCEF that we need a gradient of between 1 in 30 and 1 in 70.

"When making the signal to FOCEF that this beach was unsuitable for beaching because of the gradient, I did not wish to give the impression that I was chickening out of the operation. I had therefore said "I am ready for execution in all respects. Request instructions." That meant that the ball is in your court. I remember the reply came "Go" and I went".

VIKRANT, who had been at sea since 2 December, was scheduled to refuel at Paradip on 14 December. The postponement of the landing to 15 December meant that VIKRANT would not be available on the morning of 15 December. On the 14th, FOCEF transferred from VIKRANT to BRAHMAPUTRA. VIKRANT's aircraft attacked and recce'd the landing area before departing for Paradip.

On the night of 14/15 December BRAHMAPUTRA landed the divers by boat. The divers carried out the beach recce, sent back information that the beach gradient of 1 in 40 was suitable for landing and suggested that the landing ships should beach at 0530 the next morning when it would be slack water at low tide.

Lt Cdr (later Cdr) G Martis was the diving officer in charge of the beach recce. He recalls:

"We landed on the beach just after 2100 on 14 December. Our instructions were to recce the gradient and give all the other information necessary for a successful landing. At the time we were carrying out the recce, it was slack water at low tide. A similar condition was to prevail the next morning at dawn. So we had a clear idea regarding the gradients and the sandbars. Between the beach and the deeper water, there was a bar. We sent a message by hand of the boat to FOCEF that the landing ships should come at dawn, at the time of slack water at low tide in the morning. We stayed ashore to check whether there was any Pakistani build up and found there wasn't any".

Based on the report received from Lt Cdr Martis, FOCEF signalled to the landing force that beach conditions were suitable, that the landing would take place at 0530 on 15 December and that divers would mark the spots where the LST's should beach.

Cdr Martis recalls:

"Next morning we were eagerly waiting for the GHARIAL and GULDAR to come. To our horror, we found that both the vessels were almost a kilometre south of the point which we had recce'd. This took us by surprise. We were in no position to attract their attention. Afraid that the tide may turn and ruin the entire operation, we waved at them. Finally they located us and came to the correct spot around 0730 in the morning, by which time the tide had turned. There was a heavy swell and the bar on which the GHARIAL

and GULDAR were to have landed as per our previous recce was fully submerged. Both the LST's could not cross the bar.

"Between the bar and the beach, the water was now deep. The Gurkha soldiers were asked to land. Not realising that they were heavily weighted with rifle, helmet, boots, grenades, rations, water etc, one by one they began to jump. They might have thought that this is how wars were fought. To my horror, one by one they went down. I shouted to GHARIAL to stop the operation, but there was loud music and announcements saying "Bhartiya Jawano, jump into the water" and all sorts of martial songs were being played on the loudspeaker. Finally our divers literally had to shout and make desperate signals. Then only they realised that the Gurkhas were drowning. They were hardly five feet tall. At this stage, GULDAR withdrew without landing any troops. The landing operation was stopped temporarily. The Gurkha bodies were recovered. We managed to revive two, but the other three we could not help.

"Then there was an apprehension that the remaining Gurkhas would not land because, if they came to know that their comrades were dead, they would not take part in the war. So we were advised to tell them that they were unconscious and we would take care of them. Their bodies were shifted and thereafter we did the landing, passing a rope from the ship to the beach and the divers assisting the Gurkhas to get to the beach holding on to the rope".

Cdr Rebello recalls:

"I had given specific instructions to the Battalion Commander and to the Company Commander that the Gurkhas should remove all their equipment, except their pouches of ammunition and small arms, and go across. Their remaining equipment would be transferred later. But being Gurkhas, they decided that it was against the law to remove their battle order. They went with full battle order which means 85 pounds of weight. So what happened was that though they all had their life jackets on, they drowned with their life jackets".

Cdr Dabir, the CO of GULDAR recalls:

"Both GHARIAL and GULDAR started the run for beaching in the early hours, at nearly slack water. GHARIAL went in confidently, let go the rear anchor when about one cable from the beaching point. The rear anchor wire was paid off apparently a little too fast, perhaps to avoid straining the anchor hold during the run in. She put the nose on the last sand bar, which I could not make out clearly, opened the forward doors and lowered the landing ramp. This occurred about five minutes before GULDAR made a touch down about 2 cables to the north of GHARIAL.

"While running in, I had deliberately ordered trimming the ship with the fore-end down to the maximum extent by flooding the forward ballast tanks. This would ensure that firstly the fore-end should touch bottom first and thus leave the rear-end and propellers clear of bottom. Secondly, the fore-end would thus sit hard in the mud/loose sand and prevent forward yawing. The rear anchor was dropped at the earliest calculated point to ensure that the anchor wire stayed at as low an angle as possible. At steep angles, the wire tends to reduce the ships hold in the fore-and aft direction, thus allowing the stern to yaw or drift with the cross-current. Also at steep wire angles, the anchor breaks ground hold easily, whereas at shallow angles it tends to dig in firmly. The calculations and planning, with possible alternatives for changing situations, had kept me awake the whole of the previous night. Each key officer and sailor, including engine room hands, was briefed individually to report back to the bridge any changes or unforeseen occurrences in a specific understandable manner.

"GULDAR's fore-end touched down fairly hard and dug itself in on what appeared to be the third sand bar from seaward, leaving about a 100 yards of water to be traversed to reach the beach. After lowering the landing ramp, the depth of water between the ships fore-end and the beach was tested by two sailors wearing life jackets, held by a line controlled from the foxle. Their boat hooks showed that the depth of water increased sharply after the sand bar on which ship's fore-end rested. When it was seen that the entire boat hook was immersed, the sailors were recalled.

"My estimate was that the depth of water would be six feet or even more at the deepest point between the sand bar and the beach. In consultation with the Army officers on board, we decided that it would be foolhardy to land the troops, knowing fully well that almost all of them, being short in height, would be drowned.

Accordingly, I made a signal to FOCEF who was embarked on BRAHMAPUTRA and requested permission to unbeach and anchor off the beach. Whilst awaiting reply, we had to drop both the forward anchors to prevent too much yawing with the increasing surf after the slack water period. In the meanwhile, I concentrated on seeing what GHARIAL was doing, through binoculars and a telescope. I saw that her stern was sitting on the bottom and rising fully with the surf.

"I immediately requested CO GHARIAL to come on our voice net and told him of the danger he was in. I explained that with the stern touching the bottom he may not be able to use the propellers at all because of the peculiar design of the gearless, high RPM, static clutch propulsion system. Further, it appeared that the ship was trimmed down aft, which could lead to the bows loosening from the bottom and tending to swing the ship abeam to the surf. Lt Cdr AK Sharma told me that he would discuss this aspect with FOCEF and his staff. A short while later, he came back on the line to tell me that FOCEF had considered these aspects and ordered him to land the troops. Very shortly thereafter, I could see commotion on GHARIAL's foxle, which I came to know later was due to some soldiers getting swept away by the current. I could barely see these persons. But from our foxle, some sailors saw the soldiers struggling to hold on to the line which had been passed from GHARIAL's fore-end to the beach. It looked as if they were finding it impossible to hold on to the line simultaneously while trying to hold on to their helmet and rifle.

"In the meanwhile, it was difficult for GULDAR to remain beached safely. The surf was increasing and the bows were yawing far too much because they were coming up from the bottom off and on, only to sit again with a small thud. Any more increase in height of surf could lead to heavy damage to the fore end. The inadvisability of landing troops made continuing to remain precariously beached an unacceptable risk to the ship and the men. I started unbeaching without awaiting FOCEF's reply to my signal. Whilst withdrawing, until the stern anchor was aweigh, we had considerable difficulty in remaining perpendicular to the surf and avoid broaching to."

Commodore AK Sharma, the CO of GHARIAL recalls:

"When we beached, we found that we were far away from dry land and the troops had to wade through water for quite a distance before they could get on to the beach. And in that wading process, we lost three Gorkhas. They drowned in spite of the fact that we had rigged nylon ropes from the bows of the ship. But these heavily loaded Gorkhas went down and were lost".

At this stage, GHARIAL retracted from the beach and anchored. It was decided that some troops be landed by ships boats. Almost a platoon was landed.

Commodore Bhalla recalls:

"When I fetched up on the LST, I found that she had not been able to land the troops with equipment, but they had landed a platoon or so ashore, who were patrolling and guarding the area around the beach. Seeing that we had lost our opportunity and that surprise had been completely lost, I swam ashore from the LST to go and find fishing boats in Cox's Bazar which could ferry the troops ashore".

Commodore Sharma recalls:

"I came off that beach, anchored and informed FOCEF in BRAHMAPUTRA that the gradient was not suitable. However, I was told by FOCEF that the troops must be landed and go in. FOCEF was on board for a long time after my first beaching. I went in again. This time because the tide had started receding, I beached on another sand bar which was even farther out than the first sand bar. I got stuck and soon a time came when the ship started broaching, beam on to swell and wind, and it was becoming more and more difficult to save the ship. By then, I had on board Rear Admiral Sarma FOCEF, the CO of BEAS Cdr Ramdas and the advisors from NHQ, Cdrs Bhalla and Rebello. Everybody was trying to tell me how to handle my ship. I remember having to shout "Shut up" and FOCEF saying "Yes, let's leave it to the young man, he knows what he is doing". And I must say that I had a lucky break. I told the Chief Engineer that I will give you just one more order and do what you can. I ordered Full Astern Both Engines and somehow the swell came along at the right time, the engines went astern at that time, the ship lifted a little and next thing I knew the ship was receding astern into deeper water."

Cdr Dabir, the CO of GULDAR, recalls:

"Anchored in deeper water, I was able to look at GHARIAL. What I saw was horrifying. GHARIAL was bobbing up and down with the surf, in a

broached to condition and coming down heavily on the sea bottom as the troughs passed her. I saw the life rafts coming off the ship and her mast shudder heavily. She appeared to be climbing the sandbar with every successive wave. Her rear anchor seemed to have come off completely. Realising the tremendous danger she was leading to, we quickly weighed anchor and proceeded as close as possible to GHARIAL. Several attempts to have a line passed by Coston Gun proved unsuccesful. Swimmers with life jackets were unable to take even a heaving line, because of the surf alternately rushing towards and away from the beach.

"Suddenly I saw a motor whaler coming towards us with Lt Cdr (later Vice Admiral) KASZ Raju in it. How he managed to steer the whaler and keep it from capsizing appeared miraculous. What was even a greater miracle, he was able to take a cordage line from GULDAR's bows to GHARIAL's stern. Soon we were able to pass a good size wire hawser. GHARIAL appeared to have connected the hawser to her rear anchor cable wire and paid it out under power slowly, before applying brakes.

"As soon as I saw that the wire was not being paid out, a cautious tug was given with only one engine going Dead Slow Astern for a short while. GHARIAL's stern seemed to come out ever so little in the first tug. A second tug and then subsequent tugs were applied every time GHARIAL's stern seemed to be going up with wave action. The tug was stopped immediately when the stern was seen to be going down. This was being done by using one engine ahead and one astern, while controlling the line with twin rudders. This was quite normal for these ships because the engines could be started only a limited number of times, depending upon the quantity of compressed air available in the bottles. Each time an engine's direction was to be changed, it had to be stopped and restarted in the new direction. There was always a danger of running out of compressed air and thus not being able to restart the engine till the compressor refilled the air bottles. Only a complete understanding of this unique system could enable good maneuverability in difficult situations.

"By increasing the RPM of the engine going astern for a short while as GHARIAL seemed to rise, and simultaneously neutralizing the turning effect by rudders, we were able to pull GHARIAL's stern, step by step (or rather tug by tug) towards deeper waters. The tugs were being applied very cautiously despite the urgency expressed by GHARIAL, because of two reasons. Firstly the towing wire could take only a limited strain and pulling against the surf's action any quicker would have resulted in exceeding that strain. Secondly, if the tow had parted, it would have been a Herculean task to pass a hawser again and GHARIAL may have again broached to during the time required for repassing the tow.

"On reaching slightly deeper waters, GHARIAL started using her propellers. But I could see that they were not having much effect. I suspected that much of the propeller blades were damaged or worn out when they were used against the sand and mud at the sandbar. At this point, the FOCEF appeared to have become very impatient. He ordered me directly on R/T to go full astern on both props and pull on a continuous basis. When I explained to him that this would be dangerous for the tow-line as well as for GHARIAL, he responded that I must go full astern regardless of the consequences. I could not disobey this direct order. After a prudent interval I started increasing the RPM on the astern going engine gradually. Luckily by the time the tow wire became fully taut, GHARIAL seemed to be in sufficiently deep water and with enough distance away from the beach. At that point, the engine which was going ahead was stopped and restarted in the astern direction. However, as soon as both engines were going Slow Astern, the tow wire snapped due to over strain. I had already warned all hands on our foxle and GHARIAL's quarterdeck to clear the deck before restarting the second engine astern. There were thus no casualties, despite the tow wire snapping with a great jerk.

"By then GHARIAL was in deep enough waters and her propellers were responding just adequately to give her mobility for reaching the anchorage. She was, however, shipping in water from several leaks and we all provided whatever pumps were available."

Commodore Sharma, the CO of GHARIAL, recalls:

"My problems did not stop at that. As soon as I came off the sand bar and anchored about half a cable away, most of the aft mess decks and spaces were flooded and the machinery spaces were just about six inches away from the holes.

Thereafter the help given by BEAS and the other ships and the use of all their pumps saved the situation. I was able to repair the damage quite a bit and go to Calcutta under my own steam".

Cdr Martis, the diver officer, recalls:

"GHARIAL withdrew as the tide was falling, and unfortunately sat on her own stern anchor. She was high and dry at low water. At that time, the distance from the highest water level at the time of landing and the lowest water was almost 50 meters. Had they come at the right time, they would have been able to land the troops on the bar and withdraw within a matter of half an hour and not suffer any casualty or damage at all.

"GHARIAL had a very bad stern trim because of shipping a lot of water at the stern. I carried out an under water inspection and found that the stern post was damaged, dented inward with a big crack and water was gushing in. The Engineer Officer carried out emergency shoring and pumped out the water."

The end position on the evening of 15 December was that:

- Only a platoon of troops had been landed.
- Carrying out a recce of alternative beaches was not practical.
- Pakistani forces were expected to surrender at any moment
- Cdr Bhalla had already swum ashore and proceeded to Cox's Bazar in local transport with the platoon already landed.
- It had therefore been decided that the remaining troops would be landed at Cox's Bazar itself, using local boats.

On arrival at Cox's Bazar, Cdr Bhalla, with the help of the Mukti Bahini, commandeered all available mechanised fishing boats to commence disembarking troops on AM 16 December.

Ships proceeded to Cox's Bazar overnight and anchored eight miles from the Cox's Bazar jetty, where weather and depth conditions were least likely to delay the landing of troops.

On 16 December, 600 troops were landed. After disembarking troops, GHARIAL sailed for Calcutta to effect repairs.

Despite the surrender of Pakistani forces in East Pakistan on PM 16 December, Naval Headquarters directed that the disembarkation of troops was to continue. On 17 December, 86 troops, rations, first aid and ammunition were landed.

The remaining 600 troops were landed on 18 and 19 December. VISHWA VIJAY transferred her troops to GULDAR by 18 December and sailed for Calcutta with the vehicles, none of which could be landed at Cox's Bazar. At midday on 19 December, GULDAR and BEAS sailed to rejoin FOCEF off Chittagong. This marked the completion of Operation Beaver.

The Landing Operation in Retrospect

The Reconstruction of Events

In retrospect, the sequence of events emerges as follows:

- The joint planners in Delhi had foreseen the possibility of a US Naval Group intervening in East Pakistan but concluded that we did not have the wherewithal to carry out a landing in the face of opposition.
- With the collapse of the East Pakistani troops by 8 December, the Chiefs of Staff decided to cut off their line of retreat into Burma and expedite the completion of operations in the East. On 9 December, General Manekshaw overuled Gen Jacob's protestations about the lack of preparation and NHQ ordered troops to be landed on 12 December to capture Cox's Bazar.
- On 10 December, the joint planners in Calcutta, apprehensive that a landing at Cox's Bazar would meet with opposition, decided to land at Ukhia a few miles further south, instead of at Cox's Bazar. The date of the landing had to be postponed to 14 December because the troops were still being withdrawn from the front line. These troops had never been to sea.
- On 10 December, the move became known of the American Naval Task Group towards the Bay of Bengal. The same evening, the troops in Calcutta were told to embark VISHWA VIJAY immediately. The embarkation of 1400 troops into a bulk coal carrier was disorderly and a fatal accident occurred. Embarkation was completed in the early hours of the 12th morning but some essential stores were left behind.
- VISHWA VIJAY reached Sandheads on the 12th afternoon and anchored, awaiting scrambling nets which did not arrive. The scrambling nets were essential for the troops to scramble into the LSTs. She sailed from Sandheads early on the 13th morning, but on receiving MAGAR's submarine sighting report, had to reverse course for a few hours. She was able to join up with FOCEF, VIKRANT and the LST's only on night 13/14.

- At the conference on board VIKRANT chaired by FOCEF on the night of 13/14, it was decided to try and land at first light on 14 December. Without scrambling nets, the transfer of troops from VISHWA VIJAY took too long. The landing had to be postponed to 15 December. MAGAR who carried 1000 tons of fuel to refuel VIKRANT was sent back to Calcutta to bring back the essential stores which had been left behind.
- The CO's of the Landing Ships signalled FOCEF that the landing site was unsuitable. They took whatever precautions they could and pressed on with preparations for the landing.
- The beach recce carried out by the divers on the evening of 14 December was as seamanlike as could be expected in the time available. The gradient was found suitable. The approach course for LST's would be marked, a swimmer would mark the bar on which the bows should rest and ships would rig ropes to help jawans wade through water on landing. Ships were told to be ready to lower all available boats and life rafts. Last but not least, LSTs would beach at 0530, the slack tide at low water so that they could unbeach on a rising tide. Despite BRAHMAPUTRA, with FOCEF embarked, leading the LSTs towards the beach at 0400 hours in the morning, the exact landing point could not be spotted. By the time the recce'd spot had been reached, it was an hour and a half after slack water, the tide had started rising, the shallow runnels had become deeper and strong cross currents had set in.
- GULDAR took the precaution of taking manual soundings, found it too dangerous to land troops and retracted.
- GHARIAL beached amid fanfare. The very first section of ten troops experienced difficulties. Three jawans drowned. GHARIAL pulled off and anchored. FOCEF embarked GHARIAL. With difficulty, GHARIAL managed to land some troops by boat. FOCEF decided that both LSTs should rebeach at 1430, further to the North. Cdr Bhalla swam ashore and with the platoon already landed proceeded post haste to Cox's Bazar which had reportedly fallen into the hands of the Mukti Bahini.
- GHARIAL beached first. The unfavourable tide and swell caused GHARIAL to broach to, whereafter GHARIAL's stern anchor holed her stern. GULDAR which had not yet beached, rushed to help pull GHARIAL off the sandbar. Thereafter, all the ships helped GHARIAL to pump out the flooded compartments and effect patch repairs. By this time, the surrender of forces in East Pakistan was imminent and FOCEF decided that the remaining troops should be disembarked at Cox's Bazar.
- GULDAR, VISHWA VIJAY and BEAS proceeded to Cox's Bazar, overnight, where the unopposed transfer of troops was effected. Boats requisitioned from local sources with the help of the Mukti Bahini ferried troops and stores from the anchorage into the harbour at Cox's Bazar.
- GHARIAL escorted by RAJPUT proceeded to Cox's Bazar, disembarked troops in local craft and proceeded to Calcutta for repairs.

Could the Operation Have Been Better Managed

In the years since the war, this landing operation has been regarded as a fiasco. Every mishap in this operation was attributed to the lack of detailed planning. Very little was known of the wider compulsions which precipitated the ordering of the operation at short notice. Given these compulsions, several factors made it unlikely that this operation could have been managed better.

There was ambiguity of whether the landing should be effected in the face of opposition or at a location where there would be little or no opposition. At the planning stage in September, the planners in Delhi ruled out an opposed landing. NHQ order of 9 December stated "To land and support a battalion group at dawn on 12 December to capture Cox's Bazar". At Calcutta, it was concluded that landing at Cox's Bazar was imprudent - the waters might be mined and the enemy would have taken the precaution to defend Cox's Bazar as it protected their escape route to Burma. This led to the decision to land near Ukhia, where opposition was less likely.

The beach at Ukhia was known to have sandbars. It was concluded that these sandbars would help in the dry shod landing of troops, who were completely unfamiliar with the sea.

In spite of all the other difficulties which were encountered, this might have been successfully achieved if the beaching had taken place at the designated time of slack water at low tide. The runnels would have been shallow. The LSTs would have unbeached on a rising tide well before cross currents, wind and swell set in. The beaching was effected nearly two hours late because the precise area marked by the divers could not be located in the limited visibility at 0430 in the morning. Thereafter events followed the sequence that have been described.

MAGAR which had been specially converted to carry 1000 tons of fuel for VIKRANT was in fact present in the area when VIKRANT's fuel was running low on 14 December. Had MAGAR transferred her fuel to VIKRANT:

- VIKRANT would not have had to return to Paradeep on 15 December for refuelling.
- MAGAR having been emptied of fuel could have participated in the landing and the sailors of the Andaman Garrison who were familiar with the sea could have constituted the first wave.

However, in the rush of events, MAGAR was sent back to Calcutta to fetch stores which would be needed by the troops after landing.

VISHWA VIJAY, a 15000 ton bulk coal carrier with a crew of only 60 persons, was totally unsuitable for carrying 1400 troops, who had never been to sea, for landing on an enemy shore. It can only be presumed that no other vessel was available for immediate requisitioning.

Finally, there are certain basic realities:

- To ensure that the enemy does not come to know when and where we will land, prior planning has to be highly classified and known to very few people. In this case, the place of landing was changed, the day of landing got repeatedly postponed and the time of landing got delayed.
- The kind of meticulous planning and extensive training stipulated in the amphibious warfare manuals, which are based on the experience of prolonged wars, are unlikely to be achieved in the short sharp wars typical of our sub- continent. In 1971, despite months of preparation time, no training whatsoever could be carried out.

In the final analysis, the unpredictable will invariably happen during actual operations. Only first rate seamanship and professionalism will overcome the unpredictable.

The Pakistan Navy's Account of Naval Operations in East Pakistan

"The Story of the Pakistan Navy", states:*

"Starting on 4 December, the aircraft carrier VIKRANT launched a series of air strikes on a variety of targets along East Pakistan's coast. Using Seahawks by day and Alizes by night, the pressure was kept up by the aircraft carrier throughout the war. On the very first day, during raids carried out over Chittagong harbour, the outer anchorage, and the airfield, and the airstrip at Cox's Bazar, the Indians succeeded in inflicting considerable damage to ships and shore installations. The gunboat COMILLA was sunk and RAJSHAHI severely damaged during an air attack on the outer anchorage.

"On 5 and 6 December, carrier-borne aircraft carried out attacks on Chittagong, Khulna, and Mangla harbours, and at ships in the Pussur river. The oil installations at Chittagong caught fire and the Greek merchant ship Thetic Charlie was sunk at the outer anchorage. In strikes over Chittagong on 7 December, the oil installations and the airfield were again hit and damaged. Troop concentrations in Barisal, Bakarganj and Patuakhali areas were subjected to attacks by carrier aircraft on 8 and 9 December. Pounding of Chittagong and Cox's Bazar airfields by carrier-borne aircraft continued on the request, at least on two occasions, of AOC-in-C Eastern Command, (the Indian Air Force Commander in the East), who suspected that these airfields were being used by the PAF for air operations.

"With no opposition from the Pakistan Navy at sea, and by the PAF in the air, defence against air strikes by carrier-borne aircraft was confined to anti-aircraft fire by gunboats and shore batteries. The Indians have acknowledged heavy resistance to most of their air strikes by Pakistan anti-aircraft defence and accepted the loss of some aircraft. But such a limited effort was, by itself, insufficient to curb, in any meaningful way, the onslaught by the Indian naval air arm from seaward. On 12 December, emboldened by the lack of any serious retaliation, the Indian Navy ships closed Cox's Bazar and carried out a bombardment of the airfield in broad daylight.

* Page 341 et seq.

They succeeded in damaging the control tower at the airport during this operation.

"Fearing a possible amphibious landing, the approaches to Chittagong were mined by the Pakistan Navy on 7 December. This minefield, laid as a defensive measure to check the movement of Indian ships towards the harbour, was subsequently reinforced by more mines on 9 and 12 December. This proved to be a most useful step in that it denied to Indian forces direct access to Chittagong port for a long time, even after the instrument of surrender had been signed.

"The Indians therefore decided to carry out an amphibious landing at Cox's Bazar with the aim of cutting off the line of retreat of Pakistani troops from this direction. Having embarked a battalion of Gurkhas, the amphibious force comprising the merchant vessel VISHWA VIJAY and the LSTs GHARIAL and GULDAR, sailed from Calcutta on 12 December. The landing was carried out at the chosen site south of Cox's Bazar on the night of 15/16 December, after bombardment of the beach a day earlier. Though no opposition was offered by Pakistani forces the Indians, after experiencing some difficulties, succeeded in putting troops on the beach. At least two Indian soldiers are reported to have lost their lives in the operation, which appears to have served no purpose at this belated stage except to show that it had an amphibious capability, and that the Indian Navy was free to operate at will in the Bay of Bengal.

"The Indian Navy Task Force comprising the carrier VIKRANT and her escorts the BRAHMAPUTRA and BEAS, while maneuvering freely in the Bay of Bengal, interdicted shipping traffic to and from East Pakistan ports. Reports from Chittagong indicated that this group sometimes closed the coast to a range as close as 12 to 15 miles, not surprising in a situation in which the Pakistan Navy lacked altogether any means to react or retaliate from Chittagong. Commodore in Charge Chittagong could do no more than report the approach of these ships. The sinking and capture of several merchant ships by the carrier group and the diversion to neutral ports by the Naval Control of Shipping, reduced shipping traffic to East Pakistan to a trickle within a few days. The unchallenged presence of this force in the area ruled out possibility of reinforcements from the West in the beginning of the war, and evacuation of our troops at a later stage when such a need was felt".

"PNS Rajshahi the sole survivor of the Navy in East Pakistan, escaped capture and found her way to Penang in Malaysia. The Malaysian Government and Navy treated her ship's company in a most hospitable manner and rendered assistance to enable the patrol craft to remain seaworthy. A number of naval personnel had crossed the border into Burma at the surrender of East Pakistan."*

A Retrospect of Naval Operations in the Eastern Naval Command

The Pakistan Navy did not send any major surface warships to East Pakistan. There was therefore no surface threat. After the GHAZI sank, there was no submarine threat. The Indian Air Force attacks on the Dacca airfields made the runways unusable. The Pakistan Air Force Sabre squadron was grounded. This removed the air threat. The operations of the Eastern Fleet were therefore unopposed at sea. Whatever difficulties were experienced were the result of our own limitations.

In retrospect, the following points bear noting:

- Ambiguity persists about the role of RAJPUT in the sinking of the GHAZI. Admiral Krishnan's book reproduces a photograph of GHAZI's clock stopped at 0015. RAJPUT was very much near Visakhapatnam at that time and yet there is no mention of RAJPUT having heard or having seen the flash of GHAZI's explosion.
- Neither the 'Story of the Pakistan Navy' nor the records relating to the ENTERPRISE incident substantiate FOCINCEAST's assessment that the ENTERPRISE Task Group's move into the Bay of Bengal was linked with the intelligence intercepts

* Ibid Page 368.

of Convoy RK 623.

- Indian Air Force Gnats sank the PADMA and the PALASH at Khulna during the Commando Operations on Mongla. Force Alpha was not supposed to go to Khulna at all - it was an impromptu decision taken when it was found that Pakistani troops had withdrawn from Mongla. Even if Cdr Samant had informed his Headquarters of this decision on the morning of the 10 December, it is doubtful whether the information would have reached the Gnats in the few hours that it took Force Alpha to go up the river from Mongla to Khulna.
- Even though 'Diversionary or Real Amphibious landings' were foreseen, there is no mention of any preliminary rehearsal for the amphibious landing. Neverthless, despite all the difficulties experienced, it would have succeeded if only the LST's had beached at the appointed time.
- VIKRANT's contribution to naval operations were beyond anyone's expectations. VIKRANT was steaming on only three boilers instead of four. Each boiler drum was strapped with steel bands to minimise damage in case of explosion. To offset the reduction in speed and the low wind conditions at that time of the year, VIKRANT stretched everything and everybody to the limit to launch and recover Seahawks aircraft, including accepting the hazards of aircraft dipping after being catapulted and approaching lower than normal during recovery.

In addition to the achievements of the air strikes, VIKRANT's assistance in contraband control was invaluable. Without VIKRANT, the limited number of ships that constituted the Eastern Fleet could not have coped with the faster merchant ships.

This contraband control role of an aircraft carrier was not foreseen either by FOCINCEAST or by VIKRANT herself.

10

Naval Operations in the Western Naval Command

The ensuing account of naval operations in the Western Naval Command has been reconstructed from several sources. Admiral Kohli was the Flag Officer Commanding in Chief, Western Naval Command in 1971. His book "We Dared - Maritime Operations in the 1971 Indo Pak War" was published in 1989. The Pakistan Navy's account is contained in the "The Story of the Pakistan Navy 1947 to 1972" published in 1991. The present account is based on the above sources and on discussions with the main participants. The thought process which preceded each major operation has been correlated with what actually transpired and the reasons for its success or failure. The evolution of the plans which preceded these operation has been discussed in the chapter on the "Evolution of the Navy's Plan of Operations." The operations have been discussed under the following headings.

- The First Missile Attack on Karachi.
- Western Fleet Operations and the Second Missile Attack on Karachi.
- Anti Submarine Hunter Killer Operations and the Loss of the KHUKRI.
- Submarine Operations.
- Loss of Alize 203.
- Trade Warfare.
- Defence of Bombay.
- A Retrospect of Operations in Western Naval Command.

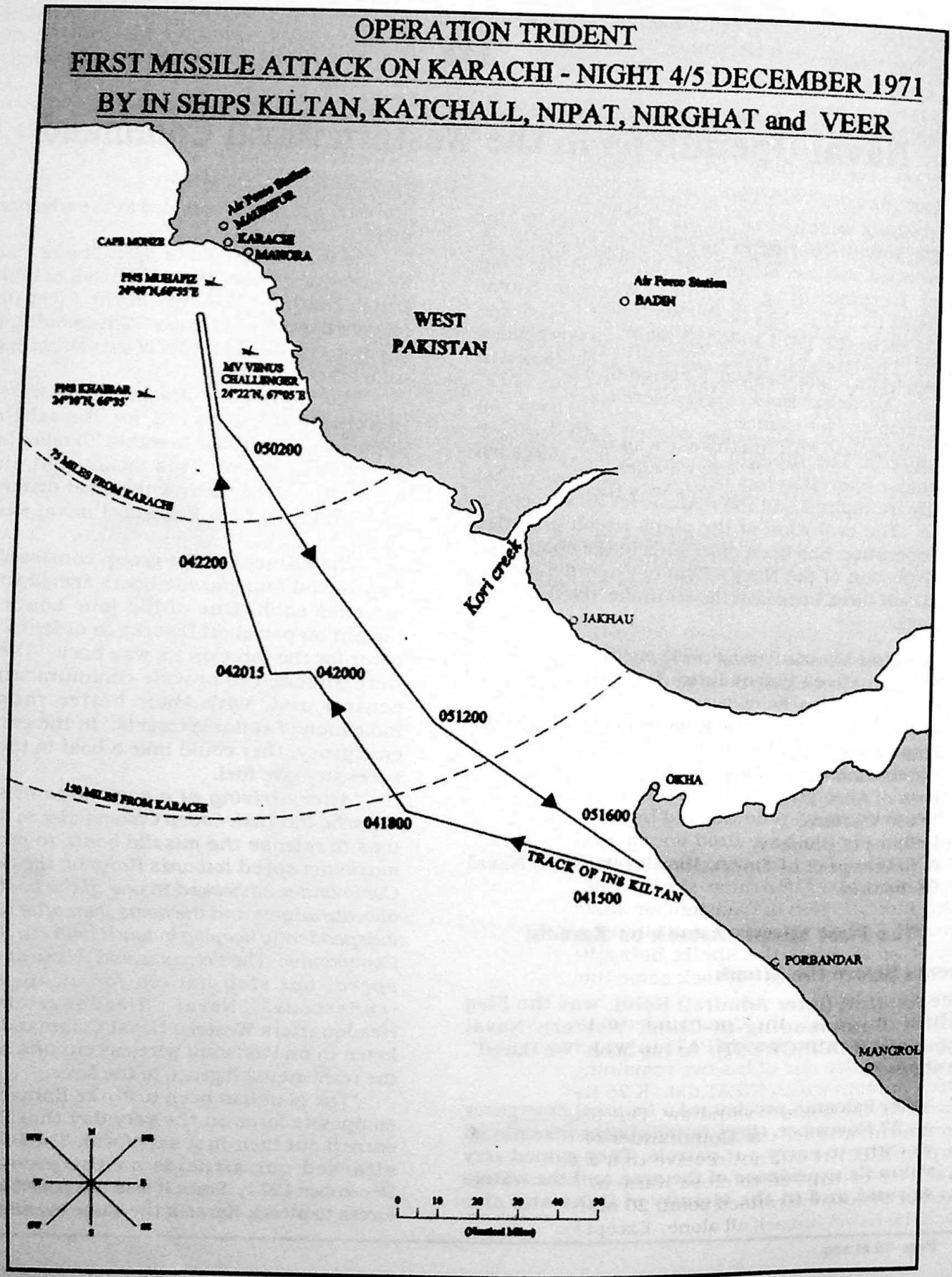
The First Missile Attack on Karachi

Events Before the Attack

Vice Admiral (later Admiral) Kohli, was the Flag Officer Commanding-in-Chief, Western Naval Command (FOCINCWEST). In his book "We Dared", he states:*

> "After Pakistan proclaimed a National Emergency on 23 November, three missile boats were placed at Okha to carry out patrols. They gained very valuable experience of the area and the waters around and in the vicinity of Okha and also proved the facilities provided at the advance base there.
>
> "As the Fleet would be operating not far from Karachi, a demarcating line was established which neither the ships of the Fleet nor the missile boats would cross. This would prevent any unfortunate incidents of own forces engaging each other.
>
> "The Pakistani authorities had warned all merchant ships bound for Karachi not to approach the harbour to within 75 miles between sunset and dawn. This meant that any unit picked up on the radar within that distance was most likely to be a Pakistani naval vessel on patrol.
>
> "The Karachi strike group consisted of two Petyas and four missile boats armed with four missiles each. One of the four boats was to remain on patrol off Dwarka in order to provide cover for the force on its way back. The Petyas were intended to provide communication and control and, with their better radar, give indication of suitable targets. In the event of an emergency, they could take a boat in tow and, if necessary give fuel.
>
> *"After arriving at a certain point south of Karachi, the Task Group Commander in the Petya was to release the missile boats to proceed at maximum speed towards Karachi; the Squadron Commander embarked in one of the boats would allocate targets and the boats thereafter would act independently keeping in touch with the Squadron Commander. The Petyas would follow at a slower speed, but stay not too far away from the rendezvous.* Naval Headquarters and Headquarters Western Naval Command were to listen in on Pakistani wireless circuits and pass the relevant intelligence to the force.
>
> "The plan had been to strike Karachi with a composite force on the very day that Pakistan carried out their first act of war. The Pakistanis attacked our airfields on the evening of 3 December 1971. Since it was not possible for our forces to attack Karachi the same evening, it was

* Page 45 et seq.


OPERATION TRIDENT
FIRST MISSILE ATTACK ON KARACHI - NIGHT 4/5 DECEMBER 1971
BY IN SHIPS KILTAN, KATCHALL, NIPAT, NIRGHAT and VEER
KARACHI
MANORA
CAPE MONZE
PNS MUHAFIZ
Air Force Station
BADIN
WEST
PAKISTAN
MV VENUS
CHALLENGER
PNS KHAIBAR
050200
75 MILES FROM KARACHI
042200
Kori creek
JAKHAU
042015
042000
051200
OKHA
130 MILES FROM KARACHI
041800
051600
TRACK OF INS KILTAN
041500
PORBANDAR
MANGROL

decided to launch the operation on the following day, i.e. the night 4/5 December."

The Attack

On the afternoon of 4 December, when the Strike Group was on its way to Karachi, FOCINCWEST sent a signal directing the Petyas and the missile boats to remain in company throughout.

The Task Group's approach to Karachi was by and large uneventful. Despite some confusion, contacts detected en route were eventually analysed as undeserving of missile attack.

When 70 miles south of Karachi, a target was detected to the northwest at a range of 45 miles. It was classified as a warship. A second target was detected to the northeast at a range of 42 miles, heading for Karachi. Both targets were tracked and missiles prepared for launch.

The contact to the northwest was engaged by missile boat NIRGHAT with two missiles. The target sank. It was later learnt that this was the Pakistan Navy destroyer KHAIBAR.

The contact to the northeast was engaged by missile boat NIPAT with two missiles. The target sank. It was learnt later that this was a merchant ship MV VENUS CHALLENGER.

A third contact appeared to the North. It was engaged by missile boat VEER with one missile. The target sank. It was learnt later that this was the Pakistan Navy coastal minesweeper MUHAFIZ.

At this stage of the attack, when there were no contacts on radar, what should have happened was that all ships of the Task Group should have continued to close Karachi and, from the predetermined point promulgated by KILTAN, each missile boat should have fired one more missile at Karachi. This did not happen. Missile boat NIRGHAT mistook anti aircraft tracer shells and reported sighting aircraft. Fear of Pakistani air attack sharply increased. KILTAN's accurate anti aircraft radar also mistook as aircraft the shells being fired from Karachi's gun defences. It took some time for this confusion to clear.

Meanwhile K 25, the Commander of the missile boats, told missile boat NIPAT, in which he was embarked, to fire one of his two remaining missiles towards Karachi which NIPAT did. K 25 then issued the order for the boats to withdraw. Due to a fade out in communications, the Commander of the Task Group in KILTAN did not receive this withdrawal signal. He continued to close Karachi. When he arrived at the predetermined point, 20 miles south of Karachi he found himself all alone. Except for missile boat VEER, everybody else had turned round and was headed back towards Saurashtra at full speed. Due to a machinery problem, VEER had reduced speed to effect repairs.

When KILTAN turned round to head for home, VEER mistook KILTAN for a Pakistani warship and almost fired a missile at her. Fortunately communications and identity were reestablished and a catastrophe averted.

In due course, ships of the Task Group arrived on the Saurashtra Coast in ones and twos, refuelled on 5 December and arrived in Bombay on 6 December.

Events After the Attack

In Bombay, there was elation at the Task Group's unprecedented achievement. At the professional level however, there was disquiet as to the reasons for not bombarding the Karachi installations with missiles. The Commander of the the Task Group, Cdr (later Commodore) KP Gopal Rao was the Commanding Officer of the Petya KILTAN. The Commander of the Missile Boat Squadron (K 25) was Cdr (later Commodore) BB Yadav, embarked in missile boat NIPAT. FOCINCWEST received differing accounts from them. He directed both of them to put up an agreed report. They were not able to agree. The disagreement hinged on who was in command of the attack, particularly after all contacts had been sunk.

K 25's stand was as follows:

- In the process of attacking KHAIBAR, NIRGHAT had fallen back by several miles, whilst KILTAN, NIPAT and VEER sped towards Karachi. KATCHALL, the second Petya, was with NIRGHAT to provide protection from air attack.
- NIPAT had raced ahead to attack VENUS CHALLENGER while VEER had fallen back.
- After VEER had fired at MUHAFIZ, he decided to fire missiles at the Karachi installations.
- At this stage, he found that NIPAT was closest to Karachi. So he told NIPAT to fire both his missiles. One missile failed prelaunch checks. NIPAT fired the other missile towards Karachi.
- NIRGHAT had started reporting that aircraft were visual and KILTAN had promulgated Air Raid Warning Red.
- Taking into account the likely confusion between friendlies due to the dispersal of own forces and the possible development of air and surface threat, K 25 decided to withdraw.

The CO KILTAN's stand was that K 25 was not authorised to order withdrawal. This was his prerogative as the Commander of the Task Group in KILTAN.

In an article in the Indian Defence Review of July 1990, Commodore Gopal Rao has described the sequence of events as he saw it. In it he stated:*

"The rendezvous with KATCHALL and missile boats NIRGHAT and VEER was effected off Dwarka on the afternoon of 4 December 1971. Clarifications on the points raised by the Commanding Officers of the ships were given and the Task Group sailed from Dwarka PM 4 December to carry out Operation Trident. KILTAN and KATCHALL were in the vanguard and the three missile boats stationed slightly in the rear. This formation was maintained throughout the approach towards Karachi. At about 1800 hrs, 4 December 1971, when we were 150 miles from Karachi, course was altered northward to head towards Karachi.

"Three incidents of interest occurred during our approach towards Karachi. The first one was at about 1810 hrs on 4 December 1971, when KILTAN"s radar picked up a surface contact on a northwesterly bearing at a range of 45 miles. This contact, which was classified as a warship was doing a speed of 24 knots and steering a north westerly course, heading towards Cape Monze, situated to the west of Karachi, oblivious of our presence. The reason for the presence of this Pak warship in this area was to become clear only after the war. The second incident occurred at about 1945 hrs when KILTAN's radar picked up a reconnaissance aircraft and I immediately altered the course of the Task Group westwards and succeeded in misleading the aircraft. The reconnaissance aircraft's message to Karachi "Firm Contact, Course 270. Speed 20" was intercepted by our shore authorities. At about 1900 hrs, when my radar scan was clear of aircraft echoes, I altered course northward again. The third incident occurred at about 2000 hrs, when a surface contact was picked up on KILTAN's radar on a northeasterly bearing at a range of 25 miles. This contact then increased its speed to 24 knots and started steering an intercepting course. I verified from my Navigation and Gunnery radars that this was not a spurious echo. When the contact closed to 15 miles, I altered course of my Group to westward and did not permit the contact to close upon us further. After a while, the contact reduced its speed considerably and its radar echo started becoming smaller and smaller until it finally disappeared. At about 2014 hrs I altered course again northward and increased the speed of the formation to 28 knots. Because of the westerly alteration of courses on two occasions the Pak warship heading northwest towards Cape Monze increased its distance and the contact was lost on our radar. She was picked up again only at about 2300 hrs, 4 December 1971 at a range of 40 miles when she was nearing Cape Monze.

The Attack

"The Task Group in formation was heading northward at high speed and was about 70 miles to the south of Karachi at 2150 hrs. Soon after, KILTAN detected a target to the northwest at a range of 45 miles, which was classified as a warship on patrol. A second target was detected to the northeast, at a range of 42 miles and classified as a large unidentified ship, proceeding in shallower waters at 16 knots towards Karachi. Pakistan had issued a warning that no merchant ships should approach closer than 75 miles from the Pakistan coast at night. All the ships of the Task Group were ordered to switch on their radars and acquire the targets. After the missile boats confirmed that they had acquired the targets, I designated the enemy warship to the northwest to NIRGHAT and the unidentified large ship to the northeast to NIPAT at about 2200 hrs and ordered them to proceed for the attacks. Both the missile boats hauled out of the formation and proceeded at higher speeds towards their respective targets.

"The Pak destroyer PNS KHAIBER was patrolling the southwest approaches to Karachi and only at about 2215 hrs was she able to appreciate that an enemy force was approaching Karachi. She then altered course and increased speed to intercept us, the rate of closing was about 60 knots. At about 2240 hrs when KHAIBER was within range, NIRGHAT fired her first missile. KHAIBER opened fire with her close range anti-aircraft guns but did not succeed in preventing the missile from hitting her. Her boiler room was hit and her speed came down to eight knots.

"I ordered a second missile to be fired at her and after the second hit, her speed came down to zero and dense smoke started rising from the ship. She sank after about 45 minutes, approximately 35 miles south-southwest of Karachi. She had mistaken this to be an air

* Pages 42 to 50.

attack and reported accordingly to Maritime Operations Room (MOR) Karachi, which perhaps resulted in the anti-aircraft guns in Karachi opening fire for a few minutes. The trajectories of these tracer shells were seen by us from seaward. KHAIBER's VHF transmission to Karachi in plain language was picked up by our shore wireless stations due to anomalous propagation.

"The other large unidentified ship to the northeast was completely darkened and was proceeding at 16 knots. At about 2300 hrs, NIPAT was able to get her within range and fired the first missile which scored a hit. A second missile was fired soon after and when this hit the ship, I saw a huge flash going up to about twice the height of the ship. My inference at that time was that ammunition had exploded on board. The ship was seen on radar to have broken into two and she sank in less than eight minutes, about 26 miles south of Karachi. After the war, it was reliably learnt from merchant shipping circles and from Pakistan Navy officers who went over to Bangladesh, as well as from Military Attaches of foreign embassies in Pakistan that this ship had been carrying a near full load of US ammunition from Saigon, for the Pak Army and the Pak Air Force. Lloyds Register of Shipping, London, gave the name of the ship as MV VENUS CHALLENGER, a ship chartered by Pakistan, which had sailed from Saigon, called at Singapore en route and was due to arrive at Karachi at 0130 hrs, on 5 December 1971. In addition to the ship's crew, the ship was reported to have had on board a small number of Pakistan naval officers and sailors for communication and ordnance duties.

"The Pak warship which I had detected at 1810 hrs on 4 December 1971, had obviously come down to rendezvous MV VENUS CHALLENGER and after satisfying herself that all was safe, she headed northwest at high speed towards Cape Monze.

"During their attacks, the missile boats NIRGHAT and NIPAT had moved ahead of the force by four to five miles. On completion of the attacks, they rejoined the force, which took them just about five minutes, as the rate of closing during the rejoining maneuver was 60 knots. This is the correct doctrine to be followed to prevent being fired at by ships of the own force.

"PNS SHAHJAHAN, a destroyer, was now ordered by MOR, Karachi, to proceed to the assistance of KHAIBER. But she regretted her inability to do so, due to engine problems. Then PNS MUHAFIZ, an ocean going mine sweeper was detailed and she was approaching my Task Group from right ahead. I designated this target to missile boat VEER. The speed of advance of the Task Group was 28 knots and VEER was not able to do more than 29 knots at this time due to a minor engine problem. Since PNS MUHAFIZ had come well within the missile range, I ordered VEER to fire the missile at the Pak warship from inside the formation. VEER was just abaft my port beam when she fired the missile at about 2320 hrs. PNS MUHAFIZ was set on fire by this missile hit and was seen burning fiercely for over 70 minutes, and finally sank in that position, about 19 miles to the south of Karachi.

"At about 2325 hrs, NIRGHAT reported sighting a reconnaissance aircraft on top of her. No contact was seen in my warning radar nor were my visual lookouts able to spot any aircraft. I informed this to the Task Group and asked NIRGHAT whether he was still in visual contact with the reconnaissance aircraft and he replied in the affirmative. I then ordered the Task Group to assume first degree of anti-aircraft readiness. We had already been briefed about the lack of capability of Pak Sabre jets to carry out night attacks by radar as well as considerable decrease in accuracy in attacks at night by visual aim. This was one of the calculated risks that we were required to take in the achievement of our aim and this risk was warranted. Moreover, KILTAN and KATCHALL had excellent anti-aircraft capability with their fully automatic 76.2 mm guns. I was now required, as per the Operations Orders, to navigate the Group to a predetermined position which was a further nine to ten miles ahead. Immediately on arrival at this position, I was to order the missile boats to fire on shore targets.

"The reported presence of a reconnaissance aircraft in the area caused undue concern in the mind of the Missile Boat Commander and the manifestation of this were two serious violations of the Operations Orders. One was that he fired a missile without orders at about 2330 hrs, towards the shore from a wrong position and in a wrong direction. I saw this missile travel to the westward of Karachi and hit the sea. When asked on VHF the reasons for firing this missile, there was no answer. Just then my navigating officer, requested me to come over to the display of the navigation radar in connection with the navigation to the predetermined position.

"It was reported to me that all the other ships of the group had disappeared from the radar display.

"I altered the range scale of the navigation radar from 24 miles to 12 miles scale and noticed four small echoes about seven miles to the south of my ship. After repeated calls on VHF for about five minutes, the Missile Boat Commander replied that he was heading for the withdrawal point and at that moment, they were 12 miles to the south of KILTAN. The rate of opening between KILTAN and the other four ships was 60 knots i.e. a mile a minute. KATCHALL had also joined the missile boats in the ignominious retreat. KILTAN had not kept watch on VHF on the missile boat net as any spare capacity in communications was required to search and intercept enemy transmissions. This unauthorised withdrawal was the second and more serious violation of the Operations Orders by the Missile Boat Commander. If he was so obsessed by the need to withdraw, the only legitimate course of action open to him was to suggest that to me as the Task Group Commander. He had no authority whatsoever to withdraw on his own.

"Even if the reconnaissance aircraft were present, there was no necessity to flee from the area, as it would not have made much of a difference to the strike aircraft whether the ships were 20 miles or 40 miles from the coast, as the reconnaissance aircraft would be able to home the strike aircraft on to its target. In actual fact, as shown on KILTAN's warning radar display, there was no reconnaissance aircraft airborne at all. Major General Fazal Muqeem Khan states that when the shore authorities in Karachi saw the glow from the burning MUHAFIZ, they sent a patrol boat to investigate. Had there been any reconnaissance aircraft airborne, it would have reported the incidents of dense smoke emanating from KHAIBER and the fiercely burning MUHAFIZ to MOR Karachi.

Withdrawal Phase

"After arrival in the predetermined position, KILTAN turned around at about 2355 hrs, 4 December 1971, and I saw the near perfect blackout in Karachi remaining intact.

"The other ships of the group were now about 16 miles to the south of KILTAN. After having performed the difficult task of transporting the missiles to the vicinity of Karachi and having sunk the enemy warships which tried to intercept us, we could have easily fired at least three missiles on shore targets. This excellent opportunity was wasted. At about 0100 hrs on 5 December, I sent the message 'Angar' to the C-in-C signifying the completion of Operation Trident.

"Meanwhile, I had ascertained that KATCHALL, NIRGHAT and NIPAT were together but not in contact with VEER. At about 0045 hrs, 5 December 1971, I gained radar contact with VEER at a range of 12 miles to the south of myself and established contact with her. VEER was able to do a speed of only 16 knots and her Estimated Time of Arrival (ETA) Withdrawal Point was 0115 hrs. I informed her that I was to her north and my ETA Withdrawal Point was 0200 hrs. I then passed the information about VEER to KATCHALL and the other two missile boats and directed them to proceed as per the withdrawal plan given in the Operations Orders. Due to the panic caused by the hasty withdrawal, VEER mistook KILTAN for an enemy warship and got a missile ready to fire at her. Fortunately, at that time VEER's engines were repaired and she was able to regain her maximum speed. The Commanding Officer of VEER therefore decided not to fire the missile. This was revealed to me by the Commanding Officer of VEER, after my return to Bombay. After she regained her speed, VEER was also directed to proceed as per the withdrawal plan given in the Operations Orders.

"During the withdrawal phase, one gas turbine engine of KILTAN failed at about 0045 hrs. The second gas turbine engine also failed at about 0130 hrs. KILTAN was now running on her main diesel engine and her speed came down to 13 knots. KILTAN finally arrived at Mangrol at about 1800 hrs on 5 December 1971. All the other ships of the Task Group had already arrived there.

"After completion of refuelling when I wanted to sail the Task Group to Bombay, KILTAN's diesel engine failed to start and she became immobile. I therefore detached KATCHALL and the three missile boats to proceed to Bombay, where they arrived on the evening of 6 December 1971. KILTAN stayed overnight at Mangrol and after getting one gas turbine engine operational by the morning of 6 December 1971 arrived in Bombay on the night of 7 December 1971.

"I called on the C-in-C on the afternoon of 8 December 1971 narrated the details of the Operation to him and handed over my report of the Operation. I also brought to his notice the

serious violations of the Operations Order committed by K 25, due to which an excellent opportunity for attacking shore targets in Karachi was wasted.

"The Admiral stated that he was pleased that the primary task of sinking enemy warships had been accomplished. Since this was the first major operation undertaken by the Indian Navy since Independence, he would rather condone the lapse of failing to attack shore targets in Karachi; any inquiry would attract adverse publicity to the Navy."

In his book, Admiral Kohli states:*

"It is quite obvious that a serious command and control problem engulfed the Trident force and could have led to serious difficulties:

- The escorts and boats had not worked together as a Task Group. There was no combined briefing. Understanding of each other by Commanding Officers which is born out of intimate knowledge of each other and their reactions under different conditions of stress was lacking.
- The limited Action Information Organisation facilities in the missile boats did not allow an adequate picture to be built up for the Command. This imposes a great burden on control of escorts and missile boats. The facilities for such command and control on Petyas were limited. But also the existing facilities were not used to best advantage.
- There were also some communication lapses. Those units who lost touch on VHF did not automatically come up on H/F resulting in loss of communication between ships of the force.
- Identification Friend or Foe between different types of ships, and the compatibility of code numbers was not checked prior to commencement of the operation. It was subsequently established that they were different. In my opinion, it was just as well that the attack was broken off by K 25.
- Had the command and control by CTG been more close and a plot maintained of friendlies and enemy contacts, it might have been possible to achieve an even greater victory than was achieved."

The Pakistan Navy's Account of the First Missile Attack

The First Missile Attack

"The Story of the Pakistan Navy" has given a detailed account of the first missile attack on Karachi as seen from their end.**

"On the morning of 4 December, the three ships joined the flotilla and at 0700 KHAIBAR was despatched for the outer patrol. She arrived at the western edge of the patrol area at 1030 and commenced her patrol; the day remained uneventful. After darkness had set in, KHAIBAR intercepted an HF radio transmission at 1905 emanating from a south-easterly direction. This radio transmission could well have originated from the missile force.

"The attacking force was first picked up by the surveillance radar on Manora at 2010, more than two hours before the attack, at the range of 75 miles to the south (bearing 165 degrees) of Karachi and tracked. Detection of the missile force more than an hour before it detected KHAIBAR and MUHAFIZ-which was not until 2130-by our shore radar station was a creditable performance. No better warning could be expected in the circumstances. The radar contact obtained by the shore station was reported to Maritime Headquarters as an unidentified contact approaching Karachi on a northerly course (345 degrees) at speed 20 knots.

"Another radar contact was detected at 2040 by the tracker radar at a range of 101 miles south of Karachi on a northerly course. Long ranges are possible under conditions of anomalous propagation of radio waves prevalent in winter months in this area. These radar detections led to the issue of a signal by NHQ at 2158 to ships at sea warning them of the presence of two groups of surface contacts approaching Karachi from the south. KHAIBAR was ordered to investigate these contacts but she never received the message.

"In KHAIBAR, a bright light was observed approaching from her starboard beam at 2245 when she was on a course of 125 degrees and her speed was 20 knots. Action stations were sounded immediately and the approaching missile thought to be an aircraft was engaged by Bofor guns. The first impression of the Commanding Officer, soon after arrival on the

* Page 54.
** Page 344 et seq.

bridge, was that the bright white light was a flare dropped by an aircraft. But observing the speed of approach, he appreciated it to be an aircraft.

"The deadly missile struck KHAIBAR on the starboard side, below the aft galley in the Electricians messdeck at about 2245. The ship immediately lost propulsion and power and was plunged into darkness. A huge flame shot up in Number One Boiler Room and thick black smoke poured out of the funnel. When the fire was observed spreading towards the torpedo tubes, a sailor was sent to train the torpedo tubes and jettison the torpedoes. But the torpedo tubes were jammed in the fore and aft position and could not be moved.

"After the ship was hit, a message was immediately sent by hand of the Yeoman to the Radio Office for transmission to MHQ by means of the emergency transmitter. The voice pipe between the bridge and the Radio Office had been damaged and could not be used to pass the message. The message read: "Enemy aircraft attacked ship in position 020 FF 20. No 1 Boiler hit. Ship stopped" The transmission of this message in total darkness and prevailing chaos, reflects creditably on the part of the staff. It was unfortunate that the position of the ship indicated in the message was incorrect ; this caused considerable hardship to ship's survivors later.

"It was after evaluation of the extensive damage, for the first time appreciated that the ship was hit by a missile. But no attempt was made to amend the previous signal to avoid delaying its transmission.

"A few minutes later, another missile was seen approaching the ship at about 2249 and was engaged by Bofors. The second missile, a few moments after it was sighted, hit No 2 Boiler Room on the starboard side. The ship, which till then had been on an even keel, began to list to port. The ship's boats were shattered by the explosion. At 2300, it was decided to abandon ship when the list to port had become dangerous and the ship had become enveloped in uncontrollable fires. By 2315, it had been abandoned by all those who could leave the ship. More explosions, possibly of bursting of ammunition, continued to rock the ship as men jumped overboard from the sinking ship. The ship went down at about 2320 stern first with a heavy list to port.

"MUHAFIZ had sailed on the evening of 4 December to relieve ZULFIQAR on the inner patrol in compliance with orders from the Task Force Commander. She arrived at her patrol area at 2245, just in time to witness the missile attack on KHAIBAR and to become a victim of the next. The trajectories of the two missiles fired at KHAIBAR were observed on board from MUHAFIZ plunging into the outer patrol area to her south. The wavering white lights, when first observed by the Commanding Officer, were thought to be star shells but later evaluated as aircraft-impressions which were very similar to those of Commanding Officer PNS KHAIBAR. It appears that none of those who saw the missiles that night recognised them as such.

"As MUHAFIZ altered course southward, the glow of light from the burning wreck of KHAIBAR could be seen on the horizon. Action stations were closed up as the ship headed towards the scene of action. She was on course 210 degrees, speed 9 knots, when at 2305, the third white light was observed heading straight for the ship. The fast approaching missile hit MUHAFIZ on the port side abaft the bridge. Upon being hit, the ship (which was of wooden construction) disintegrated instantly and some crew members were thrown into the water. The ship's instantaneous collapse gave no time for the transmission of a distress message. The ship's debris continued to burn for quite sometime while the survivors floated around the burning remains.

"The Indian Navy's first missile attack on 4 December code-named Trident, was apparently planned well in advance and carefully rehearsed. It was based on the assumption that units of the PN Fleet would be on patrol some distance from Karachi at the outbreak of hostilities, and the assumption happened to be correct. The missile attack force consisted of two Petya class frigates, IN Ships TIR and KILTAN, and three Osa class missile boats, IN Ships NIPAT, NIRGHAT and VIR. The Trident force operated directly under the command of Vice Admiral Kohli, FOCINCWEST while the rest of the Western Fleet was placed separately under the command of FOCWEF. After topping up with fuel off Diu, the Trident force headed towards Dwarka keeping close to land in shallow waters to avoid PN submarines. Arriving off Dwarka, 150 miles from Karachi, the missile boats began their final approach on a direct route to Karachi at their maximum speed of 32 knots. A fourth missile boat was left at Dwarka to cover

the withdrawal of the attacking force on its return passage.

"INS NIPAT's radar apparently picked up two contacts, presumably KHAIBAR and MUHAFIZ, at 2130 at a range of about 40 miles, when the force was approximately 50 miles south of Karachi. NIPAT fired two missiles at KHAIBAR. INS NIRGHAT engaged MUHAFIZ from a range of about 20 miles. The missiles fired at Karachi harbour at 2330 were also from NIPAT. The oil installations had also been subjected to an aerial attack earlier in the day at 0830 when two oil tanks at Keamari had caught fire. The glow from the fire helped NIPAT as it approached Karachi harbour. Of the missiles fired by the Trident force, two hit KHAIBAR and one hit MUHAFIZ.

"Having launched their attacks, the Indian missile boats turned and headed for the R/V position off the coast of Mangrol where the tanker Poshak was waiting to refuel them. At this time TIPPU SULTAN, which was about 40 miles ahead of the formation picked up three radar contacts at a range of 49 miles. TIPPU SULTAN was on her Karachi bound passage to effect repairs to her main evaporator that had developed some defect the preceding day. FOFPAK on board BABUR on learning of the contacts by TIPPU SULTAN could do no more than take evasive action and move his force further inshore.

"Following their attack, two of the missile boats, VIR and NIPAT, suffered some mechanical failure. VIR was virtually disabled but managed to move at slow speed after effecting emergency repairs at sea. It is estimated that she went nearly 100 miles off her intended track in the process and NIPAT was also forced to reduce speed. By 0130, the latter could not have gone too far from Karachi and advantage could have been taken of the vulnerability of the two boats had the information available at MHQ been more precise.

"The missiles more than once had been mistaken for approaching aircraft. In fact, the attention of the controlling authorities ashore was distracted towards the threat of an aerial attack once too often to the extent that all warnings of a surface attack given by the tracker radar on Manora ware largely ignored or not given due weightage. Tracker radar was a good radar set loaned by SUPARCO to the Navy. Its performance was extremely good. It was installed in PNS Qasim near the entrance of the harbour.

"After the attack INS TIR (actually KATCHALL not TIR) and INS KILTAN, the two supporting Petyas, had been monitoring our signal traffic and were able to pick up MHQ message ordering SHAHJAHAN to assist KHAIBAR. This broadcast in plain language enabled the Indian Navy to announce the sinking of KHAIBAR the very next day. Fortunately, SHAHJAHAN was recalled and thus was saved. The Indian estimates of damage to SHAHJAHAN and sinking of two minesweepers and a merchant ship were exaggerated versions of the result of their missile attack.

"The rescue operation launched to locate and recover survivors of KHAIBAR was a somewhat disjointed and haphazard effort. The incorrect position of KHAIBAR indicated in her last signal also contributed towards the late recovery of survivors. The search effort was, therefore, centered on a position which was more than 20 miles away from the location where the ship had sunk. The location of survivors of MUHAFIZ was by chance.

"The credit for the rescue of survivors of KHAIBAR and MUHAFIZ goes to the gunboat SADAQAT whose single handed efforts saved many lives. It would be recalled that this boat, sent from Saudi Arabia and manned by a PN crew, was operating under the direct control of MHQ and had been employed on miscellaneous tasks. On the night of 4 December, soon after the attack on KHAIBAR, COMATRON in SADAQAT was ordered to proceed and look for KHAIBAR's survivors.

"Soon after leaving harbour at about midnight, the Commanding Officer observed over the horizon a glow of light to the south-west. The light emanated from the burning remains of MUHAFIZ, but the fate of MUHAFIZ was not known to anyone at this time. He thought he had succeeded in locating KHAIBAR and steered for what he thought was the burning wreck of KHAIBAR.

"It was upon the recovery of survivors that it was for the first time learnt that MUHAFIZ had been sunk. The information was passed promptly to MHQ, and must have come as a shock for those who were busy organising the search for KHAIBAR and attempting to untangle the confused picture in the Headquarters. After an unsuccessful attempt to locate KHAIBAR's survivors, the ship returned to harbour early on the morning of 5 December.

"ZULFIQAR joined the search effort at 0830 on 5 December, when she was on her way to join the Task Force having completed the inner patrol. At this time the Commanding Officer, having missed the original message, for the first time learnt the ship was required to conduct a search, but the message received merely stated that SHAHJAHAN was to join the Task Force while MADADGAR and ZULFIQAR were to continue the search. The Commanding Officer, not knowing the position or the purpose of search, joined MADADGAR which was seen emerging from the south of Churna Island at this time. Thus until the afternoon of 5 December, MADADGAR and ZULFIQAR had made no headway in the search for KHAIBAR's survivors.

"COMATRON was again ordered to proceed out at 1000 to make a second attempt to locate KHAIBAR and her survivors. A fresh search centre was chosen by COMATRON and the search bore fruit when one of KHAIBAR's life rafts with survivors on it was sighted at 1555. By 1745 on the evening of 5 December, the survivors were recovered. When it became dark, the ship set course for harbour and on the way back picked up 4 more survivors.

"In the meantime, a concerted search effort was mounted at 1425 when MHQ ordered COMKAR to 'conduct a thorough search for survivors of KHAIBAR'. A search force under the tactical command of COMMINRON in MUNSIF was despatched to the area. MADADQAR and ZULFIQAR joined MUNSIF for this search effort. An expanding square search based on a new search datum was commenced by the search force on arrival in the area towards the evening. This attempt was abandoned at 1913, when the search force was ordered to withdraw towards the coast, as a reaction to a false alarm of a missile attack. By this time the search had, in any case, become redundant as KHAIBAR's survivors had been picked up by the gunboat SADAQAT a few hours earlier.

"With the primacy of the missile threat recognised, a reappraisal of defence measures against this threat was done. It was obvious that the missile boats must be tackled at their base or during transit before they could launch their missiles. It was equally clear that this task could not be accomplished without the support of the PAF. The Navy had initially found it difficult to get firm commitments from the Air Force due to their involvement in Army operations. Once convinced of the necessity, after the missile attack on 4 December, the PAF responded by carrying out bombing raids over Okha harbour- the forward base of missile boats. In one such attack, the fuelling facilities for missile boats at Okha were destroyed. The strikes would have been more effective had not the Indians, anticipating our reaction, dispersed the missile boats to less prominent locations along their coast.

"In the early hours of 6 December, a false alarm of a missile attack was raised by the circulation of a number of reports indicating the presence of missile boats in the area west of Cape Monze. MHQ asked the PAF to carry out an air strike on a ship which had been identified as a missile boat by Naval observers flown on a Fokker Friendship aircraft for this specific task. ZULFIQAR was informed by MHQ that a PAF sortie was on its way to attack a missile boat in the area. Shortly afterwards, at 0640, an aircraft appeared and strafed ZULFIQAR. The attack was broken off only when the ship's frantic efforts to get herself identified as a friendly unit succeeded. There was a loss of lives and some were injured. The ship sustained minor damage on the upper deck and returned to harbour to effect repairs and land casualties."

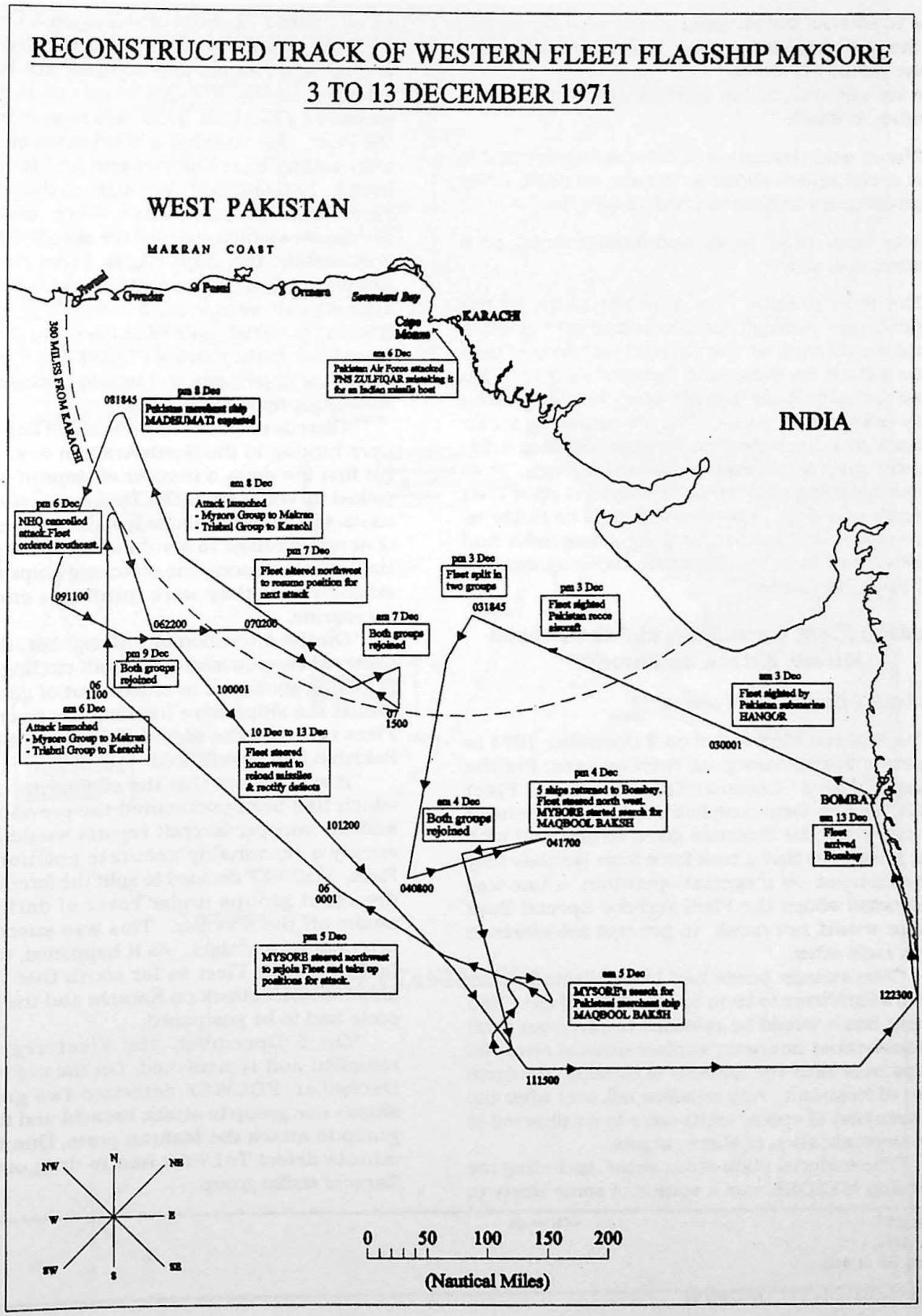
In Retrospect

Viewed in retrospect, it is doubtful whether the first missile attack on Karachi could have achieved any more than it did because:

- The planning for such operations will always be highly classified, Earmarking forces beforehand and working them up for their tasks is likely to breach security. It is also not practical. Unforeseeable defects cause earmarked forces to fall out at the last minute, as happened in the subsequent attacks on Karachi when TALWAR on 6 December and KADMATT on 8 December fell out.
- The dispersal of friendly forces was unavoidable. When NIRGHAT found that KHAIBAR was approaching her at high speed, NIRGHAT had to reverse course to gain time to complete pre launch missile checks. In so doing she dropped miles astern of the other ships who were racing towards Karachi at high speed. NIRGHAT could never have caught up and arrived at the predetermined point during the time available.

Imponderables like these are unavoidable in naval operations. Overcoming them will depend on the reactions of the man on the spot.

RECONSTRUCTED TRACK OF WESTERN FLEET FLAGSHIP MYSORE
3 TO 13 DECEMBER 1971



As to who set the oil tanks on fire on 4 December, "The Story of the Pakistan Navy" clearly states that it was the Indian Air Force.

In its account of the first missile attack on 4 December, it states:*

> *"The oil installations had also been subjected to an aerial attack earlier in the day at 0830, when two oil tanks at Keamari had caught fire."*

In its account of the second missile attack on 8 December, it states:**

> "The first missile flew over the ships at the anchorage, crossed Manora Island and crashed into an oil tank at the Keamari oil farm. There was a huge explosion and flames shot up so high that Qamar House-a multi-story building in the city- was clearly visible. *The fire caused by the air attack on 4 December had been put out only a day earlier after three days of concerted efforts. Fires once again raged in the oil farm after a short lived respite of a day. A distressing sight no doubt for everyone, but particularly for those who had risked their lives in a tenacious battle against the oil farm fires earlier."*

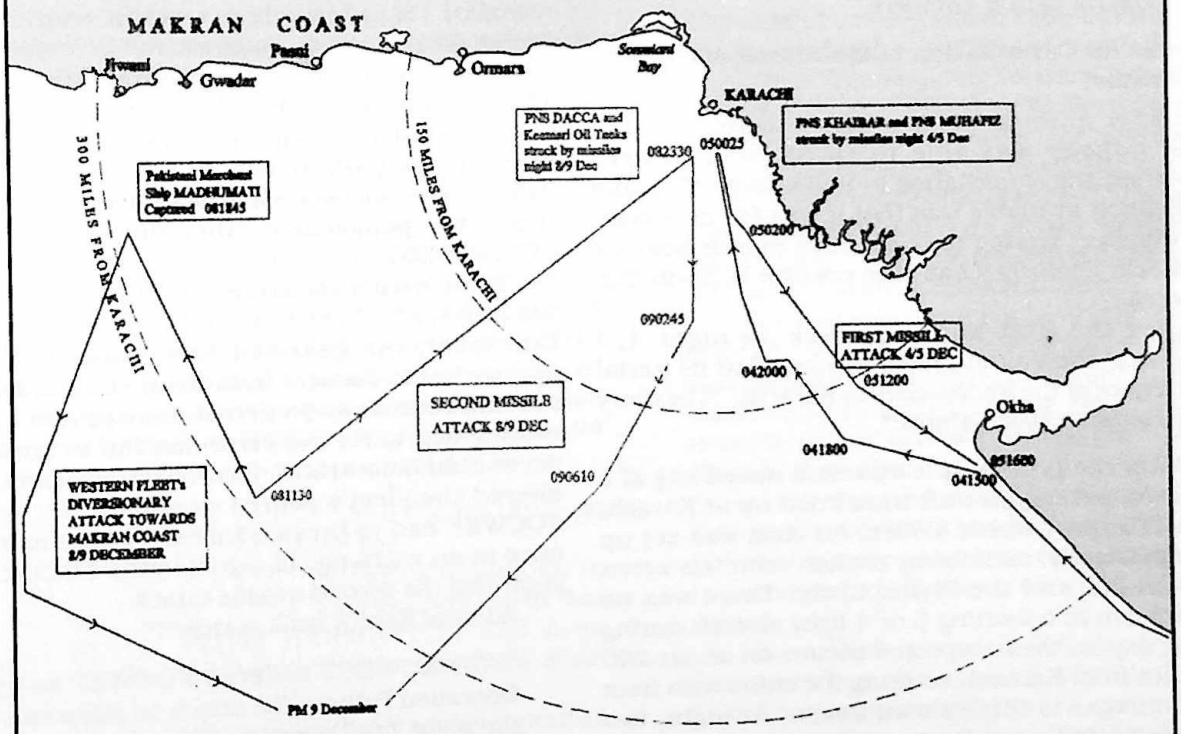
Western Fleet Operations and the Second Missile Attack on Karachi

In his book Admiral Kohli states:***

> "The Western Fleet sailed on 2 December 1971 to operate in their assigned exercise area. For the Flag Officer Commanding Western Fleet (FOCWEF) to have complete freedom of movement to carry out the directive given to him and with the possibility that a task force from Bombay may be employed on a special operation, a line was indicated which the Fleet and the Special Task Force would not cross, to prevent interference with each other.
>
> "Two missile boats had been allotted to the Fleet which were to be in tow by ships of the Fleet. These boats would be released to carry out their attacks either on enemy surface units at sea or on ships in or near the harbour of Karachi, the main port of Pakistan. Any missiles left over after the destruction of enemy units were to be directed to the neutralization of shore targets.
>
> "The material state of our ships, including the flagship MYSORE was a source of some worry to us all. Within 72 hours of sailing on 2 December, KUTHAR had a major blow-up in the engine room and some personnel were injured. She had to be taken in tow by KIRPAN to return to Bombay escorted by KHUKRI. VIJETA, a missile boat with the Fleet, also suffered a breakdown on the day after sailing from Bombay and had to be towed back by SAGARDEEP. Throughout the period the Fleet was at sea, there were machinery breakdowns which reduced the speed of the Fleet. Fortunately, the ships engine room crews rose magnificently to each occasion and repairs were expeditiously completed. It can well be imagined that the material state of ships of the Fleet was uppermost in the mind of FOCWEF and he had to take this important factor into account when embarking upon an operation.
>
> "There is no doubt that Pakistani submarines were lurking in the North Arabian Sea. During the first few days, a number of ships of our Fleet picked up sonar contacts. They prosecuted these contacts, but were unable to collect any evidence of actual damage to a submarine, though in at least two instances, the attacking ships felt very strongly that they were hunting a confirmed submarine.
>
> "On the afternoon of 3 December, the Fleet observed reconnaissance aircraft circling around it, taking good care to remain out of gun range. Whilst the ships were tracking the aircraft, the Fleet received the signal that hostilities with Pakistan had commenced.
>
> "It was evident that the submarine contacts which had been prosecuted the previous night and the snooper aircraft reports would give the enemy a reasonably accurate position of the Fleet. FOCWEF decided to split the force into two divergent groups under cover of darkness to shake off the snooper. This was successfully achieved by midnight. As it happened, this split had taken the Fleet so far south that the first simultaneous attack on Karachi and the Makran ports had to be postponed.
>
> "On 5 December, the Fleet regrouped, refuelled and replenished. On the night of 5/6 December, FOCWEF detached two groups of ships - one group to attack Karachi and the other group to attack the Makran ports. Due to a last minute defect TALWAR had to drop out of the Karachi strike group.

* Page 347.
** Page 352.
*** Pages 58 et seq.

MISSILE ATTACKS ON KARACHI
ON NIGHTS OF 4/5 AND 8/9 DECEMBER 1971



"On the afternoon of 6 December, quite inexplicably and for reasons not known to us in Bombay at that time, Naval Headquarters (NHQ) decided to assume control of operations. NHQ made a signal at about 1600 hours cancelling the attack on Karachi scheduled for the night of 6/7 December. Later the Fleet was ordered to rendezvous (R/V) TIR off Saurashtra to pick up a second missile boat VIDYUT. The various groups of Fleet ships which were well on their way to their targets had to continue to steam at high speed to make this distant R/V in time. Meanwhile TIR repeatedly broke wireless silence to report her position and Pakistani aircraft. She could well have become the target of shore based Pakistani fighter bombers."

Reasons for Cancellation of the Attack of Night 6/7 December

Even after Admiral Kohli's book was published in 1989, nobody was able to clarify who in NHQ authorised the cancellation of this attack. The only clarification available was that it was felt necessary that the Fleet should have an extra missile boat for the attack. Recently it has been possible to clarify this grey area.

After the first missile attack on night 4/5 December, the Pakistan Navy intensified its aerial surveillance of the approaches to Karachi. "The Story of the Pakistan Navy" states:*

"After the first missile attack, a mixed bag of a dozen civilian aircraft were lined up at Karachi civil airport where a Fleet Air Arm was set up immediately, manned by civilian volunteer crews from PIA and the Flying Club. There was no problem in operating 3 or 4 light aircraft during the day, in their respective sectors on an arc 200 miles from Karachi, covering the entire area from Jamnagar to the Makran Coast. At night, two radar fitted aircraft at a time covered the same arc. Thus from the afternoon of 5 December, it was difficult for a missile boat to approach within 200 miles of Karachi undetected."

On the morning of 6 December, NHQ had intercepted the Pakistan Navy's signals of the Pakistan Air Force strafing one of its own warships, the Pakistani frigate ZULFIQAR. This caused considerable concern in the mind of the Chief of the Naval Staff, Admiral Nanda. He assessed that it would not be prudent to expose the Karachi group to such a high probability of attack by an alert enemy. Karachi had already been attacked on night 4/5 December and could again be attacked later. He therefore cancelled the attack which the Fleet had already launched on Karachi and the Makran ports.

The situation on the 7th morning was that the various groups of Fleet ships had assembled at the R/V. But TIR and VIDYUT had not reached the R/V. Had the enemy been D/Fing the signals made by TIR during the night and had the Pakistan Air Force launched an air strike to attack the TIR group, there was a possibility that this strike might by chance find the Fleet and attack it instead of TIR. Indeed, after intercepting a Pakistani transmission, FOCINCWEST signalled TIR to "prepare to repel air attack" and the Indian Air Force swiftly sent aircraft to protect the TIR group from air attack. At this stage, the missile boat VIDYUT, which TIR was towing to hand over to the Fleet, started reporting defects which required her to return to Bombay. In Admiral Kohli's words "Things had not gone too well and NHQ reinstated control of maritime operations on the western seaboard to FOCINCWEST."**

These events confirmed FOCWEF's assessment that after the first missile attack on night 4/5 December, the Pakistan Navy was keeping the approaches to Karachi from Saurashtra under close surveillance so as to detect the approach of our missile boats. He therefore decided to launch the second missile attack from west-southwest and altered the Fleet's course westward. On the 7th, FOCWEF had to break wireless silence more than once in an exchange of signals with FOCINCWEST regarding the second missile attack.

Admiral Kohli's book states:***

"FOCINCWEST ordered FOCWEF to execute Operation Python- the attack on Karachi - during the night 7/8 December, if feasible. The forces to be used were left to the discretion of FOCWEF. In another message, the C-in-C directed FOCWEF to press home the attack as the enemy forces were in disarray. FOCWEF reported inability due to weather conditions. The weather improved on 8 December and the Fleet planned the next attack on Karachi on the night of 8/9 December."

On 8 December, FOCWEF split his force into three groups:

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* Page 349.
** Page 60.
*** Page 60.

- The fast frigates of the 15th Frigate Squadron, TRISHUL and TALWAR to escort missile boat VINASH for the second missile attack on Karachi.
- The cruiser MYSORE accompanied by BETWA and RANJIT to raid Makran.
- The tanker DEEPAK, accompanied by KADMATT to continue contraband control. KADMATT had dropped out of the Karachi strike group due to a last minute defect.

The Second Missile Attack on Karachi

FOCWEF's primary concern now was to distract the Pakistan Navy's attention towards the MYSORE group so as to reduce the probability of the Karachi group being detected during approach and withdrawal.

TRISHUL, TALWAR and VINASH set course for Karachi at high speed. En route, electronic emissions were detected on a Pakistan Naval frequency which was being monitored. It was appreciated that a vessel was reporting the presence of the group to Karachi. The vessel was soon sighted. TALWAR was told to sink the vessel which she did and rejoined.

During the approach to Karachi, TRISHUL's electronic surveillance reported that the radar at Karachi had stopped rotating and was pointed directly at the group, a sure sign that the group had been detected. At 2300, the group arrived off Karachi and on radar detected a group of ships. FOCWEF had already told the CO of TRISHUL that VINASH should fire all four missiles. VINASH proceeded to do so:

- The first missile homed on to the oil tanks at Keamari and started a huge fire.
- The second and third missiles homed on to merchant ships. It was subsequently learnt that the British vessel HARMATTON had been damaged and the Panamanian vessel GULF STAR had sunk.
- The fourth missile homed on to the Pakistan Navy's tanker DACCA which had been camouflaged and anchored amidst the merchant ships because, laden with oil, she could not seek safety inside Karachi port as the other Pakistan Naval ships had done.

It had been pre-arranged that the Indian Air Force would attack Karachi's airfields at Masroor and Drigh Road at the same time as the second missile attack. It so happened that the TRISHUL group arrived off Karachi and carried out its attack before the prearranged time. The air attack commenced soon thereafter. The anti aircraft guns at Karachi opened fire as the TRISHUL group withdrew unobserved. Post war intelligence indicated that Karachi's guns set fire to a Greek ship ZOE which Lloyds List of 10 December stated as "set ablaze and sunk".

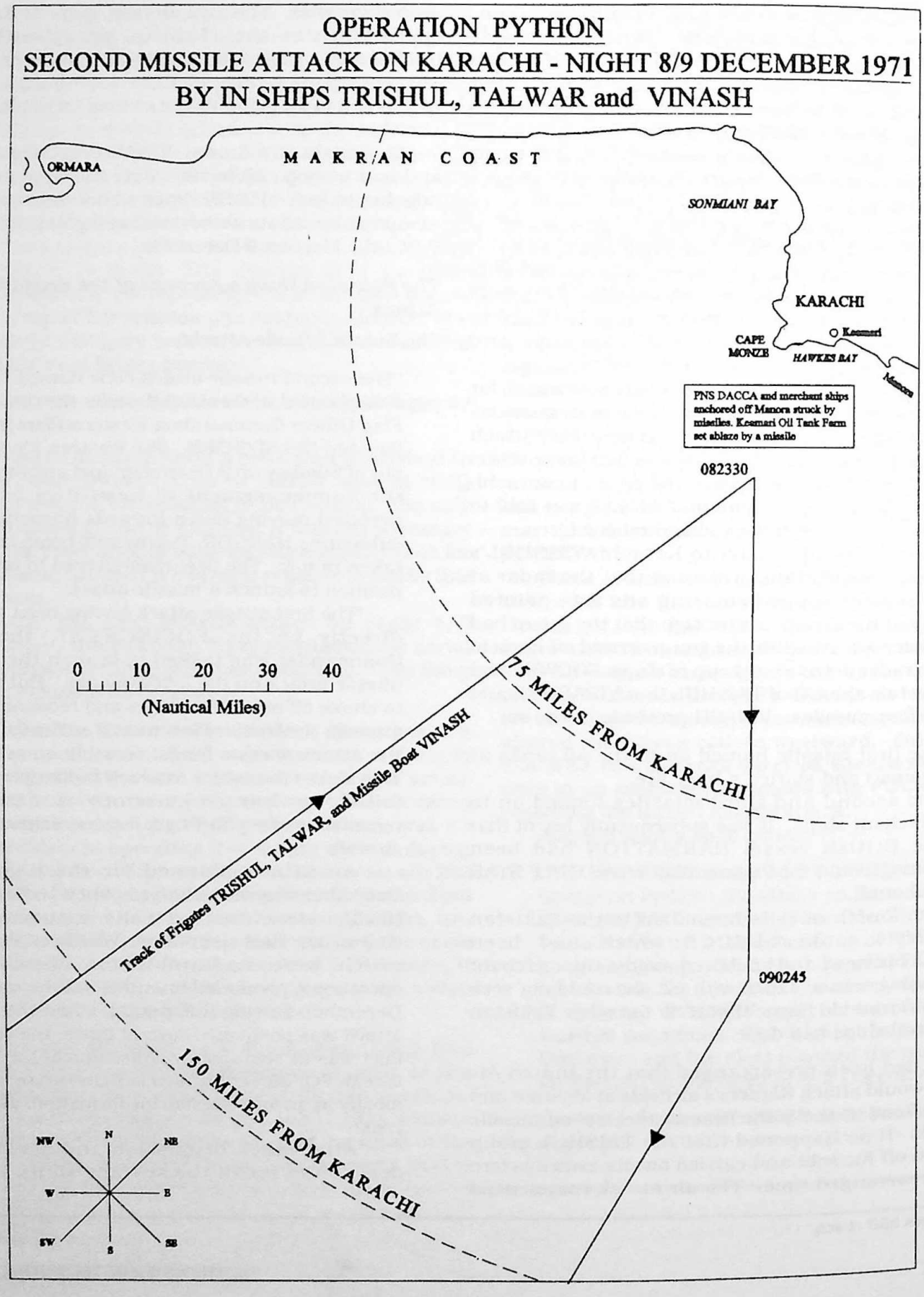
During the withdrawal, VINASH reported defects and had to stop. However before the need arose to take her in tow, VINASH repaired her defect and the group continued its withdrawal at high speed. They R/V'd the Fleet on 9 December.

The Pakistan Navy's Account of the Second Misile Attack

The Second Missile Attack*

> "The second missile attack code named `Python' was planned and executed under the direction of Flag Officer Commanding Western Fleet from his flagship INS MYSORE. The Western Fleet sailed out of Bombay on 2 December, just one day before the commencement of hostilities and was detected moving north towards Karachi by the submarine HANGOR. Two missile boats had been taken in tow. The fleet maneuvered to take up a position to launch a missile attack.
>
> "The first missile attack having been handled directly by the FOCINCWEST, the Fleet Commander was tasked to launch the second missile attack on the following day. But in a bid to shake off our submarines and reconnaissance aircraft, the Indian Fleet moved so far south that the attack was no longer feasible on schedule. This shows the extent to which Indian plans were foiled by our submarines and meagre reconnaissance effort by a few requisitioned civil aircraft.
>
> "An attack planned for the night of 6 December was also aborted, when Indian Naval Headquarters cancelled it after assuming direct control over fleet operations. Weather conditions, which were unsuitable for missile boat operations, precluded an attack on the night of 7 December. During this period, when the missile attack was postponed several times, the Pakistan fleet was at sea. Deeply conscious of the missile threat, FOFPAK continued to manoeuvre his fleet, mostly in an anti-submarine formation, along the coast.
>
> "After much discussion and debate, the decision to recall the surface ships back to

* Pages 350 et seq.


OPERATION PYTHON
SECOND MISSILE ATTACK ON KARACHI - NIGHT 8/9 DECEMBER 1971
BY IN SHIPS TRISHUL, TALWAR and VINASH
MAKRAN COAST
ORMARA
SONMIANI BAY
KARACHI
CAPE MONZE
Keamari
HAWKES BAY
Manora
PNS DACCA and merchant ships anchored off Manora struck by missiles. Keamari Oil Tank Farm set ablaze by a missile
082330
0 10 20 30 40
(Nautical Miles)
75 MILES FROM KARACHI
Track of Frigates TRISHUL, TALWAR, and Missile Boat VINASH
090245
150 MILES FROM KARACHI
N
NE
E
SE
S
SW
W
NW

harbour was taken sometime on 7 December and by the afternoon of 8 December, all major surface units except DACCA had entered harbour. DACCA was at Manora anchorage and remained there as its entry into harbour was precluded by its deep draft and tidal conditions in harbour. The men on board watched the ships steam into harbour with a growing feeling of uneasiness.

"DACCA had performed admirably its basic role of keeping the ships topped up with fuel, rations and other stores necessary for the sustenance of the fleet at sea during its operations. She had been out at sea since 10 November carrying out underway replenishment of ships at sea as and when required. When her services were not required, she lay at anchor. Having camouflaged herself as a merchant ship a day earlier, the ship happened to be at Manora anchorage on the fateful night of 8 December.

"This missile attack was carried out by a single missile boat VINASH, supported by two frigates TRISHUL and TALWAR of the 15th Frigate Squadron, under the command of F-15 on board TRISHUL. The Indian Fleet appears to have remained well to the south, while the missile attack unit was detached to sortie out towards Karachi from a southwesterly direction.

"On the way to Karachi, one of the escorting frigates INS TALWAR engaged and sank a ship, which was believed to be a Pakistani patrol craft suspected of having reported the position of the approaching force. Since none of our patrol craft, or for that matter any other warship, was engaged or sunk that night, it can be surmised that the victim of this attack must have been a civilian craft. It appears that the unfortunate vessel was mercilessly pounded with shells from the frigate's guns until she caught fire and sank.

"The missile boat VINASH closed Karachi to a range of 12 miles and fired four missiles in succession at four different ships chosen at random by the Unit Commander from the cluster of about a dozen ships at Manora anchorage. DACCA was unfortunate enough to be one of them.

"The first missile flew over the ships at the anchorage, crossed Manora Island and crashed into an oil tank at the Keamari oil farm. There was a huge explosion and flames shot up so high that Qamar House-a multi-storey building in the city- was clearly visible. The fire caused by the air attack on 4 December had been put out only a day earlier after three days of concerted efforts. Fires once again raged in the oil farm after a short lived respite of a day. A distressing sight no doubt for everyone, but particularly for those who had risked their lives in a tenacious battle against the oil farm fires earlier.

"The other three missiles homed on ships at Manora anchorage. The British-owned merchant vessel HARMATTAN, SS GULF STAR flying the Panama flag, and PNS DACCA were hit by a missile each. The HARMATTAN sank immediately, but GULF STAR survived. PNS DACCA's miraculous survival after absorbing a missile hit in an oil tank can be attributed to the courage and vigilance of the Commanding Officer and crew. Timely operation of the steam smothering system by engine room personnel after the missile hit the ship certainly averted a major explosion that could have been fatal for the ship. A first hand account of this missile attack is given from a special report submitted by PNS DACCA.

> 'At about 2245, a pale light was seen travelling towards Manora, parallel to Manora breakwater and when it was abreast of AA School, it turned right and directly hit the oil tank which immediately burst into flames. A little later, another light was seen travelling from the same direction and hit the ship anchored very close to the breakwater; the ship sank immediately. At that moment action stations was sounded and in no time the ship had manned her guns and was ready to engage the target. In the meantime, a third light was seen travelling towards another ship at the southern corner of the anchorage, she caught fire immediately. A little later, a bright light was seen coming up from behind the horizon gaining height on port bow (ship was lying 280-100 degrees). It appeared stationary for sometime, and then rushed steeply towards the ship. It was engaged by port guns. It hit on the port side piercing No 7 port FFO tank just above the water line. It ripped open the cargo and jungle decks. The motor boat and spare fuel hoses caught fire. Abandon ship was piped immediately. A number of officers and men jumped overboard and only eight officers and 37 CPOs and sailors stayed.'

"The Commanding Officer stayed on board and, with the help of those who had not abandoned ship, brought the fire on the upper deck under control. He has maintained that the

hasty and controversial order to abandon ship, cancelled soon afterwards, was given without his approval. His presence of mind in a moment of crisis saved the ship, and deprived the Indian Navy of the satisfaction of having sunk a warship of the Pakistan Navy in the second missile attack. As matters stood, their score was only one defenceless merchant ship sunk and another damaged.

"It is surprising though that while the missile threat was uppermost in everyone's mind, the missiles when first observed on board DACCA, were mistaken for aircraft flying with search lights switched on to locate their targets. The reaction of many others who saw the missiles in the air that night was no different.

"There was an air strike at Karachi by IAF just about the time the Indian Navy launched the missile attack; but there is no positive evidence of damage to the harbour due to the air strike, which was in all probability directed at PAF air bases in Karachi. There were reports of bombs having been dropped in Bihar and Agra Taj colonies near Mauripur. The chance attack by IAF at about the same time as the missile attack had led to a controversy between the IAF and the Indian Navy for claiming credit for the damage to oil tanks at Keamari. In all probability this missile had strayed away from its target and locked on to the strong echo of the oil tank.

"The approaching missile was sighted by lookouts on Manora Island and reported to COMKAR who passed the information on to Air Defence Sector Operation Centre, Korangi. Not a single shot was fired as the missile whizzed past over harbour defenses and plunged into the oil tank. Perceived, by those who saw it, to be an aircraft, it was not engaged because of the gun restrictions in force. It was nearly six minutes after the missile hit the tank that a tremendous barrage of fire was let loose by anti aircraft guns in harbour at 2248, when air raid warning red was promulgated and gun restrictions lifted. No aircraft were actually sighted over the harbour. There were more blasts as other tanks exploded in the spreading fires. Starshells, which looked like missiles, fired by PNS Himalaya at this time further confused the picture. The harbour reverberated with the sound of guns and blasts as innumerable shells were pumped into the air.

"On the evening of 8 December at about 1800, a radar-fitted Cessna on patrol reported sighting Osa boats just leaving Jamnagar and heading towards Karachi. The C-in-C, PAF was contacted on the direct telephone and asked to strike the Osas from the air. The C-in-C PN also had a word with him to emphasise the urgency. The Air Marshal regretted his inability as according to him "No air effort was available".

"The circumstances surrounding the sudden disappearance of the merchant vessel VENUS CHALLENGER from the high seas have remained somewhat of a mystery. It is certain though that the ship was sunk in one of the two missile attacks at Karachi. The ship, loaded with a cargo of rice, had sailed for East Pakistan from the United States on 10 September. Arriving off Chittagong in late November, she was diverted to Karachi where she was expected in the first week of December. Thereafter, the ship could not be traced until the identification of her wreck by a team of naval divers 26 miles to the south of Karachi a few days after the war.

"If the objective of the attack, as claimed by the Indian Navy, was to destroy the Pakistan Navy, not much contribution was made by the second missile attack towards that goal. True, PNS DACCA was damaged by a chance hit, but she was repaired in less than a month and continues to serve the Navy till today. On the other hand, if the objective was to scare away merchant ships, the unscrupulous method adopted for this purpose is without precedence.

"The provisions of international law and conventions that forbid attack on merchant ships without warning were blatantly violated. No effort at maintaining even a semblance of legal propriety was made by declaration of a blockade or a war zone before embarking on a callous slaughter of merchantmen and their crew by those who claim to have taken up arms to champion the cause of the oppressed. For it was well known to the Indians that missiles hurled blindly at ships at Manora anchorage were bound to take a toll of neutral merchant ships.

"MUNSIF which was anchored in the vicinity of DACCA at Manora anchorage proceeded to assist DACCA and picked up some of her survivors. Other personnel of DACCA and those of merchant ships were recovered by auxiliary craft promptly despatched to the scene by COMKAR. MADADGAR was sent to assist DACCA but by the time she arrived there past midnight, the fire had been put out and the situation was under control. By the evening of 9 December, DACCA's power had been restored and

she moved to a position close inshore off Buleji Point, anchored and remained there until she was towed back to harbour on 19 December.

"There followed in the wake of the second missile attack yet another controversial decision: orders were issued at 1400 on 9 December to ships at Karachi to reduce their ammunition outfit.

"After the return of the ships to harbour on 8 December, their vulnerability in the port remained a topic of continuing debate. *In the early hours of 9 December, only a few hours after the missile attack, dockyard workshops and buildings were severely damaged in a low level attack - facilitated, no doubt, by the light emitted by the huge flames of the fire at the oil farm - by an IAF bomber.* Under these circumstances anxiety about the catastrophic consequences of an explosion in a ship fully loaded with ammunition was only natural.

"The decision to reduce the ammunition outfit, not withstanding the logic behind it, continues to be questioned by many. The adverse effect on morale of men, who were inclined to see it as a step to limit the surface ships operational role, was immediate. Not accepted by most as a necessary rational step, the decision remained a controversial issue.

"It was perhaps in consideration of the morale factor and to avoid the impression that the fleet was immobilised that a strategy of high speed probes was introduced. This required random sorties of short duration to be carried out at high speed by designated ships. Destroyers and frigates were employed in this manner until the end of the war."

The Mysore Group's Raid on the Makran Coast

At the same time that the TRISHUL group had been detached to attack Karachi, FOCWEF had detached the MYSORE group to bombard Jiwani. On the evening of 8 December, 75 miles south of Jiwani, the MYSORE group, encountered a merchant ship who, on seeing the MYSORE group reversed course towards Karachi and was heard calling Karachi on a frequency being monitored. The ship was signalled to stop but she did not comply. MYSORE fired a broadside ahead of her and she stopped. RANJIT was sent to investigate and reported that it was the Pakistani merchant ship MADHUMATI registered in Karachi who had over - painted her name to read ADAMANT to masquerade as a neutral ship registered in Manila. The ship was boarded and apprehended.

FOCWEF assessed that the MADHUMATI's call to Karachi would have distracted attention from the TRISHUL group headed for Karachi. This was confirmed when, soon after sunset, BETWA reported a slow moving aircraft circling with lights on but staying out of gun range. FOCWEF told CO MYSORE that there was no need to bombard Jiwani. The MYSORE group withdrew with MADHUMATI and headed for the R/V where all groups were to rejoin on 9 December.

All groups rejoined on the 9th evening and were replenished. By the 10th morning, the Fleet had been steaming at high speed for 8 days and cumulative defects were beginning to reduce the speeds that ships could sustain. FOCWEF decided that the Fleet should return to Bombay, effect repairs, pick up two missile boats and return to the operational area.

To outflank the enemy submarines deployed off Bombay, FOCWEF maintained absolute wireless silence, made landfall well south of Bombay and proceeded up the coast inside the 10 fathom line, through waters too shallow for submarines to operate. The ruse succeeded and the Fleet arrived safely at Bombay on 13 December. By the time the ships were ready to sail again, the Pakistan Army in the East had surrendered on 16 December and West Pakistan had accepted India's unilateral offer of ceasefire on 17 December.

After the War

After the war there were differing views about the raid on the Makran Coast. One view, held by high quarters in NHQ, was that FOCWEF should have let the MYSORE group bombard Jiwani so as to give ships companies a feeling of having played a part in the war and the satisfaction of having fired their guns in anger.

Another view has been stated by Admiral Kohli himself in his book:

> "The Pakistani naval raid at Dwarka in 1965 left the officers and men of the Indian Navy infuriated and somewhat humiliated. I was then the Deputy Chief of the Naval Staff and I vowed to myself that if ever there was another round involving naval forces and I was in any kind of a position of responsibility, I would go to the farthest extremes to teach the enemy a lesson and to avenge this dastardly act.*

* Page 1.

"By not bombarding Gwadar and Makran, the Fleet robbed itself of the glory and the kudos which would justifiably have been theirs, and denied me the satisfaction of avenging the bombardment of Dwarka in 1965 by the Pakistan Task Force."*

As regards the first view, Makran would have been bombarded if NHQ had not cancelled the attack on 6 December because of apprehensions that the Karachi group would be exposed to too high a risk of air attack.

As regards the second view, FOCWEF had no enthusiasm whatsoever for bombarding worthless targets on the Makran Coast. Even at the planning stage, the sole purpose of such bombardments was "to repeatedly provoke the Pakistan Flotilla to come out and fight." After the success of the first missile attack, the purpose of bombardment changed "to enhance the success of the second missile attack by distracting attention towards the bombarding group." In FOCWEF's view, the capture of the MADHUMATI close off the Makran coast, soon after MADHUMATI transmitted her message to Karachi, achieved this purpose. Had there been no MADHUMATI, the MYSORE group would have bombarded Jiwani to divert attention from the Karachi group but not to avenge Dwarka or to give ships companies the satisfaction of firing guns in anger.

The second missile attack had unexpected results. As is evident from the Pakistan Navy's account, the hit on one oil tank set several adjacent oil tanks on fire. The ships of the Pakistan Flotilla who had withdrawn into harbour the previous day were told to reduce their outfits of ammunition so as to minimize explosion damage in case of being hit. Most significant of all, the neutral merchant ships who had witnessed the two missile attacks started seeking assurance of safe passage from the Government of India before sailing out of Karachi. Since no neutral shipping was heading for Karachi either, the Western Fleet, despite its limited resources, had achieved a de facto blockade without it having been declared. With the Pakistani Flotilla in harbour, the Western Fleet controlled the approaches to West Pakistan from 9 December onwards.

Sinking of the KHUKRI

Preamble

In his comparative assessment of Naval Forces, FOCINCWEST had accepted that the Pakistan Navy's latest Daphne class submarines were far superior to not only our submarines but also our surface ships. Accordingly all naval ships coming to or departing from Bombay hugged the shallow waters of the coast north and south of Bombay and altered landwards/seawards at random so that enemy submarines could never predict where to wait for targets.

Immediately after Pakistan attacked on 3 December, systematic attempts were commenced to interfere with the Pakistan Navy's shore to submarine broadcast. This yielded a series of D/F positions of Pakistani submarines transmitting messages to Karachi. Progressively these D/F positions helped to confirm that one submarine was moving northwards from off Bombay towards Diu. Since Diu was the assembly area for ships to be deployed for missile attacks on Karachi, this submarine threat started causing concern. However all the anti submarine frigates were away with the Western Fleet and no ships were immediately available to deal with this submarine.

The 14th Frigate Squadron KHUKRI, KUTHAR and KIRPAN had sailed with the Western Fleet on 2 December. KUTHAR suffered a boiler explosion on PM 4 December. FOCWEF detached KIRPAN to tow KUTHAR back to Bombay escorted by Captain F 14 in KHUKRI. Enroute to Bombay, at midday on 5 December KHUKRI carried out an attack on a submarine, recorded the entire attack and explosions on tape and signalled that she considered the submarine destroyed. The 14 FS arrived Bombay on AM 6 December and KUTHAR was taken in hand for repairs.

FOCINCWEST decided to deploy the 14 FS along with the Navy's latest Seaking anti submarine helicopters operating from Bombay to eliminate the submarine threat off Diu. The Seaking helicopters were to operate in the southern sector of the search

* Page 62.

area closer to Bombay and thereby have longer time on task. The frigates were to operate in the northern sector of the search area, closer to Diu Head.

The Hunter Killer Operation

In his book, Admiral Kohli states:

> "Where the Pakistan Navy scored over the Indian Navy was in their submarine arm. The French Daphne class submarines were the most modern conventional submarines, with sensors and armament far superior to not only our submarines but also our anti submarine frigates. This is how the KHUKRI was detected by a Daphne much before the frigate became aware of the submarine's presence."*
>
> "It was appreciated that the Pakistan Navy would have deployed at least two Daphne class submarines to cover focal points on the likely sea lanes used by Indian ships for passage to and from Bombay port or any attacking force transiting between Bombay and Karachi. While the destruction of hostile ships would have been the primary mission of enemy submarines operating off the West Coast of India, they would also provide early warning of Indian warship movements.**
>
> "As expected there were sonar contacts and reports of occasional sightings of periscopes by Indian ships and maritime reconnaissance aircraft. There were subsequently confirmed sighting reports of an enemy submarine in the area west of Diu Head. D/F bearings obtained of a submarine which had transmitted a wireless message to Karachi also confirmed the position. *This submarine was a potential threat to our shipping and it was decided by the Western Naval Command to eliminate this threat.* The 14th anti submarine squadron comprising KHUKRI (F14), KIRPAN and KUTHAR was the only force available for the task, together with some Seakings."***
>
> "Urgent operational orders for a hunt were prepared in consultation with Captain MN Mulla, Senior Officer of the Squadron, requiring the squadron to sail on 8 December for the last known position of the submarine. KUTHAR's problems were too serious to permit early readiness of the ship for sea. *After considering the gravity of the situation and in consultation with F 14, who accepted decreased A/S capability of the two ships, KHUKRI and KIRPAN were sailed for the hunt.*"****

Sinking of the KHUKRI

"The Story of the Pakistan Navy" has recounted the events as seen from the submarine HANGOR which sank the KHUKRI.

HANGOR had sailed from Karachi on 22 November for a patrol off the Saurashtra coast. On 1 December, she was ordered to shift to the area off Bombay to relieve her sister submarine MANGRO who was completing her patrol.

On 2 December, HANGOR sighted the Western Fleet which was on its way to its patrol area. HANGOR reported this to Karachi and continued her patrol off Bombay. She was unable to find good warship targets. Thereafter "The Story of the Pakistan Navy" states:*****

> "In an effort to locate the evasive enemy, HANGOR extended her patrol northwards to investigate some radio transmissions that she had intercepted on her sensors. In the early hours of the morning of 9 December, when she was off the Kathiawar coast, two contacts were picked up on her passive sonar on a north-easterly bearing. They were easily identified as warships by their sonar transmissions: radar indicated a range of 6 to 8 miles. A pursuit of the enemy began.
>
> "When the first attempt to intercept the ships failed, the submarine began snorkelling to gain speed. HANGOR, however, failed to attract the attention of the ships and contact was lost as the range increased. By the evening of 9 December, she was able to make out the pattern of their movement by tracking them with the aid of her sensors. The ships were carrying out a rectangular anti-submarine search.
>
> "Forecasting their movement along this search pattern, the submarine succeeded by 1900 in taking up a tactically advantageous position on the path of the patrolling frigates. The range of the ships, which were moving at a speed of 12 knots, began to close. The crucial moment which the submarine had patiently worked for since the early hours of the morning had arrived. HANGOR was finally in a position to launch an attack.

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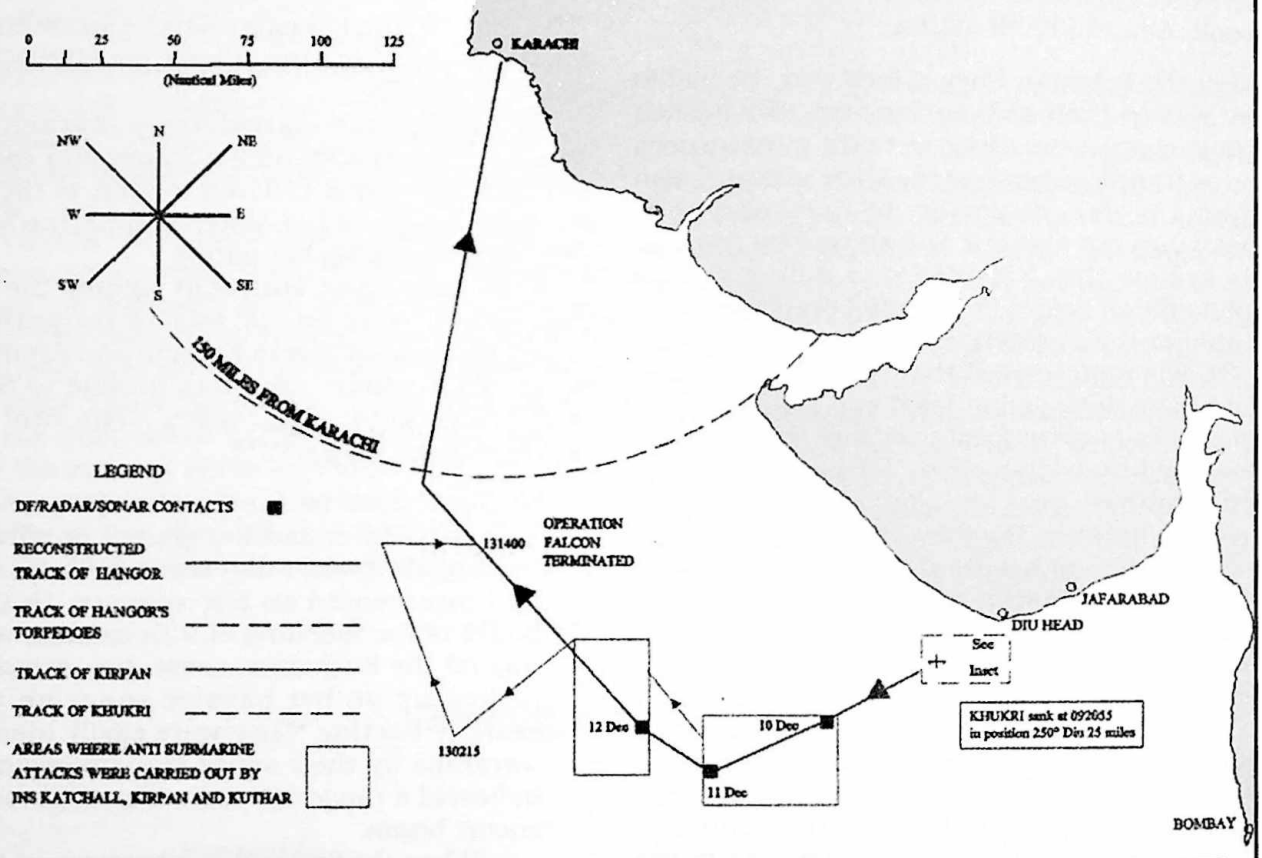
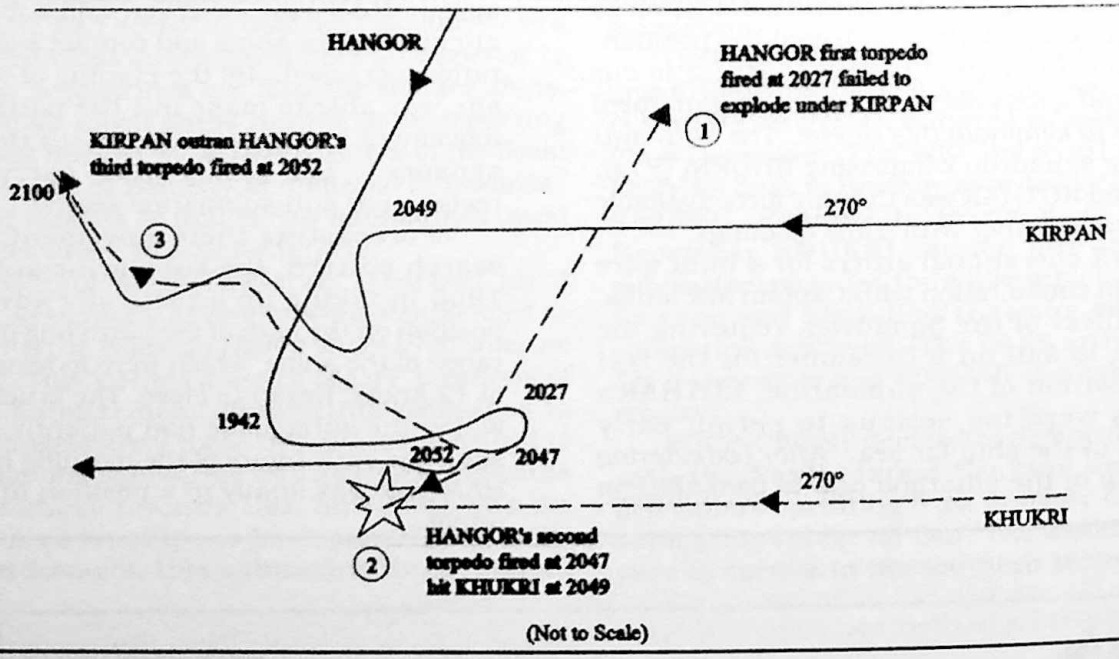
* Page 33.
** Page 75.
*** Page 75.
**** Page 75.
***** Pages 357 et seq.

RECONSTRUCTED TRACKS OF PAKISTANI SUBMARINE HANGOR's ATTACK ON INS KHUKRI AND INS KIRPAN ON 9 DECEMBER AND SUBSEQUENT OPERATION FALCON 10 TO 13 DECEMBER 1971



HANGOR's ATTACK ON KHUKRI AND KIRPAN - 9 DECEMBER 1971



"At 1915, she went to action stations. Fifteen minutes later, she came up to periscope depth, but could see nothing in the dark night when the range of the ships indicated by her periscope radar was only 9800 meters. The ships were completely darkened. The Commanding Officer decided to go down to 55 metres depth and make a sonar approach for the final phase of the attack. Unaware of the submarine's presence, the frigates continued on their track. At 1957, HANGOR fired a down-the-throat shot with a homing torpedo at the northerly ship from a depth of 40 metres. The torpedo was tracked but no explosion was heard. This was not the time to brood over the situation. The control team sprang into action and fired a second torpedo. After five tense minutes, a tremendous explosion was heard at 2019 hours. The torpedo had found its mark. The other enemy frigate came straight for the submarine. HANGOR fired a third torpedo and turned away at maximum speed. A distant explosion was heard subsequently.

"Moving west towards deeper waters, where she would be less vulnerable, the submarine passed very close to the scene of action and heard distinctly the noise of explosions emanating from the burning wreck. Later she came up to periscope depth and took a last look. In the dark, nothing could be seen except a faint glow on the horizon near the scene of action.

"In an extremely vulnerable position in enemy controlled shallow waters where no help could reach her, the task that lay ahead of HANGOR was to evade her pursuers in the hunt that followed-the first signs of which came when a number of underwater explosions were heard just about half an hour after the attack. For the next four days, HANGOR braved the might of the Western Fleet. All their anti-submarine assets-frigates, Seaking helicopters and Alize aircraft-were thrown into the chase that followed. A hunter killer (anti-submarine) operation fully supported by IAF reconnaissance aircraft based ashore in the area, was put into effect.

"The first priority of HANGOR after the attack was to get into deeper waters and put as much distance between her and the position from which the torpedoes were fired, the datum (reference point) for the search by enemy units. Having successfully done that, she began her journey back home. For four days and nights, she was harassed by the enemy. The dimensions of the enemy anti-submarine effort can be gauged from the fact that about 150 underwater projectiles were fired in this period. Only on one occasion were the explosions close enough to shake the submarine.

"The Commanding Officer was naturally keen to pass the information of this successful attack to Naval Headquarters. The submarine had to come up as it cannot transmit radio messages while submerged. She took the risk of being fixed by enemy direction finding stations ashore while transmitting the message. Enemy aircraft were overhead soon after the message was sent. Intense air activity throughout the day forced the submarine to run silent and run deep, reducing her speed of advance to 1.5 knots.

"There were, of course, many close calls during the passage back to Karachi. The Indian Navy called off the futile hunt on the evening of 13 December. There were claims by some of their units to have sunk the submarine, but she arrived unharmed at Karachi on 18 December.

"In this spectacular action which took place about 30 miles south of Diu off the Indian Kathiawar coast, KHUKRI, the ship of the Squadron Commander of the 14th Frigate Squadron, was sunk within two minutes after receiving a hit in the magazine where explosives were stowed. 18 officers and 176 sailors including the Commanding Officer, who deliberately stayed back on the sinking ship, lost their lives. This came as a shattering blow to the Indian Navy, deflating in one stroke the exuberance generated by highly exaggerated success stories of the missile attacks at ships off Karachi."

The Pakistan Naval Historical Review of March 1979 contained an article by a French naval officer, Cdr Courau. It states:

"At the beginning on the afternoon of the 8th, there had been only two radar echoes, detected twice in the same formation at an interval of one hour; this was enough to class them as warships on a south-easterly course. The hunt began.

"Since the sighting, the enemy had continued to change course, which gave the hunter some problems. On the evening of the 8th the enemy was on a north-westerly course, then on the morning of the 9th, they changed to a north-easterly course, then to a south-easterly course about noon.

"HANGOR now realised that the enemy ships had been on a course that described a rectangle.

Then at 1900 the ships set a course to the north west. At 1915 the CO estimated their mean course and dived to attack. He altered course on the frigate on the western side (KIRPAN) at very slow speed in order to present the smallest silhouette to the enemy's sonar. He decided not to hurry the moment of firing, but to wait for the moment the enemy would be on target judged to be at 2000.

"At 2013, a sharp order broke the silence - "Fire". Everyone was tense. The torpedo left the tube and was heard moving towards the target, but then they heard it passing under without exploding.

"There was no time to criticise this failure. The frigate on the eastern side (KHUKRI) passed in her turn at a range of about 5000 meres. There was just time to set the range and at 2017 a second torpedo was fired. A loud explosion was heard.

"KIRPAN returned to pick up survivors and her course brought her in line with the submarine which promptly fired a third torpedo but the frigate was prepared for the attack and left at high speed. After 8 or 10 minutes a very clear explosion was heard followed by the stopping of the KIRPAN's machinery. HANGOR considered that he had hit the frigate, but he decided to abandon the attack and made for deep water. KIRPAN had a badly damaged stern and was unable to steam, she was finally towed into Bombay.

"There followed three days of depth charge attacks by Shackeltons, Alizes and escorts. The submarine suffered 156 depth charges, most of which were a long way off. Every time the submarine used the schnorkel, it was spotted by aircraft, but the escorts led to the position by the aircraft never made contact. Finally the HANGOR managed to escape and carry on her mission."

In 1997, the Public Relations Directorate of Pakistan Naval Headquarters published "Sentinels of the Sea - The Pakistan Navy 1947-1997". It contains an article by Rear Admiral RA Qadri, who was the Electrical Officer of HANGOR. The following excerpts describe the attack on KHUKRI as seen from HANGOR.

"After having obtained a perfect (fire control) solution, HANGOR commenced the attack at 1957 by firing one homing torpedo, "down the throat" at the more northerly target, which was INS KIRPAN. The torpedo ran true and it was tracked on sonar all the way as it acquired "lock on" to the target and passed under it (as it was supposed to do). However, the newly acquired torpedoes, whose test facilities had not yet been set up, failed to explode and kept going. Until the time that the torpedo was fired, neither of the two frigates had any inkling of being under attack. However, the moment the torpedo passed under INS KIRPAN, she suddenly woke up, realised she was under attack and turned away at maximum speed. HANGOR had struck first, but had failed to hit hard. The new torpedo had let it down.

"The advantage had now shifted completely in favour of the enemy. If the enemy had kept their cool, it is difficult to say what would have been the final outcome. Perhaps, this article would not have been written in such detail. But one thing is sure - the fate of INS KHUKRI would still have been what it was.

"As KIRPAN turned away and ran, KHUKRI, which was to its south, now knowing the direction from which the torpedo had come, increased speed and came straight for an attack on HANGOR.

"It was now HANGOR's turn to keep it's cool and this, the submarine did well. As KHUKRI came in for the attack, HANGOR's attack team calmly shifted target to KHUKRI, obtained a quick solution and fired the second torpedo at it. This quick shot was mostly meant to spoil the attack by KHUKRI. However loss of nerve by KHUKRI's Commanding Officer on hearing the oncoming torpedo, made him try to turn away from it. This greatly helped to "pull" the torpedo towards the frigate. As soon as the torpedo acquired "lock on", it went straight for the target, passed under it and when it was directly under the keel it exploded, breaking the keel of INS KHUKRI which sank in a matter of two minutes; with all hands on board. There were no survivors. There was simply no time for the myth of the "CO nonchalantly lighting a cigarette as the ship sank under him" to be enacted.

"The sinking of KHUKRI had now made the balance of advantage even between HANGOR and KIRPAN and the action had not yet finished.

"Seeing its sister ship sink in such a short time must have been a nerve-shattering experience for the KIRPAN's Commanding Officer, for he came charging in for an emergency attack, fired off a pattern of depth charges, hoping to scare HANGOR into breaking off its attack. But when he found that HANGOR was not intimidated

and instead had fired the third torpedo at KIRPAN, he broke off the attack just as quickly and ran "hell for leather" in panic trying to outrun the torpedo locked on to the frigate's tail. That was the last seen (actually heard) of her.

"What followed this action was a massive anti-submarine effort by the Indian Navy, in the form of Operation Falcon to hunt down and kill just one submarine, PNS/M HANGOR. The operation continued for four days till the night of 13 December.

"A number of anti submarine charges were fired, on what the HUK groups thought was HANGOR. In the submarine itself, 24 salvoes (each of three charges) on 10 December and 12 salvoes on 12 December were registered. The latter depth charging took place after the Indian Navy's shore stations had taken cross bearings on HANGOR's radio message to Naval Headquarters regarding the action.

"Throughout these four days, HANGOR remained completely aware of the huge effort underway (though the details of Operation Falcon as such were known only after the war). It is a measure of HANGOR's efficiency that in spite of leaving the action area with a highly depleted battery, and with such a massive hunt for her in progress, she managed not only to recharge her batteries but was able to successfully lay a false trail for the HUK groups to follow. How successful the false trail was, can be judged from the fact that of the more than 36 salvoes fired, none came anywhere near the submarine; only two slightly shook the submarine. Most, being far away, could just be heard on sonar."

Admiral Kohli's book states:*

"While in the process of hunting, the enemy submarine with her superior sonar facility, obtained contact of KHUKRI before her own detection by the ship and struck KHUKRI by a salvo of three torpedoes in quick succession. The ship sank in a matter of minutes at 2055 on 9 December, taking down with her 18 officers and 176 men including the Commanding Officer, Captain MN Mulla. It was a serious blow in an encounter in which the superior underwater destruction capability and its allied weapons systems of a modern submarine turned the scales and thus the hunter became the victim. A subsequent technical enquiry also revealed certain failings and non compliance on the part of KHUKRI's A/S Team with the laid down A/S doctrine."

KIRPAN, who was searching for the submarine together with KHUKRI, reported detecting torpedoes going past her at the time KHUKRI was torpedoed. She took vigorous evasive action and fired mortars on the torpedo bearing. After a few salvos, her mortars went non operational. KIRPAN now faced a dilemma - should she rescue KHUKRI's survivors - either by going amidst them on a dark night or should she lower her boats to rescue survivors. Both actions would require KIRPAN to stop and this would make her an easy target for the submarine, if it chose to attack KIRPAN. Or should KIRPAN leave the area, repair her mortars and return to the area with an additional ship to rescue the survivors and start hunting the submarine? This however would give the submarine time to get away from the scene of the sinking and consequently greatly enlarge the area to be searched. The CO of KIRPAN decided to withdraw from the scene and return later.

Admiral Kohli's book states:**

"There was some controversy about KIRPAN withdrawing from the scene of the sinking instead of picking up survivors. She had heard the hydrophonic effect of more torpedoes and she had defective mortars. In the circumstances she took the wisest course. After meeting with KATCHALL, she returned to the scene in her company to carry on with the hunt."

On receiving KIRPAN's signals reporting the sinking of KHUKRI, FOCINCWEST rushed rescue forces to the scene. By the time KATCHALL and KIRPAN returned the next morning, only 6 officers and 61 sailors had survived to be rescued.

FOCINCWEST cancelled the third missile attack on Karachi which was to be have been carried out on the 10th night and deployed forces to hunt the submarine.

Anti Submarine Operation Falcon

Admiral Kohli's book states:***

"A massive hunt was launched for the killer submarine with all available A/S ships, Seakings and Alizes.

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* Page 76.
** Page 77.
*** Page 77.

"The Alizes laid a barrier of sonobuoys and the Seakings continued to operate from Diu until the passage became so long that time on the job was much reduced. The IAF mounted sustained maritime reconnaissance searches in search of the submarine. For the next four days, all forces were engaged in relentless and coordinated activity. Ships reported successful attacks on all four days. The submarine was slowly making its way towards Karachi where air cover would prevent further attacks and save her. It was evaluated by those taking part in the hunt that the submarine was certainly severely damaged and that her arrival in Karachi was problematic. The hunt was terminated reluctantly on the evening of 13 December as our forces were approaching within range of shore based Pakistani aircraft."

After the War

After the war, there was considerable debate on:

- Whether two ships were a viable enough force to send on an anti Daphne Hunter Killer mission without anti submarine air effort in direct support.
- Whether KHUKRI's doing so low a speed was related to the experimental Sonar 170 modification.
- Whether the Seakings could have been utilised more offensively.
- Whether KIRPAN was justified in withdrawing from the scene after KHUKRI's sinking instead of immediately rescuing KHUKRI's survivors.
- Why Operation FALCON was unable to locate the Pakistani submarine.

Since the action of the Commanding Officer of the KHUKRI going down with his ships had seized the nation's attention, each of these issues bacame sensitive and controversial, because they called into question:

- The very prudence of FOCINCWEST having launched the operation, more-so as he himself was later to admit in his book "We Dared" that:

  "The French Daphne class submarines were the most modern conventional submarine, with sensors and armament far superior not only to our submarines but also to our anti submarine frigates.

  - "In consultation with F 14, who accepted decreased anti submarine capability of the two ships, KHUKRI and KIRPAN were sailed for the hunt."
- The imprudent actions of the CO KHUKRI in a known very high submarine probability area.
- The glaring inadequacies in lifesaving equipment.

Notwithstanding these sensitivities, intensive enquiries were initiated.

Post War Inquiries on the Loss of the KHUKRI

Since the Daphne class submarine's anti ship capability was known to be and accepted to be superior to our anti submarine capability, should the anti submarine operation have been launched at all?

The consensus was that in war, it is unacceptable to let an enemy submarine threaten you on your doorstep - it has to be hunted.

Were the two frigates and Seakings deployed on 8 December adequate to cope with a Daphne class submarine?

It emerged that the Seaking helicopters, which were the Navy's latest and best anti submarine system, could have been better utilised operating from Diu but they were considered to be defenceless if attacked by Pakistani aircraft. However, available Super Connie maritime recce aircraft and Alize anti submarine aircraft should have been utilised in support of the operation from the moment it started on 8 December.

Why was KHUKRI doing slow speed when tactical doctrine laid down high speed?

It emerged that with the assistance of the Bhabha Atomic Research Centre in Bombay, a secret but promising experiment had been initiated to increase the range at which ships sonars could detect submarines. The modification equipment had been tried at sea, results were promising but further improvements were needed. These were completed after the Western Fleet sailed on 2 December. After the 14 FS returned to Bombay, approval was given by Admiral Kohli for the modification kit to be embarked in KHUKRI when she sailed on 8 December. Throughout the search on 8 and 9 December, when the modification equipment was connected up to KHUKRI's sonar, the CO of KHUKRI had detailed discussions on the pros and cons of doing slow speed to increase detection range vis a vis doing higher speed and decreasing detection range. A conscious decision was taken by him to do slow speed. In this connection, Admiral Kohli's book states:*

* Page 40.

"It is of the utmost importance that any new sensors which have a direct bearing and importance on the safety of the ship should not be experimented with during war, when the ships are engaged in active operations, especially so if this experimentation would place restrictions on the speed and movement of the ship."

Why weren't torpedo decoys streamed?

It emerged that this too was a conscious decision. The background noise generated by the noise maker to distract a torpedo's homing head was so high that it swamped the sonar which was trying to detect a weak submarine echo.

Could more lives have been saved?

It emerged that in the few minutes that it took the ship to sink, not many could jump into the sea. Of those that did, not many had lifejackets. Due to the shock of explosion, neither did all life rafts get released or inflated nor were those that did inflate made full use of.

Follow up action was initiated on diverse fronts:

- An Anti Submarine Warfare Seminar exposed, for the first time in the Navy's history, the sharp and serious differences in opinion on how to cope with a modern silent submarine having long range homing torpedoes. The basic issues were whether to sidestep a submarine or confront it? Whether to do slow silent speed against passive homing torpedoes? Or whether to do high speeds to outrun the torpedoes?
- The pre 1971, fatalistic acceptance of insuperable hydrological limitations in anti submarine efficiency was rooted out.
- The causes of poor sonar performance in the waters off the Indian coast were pinpointed and remedies identified.
- Longer range sonars and anti submarine weapons were inducted, as also electrically controlled noise makers which could be remotely switched on to decoy homing torpedoes.
- A Tactics Committee was constituted to formulate tactics for the Navy's unique mix of Russian, Western and indigenous sensors and weapons. Systematic effort began to keep up with the rapid advances taking place in submarine and anti submarine warfare, sonars, anti submarine torpedoes and rockets, torpedo homing mechanisms and torpedo decoys and integrate all this into a simple effective anti submarine doctrine.
- A new computer aided Tactical Teacher was installed at Bombay. In due course, this was augmented by a Tactical Evaluation Group.
- Major tactical exercises and debriefs were organised under NHQ's direct supervision to root out the ignorance of anti submarine tactics resulting from the lack of knowledge of own sonar and weapon capabilities and annual transfer of ASW officers and sonar operators. These helped to gradually standardise tactical doctrines and enhance operator efficiency.

The most important lesson that was learnt from the loss of the KHUKRI was that longer range sonars and longer range weapons had to be inducted if ships were to have a fighting chance against modern submarines and their long range homing torpedoes.

Immediate action was taken to improve the anti submarine capability of the Leander Class frigates then under construction in Mazagon Docks at Bombay. The significant improvements which were achieved have been described in the chapter dealing with the Leander Project.

In retrospect, KHUKRI's tragic loss did not go in vain.

Submarine Operations

Western Naval Command was allocated two submarines KURSURA and KARANJ operating directly under FOCINCWEST. Since the approaches to Karachi and the Makran Coast were going to be transited by the Western Fleet and by the submarines, waiting stations and submarine havens were established. To exclude any possibility of mistaken identity, two precautions were taken:

- Corridors were demarcated which were not to be crossed.
- Submarines were required to positively identify a target before attack.

KURSURA's Patrol

Admiral Kohli's book states:*

"KURSURA was deployed on patrol during the precautionary stage, before the outbreak of hostilities. The aims of the patrol were:

- To attack and sink all Pakistani warships.
- To sink all merchant shipping sighted/ detected when specifically ordered.
- Patrol and surveillance.

* Page 82.

"A waiting station and two patrol areas were established. The submarine was to proceed to her waiting station prior to the commencement of hostilities and move into her patrol area only after receiving a signal `Commence hostilities with Pakistan'. She sailed from base port on 13 November 1971 and arrived in her waiting station in the forenoon of 18 November. She stayed on patrol in her waiting station till 25 November. Thereafter, she was shifted to another area where she remained till 30 November. On 30 November, she was ordered to R/V KARANJ at sea to pass necessary information and instructions which she did and thereafter she entered Bombay on 4 December.

"She encountered a number of tankers in her waiting station, and two or three commercial aircraft daily on international routes. She had fair weather throughout."

KARANJ's Patrol

Admiral Kohli's book states:*

"KARANJ, with orders similar to KURSURA, sailed on 30 November 1971 for her patrol. She effected R/V with KURSURA at sea on 2 December 1971 and thereafter proceeded to her waiting station which she entered at 1600 hrs on 3 December. The same night, she received information that hostilities with Pakistan had broken out. She was, however, ordered to remain in her waiting station. On 5 December at 0145 hrs she received orders to move to her patrol area which she entered on the morning of 6 December. On transit she received news of the Fleet's bombardment of Karachi and the sinking of two PN warships. Morale on board was high.

"The Commanding Officer, traversed the entire patrol area assigned to the submarine. His deductions at the end of it were:

- *Upto 8 December.* Ships were using the normal shipping route traversing the route east of Ormara by night. Air recce was 'moderate' east of Ormara and 'slight' west of it. Warship activity was 'slight'.
- *On the night of 8/9 December.* Hectic aerial recce and warship activity to the west, north-west and south-west of Cape Monze. Radio Pakistan announced a hunt for an Indian submarine off their coast.
- *9/10 December and thereafter.* All shipping traffic moved inside the 10 to 15 fathom line along the Makran coast. Warship activity frequent in Sonmiani Bay and off Ormara but close to the coast. Intense aerial recce east and south of Ormara from Monze and following the same route while approaching from the south.
- *11 to 14 December.* No shipping activity west of Ormara. Intense aerial activity east of Ormara and moderate to the west. Some warship activity possible near Ormara.

"On the evening of 14 December, the submarine was directed to withdraw from her patrol and she returned to base port on 20 December 1971.

"KARANJ thus became the longest deployed naval unit during the 1971 Indo-Pak conflict. She had been out from 30 November to 20 December 1971. On four different occasions during this patrol, the submarine almost released her weapons on merchantmen. The requirement to positively identify these precluded any firings."

In Retrospect

In Admiral Kohli's words:**

"The stipulation of "positive identification" prior to attacking any enemy ships deprived our submarines of any real action. The correct line of action would have been to have declared `War Zones' and sink any ship transiting through these, after a suitable warning period. Only the submarines could have achieved this with impunity in enemy waters."

Loss of Alize 203

Immediately after KHUKRI sank, two Alizes were sent from Santa Cruz at short notice to operate from Jamnagar on 10 December and assist in anti submarine operations.

On the afternoon of 10 December, reports were received from Okha of suspicious warship and air activity near Jakhau on the Indo-Pak border. FOCINCWEST decided to recce the area. One of the two Alizes at Jamnagar was directed to carry out a low level recce of the area before returning to Bombay. Air Force Canberra aircraft were tasked to be ready at Poona to attack whatever the Alize reported.

The Alize did not arrive at Bombay that evening. Pakistan Radio announced that an Indian Navy Alize has been shot down "near Karachi." Pakistani records state that Pakistan Air Force Starfighters

* Page 82.
** Page 80.

returning from a raid on Okha chanced to encounter the Alize and shot it down with an air to air missile.

Trade Warfare

In his book, Admiral Kohli states:

> "Towards the third week of November 1971, Pakistan declared a National Emergency and the Pakistan Navy assumed control of Pakistani merchant shipping. Very soon thereafter, FOCINCWEST was given control of Indian merchant shipping. The first action taken was to recall all Indian ships from the Gulf and direct all merchant shipping not to approach the Pakistan coast.
>
> "The Pakistan Navy also announced the closure of Karachi port and merchant shipping was warned not to approach within 75 miles of Karachi during the dark hours".*
>
> "During the operations of the Fleet, a number of merchant ships and dhows were intercepted and examined for contraband. Thus a Swedish ship and a dhow on 6 December and a Panamanian ship on 7 December were sent to Bombay under the charge of a boarding party. On 9 December, a large dhow was apprehended carrying Rs 60 lakh worth of gold which was not in the manifest; the crew of the dhow were all Pakistani nationals. On 9 December, the MYSORE group raiding the Makran coast apprehended the Pakistani merchant ship MADHUMATI. On 10 December, the ATHENIAN was apprehended."**

In Admiral Kohli's words:***

> "It was very satisfying to note that foreign neutral merchant ships and their representatives approached the Indian Government and the Navy for grace to leave Karachi in safety during those three hectic weeks. They had seen the devastation that had been wrought by the attack of the Indian Fleet. The Indian Navy was truly in command of the waters in the North Arabian Sea during those fateful days."

Defence of Bombay

Admiral Kohli's book states:****

> "Contingency plans were made for the defence of all the major ports on the West Coast but special emphasis had to be directed towards Bombay harbour because it was our main port, and the home of the Western Fleet and the premier dockyard of our Navy. It was appreciated that the enemy would deploy two submarines off Bombay in order to pick up our main naval units. They would also employ their Midgets and Chariots to indulge in sabotage inside the harbour. There was also a possibility that their ships or submarines may lay mines in the approaches to Bombay harbour. Provision had to be made for all these forms of threats. Any air raid attacks by the Pakistan Air Force would be dealt with by our Air Force and by the anti-aircraft fire from our ships and shore batteries located at different strategic points.
>
> "Patrols were organised by surface ships inside the harbour and upto 20 miles at sea. Air reconnaissance was instituted upto 60 miles at sea. Missile boats were at immediate notice to proceed to sea and deal with any attempt by enemy naval units which approached Bombay harbour to carry out any bombardment. Our 6 inch shore batteries were brought to immediate readiness also.
>
> "Merchant ships were warned not to approach Bombay harbour to within 40 miles between dusk and dawn; it was hoped that this measure would ensure that any radar echoes obtained during the night could only be that of an enemy ship.
>
> "The harbour patrols were ordered to explode two-pound charges (especially made for the occasion) ever so often to scare away any Midgets or Chariots. All ships anchored in the stream were made to illuminate the water around the ship so that patrols on board would be able to visually apprehend any danger to their ship.
>
> "Close liaison was established and maintained with the police and the Home Guards; they were shown photographs of Midgets and Chariots and frogmen and given detailed instructions on how to deal with personnel landed by such craft to carry out sabotage.
>
> "Plans to lay minefields off Bombay harbour and arrangements for swept channels were progressed and mines prepared for this purpose.
>
> "Fishing boats and vessels were mobilized and their cooperation enlisted. They were encouraged to go out to sea and report any suspicious movements. Fishermen were familiarised with silhouettes of Pakistani warships and submarines and also Midget

* Page 58.
** Page 65.
*** Page viii.
**** Page 85.

submarines and frogmen.

"Close and constant liaison was established with the port authorities and the Port Advisory Committee to undertake necessary measures for important port installations and merchant ships in harbour to come under the umbrella of the overall defensive measures instituted by the Navy for the defence of Bombay.

"Additional batteries ashore were installed - two 4" guns at Okha, two 40/60s at Jamnagar, one 40/60 at Valsura. At Bombay, the existing batteries were augmented by putting two additional 40/60 guns each at Colaba Point and Worli. Three additional 40/60 guns were installed at Oyster Rock and Middle Ground. Four 40/60 guns were installed at critical points in the Naval Dockyard.

"The War Watching Organisation was instituted: suitable temporary telephone lines were installed so that watchers at lighthouses and other promontory points would report enemy warships or suspicious vessels as soon as they were sighted.

"We had acquired one dozen fishing trawlers from the trade and these were fitted out for carrying out harbour patrols and limited seaward patrols. Naval personnel were appointed to them and the existing crews were signed on for limited naval service.

"Our seaward resources of ships and crafts were augmented by two Alizes, four Seakings and two Alouettes. The Alizes were deployed on seaward patrols of 60 miles from Bombay.

Various other security measures were also instituted:

- Screening of antecedents of officers and crews of Indian merchant ships to prevent vital information from leaking out.
- Naval publications withheld from coastal vessels.
- Adoption of strict security measures against possible use of dhows and neutral ships for landing of saboteurs and for towing Midgets from Pakistan.
- Supervision on the steering of foreign ships in harbours.
- Guarding of sensitive points and vital installations in harbours.
- Control of W/T and signal stations and lighthouses to avoid their misuse.
- Tightening of restrictions on landing of Chinese and Pakistani nationals from neutral ships calling at Indian ports."

A Retrospect of Operations in the Western Naval Command

Of the three threats posed by the Pakistan Navy, the surface warship threat was contained by the missile attacks on Karachi. These confined the Pakistan flotilla inside Karachi harbour to escape further losses.

The submarine threat was more serious. Despite the known limitations in anti submarine capability, the question was whether:

- to do something i.e. hunt and kill the submarine or
- do nothing i.e. let the submarine look for its targets while ships got on with other missions.

In retrospect, it is clear that even if all available air effort and three or more ships had been deployed to hunt the submarine, the submarine torpedoes could not have missed KHUKRI doing so low a speed. If air effort had been better managed, it could have driven the submarine away from the Diu area and thereby reduce the threat to the missile forces assembling at Diu. The loss of the KHUKRI was a serious blow. But it did lead to extensive improvements in anti submarine capability.

The air threat too was serious. But no one could have anticipated that the Pakistan Air Force would be so slow in responding to the requests of the Pakistan Navy. The chapter on the "Analysis of the Pakistan navy's Accounts of the 1971 War" discusses the causes for this lack of support.

In Admiral Kohli's words:*

> "Our Fleet was lucky to have got away without any air attacks by shore based aircraft from Pakistani territory. However enemy attacks on naval shore targets did take place. From 5 December onwards, Okha received concentrated attention by the Pakistan Air Force aircraft and was bombed almost every day. Our special oil fuel tank was blown up in the very early stages of the war and our use of Okha as an advance base came to an end."

In spite of the material state of ships being so poor, ships companies managed to achieve almost continuous high speed operations for a full seven days after 2 December.

By 9 December, after the second missile attack on Karachi, the Navy had achieved maritime dominance of the approaches to Karachi.

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* Page 64.

11

Naval Operations in the Southern Naval Area

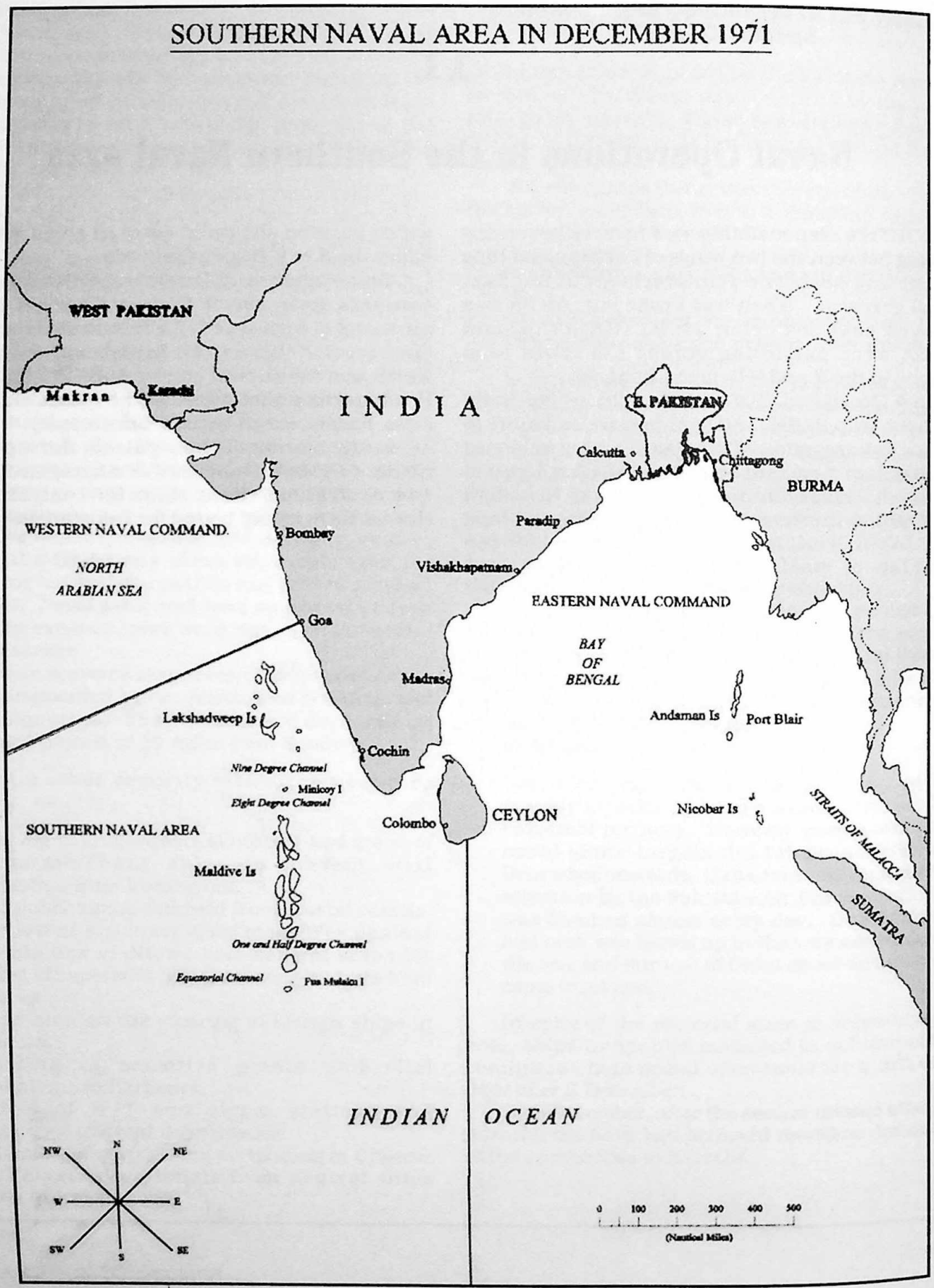
FOCSOUTH's responsibility was to interdict enemy shipping between the two wings of Pakistan and thus prevent any seaborne reinforcement of the East Bengal garrison. When war broke out, AMBA was deployed east of Ceylon whilst GODAVARI and GANGA were patrolling across the route from Colombo to the 8 and 9 Degree Channels.

On 4 December, GODAVARI captured Pakistani merchant ship PASNI and sent her under escort to Cochin. Interrogation of the PASNI's crew indicated that Pakistani merchant ships had been instructed to use the 8 Degree Channel. AMBA was therefore redeployed to the west of the 9 Degree Channel from which position she could cover all ships making for either the 8 or 9 Degree Channels.

On midnight of 12 December, AMBA detected two contacts near the 9 Degree Channel heading southeast at high speed. Air reconnaissance the next day revealed these to be British warships, one of which was the aircraft carrier ALBION. Since Naval Headquarters were aware of the movements of this force, further action became unnecessary.

In the course of their patrols during the war AMBA, GODAVARI and GANGA interrogated a total of 144 neutral merchant ships for contraband and cleared them as not bound for Pakistan ports.

SOUTHERN NAVAL AREA IN DECEMBER 1971



12

Analysis of the Pakistan Navy's Accounts of the 1971 War

The perceptions, plans and activities of the Pakistan Navy can be discerned from the following source documents:

- "Pakistan's Crisis in Leadership" by Maj Gen Fazal Muqeem Khan published in 1972, soon after the war.
- "The Story of the Pakistan Navy 1947-1972", compiled by the PN History Section in 1991, twenty years after the war.
- "The History of the Pakistan Air Force" by Syed Shabir Hussain and Squadron Leader M Tariq Quareshi published in 1982 by the PAF Press.

To present a balanced overview, excerpts which relate to specific naval operations have already been conjoined with the Indian accounts of these operations eg the First Missile Attack, the Second Missile Attack, the Sinking of the KHUKRI and Naval Operations in East Pakistan. The remaining excerpts of relevance have been presented in this chapter.

To facilitate analysis, the source material has been rearranged under the following headings :

- Pakistan Flotilla Operations
- Pakistan Submarine Deployment
- Assessment of Pakistan Air Force Performance
- Pakistan Navy and Air Force Cooperation
- Pakistan Maritime Reconnaissance

The timings in the Pakistan documents are Pakistan Standard Time. 30 minutes should be added to Pakistan Standard Time to bring it to Indian Standard Time.

Pakistan Flotilla Operations

Excerpts from "Pakistan's Crisis in Leadership"

"The naval war plans had last been reviewed in March 1971 and were based on the limited aim achievable by the available strength and state of weapons and the equipment that the Navy held. As there had been no changes in the Navy, no need was felt to review or revise them after that date. While planning, the Navy had assumed that it would be given a minimum of one weeks' notice before the war to redeploy and alert its units at sea. It had also expected that the promised limited air support would be made available within eighty miles of Karachi.

"As for the Indian intentions, the Navy had visualised that with Osa class missile boats and submarines available to the Indians, together with the threat from Pakistan submarines, their Navy would not attempt to attack Pakistan ships by their surface ships unless submarines, missiles and air attacks failed to neutralise the Pakistan Navy. Therefore its plans were based on the appreciation that it had no answer to the Indian Navy's missile boats. The surface ships were not to be exposed to this danger until the missile boat threat had been neutralised. The ships had to remain at sea within the Air Force fighter cover. The submarines, however, were to be deployed on offensive patrols off the major Indian ports and other focal areas.

"Like other major military decisions, the C-in-C Navy had neither been consulted nor associated with any of the deliberations that resulted in the decision to counter-attack from West Pakistan. He was merely called up by COS Army, to Rawalpindi on November 29, 1971, and informed of the President's decision to open hostilities in the West in a few days. He was not given the actual date and time, which were to be conveyed to him by C-in-C Air through a mutually agreed code word at the appropriate time.

"The mutually agreed code word was passed to C-in-C Navy at 1515 hours on December 3, 1971, personally by the C-in-C Air. The commanders concerned were hurriedly collected and given their instructions and signals were despatched to all ships by 1700 hours. The Navy had been deployed in their war stations earlier, when Indian belligerent intentions had become clear and on subsequent Indian invasion of East Pakistan on November 21, 1971. Some ships were patrolling 40 miles off Karachi and others 70 miles off the port. This was done for monitoring and checking the incoming ships and suspected craft approaching Karachi.

"On December 3, the PIA Fokker flying along the Kathiawar coast reported the sighting of India's Western fleet. The Pakistani submarines deployed in the area were not able to attack it, as they got their orders to commence their operations late that evening. Indeed the submarines had themselves seen the Indian Fleet proceeding overhead on December 2 but were unable to attack for the same reasons. As an alternative, an air strike was requested by the Navy but it was not available. Thus, by not giving sufficient notice of starting the operations to the Navy, a good opportunity to attack the Indian Western Fleet was missed.

"The first Indian Naval action took place on December 4, 1971. The Indian Air Force and the Navy seemed to have first class coordination. They had already established a Joint Centre in Bombay a few months earlier. Indian Naval attacks were always covered by the Indian Air Force by keeping Karachi under air attacks. At 0800 hours, the Indian Air Force started strafing Karachi. Two aircraft flew very low over the harbour and an oil tank in Keamari was hit by rockets. Indian aircraft strafed at intervals for the whole of the day on December 4. While the air raids were going on, the radar picked up a suspect contact at 2100 hours about 40 miles south of Karachi. It must be mentioned here that the presence of Osa Missile Boats of Russian origin, which had been taken over by the Indians, was known and upto the middle of November 1971, Russian naval personnel were seen on these boats in Bombay harbour. The Russian method of deployment which was followed by these boats was that they operated with submarines which acted as watch-dogs and observation posts. The Indian submarines were keeping 60 miles off Karachi and closed up only during the night. The Osa Boats had to have the submarines as directing platforms for their operations.

"After having been informed about the suspect contact, efforts were made to identify this contact. While this was being pursued, the attack came. At 2330 hours the Indian Air Force attack was still on, when PNS KHYBER out on patrol 70 miles off Karachi, signalled that it had been hit by an aircraft bomb. The NHQ was taken aback by this information.They could not believe that an aircraft could do this in the middle of the night. They asked for further information. No reply came from the ship as all communications with it had been lost in the meantime.

"About the same time HQ PNS Qasim, at Manora, reported having seen a big fire glow on the horizon out at sea. A fast patrol boat was at once despatched to investigate. On arriving at the site, it found mine sweeper PNS MUHAFIZ, 40 miles off Karachi, burning. The first person to be picked up by this boat from the water was the Captain of the minesweeper. It only came to light through him that the ship had been hit by missiles. No report of this incident had been received from this ship. The Indians had hit the two ships simultaneously. Other survivors were also picked up. On receiving information of the missile hit on PNS KHYBER, the boat despatched to pick up its survivors returned without success with the excuse that the weather at sea was very choppy and the survivors picked up from the minesweeper were in a bad way and needed medical attention immediately. All efforts were made to locate the KHYBER's survivors and 70 of them were rescued the next afternoon after about 18 hours of its sinking, although the search had continued by sea and air for the whole day.

"At midnight on December 4, the local Air Force Commanding Officer was approached to order an attack on the retreating missile boats. It was calculated that they would take six hours to reach their nearest sanctuary and thus allow enough time for the Air Force to attack them early next morning, but no air strike could be made available. It was known later that after the missile attack, the Indian boats instead of retreating south, had sailed westward off Gawadar where they stayed for three days. This fact came to notice by a chance conversation with someone travelling in a Cessna which had flown over Gawadar on December, 5. After having seen the pictures of the boats, he came out with the information that he had seen two of them near Gawadar.

"Anyway the Air Force in Karachi did not react to the Navy's request; therefore, the C-in-C Navy rang up the C-in-C PAF in Rawalpindi at 0400 hours and woke him up. After all sorts of pleading, the answer he obtained was 'Well old boy, this happens in war. I am sorry your ships have been sunk. We shall try to do something in the future'.

"After the missile attack, the position of the surface ships at sea became almost untenable, as they had no defence against missiles. On December 7, the Flag Officer Commanding the Flotilla, after consulting his sea going

Commanders, met the C-in-C. He acquainted him with the prevailing situation and suggested a withdrawal of the ships inside the harbour in order to escape a missile attack which was most likely to occur. The ships would of course be more susceptible to air attack there, but could also provide a powerful anti-aircraft threat, particularly against a low flying attack. It was, therefore, decided to withdraw all ships to the harbour on December 8, except for the fleet oil tanker which was fully loaded. It had to stay out because of fire hazard within the harbour by its presence and also that its deep draught restricted her entry into port. The oil tanker DACCA was, therefore, ordered to anchor with the other merchant ships away from the port.

"The Indian missile boats on their passage from Gawadar to Bombay, attacked the merchant ships outside the anchorage at night on December 8. Gulf Star, flying the Panama flag and the US owned ship Venus Challenger were sunk and Harmatton, a British vessel was severely damaged. DACCA along with three merchant ships, was also hit. Her company valiantly fought the fire and saved the ship after heavy damage had been done. One of the missiles fired by the missile boats flew over Manora and hit the first big steel structure it came cross. That was one of the oil tanks at Keamari which started huge fires in the oil farm. The course followed by this missile was strange, perhaps its homing device had failed.

"The withdrawal of the naval surface ships into harbour was thus claimed by NHQ as a sound tactical move as otherwise, all the naval units would have been attacked by the missile boats and in all probability most of them would have been sunk. Some officers of the Navy thought that it was a shameful act for the Navy to retreat to the harbour. This withdrawal is however a point on which any verdict is best left to Naval experts who would probably be discussing this as a case study for years.

"On December 8, air attacks on Karachi had started at 2000 hours. Again the air attacks were well coordinated with the missile attack at 2300 hours. Karachi was kept under air attack till 0200 hours on December 9 to give enough time to these missile boats to get away. The Navy was blamed all along by the public for doing nothing against the constant air attacks on Karachi. But the public did not know that the Navy had neither the means nor the responsibility for the air defence of Karachi. The Navy's presence in the harbour, however, acted as a deterrent to Indian aircraft. The dockyard was bombed but providentially remained safe. Four Indian aircraft were brought down by the Navy's anti-aircraft guns that night.

"In the meantime PNS BABUR while operating with other units of the Flotilla off the Makran coast in the evening on December 5, engaged a submarine. Destroyers were immediately despatched to carry out anti-submarine operations. Sonar contact was achieved with the submarine which had by now submerged, and a number of attacks were carried out with anti-submarine mortars. Later, on basis of the evidence collected, the Navy claimed to have damaged the Indian submarine"

Excerpts from "Story of the Pakistan Navy"*

"On 22 November, the Government of Pakistan issued a proclamation of state of emergency. The Pakistan Navy took on added precautions on 24 November, and the fleet came to standby with instructions to avoid creating the impression of an aggressive posture, as directed by the Government. Harbour defence measures were advanced and the Pakistan Navy took over control of all merchant shipping. Sea traffic from the west was diverted to a safe route.

"A critical element in the war at sea was the correct and timely deployment of the submarines. As tensions with India continued unabated, hostilities were inevitable. The Navy ordered the submarines to slip out of harbour quietly on various dates between 14 and 22 November. They were allocated patrol areas covering the west coast of India while GHAZI was despatched to the Bay of Bengal with the primary objective of locating the Indian aircraft carrier, INS VIKRANT, which was reported to be operating in that area. Interdiction of merchant shipping was, however, not permitted due to lack of Government approval for this form of warfare. It may be mentioned that the Indians suffered no such inhibitions.

"On 27 November, NHQ instructed FOFPAK (Rear Admiral MAK Lodi) to supplement the patrol undertaken by the minesweepers. The minesweepers were employed on an inner patrol and destroyers on an outer patrol. The object of the outer and inner patrols was to provide early

* Pages 333 et seq.

warning of an enemy attack developing towards Karachi and to enable the fleet to make a timely interception. It was mistakenly thought that a missile attack would be neutralised by the PAF. At one stage commanding officers of ships of the flotilla expressed the view that greater emphasis should be placed on the possibility of a missile attack, and the concept of inner and outer patrols was abandoned. This was subsequently reinstituted.

"A plan for a counter-offensive in the West was presented to the President of Pakistan on 30 November, 1971 and the high command decided to initiate military operations in the West on 3 December 1971. Pre-emptive strikes were carried out by the PAF at several Indian air bases along the western border and 3 December 1971. NHQ announced the outbreak of the war at 1845 on 3 December.

"The operational orders issued to the submarines confined them to attacks against warships only and interdiction of merchant ships was not permitted. The Indian naval units operated with no such inhibition; they attacked and captured several merchant vessels. However, the important point was that the submarines were at their war stations on 3 December when open hostilities started, poised to attack Indian naval units.

"The PN reconnaissance aircraft sighted a formation of eight enemy ships when the war had just started; but the naval observer, being unaware of war having started, made his contact report hours later after landing. Had the Pakistan Navy been consulted or at least informed in time, this enemy force would have been destroyed or seriously damaged by our submarines and PAF effort. The outcome of naval warfare would then have been completely different than just being able to draw equal blood.

"On 3 December 1971, most of the Pakistan Navy ships were operational. BABUR and MUHAFIZ were at anchorage. DACCA was at Manora anchorage for a 5 day maintenance period with dockyard hands on board. SHAHJAHAN, MUJAHID and MAHMOOD were in harbour preparing for passage to East Pakistan. The only other operational destroyer in harbour was BADR.

"ALAMGIR was under repairs scheduled to be completed on 15 December, 1971 and TUGHRIL was under refit. Two gun boats from Saudi Arabia, re-named SADAQAT and RAFAQAT, were at Karachi under the direct operational control of MHQ.

"KHAIBAR and TIPPU SULTAN were searching for MV Jhelum about 80 miles south-west of Karachi on a mission to escort her to Karachi. JAHANGIR was on patrol about 60 miles south of Karachi. She had been tasked to assist KHAIBAR to locate MV Jhelum and was to resume patrol thereafter. ZULFIQAR was on the inner patrol 30 miles south of Karachi.

"On the outbreak of hostilities, BADR and SHAHJAHAN were ordered to join FOFPAK at Gaddani. The minesweepers were sailed and tasked to carry out check sweeps outside the harbour and maintain a patrol between Cape Monze and Manora lighthouse. Within a few hours of the outbreak of war, all operational Pakistan Navy ships had put to sea and were on their war stations as planned: the surface fleet operating off the Makran coast and the submarines in their allocated areas off the Indian coast.

"KHAIBAR, with TIPPU SULTAN and JAHANGIR in company, learnt about the outbreak of hostilities through Radio Pakistan broadcast at 1800, when she was searching for MV Jhelum which was to be escorted to Karachi. C-in-C's message regarding outbreak of hostilities was received by these ships about an hour later at 1905. Three hours later at 2200, this task unit was alerted to the presence of a force consisting of two merchant ships screened by 8 warships off Diu Head on the Kathiawar coast (in position 20 50N, 67 23E at 2140 on 3 December) through a message transmitted to ships at sea by MHQ. The information in this message was based on an enemy report made by PN S/M HANGOR on patrol in the area.

"The presence and composition of this force had also been confirmed by a reconnaissance aircraft on the evening of 3 December. An amplifying report indicated that the force had moved 30 miles southwards by 0332 on 4 December, although it was reported on a north-westerly course in the initial message. This tallies with the movement of Western Indian Fleet which had sailed out of Bombay on 2 December, and subsequently, suspecting detection by our submarines and reconnaissance aircraft had split and moved south. Probably this was the MYSORE group, which had been allocated two Osas for a missile attack on Karachi.

Pakistan Army officers laying down arms - 16 December 1971

Lt Gen Niazi signing the Instrument of Surrender at Dhaka - 16 December 1971 with Lt Gen JS Aurora (GOC IN C EAST). Standing (L to R) Vice Admiral N Krishnan (DOC IN EAST) Air Marshal Dewan (AOC IN C EAST). Lt Gen Sagat Singh, Maj Gen JFR Jacob (Chief of Staff Eastern Army)

PRIME MINISTER

No.312-PMH/71

New Delhi,
December 22, 1971.

Dear Admiral Nanda,

The Navy's exploits in these fourteen days of fighting will long be remembered. The achievements of our Naval Forces have thrilled the nation. Your leadership and the daring and the skill of our Fleet have made singular contribution to the success of the war on both fronts. I should like to express the gratitude of the Government and the people of India to you and to your officers and men.

None of this would have been possible without the most exacting leadership and dedication at all levels. In this, your role has been crucial. No words can be a better recompense for your labours than the people's admiration and India's success.

With kindest regards,

Yours sincerely,

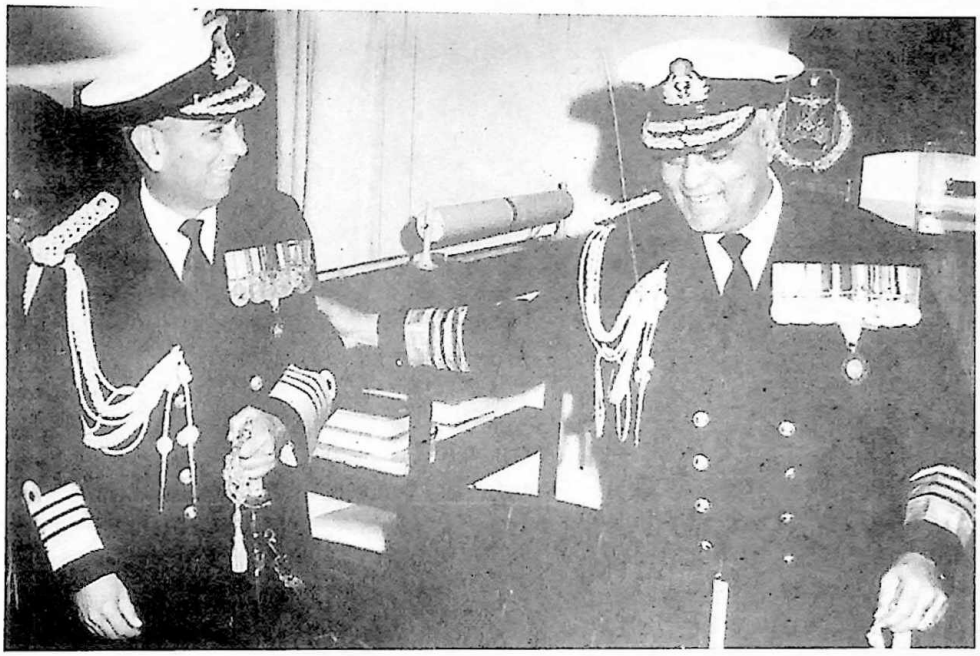
Indira Gandhi

(Indira Gandhi)

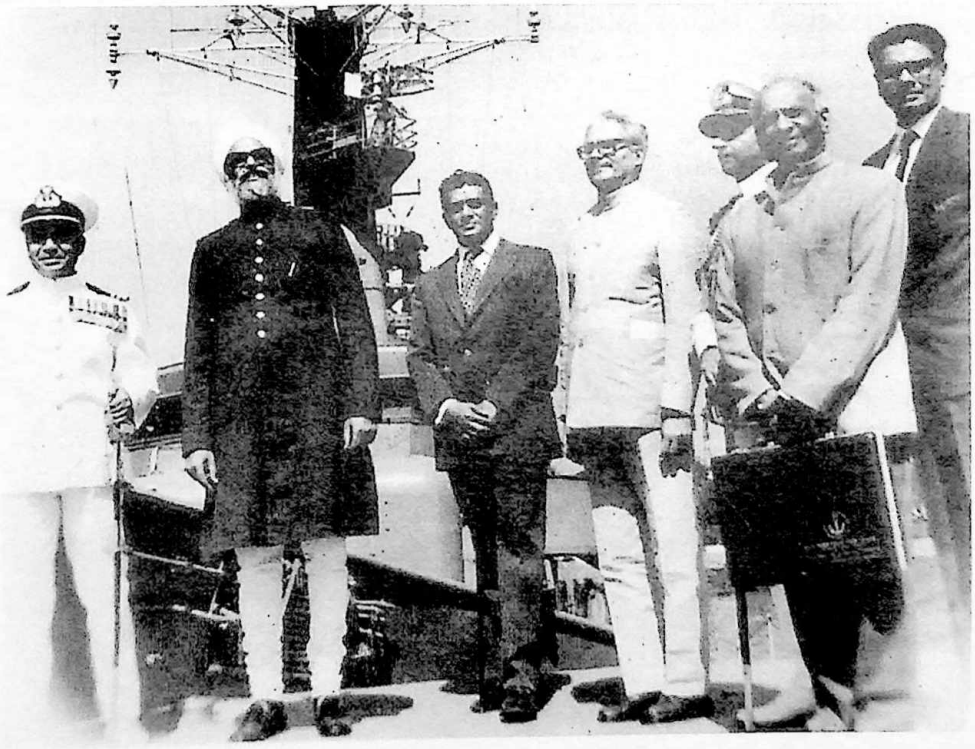
Admiral S.M.Nanda,
Chief of the Naval Staff,
New Delhi.

Prime Minister's letter to the Chief of the Naval Staff after the 1971 War

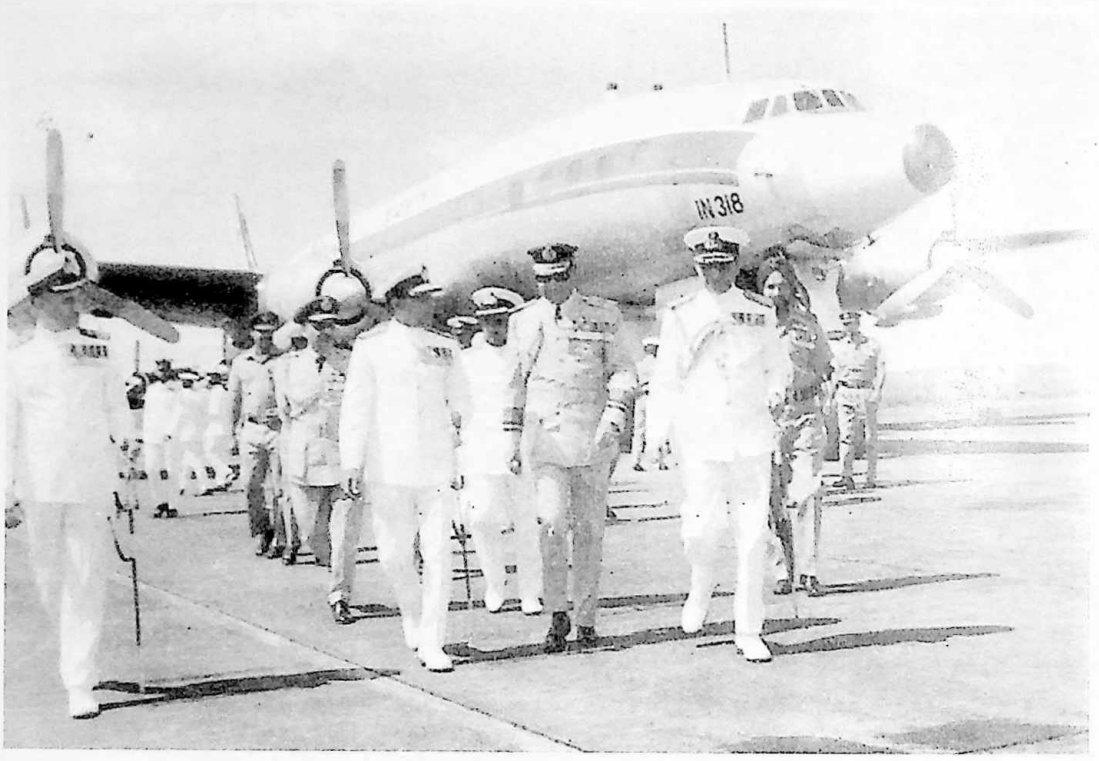
The Chiefs of Staff in the 1971 War with Defence Minister Jagjivan Ram. (L to R) Air Chief Marshal PC Lal (CAS), Admiral SM Nanda (CNS) General SHJF Manekshaw (COAS)



Admiral SM Nanda handing over charge of the Navy to Admiral SN Kohli - 1 March 1973



Commissioning ceremony of the second Leander frigate INS HIMGIRI (L to R) Cdr KN Zadu (CO), Sardar Swaran Singh (Defence Minister), Vice Admiral EC Kuruvila (CMD of Mazdocks), Vice Admiral J Cursetji (VCNS), Mr VN Gadgil, Minister of Defence Production, Shri MM Sen, Secretary Defence Production - 23 November 1974



On the occasion of the taking over of the Super Connie Maritime Reconaissance Squadron from the Air Force - 18 November 1976. (L to R) Commodore SL Sethi (NOIC GOA), Vice Admiral VEC Barboza (FOC IN C SOUTH), Commodore RAJ Anderson (CO HANSA), Air Chief Marshal A Moolgavkar (CAS), Amiral J Cursetji (CNS)

Prime Minister of India, Smt Indira Gandhi and Admiral of the Fleet of the Soviet Union SG Gorshkov

"Although this was not the force which launched the first missile attack off Karachi on 4 December, MHQ's assessment was substantially correct; for the ships of this force did, in fact, have missile boats in tow to be released for an attack which had to be postponed from 5 to 8 December.

"After ordering TIPPU SULTAN to release an Indian dhow which had been taken in tow by her earlier, the OTC increased the speed of the force to 25 knots and at 2345 signalled his intention to join the flotilla. It will be recalled that the last orders for this unit were for KHAIBAR and TIPPU SULTAN to take MV Jhelum under escort and for JAHANGIR to resume outer patrol. With the changed situation, however, the ships expected new orders, but having received none decided to join the flotilla".

"As has been related in the section on Naval Operations in the Western Naval Command, two missile attacks took place. The "Story of the Pakistan Navy" states:

"There followed in the wake of the second missile attack yet another controversial decision: orders were issued at 1400 on 9 December to ships at Karachi to reduce their ammunition outfit.

"After the return of the ships to harbour on 8 December, their vulnerability in the port remained a topic of continuing debate. In the early hours of 9 December, only a few hours after the missile attack, dockyard workshops and buildings were severely damaged in a low level attack - facilitated, no doubt, by the light emitted by the huge flames of the fire at the oil farm - by an IAF bomber. Under these circumstances anxiety about the catastrophic consequences of an explosion in a ship fully loaded with ammunition was only natural.

"The decision to reduce the ammunition outfit, not withstanding the logic behind it, continues to be questioned by many. The adverse effect on morale of men, who were inclined to see it as a step to limit the surface ships operational role, was immediate. Not accepted by most as a necessary rational step, the decision remained a controversial issue.

"It was perhaps in consideration of the morale factor, and to avoid the impression that the fleet was immobilised, that a strategy of high speed probes was introduced. This required random sorties of short duration to be carried out at high speed by designated ships. Destroyers and frigates were employed in this manner until the end of the war.

"This speaks much for the mettle of officers and men who readily undertook these operations with enthusiasm, inspite of the knowledge that the ships had no viable defence against the surface missiles.

"While evaluating the performance of the surface fleet, it must be noted that in spite of the tremendous advantage, particularly in weapon range, which the Indian Navy enjoyed, our actual physical losses amounted to only one destroyer and a minesweeper sunk. This cannot be construed as the destruction of our fleet which was the Indian objective. The Indian Navy did succeed in gaining initial advantage through surprise but failed to fully press home its gains. The second missile attack cannot be called an unqualified success when evaluated against the strategic objective of destruction of the Pakistan Navy Fleet. The shock effect created by the missile attacks was more significant and it was aggravated by the thought that we would not have air support.

"As far as the Pakistan Fleet is concerned, the psychological impact was far greater than that warranted by physical losses. Though the surface force managed to survive, it failed to retain its threat and deterrent value as a Fleet-in-Being. The obsolescence of its weapons apart, lack of adequate air support inhibited the success of its operations. It must also be a admitted that our surveillance capability and command and control facilities were far from satisfactory. The neglect of the Navy over several decades came through clearly in the 1971 war."*

Pakistan Submarine Deployment

In Dec 71, the Pakistan Navy had four submarines - the GHAZI on loan from America since 1964 and three new Daphne class submarines HANGOR, MANGOR and SHUSHUK acquired in 1970/71.

Excerpt from Pakistan's Crisis in Leadership

"With the outmoded surface fleet almost neutralised by the missile threat, the burden of the Pakistan Navy's entire offensive effort hinged on the small but effective submarine force.

"The submarines were to be deployed on offensive patrols off the major Indian ports and other focal areas. Three Daphne submarines were

* Page 356.

deployed off the Bombay and Kathiawar coast and the submarine GHAZI was despatched to the Visakhapatnam Naval Base in the Bay of Bengal. The GHAZI's task was to carry out offensive mine-laying against Visakhapatnam and the other three submarines had to attack Indian warships when ordered."

Excerpt from " Story of the Pakistan Navy"

"The Navy ordered the submarines to slip out of harbour quietly on various dates between 14 and 22 November. The Daphnes were allocated patrol areas covering the west coast of India, while GHAZI was despatched to the Bay of Bengal to locate VIKRANT.

"The operational orders issued to the submarines confined them to attacks against warships only and interdiction of merchant ships was not permitted."

On 22 November after the skirmish off Boyra in East Pakistan the previous day, COMSUB signal DTG 221720 to SUBRON 5 stated:

"Following areas occupied.

- PAPA ONE, TWO, THREE, FOUR.
- APA FIVE, SIX, SEVEN, EIGHT.
- BRAVO ONE, TWO THREE, FOUR, FIVE, SIX.
- MIKE".

The occupied areas referred to as PAPA ONE, TWO, THREE, FOUR, FIVE, SIX, SEVEN, EIGHT were the inner and outer patrol areas of ships of the Pakistan Fleet. The BRAVO areas were off Bombay occupied by MANGRO. Area MIKE was Madras occupied by GHAZI.

On the evening of 22 November, COMSUBS signal DTG 222117 addressed only to GHAZI and MANGRO directed them to "Arm all torpedoes."

On 23 November, the day Pakistan declared a national emergency, COMSUBS signal DTG 231905 to SUBRON 5 directed the submarine squadron to "Assume Precautionary stage".

On 25 November, COMSUBS signal DTG 252307 addressed only to GHAZI stated "Occupy Zone Victor with all despatch. Intelligence indicates carrier in port". Zone VICTOR was off Visakhapatnam.

On 1 December, one Daphne class submarine was seen entering Karachi harbour. This appears to have been SHUSHUK.

Role of Pakistani Submarines

'The Story of the Pakistan Navy' states:*

"Interdiction of merchant shipping was not permitted due to lack of Government approval for this form of warfare.

The operational orders issued to the submarines confined them to attack against warships only."

HANGOR's Movements Till 9 December**

"HANGOR slipped in the early hours of 22 November 1971 for a patrol off the Indian Kathiawar coast. On 23 November, when a state of emergency was declared by Pakistan, HANGOR was off Porbandar close to the Indian cost. On 1 December, she received orders directing her to shift to a patrol area off Bombay vacated by PNS Submarine Mangro on completion of her patrol.

"HANGOR was on the surface on the night of 2 December when, at 2340, a large formation of ships was detected on her radar on an easterly bearing about 35 miles away. Such abnormal detection ranges are frequently obtained in this area in the winter months due to anomalous propagation of radio waves, a phenomenon which results from the trapping of radio waves in ducts formed due to temperature inversions in the atmosphere. HANGOR closed this formation to a range of 26 miles at 0049 on 3 December, when she dived to a depth of 40 metres and tracked the ships on her sonar till the early hours of the morning. A quick sweep by her radar at periscope depth revealed that the formation consisted of 6 escorts screening a main body of four ships. This was undoubtedly the Western Fleet comprising the cruiser INS MYSORE with supporting auxiliaries and her escorts which had sailed from Bombay on 2 December.

"At this time, though an all out war was raging in East Pakistan, hostilities had not broken out in the West. HANGOR could not attack these ships as she did not have clearance to do so. It was not until 0820 on the morning of 4 December that HANGOR learnt about the outbreak of hostilities through C-in-C's message received on the submarine broadcast. Frustration and disappointment at missing their prey by such a narrow margin was great for the Commanding Officer and the crew. But HANGOR's endeavours were not entirely in vain. Location of the Indian Fleet at this crucial time

*. Page 335.
** Page 356.

was by itself a significant accomplishment. In this case, however, her vigilance also contributed towards the cancellation of a missile attack which this force was scheduled to launch at Karachi on the night of 5 December. Suspecting detection by the submarine, the Indian Fleet split and moved so far south that it was no longer in a position to execute its attack plan.

"HANGOR continued her patrol. Occasionally she closed Bombay harbour and detected some warships operating in waters too shallow for the submarine to make an approach and launch its torpedoes. At other times, her limited submerged speed-the main handicap of conventional submarines-prevented interception of good targets. The officers and men of HANGOR were not deterred by these disappointments."

Analysis of Pakistani Submarine Deployment

Deployment of GHAZI

GHAZI, having the longest distance to go, sailed from Karachi on 14 November. She was off Madras on 23 November in Area Mike, until she was ordered on night 25/26 November to occupy Zone Victor off Visakhapatnam, where she sank on night 3/4 December.

Deployment of Daphne Class Submarines

MANGRO

MANGRO sailed around 14 December to her patrol area off Bombay. COMSUBS signal DTG 222117 to "Arm all torpedoes" was addressed only to GHAZI (who was nearing Madras) and to MANGRO who was off Bombay till 1 December, occupying the areas referred to as BRAVO ONE, TWO, THREE, FOUR, FIVE, SIX in COMSUBS signal DTG 221720. This area stretched from Diu Head to Dabhol on the west coast of India. MANGRO vacated her patrol area in end November and returned to Karachi.

HANGOR

HANGOR sailed in the early hours of 22 November for a patrol off the Indian Kathiawar coast. On 23 November, when Pakistan declared a state of emergency, HANGOR was off Porbandar.

On 1 Dec, HANGOR shifted from off Porbandar to the patrol area off Bombay vacated by MANGRO on completion of its patrol. On the night of 2 December, HANGOR detected the Indian Fleet and tracked it till the early hours of 3 December. News of the outbreak of hostilities reached HANGOR only on the morning of 4 December.

From 4 Dec to 8 Dec HANGOR operated in the approaches to Bombay. She found that Indian warships were operating in waters too shallow for her to approach and attack. She extended her patrol northwards towards Diu. On five occasions, she transmitted on HF, which enabled her position to be established.

- On 4 December at 1004 in position 271 Dabhol Lt 71.
- On 4 December at 1745 in position 285 Khanderi Lt 135.
- On 7 December at 1538 in position 265 Khanderi Lt 285.
- On 9 December at 1045 in position 239 Diu 59.
- On 9 December at 1720 in position 220 Okha 60.

By 8 December her identity as HANGOR had been established. In the early hours of 9 December, she located KHUKRI and KIRPAN, who had been deployed to locate and attack her.

HANGOR sank the KHUKRI at 2045 on the evening of 9 December, eighteen miles southwest of Diu and headed for Karachi. Operation FALCON did not succeed in crippling her and she reached Karachi on 18 December after the ceasefire.

SHUSHUK

"The Story of Pakistan Navy" makes no mention of SHUSHUK's deployment. Intelligence reports after the war indicated that SHUSHUK was initially employed in the approaches to Karachi but had to be withdrawn for emergency docking to rectify leaks in the stern glands and defects in her torpedo tubes.

Deployment of Midget Submarines

The naval element of the Special Surface Group which manned the midget submarines were an elite, rigorously trained group. The offensive capability of the midget submarine had been seriously depleted as early as 1968 when it was found that it could not carry a torpedo. That reduced its role to carrying frogmen to enemy harbours, into depths where larger submarines could not penetrate.

In mid 1971, some SSG personnel had to be deployed to East Pakistan to cope with the Mukti Bahini. They returned to Karachi only in September. Their absence lowered the combat readiness of the midgets.

Midget crews had been trained to be towed underwater by GHAZI. For sorties longer than three days, the relief crew took over on passage and the attack crew took over just before being detached to attack.

During the 1971 war, midgets could not play any role because GHAZI's role was changed to minelaying and she was deployed in the Bay of Bengal.

Deployment of Chariots

There is no evidence that the chariots were deployed during the war. Reportedly, a shortage of spare parts affected their operational readiness.

Assessment of Pakistan Air Force Performance

In his book, Pakistan's "Crisis in Leadership", Maj Gen Fazal Muqueem Khan analysed the Pakistan Air Force's performance during the 1971 war. His conclusions were:

- The PAF plan was based on the war lasting six months.
- The PAF C-in-C's main idea was to conserve the Air Force. The PAF chose to be on the defensive, both tactically and strategically. It was committed to defending its air bases only and waiting for the enemy to come and attack them. This kept the aircraft perpetually busy in air patrols over the defended air bases.
- The PAF defensive strategy relied too heavily on the expectation that the IAF would carry out mass raids on the PAF air bases and would thus suffer heavily. Confining the PAF to selected airfields away from the border decreased the effective strike range of PAF aircraft and increased the reaction time.
- The C-in-C PAF over-centralised his command and allowed little flexibility to his subordinates. Hardly any action could be taken without clearance from the C-in-C.
- The PAF deployment in airfields a long distance away from the scene of action affected the ability of the PAF to intervene effectively in the naval battles in the South.
- In East Pakistan, there was only one squadron of 16 Sabres. Two of these were lost over Boyra on 22 November. Three were lost on 4 December in the air battles over Dacca. Eleven were immobilised by the PAF itself on the ground in Dacca, to prevent their falling into enemy hands.
- The Indian victory was due as much to their careful and patient planning as it was to the lack of all this in Pakistan.

Excerpts from "History of the Pakistan Air Force"

This document is conspicuously sparse on information regarding sorties in support of the Pakistan Navy. The only information of naval relevance is :

- In November 1971, No 7 Canberra Squadron based at Mauripur (Masroor)flew six sorties in support of the Pakistan Navy. These were armed recce missions in search of hostile naval vessels within 180 miles south and southwest of Karachi.
- In December 1971 on 5 December, the Indian Naval base for missile boats at Okha was set ablaze; the fire continued for full six days. Okha was attacked again on 10 Dec.

Pakistan Navy - Air Force Cooperation

Excerpts from "Pakistan's Crisis in Leadership"

"The PAF was not equipped to support naval operations. Maritime reconnaissance was only provided by the Pakistan International Airlines (PIA) and civil aviation aircraft which had been pressed into service after the emergency (i.e. on 23 November 1971). In all, 59 sorties by PIA aircraft and 68 sorties by civil aviation aircraft were provided during the war. In spite of all their limitations and their pilots' lack of training for this particular task, these aircraft still performed very well. One Fokker aircraft was lost during these operations.

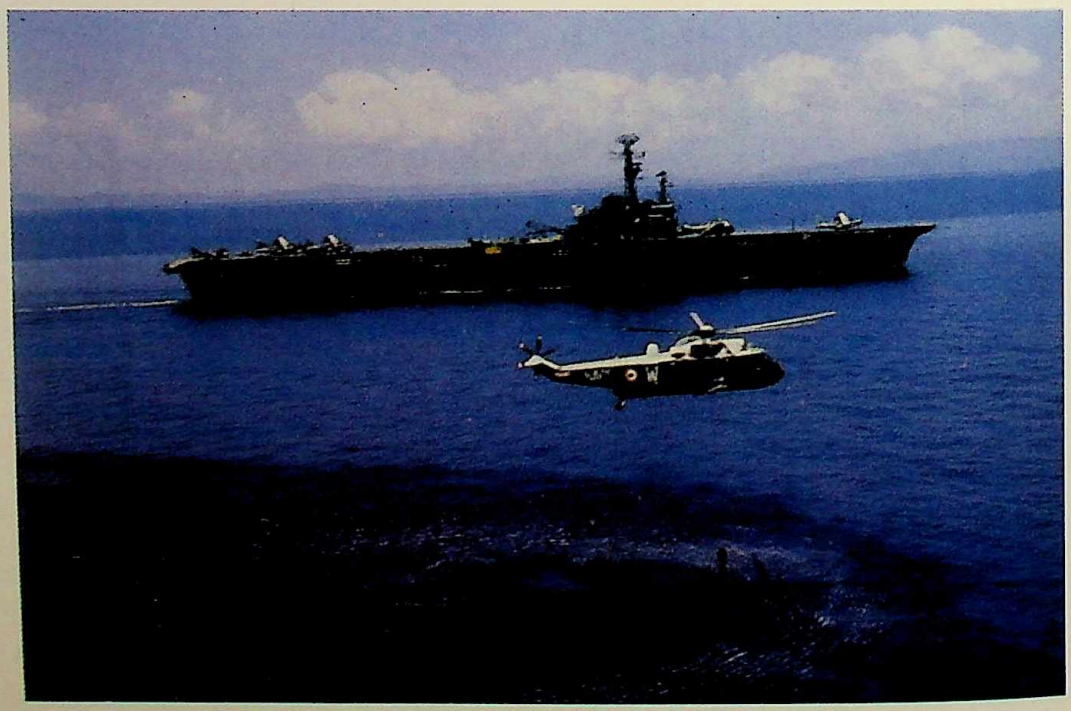
"The PAF launched a B-57 mission against the Indian missile boat harbour at Okha and some harbour installations were set on fire, but this was late in the war and much after the time when the Navy had asked for it, and none of the missile boats, already out to sea, was affected. Repeat strikes were also launched on December 9 and 10 and some other installations and two large oil tanks were set ablaze. *The last strike was carried out by a section of F - 104s, which sighted an anti-submarine Alize aircraft of the Indian Navy and shot it down.*

"After the Indian air attacks on Karachi, the people wondered why the PAF did not strike at Bombay harbour. It failed to attack Bombay in retaliation to the Indian attacks on Karachi's civilian targets. This should have been done even for psychological reasons, but the PAF missed the opportunity. The excuse for not doing so was that it had night capability only for a strike at Bombay and was not convinced of gaining any military advantage there. The Indian announcement of a PAF strike at Bombay and stories of the damages done there, were, therefore, surprising.

A missile boat of the Killer Squadron

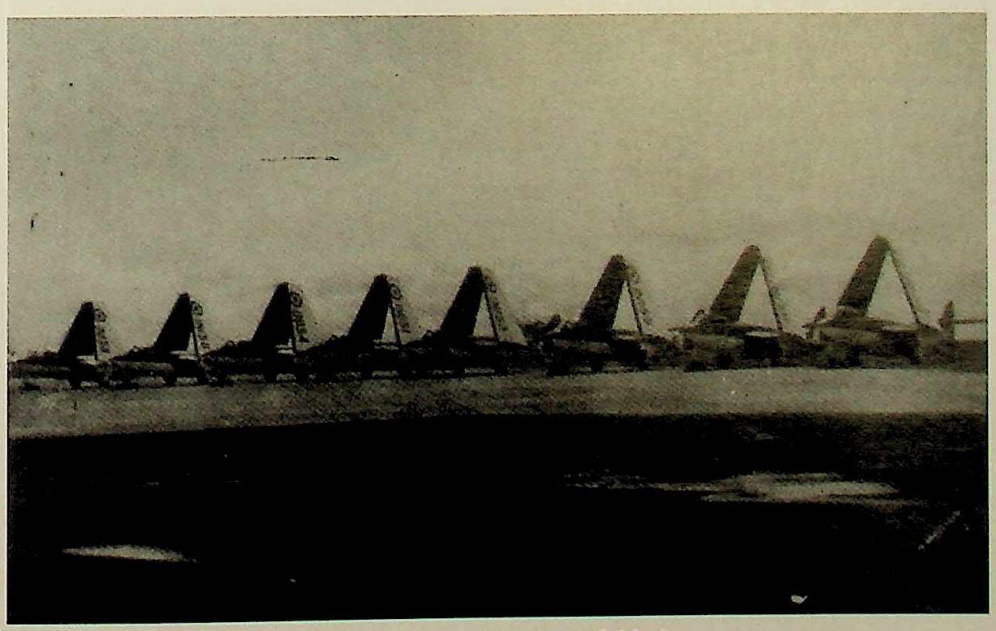
A submarine proceeding at speed

A Petya firing anti submarine rockets. INS NILGIRI in the background



Seaking helicopter hovering with its sonar dunked.
INS VIKRANT in the background

Alouette SAR helicopter hovering above a Commando dinghy



Seahawks with wings folded

INS VIKRANT launching an Alize aircraft

A Landing Ship disembarking troops and vehicles on to a beach

"The air support which the Navy wanted was never catered for. It was vaguely promised a few reconnaissance sorties and some close support sorties which were dependent on availability. It never occurred to the C-in-C Navy to ask for the PAF plan.

"The Pakistan Air Force flew 27 sorties in support of Pakistan Navy Operations.

"The PAF's performance in 1971 did not come up to public expectation. The C-in-C, PAF failed to provide imaginative leadership to plan and direct the air effort. Both strategically and tactically the air force was kept on the defensive. It was deployed in depth but too thinly. Whereas it could undertake its own defence, it could not generate offensive effort. When the Indians changed their strategy on or about December 7, after the first three days, the PAF was not prepared to change over during the short war to meet the new enemy threat, and remained helpless. In addition, by too much centralized control, it was kept on the leash all the time. It operated at only about 50 percent of its war time capability. As for inter-service cooperation, it had not acquired any maritime support capability and did not provide any meaningful support to the Navy."

Pakistan Maritime Reconnaissance

Excerpt from Pakistan's Crisis in Leadership

"The Navy, in the absence of any shore based radar and maritime reconnaissance aircraft, was virtually blind. Therefore the services of a civilian radar were requisitioned and Pakistan International Airlines (PIA) willingly provided a Fokker Friendship flight to operate reconnaissance flights. The PIA plane had its own limitations for the purpose it was being used. Its radar was a weather radar and it had only 7 degree decline which could not see downwards. The civil pilots, however, did an extremely good job of work without any previous training in this particular field.

"At about the same time on December 3, when Naval HQ was issuing orders and instructions, the Fokker flying along the Kathiawar coast - PIA air patrols had been started on November 30 - reported the sighting of India's Western Fleet consisting of a cruiser, six destroyers and an oil tanker off the Rann of Kutch coast. It was operating around its forward base at Okha."

Excerpts from the Story of Pakistan Navy

"The PN reconnaissance aircraft sighted a formation of eight enemy ships when the war had just started, but the naval observer, being unaware of war having started, made his contact report hours later after landing.*

"After the first missile attack, Commodore Hanif took over as DCNS(O) on 5 December and contacted the Air Priority Board which provided a mixed bag of a dozen aircraft including the Governor of Punjab's Cessna, a plant protection aircraft, an old DC3 Dakota, some Aero Club Austers and two armed Cessnas. We also obtained two Fokkers and two Twin Otters fitted with radar. All these aircraft were lined-up at Karachi civil airport where a "Fleet Air Arm" was set up immediately. The aircraft were controlled by naval officers positioned at the airport along with a PAF liaison officer provided by MHQ.**

"The aircraft were manned by civilian volunteer crews from PIA and the Flying Club and maintained by PIA and CAA at Karachi in such an efficient manner that there was no problem in operating 3 or 4 light aircraft at a time during day in their respective sectors on an arc 200 miles from Karachi covering the entire area from Jamnagar to the Makran coast. At night, two radar-fitted aircraft at a time covered the same arc. Thus, from the afternoon of 5 December, it was difficult for an Osa to approach within 200 miles of Karachi undetected.

Analysis

Indian Naval ships and submarines reported shadowing aircraft on the following dates. Available records do not indicate whether all the aircraft made detection reports.

3 Dec	-	PM	- Western Fleet 210 miles south of Karachi
4 Dec	-	AM	- Western fleet southwest of Okha.
	-	AM	- Submarine KURSURA returning to Bombay after R/V with KARANJ.
5 Dec	-	AM	- Trident force withdrawing from Karachi.

* Page 335.
** Page 349.

- PM - TIR and Trident force refuelling at Mangrol.

6 Dec - PM - RANJIT south of Makran Coast.

7 Dec - AM - TIR, KATCHALL,missile boat group west of Okha.

8 Dec - PM - Western Fleet 75 miles south of Jiwani.
Submarine KARANJ off Karachi. TIR off Saurashtra.

9 Dec - AM - Submarine KARANJ east of Ormara. KIRPAN off Diu.
- PM - KHUKRI, KIRPAN off Diu.

10 Dec - PM - Submarine KARANJ south of Ormara.

Naval observers were flown in the PIA Fokker recce aircraft which had been tasked with locating missile boats :

- The naval observer correctly recognised the Western Fleet on 3 Dec and correctly reported its alteration of course southward.
- The naval observer mistook the ZULFIQAR for a missile boat near Cape Monze on 6 Dec, which led to ZULFIQAR being attacked by the PAF.

13

Retrospect of the 1971 War

The foregoing accounts and analyses of the major events of 1971 war have examined why and how certain operations were successful and other operations less so. As in all wars, many of the outcomes were not foreseen.

Naval Operations in the Arabian Sea

The withdrawal of the Pakistan Fleet into the inner harbour of Karachi on 7/8 December yielded maritime supremacy to the Western Fleet within the first six days of the war. This withdrawal was exactly the opposite of our expectation that repeated attacks alternately from Saurashtra and the southwest would provoke the Pakistan Flotilla to react and join in a gun battle with the Indian Fleet, for which the latter had so assiduously prepared.

The destruction of the oil tanks at Keamari on 8 December was fortuitious. A radar homing missile can be expected to home on to any shore installation which, due to its size, shape, location and other characteristics gives the missile's homing radar a better radar response than its surroundings. Claims that these tanks were targeted and hit on 4 December are not substantiated by the Pakistani records.

The Pakistan Navy knew exactly where the Western Fleet was from 2 December when it sailed from Bombay till the early hours of 4 December. Submarine HANGOR was the first to report the Western Fleet's position, course and speed on the night of 2/3 December. Within hours of HANGOR's report being received in Karachi on AM 3 December, Pakistani requisitioned civil aircraft were circling the Western Fleet when the war started on the evening of 3 December. The Western Fleet's southward diversion on night 3/4 December shook off the shadowers in the early hours of 4 December. Thereafter the Western Fleet remained undetected. The Pakistan Navy's account gives no indication that it was particularly concerned where the Indian Fleet was. All available civilian air reconnaissance effort was concentrated within 200 miles of the approaches to Karachi to detect the approach of missile boats.

During the second missile attack on Karachi by the Western Fleet, the only major Pakistani naval ship which was not inside harbour, the tanker DACCA, was fortuitously hit. The naval ships inside Karachi harbour found themselves in dire straits. Their predicament was compounded by the Indian Air Force air attacks on the 8th evening which fortuitously hit workshops in the Naval Dockyard where the ships were berthed. In an unprecedented but sensible move, Pakistani warships were ordered to reduce the ammunition they had on board, so as to minimise the damage that an explosion might cause if they were hit.

The sinking of the KHUKRI on 9 December and the loss of Alize 203 on 10 December were unforeseen consequences of the fortunes of war. Despite specific mention of Hunter Killer Operations in his pre war plans, the fact that he limited the duration of the operation from 8 to 10 December shows that FOCINCWEST had a very limited aim. He wanted to ensure that the Pakistani submarine D/Fd off Diu would not interfere with the third missile attack which he planned to launch on 10 December.

FOCINCWEST, when according approval for the Sonar 170 modification to be embarked in KHUKRI, could not have foreseen that KHUKRI, in trying to increase sonar detection range would do so low a speed as to become an easy target for the submarine's torpedoes.

Similarly, it could not have been foreseen that a Pakistani F 104 returning homewards from an evening raid on Okha would make a chance sighting of Alize 203 and shoot it down with an air to air missile.

It could not have been foreseen that the Pakistan Air Force would be tardy in responding to the Pakistan Navy's calls for air support on the night of 4/5 December. When however, the PAF did respond, it mistakenly struck a Pakistan naval ship ZULFIQAR on AM 6 December. This was to have an altogether unforeseen result. The CNS became apprehensive that an alerted PAF might inflict similar damage on Western fleet ships who were on their way in to attack Karachi on the night of 6/7 December. NHQ not only intervened to cancel this attack but assumed control of separated groups of ships of the Western Fleet and Western Naval Command by ordering R/V's off Saurashtra to give the Western Fleet a second missile boat to replace the one which had earlier returned to

harbour. Not only could the R/V not be kept, but the TIR group off Saurashtra reported Pakistani aircraft overhead on several occasions. When this second missile boat reported defects necessitating return to harbour, Naval Headquarters restored the control of operations to FOCINCWEST.

It was not foreseen that Pakistan could not deploy its midget submarines and chariots in a preemptive attack on the Western Fleet in harbour. Indeed the most elaborate precautions had been taken against this threat. Post war reports indicated that whereas the crews had been intensively trained in 1968-69, thereafter they did not take the midgets and chariots out to sea for long enough to prove the endurance either of the craft or the crews. Spares problems had also begun to affect their material state. By 1971, the crews were not confident of sailing the midgets independantly from Karachi to Bombay.

There were also reports that the Pakistani Navy, on their own, fitted two midgets with external torpedo tubes for firing Mk 44 torpedoes. During the war, these midgets were deployed 30 miles from Karachi. When one of them tried to fire against an Indian ship, the fire control system did not work.

An East Bengal sailor, who had been trained on the midgets and chariots and who deserted the Pakistan Navy joined the Mukti Bahini Naval Commandos in mid 1971. He informed that their prime objective was to put a huge limpet mine under the VIKRANT.

It was not foreseen that Pakistan submarines would be prohibited from attacking Indian merchant ships.

On the other hand, several outcomes were foreseen and came to pass.

FOCWEF had foreseen that in an encounter with a Pakistan Daphne Class submarine, surface warships would be worsted. The sinking of KHUKRI on 9 December, the failure to sink the HANGOR in the intensive anti submarine Operation FALCON from 10 to 13 December and the consistent lack of debris after innumerable anti submarine attacks by diverse ships, all reiterated the basic reality that underwater operations in the Arabian Sea favour the submarine.

It was foreseen that Pakistani merchant ships had to be apprehended in the early days of the war. Only the PASNI could be seized on 4 December. The MAQBOOL BAKSH escaped despite being sighted by our reconnaissance aircraft. The seizure of MADHUMATI south of Jiwani on 8 December was fortuitious.

Naval Operations in the Bay of Bengal

It could not have been foreseen that the greatest single threat to VIKRANT, the submarine GHAZI, would sink outside Visakhapatnam at the commencement of the war. Had this not occurred, the entire pattern of the Eastern Fleet's operations would have been different. It would not have been possible to stop ships at sea for refuelling and transferring stores and personnel, troops and vehicles whenever convenient. Nor would it have been permissible for the Fleet to break wireless silence every few hours to make long sitreps to FOCINCEAST and NHQ.

On the other hand, it was correctly foreseen that after the Air Force had struck Chittagong and Dacca airfields, the Pakistan Air Force Sabre squadron in East Pakistan would cease to pose any air threat to the VIKRANT or to offer any opposition to VIKRANT's air strikes.

It was correctly foreseen that by themselves the ships of the Eastern Fleet were too few and too slow to enforce contraband control. It was not foreseen that Vikrant's aircraft might help. The extraordinary extent to which VIKRANT's aircraft actually succeeded in assisting ships in contraband control and apprehending merchant ships, over and above their air strikes against East Pakistan, came to be fully realised only after the war. A new role had crystallised for an aircraft carrier in limited war.

It was correctly foreseen that an amphibious landing might be required in East Pakistan prior to western naval intervention. The inescapable need for secrecy and the inability to spare the already heavily tasked ships of the Eastern Fleet precluded any prior training for a landing. The ENTERPRISE Task Group came through the Malacca Straits on the afternoon of 14 December and the forces in East Pakistan surrendered on the afternoon of 16 December. A successful landing on the morning of 15 December would still have been timely.

However, it could not have been foreseen that the LST's would beach over an hour later than scheduled and thereby get seriously affected by the cross currents of a rising tide and sea and swell.

Submarine Attacks on Merchant Ships at Sea

In the 1971 war, the policy regarding attacks on merchant shipping proved to be quite complex.

Pakistan Navy's Policy on Attacking Merchant Ships

"The Story of the Pakistan Navy" states:*

> "The operational orders issued to submarines confined them to attacks against warships only and interdiction of merchant ships was not permitted.
>
> "The Indian Navy made no effort at maintaining even a semblance of legal propriety, by declaration of a blockade or a war zone before embarking on a callous slaughter of merchantmen and their crew by those who claim to have taken up arms to champion the cause of the oppressed. For it was well known to the Indians that missiles hurled blindly at ships at Manora anchorage were bound to take a toll of neutral merchant ships."

Indian Navy's Policy on Attacking Merchant Ships

There were two basic problems to be resolved:

- Clearly neutral ships were not to be attacked. But what was one to do when a Pakistan merchant ship changed identity and masqueraded as a neutral merchant ship - as MADHUMATI did in the Arabian Sea and ANWAR BAKSH did in the Bay of Bengal? The only way out was to put the onus for positive identification on the attacker.
- How was a submarine expected to positively identify a warship or a merchant ship before attack? The Pakistan Navy solved its problem by restricting its submarines to only attacking Indian warships. The Indian Navy directed its submarines to attack only positively identified Pakistani merchant ship and warships. No encounter occurred between Pakistani warships and KARANJ in the Arabian Sea or with KHANDERI in the Bay of Bengal. As regards Pakistani merchant ships, the only way a submarine could positively identify a merchantman by day was to surface and board. This was unrealistic. By night, it was even more unrealistic to expect a submarine to effect positive identification. In the event, the Indian submarines did not carry out a single attack.

Giving submarines carte blanche to fire torpedoes would only have been legitimate if unrestricted submarine warfare had been resorted to - as between Germany and Britain in the Second World War. Neither India nor Pakistan had any such intention. With the large number of neutral ships plying the Arabian Sea, unrestricted submarine warfare would have had the most serious international repercussions.

Inadvertent Damage to Neutral Ships in Harbour

An American merchant ship, SS BUCKEYE STATE was off Chittagong harbour at the time that Chittagong installations were under attack by VIKRANT's aircraft. She reported that she had been strafed whilst she was in international waters. The American Government lodged a protest. Naval Headquarters was able to prove that the ship was close to a Pakistani merchant ship which was being attacked and may have suffered inadvertent damage.

A useful insight on the American thought process which led to the American protest regarding the BUCKEYE STATE can be had from the following excerpts of the Minutes of the Washington Special Action Group:*

- *6 Dec 71.* "Dr Kissinger asked about a legal position concerning the current Indian naval blockade. Mr Sisco stated that we have protested both incidents in which American ships have been involved. However no formal proclamation apparently has been made in terms of a declaration of war, that it is still essentially an undeclared war, with the Indians claiming power to exercise their rights of belligerency. The State Department would however prepare a paper on the legal aspects of the issue. Ambassador Johnson said that so far as he was concerned, the Indians had no legal position to assert a blockade. Dr Kissinger asked that a draft protest be drawn up. If we considered it illegal, we will make a formal diplomatic protest."
- *8 Dec 71* "Turning to the question of blockade, Ambassador Johnson said that both India and Pakistan have taken blockade action, even though the Pak blockade is essentially a paper blockade. Dr Kissinger said that we should also protest to the Paks. Ambassador Johnson indicated we do not have a legal case to protest the blockade. The belligerent nations have a right to blockade when a state of war exists. We may think it unwise and we may question how it is carried out. We have, in fact, normally expressed our concern. On the other hand, we have no problem in protesting the incident of the SS BUCKEYE STATE which had been strafed in a Pakistani port."

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* Page 335.

The unambiguous provisions of international law regarding blockade, contraband control and attacks on merchant ships make it clear that our submarines will continue to be deprived of the freedom of unrestricted attack on merchant shipping.

Even when a war zone is declared, as was done by Britain in the Falklands War of 1982, the British Navy's sinking of the Argentinean cruiser BELGRANO outside of this war zone invited opprobrium even though BELGRANO, being a warship, was a legitimate target.

A different kind of precedent was set in the Persian Gulf in the Iran - Iraq war of the mid 1980's. Iraq declared a war zone and freely fired missiles at all tankers going to or suspected to be going to Iranian ports. In retaliation, Iran responded by firing missiles at tankers seen to be heading for Iraqi ports. In both cases, tankers of all nationalities were hit.

In retrospect, a striking contrast can be discerned between trade warfare in the 1965 war and the 1971 war:

- In 1965, the Indian Fleet, prohibited from taking offensive action, could do nothing to prevent merchant ships STEEL VENDOR and STEEL PROTECTOR from going to Karachi. The Chief of the Naval Staff was constrained to state:
  "When naval officers generally and senior ones in particular, who ought to know better, talk glibly of blockade, contraband control, seizing enemy merchant ships and attacking enemy warships at sea and their ports without a proper and formal declaration of war, one wonders whether they realise that any such action on the high seas without the declaration of war is liable to be branded as piracy, especially if any neutral ships become involved."
- In 1971, the second missile attack inadvertently damaged merchant ships. When diplomatic protests were received, NHQ issued an IG:
  FROM : NHQ TO : 254 IG DTG 102101
  "IN ORDER THAT NO NEUTRAL SHIPS ARE DAMAGED INADVERTENTLY DURING NAVAL OPERATIONS AGAINST PAKISTAN'S MILITARY TARGETS IN WEST PAKISTAN PORTS AND TERRITORIAL WATERS, OPERATIONS WILL BE SO CONDUCTED BY THE INDIAN NAVY THAT NEUTRAL SHIPS MAY LEAVE THE PORT OF KARACHI BY 1800 HOURS ON 12 DEC."

In 1971, there was near unanimity between the Chief of the Naval Staff, the Commanders in Chief and the Fleet Commanders that offensive action alone would carry the day. And so it transpired. Diplomatic protests were handled by directives to the Fleets to be careful and by genuine expressions of regret. By then, the war at sea had been won.

If one takes an overview of the Navy's successful operations in the 1971 war, the following stand out:

- In the West, the missile attacks on Karachi achieved maritime supremacy and the Fleet remained "in being." The Pakistan Navy's surface threat was bottled up. The air threat did not materialize. The submarine threat proved its deadliness; the midget submarines and chariots were not seen.
- In the East, VIKRANT's air superiority over the sea achieved maritime supremacy and the Eastern Fleet remained "in being." The Pakistan Navy had not deployed any major units in the East, so there was no surface threat. The GHAZI's sinking removed the sub surface threat. The Indian Air Force strikes grounded the Pakistan air threat.
- In the South, the few ships keeping vigil on inter-wing Pakistani traffic helped capture one Pakistani merchant ship and alert NHQ on the movement of western naval ships.
- Given the density of neutral shipping and the imprudence of mistakenly attacking innocent merchant ships in what was already an internationally sensitive political situation, there was no option but to insist that submarines positively identify targets as enemy vessels. On the one hand, positively identified enemy warships were legitimate targets for submarines to attack but they were not to be found at sea. On the other hand, positively identified enemy merchant ships could only be apprehended if submarines had boarding parties, for which submarines do not have space. Under international law, enemy merchant ships could only be sunk after all crew and passengers had been removed to a place of safety - submarines have no space to accommodate merchant ship crews. For all practical purposes, the submarines remained a force in being. It remains in the realm of speculation whether the declaration of war zones could have sidestepped the stipulations of international law.
- The Navy achieved what it did despite the considerable limitations described in the section on "Events Prior to the War" and despite the material state of ships before and during the war being so poor.

Lest the lay reader feel that the war was won just by the missile boats and the VIKRANT, it is essential to remember that both these elements were entirely supported by ships, submarines and aircraft in all three dimensions of naval warfare - on the sea, below the sea and above the sea.

Afterword

There were many significant spinoffs after the 1971 war. Within India, for the first time since independence, there was public jubilation at the Navy's startling contribution to victory. There was the Government's realisation of the effectiveness of seapower. Both of these dispelled the earlier doubts about the "relevance of a Navy for a peace-loving country like India which had no vital interests overseas". The maritime world accepted India's naval predominance in the Arabian Sea and the Bay of Bengal.

Within the Navy, there was an upsurge of self confidence to overcome problems. In its wake, there followed a remarkable synergy of events. The success of the Leander frigate programme, the admiration of Russian and Western navies for the Indian Navy's professionalism and innovativeness, the remarkable interaction which helped in integrating the latest weapon systems from Russian, Western and indigenous sources into Indian hulls, all these combined to propel the Indian Navy upwards to the seventh rank in the world's navies.

14

Naval Assistance to Bangladesh after the 1971 War

Preamble

Before the war started, the Mukti Bahini had laid mines across the entrance to the Pussur river. Three merchant ships and a Pakistani gunboat had sunk or run aground as a result of mine explosions. Shipping traffic to the river ports of Mongla/Chalna and Khulna came to a stop.

Prior to surrendering, the Pakistan Navy had laid a large minefield in the approach to Chittagong harbour and shipping traffic ceased.

During the war, air attacks by Indian naval aircraft operating from the aircraft carrier VIKRANT had sunk several ships and damaged several facilities in the Mongla/Chalna port complex and in Chittagong port.

By 16 December, when Pakistani forces surrendered at Dacca, all shipping activity in East Pakistan had ceased.

To help restore maritime activity in Bangladesh as early as possible, Naval Headquarters established Naval Advisory Groups (NAGs) to work in close collaboration with Army Eastern Command and the Civil Affairs Group established by Army Headquarters in Bangladesh. Their tasks were:

- Re-opening of Bangladesh ports for resumption of sea borne traffic.
- Taking control of erstwhile Pakistani naval craft, units and installations in the area with a view to getting them operational as early as possible.
- Minesweeping and mine clearance.
- Clearance of wrecks in harbours, restoration of navigational aids and rehabilitation of port facilities.

NAGs were positioned in Khulna and in Chittagong under the overall control of the Commodore in Charge of NAGs (COMNAG) in Dacca. A total of 34 officers and 410 sailors were deployed :

- COM NAG Dacca had 11 officers and 100 sailors.
- NAG Chittagong had 13 officers and 210 sailors.
- NAG Khulna had 10 officers and 100 sailors.

Reopening the Port of Chittagong

Immediately after the surrender on 16 December 1971, the Flag Officer Commanding Eastern Fleet took charge of the activities to reactivate the port of Chittagong. By 3 January 1972, a swept channel had been established skirting the minefield and basic port facilities had been restored. The enormous effort involved in this achievement can be glimpsed from the sequence of events.

Establishing a Swept Channel

- Interrogation of the prisoners of war revealed that the Pakistan Navy, using coastal craft, had laid about 94 moored contact type mines in an area of 450 square miles (30 miles long by 15 miles wide). During laying, one mine had exploded and sunk the coaster involved in laying it. The perimeter of the minefield having been broadly established, a channel was marked by 23 December through which ships up to a draft of 14 feet could skirt the minefield and enter Chittagong port at high water.
- On 23 and 24 December, Alize aircraft from the aircraft carrier VIKRANT bombed the minefield to explode as many mines as possible.
- Since minesweepers were not likely to be available immediately, intensive efforts commenced to locate trawlers and coasters and their crews (who had fled to their villages) so as to press them into service for improvised minesweeping. By 27 December, four trawlers had been selected and smaller boats had been earmarked to mark the swept channel till suitable marker buoys could be found. From 28 December onwards, trawlers and coasters started wire sweeping for mines.
- By 2 January, a deeper safe channel, marked by channel buoys, had been established for ships up to 21 feet draft.

Restoring Port Facilities

By 3 January, the state of Chittagong port was as follows:

- Of the total of 28 cranes, 26 cranes had been made operational.
- The 125 ton floating crane had been made functional.
- Of the total of 17 jetties, ten had been made fully usable and wrecks were being removed from four more usable jetties to the three old, unusable jetties.
- Water supply had been restored to 3 out of 7 jetties.
- All coastal navigational aids, and such aids as existed in the Karnaphuli River in mid November 1971, had been restored.
- Coastal traffic carrying oil and essential food supplies from Chittagong to inland ports had been restored and fishing boats were proceeding to sea again.
- Chittagong Port Commercial Radio had been manned and reoriented to maritime use.

Reopening the Pussur River Ports

Khulna

After visiting the ports of Khulna and the Mongla/ Chalna complex, the Officer-in-Charge NAG Khulna reported that:

- The jetties and warehouses at Khulna had suffered only negligible damage.
- Ships at Mongla had suffered considerable damage during the Navy's air attacks. The pilot vessel and mooring vessel had been damaged and were non operational. Of the six heavily damaged and abandoned ships in port, four were Pakistani (OCEAN ENTERPRISE, MUSTALI, MAKRAN and SHAPTA DINGA), one was Danish (NEDE COLE) and one Greek, (MASTRO STELIOS).
- The clearance of wrecks was beyond the Indian Navy's capability. A United Nations agency had already approached the Bangladesh Government to undertake this task.

With the assistance of the NAG, the port of Khulna was declared open on 7 January and the first ship entered on 17 January. The NAG Khulna was withdrawn on 20 January 1972.

Minesweeping the Entrance to the Pussur River

The Indian Navy's minesweepers CANNANORE and BULSAR sailed from Visakhapatnam on 16 January 1972 and arrived at the entrance to the Pussur River on 18 January. Minesweeping commenced the same night and completed by the evening of 21 January. The minesweepers then sailed for Chittagong to commence minesweeping there.

Lt (later Rear Admiral) A Tewari was the Commanding Officer of BULSAR. He recalls:

"Immediately after the surrender, Indian Naval minesweepers were ordered to proceed to Bangladesh to clear mines. The ships involved in this operation were CANNANORE, a coastal minesweeper, and BULSAR, an inshore minesweeper. They were later joined by another inshore minesweeper, BHATKAL.

"We had been on our toes since August 1971 and the wear and tear was showing on men and machinery - both needed rest. But with the latest orders, that had to wait as a lot of preparations had to be done to get ready for operational minesweeping. The Navy's 18th Minesweeping Squadron comprised four coastal and four inshore minesweepers. The two best ships finally selected were BULSAR and CANNANORE. The Senior Officer of the 18th Minesweeping Squadron, M 18, was embarked in CANNANORE.

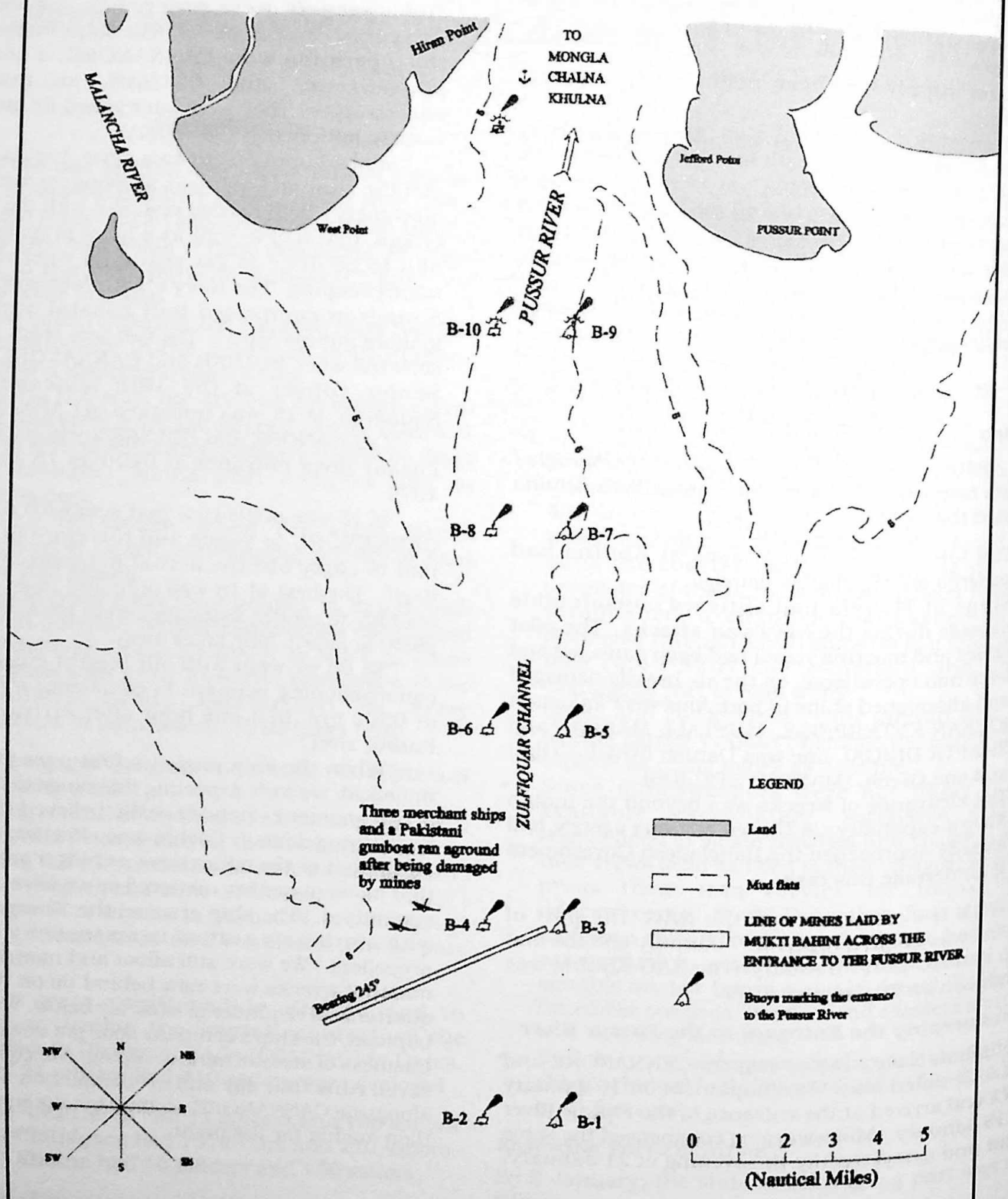
"CANNANORE and BULSAR anchored off the Pussur River entrance at 0400 on 18 January 1972.

"M 18 was of the view that it was too risky for CANNANORE to sweep and therefore BULSAR had to carry out the actual minesweeping by itself. The best M 18 was prepared to do was to standby to render assistance from his anchorage position nearly four miles away.

"So off we went with our biggest ensign and commissioning pennant to commence sweeping at 0500 hrs, just one hour after arrival at the Pussur river.

"When the ship made its first pass over the minefield, we were expecting the mines to explode at any moment - nobody really believed that the degaussing done at Cochin was effective. Either it was that or the mines were no longer active. At that moment neither mattered as we were already committed. The ship crossed the "Danger" line with our hearts beating in resonance with the propellers. We were still afloat and moving! The mine-hit wrecks were now behind us on the port quarter as a reminder of what lay below. With this baptism, the ship's company soon got down to the business of serious minesweeping. We completed seven runs that day and on completion secured alongside CANNANORE at 2200 to take water and then anchor for the night.

MINESWEEPING OPERATIONS AT THE PUSSUR RIVER ENTRANCE IN JANUARY 1972



"Only those who have served in minesweepers can really understand the difficulties of minesweeping and how tedious, hard and demanding it can be. Handling the heavy sweep gear, cables, floats and wires requires seamanship and professional competence of the highest order. With the limited complement, all hands have to contribute their mite - there is no exception to this rule. There are no watches, no special duty men and no time for rest. An engineering mechanic comes out of the engine room, joins hands with the seamen in pulling the wires and cables as the sweeps are streamed and recovered and then goes back to the engine room freshened. There are no breaks for meals and the work goes on uninterrupted and takes priority over everything else.

"This routine was maintained continuously for four days, starting from 0400 till 2400 hours each day and ended with almost every one exhausted and dog-tired after being on deck for 20 hours at a stretch, followed by less than 4 hours of sleep.

"Carrying out magnetic sweeping involved streaming a 250 to 300 meter long and heavy cable behind the ship along with associated floats, kites and depressors. Normally this sweep should be streamed in waters where depths are in excess of 10 fathoms (18 meters). The mines had however been laid in about 4 to 5 fathoms (9 meters) of water. This caused considerable problems because the cable was found to be dragging on the bottom of the sea especially during turns, which resulted in it getting cut. It, therefore, had to be repaired repeatedly in order to improve its insulation.

"As compared to an inshore minesweeper, a coastal minesweeper like CANNANORE was better suited for shallow water tasks because of her higher superstructure, which enabled lessor sag when towing the cable. There were therefore, no technical limitations in the participation of CANNANORE if she had so desired.

"The minesweeping task at Pussur river was unique because no Indian Naval ship had ever done operational sweeping of influence mines in the past."

Sweeping the Minefield at Chittagong

CANNANORE and BULSAR arrived at Chittagong on 25 January. They were joined by inshore minesweeper BHATKAL on 27 January.

Minesweeping commenced on 25 January. A number of mines were cut. Initially a shallow channel was swept to allow ships of 24 foot draft to enter Chittagong. This channel was marked with buoys. By 12 February, a deep draft channel, one mile wide and 26 miles long had been established.

Damage Caused by Drifting Mines After they had been Swept

The Hague Convention requires that on being cut or on coming adrift, mines should render themselves safe. It soon became evident that the mines laid in Chittagong did not comply with this requirement.

The drifting mines were seen to be behaving in a random and unpredictable manner:

- They were found to drag with the tidal stream, shifting their position while still underwater, thus requiring periodical check sweeps of the areas which had already been cleared.
- While some of the cut mines rose to the surface, others tended to remain below and drift underwater. As the mines were small, it was very difficult to see them, even on the surface.

In effect, once they were cut, these drifting mines became a danger to ships transiting the area.

On 5 February, the Shipping Corporation of India's ship MV VISHWA KUSUM was struck by a drifting mine. She flooded and ran aground. She was refloated and brought to off Chittagong by 12 February, where, however, she sank on 13 February.

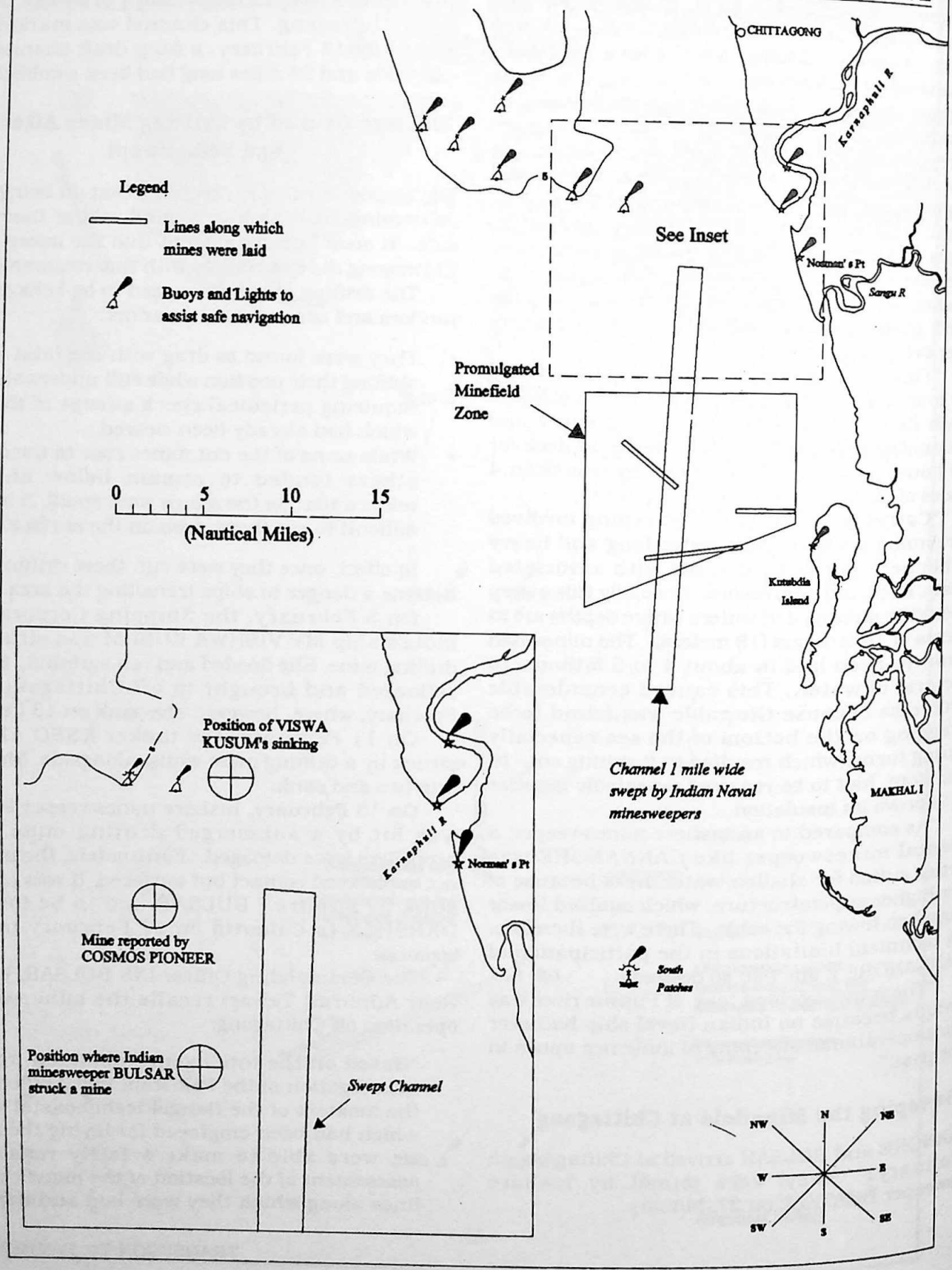
On 11 February, the tanker ESSO ARK was struck by a drifting mine whilst alongside. She broke into two and sank.

On 13 February, inshore minesweeper BULSAR was hit by a submerged drifting mine. Both propellers were damaged. Fortunately, the mine did not explode on contact but surfaced. It was promptly sunk by gunfire. BULSAR had to be towed by DARSHAK to Calcutta on 27 February to effect repairs.

The Commanding Officer INS BULSAR, Lt (later Rear Admiral) Tewari recalls the minesweeping operation off Chittagong:

> "Based on the intelligence obtained from the interrogation of the Pakistani naval officers and the masters of the Bangladeshi coastal vessels which had been employed for laying the mines, we were able to make a fairly reasonable assessment of the location of the minefields, the lines along which they were laid and the likely

MINESWEEPING OPERATIONS AT CHITTAGONG IN FEBRUARY 1972



depth to which they were placed. Based on our assessment of the situation, the following decisions were taken:

- An area of 25 miles by 13 miles was taken as the "Danger" area. A swept channel of 25 miles had to be established through this.
- Out of this, another area of 9 miles by 13 miles was the "hard core" area confirmed to be having mines.
- 15 danbuoys were to be laid at a distance of 1.5 miles apart.
- The danbuoys were to be laid on bearing 185 degrees - 005 degrees through the deepest water to allow deep draft vessels to approach Chittagong port.
- The Bangladesh gunboat SAHAYAK was to lay danbuoys through the "hard core" area, as her draft was 4 feet.
- BULSAR was to standby to rescue the Bangladesh gunboat if struck by a mine.
- BULSAR had to lay the first six danbuoys, through the "soft core" area and the later ones beyond the "hard core" area.

"We also knew that the mines had been laid by the Pakistan Navy in a hurry just before surrender and therefore they may not have had adequate time to prepare the mines and arm them properly. The chances of encountering dud mines were therefore a possibility, but this could not be pre-judged at that juncture. Based on M 18's advice, BULSAR was once again nominated for the task. Once again, M-18 kept CANNANORE well clear of any involvement, except for behind the scene activities.

"The laying of danbuoys for a minesweeping operation is a very precise evolution and a number of factors have to be kept in mind. Foremost amongst them is that each danbuoy should be anchored firmly at the bottom, to prevent it from drifting, especially off Chittagong where the currents were known to be up to 5 knots. The next important factor was that they should be laid in the exact positions given in the chart, because they were to be the datum for all further minesweeping tasks.

"On the first day, the danbuoy laying task went as per plan. The first five danbuoys were laid by BULSAR in the "soft core" area, with the Bangladesh gun boat SAHAYAK following behind. When SAHAYAK's turn came to lay the danbuoys through the "hard core" area, she turned around and headed back to Chittagong as fast as her engines could take her! In the process of doing this and probably by design, her Captain decided that it was safer to be a derelict than an underwater wreck. She ran aground at the entrance of the Karnaphuli River. That ended the first and the only contribution of the emerging Bangladesh Navy.

"As a consequence to this unexpected turn of events, I realised that there was no alternative but for BULSAR to complete the job, as CANNANORE was unlikely to do so under any circumstances. Intuitively, she had also developed a defect in her diesel generators. Realising the gravity of the situation and the fact that the work had to go on, I volunteered even before being asked, to continue laying the remaining danbuoys through the "hard core" area and beyond.

"Since it was unlikely that a ship of BULSAR's size could have survived a mine explosion, the ship's company was briefed in detail about the risks and the safety precautions required. To minimise injury, all personnel were told to remain on the upper deck.

"By now, BHATKAL had joined CANNANORE and BULSAR at Chittagong and was deputed to keep an eye on BULSAR. This she did very faithfully even through the "hard core" area, although her orders were to wait outside the area and remain in communication. The Commanding Officer BHATKAL's reason for doing so was simple - "We are sister ships, wherever BULSAR goes, I too will go.

"Till now, the laying of danbuoys had progressed smoothly and as per schedule. The last group of danbuoys was finally laid on the third day but on this occasion, BHATKAL had not sailed out with BULSAR. This was the first time that I had a major emergency. While entering harbour on completion of the task, in the Karnaphuli river, my port diesel generator (DG) exhaust caught fire due to under loading and the smoke spread quickly in the entire Engine Room. There was a danger that the reserve fuel tank, located just below the DG, might catch fire. The engines had to be stopped and fuel shut off to fight the fire. As the ship had by now lost way, the only anchor available in the ship was let go to hold the ship in the channel.

"The Karnaphuli river is well known for its very strong ebb tide which sometimes reaches speeds of 10 to 12 knots. On that particular day, it must have been around 5 to 6 knots, which was

too strong for BULSAR's weak, non-ferrous chain cable to hold. As the ship had also gained a certain amount of stern way before the decision to let go the anchor was taken, the chain cable had even lesser chance of holding the ship. Thus, on letting go, it ran out and snapped. I helplessly watched the ship being carried down rapidly. By some stroke of luck, the ship remained in the centre of the channel and did not drift towards the shore. In the meantime, the Chief ERA, appreciating the danger, entered the smoke filled engine room, stopped the DG and shut its fuel supply. Soon the fire was also extinguished. In the process of carrying out all this, the Chief ERA collapsed due to smoke. This act of the Chief ERA allowed us to start one engine and get underway again. For this act of bravery and presence of mind, the Chief ERA was later decorated with a Nao Sena Medal.

"On arrival at the naval jetty, we had something to cheer about. Captain Bawa was fully aware of the importance of the task carried out by BULSAR. He paid his compliment with this signal.

FROM : NAG CHITTAGONG TO : BULSAR
NOT ONLY HAVE YOU THE DISTINCTION OF BEING THE FIRST WARSHIP TO SAIL THROUGH THE MINEFIELD BUT YOU HAVE ALSO LAID THE FOUNDATION FOR SUBSEQUENT MINE SWEEPING. WELL DONE.

"It took only one day to repair BULSAR's port DG as neither water nor foam had been used indiscriminately to put out the fire. The lost anchor was replaced with an old metallic anchor and chain found in the former Pakistan naval stores. With no threat from influence mines, we could safely disregard magnetic discipline. The ship was made ready for sea again, as we did not want to miss out from the inaugural minesweeping run.

"BULSAR sailed out of CHittagong on 1 February 1972 to join CANNANORE and BHATKAL who were waiting for her to commence the first-ever operational sweeping of contact mines in the history of the Indian Navy. The inshore minesweepers were positioned on either side of the danbuoy line. BHATKAL on the west and BULSAR on the east of the line. Two runs were made on the first day, which passed off without any incident.

"Unknown and unnoticed by us was the fact that this time we were right on target and mines had already been cut. One such mine got caught in a fishing net. This was taken ashore by an unsuspecting fisherman, who probably thought it contained some treasure and tried tinkering with its horns. The mine soon exploded killing 15 persons and burning down 10 huts of that village. This incident was the last straw that broke M 18's nerves which were already on edge - he suffered a heart attack. He had to be evacuated back to Calcutta by Red Cross aircraft. He was brave enough to walk out of his ship on his own two legs.

"To us now it was amply clear that:

- Mines were definitely there - live and properly laid.
- They did not have much positive buoyancy and therefore, unlike other buoyant mines, they did not rise to the surface immediately on being cut. This made them more dangerous, as they were inconspicuous.
- They were live even after being cut.

"Undaunted by the tragedy, we were on task the next day, this time with more watchful lookouts and sharpshooters. During our second run CANNANORE, which was stationed behind BULSAR's swept path, was the first to sight a mine ahead of us. This was probably cut by us during the run earlier in the day. It was ahead of my ship and was fired at by the 20mm Hispano gun and hit after a few attempts. It slowly sank but did not explode.

FROM : CANNANORE TO : NAG CHITTAGONG
HAVE CUT ONE MINE MRN I IN POSITION 21 51.4' N, 91 41.5'E.
ALL SHIPS OPENED FIRE. MINE SUNK BY BULSARs 20MM.

"Two days later, 3 more mines were sighted in the same area and destroyed, two by BHATKAL and one by BULSAR. By now, every one knew his duty, no one had to be told what to do. By 12 February, we had succeeded in establishing a swept channel 25 miles long and one mile wide. Our first mission of minesweeping having been completed, the next mission was to maintain the swept channel free of mines.

"By this time, we had been operational and away from home port continuously for about two months. By itself, this was no mean achievement for a small ship like an inshore minesweeper with little shore support. But this was not the end of our problems.

"The minesweepers had probably cut many more mines than were accounted for, some of which were adrift. These mines were small and had low buoyancy, which made them difficult to locate and distinguish. NAG Chittagong's problem was that if he promulgated this fact then it could have led to the stoppage of all shipping, which we were trying to revive. Before we could make up our minds, the mine struck its next victim. This was the SCI ship VISHWA KUSUM which was leaving harbour, when it was not in the channel swept by the minesweepers.

"CANNANORE, which was at anchorage and 2 to 3 miles away rushed to the site to help the stricken ship. BULSAR, which was inside the harbour repairing the main engine megator pump, was ordered to sail out at night to R/V CANNANORE to bring the survivors back to Chittagong. BULSAR reached the area at about 0001 hrs and brought the survivors back to the harbour the same night, as there was no place for them on board either CANNANORE or BULSAR.

"On interrogation of VISHWA KUSUM's crew, it came to light that they had indeed seen the mine floating towards them but they had mistaken it to be a submarine. When the mine exploded, they thought that they had been attacked by a submarine and abandoned the ship in a state of panic without attempting any damage control action, as they anticipated another attack from the same submarine. Finally, VISHWA KUSUM sank on 13 February despite all the efforts of the Navy and the SCI to save her.

"On the same day that VISHWA KUSUM sank off Chittagong harbour, a merchant ship COSMOS PIONEER, reported sighting a mine while leaving harbour at 3.15 p.m.. I was ordered to sail with dispatch and destroy the errant mine.

"On plotting the position and the likely drift due to current, I appreciated that we would be able to reach mine only by sunset and thus may not be in a position to see a drifting mine. Prudence dictated that I should sail the next morning since COSMOS PIONEER had safely sailed out and no other sailing was scheduled until the next day. Despite this, NAG Chittagong wanted me to search for the mine and anchor for the night if necessary. We sailed out and by dusk, the ship was slightly short of the estimated position of the mine.

"The entire ship's company was on the upper deck keeping a sharp look out. All pairs of eyes were needed to see a single drifting mine. Suddenly, when the ship was in the process of turning and under helm, there was a loud 'thud' and a strong jerk as if something was pulling the ship back. Due to the list caused by the turn, it appeared as if the ship was taking in water. The initial panic disappeared when the ship was found to be on even keel, with a mine rolling behind the wake. We had struck a moored mine and cut it with our propellers. It was our good fortune that for some reason this mine had not exploded. Finding ourselves safe, we wasted no time in sinking this mine. That ended our minesweeping deployment.

FROM : NAG CHITTAGONG TO : NHQ

BULSAR HIT A SUBMERGED DRIFTING MINE AT 1317 40F IN POSITION 22 07.8 N, 91 40.6 E. MINE DID NOT REPEAT DID NOT EXPLODE ON CONTACT BUT SURFACED AND SUNK BY GUNFIRE.

SUSPECT DAMAGE TO PROPELLERS OR SHAFTS AS CONSIDERABLE VIBRATION EXPERIENCED ON RETURN PASSAGE TO HARBOUR. FURTHER ASSESSMENT AFTER DIVER INSPECTIONS.

HAVE POSTPONED DEPARTURE OF MV HOOGHLY WITH CAPTURED AMMUNITION SCHEDULED FOR TOMORROW MONDAY.

INTEND ADVISING PORT TO SUSPEND TRAFFIC THROUGH PRESENT CHANNEL AFTER CONSULTATION WITH COMNAG."

"The damage to BULSAR's propellers ended her participation in minesweeping operations. Soon thereafter, BULSAR was towed by DARSHAK to Calcutta for repairs in Garden Reach Workshops".

Check Sweeping of the Swept Channel

The danger posed by drifting mines made it clear that continuous check sweeps would be necessary to keep the swept channel clear of mines. Meanwhile, to avoid any Bangladesh suspicions that the Indian Armed Forces were an "occupying force", the Government of India had directed that all Indian Armed Forces were to be withdrawn by 25 March 1972.

The Navy had informed the Government that it did not have the capability either to clear wrecks or to clear the entire minefield at Chittagong. The Bangladesh Government then requested that Indian minesweepers continue check sweeps. Concurrently, it sought the Russian Navy's assistance to clear the

wrecks in the rivers of Bangladesh and the minefield at Chittagong.

Coastal minesweepers KAKINADA and KARWAR arrived at Chittagong on 17 March and started carrying out regular check sweeps of the swept channel.

Starting early April 1972, a flotilla of Russian ships (naval minesweepers, salvage ships and their supporting vessels) arrived in Chittagong. By end May, they had widened the swept channel to 2 miles.

Meanwhile the Indian naval minesweepers who had been carrying out check sweeps from mid March onwards without a break began to report major defects. This led to their withdrawal to Calcutta and Visakhapatnam to effect repairs. M 18 therefore recommended that the responsibility for carrying out check sweeps be formally taken over by the Russian minesweeping force.

In May 1972, the Flag Officer Commanding Eastern Fleet, Rear Admiral (later Vice Admiral) Sarma flew to Chittagong to discuss the coordination of the Indian and Russian naval minesweeping effort. It was agreed that in view of the need for Indian minesweepers to undertake long overdue maintenance and repairs, only one Indian minesweeper was likely to be available in the foreseeable future. It was agreed that the responsibility for check minesweeping would be taken over by Russian minesweepers.

Minesweeping operations at Chittagong were suspended in July 72 with the advent of the monsoons. By then, the swept channel had been widened to 3 miles and a total of 24 mines had been swept.

In July 1972, Russia and Bangladesh signed a bilateral protocol for salvage and minesweeping, which envisaged the complete clearance of all mines off Chittagong by end 1972 and check sweeping till the end of 1973.

When minesweeping operations were resumed in October, Indian minesweepers had not yet completed maintenance and repair. Moreover, minesweeping operations with the Russian minesweepers had revealed that it was not possible to marry British origin minesweeping equipment with the Russian minesweeping equipment. Naval Headquarters therefore withdrew the remaining minesweeper in November 1972. This brought to a close the Indian Navy's minesweeping assistance to Bangladesh. The Russian Navy also withdrew most of its vessels, leaving only two minesweepers to carry out check sweeping till December 1973.

Retrospect

The minesweeping operation off Chittagong was the Indian Navy's first real encounter with live mines. For nearly twelve months, these small, over-aged minesweepers operated 2500 miles from their home base in Bombay and 600 miles from the nearest naval base in Visakhapatnam, without proper logistic support, in extremely hazardous conditions, in a port ravaged by war. Both officers and men came through the arduous experience well and with confidence. The minesweepers, however, needed extensive repairs for several months before their operational capability could be restored.

Of the 94 mines believed to have been laid off Chittagong, 18 mines were cut by Indian minesweepers and 2 by Russian minesweepers. 6 mines were washed ashore and destroyed.

Diving Operations in Chittagong

A few hours before the surrender, the Pakistan Navy had reportedly dumped into the river, Rupees 22 lakhs of coins, a large quantity of looted gold and silver ornaments and six large trunks of gold taken from the National Bank. Diving operations at Chittagong were undertaken at the request of the Bangladesh Navy and the Bangladesh Bank.

Diving operations commenced on 3 July 74 and completed on 24 October, 1972.

To avoid any suspicion of misappropriation, the procedure followed was:

- Diving operations were conducted in the presence of two officers of the Bangladesh Bank and one officer of the Bangladesh Navy.
- The items recovered were handed over to the Bangladesh Bank representatives in the presence of a Bangladesh naval officer after the necessary supply and receipt vouchers had been signed by the Bangladesh officials and the Officer in-Charge of the Diving team/Commanding Officer of the Indian naval ship supporting the diving operation.

The total recovery was 52.75 tolas of gold, 70.05 kgs of silver and large quantities of coins.

Transfer of Seaward Defence Boats

At the request of the Bangladesh Navy, Seaward Defence Boats AKSHAY and AJAY were transferred in April 73 and July 74 and recommissioned as BNS PADMA and SURMA respectively. Concurrently,

Bangladesh naval personnel started undergoing training in India.

Transfer of Captured Pakistani Merchant Ships to Bangladesh

Of the four Pakistani merchant ships seized in the 1971 war:

- On 17 Apr 72, BAQIR was renamed MV HOOGHLY and manned by the Shipping Corporation of India for transporting troops and stores from Bangladesh to India. Thereafter, she transported the Army Garrison to Port Blair. Later in 1972, she was commissioned as INS ADHAR and used for the transportation of stores and material between the mainland and the A&N Islands and between the naval ports. In January 1974, ADHAR was chartered to the Mogul Line for four years at Rs 75,000 per month and renamed as LOK ADHAR. She was used for coastal service. On completion of the charter, LOK ADHAR was disposed of by the Navy.
- In June 72, the Government of India decided that ANWAR BAKSH, MADHUMATI and PASNI would be handed over to the SCI who would run these ships and pay the Navy an agreed amount. Later, as a gesture of goodwill, these ships were handed over to Bangladesh, MADHUMATI and PASNI in April 73 and ANWAR BAKSH in November 74.

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The Russian Acquisitions 1972 to 1975

Preamble

Indo Russian naval interaction between 1972 and 1975 centred on a number of key issues:

- In view of the delay in setting up repair and refit facilities at Visakhapatnam, how to solve the growing backlog of biennial refits of submarines and Petyas which had become due from 1970 onwards and for six-yearly refits which would become due from 1973 onwards. Ships and submarines had developed major defects which needed immediate attention. A stage had been reached when the new equipment received for the Training Complex was being used to replace defective equipment on board ships.
- Consequent on the decision, immediately after the 1971 War, to base some Petyas and submarines at Bombay and some missile boats at Visakhapatnam, the maintenance and repair facilities at Bombay and Visakhapatnam had to be augmented.
- In the light of the experience gained of operating Russian ships and submarines in Indian conditions and of their performance in the 1971 War, the acquisition of better ships, submarines and missile boats with better sensors and longer range weapons.
- The acquisition for the Air Arm of maritime reconnaissance aircraft and, if possible, of vertical-take-off-and land aircraft to replace VIKRANT's aging Seahawks.
- The fitment of surface to surface missiles in existing ships and coast batteries.
- The feasibility of 'Design Collaboration' for building future warships in India.
- Finding ways and means to resolve the mounting problems of spares and Repair Technical Documentation.
- Resolving the difficulties being experienced as a result of the Russian side's restriction that only use of lubricants supplied by them or of the brand approved by them was permissible during the guarantee period. In effect, this prohibited use of other available lubricants of identical specification on occasions when Russian specified lubricant was not available.
- Providing advanced tactical and technical training for officers.

1972

Basing of Russian Acquisitions in Bombay

As soon as the war ended in 1971, the Navy considered it essential that a certain number of operational Petyas and submarines should always be available on the West Coast. This would minimise the using up of engine hours in long transits from coast to coast and make ships and submarines available for longer periods for operations and training. Some new acquisition ships would also have to be based on the West Coast as replacement for the older ships being paid off. The Navy therefore decided to base in Bombay the five newer Petyas and the four newer submarines for which the agreement had been signed in 1971. The main repair facilities however would remain concentrated at Visakhapatnam and only facilities up to annual refit level would require to be set up at Bombay.

Requirements Forwarded to the Russian Side

After the 1971 war, the Navy forwarded a comprehensive list of requirements to the Russian side. This list included Hunter Killer submarines, anti submarine aircraft, missile boats, landing ships, guided missile destroyers, a fleet tanker, aircraft for VIKRANT, torpedo recovery vessels, minesweepers, solid propellant missiles, anti missile defence systems, harbour defence systems, training of technical personnel in Russia and setting up a Design Organisation in India.

Acquisition of Improved Missile Boats

An agreement was signed for the acquisition of a second squadron of longer range missile boats. These new boats would have better tropicalisation, extra air conditioning and more powerful engines. They would also have anti missile gunfire control systems instead of visual sights as in the earlier boats. An agreement

was also signed for the supply of these systems for retrofitting in the earlier boats.

Russian Technical Delegation to India

The Indian delegations to Moscow in 1971 had requested the Russian side to depute a high level team to India to help resolve major pending problems. These were:

- Ships and submarines were overdue biennial refits. The new workshop facilities at Visakhapatnam were not expected to be ready for years. The Visakhapatnam Project needed to be reviewed to investigate the feasibility of setting up the critical workshops on a priority basis so that biennial refits of ships and submarines could commence as early as possible.
- Indian technical personnel needed to be trained in Russia to acquire the expertise to carry out the six-yearly and ten-yearly overhaul of equipment and machinery. The services of Russian specialists would also be required to assist in the biennial refits of the first Petya and submarine in India.
- The scope of biennial refits, the necessary technical documentation and the standard work lists for ships and submarines, all needed to be known before the first refits were undertaken in India.

These problems were discussed with the Russian Technical Delegation which visited India and workable solutions were agreed upon.

Commissionings in 1972

Three Petyas, ARNALA, ANDROTH and ANJADIP commissioned in 1972.

1973

Acquisition of Improved Landing Ships from Poland

Pursuant to Russian advice that landing ships be acquired directly from the shipbuilders, an agreement was signed with Poland for the supply of four improved landing ships.

Maritime Reconnaissance Aircraft

By 1973, the Indian Navy had evaluated three types of aircraft the French Atlantic, the British Nimrod and the Russian Beriev 12. The Beriev 12 did not meet the Navy's requirement. The Atlantic and the Nimrod would have to be paid for in foreign exchange which was scarce. The Navy had therefore pressed for the Russian IL 38. The Russian Navy was unable to spare any because they did not have sufficient aircraft for their own needs. Production had stopped and a new model was being developed. The Russian side agreed however to ask their industry if they could produce a few IL 38s for India.

Six-yearly Refits of Submarines

Due to delays in the Visakhapatnam Dockyard Project, the earliest that six-yearly submarine refits could be undertaken in India was end 1978. The existing 'interim' facilities were already fully stretched coping with the annual and biennial refits. The Navy therefore suggested that the Russian side accept one submarine per year for six-yearly refit in Russia, with effect from 1975, for the first three submarines. The fourth submarine could be considered for refit in Visakhapatnam depending on the progress of setting up refit facilities.

Commissionings in 1973

Two submarines VELA and VAGIR and the Petya ANDAMAN commissioned in 1973.

1974

Russian Technical Delegation to India

The 1972 Russian Technical Delegation had concluded that if certain essential facilities could be set up in Visakhapatnam on a priority basis, the biennial refits of Petyas and submarines could commence in 1974. Target dates had been agreed for the completion of buildings and the installation of Russian supplied equipment and indigenous machinery.

By 1973, it had become clear that the target dates could not be met. A Steering Committee was therefore set up in the Ministry of Defence to direct and take decisions on the progress of the Visakhapatnam Project. The revised target dates approved by the Steering Committee showed that the dry dock, the alongside refitting berth, workshops, services, test facilities, manpower and know-how were not likely to be ready before 1977.

The six-yearly refit of the first submarine was due in end 1973, beyond which it would have to be laid up as unsafe for operations. The Navy had suggested that at least three submarines would need to do their six-yearly refits in Russia, one per year commencing 1974.

When this had been suggested to the Russian side, they felt that it was better to expedite the work in Visakhapatnam. The Russian side therefore sent a Technical Delegation to India to find ways and means to do the refits in India.

From the outset of the discussions, it became clear that the Technical Delegation was in the awkward position of:

- Not wanting to do the six-yearly refits in Russia.
- Knowing that in the Visakhapatnam Dockyard, neither buildings nor equipment were ready to undertake these refits in India.
- Nevertheless, trying to find ways and means to do the refits in India to avoid their going to Russia.

After discussion, the general picture that emerged was that the Russian side might reluctantly accept only the first submarine for refit in 1975 but that the refits of the remaining submarines should be done in India.

Meanwhile, in view of the steep increase in the estimated cost of the Visakhapatnam Project, the Steering Committee decided that the remaining work should be planned in phases. In the immediate phase, only those core items were to be provided which were essential for undertaking the major refits of submarines and Petyas.

Acquisition of Newer Larger Ships

Since 1972, discussions had been in progress about the acquisition of larger newer ships. As regards frigates, the Navy preferred that they be fitted with surface to surface missiles, surface to air missiles, medium and short range gunfire systems, long range sonars, long range anti submarine rockets and torpedoes and an anti submarine helicopter. At that point in time, the Russian Navy's frigates were being equipped either for the anti submarine role or the anti ship role because combining the two roles in one ship resulted in an unacceptable increase in ship size. The Indian Navy's reasoning however was that since it could afford only a limited number of frigates, it was preferable to have multi role frigates. In 1973, the first APEX Committee approved the Navy's proposals for acquiring multi role frigates, ocean going rocket boats, minesweepers and anti submarine aircraft. By then, the Russian side had veered round to the view that a multi role frigate might be possible. During 1974, discussions were held to finalise the weapons and systems to be fitted in the new acquisitions.

IL 38 MRASW Aircraft

In 1974, the Russian side intimated that it would be possible to give three IL 38 MRASW aircraft.

Six-yearly Refit of Submarine in Russia

In end 1974, an agreement was signed for the first submarine KALVARI to be refitted in Russia.

Commissionings in 1974

Two submarines VAGIR and VAGSHEER and the Petya AMINI were commissioned in 1974. In the same year, the Integrated Type Training Establishment in Visakhapatnam was commissioned as SATAVAHANA and the Missile Boat Technical Position in Bombay was commissioned as TUNIR.

1975

Inter Governmental Agreement for the New Acquisitions

In February 1975, an Inter Governmental Agreement was signed for the Navy's largest acquisition of Russian ships and aircraft and their supporting infrastructure. The agreement was for:

- 3 multi-role guided missile frigates frigates with KAMOV anti submarine helicopters.
- 3 ocean going rocket boats with surface to surface and surface to air missiles.
- 6 coastal minesweepers.
- 3 IL 38 MRASW aircraft.
- Ammunition and support equipment for all the above acquisitions.
- Technical Positions for each of the new missiles and torpedoes.
- Spares for the submarines.

Professional Delegation to Russia

To minimise the kind of difficulties which had been experienced with the earlier Russian acquisitions, the Navy had prepared a detailed questionnaire regarding the new acquisitions and forwarded it to the Russian side.

The Russian side's answers to this questionnaire provided the basis for further detailed discussions. A Professional Delegation went to Russia in mid 1975. Its aim was to obtain detailed information:

- On the characteristics, performance data and exploitation of machinery and equipment of the ships and aircraft being acquired.

- For the timely establishment of support facilities for their refits, maintenance, logistics and training.
- On the feasibility of fitting indigenous communication equipment in the frigates.
- On the technical documentation and spares and the time frame for their supply.
- On the content and duration of training courses, availability of training equipment and simulators.
- On whether the Russian weapons and systems being acquired could be retrofitted in our older ships or into the frigates being constructed in India.

The delegation's discussions proved extremely useful in the subsequent management of the new acquisitions.

Missile Coast Battery at Bombay

During 1974, a missile launcher and a fire control system had been removed from a non operational missile boat and fitted on a rotating platform cannibalised from an obsolete gun mounting. It was successfully test fired in 1975. Installation then commenced of a second similar launcher.

Fitment of Surface to Surface Missile System in TALWAR

In 1975, work commenced on the fitment in TALWAR of surface to surface missile launchers and a fire control system which had been removed from a non operational missile boat.

Commissionings in 1975

Three Landing Ships GHORPAD, KESARI and SHARDUL were commissioned in 1975. The fourth and last of this class, SHARABH, was commissioned in January 1976.

Developments After 1975

Surface Vessels:	Eight new improved missile boats arrived in 1976.
	The three 800 ton rocket boats arrived between 1976 and 1978.
	The six coastal minesweepers arrived between 1977 and 1980.
	The three guided missile frigates arrived between 1980 and 1983.
Aircraft :	The three IL 38 MRASW arrived in 1977.
	The Kamov 25 helicopters arrived with their respective frigates.
Infrastructure:	The new Naval Dockyard continued to expand till the 1980s.
Visakhapatnam:	The South Dry Dock was completed in 1978.
	The Technical Position for the missile boats based in Visakhapatnam was commissioned as KALINGA in 1985.
Bombay :	The repair facility for missile boat engines was completed in 1980.

A Retrospect of the Russian Acquisition Programme

Could the Acquisitions Have Been Managed Better

In the light of hindsight, there is force in the view that the Russian acquisition programme between 1965 and 1975 could have been managed better. There were strong pressures from the Material Branch to slow down the pace of acquisitions because the shortage of technical artificers and lack of repair facilities could not keep the acquisitions going. There were, also, other underlying causes.

To start with, there was the relaxed ambience of the early 1960's into which the Russian acquisitions were suddenly injected. Until 1966, the Navy's ships were entirely of British origin. Steam driven machinery and auxiliaries permitted virtually unlimited usage. Their machinery, weapons, sensors and other equipment were of almost the same technological vintage as ships in the British Navy. British naval feedback kept the Navy up to date with the problems encountered in the fields of operations, maintenance and logistics. Spares were readily available off the shelf, often through direct sourcing from the British Navy.

This picture changed after 1966. The vessels of various types procured from Russia were densely packed with equipment whose maintenance was governed by hours of usage. The Russian operating - maintenance - logistic procedures were designed to keep vessels ready for instant combat. This required strictly regulated usage backed up by an extensive maintenance infrastructure ashore. The repair and

refit cycles were more closely spaced. All this required timely logistic support.

After the vessels arrived in India, it was found that the procurement of spares from Russia required strict conformance with an inflexible, time-consuming process which the Navy was neither used to nor could it comply with, because of the paucity of spare part reference numbers, difficulties in preparing indents in the Russian language etc.

The submarines, when inducted, required stricter technical monitoring and stronger logistic support. They had their own unique maintenance and logistic requirements. Soon thereafter, the thin skinned, high speed missile boats arrived. They too had a novel support philosophy involving special to type base support and training complexes for the boats and their missiles.

In a very short space of time, all the existing maintenance and logistic facilities came under pressure. The number of items handled by the Logistics Organisation doubled and the rupee value of material used in the Naval Dockyard Bombay trebled. Cumulatively, the induction of large numbers of new types of ships and weapons and the new procedures requiring intensive usage-hour-based maintenance and instant logistics strained the prevailing system to its limits.

These stresses and strains were compounded by the inability of the Navy to perceive that the only way it could overcome the constraints of austere usage for which the equipment had been designed, was by indenting substantially more spares than what even the Russian side had recommended. As a result, the interaction between operational and technical compulsions, which should have been positive, became negative.

The Operational Compulsions

As mentioned earlier, a major compulsion was the need to give sea time to every officer and sailor by rotating ships' crews every year.

From the very outset the Navy, which was used to unrestricted usage of steam propelled ships, blithely ignored the repercussions of not adhering to the limitations laid down regarding the operating hours of critical machinery like diesel engines and diesel generators. There is substance in the Russian view, which was stated to every Indian delegation which complained about the non availability of critical operational spares, that the shortage derived more from what, by Russian norms, was "excessive usage" and "beyond what the equipment was designed to do". The Indian Navy's dilemma was that it just could not countenance not giving every officer and sailor sea time. It was a mandatory prerequisite for their next promotion. The annual compulsion of taking new crews to sea and the inability to accept that Russian equipment would break down as soon as its design limits were exceeded led directly to "over exploitation". Subsequently, rather ironically, the Navy had to accept that time spent in ships which barely went to sea would have to be treated as sea time.

The Technical Compulsions

From the very outset, it was known that:

- The new Dockyard at Visakhapatnam would take several years to come up.
- The rudimentary Base Repair Organisation at Visakhapatnam was not, and could not be, equipped to cope with the day to day maintenance, annual refit, biennial refit and six yearly refit workload of four submarines, five Petyas, two landing ships etc.

The only salvation was to concentrate the experience of the officers and men trained in Russia, utilise the workshop facilities in the submarine depot ship and avail of the expertise of the Russian guarantee specialists which came with each new acquisition. In the event, for diverse reasons, none of these resources were effectively dovetailed. To save on training costs, the experienced personnel of the first few vessels were sent back to Russia to commission the subsequent vessels, much to the detriment of vessels so deprived.

The submarine depot ship was deployed to support the submarines operating from Bombay. Since Bombay did not have the appropriate shore supply, the depot ship's generators soon ran out of operating hours. Efforts focussed on getting the depot ship itself back into shape, so that it could be used to help maintain the Petyas and submarines. And as regards utilising the services of the Russian guarantee specialists, the difficulties of interacting in the Russian language and the fierce pride in "not being technically dependent on the Russians" constrained meaningful interaction.

Retrospect

Despite all these vexatious problems, the transition from British to Russian acquisitions did manage to succeed, slowly and tortuously to begin with and

eventually beyond everybody's expectations. Indeed, there is substance in the view that it was in these painful years that the solid foundations were laid for future interaction. After the initial resentment at the temerity of Indian crews to decline the weekly political lectures and the persistent questions of Indian officers and artificers seeking to know more and more about their equipment, the Russian Training Centres realised that they were dealing with persons who were not only intelligent and professional but also diligent and innovative.

This professional respect began to over-arch the complex mindsets and inhibitions of each side, firstly at the Training Centre level and then at the Soviet Fleet level, when the Russians saw how confidently and competently the crews they had trained sailed their vessels back to India, which none of the previous Navies trained by them had done. On the Indian side, as soon as the crews commissioned their ships and submarines, they realised how invaluable the thoroughness of their Russian training had been.

As mutual respect increased at the local fleet level, it percolated upwards to Moscow and got reflected in the greater candour, width and depth of interaction with naval delegations to Moscow.

A remarkable achievement of these high level interactions in Moscow was that each successive acquisition was an improvement on its predecessor - the second lot of VELA class submarines were better than the KALVARI class; the second lot of Petyas were better than the KAMORTA class; the second lot of extended range missile boats were better than the earlier lot and the second lot of GHORPAD class LSTs were better than the earlier GHARIAL class.

Much of the credit for this achievement must go to the tenacity and dexterity with which successive CNS', VCNS' and COMs pursued the briefs prepared for them by the eager Commanders in NHQ's professional directorates. The latter were keeping abreast of the latest developments in the Western navies via the Leander and Corvette Projects and also of the latest developments in the Russian Navy via the international naval compendium known as Jane's Fighting Ships. The Russians realised this and were good humoured enough to occasionally remark in jest that "India should acquire one from the West and give it to us and very soon Russia would give India something better."

A substantial share of the credit for the success of Indo-Russian naval cooperation must go to the State Committee for Foreign Economic Relations and its much maligned departments - the General Engineering Department (GED) and the General Technical Department (GTD). Their enormous patience and tolerance was able to bridge the Indian side's inability to understand the inertia of the centrally planned, totally Government owned and controlled, Russian industrial system.

An equally great, if not greater, share of credit must go to the Indian Ministries of Defence and Finance (Defence). Their agility in negotiations and the painstaking discussions with their counterparts in the State Committee for Foreign Economic Relations belies the widespread naval belief that the Navy was treated like a stepchild. The Navy's incredible technological leap frog in just ten years after 1965 would not have been possible without the whole-hearted support of these two institutions.

But the largest share of credit for laying a sound foundation for Indo - Russian naval cooperation belongs to Admiral Gorshkov. He intervened adroitly at every impasse. His calibrated release of larger, better and more modern ships, submarines and aircraft were not only in step with the larger objectives of Indo - Russian political, economic and defence cooperation but also in step with his growing confidence that the Indian Navy would confidently cope with whatever Russia gave. His confidence, and indeed that of the entire Russian establishment, soared after the spectacular success of the missile boat attacks on Karachi harbour during the 1971 war. These attacks not only brought glory to the efficacy of Russian weapons when properly exploited; they also validated Russian confidence in Indian professional competence.

It was this confidence and mutual respect which flowered in the years that followed to produce the elegant guided missile corvettes of the KHUKRI class and sleek destroyers like DELHI and MYSORE.

In retrospect, despite all the procedural limitations of each side, the absorption of the Russian acquisitions was as monumental an achievement as the Leander Programme and the 1971 war.

16

The Submarine Arm

Developments Until 1965

The Navy's very first plan formulated after Independence in 1947 proposed to the Government the acquisition of four submarines. The plan did not specify in which year of the plan the submarines should be acquired. This was because of uncertainty in the source of supply and the difficulties anticipated in starting to operate submarines.

In 1948, due to budgetary constraints, the Navy was asked to recast its requirements. The Navy's 10 year plan 1948 - 1958 gave lesser priority to the Submarine Arm because it could not be created by 1958. In 1951, since large scale naval expansion could not be afforded, the Navy proposed a ship replacement programme instead of a ship acquisition programme. Submarines found no mention in this plan.

By 1956, Pakistan had joined CENTO and SEATO and was going to be given extensive naval assistance by America and Britain. The Navy had to propose the acquisition of ships to match Pakistan's acquisitions. No mention was made of submarines.

During all these years, there had been no progress on the acquisition of submarines. There were several weighty reasons:

- Until 1956, the Navy itself was fully stretched, personnelwise and budgetwise, in remedying the after-effects of the partition of the Royal Indian Navy. Ships and aircraft were being acquired and training, repair and logistic facilities were being set up ashore.
- After 1956, the Navy's efforts were primarily focussed on acquiring ships and aircraft to cope with the increased threat from Pakistan.
- The Navy found it exceedingly difficult to carry conviction, either in India or in Britain, that the Submarine Arm was a priority requirement. In the context of a non- violent, peace-loving member of the British Commonwealth whose over-riding priority was economic development, nobody was prepared to accept that India at all needed a patently offensive Submarine Arm.*

However, the Navy kept a close watch on the design and development of post war submarines. France had developed the Daphne class. Holland had developed the Dolphin class. Britain had first developed the Porpoise class which had evolved into the Oberon class. The British Navy had increased the submerged endurance of some of its earlier World War II submarines by cutting the hull in two and inserting a midships section to provide an additional propulsion battery compartment. The American Navy had improved their conventional submarines by giving them "Greater Underwater Propulsion Power", which came to be known as the GUPPY conversion.

The Navy also kept a watch on the development of the Submarine Arms by the Commonwealth Navies. Both the Canadian and Australian Navies had taken British manned A and T class submarines on loan in which their personnel received on job training under British submariners. Both Canada and Australia were awaiting the finalising of the Oberon design before purchasing them.

By 1956, the feed back from the annual Commonwealth JET exercises indicated that the arrangements for participating Navies to share anti submarine exercise time with available British submarines were becoming inadequate for our ships. Defence Minister Krishna Menon wrote to the First Sea Lord, Admiral Mountbatten in May 1957 for "acquiring a target submarine service comprising the oldest and cheapest submarines, since it was not envisaged that India would need to employ them in war".**

Because of the British Navy's extended commitments, reduced strength, procedural difficulties in loaning British naval personnel etc, the loan of a training submarine did not find favour. The Navy then accepted the British Navy's suggestion for providing India with increased anti submarine exercise time in Indian waters.

In 1958, the eight new British frigates of the naval replacement plan started arriving in India and the second hand British aircraft carrier had been purchased. The Navy re-started its case for a Submarine Arm.

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* Mr. Inder Malhotra, (senior defence journalist), recalls: "Mr Mahavir Tyagi (then Minister of State for Defence) once told me that whilst Prime Minister Nehru was receptive to proposals for acquisition of surface warships, he put his foot down on the acquisition of submarines. He felt that it was a weapon of offence".

** Roy Choudhary Page 37.

In his book "Indian Navy's Submarine Arm," Admiral Chatterji states:*

"A paper was submitted to the Government in 1959 for the acquisition of three operational submarines which would also naturally be available as target submarines for the anti submarine ships. Protracted discussions took place with the Government at various levels over years without much progress.

"The British were adamant in their views that submarines were sophisticated weapon systems which were difficult to operate, that the Indian Navy was still too young to venture into the submarine field, that submarines were accident prone, that the loss of a submarine at sea would lead to the loss of confidence in the Navy at Governmental and national level which would gravely impair the Navy's further development.

"Examples were quoted of the Australian and Canadian Navies which operated submarines on loan from the British Navy, manned by British personnel with a few junior officers and sailors as trainees.

"Having just attained independance, the thought of adding any warship to the Indian Navy commanded by a British officer and manned by British sailors was repugnant to Indian sentiments."

The Navy refined its line of argument. It impressed on the Government that every Navy worth its name had to have submarines. It took several years to train an officer in the operation of a submarine and give him sufficient experience to ensure that he would be competent to assume command of a submarine. The Navy urged that the Government accept the creation of the Submarine Arm in principle and allow the Navy to depute a few officers to Britain for training in submarines.

Early in 1962, the Government agreed to the deputation of personnel to Britain. The training of junior officers was accepted on the premise that intimate knowledge of submarines would help to increase the efficiency of our anti submarine ships. Since submarines were still viewed as "offensive" vessels, the Government made it clear that the approval to depute officers for submarine training did not in any way commit the Government to the acquisition of submarines.

Submarine Training With the British Navy

Commodore KS Subra Manian (then Lt Cdr) and later Commanding Officer of the Navy's first submarine KALVARI, recalls:

"We were trained along with British officers. After classroom training, we were attached to various British submarines for six months. During afloat training, we had to qualify practically as watchkeeping officers in a submarine. I started in HMS Porpoise and then went to other submarines of the Porpoise class. Overall, the period of training was just under a year".

Captain MN Samant (then Lt Cdr) and later Commanding Officer of the Navy's third submarine KARANJ, recalls:

"There was no holding back on anything, except for classified matters such as their latest submarine sonars.

"Trainingwise, it was very much more instructive from the practical point of view, than later in Russia. In Russia they placed tremendous emphasis on the theoretical aspect, including the mathematical basis, but our actual sea time in Russian submarines was very very low as compared to the British Navy. The British Navy did not emphasise so much on the mathematical or theoretical aspects, but they made up for it by giving you 6 months of actual seatime in submarines. In addition, during our shore training, we went to sea in submarines almost 40% of the time".

Admiral VS Shekhawat (then Lt) and later Commanding Officer of submarine KARANJ in the 1971 War, recalls:

"Training started with an intensive three and a half month theoretical course in which all the technical aspects of submarine construction, engineering and electrical systems, diving and surfacing systems, submarine control, ventilation, salt water, fuel, fresh water, distilled water and other systems were covered. Practical instructions consisted of visits to old submarines secured alongside the jetty. There were instructional visits to the works of the suppliers of submarine batteries and to hyperbaric research laboratories to understand the effects of sea water pressure and underwater explosions on the human body.

"The training imparted was of a high order, compressed into a very short time frame and entailing long hours of study and practical work. Perhaps it did not go into as much detail as was to be our subsequent experience with Soviet

* Page 36.

training, but it was adequate for the trainees to form crews of British submarines and learn on the job.

"Our officers deputed to British submarines formed part of their crews for all practical purposes, kept watch independently, and gained invaluable experience and self confidence which was to stand them in good stead indeed when they later commissioned the Russian submarines.

"The attachments of our personnel was to all the classes of submarine then operating in the Royal Navy. Thus in a short period of time, Indian submarine personnel were exposed to several different types of submarines, with concepts of machinery design spanning more than twenty five years. This further helped in widening their perspective and experience.

"Indian officers and sailors, were always welcome as their presence relieved the strain of constant watch keeping at sea and in harbour. With our close familiarity with the Royal Navy at that time and the British origin of our surface ships, equipment, documentation and administrative set up, it was easy for our people to assimilate and absorb the training imparted and in general they were treated as equals, though with some restrictions on security matters.

"Indian personnel were particularly welcome because of their quick learning and special skills which enabled them to rectify difficult machinery defects and render the submarine operational. Brought up as they were in the older Indian ships with inadequate base support, shortage of spares and tools, the Indian sailor had developed fine skills in the art of improvisation and in making-do, allied with native ingenuity. No wonder they were popular on board with the masses of complex machinery in the highly confined spaces of the submarines."

Rear Admiral JMS Sodhi (then Lt) recalls:

"Submarine training in Britain was to the point. Even the escape training was only of three days duration. We used to do six weeks of sailing, followed by two weeks of rest and recreation. During sea training, in view of the shortage of RN officers on board, we were given maximum opportunity to do everything we could. In fact, we got our independent watch keeping at sea very very quickly and to that extent we learnt a lot. The British Navy officers, being disinterested, gave us the opportunity to learn as much as we could.

"Even in their system of assessing officers, they were very free and frank. When we sailed in HMS Astute, the Captain SM came on board and told our Commanding Officer, who was aspiring to become a Commander, "In the next exercise, if you catch the other submarine, you will become a Commander. Otherwise you will not". For nearly 72 hours, we sat on watch on the sonar, trying to locate the other submarine but unfortunately we were caught by that submarine. The Captain SM very nicely came to the Wardroom and said "Sorry, Tim, you have to retire as a Lt Cdr". That was the end of the story. There was no heartburn".

Utilisation of British Trained Personnel Pending the Acquisition of Submarines from Russia

To ensure that the batches returning from Britain did not forget what they had learnt, arrangements were made for officers to be attached to British submarines during the JET exercise of 1964.

Approval to Commence Negotiations for Acquiring Submarines

After the military reverses in the border war with China in October 1962, a major defence review was initiated to remedy the inadequacies. This gave the Navy the opportunity to resubmit its case for the acquisition of submarines. In addition to the arguments used earlier, it was emphasised that China possessed submarines, some of which had sufficient range to operate in the Bay of Bengal. The Navy therefore needed to acquire submarines, not only for the earlier reasons, but also for employment in the Hunter-Killer role against Chinese submarines.

The new proposal put up in November 1962 asked for three submarines. The justification given was that to keep one submarine continuously on patrol in an area about 1500 miles from India, such as the Malacca Straits, three submarines would be required: one would be undergoing repairs or refit or resting the crew, the second in transit to and from the patrol area and the third actually on patrol.

Vice Admiral BS Soman was the Chief of the Naval Staff in 1963. Writing in the naval magazine Quarterdeck 1997, he recalled:

"A serious bone of contention with the Government was the acquisition of submarines. I was convinced that these were crucial for a

balanced force, but Prime Minister Nehru and Admiral Mountbatten thought otherwise.

"After a lot of discussion, I was allowed to raise the matter with the Admiralty when I went to Britain in 1963. As expected, they turned it down - it was clear that the British would only sell us vessels which conformed to their Commonwealth Indian Ocean Defence Plan. This was not acceptable to the Navy and I recommended that we look elsewhere, suggesting that Russia might be a likely substitute.

"We found the Russians not only ready to sell, but to accept part of the payment in rupees. Thus it came about that the Russians got our custom and remained our major and reliable suppliers over the years."

During 1963 and 1964, in the expectation of assistance from Britain and America, there was considerable discussion to crystallise the requirements for what eventually became the 1964-1969 Defence Plan. As regards submarines, the Navy had four options before it:

- The older British submarines which the Admiralty had earlier offered. They were already 20 years old. Their remaining life was too short to make purchase worthwhile.
- Older American Fleet class submarines which after modernisation would have five years operational life. Politically, however, it was unlikely that America would give submarines to India.
- New British submarines of the Porpoise/Oberon class.
- New Russian F class submarines whose specifications were similar to those of the British Porpoise class and the American Fleet class.*

In view of the Navy's lack of familiarity with Russian naval hardware, the Navy recommended the acquisition of three Porpoise class submarines from Britain. Government accepted the Navy's recommendations in principle. Negotiations were started with the British Government for the acquisition of one second hand Porpoise class submarine to start with.

Discussions with Britain in 1963

In 1963, the British were experiencing economic difficulties and were considering reduction in their naval forces. The British Navy was not willing to spare one of their own Porpoise class submarines. However, British shipbuilders were willing and eager to build an Oberon class submarine for India. The Navy was agreeable to buy one new Oberon but sought deferred credit terms to cover the cost of the submarine, which at 1963 prices was working out to about Rs five crores - three crores for the submarine and two crores for the infrastructure. The British were unwilling to extend soft credit and India could not spare the foreign exchange.

By early 1964, the 1964-1969 Defence Plan had taken shape and the requirements therein had been indicated to America, Britain and Russia in preparation for the visit to these countries of delegations led by the Defence Minister. Commodore (later Admiral) SM Nanda was the Deputy Chief of the Naval Staff at that time and represented the Navy in all three delegations.

Discussions in America - May 1964

Admiral Nanda recalls:

> "During these discussions, Mr Mc Namara reiterated that in the context of our problem with China, the Army and Air Force will have priority. He said "Your threat is from China. All your ships up to now have been from Britain. So you will have to go to Britain. As far as the US is concerned, the Navy has no priority." We came back empty handed."

Mr PVR Rao was the Defence Secretary from after the Chinese war in 1962 till after the Pakistan war of 1965 and accompanied the Defence Minister's delegation to America. He recalls:

> "At the Ministry level, we did not broach naval supplies with the US at all. We knew it would be futile, because the US could not supply any naval ships without Congressional approval. We were extremely doubtful whether that approval would be forthcoming. The US was committed to Pakistan and under the law of the time, only Congress could approve the transfer of naval vessels. In fact, even the transfer of the submarine GHAZI on loan to Pakistan was illegal under US law.
>
> "We also had a very low priority for the Navy in 1965. After the 1962 battle, the first problem facing Indian defence planning was with regard to Pakistan and China, and China's Navy had a low role to play against India. The Army primarily, and to back up the Army, the Air Force, had priority."

* The Air Force had already turned to Russia in 1962 for the manufacture of the latest Russian MIG 21 fighter aircraft in India.

American records are not yet available which could throw light on precisely why America declined India's request for submarines. The reasoning of "traditional supplier" appears odd because in that very same year 1964, Pakistan was given the submarine GHAZI on loan for a period of three years to start with. It is more likely that Congress would not have agreed to loan submarines to India because India was not a CENTO/SEATO ally of America, whereas Pakistan was. The American Administration may also have reconciled themselves to the Indian Navy turning to Russia as the Indian Air Force had done, in case the West was unable to meet its needs.

On the eve of the Defence Minister's delegation to Russia in September 1964, the position was:

- The British were not willing to spare a Porpoise class submarine. The shipbuilders were keen to build on Oberon but the British Government could not extend a soft credit of five million pounds for its construction.
- India was unable to spare this huge amount in foreign exchange for purchasing a submarine.

Under the circumstances, the delegation's task was to explore the availability of the Navy's requirements from Russia and the financial implications of doing so.

Discussions in Russia - September 1964

In Russia, the response to the Navy's requirements was positive. The Russians offered four of their new F class submarines, a submarine depot ship and other vessels.

Admiral Nanda recalls:

> "Russia was keen to meet our requirements for ships and submarines. In Leningrad, we were taken to sea in a submarine and were quite impressed with what we saw. But Delhi had sent instructions not to sign for any naval equipment from Russia.
>
> "When we came back, I got to know what had happened. It appeared that the instructions had come from the Government, who had been influenced by the British and the American Governments, that the Navy should not go in for Russian acquisitions. And so in 1964, we did not take the Russian submarines that were being offered to us."

Mr RD Pradhan, IAS, was the Private Secretary of Defence Minister YB Chavan from 1962 to 1965. He accompanied the Defence Minister in 1964. In his memoirs "Debacle to Revival", he states:*

> "Lal Bahadur Shastri felt that before making any commitment to the Soviets, the Defence Minister should visit Britain to find out the attitude of the British Government. Apparently, the situation had become favourable with the advent of the Labour Party in 1964 under Prime Minister Harold Wilson".

Discussions in Britain - November 1964

Admiral Nanda recalls:

> "In the UK, the Labour Government had just taken over and Mountbatten was the Chief of Defence Staff. A lot of discussion took place. Eventually the First Sea Lord, Sir Michael Pollock, asked me over for a session at the Admiralty. He felt that the Labour Government may be more sympathetic to India and he might be forced to give us the Oberon class submarine and the Daring class destroyers we were asking for. So he said "The Royal Navy is being run down. I cannot give you Daring class destroyers. Please do not press for them. A 'T' class submarine is being returned to UK from Australia to be scrapped. Please accept this submarine".
>
> "I had to say "Sorry, Sir, I cannot recommend this to my Defence Minister. You have got the infrastructure for the maintenance of your submarines. If you feel that this 'T' class submarine cannot be maintained by you, how do you expect us to maintain this T class submarine in India?" Then he said "Look the whole thing is that you have no experience of running submarines and if you want to learn driving, you don't go and buy a new car. You learn driving on an old car". So I said "Sir, I accept that also, that when you want to learn driving, you learn driving on an old car. But you don't go and buy an old car to learn driving. We have, as you know, been offered four brand new submarines from Russia. How do you expect my Defence Minister to stand up in Parliament and say that we have refused four brand new submarines from Russia, but we are going to take from Britain a submarine which is going to be scrapped? What I am prepared to recommend to my Minister is that we sign for an Oberon class submarine and that you agree to it. It will take you two to three years to build it. During that period you can loan us the old 'T' Class submarine on which we will train our crew and return the submarine back to you as soon as

* Pages 229 et seq.

you give us the Oberon class submarine". But even to that he would not agree.

"As the First Sea Lord, he felt that his job was to see that the British Navy did not lose any ships and submarines. His job was to see that it remained strong. He did not want his Navy to be cut down by handing over ships and submarines to India which he, at that time, felt he could ill afford to give".

Mr PVR Rao, the Defence Secretary, accompanied Mr Chavan's delegation to Britain. He recalls:

"In England, our main effort was to get some money - deferred credit - on soft terms. The difference between India's naval demands and what the British were prepared to give was substantial. Even Lord Mountbatten, who was Chief of Defence Staff at that time, could not prevail with the Admiralty, though he pleaded India's cause better than even India did. He even told the First Sea Lord that India may be driven to seek help from the USSR. But the First Sea Lord was adamant that he could not spare an Oberon submarine.

"Our Navy was still keen on the Oberon class submarine and the probability of obtaining it was hard to die. The Admiralty were building this new class of submarines. They had just given an order for three submarines and India wanted one of those submarines. The British Admiralty said "No, we have got only three submarines on order, they are absolutely necessary for us, we cannot release any of them". They were prepared to give us older submarines, which our Navy refused to take.

"The British Prime Minister Harold Wilson remarked, half humorously, to Mr Chavan; "I did not know that submarines could climb the Himalayas".

To avoid a distruption in the naval relationship, the British agreed to reconsider whether they could find ways and means to give India deferred credit for building a new Oberon class submarine in a British shipyard.

Developments in Early 1965

Indonesian Bellicosity

After the conference in Bandung in Indonesia in 1955, when the principles of Panchsheel were formally accepted, relations between India and Indonesia had steadily deteriorated. The predominant Communist Party of Indonesia had close links with Communist China and the Soviet Union. Between 1958 and 1965, the Soviet Union gave Indonesia a substantial naval fleet. Indonesia wanted to rename the Indian Ocean as the Indonesian Ocean and intrusions were observed in the Nicobar Islands, the nearest of which was only 90 nautical miles from the northern tip of Sumatra.

Mr K Subrahmanyam was Deputy Secretary Budget and Planning in the Ministry of Defence in 1964 and 1965. He recalls:

"In March 1965, the British told us that they will not be able to give us deferred credit for building an Oberon class submarine.

"In early April, there was a meeting of the Secretaries Committee in which the activities of the Indonesian Navy around the Andaman and Nicobar Islands were discussed. The Navy stressed the need for maintaining a naval presence there to deal with the situation. On the basis of that discussion, the Navy prepared a draft paper in which it described the situation around the Andaman and Nicobar Islands and recommended that we again approach the United States, Britain and Russia for naval vessels.

"I felt this was not the right approach. I pointed out that going back to the Americans, British and Russians was not going to give us any additional benefits because:

- The Americans had told us that they will not give us naval equipment and
- The British had already told us they couldn't give us credit for building the Oberon class submarine.

"Therefore the best course was not to delay any further, but to accept the Russian offer which had been pending since August 1964. Mr Chavan agreed. Naval Headquarters were asked to put up definite proposals for acquisition of Russian ships and submarines."

The Navy's Hesitance to Switch Over to Russian Acquisitions

There is no doubt that Naval Headquarters had grave reservations about going in for Russian acquisitions. Indeed, the Navy appears to have been almost apologetic. Admiral Kohli, who was the Deputy Chief of the Naval Staff in 1965, states in his book:*

"Having tried both the USA and UK and drawn a blank from both countries, we had no alternative

* Appendix C Page 117.

but to go to the Soviet Union. This decision was taken after the most careful consideration as it would mean going to the Communist camp for the first time. We are often blamed by spokesmen from Western countries, more particularly the USA, for going to Russia - but they are not aware that a first approach to their country had drawn a blank."

In 1965, the agreement was signed for the acquisition of Russian ships and submarines. Admiral Kohli, then Deputy Chief of the Naval Staff, headed the Naval team of this delegation. In his book, he states:*

"The first submarine was to be ready at the end of 1967. The Soviets undertook to train two complete submarine crews in their naval base at Vladivostok on the Pacific Coast. Our crews began their training in July 1966. Credits were made available by the Soviet Union and the payments were to be made in Rupees. The price of each submarine was around 3 crores."

Admiral Mountbatten, visited the National Defence College after he retired as the British Chief of the Defence Staff. He deplored "The short sightedness of the British Government who, by declining a deferred credit of a measly five million pounds for building an Oberon class submarine, forced the Indian Navy to acquire its requirements from Russia, thereby limiting the British warship industry's market to meeting the needs only of the Leander Frigate Project."**

Developments 1966 to 1975

Selection of Crew and Pre Deputation Russian Language Training

Captain MN Samant recalls:

"Selection of a submarine crew is critical in that it requires high medical and psychological fitness standards. In those days we had to screen 7 to 8 volunteers before we had one man. Then we wanted to get experienced persons, who would stay longer in the service and yet we wanted to induct junior persons, so that they could be trained to gradually take the place of the experienced ones".

All personnel selected to undergo training in Russia were given three months of Russian language training in Bombay.

Submarine Training in Russia

Commodore KS Subra-Manian recalls:

"The USSR Navy at that time consisted mainly of conscripts who spent three years in service and then went out, unless they were retained for any reason. They were all raw recruits and they were trained for a specific job. Our sailors and officers who went there had been in the service for a number of years, about eight to ten years. They were all experienced in their particular trades. Now the trade structures of the Soviet Navy and of our Navy were not quite compatible. They trained each sailor for a specific job and he only concentrated on that. Our sailor was trained to do multifarious duties.

"One of my first headaches on arrival there was to draw up a syllabus for training our sailors and to convince the Soviets that their system is not compatible with ours and cannot work. I had a lot of problems on this subject. However we managed to draw up a syllabus, not only for ourselves but for subsequent batches also. We did evolve some sort of a compromise to make sure that our sailors got the right sort of training.

"As far as comparing the two systems of training is concerned, there is good in both systems. We adopted the best of both".

Capt MN Samant recalls:

"We tried to make the Soviets understand that none of our crew had come directly from universities and schools. We were career officers and crew having 12 to 15 years of service, including almost one year's practical experience in submarines and three months' training with British Navy. We told them that what we wanted was a concept of type training, as against the basic training which they were trying to impart. That had the desired effect. From the second batch onwards, we were able to reduce the training time from 18 months to 15 months. And for the third and fourth, we were able to reduce it further.

"Another point noticed was the Soviet's pride. To try out a submarine's weapon systems, especially after a new submarine is commissioned, we require a target vessel. The Soviets felt very awkward. They said that "After the Second World War, we feel very hurt if any foreign ship fires at a Soviet vessel!" It actually

* Ibid.

** Indian Navy's Submarine Arm by Admiral A K Chatterji Page 46.

took time to convince them that unless they proved the weapon system. it will not be possible for us to accept their vessels. That too had the desired effect".

Admiral VS Shekhawat recalls:

"The Russians believed in a lot of class room instruction and it was very very thorough. I felt that for us the best was a combination of the two,. not the very short duration that the British did, nor the prolonged duration that the Russians believed in. Eventually we arrived at our own training duration somewhat between the two, but leaning more towards the Russian side in thoroughness of class room instructions, diagrams and so on. I think that has suited us better than the British system might have done. Of course, the British system probably is more cost effective because of less time spent on training. But the safety aspect has also to be borne in mind as well as the educational background and aptitude of the trainees. We have been fortunate in being able to operate in considerable safety over all these very many years as a result of the practices that we followed"

Vice Admiral (then Lt) RN Ganesh had joined the Submarine Arm after training in Britain had ceased. He was later to be the first Commanding Officer of the nuclear propelled submarine CHAKRA. His recollections of training in Russia were, in some respects, different from those who had earlier been trained in Britain:

"Our instructors impressed us with their technical knowledge and we did benefit greatly from the training. We developed the habit of learning our equipment thoroughly, of being able to run and maintain our own equipment, irrespective of branch. This technical knowledge of one's own equipment stood us in very good stead. On the more general front, the Soviets were not generally very forthcoming on tactical doctrine.

"There was undoubtedly a kind of cultural divide among the Indians themselves. Those who had undergone training with the British Navy, were more reluctant to accept the Soviet instructors in that role and very often assumed a kind of superior attitude. By and large, they were slightly derisive in their approach to the Soviets. This was largely a spin off of our totally Western reading habits. The Western perception of the Soviets had somehow got grafted on our way of thinking.

"The training, in my view, was excellent for the type of sailor that the Indian is. He likes to be told in detail, he likes to know exactly what he was to do. Methodical, systematic and thorough, that is the essence of Soviet training. Perhaps it did not leave too much room for initiative in the sense that everyone carried a notebook indicating what he was supposed to do when there was a fire, when there was flooding and so on. But all these things did help in maintaining a very strict organisation. This was happily blended, I think, with those of British experience. In the end, we did get a happy blend of thorough Soviet basic training but with the experience of those who had been trained in Britain."

Rear Admiral JMS Sodhi recalls:

"The training was slow but it was absolutely thorough, it was very good and the practical training was excellent. It was far better than the British training. The Russians told us that the many orders and procedures might seem very silly to you, but please remember that "It is written in the blood of comrades gone by". So please do not ignore them. I found their advice to be very correct.

"We found that because of the Russian system of conscript training, they had many safety features on their submarine. That meant that no single fault could create a crisis in a submarine. There had to be a series of faults, only then could an accident occur. In fact, even in the propulsion system, there were seven alternative modes of propulsion. So six or seven modes had to break down before the submarine was completely immobilised"

Rear Admiral (then Lt) SC Anand underwent his initial submarine training in Russia. He recalls:

"It was only when we were finishing the training that we realised how valuable the training was. Because as we went along, we found our knowledge of specific actions to be carried out on board a submarine, specific activities, drills, procedures became that much more thorough. We realised how important it was to know the specifics of any action rather than knowing it only theoretically. The only reason we did not know very much about this type of training was that in our surface navy, emphasis on this kind of practical training was not to be found.

"We were also impressed with the knowledge of the Russian Instructors, as well as the other sailors who guided us during our first steps in the submarine. We wanted to emulate the example being set by those instructors, the thoroughness of their knowledge, and their total command over the subject they were teaching."

Submarine Infrastructure Facilities

The 1965 agreement with Russia not only covered the delivery of ships and submarines, but also the creation of a modern Dockyard at Visakhapatnam, along with a submarine base and training school.

The basic infrastructure required for the Submarine Arm was a submarine base, a submarine training establishment, submarine maintenance and repair workshops, facilities to charge the submarine propulsion batteries and the high pressure air bottles and facilities for blowing the ballast tanks and preparing submarine torpedoes.

Since the new Dockyard would take several years to come up, interim arrangements were made for the Base Repair Workshop in Visakhapatnam to be expanded.

The Induction of the Submarines

After commissioning, each submarine did a three month combat work up in the Baltic before departing for India. Since the Suez Canal was closed, the maiden voyages were around the Cape of Good Hope. The first two submarines were escorted by Indian naval ships, the latter two came on their own. The first four submarines arrived between July 1968 and May 1970 and were based in Visakhapatnam .

After arrival, the submarines:

- Participated in anti submarine exercises with ships, Alizes and Seakings and helped them to evaluate anti submarine sonars and sonobuoys.
- Undertook operational patrols.
- Helped train the fresh inductees into the submarine service.

In 1971, an agreement was signed for four improved Russian submarines of the same class. The improvements were the result of experience gained by us in operating the submarines in Indian tropical conditions:

- Design of equipment and machinery to cater for higher ambient air temperature, sea water temperature and relative humidity parameters.
- Improved active and passive sonar sets and the requirement of a long range passive sonar.
- Improved version of radar with better power output and an extra PPI to be fitted in the Chart House.
- Improved version of SHF/DF set with better presentation.
- Improvements in the layout of the control room.
- Improved arrangements on equipment and machinery to ensure a higher degree of silence.
- Improvements to Main diesels, HP air compressors, Refrigeration plant, Ventilation system, etc.
- Provisioning of a frequency analyser and a cavitation meter.

The 1971 Indo Pakistan War

During the 1971 war KURSURA and KARANJ operated in the Arabian Sea. KHANDERI operated in the Boy of Bengal. Their activities have been described in the chapters on the 1971 war.

KALVARI remained in Visakhapatnam to continue training of fresh inductees for the next lot of four submarines.

Basing of Submarines in Bombay

After the 1971 war, it was decided to base the four new submarines in Bombay and create the minimum essential support, maintenance and repair facilities.

These four submarines arrived in Bombay between January 1974 and May 1975. Until their shore facilities were set up, they were supported by the submarine depot ship AMBA, which had been moved from Visakhapatnam to Bombay.

After arrival, these submarines participated in anti submarine exercises, evaluations and operational patrols as the earlier submarines had done. They were saved, however, from having to expend precious motoring hours in transits between the East and West coasts, which had been unavoidable for the earlier four submarines based in Visakhapatnam.

Personnel Aspects

From the outset, the tight delivery schedule of the submarines created problems. By 1969, personnel shortages began to cause concern. Several measures were taken to remedy these shortages.

Reducing the Rejection Rate

Analysis indicated that a major cause of the shortage in intake was the large number of rejects in the psychological tests and the general lack of confidence in the procedures for selection. It was decided:

- To do away with psychological and mechanical response test; only the recompression chamber (RCC) test was to continue.
- Sailors rejected in the earlier psychological tests were to be retested for suitability in the RCC test at Submarine Headquarters.
- The incentives and benefits of service in submarines were to be widely disseminated and followed up by liaison visits of submarine officers to ships and establishments.

Monetary Incentives

To make service in the Submarine Cadre attractive, special benefits were sanctioned. These were Submarine Allowance, Submarine Pay, Submarine Rations, Special Submarine Clothing and Hardlying Money at full rates.

Special Rations

- Government sanctioned a special scale of rations for sailors serving on board submarines. This included special items of pre-cooked foods for issue when submerged, when normal cooking would not be possible.
- *Ready to Eat Meals.* Large scale trials of ready-to-eat meals, manufactured at the Defence Food Research Laboratory, Mysore and the Accelerated Freeze Dried Unit, Delhi, were undertaken on board KALVARI. The trials were found to be quite satisfactory. After effecting further improvements, the DFRL Mysore commenced bulk production. These meals, however, never became popular.
- *Special Rations.* The special scale of rations, which was earlier admissible to sailors when submarines were submerged, was now authorised for both officers and sailors, both when submerged and on surface, except when they were not messed on board.
- *Emergency Ration Scales for Submarines.* Government authorised an emergency ration scale for personnel on board submarines, comprising boiled sweets/milk toffees, fruit bar, mango flakes, pumpkin halwa, refined seedless dates and sweet biscuits.

Standard Submarine Ration Scale

- Based on the recommendations of the Defence Institute of Physiology and Allied Sciences (DIPAS), a revised standard ration scale for submarine personnel was promulgated. The scale provided a greater variety of substitutes for issue in lieu of basic items. It also provided for issue of ready-to-eat meals whenever, either for operational or other reasons, cooking on board was not possible. However, since calorific value of the revised scale was much lower, it directly impinged on the variety of the menus and caused consternation amongst submarine personnel.

Catering Units

- To overcome the limited facilities and space on board submarines, an experimental Catering Unit was established ashore to issue cleaned, chopped and ready to cook provisions to submarines prior to their sailing.

Submarine Depot Ship - AMBA

The Submarine Depot Ship AMBA had commissioned in 1968 and had been based in Visakhapatnam. Between 1969 and 1971, AMBA supported the submarines operating on the West Coast. In the 1971 war, AMBA was deployed to patrol off the Lakshadweep Islands, across the sea lane between East and West Pakistan.

With the arrival of VELA at Bombay in early 74, AMBA's base was changed from Visakhapatnam to Bombay. From early 1974 onwards, AMBA was commanded by a CO who had commissioned a submarine in Russia. He was well aware of what submariners expected from their depot ship. In the following months, AMBA ably fulfilled her designed role as a Depot Ship:

- The submarines used to berth alongside and the crews were billeted on board AMBA.
- Operational and technical needs were met by AMBA's Heads of Department who were experienced submariners.
- Since the Torpedo Preparation Shop had not yet been set up in Bombay, the periodic preparation and change round of torpedoes was done by AMBA, just as she was designed to do.
- To conserve submarine engine/machinery hours, AMBA provided all the power supplies.

Submarine Rescue Vessel - NISTAR

The submarine rescue vessel NISTAR was commissioned in 1971 and based at Visakhapatnam. She conducted the diving operation on the Pakistan Navy submarine GHAZI, which sank outside Visakhapatnam harbour in December 1971.

From 1972 onwards, NISTAR helped train divers to meet the Navy's urgent need for Deep Divers and Clearance Divers.

Submarine Training School - SATAVAHANA

The Submarine Training School, which formed part of the Integrated Type Training Establishment for the Russian acquisitions, was commissioned as INS SATAVAHANA in December 1974.

Six Yearly Refits of Submarines

The delays in the completion of the Naval Dockyard at Visakhapatnam began to delay the commencement of six-yearly refits of submarines. To ensure that the safety of submarines was not prejudiced, detailed discussions were held with the Russian side. It was decided that the refit of the first submarine KALVARI would be carried out in Russia and that of the second submarine KHANDERI in Visakhapatnam. Dockyard personnel proceeded to Russia to acquire first hand experience of how these repairs were done.

Indigenous Submarine Batteries

In 1973, Standard Batteries of Bombay went into collaboration with Tudor, the Swedish battery manufacturers, to produce submarine batteries indigenously. After the initial teething troubles had been overcome, these batteries proved far superior in Indian conditions than the performance of the imported batteries.

Other Activities

In 1975:

- Sanction was accorded for submarine battery charging facilities at Bombay.
- The Escape Training Facility was commissioned as part of INS SATAVAHANA in Visakhapatnam.
- A full fledged medical organisation was sanctioned to provide cover for submarine rescue operations.
- A new scale of Submarine Pay was sanctioned.
- The Third Symposium on Underwater Medicine was held at Bombay. It focussed on the problems associated with underwater medicine that had come to notice since 1969.
- Ready-to-eat pack rations were supplied to the Base Victualling Yards for supply to submarines.

Developments After 1975

Six-Yearly Refits of Submarines

KALVARI returned to Visakhapatnam in 1976 with no defects. Her guarantee specialists returned to Russia earlier than scheduled. It provided a benchmark of a high quality refit to the personnel in Visakhapatnam who had commenced the six yearly repairs of the second submarine KHANDERI in mid 1976.

The actual experience with KHANDERI was beset with delays due to lack of expertise, shortage of spares and the low productivity of the Dockyard. Progressively, as expertise built up and the Dockyard facilities developed, it became possible to become self sufficient for submarine refits. Spares however always remained a problem.

In subsequent years, six yearly refits were carried out both in Visakhapatnam and in Russia. This helped to mitigate the problems of bunching which was a result of four submarines being acquired in 1968-1969 and another four in 1973-1974.

Indigenous Submarine Construction

In 1981, almost fourteen years after the initial dialogue with HDW of Germany, Kockums of Sweden, Vickers of Britain, DCN of France and Nevesbu of Holland, a contract was signed with HDW of Germany for four submarines - two to be built in Germany and two in Mazagon Docks, Bombay. These four submarines, called SSKs, entered service between 1986 and 1994.

Acquisition of Improved Russian Submarines

Between 1986 and 1990, eight improved Russian submarines of the Kilo class were acquired. These submarines were quieter, had better sonar and used indigenously produced submarine propulsion batteries.

Nuclear Propulsion

The Submarine Arm Pictorial History, published in 1992, states:

> "Seeing the advent of nuclear propulsion in submarines of other navies, a study was undertaken by BARC to study a nuclear propulsion package for naval ships and submarines. A stage arose when it became necessary to train serving personnel in this very important area of propulsion technology.
>
> "An agreement was concluded with the Soviet Union and a team of officers under the supervision of Vice Admiral MK Roy was formed to steer the project. After a rigorous selection procedure, the first batch of the nuclear submarine crews, under the command of Captain S Daniel commenced their training in the USSR. The training was, perhaps, the most thorough and taxing course that any of the Indian submariners, most of whom had over a decade of submarining behind them, had ever undergone. They absorbed the new technology with professional aplomb."

Vice Admiral Roy's book, "War in the Indian Ocean", states:*

"Nuclear propulsion in India was first mooted in 1967 when a naval officer and a BARC scientist prepared a feasibility report. A more detailed report was prepared in 1971 as the Committee of Secretaries felt that R&D on nuclear propulsion technology was inescapable if India was not to be left too far behind by the end of the century, when atomic energy would be a major source for both propulsion and energy requirements. A small nucleus of engineers were located in BARC as early as 1978.

"The offer by the Soviet authorities of a 'nuclear-powered submarine fleet' for the Indian Navy was made by Marshal Ogarkov during his visit to India in April 1981. The Soviets offered to arrange a two years' training programme for Indian naval personnel, lease one nuclear submarine for five years for practical training and to render technical assistance for creating maintenance facilities in India for nuclear powered submarines. He added that the sale as also assistance for designing and constructing nuclear-powered submarines could be taken up later. This offer was reiterated by the Defence Minister, Marshal Ustinov.

"It was in this context that the former President, R Venkataraman, stated in his book "My Presidential Years" that: (Pages 74, 75)

"On September 14, Admiral Roy, Vice Chief of the Eastern Naval Command conveyed to me the pleasant news that the Government had finally decided to take the first nuclear propelled submarine from the Soviet Union on lease, as purchase would entail acceptance of NPT conditions. The idea of acquiring a nuclear-propelled submarine was floated by me as Defence Minister and after months of bargaining the Soviets agreed. A training programme was arranged for Indian sailors. I had visited the trainees in Leningrad and Riga. I was also happy that the lease amount charged by the Soviet Union was fairly reasonable. The nuclear propelled submarine had the advantage of remaining under water longer, which was not possible for the conventional submarines. It was also proposed at that time that a second nuclear propelled submarine would be built in India. The Atomic Energy were confident of producing an atomic power pack for the submarine"

Lease of Russian Nuclear Submarine

In 1988, a nuclear submarine was leased from the Russian Navy. It was commanded and manned by Indian naval personnel and commissioned as CHAKRA. She was returned to Russia in 1991.

During this three year lease period, the Navy was able to better understand:

- Nuclear submarine culture and the practical aspects of handling nuclear power plants afloat.
- The tactical benefits of underwater launched anti-ship missiles.
- Anti submarine operations against nuclear submarines.

Very Low Frequency Communications with Submarines at Sea

Whereas a submarine on the surface can transmit and receive wireless messages just like a ship can, submerged submarines can only receive wireless messages on Very Low Frequency (VLF). VLF transmitters require huge antennae suspended high above the ground.

The initial discussions were solely with the Russian side, from whom the submarines had been acquired. Inquiries with western manufacturers indicated that better technology might be available from America. Parallel discussions were therefore pursued, both with Russia and with America.

Between 1979 and 1984, modalities were worked out for an American company, in collaboration with an Indian company, to assume responsibility for the detailed design, manufacture, site installation and commissioning of the VLF transmitting station.

During the same period, the Defence Research and Development Organisation designed the antennae to be fitted in the submarine for receiving VLF transmissions.

Installation of the VLF Transmitter commenced in 1987. Trials completed in 1989. On 20 Oct 90, the VLF Transmitting Station was commissioned as INS KATTABOMAN.

In Retrospect

If one corelates the justifications for setting up the Submarine Arm with events as they transpired during the decade 1965-1975, it becomes evident, as is usually the case with most new acquisitions, that either it takes considerable time for expectations to become reality or that expectations mutate as experience is gained. The following examples are illustrative.

* Pages 114 et seq.

Examples of Expectations that Did Not Materialise

The first expectation was that acquiring submarines would enhance the anti submarine effectiveness of our surface ships. Commodore KS Subra-Manian recalls:

> "As far as the anti submarine CASEXs and interaction with the surface forces were concerned, my experience has been that there has not been enough interaction. There was a feeling of smugness in our surface Navy as far as submarines were concerned. They had not really realised what exactly submarines are capable of, in spite of umpteen exercises, major and minor, proving that practically on every occasion a submarine can operate practically undetected in the face of combined opposition, in the face of unbroken sonar fronts, random patrolling and what have you. They still haven't realised. So I would say, very regretfully, that there has been insufficient interaction or appreciation of the potential of a submarine by the surface Navy."

The second expectation was that in a war, submarines could be used offensively. The section on submarine operations during the 1971 Indo-Pakistan war clearly indicates why this expectation did not translate into reality.

Examples of Utilisation Not Foreseen But Which Proved Invaluable

If submarines had not been available, it would not have been possible to undertake the following evaluations in the unusual hydrological conditions which prevail in Indian waters:

- Carry out comparative evaluations of the MRASW Atlantic aircraft in 1969.
- Systematically pinpoint and rectify the shortcomings in the Seakings' dunking sonar after the 1971 war.
- Evaluate, modify and progressively improve the indigenously designed and produced sonars for ships.
- Carry out comparative evaluations of American and French dunking sonars for the later Seakings.
- Evolve anti submarine tactics appropriate to our own hydrological conditions and our unique mix of Russian and Western anti submarine ships, submarines, aircraft and helicopters.

Under Utilisation of Submarine Depot Ship AMBA

In hindsight, it is interesting to note that some of the facilities which the submarine depot ship had could not be utilised. These were stated to be:

- "Cater for the annual refits for four submarines and limited repairs for the Petyas. Workshops are provided for electrical, electronic, torpedo, weapon and machinery repairs. Fitted with a 150 ton bow lift crane for lifting the stern of a submarine for effecting underwater repairs to the propeller or the rudder."
  Since AMBA was supporting the submarines on the West Coast from 1969 onwards, she could not help in the annual refits of the Petyas.
- "Training facilities are provided for torpedo firing, sonar, communications etc."

Most of these facilities were similar to those which were later to be installed in SATAVAHANA. Yet both submarines and Petya pre-occupations prevented the full utilisation of these trainers.

One reason for the under-utilisation of the submarine depot ship was the difference in perceptions. The Submarine Arm felt that the submarine depot ship should be exclusively earmarked for the submarines. The Navy felt that the depot ship's capabilities could be better utilised in general fleet ship functions, in addition to providing technical support to the submarines. These perceptions never reconciled. AMBA did however fully justify its role when, from 1974 onwards, it extended support to the VELA class submarines in Bombay.

In retrospect, the growth of the Navy's Submarine Arm was phenomenal. Very few navies have acquired four submarines in three years after the start of a Submarine Arm. Even fewer navies have successfully built their own submarines in twenty five years after starting a Submarine Arm.

In the short span of 30 years from the time that submarine training first started in Britain in 1962, till the time CHAKRA was returned to Russia in 1991, the Navy saw the submarine fleet grow to 20 submarines - 16 Russian conventional ocean going submarines, 4 German conventional Hunter Killer SSK submarines (of which two were under construction in India).

This unprecedented achievement was only possible because of:

- The enthusiasm, dedication and professionalism of the young officers and sailors who started the Submarine Arm.

- The thorough and rigorous submarine training imparted by the British and Russian Navies and the assistance extended by their Governments.
- The determination and tenacity of the officers and men in the technical organisations to somehow keep the submarines going until the maintenance and refit facilities were set up in the new Naval Dockyard in Visakhapatnam.
- The generous and forthright technical assistance extended by the Russian and German Navies.
- The sagacious handling of all the Submarine Arm acquisitions by the Ministries of Defence and Finance (Defence) despite the Navy's over-stretched budget.

17

The Naval Air Arm

The Growth of the Air Arm Till 1965

Even though the need for a naval air arm and an aircraft carrier had been accepted in principle before, and again, after Independence in 1947, negotiations for the acquisition of the first carrier from Britain concluded only in 1957. Apart from the lack of resources for so large a project, this ten year delay was also caused by the outbreak of the Korean War, which prevented the British Navy from releasing to India a British aircraft carrier with British fighter aircraft. This delay was fortuitious for it enabled the acquisition from Britain of a surface fleet and the creation ashore of Training Schools to remedy the dislocation caused by the partition of the Navy in 1947.

It was decided to go ahead only with shore based aircraft. The Directorate of Naval Aviation started functioning in Naval Headquarters in 1948. From 1948 onwards, officers and sailors started going to Britain for training as pilots, as observers and for technical training in aircraft maintenance.

FRU and INS GARUDA

In 1951, the Fleet Requirement Unit (FRU) was formed to meet the Fleet's requirement of aircraft targets for gunnery and radar tracking practices, for radar and communication calibrations and for aircrew training.

The airfield at Cochin was taken over from the Directorate General of Civil Aviation on 1 January 1953. From that date, the Navy assumed responsibility of the operation from Cochin airfield of all aircraft, civilian and naval.

Ten amphibian Sealand aircraft were acquired in 1953 and were based in Cochin.

The FRU was commissioned on 11 March 1953 and the Navy's first Naval Air Station, INS GARUDA, commissioned on 11 May 1953.

Since the Sealands were not suitable for anti aircraft firing practices, between February 1955 and December 1958; ten target towing British naval Firefly aircraft were inducted. They were fitted with target - towing winches to tow drogue/sleeve targets. The last five of these Firefly aircraft were equipped with 20 mm cannon and were capable of carrying rockets and bombs. They marked the advent of weapon capability in the Air Arm.

From 1952 onwards, basic flying training had been imparted by the Air Force. To facilitate continuation flying training at Cochin, three Hindustan Trainer 2 (HT 2) aircraft, made by Hindustan Aircraft Ltd (HAL), joined the FRU in October 1956.

INAS 550

On 17 January 1959, the FRU became the first unit to be commissioned as Indian Naval Air Squadron (INAS) 550. It had ten amphibian Sealands, ten target towing Fireflies and three HT 2 trainer aircraft.

Acquisition of VIKRANT

Until 1955, the British Navy had not been able to spare a light fleet carrier. Nor could the naval budget have been able to afford one. In 1955, Admiral Mountbatten succeeded in convincing Prime Minister Nehru that the Navy should have a carrier. Formal approval was accorded soon thereafter.

By 1957, the Navy was able to finalise the acquisition of the aircraft carrier VIKRANT along with two aircraft squadrons. In April 1957, VIKRANT commenced an extensive refit cum modernisation in Britain, scheduled for completion in 1961. Almost all the electronic and electrical equipment was to be replaced. The ship was to be fitted with an angled deck, a steam catapult and a mirror landing sight. Essential spaces were to be air conditioned. Additional accomodation and facilities were to be provided to enable VIKRANT to function as the Fleet Commander's flagship.

Naval Jet Flight

Since VIKRANT was going to operate jet aircraft, pilots had to undergo conversion. Three Vampire jet aircraft were acquired from HAL and one Vampire trainer was transferred from the Air Force. GARUDA's runway was not long enough to operate the Vampires. From September 1957 onwards, a 'Naval Jet Flight' started operating from the longer airfield at Sulur near Coimbatore.

In 1960, the Naval Jet Flight at Sulur was designated as INAS 550'A' Flight and tasked with the training of pilots for VIKRANT's Seahawk squadron. The FRU at Cochin was designated as INAS 550'B' Flight.

INAS 550, 551 and INS HANSA Sulur

On 1 September 1961, the aviation unit at Coimbatore was commissioned as INAS 551. On 5 September 1961, the Naval Jet Flight was merged with the Naval Rifle Range Detachment Coimbatore and commissioned as INS HANSA. The B Flight at Cochin became INAS 550.

Establishment of Training and Maintenance Facilities at Cochin

Airmen Training. The School for Naval Airmen (SFNA) started in August 1956. The Observer School started in March 1960.

Air Technical Training. The Naval Air Technical School (NATS) started in June 1957.

Aircraft Repair. The Naval Aircraft Repair Organisation (NARO) started in February 1960. Its task was to repair and overhaul airframes and major components. Overhauls of engines would be undertaken by HAL and the Air Force.

Naval Aircraft Inspection Service. The Naval Aircraft Inspection Service (NAIS) started in November 1960.

Before VIKRANT arrived the basic support infrastructure for the Air Arm had been established ashore in Cochin.

VIKRANT, Seahawks and Alizes

VIKRANT commissioned in March 1961. After an intensive six week work up in Malta, she arrived in India in November 1961 with two air squadrons embarked:

- INAS 300, the first operational squadron of the Navy comprising Seahawk 'Fighters Ground Attack' (FGA). The first flight of Seahawks had been constituted in end 1959 and the squadron had commissioned in Britain on 7 July 1960. The Seahawk was a well proven jet aircraft, having been in operation with the British Navy since 1953 and also in the German and Netherland Navies. A total of 74 Seahawks were eventually acquired, 46 from Britain between 1960 and 1964 and 28 from Germany in 1966.
- INAS 310 comprising Alize anti submarine aircraft had commissioned in France on 21 March 1961. The Alize too was a well proven turbo-prop aircraft, having been in operation with the French Navy since 1959. A total of 14 Alizes were eventually acquired, 12 in 1961 and 2 in 1969.

The Goa Operation in December 1961

Within a month of her arrival in India, VIKRANT was deployed for the Goa Operation. On patrol 75 miles seaward of Goa, her task was to counter any action by the Portuguese Air Force F - 86 Sabres (which according to intelligence reports were operating from Dabolim) and to forestall any interference by Western NATO allies of Portugal. VIKRANT steamed up and down at high speed for two days on 18 and 19 December, with Seahawk combat air patrols airborne from dawn to dusk. No Portuguese Sabre aircraft or any other intrusive air or naval activity was observed.

Lt Cdr (later Admiral) RH Tahiliani, flew the Seahawks from VIKRANT in 1961. He recalls:

> "Early on the morning of 18 December, we were briefed that the Portuguese had Sabres in Goa and that they would possibly be coming out to sea to attack us. I was the leader of the first combat air patrol to get airborne at first light. I positioned myself between the ship and Goa and followed this routine throughout the day. We did not sight any enemy at all. After the operation, it transpired that the Portuguese did not have a single aircraft at Goa. It was faulty intelligence. As far as VIKRANT was concerned, we had a fully worked up ship and air squadrons and would have given a very good account of ourselves if we had been assigned any targets or if there had been some inter-services coordinated planning."

Captain (late Vice Admiral) N Krishnan was the Commanding Officer of the cruiser INS DELHI. He stated:

> "Incredibly, VIKRANT, our latest and newest acquisition, was not taking part in the operation but was going to be deployed somewhere in the middle of the ocean where she would be 'safe'. After giving distant support to the Army at Diu, I was to join VIKRANT and DELHI was to give her close support".

INS HANSA's Shift to Dabolim

After the liberation of Goa in December 1961, the Portuguese airfield at Dabolim was taken over by the Navy in April 1962. In June 1964, INS HANSA and INAS 551 relocated from Sulur in Coimbatore to Dabolim. In July 1964, sanction was accorded for INS

• Blueprint to Bluewater Page 395.

HANSA to be a full fledged Naval Air Station, equipped with a Ground Controlled Approach (GCA) radar. In November 1964, the Seahawk Squadron INAS 300 disembarked from VIKRANT directly to HANSA.

Helicopters

Helicopters first entered naval service with the VIKRANT's Search and Rescue (SAR) Flight whose primary role was to rescue ditched pilots. Helicopter pilots received their initial training with the Air Force and later in France. The two French Alouette helicopters obtained on loan for VIKRANT's work up in Malta were returned to France. Three Alouettes had been ordered from France for VIKRANT's SAR Flight but their delivery was expected only in 1964. To bridge the gap between 1961 and 1964, two American Sikorsky helicopters were obtained on loan from the Air Force. When the Navy's Alouettes arrived from France in early 1964, the Air Force had an urgent need of Alouettes for their high altitude operations. The Navy's Alouettes were therefore diverted to the Air Force. The Sikorskys continued to fly in VIKRANT till mid 1964 when more Alouettes arrived from France.

Thumba

In 1964, the firing of weather rockets commenced from the launch range at Thumba near Trivandrum. The Navy undertook to operate and maintain the Russian MI 4 helicopter belonging to the Indian Committee for Space Research's Thumba Rocket Project till such time as their own personnel became available. The task involved range clearance and rocket recovery.

Helicopter Maintenance Unit in Bombay at INS KUNJALI

In 1964, INS DARSHAK, the first indigenously built survey ship was commissioned. She was designed to embark an Alouette helicopter. A small helicopter maintenance unit was therefore set up in Bombay in INS KUNJALI to support the Alouette helicopters in VIKRANT and DARSHAK.

Naval Air Operations in the 1965 Indo Pakistan War

In April 1965, VIKRANT commenced her refit. When the Rann of Kutch incident started, an Alize was deployed at Jamnagar for electronic reconnaissance. VIKRANT was quickly boxed up, the air squadrons were re-embarked and VIKRANT patrolled between Bombay and Goa. After the cease fire in Kutch, the squadrons disembarked and VIKRANT resumed her refit which was rescheduled so as to complete in November 1965. When the Pakistani intrusions into Jammu and Kashmir started in August 1965, VIKRANT was still under refit, INAS 300 and 551 were at Goa and INAS 310 and INAS 550 were at Cochin.

INAS 300 had been programmed for its usual annual armament work up. Eight Seahawks arrived at Jamnagar as planned on 1 September 1965. The same morning, the Pakistan Army crossed the international border between West Pakistan and India. War appeared imminent.

Cdr (later Rear Admiral) RV Singh was the Commanding Officer of the Seahawk Squadron. He recalls:

> "We were placed under the operational control of the Air Force and ordered to prepare for air defence and air strike missions. Badin was specially assigned to us as a target if the need arose.
>
> "We set about obtaining live weapons from the Armament Depot Bombay or, where there was compatibility, from the Air Force. Air Force rockets were found to be suitable for the Seahawks and we equipped the Seahawks with them. The bombs had to be brought from Bombay and arrived after 4 days. There was some problem with regard to the fuzes. We were keen to have a fuze appropriate to low level attack. These were not available. Therefore we were restricted to dive bombing attacks.
>
> "With the local Air Force authorities, it was worked out that Seahawks would carry out the dawn air patrols and Air Force would carry out the dusk air patrols. These were instituted by 2 September.
>
> "On the evening of 6 September, soon after the dusk air patrol landed, Pakistan Air Force B-57 bombers appeared overhead. Initially, even the Air Force thought they were our own bombers but as soon they started bombing, it was clear that they were Pakistani B-57's. After this initial raid, a single B-57 continued bombing throughout the night to keep the air station on its toes.
>
> "Fairly early on the evening of 6 September, we were informed by the OC Flying that we had been cleared to carry out the dawn strike on Badin airfield.
>
> "At about 0400 on 7 September, whether as a result of these attacks or whatever, we were told

by the Air Force that orders had been received for us to go back to Bombay.

"The Jamnagar airfield had been damaged quite heavily during the night. The dawn inspection of the runway indicated however that the Western half of the main runway was fairly clear. We used that portion to take off for Bombay.

The Pakistan Air Force air attack on Jamnagar on the evening of 6 December was a response to the Indian Army's thrust towards Lahore in the early hours of 6 December. Loaded for a strike as they were, the Seahawks were helpless in the fading light. Fortunately, the bombers failed to notice the Seahawks parked in the dispersal.

On 7 September, after the Seahawks withdrew to Bombay to operate from Santa Cruz, they were tasked with the air defence of Bombay since the Air Force resources at Poona had become fully committed in the air battles in the North. One hundred dawn and dusk patrols were flown but without contact.

Meanwhile the Alizes had moved up from Cochin to Bombay for anti submarine and reconnaissance patrols. Their activities have been described in the Chapter on the 1965 War. In addition, an Alize was deployed for electronic surveillance duties on the border with West Pakistan. Commander (O) (then Lieutenant) Dilip Choudhary, who flew in these sorties recalls:

"We were briefed to carry out a radar recce of enemy territory for our Air Force. During the war, we flew low level sorties below 100 feet all along the Pakistan border starting from the Kashmir sector, then the Punjab sector, Rajasthan sector and by the time we had come down to Jodhpur, the war had ended. The Alize's direction finding system detected a number of Pakistani radar stations. We pin-pointed each one with a three point fix and gave the positions to the Air Force. The Air Force of course did not have any such capability and they did not take our positions or our information very seriously.

"Even though we gathered a lot of information, I don't think the Air Force authorities ever used it. We got into trouble with the Air Force a couple of times, when we picked up a radar station like Sargodha and others which were still operating, because the Air Force had declared that they had destroyed these radars. We were jumped by our own Air Force aircraft every time, even though our silhouettes were available to them. We were even fired upon every time by the AA batteries on our border and we had to zig zag to avoid them. Throughout this operation, we survived on our wits and on secrecy. We were unarmed and we could only survive by operating on our own. We had a small detachment of our maintenance staff following us in a Dakota."

Developments Between 1966 and 1971

The Aircraft Carrier

By 1966, VIKRANT had been in commission for five years and had undergone major refits in 1963 and 1965. Between 1966 and 1971, VIKRANT participated in flying exercises whenever she was not afflicted with defects:

- Despite her refit in 1965, VIKRANT experienced problems on the catapult, the arrestor gear and the boilers in 1966.
- Throughout 1967, problems continued to recur on the catapult and the arrestor gear. In mid 1967, she suffered a burst boiler and underwent a long refit from end 1967 till early 1969.
- In mid 1970, cracks were detected in the water drum of one of her four boilers and she was laid up in Bombay.
- By mid 1971, both short and long term remedial measures had been instituted and VIKRANT was made operational to steam on only three boilers at lower speeds.

Seahawks

Additional Seahawk Fighter Aircraft

In addition to the initial order of 23 Seahawks acquired with the VIKRANT, 23 more reconditioned Seahawks had been purchased from Britain - seven in 1962, ten in 1963 and six in 1964.

In 1965, an agreement was signed for the purchase of 28 more Seahawks which were being phased out by the Federal German Navy. These aircraft arrived in 1966. Ten were day fighter bombers (MK 100) and eighteen were all weather aircraft (MK 101).

In 1968, Seahawks carried out DART target towing trials and the first ever live firing sorties at towed banner targets.

Material State of Seahawks

From 1963 onwards, the Seahawks had started suffering the consequences of the temperatures in India being higher than in Britain. The rear fuel tank fire warnings started operating with greater

frequency. In 1966 and 1967, there were a large number of fire warning light incidents.

In 1968, a large number of short service Commission entry officers started joining the Air Arm. They were keen to become fighter pilots and often the material state of the Seahawks could not withstand the demands the enthusiastic pilots placed on the aging aircraft.

Between 1966 and 1970, Lt Cdr (later Commodore) DJ Shahane was the Deputy Air Engineer Officer of 300 Squadron, then Air Engineer officer of the 551 Squadron and then Air Engineer Officer of 300 Squadron. He recalls :

"In 1966, the availability of the Seahawks was better from the carrier, not so much from ashore. On the carrier also, there were frequent problems of non-availability of hot ends and frequent hydraulic leaks, the canopy flying away or canopy being loose or inoperative etc. There was also the problem of shortage of maintenance personnel, which resolved somewhat after two to three years.

"Regarding the hot ends, the audio indication of the rear tank fire warning lights had not come into being. When that was introduced, within an year or so we found that the aircrew developed considerable confidence in the rear tank fire warning light system.

"Another experience was that when the Seahawks operated from the carrier, there were fewer instances of either rear tank fire warning light or high JPT or saddle tank burst. When the Seahawks were operating from ashore, and particularly during the practice MADDL sorties, we had saddle tank bursts coming up very often.*

"The saddle tank was a small tank of 40 gallons capacity which sort of straddled the hottest part of the Seahawk. During the MADDLs, we found that this area got heated up considerably and we had a few cases of saddle tanks bursting, causing structural damage. This could also lead to fuel leaks and fire in the rear tank area. Actually the saddle tank, having a capacity of only 40 gallons, used to get consumed within say the first ten minutes of the sortie. So a conscious decision was taken to remove the saddle tanks completely and make up for this 40 gallon shortfall of fuel by fuelling the drop tanks with 20 gallons each. Thereafter this problem reduced considerably, though there were a few cases when the saddle tank bay itself showed some sign of explosion.

"Over the next few years, while operating from ashore, the operating procedures were changed. The max engine RPM for operating from ashore was reduced from 12700 to 12400. From the carrier, of course, they continued to operate at 12700. This appears to have reduced the problem considerably.

"In early 67, the German Seahawks MK 100 and MK 101 joined the Seahawk fleet. Apart from the Seahawks themselves, we got a very large number of spares from the German Navy. Thereafter, with the improved spares position and with German Seahawks, the availability of the Seahawks went up considerably.

"The period 1968 to 1970 was one of the finest periods of Seahawk operations. When I joined in November 1968, we had almost 20 Seahawks in the squadron. In February 1969, we embarked in VIKRANT after a gap of over a year, since VIKRANT had been under refit. We embarked with 18 Seahawks and the availability was extremely good. This was the time when we had Mark 100s and 101s joining the earlier Mark 6s . This was also the time when the manpower position had improved considerably. We had a fairly good and adequate maintenance crowd in the squadron. Throughout my one and a half years, we were able to keep the operational and material state of the Seahawks extremely high.

"We had two fatal accidents during the period, but only one of them could have been due to a material failure. The other one was most likely due to pilot disorientation. We undertook daring operations in flying. Somehow I felt that the air crew and the pilots were more confident in flying Seahawks at that time than I had seen them at any other time".

Replacements for the Seahawk Aircraft

With Seahawks having been phased out from the Royal Navy in the early 1960s, the Indian Navy was constantly on the look out for their replacements. The American Navy's A-4 Skyhawk appeared to be the most suitable, but political considerations precluded their acquisition from the USA. In view of the design limitations of VIKRANT's catapult, a study had been carried out whether the British GNAT fighter aircraft, which was being indigenously produced by HAL for the Air Force, could be 'navalised'. It was not found cost effective.

In 1966, after a major Defence Review, the British Government decided to disband fixed wing naval

* When practising repeated dummy deck landings on a shore airfield, pilots needed to use high engine power for sustained periods.

aviation and its Navy's aircraft carriers. The British Navy managed, however, to safeguard its air arm by obtaining sanction for the "Through Deck Cruiser". This was basically a flat topped ship, without catapult or arrestor gear which would operate the short/vertical take off and land (STOL/VTOL) Harrier aircraft which were then under development. The subsequent addition of a ski-jump in the bows enhanced the aircraft operating potential of the ship.

The ground version of the Harrier entered service in the Royal Air Force in 1969. The US Marine Corps ordered the Harriers for their amphibious assault ships. The Royal Navy then asked British Aerospace to develop a maritime version of the Harrier (to be called Sea Harrier) for the roles of shipborne air defence and strike, with a specific requirement that it be able to withstand the corrosive marine environment. The Indian Navy decided to await the developments of the Sea Harrier.

Alize Anti Submarine and Reconnaissance Aircraft

Twelve Alize aircraft had been acquired with VIKRANT. As in the case of the Seahawks, difficulties were experienced in obtaining additional Alizes, because the French Navy was phasing them out. Eventually, in 1966/67 the French Navy agreed to release two Alizes.

In the anti submarine role, the Alizes were fitted with radar to detect submarine periscopes/snorts and a direction finding system to detect submarine radar transmissions. For attacking a submarine the Alizes used sonobuoys to track the submarine and depth charges to damage the submarine. The two key elements were the availabilty of submarines to exercise with and the availability of large numbers of sonobuoys to achieve proficiency in tracking. Until, Indian submarines arrived in 1968, the Alizes did not have enough opportunities to exercise with submarines.

In 1965, the Alizes exercised with the British submarine ASTUTE off Madras. In 1967, the Alizes exercised with the British submarine ONSLAUGHT off Cochin. After the submarines acquired from Russia arrived from 1968 onwards, the tempo of Alize anti submarine exercise steadily increased and made possible the sea trials of the sonobuoys which had been by then been developed indigeneously.

From 1965 onwards, attention focussed on carrying out trials on indigenous air dropped mines and on improving the anti submarine capability of the Alizes by fitting a sonobuoy recording system. The latter required:

- Comparitive evaluation of the sonobuoy recorders developed by INPL on French Julie recorders.
- Obtaining the latest JULIE sonobuoy recorders to be fitted in the two Alizes being acquired from France.
- Obtaining JULIE systems for retrofitting in all the earlier Alizes.
- Importing the minimum essential requirements of the latest sonobuoys from France.
- Developing and producing indigenous sonobuoys, which could cope with India's hot and humid tropical conditions, as well as minimise the outflow of precious foreign exchange on these expensive expendable items.

In August 1968, the two Julie fitted Alizes arrived from France, just in time for exercises with the submarine KALVARI which had arrived from Russia.

To increase their effectiveness in the reconnaissance role, the Alizes started carrying out the following exercises from 1966 onwards:

- Joint tactical exercises with Air Force Liberator MR aircraft, Canberra bombers, Hunters and HF 24 fighters in which Alizes homed these aircraft on to their targets.
- Trials with the newly acquired Swedish LEPUS flare bombs to illuminate targets at night for attack by Seahawks.

During this period, Alizes carried out electronic surveillance missions whenever and wherever required.

By 1970, the Alizes were getting older and defects were becoming chronic.

Helicopters

The period 1966 to 1971 saw a phenomenal increase in the variety and capability of helicopters entering service :

- ***Seakings.*** The acquisition of the new French Daphne class submarines by the Pakistan Navy increased the urgency of acquiring anti submarine helicopters. In 1968, a proposal was made for acquiring 12 Seakings. Sanction for the acquisition of 6 Seakings was accorded in 1969 and in 1970 an order was placed for their delivery in 1971. Concurrently, an order was also placed for the acquisition of the MK 44 anti submarine homing torpedoes. On 17 Apr 1971, the Seaking Squadron was commissioned as INAS 330. Between May 1971 and end 1971, the Seakings were involved in the following activities:

- Conversion flying
- Maintenance courses at NATS
- Evaluation by Tactical School of Seaking capabilities and limitations and promulgation of preliminary Tactical Instructions

This preliminary evaluation was to prove misleading. The first group who had returned from UK had only done familiarisation flying. At Indian insistence, the British Navy was giving the second group tactical flying experience but this group arrived in India only in October 1971 and were deployed in Bombay. Meanwhile, NHQ had based its assessment of Seaking utilisation on the limited information that had been given to the first group and tasked the Seakings for anti submarine patrols off Bombay harbour. To cap it all, the Tactical School's Seaking dockets were given high security classification. Consequently, the people who mattered remained in ignorance of Seaking performance and potential. The defensive utilisation of the Seaking helicopters in the 1971 war was the cumulative result of all these factors.

Seaking availability was low during May, June and July 1971. In August, NHQ lifted the ban on lowering Sonar 195 and the evaluation of Seaking's dunking Sonar 195 commenced in earnest. Since the MK 44 torpedoes were not yet available, flight trials were started for using depth charges. In end August, the squadron started night flying. By October, two Seakings were based at Bombay. In November, this had increased to four Seakings. The remaining two were at Cochin.

- ***MATCH Alouettes.*** The Leander Class frigates were designed to embark Multi-role Anti Submarine Torpedo Carrying Helicopters, whose acronym became 'MATCH' helicopters. After the decision had been taken for the Army, Navy and Air Force to have a common helicopter, the French Alouette was chosen for indigenous manufacture at HAL. The Navy's first three helicopters were imported from France. The remainder were supplied by HAL.
- ***SAR Alouettes.*** The Search and Rescue (SAR) Alouette helicopter had entered the service with VIKRANT in 1961. The survey ship DARSHAK, which had been designed to embark a helicopter and had entered service in 1964, first embarked an Alouette in 1970 to help survey the Gulf of Kutch. The tanker DEEPAK, which was commissioned in 1967, was designed to embark an Alouette. By March 1969, 'Logistic Support' had been added to the Alouette's 'Search and Rescue' role. On 15 March 1969, the Helicopter Squadron was commissioned as INAS 321. It comprised the SAR flights of VIKRANT, HANSA, GARUDA and DEEPAK.

Helicopter Training School

On 15 September 1971, the Helicopter Training School was commissioned as INAS 561 to provide basic training on Hughes 300 helicopters acquired from the USA and provide advanced training on the MATCH and SAR role Alouttes produced by HAL.

INAS 551

As the Vampires became older and less available, the squadron started using Seahawks. Since the Seahawks were themselves ageing, seven indigenous "Kiran" jet trainer aircraft (HJT-16) were ordered from HAL. By mid 1971, all seven Kirans had been delivered. As Kirans joined, the Seahawks were returned to INAS 300 reserve stock.

Naval Air Operations in the 1971 Indo Pakistan War

Bay of Bengal

The achievements of VIKRANT and her air squadrons have been described in the Chapter on the 1971 War. The squadrons embarked VIKRANT in August, senior experienced pilots were inducted and aircraft holdings raised to 18 Seahawks and 5 Alizes. They worked up in the Bay of Bengal and were ready for operations by November.

Between 4 and 14 December, the Seahawks by day and the Alizes by day and by night struck targets at Cox's Bazar, Chittagong, Khulna, Chalna, Mongla, Barisal, Do Hazari, Chiringa and Bakarganj. Using 500 lb bombs, rockets and guns, they struck airfields, harbours, ammunition dumps, gunboats, armed merchant ships and troop positions. Despite damage by small arms fire, all aircraft were kept airworthy. The Alizes proved most useful in assisting ships of the Eastern Fleet in contraband control.

Lt Cdr (later Rear Admiral) SK Gupta, was the Commanding Officer of the Seahawk squadron on board VIKRANT. He recalls:

> "VIKRANT with her squadrons was ready for action since November, having learnt to operate aircraft at marginal conditions of wind and low speeds and with the most experienced Seahawk pilots embarked on board.
>
> "The initial Seahawk attacks were by eight aircraft with two aircraft providing air defence

cover. The attacks knocked out the ATC and other airfield installations at Cox's Bazar. Similarly, Chittagong harbour and gunboats in the vicinity were sucessfully attacked.

"Thereafter, for the next 10 days, nearly 2001 sorties were flown between the Seahawks and Alizes, destroying pre-planned and opportunity targets. Enemy ground fire began to get more accurate and several aircraft were damaged, some requiring emergency landings on board, with the ship about 90 to 100 miles away. The Alizes were busy doing recce sorties by day and bombing the runways at Cox's Bazar at night. The Seahawks were very accurate in destroying small targets in the city, merchant ships in harbour and those that tried to sail out".

Operational Sorties Flown in December 1971

Date	CAP	Anti Submarine Patrols	Cox's Bazar	Chittagong	Khulna	Mongla/ Chalna/ Pussur River	Hathazari Dohazari/ Barisal/ Bakarganj	Night Strike	Contraband Control	Armed Recce	Army Coop
4	4 HK	5 AZ	8 HK	8 HK	-	-	-	-	-	-	-
5	-	3 AZ	-	-	-	-	-	2 AZ	4 AZ	-	-
6	3 HK	-	-	4 HK	4 HK	4 HK	7 HK			-	-
				1 AZ		3 AZ		1 AZ	1 AZ		
7	2 HK	-	2 HK	4 HK	-	-	-	-			
						2 AZ		2 AZ	2 AZ		
8	-	-	-	-	-	1 AZ	-	-	3 AZ	-	-
9	-	-	-	4 HK	-		7 HK	-	-	3 HK	-
						1 AZ		2 AZ	3 AZ		
10	-	-	5 AZ	-	-	-	-	2 AZ	-	1 AZ	-
11	-	-	2 AZ	-	-	1 AZ	1 AZ	1 AZ	-	2 AZ	-
12	-	-	-	25 HK	-	-	-		-		4 HK
								2 AZ		2 AZ	
13	-	1 AZ	-	16 HK	-	-	-				7 HK
								1 AZ		1 AZ	1 AZ
14	-	-	2 HK	5 HK	-	3 AZ	-		-	-	-
			1 AZ	1 AZ		1 AZ	1 AZ	2 AZ			

Total		Sorties	Hours Flown
	Seahawk	128	108
	Alize	63	158

The vertical positioning needs to be adjusted downwards.

The Seahawk Squadron won one Maha Vir Chakra, five Vir Chakras, one Nao Sena Medal and three Mentions in Despatches.

The Alize Squadron won six Vir Chakras, six Nao Sena Medals and three Mentions in Despatches.

Arabian Sea

On the West Coast of India:

- Alizes operating from Bombay and Jamnagar carried out anti submarine and reconnaissance patrols. On 10 December, a Pakistan Air Force Starfighter, returning homeward, happened to sight an Alize and shot it down with a Sidewinder missile. All three crew were lost.
- Seakings operating from Santacruz Bombay carried out anti submarine patrols of the approaches to Bombay harbour. After KHUKRI was sunk on 9 December, the Seakings carried out a few anti submarine searches, staging from the disused airfield at Diu.
- Alouettes, operating from INS KUNJALI in Bombay, provided air surveillance of the inner harbour to deter/detect clandestine underwater attacks by chariots and frogmen.
- Aircraft of the training squadrons INAS 551 and 550 carried out coastal surveillance off Goa and Cochin respectively.
- Requisitioned civilian flying club aircraft assisted coastal surveillance in their local areas.

Prior to the war, two naval pilots, Lieutenant (later Vice Admiral) Arun Prakash and Lieutenant (later Rear Admiral) P Debrass had been deputed to the Air Force as part of an ongoing exchange programme. During the war, Lt Arun Prakash won the Vir Chakra. He destroyed two C 130's.

Developments Between 1972 and 1975

The Aircraft Carrier

After the war ended, VIKRANT undertook three crucial requirements before starting her long refit to attend to her boiler problems :

- Complete the training of the new aircrews which had been interrupted in September 1971, when senior experienced aircrew had been inducted.
- Carry out Seaking flying trials to finalise what was required to be done during the forthcoming refit to enable Seakings to operate from VIKRANT.
- Carry out Harrier trials to establish, "prima facie", its ability to operate from VIKRANT's fight deck.

In Aug 72, VIKRANT started a three year refit during which

- The boilers were refurbished.
- Seaking operating and maintenance facilities were installed.
- The communication systems were modernised and indigeneous communication equipment installed.
- All electronic compartments and test rooms were air conditioned.

VIKRANT become operational in May 1975. Seahawks, Alizes and Seakings resumed flying from VIKRANT and participating in Fleet exercises.

Aircraft

The Seahawks

Between 1972 and 1974, the Seahawks, operating from ashore, suffered a number of fatal accidents. The problems were similar to those experienced earlier with fire warning lights, but the aircrew were new entrants. It took some time for them to gain experience. By 1974, Seahawk spares became available in abundance. The firewalls were changed on almost all aircraft and Seahawks serviceability improved.

Harrier Trials on Board VIKRANT in 1972

In July 1972, British Aerospace, sent their demonstrator G-VTOL Harrier to India for landing trials on board the VIKRANT. The trials showed that VIKRANT would be able to operate VTOL type aircraft.

Alizes

In March 1973, a French team visited the squadron regarding refurbishment of the Alizes. The production line for Alizes had stopped long ago and the French Navy had resorted to "refurbishing" their Alizes. It was decided that the Indian Alizes should be similarly refurbished to stretch their life into the mid 1980s. Refurbishment commenced in 1975 and completed in 1978.

Seakings

As a result of their extensive flying and limited maintenance in the 1971 war, the availability of Seakings fell sharply. It took nearly two years for the situation to get better. Specialists came from Britain to improve detection capability of the Seaking sonars. It took them over a year to isolate the causes and implement the remedies. The numerous other problems that accompany the induction of a technologically sophisticated new helicopter also took time to resolve.

In 1973, three new Seakings arrived, followed by three more in 1974, enabling the commissioning of the second Seaking squadron INAS 336.

Thereafter, Seaking availabilty and efficiency improved considerably. With a larger number of submarines also available on both coasts, the Seakings were able to coordinate their anti submarine search and attack tactics and procedures with those of the Russian Petyas and the British Leanders.

The table on the next page gives an overview of the delays that had to be suffered in the induction of this potent new weapon platform.

Alouettes/Chetaks

INAS 331. The MATCH flight for the first Leander class frigate, NILGIRI, was commissioned as INAS 331 on 15 May 1972.

In the light of experience gained in the 1971 war of how useful the light Alouette helicopter could be, Alouette flights were sanctioned for a number of ships. Apart from the first four Leanders and the frigates TRISHUL and TALWAR, which embarked the MATCH Alouettes, SAR Alouettes were sanctioned for the frigates BRAHMAPUTRA, BEAS, BETWA, the new training ship TIR and the new survey ships.

Kirans

The Kirans started flying from HANSA in 1972. As experience was consolidated in operating and maintaining Kirans, their serviceability improved considerably.

Period	Seaking Serviceability	Performance of Role Equipment	Flying Hours
January 1972 to July 1972	Low	Poor	Limited
August 1972 to October 1972	Low	Commenced Sea trials of Sonar. Performance poor (Note: No workshop facilities, no spares)	Limited
November 1972 to July 1973	Improved	Poor	Limited
August 1973 to November 1973	- Three new Seakings arrived. - Serviceability improved	- Commenced trials and evaluations - Workshops and test equipment set up	Improved
December 1973 onwards	Good	- Intensive anti submarine exercises - MK 44 torpedo evaluation	Good
July 1974	- Three new Seakings arrived	- Depth charge practices	Very Good
September 1974	- INAS 336 commissioned		
1975	- Seakings embarked in VIKRANT - First Flyex from offshore rig SAGAR SAMRAT - Seakings operated from Advance Landing Ground in Saurashtra	Evaluations of tactical anti submarine cooperation between: - Seaking and Petyas - Seaking and Leanders - Seaking and Alizes - Seaking and Seahawks	Very Good

Maritime Reconnaissance

Maritime Reconnaissance (MR) was two facets:

- In earlier days, the role of MR was to search large sea areas by day and by night to locate and track enemy warships and merchant ships and home air strikes and naval ships against them.
- With the increase in the number of submarines, the MR role evolved into MRASW to search, locate, track and attack enemy submarines on surface and submerged, and co-operate with own surface forces in anti submarine warfare operations.

The system inherited from the British was that the Air Force operated MR aircraft for naval tasks.

The MR arm of the Indian Air Force was formed from World War II Liberator aircraft. The first Liberator Squadron (No 5) was raised in November 1948. Though old and inadequately equipped for the task, Liberators did useful work as a MR squadron as well as Air Sea rescue. In 1961, the IAF acquired seven Super Constellation (Super Connie) aircraft from Air India for conversion to the MR role.

During the hostilities with Pakistan in 1965, the inadequacy of MR become very apparent. During the Kutch operations in April-May 1965, every available MR aircraft was deployed to search for Pakistan naval forces but without result During the war in September 1965, the MR effort available was barely able to cover the approaches to Bombay and that too only in conjunction with VIKRANT's carrier based aircraft flown from Santa Cruz. Despite the IAF's best efforts, the maximum that could be provided during the operations in May and September 1965 was about 10 hours per day as against a requirement of 80 hours per day in the Arabian Sea alone.

In 1966, the Navy recommended to the Government that the responsibility for MR and the command and control of shore based MR aircraft be transferred from the Air Force to the Navy. The Air Force was not agreeable and preferred status quo. The reasons advanced for and against this proposal were as follows:

- The Navy's position was that enemy ship recognition at sea and subsequent co-ordination of tactical action with co-operating surface forces

required such extensive training that it was most cost effective for MR aircrews to be naval officers familiar with the sea. It was for this reason that in all the major navies of the world (USA, Russia, Japan, China, France, Germany and Holland), MR aircraft were controlled and operated solely by the Navy. The only exceptions were Britain, India and Australia. In the early years of the British Royal Air Force, MR had been solely the responsibility of the Air Force. After the First World War, the Coastal Command of the Royal Air Force had been formed from the Royal Naval Air Service and was largely manned by naval aviators who were transferred en bloc to the RAF Coastal Command at birth. Naval experience had therefore been available to the RAF and it was on this foundation that the RAF Coastal Command evolved. The Commonwealth countries had unquestioningly adopted the British model. There was no reason for its continuance.

- The Air Force position was that in the British Manual of Joint Operations, MR was a joint responsibility, that this system had stood the test in Britain and Australia, that there would be greater flexibility in aircraft utilisation if MR remained with the Air Force, (since the aircraft could be used for other roles as well) and that in the 1965 operations, the Air Force had met the Navy's MR requirement to the extent possible within the inadequate resources available.

After prolonged discussions, it was decided to maintain the status quo. The Air Force was to remain responsible for MR as long as the existing Super Constellation aircraft were in service. The question of command and control of MR would be reviewed when considering the induction of new MR aircraft.

In subsequent years:

- The IAF continued to operate the Liberators and the Super Constellations from Poona and Bangalore.
- The Joint Sea Air Warfare Committee kept the augmentation of the MR squadrons under continuous consideration.
- Every major Fleet exercise repeatedly highlighted the number of air attacks that were wasted, time and again, because of mistaken identity.

It became unmistakably clear that the correct identification of ships at sea required extremely high skills of aircrews to distinguish between and positively identify own, enemy and neutral ships.

Evaluation of the French Atlantic MRASW Aircraft

In October 1968, an Atlantic gave a flight demonstration in Dabolim. In August 1969, a joint Navy Air Force team evaluated the French Navy Atlantic anti submarine reconnaissance aircraft. The Atlantic operated from the Air Force station at Poona and the evaluation was carried out with submarine KALVARI. The Atlantic was found to be suitable. A special study group was appointed to further examine the matter, after which a decision could be taken whether the Navy or the Air Force would operate MRASW aircraft.

Decision for Navy to Acquire MRASW Aircraft

After the 1971 war, in which KHUKRI was sunk by a Pakistan Navy submarine, the Navy pressed the requirement for a versatile MRASW aircraft which, with a good radar, could rapidly search a required area and be capable of attacking and sinking a submarine located by it. In addition to its primary role of anti submarine warfare, such a maritime aircraft would also meet the surveillance needs of the Navy over large ocean areas and thus act as the eyes of the Fleet over the horizon. In an anti submarine operation, MRASW aircraft, anti submarine helicopters and anti submarine ships had to act as a single weapon system. This required a high degree of coordination and similar mental response to submarine evasive action. This could only be done if MRASW aircraft were operated by the Navy. The Navy therefore urged the Government for an early decision to acquire a suitable MRASW aircraft to be operated by the Navy.

In May 1973, the Government accepted the Navy's reasoning and approved in principle the acquisition of four shore based MRASW aircraft.

In September 1973, a Naval team evaluated the British Nimrod aircraft in Britain. However the serious financial situation after the oil crisis of October 1973 ruled out the purchase in foreign exchange of either the Atlantic or the Nimrod.

Subsequent efforts focussed on ascertaining whether IL 38 MRASW aircraft could be obtained from Russia. The Russian Navy was reluctant to spare these aircraft from their inventory because they needed these for their own Navy. After persuasion, the Russian side agreed to spare a few aircraft.

In February 1975, the agreement was signed for the acquisition of three IL 38s from Russia.

In June 1975 Government took the decision to vest the command, control and operation of the MRASW IL 38's with the Navy.

Shri Govind Narain, then Defence Secretary recalls:

"The control of the air reconnaissance system over the sea was in the hands of the Air Force. The Navy wanted this control to be transferred to itself. This matter had been pending with the Government for nearly 10 years and it could not get resolved. In the 1971 war, all the three wings of the defence forces played a very significant part and all concerned could observe their respective roles. The performance of the Navy in Karachi was brilliant and the whole country was very impressed.

"Pressure continued to mount from the naval side that they would do even better if their operators felt more confident, if the air recce system was also within their own control. On the other hand, the Air Force pleaded that they had all the airfield arrangements, they had all the know how, they knew which aircraft from which country could be best for what purpose, they had the maintenance facilities. All these were very strong points.

"When this matter came repeatedly to the Defence Ministry, what we did was to send the whole problem to the Committee of the three Chiefs of Staff and told them to deliberate afresh on these problems. We gave them two months time to come back to the Defence Ministry with an agreed solution. Whatever agreed solution was found would be acceptable to the Defence Ministry.

"At the end of the two months, no solution was forthcoming. In individual discussions, the three Chiefs expressed their helplessness that no agreement could be reached. We gave them another two months time to reconsider this matter as it was very urgent, very important and required their considered views. But again the matter remained with them for two more months and there was no solution forthcoming. Then we discussed with the three Chiefs that if they could not reach any conclusion, would they like the Defence Ministry to consider the whole matter objectively and find a solution. All the three Chiefs agreed that this should be done.

"Thus the matter came to be considered in the Defence Ministry. We collected the necessary information from the various countries of the world which had developed a system of maritime reconnaissance. Then we analysed our own position. We went into great details of the points of view of the Navy. We went into great details of the points of view of the Air Force. Then we in the Defence Ministry prepared an elaborate note of 20 or 25 pages, putting down all points of view and reached the conclusion that it would be more prudent if maritime reconnaissance was put under the control of the Navy but the maintenance of the aircraft could be left with the Air Force. Naturally the Navy was jubilant and the Air Force was unhappy, but this solution was accepted by the Defence Minister, by the Political Affairs Committee of the Cabinet and finally by the Prime Minister and was enforced as a Government order."

Transfer of the Super Constellations to the Navy.

In early 1976, the Air Force wrote to the Navy offering to immediately hand over the Super Constellation MR aircraft. The offer had a proviso that should the Navy find that they could not cope with the Super Constellations, then the IL 38's should revert to the Air Force.

Admiral Tahiliani recalls:

"On the 5th of April 1976, at the Chiefs of Staff Committee meeting in Delhi, an offer was made by the Chief of Air Staff, Air Chief Marshal Moolgavkar, to Chief of the Naval Staff, Admiral Cursetji, that with the Government having decided that the Navy will operate the IL 38s, (which were not due to arrive till the middle of 1977), the Navy should now take over the Super Connies.

"After a certain amount of discussion within the Navy, we naturally decided that we were going to do so. I first came to know about it on the day after, that is the 6th of April, when then General Raina, who was Chairman Chiefs of Staff, came and spent a day with us at sea on board VIKRANT. At lunch he said "What would be your reaction if I was to tell you that the Air Force has said that you can take over the Super Connies?" I said "Sir, there must be some catch in it". Then he related to me the discussion at the Chiefs of Staff Committee meeting. I said "We must take them over. There is not the slightest doubt in my mind." He said "How would you manage the maintenance and the flying part?" I said "We will give our aircrew conversions. In three months they will be flying the aircraft. Major maintenance is done by Air India and that is no hassle for us.

"I must pay tribute to the first team led by the late Cdr Ravi Dhir who did a magnificent job, because the loaned Air Force aircrews and

ground crew were all withdrawn, after their initial loan period of six months. We had requested the Air Force to let them stay with us a little longer, because our aircrew had not acquired enough cloud flying, or experience in adverse conditions for which they were not rated. However the Air Force withdrew every single person of theirs at the end of six months. This first team got themselves rated, gained all the experience very quickly and we were flying the Super Connies as well, if not better than our Air Force friends. Purely in passing, I will mention that when the Super Connies were transferred from Air India to the Air Force, Air India crews had been loaned to the Air Force for a period of 20 months.

"So, although our Air Force friends might have thought that they were going to frighten the Navy into accepting a commitment we would not be able to cope with, in the bargain they gave us an opportunity, by grabbing which we were able, once and for all, to put this question of the operation of long range maritime ASW aircraft behind us".

Air Chief Marshal Moolgavkar, then Chief of the Air Staff recalls:

"The control of Maritime Operations had been with the Air Force ever since Independence. Successive Air Chiefs were able to keep it with the Air Force, because they felt that air effort should be a single point responsibility. During the time of my predecessor, Air Chief Marshal OP Mehra, the question came up again very strongly and it was decided that when the new IL-38 Russian MRASW aircraft came, then these would be handed over to the Navy and put under their control. At that time, we were operating the Super Constellation aircraft in this role.

"At the beginning of my tenure, I felt that it would be the right and correct thing to do, that the Navy should be given Super Connies now, a year and a half in advance, so that they could familiarise to operate heavy aircraft. Any mistakes the Navy made or any accidents would be on these old aircraft and not on the new IL 38's. Surely this is reasonable thinking.

"In this context, I made the offer to hand over the Super Constellations to the Naval Chief, if I recall right, in the Defence Secretary Banerjee's office. The CNS, Jal Cursetji, was in fact taken aback, asked me if I was feeling alright. I said "Yes, I am making this offer because I feel this is the correct thing to do" He did not quite believe it, so I said "Shall I put it down in writing ?. I will send a note to Defence Secretary with a copy to you, saying that we are prepared to hand over the Super Connies immediately to the Navy In fact, I suggest you take these aircraft now and we will send training teams, pilots and technicians for this.

"But I also mentioned to CNS that "If you find you cannot cope the Super Connies and you have a problem, then the same should be returned to the Air Force. This would surely be in the national interest." Jal was a gentleman and he agreed. He said "You have my word". I said "Fine. The battle is closed.

"That is how the whole thing was done. Naturally, the IL 38 got reflected in the Naval budget because the Navy were going to get it. The Air Force would not want to pay for these then.

"Certainly some of us, and certainly myself, realised that the Navy had a point that MRASW should come under naval control and should be operated by navy pilots and maintained by naval personnel. If I may be utterly frank, I think what the Air Force feared was that after acquiring MR aircraft, the Navy would want to expand their carrier fleet and get more and more aircraft and perhaps try to take on some of the Air Force roles like the air defence of Bombay. The Air Force felt that their budget would be slashed and the Navy would get another carrier and more modern aircraft.

"I think the approach in the past had been that we should nip naval suggestions in the bud and say no to everything including the MR. I felt that "Let us handle each role by itself. Let the Navy have the MR and we will see in the future regarding the air defence of Bombay, whether the Navy can control it or do it better than we can." So that is how the decision about the immediate transfer of MR was taken. I think it was the right decision. All the Air Force crew, the pilots, the technicians, etc were briefed and told very clearly that everything possible should be done to train the Navy personnel quickly and seriously with the intention of early transfer of the Super Connies."

Vice Admiral (then Lt Cdr) Arun Prakash recalls:

"The Navy had been pecking away at the Government with its claim to take over MR and we had more than adequate justification. The Air Chief decided that he would by a "coup de main", once and for all, put an end to the Navy's claims to MR. He suddenly turned round and said "All

right, I will hand over aircraft belonging to No 6 Squadron Air Force. You have six months to prove that you can fly and maintain that machine. If the Navy cannot do this, then the whole thing falls back to the Air Force". It was something like "double or quits". It could mean that the Navy would also lose the Ilyushin 38 MR/ASW aircraft.

"It was quite a challenge, because all our experience as far as flying and maintenance was concerned was confined to relatively small turbo prop or jet aircraft which were single engined. Now the Super Constellation was a giant (144,000 pound) machine with four piston engines. She had started off life as an airliner with Air-India, and when the aircraft were superseded by Boeing 707s they were handed over to the Indian Air Force for maritime reconnaissance.

"So the Air Chief did take a very calculated gamble. No naval aircrew had any experience of flying anything more than medium sized twin engine aircraft, and that too was way back in the days of the Sealand in the early 1950s. Most of us were single engine pilots, most of our observers had only experience of flying over the sea where they were more tactically oriented in terms of anti-submarine warfare and so on. Whereas flying these four-engined behemoths required skills, both of piloting as well as of navigation, of an entirely different kind. For example, if you had to go and land at an international airfield, the procedures and the holding patterns, the R/T natter and the circuits etc were so complicated, that we really had no experience of this. So it was not without a fair amount of trepidation that all of us gathered in Goa in early 1976 and we were deputed from there to proceed to No 2 Wing at Poona.

"The Squadron Commander (designate) was Cdr Ravi Dhir, the Senior Pilot was Lt Cdr Bhide and there were two more pilots, I being one of them. Similarly, there were four co-pilots and about 6 to 8 observers. We all gathered in Goa and proceeded to No 2 Wing, Poona, where we were given a short course by the Air Force under the aegis of No 6 Squadron in basic flying procedures, the technical details of the aircraft and so on. The maintenance crew started their class room and practical training at the same time. After that, on completion of this brief course, all of us naval aircrew plus some Air Force flying instructors, navigation instructors and a core team of Air Force maintenance personnel were bundled off to Goa. Here we gathered once again into an "ad hoc" squadron which was given the designation INAS 312, although not yet commissioned. We gathered all our sailors who had any experience at all of piston engined aircraft and multi engined aircraft and put them in the hands of the IAF technical crew.

"Now we were quite clear in our minds that we had a short lease of time to show that we could handle this aircraft, both from the flying angle as well as the maintenance aspects. Fortunately, the Air Force crew who came along with us as a training team had no qualms or reservations at all. They were totally dedicated to their task, which was to train the naval personnel to take over, regardless of what the higher Air Force authorities had in mind. So we got down to our work with a will, and within about six weeks, the first Naval pilot flew solo and that was Lt Cdr Bhide who had jumped from single engine jets to a four engined aircraft. That I think was quite an achievement. Slowly and progressively, all four pilots went solo. Similarly our observers managed to master the art of navigation over land and of procedures and let down into busy international airports, which was quite an achievement. One fine day, we found that we had virtually taken over the squadron. A formal commissioning ceremony was then organised where both Air Chief Marshal Moolgavkar and Admiral Jal Cursetji came down to Goa and the squadron was commissioned as INAS 312.

"We gathered from informal conversation and discussions with our Air Force colleagues who had worked with us that this was not as per the Air Force game plan. Actually, they had anticipated that with our background and our levels of experience, we would find it extremely difficult to get on top of this aircraft; certainly so in six months. They had estimated that 12 to 18 months was the minimum that the Navy would need to be able to fly this aircraft and handle all the maintenance operations that were involved. So I presume, this came as an unpleasant surprise to the Air Force that we were ready, willing and able to take on this task."

Commodore Shahane (then Cdr) was the Squadron Air Engineer Officer in HANSA from 1976 to 1978. He recalls:

"A large contingent had gone away to Russia for training and induction of the IL 38s. Technical

manpower was minimal at HANSA and in the squadrons and in VIKRANT. Then we were suddenly faced with the problem of sending personnel for training and inducting a huge MR aircraft like the Super Constellation.

"At HANSA, there were tremendous challenges for developing the infrastructure facilities for the Super Constellations, which were quite different from those which were already in hand for the IL 38s. I remember being on 10 boards at a time for developing all these facilities. We were also very apprehensive about how we would be able to operate the Super Constellations because the Air Force was not in a position to give us things like aircraft jacks and other support equipment. While dealing with the Air Force however, we found them very helpful at the squadron level. And the Air Force technical and operational staff and the pilots and the aircrew who had come to Goa were extremely co-operative in helping us with the maintenance of the Super Constellations. By and large, after the initial teething problems were resolved, not much difficulty was experienced."

Developments After 1975

Aircraft Carriers

VIKRANT underwent two modernisation refits:

- *1979 to 1981.* In the first phase of her modernisation, her boilers were renewed, new radars were fitted, facilities were installed to operate the Sea Harriers, new anti aircraft guns were fitted, the communication systems were modernised, the air conditioning was extended, and the catapult and arrestor gear were overhauled since Alizes would continue to operate.
- *1987 to 1989.* In the second phase of modernisation the catapult and arrestor gear were removed, a ski jump was fitted in the bows to assist the Sea Harriers to take off, facilities were installed to operate the newer technologically advanced Seaking helicopters and their new missiles and torpedoes.

VIKRANT continued to operate till 1994, after which she was laid up and eventually decommisioned in 1997.

The Second Aircraft Carrier

In 1985, the second hand, 1953 vintage, British aircraft carrier HMS HERMES, became available for acquisition. It had already been operating Sea Harriers. After Government approved its acquisition and refit, it was commissioned as INS VIRAAT on 12 May 1987.

Fixed Wing Aircraft

INAS 300

Phasing out of Seahawks

The Seahawks disembarked from VIKRANT for the last time on 8 May 1978. Even ashore, their availability could not be sustained. By end 1978, the Seahawks phased out. The last Seahawk flight was on 16 Dec 1983, to escort the first three Sea Harriers as they arrived over Naval Air Station Dabolim.

Induction of Sea Harriers

In 1977, Government approved the acquisition of 8 Sea Harriers, including 2 trainers. The first British Sea Harrier flew in 1978. By mid 1979, it was undergoing intensive flying trials. In 1979, NHQ placed an order for 6 Sea Harriers and 2 Harrier Trainers for delivery in 1983. The Sea Harrier entered service with the British Navy in 1980. In 1982, it proved its capability in the British operations against Argentina in the Falkland Islands.

The training in Britain of Indian Sea Harrier pilots started in 1982. The first three Sea Harriers landed at Dabolim on 16 December 1983. The first Sea Harrier landed on VIKRANT's deck on 20 Dec 83.

Sea Harriers were acquired in three batches.

Batch	Sea Harriers	Trainers
First	6	2
Second	7	1
Third	10	1

The Sea Harriers carried a variety of weapons; air to air and air to surface missiles; conventional and cluster bombs and runway denial weapons; rockets and guns. All weapon release modes were calculated by weapon aiming computers and displayed on the head-up symbology.

INAS 310

Phasing Out of Alizes

The Alizes were refurbished by 1978. The last launch of Alizes from VIKRANT took place on 2 April 1987 Thereafter Alizes operated only from ashore.

From February 1988 to October 1989, during Operation Pawan to assist the Government of Sri Lanka, the Alizes operated from Madurai in support of the Indian Peace Keeping Force. They flew 1800

hours and the crew won three Nao Sena Medals and four Mentions in Despatches.

During the operation to assist the Government of the Maldives, in suppressing an insurrection, an Alize spotted the rebel's escape vessel MV Progress Light and fired at it, forcing it to stop and be apprehended.

The Alizes stopped flying on 12 April 1991 and the Squadron was decommissioned in Aug 91. Seven aircraft were left of the total of 14 acquired. During the 30 years of the squadron's existence, the Alizes had flown 35,912 hours and done 7,144 deck landings.

Induction of Dornier 228

On 24 August 1991, the first naval Dornier arrived to replace the Alizes in INAS 310. Thereafter additional Dorniers joined: one in 1991, two in 1992 and one in 1993, making a total induction of five Dorniers.

The Dorniers were progressively fitted with the latest radar, electronic and sonobuoy systems for the surveillance and EW roles.

INAS 312

Super Constellations

Five Super Constellation aircraft of the Air Force's No 6 Squadron at Pune were taken over from the Air Force on 18 November 76 and designated INAS 312.

The Super Connies phased out in 1983 and in due course were replaced by the Russian TU 142s which arrived in 1988.

TU 142s for Long Range Maritime Patrol

On 30 March 1988, the first three TU 142 M aircraft landed at HANSA after a non stop flight from Russia. Two more aircraft arrived on 13 April. The squadron was commissioned at HANSA on 16 April and designated INAS 312. The remaining three aircraft arrived between August and October 1988.

INAS 315

Maritime Reconnaissance Anti Submarine Aircraft IL 38s

Three IL 38's arrived in Goa in October 1977. Later, two more IL 38's joined the squadron in 1983.

INAS 550

Islanders

The proposal to acquire Islanders for Pilot and Observer Training and Fleet requirements had been initiated in 1972. The first two Islanders arrived in Cochin on 18 May 76. The remaining three arrived by end 76.

In 1981, two Islanders of INAS 550 were based at Port Blair. In 1984, these were commissioned as INAS 318 and the naval air station at Port Blair was commissioned as INS UTKROSH.

INAS 551

Kiran Training Aircraft

The Vampires were phased out by 1976. In 1978, the last of the Seahawks was returned to INAS 300 and the armed versions of the Kirans joined the squadron for training jet pilots for the frontline squadron and for FRU tasks. In 1987 and 1988, 8 Kiran MK II's joined the squadron.

Helicopters

Helicopters in Frigates and Destroyers

The embarkation of helicopters in ships, which had started with the light Alouette IIIs in VIKRANT, DARSHAK and DEEPAK in the 1960's followed by the MATCH Alouettes in the first four Leander frigates in the 1970's, accelerated in the 1980s.

- All new front line frigates and destroyers were designed to embark heavy helicopters. TARAGIRI and VINDHYAGIRI had one Seaking each. The RAJPUT class frigates from Russia had one Kamov each. The GODAVARI class frigates of Project 16 had two Seakings each, as do the DELHI class destroyers of Project 15. The LST(L)'s were designed to embark the commando variant Seakings.
- All other frigate sized ships had the lighter Alouette IIIs (Chetaks) - TRISHUL and TALWAR after conversion, BRAHMAPUTRA, BEAS and BETWA after conversion to the training role, the new training ship TIR, the new survey ships and the new KHUKRI class corvettes of Project 25.

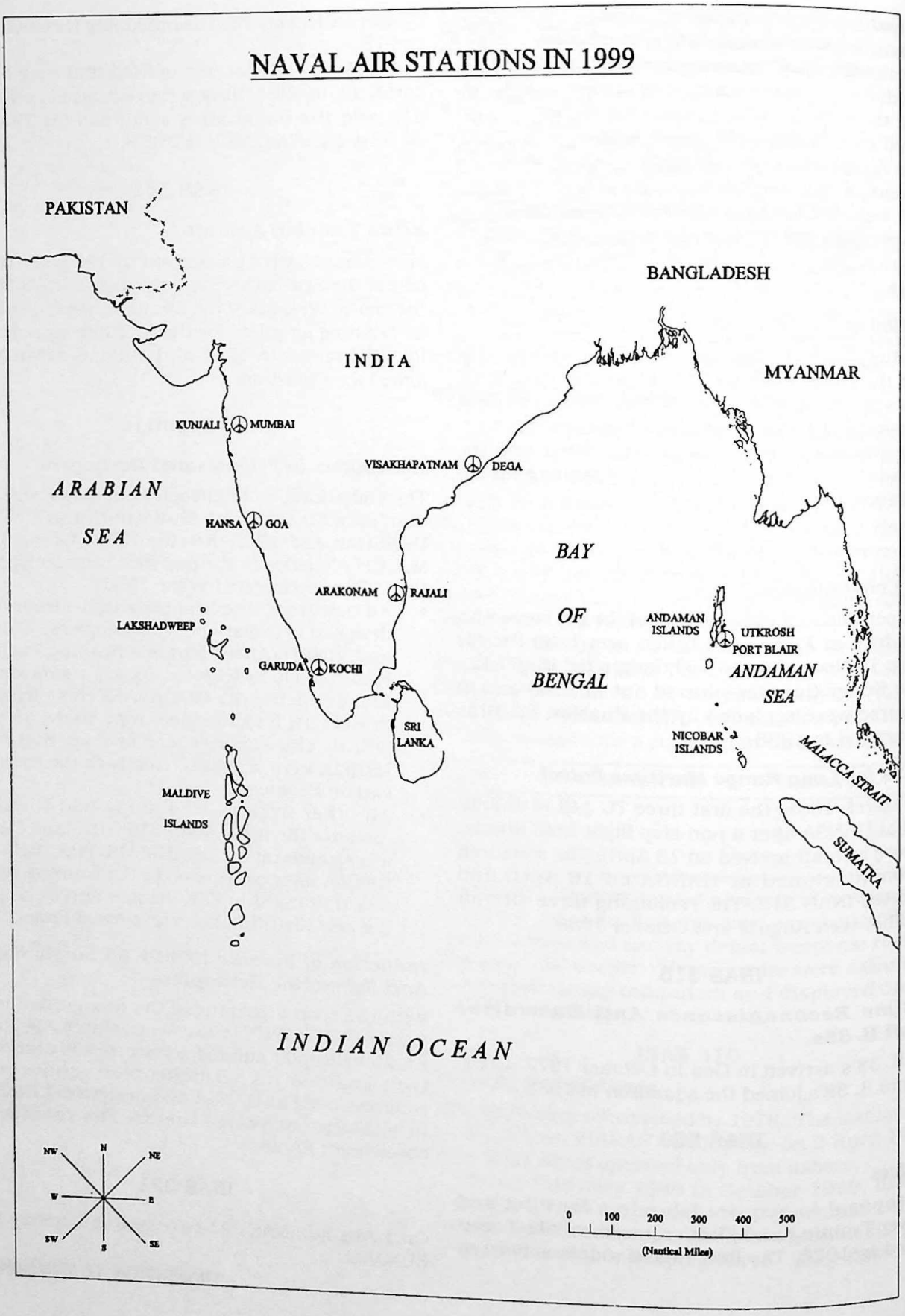
Induction of Russian KAMOV 25 Single Package Anti Submarine Helicopters

With the commissioning of the new guided missile frigate INS RAJPUT in Russia in March 80, the first KA 25 helicopter entered service. On 11 Dec 80, the twin engined KA 25 helicopter squadron was commissioned at HANSA and designated INAS 333. In subsequent years, the KA 28s replaced the obsolescent KA 25s.

INAS 321

On 1 Aug 80, INAS 321 relocated to Bombay in INS KUNJALI.

NAVAL AIR STATIONS IN 1999



INAS 330/336 and Seaking Variants

On 19 Jul 79, the Seaking Flight and Tactical Simulator (FATs) was commissioned in Cochin.

In addition to the ASW Seakings MK 42 acquired in 1971, other variants of Seakings were acquired in subsequent years:

1979/80	Seakings Mk 42 A	:	ASW Helicopters designed for being hauled down on the decks of the 5th and 6th Leanders, TARAGIRI and VINDHYAGIRI using the Recovery Assist Traverse system (RAST).
1987 to 1989	Seakings Mk 42 B	:	ASW Helicopters for embarkation in the aircraft carriers VIKRANT and VIRAAT, and the GODAVARI class missile frigates. In the anti ship role, the MK 42B's were capable of firing air to surface Sea Eagle missiles.
	Seakings Mk 42C		Commando/Troop Carrying Helicopters for the Marine Commandos and for the new indigenous Landing Ships MAGAR and GHARIAL

New Naval Air Stations

The naval air station at Port Blair was commissioned as INS UTKROSH on 11 May 1984.

The fourth naval air station, on the east coast of India, commissioned in 1992 as INS RAJALI.

With the increasing number of helicopters on board the ships based in Bombay, it became necessary to have a helipad area from where helicopters could continue flying when ships were alongside. In view of its proximate location, INS KUNJALI became the Navy's helicopter base in Bombay.

For similar reasons, a naval air station was commissioned at Visakhapatnam as INS DEGA in 21 October 1991.

18

Weapons

Preamble

The variety and technology of the new weapons that entered service between 1965 and 1975 significantly raised the Navy's weapon capability. This chapter describes weapon developments under five headings:

- The New Weapons
- Weapon Maintenance
- Naval Armament Service
- Naval Armament Inspection
- Weapon Acceptance Trials and Work Up

The New Weapons

Surface Warfare

Until 1967, the Navy's mindset regarding surface warfare was totally "gun" oriented. The effectiveness of Russian anti-ship missiles surprised the world with the sinking of an Israeli frigate during the 1967 Arab Israel War. This led to the Navy's acquiring missile boats from Russia.

Acquaintance with the capabilities of Russian missiles, combined with the damage that the missile boats caused during their attacks on Karachi harbour in the 1971 Indo Pakistan War, led to a review of future weapon fitment for surface warfare.

It was clear that heavy guns had been superceded by anti-ship missiles. It was equally clear that small missile boats could not decide a battle in mid-ocean, where operations at long distances from shore required not only endurance and sea keeping qualities, but also a multi role configuration to counter submarines. The future seemed to lie in retrofitting anti-ship missiles in existing ships, having anti-ship missiles in new warships and, wherever possible, have anti aircraft missiles and high rate of fire small calibre guns to provide defensive capability against incoming enemy missiles.

By 1975:

- Discussions with the Russian side had clarified the grey areas regarding the feasibility of fitting a missile boat system in the British anti submarine frigates TALWAR and TRISHUL. An entire missile launcher-fire control suite had been removed from a non-operational missile boat and was being installed in TALWAR. TRISHUL was to be similarly fitted in her next modernisation refit.
- Likewise, an entire missile launcher-fire control suite had been removed from another non-operational missile boat, installed at the Naval Coast Battery Bombay and successfully test fired.
- Agreements had been signed for the acquisition from Russia of frigates and ocean-going rocket boats having anti ship and anti aircraft missiles and high rate of fire, small calibre guns for anti aircraft and anti missile defence.
- The design of the indigenous Project 16 GODAVARI class frigates, which would follow the sixth Leander, featured anti ship and anti aircraft missiles and high rate of fire guns, similar to those in the new guided missile frigates and ocean going rocket boats being acquired from Russia.
- A second squadron of longer endurance, improved missile boats had been acquired from Russia for coastal defence.

Anti Aircraft Warfare

From 1966 onwards, the Russian acquisitions brought in 25 mm, 30 mm and 76 mm high rate of fire, anti aircraft guns.

In 1972, the British Seacat, short range, anti aircraft missile entered service in the first Leander frigate, the NILGIRI. In 1973, it demonstrated its capability to shoot down a towed target. In 1974, the second frigate, HIMGIRI, demonstrated its capability to shoot down a pilotless target aircraft (PTA).

The Seacat missile soon presented the Gunnery world with a problem. Sailors who had already proved their proficiency as "Gun Layers", having good "hand-eye" coordination, were the obvious field from which to select Seacat aimers. During practice runs on the simulator and during Seacat firing practices, however, it soon became evident that this was not so. The Seacat was a radio command guided missile whose control was achieved by using the right thumb on a ball, moving it - up/down and left/right - to send commands to the missile and optically guide it on to

the target in the aimer's sight. What was actually required was "thumb-eye" coordination. It took time for the Gunnery branch to shed its elitist possessiveness of this new weapon and accept that "thumb-eye" coordination was an aptitude which had to be culled after testing sailors of all branches. Thereafter, they had to be given a Seacat Aimers badge and an allowance as an incentive to hone this skill.

Anti Submarine Warfare

The arrival by 1961 of the British anti submarine frigates TRISHUL, TALWAR, KHUKRI, KUTHAR and KIRPAN had increased the maximum sonar detection range from the earlier few hundred metres, to a few thousand metres; the range of their anti submarine weapons had increased from a few dozen metres to a few hundred meters.

The Pakistan Navy's acquisition of "silent" Daphne class submarines made it unlikely that they could be detected on passive sonars. The vagaries of hydrology in the Arabian Sea favoured the submarine because the temperature layers in the sea refracted a ship's sonar transmissions. The range of the Daphne's class submarine's latest homing torpedoes exceeded by far the maximum detection range and the weapon range of the Navy's anti submarine frigates. There was, therefore, a pressing need for longer range sonars, longer range homing torpedoes, and variable depth/dunking sonar which could overcome hydrological constraints.

The Russian Petyas which started arriving from 1968 onwards greatly increased anti submarine capability. Their medium range sonars had a maximum detection range of several thousand metres; their anti submarine rockets had a range of a few thousand metres and the range of their heavy, anti submarine, homing torpedoes matched that of their medium range sonars.

The arrival of the Seaking helicopters in 1971, with their dunking sonar and lightweight air dropped homing torpedoes, further increased the Navy's anti submarine capability.

The first Leander frigate, the NILGIRI, was being fitted with a variable Depth Sonar and her propellers would have the Agouti system to minimise cavitation noise.

Problem Areas

The induction of this large number of technologically advanced fire control radars, sonars and weapons raised two problem areas regarding the overall responsibility for their combat readiness:

- Should the overall responsibility of the ships weapon system continue to be with the "user" department as in the past or should it be shared with the Electrical Department's maintenance personnel?
- Should the responsibility for a complete weapon like a missile or a torpedo continue to be with the armament supply organisation as in the past or shared with the Electrical Branch?

Since both fire control systems and weapons now had considerable electronic content, the Navy's Weapon Maintenance Policy and the Division of Responsibilities had to be revised.

Another problem area was the need to reduce the proliferation of gun calibres in service. By 1975, the position was expected to be:

Calibres Phasing Out	Calibres Still in Service		New Calibres
British two pounder	Oerlikon/Hispano	20 mm	Russian 25 mm
Pom-poms	Bofors	40/60 mm	Russian 30 mm
British twelve pounders	British	4 inch	Russian 57 mm
	British	4.5 inch	Russian 76 mm
	British	4.7 inch	
	British	6 inch	

Weapon Maintenance

Evolution of Responsibilities for Weapon Maintenance

From 1939 onwards, gun mountings on board used to be maintained by ordnance engineer officers and ordnance artificers who formed part of the Ships Engineering Department. The repair of radars, sonars, gyros, communication equipment and electrical instruments were the responsibility of the Electrical Department. The remaining parts of guns like barrels, breech blocks and recoil cylinders were maintained and repaired by the Armament Supply Organisation. Torpedoes were the responsibility of the Armament Supply Organisation, which had a Torpedo Engineering Shop located in the Naval Dockyard.

Until 1958, the Navy's weapons had been entirely of Second World War vintage :

- For surface action, ships had manually operated, hand loaded, 12 pounder, 4 inch, 4.7 inch and 6 inch calibre guns.
- For defence against aircraft, ships had manually operated, hand loaded, two pounder pom poms, Bofors 40/60 and Oerlikon 20 mm guns.
- For anti submarine action, ships had short range anti submarine weapons like depth charges and hedgehogs, compatible with their short range sonars.

From 1958 onwards, the eight new British frigates of post war design ushered in analogue computers and gyro stabilised fire control systems, together with remotely controlled, semi-automatic, longer range weapons. On board ships, things were manageable when everything worked efficiently. When things did not work properly, the problem arose as to who was responsible. The statutary regulations unambiguously stipulated that single point responsibility and accountability for battle readiness vested in the Gunnery and the Torpedo Anti Submarine (TAS) officers. They were responsible to the Commanding Officer for the efficient performance of both men and equipment in battle. Officers and artificers trained in ordnance engineering and gun mounting hydraulics formed part of these departments. Now, with the increase in electronics and power electrics, responsibility and accountability became unclear. How could the Gunnery and TAS Departments be accountable for problems in the electronic and electrical equipment of their weapon systems?

It was clear that major changes were necessary in sailors' trades and departmental responsibilities. Could the seaman user also do the electrical maintenance - if so, could seaman sailors be trained to understand electronics? Or was it better that the electrical maintainer become the user? If so, was it cost effective for electrical sailors to perform seamen duties? The 1967 Committee for the Reorganisation of the Sailors Structure (CROSS Committee) examined these issues. No satisfactory via media could be found to evolve a User-Maintainer concept.

In 1968, the responsibility for the "functional efficiency" of weapons was transferred to the Electrical Branch and a new designation of Weapon Maintenance Officer was introduced:

- The ships Electrical Officer, as the weapon maintainer, was made responsible to the Commanding Officer for the efficient functioning of weapon equipment. The Weapon Maintenance Officer, where provided, was made responsible to the Electrical Officer for the efficient upkeep of weapon systems and the custody of spare gear and test equipment required for the maintenance of Gunnery and TAS equipment. The Weapon Maintenance Officer was to keep the Gunnery and TAS Officers informed of the state of serviceability of their respective weapon systems for operation and firing.
- The Gunnery and TAS officers, as the users of the weapons, remained responsible for the custody and accounting of the Gunnery and TAS equipment fitted on board, naval armament stores, diving equipment and minesweeps, as applicable.

This division of responsibility was recognised to be fragile but no better solution could be found.

The arrival of the Russian acquisitions from 1968 onwards imposed unforeseen strains on the Weapon Maintenance Policy which had just been promulgated:

- The design and technology of Russian electronics and power electrics differed from that of the British. Russian weapons had greater automation, longer ranges and higher rates of fire.
- Russian ships were crammed with electronic and electric equipment. The cramped spaces imposed limits on the maintenance and repair that could be done on board.
- Russian ships did not have enough bunks to accomodate the Indian Navy's separate Seaman Branch weapon users and separate Electrical Branch weapon maintainers.

These difficulties were compounded by the lack of Russian maintenance and repair facilities in Visakhapatnam which took time to be set up. When all this combined with the compulsions mentioned elsewhere, like "Need to Know", rotation of personnel, and lack of spare parts, the shortfalls in the "functional efficiency" of Russian weapon systems became a cause for serious concern.

In contrast, the weapon spaces in the Leander class frigates were more spacious and enough bunks had been provided to meet the needs of the Navy's sailor trade structure of separate users and separate maintainers. Moreover, Bombay being the main base of the Navy, the development of weapon maintenance facilities in Bombay had kept abreast of the inductions.

Evolution of Weapon Maintenance Facilities in Bombay

In 1959, the Weapon Control Repair Shop (WECORS) was sanctioned for the repair of the gunnery and anti submarine fire control systems. WECORS developed in phases:

- Phase 1 was completed in 1966 and enabled the repair of fire control equipment and gyros of all weapon systems in the new British frigates.
- Phase 2 was completed in 1971 and enabled the repair of the heavy mountings in these frigates.

In 1965, it was decided that except for those functions looked after by the Armament Supply Organisation, all the repair work carried out by the different departments of the Dockyard on weapon systems and associated gunnery and electronic equipment should be combined. A separate Weapons Department was formed as part of the Industrial Manager's Department. Like the Constructor, Engineer and Electrical departments, the Weapon Department was headed by the Assistant Industrial Manager Weapons (AIMW) to administer the WECORS (then under construction), and the Gun Mounting Depot and the Torpedo Engineering Workshops. In August 1968, the Gun Mounting and Torpedo Depots at Bombay were combined and redesignated as the Weapons Equipment Depot (WED) Bombay under the AIM(W).

Apart from the maintenance of weapon systems on board ships, the Weapons department of the Electrical Branch was involved in the following activities:

- The development and laying of deep and shallow degaussing ranges. Degaussing helped to minimize the magnetic influence of ships hulls and thereby decrease the likelihood of their triggering magnetic mines.
- The repair, in conjunction with INPL Cochin, of sonar transducers.
- Setting up calibration ranges for anti submarine mortars and carrying out calibrations.
- Testing and repairing buoyant minesweeping cables.
- Indigenous manufacture by Indian agencies of Leander gun mountings and anti submarine mortars in collaboration with the principals in Britain.
- Development of an underwater noise range.
- Repair of diving equipment.
- Modification of sonar domes.
- The half-life "strip and rebuild" of electronic weapon systems after approximately twelve years of service.

The Naval Armament Service

The Naval Armament Service had its beginning in 1932 with the formation of the Royal Indian Marine. A small Royal Naval Armament Depot was started in Bombay at Butcher Island, manned entirely by British civilians. In 1933, the entire British staff were transferred to the British naval base at Trincomalee in Ceylon. The needs of the Indian Navy were met by the Indian Army Ordnance Corps, who established a small group in the Naval Dockyard and at Butcher Island.

Developments During the Second World War 1939 to 1947

In 1940, the Admiralty deputed a senior Royal Naval Armament Service officer to India, to advise on the possibility of setting up a Naval Armament Supply (NAS) organisation in India. In September 1941, the first NASO (India) was appointed in Bombay.

After the British surrender at Singapore in February 1942 and the British Navy's withdrawal from Trincomalee, a large number of Indian subordinate officers and senior supervisors from the Naval Armament Depots (NADs) at Singapore and Trincomalee moved to Bombay. With this experienced staff and the storage accomodation readily available in Butcher Island, the NAD Bombay expanded overnight. NASO Bombay operated directly under the Admiralty in Britain to meet the needs of the British Eastern and Pacific Fleets. In addition to the NAD at Butcher Island, mine issuing and armament store issuing ships were based in Bombay. The first Indian NASO was appointed in 1944, but for all practical purposes, the NAD was run by the Director of Armament Supply (DAS) at the Admiralty and under the Deputy DAS in Colombo.

In preparation for the offensive against Japan, small armament depots were opened at Karachi, Cochin, Madras, Visakhapatnam, Calcutta and Chittagong. Bulk naval armament stores were kept at the inland Army Depot at Phulgaon. A Director of Armament Supply (India) was appointed in 1945. After the end of the war, all the small depots were closed down in 1946, except for Visakhapatnam where the Navy moved into the Transit Depot vacated by the Army. The British Navy's Torpedo Depot in Bombay was handed over to the RIN's Armament Supply Organisation in 1946.

The main problem during 1946 had been the closure of armament depots and the disposal and redistribution of surplus ammunition. To this was added, in 1947, the problem of division of assets at the time of partition.

Developments from 1948 to 1965

By 1948, the Navy's expansion plans had crystallised. From 1949 onwards, the development of the NAS organisation concentrated on three main activities:

- Building up the NAS cadres of officers and supervisory staff.
- Building new NADs to accomodate the war reserves and practice requirements of ammunition for the ships being acquired from Britain.
- Building up in the NADs the capability and capacity to refurbish explosive items and conserve foreign exchange.

Building up the NASO Cadres

From 1949 onwards, batches of officers and senior supervisors started being sent to Britain for training. By 1951, they were able to relieve most of the Admiralty's British staff in India. The last British DAS left in 1955.

In the 1950's, the first batch of NASOs having mechanical and electrical engineering degrees was recruited to man the NADs. On joining, they underwent a year's technical training on naval armament activities. In 1966, to attract better talent, NASOs started being inducted through the Union Public Service Commission's annual Engineering Service Examination. The response was short of expectations. In 1975, approval was accorded to constitute a separate service for NASOs as a recognised cadre known as the Indian Naval Armament Service.

Building the New Naval Armament Depots (NADs)

Bombay

In 1952, the old NAD at Butcher Island had to be vacated to make way for the construction of an oil terminal jetty. Tankers bringing crude oil to feed the new oil refineries being established near Trombay would secure to this jetty.

Karanja was selected as the site for the new NAD. Since it would take time for it to come up, an interim NAD needed to be found. The vacation by the Army of its Transit Ammunition Sub Depot at Trombay was fortuitious. Trombay was connected by rail and road with Kurla and the disused Coastal Forces pier at Cheetah Camp was revived. The movement of stores to Trombay started in 1952 and was completed by 1953, whereafter it became NAD Bombay.

During these years, the NAS Organisation had two wings. The NAD Bombay, stored the ammunition and mines. The NASO's section, located inside the Naval Dockyard, looked after the Torpedo Depot, took wear measurements of barrels, replaced weapon barrels when necessary and maintained and repaired weapon parts like breach blocks and recoil cylinders. It also served as the front office for liaising with ships regarding ammunitioning and de- ammunitioning.

The construction of the NAD Karanja was implemented in phases. It started being occupied in 1959 and continued expanding thereafter to store the ammunition of the new British frigates.

In 1961, the arrival of the aircraft carrier VIKRANT brought with it large holdings of bombs, rocket and gun ammunition. All these were stowed in the NAD Karanja and older holdings were distributed to the NAD's at Trombay, Alwaye and Visakhapatnam.

It was intended that ships go alongside a new jetty at Karanja which would have sufficient depth for ships to secure alongside and embark/disembark ammunition. During its construction, however, the jetty was afflicted by such severe siltation that its dredging became prohibitive in cost. Various schemes were examined to make the jetty usable but to no avail. Ships anchored in ammunitioning berths in the vicinity of the jetty and barges ferried the ammunition between the jetty and these berths.

Visakhapatnam

Until the Russian acquisitions started arriving in 1966, there were no combatant ships based in Visakhapatnam. The Transit Depot which had been taken over in 1946 had been converted into a NAD and was being used as a storage depot.

After China's attack in 1962, there was a major drive for self reliance in the production of components required to repair and refurbish ammunition. Since anti aircraft, time mechanical fuzes had to be refurbished every seven years, a Fuze Reconditioning Shop was established to recondition these fuzes. This shop also manufactured and assembled the fuzes for anti submarine mortars.

Cochin/Alwaye

The construction of the NAD Alwaye commenced in 1953. With the build up of the training schools at Cochin, there was a steady increase in musketry and small arms firing. In 1957, a detachment of the NAD

was established inside the naval base to repair small arms. A full fledged NAD with magazines and armament workshops was inaugurated in 1958. Thereafter it supplied the Gunnery School's Naval Battery at Fort Cochin with ammunition for seaward firing practices and it was made responsible for meeting the needs of all Naval NCC Units for small arms and small arms practice ammunition.

Goa

The NAD at Goa started in 1963. After INS HANSA and the Seahawks moved to Goa in 1964, the NAD was expanded in phases.

Building up Self Reliance

From 1952 onwards, emphasis had been laid on attaining self sufficiency in the indigenisation of naval armament stores. The Navy's bulk requirements of cartridge cases, shells, cordite and shell fillings were projected to the Ordnance Factory Board for inclusion in the annual production plans. It took some time for the Naval Armament Inspection Organisation to establish itself and for the Ordnance factories to become familiar with the Navy's special requirements. By 1965, production had been established for the Navy's bulk requirements.

A vexed problem however was the non-availability of components for repairing ammunition. The requirements were too small to make their production economically worthwhile, either for the Ordnance Factories or for private firms. The armament workshops being set up in the new NADs were therefore provided the wherewithal to undertake the production of such components.

After 1962, when even greater emphasis was placed on self reliance, the NAD workshops were further augmented to undertake the manufacture of a larger number of components for subsequent assembly and filling.

By 1969, the indigenous manufacture of the older conventional armaments had been established and production was being farmed out to the civil sector. This enabled the NAD workshops to concentrate on the proof and evaluation of older ammunition to extend its life.

Developments After 1965

From 1966 onwards, homing torpedoes, anti submarine rockets and gun ammunition for the Russian acquisitions started arriving at the NAD Visakhapatnam. From 1970 onwards, anti ship missiles and gun ammunition started arriving in Bombay for the Russian missile boats. In 1971, homing torpedoes arrived in Bombay for the Seaking helicopters. In 1972, Seacat surface to air missiles entered service with the frigates of the Leander project. Within a short space of five years, the technology level of naval armaments rose sharply. In its wake, there followed the problem of division of responsibility for homing torpedoes and guided missiles.

Homing Torpedoes

The responsibility for the preparation for firing of Russian torpedoes was entrusted to the Weapons Department. The remaining activities remained with the Armament Supply Organisation. In the case of the British MK 44 torpedoes, the entire responsibility was that of DAS. However, in 1974, the responsibility for the preparation of Russian torpedoes was handed over to the Armament Supply Organisation.

Guided Missiles

In the case of the Russian missiles, the responsibility for non-integrated missiles was given to the Weapons department of the Electrical Branch, except for the warhead and the explosive components which remained with DAS. Integrated Russian missiles and Seacat missiles were made the responsibility of DAS.

Responsibility for Explosive Handling in Commercial Ports

The Navy's Armament Supply Organisation has the sole responsibility for supervising all defence and commercial explosive handling activity in the ports of India.

Naval Armament Inspection

Developments Until 1965

Prior to the formation of the Naval Armament Inspection (NAI) Organisation in India, the naval armament stores received from Britain used to be inspected by local Army Ordnance authorities on behalf of the Navy.

In 1949, when it was decided to set up a Naval Armament Stores Organisation, it was decided also to set up an NAI organisation. In 1950, a British Army Ordnance officer came on deputation from Britain to head the NAI Department. Along with him came British civilian technical officers.

Between 1949 and 1960, there were four British naval Captains who came on deputation as Directors of Naval Armament Inspection (DNAI). During the same period, thirteen Indian NAI officers underwent the Assistant Inspector of Naval Ordnance course in

Britain. After 1960, Indian officers became DNAIs and the initial training of NAI officers was conducted at the Institute of Armament Technology (IAT) near Pune, conjoined with the Army's Technical Staff Course.

The duties of NAIOs, in conjunction with NASOs where appropriate, were to:

- Inspect all new ammunition and armament stores manufactured by the Ordnance Factories and by private trade for compliance with acceptance standards and conformance to specifications.
- Periodically inspect all ammunition and armament stores in service stored in the NADs and select representative samples for proof firing to confirm that they remained safe and fit for operational use.
- Investigate misfires/failures and initiate/promulgate remedial action.
- Inspect modifications to existing weapons and ammunition.
- Periodically inspect all gun barrels and launcher tubes on board ships to ensure their accurate and reliable functioning.

Senior Inspectors of Naval Armament were positioned at Bombay and Visakhapatnam. As indigenous production picked up, Naval Armament Inspectorates were established at places wherever naval ammunition was being manufactured. In addition, NAI wings were posted at the IAT Pune and the proof firing establishment at Balasore.

Developments After 1965

With the induction of guided missiles and homing torpedoes in the Russian acquisitions and the Leander Frigate Project, it became necessary to enhance the technical knowledge of NAIOs. In 1968, a separate post graduate Naval Technical Staff Course commenced at the IAT Pune. In 1978, the shortage of volunteers from the Executive Branch led to the introduction of the Direct Entry Scheme for the NAI Cadre. The educational qualifications prescribed were a degree in mechanical/electrical/electronic/engineering or a post graduate degree in physics or electronics.

The responsibilities of NAIOs also diversified:

- Indigenisation Cells were set up in Visakhapatnam and Bombay to prepare the drawings and specifications for and to inspect the indigenous manufacture of perishable and critical components of Russian and Western weapons.
- Calibration Labs were set up in Visakhapatnam and Bombay to calibrate imported, special-to-type measuring equipment.
- Special targets were produced to test and evaluate imported and indigenous proximity fuzes at the Proof and Experimental Establishment at Balasore.
- Inspections were undertaken of all repaired/refurbished guided missiles, homing torpedoes and mines.

NAIOs were also associated with the R&D and the indigenisation programmes to:

- Improve the capabilities of homing torpedoes and refurbish homing torpedoes in stock.
- Indigenise anti submarine rockets.
- Improve the capabilities of mines.
- Indigenise practice missile warheads.
- Inspect and test imported weapons at their place of manufacture before despatch to India.

Weapon Acceptance Trials and Work up

Weapon Acceptance Trials

By the end 1960s/early 1970s, it was clear that given the pace at which new weapons were being inducted and the inescapable lag in setting up the maintenance facilities ashore, some way had to be found of ensuring that weapon systems were combat worthy. It was decided to adopt the British Navy's system, whereby the weapon systems of refitted ships were systematically checked by an Acceptance Trials Team, independent of the Dockyard and the ship. There was opposition. The reasoning was that since the organisational constraints were known, nothing was going to be achieved by harping on the maintenance/repair shortcomings in weapon systems. The opposite point of view was that user personnel had no hope of acquiring any practical firing experience on their weapon systems if the systems were not working properly.

The acceptance trials of the NILGIRI showed how imperative the trials were. Eventually, by end 1975, the first elements of the much debated Harbour Acceptance Trial (HATS), Sea Acceptance Trials (SATS), Warship Acceptance Trial Team (WATT) and Warship Workup Organisation (WWO) were in place. The procedure was:

- During HATS, critical parameters were checked against laid down schedules and parameters.
- During SATS, the weapon system accuracy was checked in firing practices. Air target

requirements were met by the Target Towing Dakotas based in Cochin. Surface target requirements were met by local ships (tugs/ LSTs/coastal minesweepers) towing Pattern II targets and the heavier Battle Practice Targets (BPTs). Moored triplane targets were used to check sonar accuracy. Mortars were calibrated on a special range. On completion of Acceptance Trials, shortcomings were rectified before commencing workup.

Workup

The concept of Workup was that on the satisfactory completion of all weapon, radar and communication Sea Acceptance Trials by the Warship Acceptance Trials Team, the systematic work up of every ship for combat readiness should follow a progressive, logical sequence:

- After a refit, a ship should shakedown off her base port. This shakedown was to be conducted by the Commanding Officer, assisted by Squadron/Fleet staff.
- After shakedown, the ship should commence basic work up with suitable targets under the supervision of the Warship Workup Team.
- After basic workup, the ship should participate in multi unit tactical work up with other ships, submarines and helicopters under the supervision of the Fleet Commander and assisted by the Warship Workup Team.
- On successful completion, each ship would carry out weapon firing practices as laid down in the relevant manuals and participate in tactical and Fleet exercises.

It took several years for the concept to take root.

Developments After 1975

New Weapons

Air to surface missiles entered service with the Sea Harrier aircraft and the improved Seaking helicopters.

Longer range anti ship and anti aircraft missiles entered service with the guided missile frigates and the ocean going rocket boats.

Longer range anti submarine rockets and better long range homing torpedoes entered service with the new guided missile frigates.

Better short range homing torpedoes entered service with the new Kamov and Seaking helicopters.

Better long range homing torpedoes entered service with the new Russian and German submarines.

Weapon Maintenance

- *Designations.* In 1976, the designation of Assistant Industrial Manager (Weapons) was changed to Manager Weapons. In 1981, the designation changed to General Manager Weapons.
- *WECORS Bombay.* Phase 1, commissioned in 1966 had been established to repair the fire control systems of the British frigates. Phase 2, commissioned in 1970 had been established to repair their gun mountings. Phase 3 was established in the mid 1970s to repair British and Dutch fire control systems of the Leander class frigates. Phase 4 was established in the 1980s to repair the fire control systems of the Russian Petyas, submarines and missile boats based in Bombay. In due course, Phase 4 was augmented to cater for the Russian guided missiles frigates, ocean going rocket boats and minesweepers, and the German SSK submarines.
- *Weapon Repair Shop Visakhapatnam.* Phase 1 commissioned by 1972. The shop was augmented in phases to cater for the new Russian acquisitions.

Naval Armament Depots

Bombay. Over the years, the NAD Karanja concentrated on the preparation of sophisticated torpedoes and missiles. Torpedo repair activity was shared with Trombay.

Goa. The NAD expanded to accomodate the weapon needs of the Sea Harrier fighters, the TU 142 and IL 38 reconnaissance aircraft and the Kamov helicopters.

Visakhapatnam. The NAD expanded to accomodate the torpedoes of the new submarines. The repair activities of torpedoes were shared with Bombay.

Sunabeda. This new bulk storage NAD was established on the East Coast in 1988.

Naval Armament Inspection

After 1975, financial stringency compelled greater emphasis on extending the life of ammunition and expediting indigenisation. This necessitated the setting up of in-house test and evaluation facilities. Rubber test facilities came up at NAI Visakhapatnam. At NAI Karanja, sophisticated facilities were set up for testing the dynamic parameters of rocket motors and undertaking simulated sea trials of torpedo batteries.

In addition to its normal responsibilities, the NAI organisation:

- diversified into research, design and development projects of armaments and explosives.
- increased its involvement in developing indigenous equivalents of unavailable explosive items.

Weapon Acceptance Trials and Work up

The concept of Weapon Acceptance Trials gradually extended to machinery, particularly diesel engines and gas turbines. When the Naval Dockyard Visakhapatnam started undertaking major refits, Weapon Acceptance and Work Up Teams were established in Visakhapatnam on the same lines as in Bombay.

In the 1990's, Flag Officer Sea Training was established in Cochin to conduct the work up of all ships after major refit and identify the shortcomings in weapon and combat readiness for remedial action before they joined the respective Fleets.

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Fleet Activities

The Pattern of Fleet Activity Prior to 1965

Until 1965, there used to be two well defined exercise periods-Spring Exercises (SPRINGEX) and Summer Exercises (SUMMEREX).

The annual cycle was:

April/May	- Transfers of personnel in and out of ships to coincide with the end of childrens' school year.
June/July/August	- Summer Exercises.
September	- CNS' Tactical Exercises.
October/November/ December	- Maintenance and leave period.
January/February/ March	- Spring Exercises.

Several factors had combined to coalesce into this pattern. The critical determinant was that there were not enough alongside berths in Bombay, as a result of which ships usually remained at the anchorage. This was not possible during the rough weather of the monsoon months and ships had either to be brought alongside or sent away from Bombay. The general practice was for the non operational ships to go alongside for repairs/refit and for operational ships to sail for the Bay of Bengal where maximum value could be derived from sea training in areas not seriously affected by the southwest monsoon. This also enabled joint exercises with Commonwealth navies at Trincomalee.

On completion of exercises, ships paid goodwill and flag-showing visits to neighbouring friendly countries.

The final phase of the summer exercise period was the CNS' Tactical Exercises held on the Fleet's return passage from Cochin to Bombay in September each year. The CNS usually invited Ministers of the Central Government and Governments of the maritime states, as well as senior officials from the Ministries of Defence and Finance (Defence) and Army and Air Force Headquarters to witness these exercises. The National Defence College also embarked during this period.

On arrival in Bombay in end September, ships commenced maintenance and defect rectification in preparation for Spring Exercises. During October, November and December, ships companies availed of annual leave and personnel were transferred in and out if necessary.

Spring Exercises from January to March were carried out off both the East and West coasts. As in the case of the Summer Exercises, ships participated in joint exercises with Commonwealth Navies, paid goodwill visits to neighbouring friendly countries and ended up with the Staff College students embarking fleet ships for witnessing exercise between Cochin and Bombay.

On arrival in Bombay in end March, block drafts/ transfers were effected to coincide with end of children's school year. Maintenance and defect rectification were carried out in preparation for the Summer Exercises whilst personnel availed of annual leave.

This annual cycle comfortably met several requirements:

- Giving officers and men sea-time for promotion and experience of exercising with other navies.
- Dovetailing the completion of courses in the Annual Training Programme with block transfers in and out of ships.
- Sharing the maintenance and defect rectification load between ships staff and the Dockyard. Any ship which did not cope with its defects and depended too much on the Dockyard, missed out on the exercises and the foreign cruises.
- The Staff College, the National Defence College and visiting dignitaries witnessed fleet exercises when ships companies were at peak efficiency.
- Whenever cadets from the National Defence Academy and the National Cadet Corps could not be embarked during these exercises, individual ships or groups of ships took them to sea for short durations.

JET Exercises with Commonwealth Navies

JET (Joint Exercises at Trincomalee) started in 1949 and were organised at Trincomalee on the east coast

of Ceylon. Initially, JETs were held in the spring. Later, JETs were held during the height of the southwest monsoon when the west coast of India became unsuitable for naval exercises due to rain and rough seas. Trincomalee and the exercise areas in the vicinity were sheltered from the monsoon and provided calm seas.

Ships of Commonwealth navies participated in JET, which were held under the general guidance and control of the British Commander in Chief Far East Fleet, using the facilities available at Trincomalee.

The pattern was for individual ships to shake down, followed by each Commonwealth Navy working up its ships and culminating in Combined/Joint Exercises in the Bay of Bengal. The combined exercises lasted for a period of two weeks during which a variety of exercises were carried out, including gunnery firing practices at surface and aerial targets, anti submarine exercises with British submarines as targets, replenishment at sea with British tankers, ship manoeuvres and culminating in large scale tactical exercises. The basic advantage of these exercises was the exposure to contemporary tactics and cross-operating with other navies.

Until 1958, all exercises were held at Trincomalee:

Month/Year	Participating Commonwealth Navies
March-April 1951	Britain, India, Pakistan
March-April 1952	Britain, India, Pakistan
April 1953	Britain, India, Pakistan
August 1953	Britain, India
August 1954	Britain, India, Pakistan, Ceylon
August-September 1955	Britain, India, Pakistan, Ceylon
August-September 1956	Britain, India, Pakistan, Ceylon
August-September 1957	Britain, India, Pakistan, Ceylon
June 1958	Britain, India, Pakistan

In September 1958, the British Navy's East India Station at Trincomalee closed down. From 1959 onwards, JET exercises started being conducted in phases:

- Phase 1, individual ship work up, was held at Cochin with a British submarine and aircraft of the naval air arm.
- Phase 2 consisted of sea exercises enroute to join the other Commonwealth Navies in the Bay of Bengal.
- Phases 3 and 4 were the Combined Fleet Exercises in the Bay of Bengal followed by post exercise debriefs.

In 1959, 1960 and 1961, a British submarine was made available every year for anti submarine exercises during Phase 1 off Cochin, particularly with the new British frigates which had started arriving from 1958 onwards.

In December 1964, exercises were conducted with the submarine AMBUSH off Bombay and in July 1965 with the submarine ASTUTE off Madras and Visakhapatnam.

The Pattern of Fleet Activity 1965 to 1975

Until 1965, the Navy's operational cycle was determined primarily by the fact that the Bombay Dockyard was unable to provide sheltered alongside berths during the monsoon months. After the Indo Pakistan War of 1965, the operational cycle was governed by the decision that 60% of the Fleet was to be operational in the Arabian Sea throughout the year.

Between 1965 and mid 1971, the Petyas and submarines arrived from Russia. They used to transit from their base in Visakhapatnam to exercise with the Fleet in the Arabian Sea. With submarines now available, there was a marked increase in anti submarine exercises in the Arabian Sea. Not many exercises were carried out in the Bay of Bengal.

After the Indo Pakistan War of December 1971, it took nearly two years for the Eastern Fleet (which had been formed in November 1971) to commence meaningful exercises. The basic reason was that the earlier Petyas and submarines were undergoing repairs and refit after their prolonged utilisation in 1971. Such ships and submarines as were available had very limited motoring hours left. The maintenance, repair and refit facilities had yet to come up in Visakhapatnam. Moreover, in view of the unpredictability of Pakistan's intentions after the surrender of its forces in East Pakistan, the Navy had decided to base the five new Petyas and the four new submarines in Bombay. Overall, the Eastern Fleet had very few ships it could call operational. By 1974, the position improved and both Fleets started exercising in their respective waters.

The Fleets activities between 1965 and 1975 marked a transformation from the pre 1965 Springex/Summerex pattern to the 1975 era of practice missile firings (PMFs), amphibious exercises (AMPHEXs), individual fleet Tactical Exercises (TACEXs) and Combined Fleet TACEXs, whilst still

meeting the training requirements of the NDA, the DSSC and the NDC and essential requirements like Joint Exercises with other navies and goodwill visits.

Tactical Evaluations

A significant feature of exercises from 1973 onwards was the emphasis on the tactical evaluations of the new weapon platforms. By then, the lessons of the 1971 War had been analysed and digested. The nature of surface warfare had changed with the induction of surface to surface missiles. The nature of anti air warfare had changed with the induction of Seacat anti aircraft missiles in the Leanders and high rate of fire guns in the Petyas and the missile boats. The nature of anti submarine warfare had changed with the induction of medium range sonars in the Leanders and the Petyas, variable depth sonar in NILGIRI, dunking sonars in the Seakings and anti submarine homing torpedoes in the Petyas, the Seakings and the MATCH helicopters in the Leanders.

Not only had the capabilities and limitations of each of these systems to be determined, but also their utilisation dovetailed into Fleet Operating and Tactical Instructions. It became timely for the Navy to start formulating its own tactical doctrines, appropriate to its unique mix of Western and Russian sensors and weapons.

In 1974, a Tactics Committee was formed in Naval Headquarters, with analogous Committees in each Fleet and Command. intensive interaction and evaluations progressively led to multi- system evaluations and culminated in structured Joint Fleet Exercises conducted by Naval Headquarters to evaluate and validate Fleet tactical doctrines before they were promulgated.

The Pattern of Fleet Activity After 1975

The momentum built up by 1975 in tactical evaluations of individual types of ships, submarines, helicopters and aircraft, followed by Fleet exercises to validate evolving tactical doctrine, continued after 1975. This procedure was to stand the Navy in good stead when the new Russian guided missile frigates, ocean going rocket boats and IL 38 MRASW aircraft were inducted along with the improved Leander class frigates TARAGIRI and VINDHYAGIRI.

The distance from the mainland at which Fleet exercises were held was also steadily increased, to establish the Fleets' endurance for sustained mid-ocean operations.

Goodwill Visits to Friendly Countries

Goodwill and flag showing visits by naval ships have traditionally been one of the important peacetime functions of the Navy. These visits fulfilled several worthwhile objectives.

- They enabled officers and sailors to visit the ships and establishments of the host navies, interact and imbibe new concepts and ideas.
- The enormous sense of pride which Indian communities settled abroad felt on seeing warships flying the Indian flag enhanced their self-worth in their local community and revitalised their bonds with India. The warmth and hospitality which Indian communities settled abroad have extended to visiting Navy ships is legendary.
- One of the attractions of volunteering for naval service has always been "Join the Navy and see the world". Visits to friendly countries help to recruit the talent the Navy seeks to attract.
- The exemplary behaviour of Indian naval personnel during visits to foreign ports is usually in sharp contrast to those from other navies and this makes them very welcome as visitors. Indian personnel do not tend to alchoholic intoxication and the ensuing brawls. Their main interest is to spend their limited foreign exchange in buying mementos to take home to their families. Without exception, host countries have commented how lucky India is to have such a well behaved Navy in such clean, smart ships. All this helps to dispel the persistent Kiplingesque images of India - flying carpets, snake charmers, elephants and tigers - and project the image of a confident, modern India.

In the case of foreign cruises by training ships, long cruises to distant ports are essential for cadets and midshipmen to acquire their sea legs and acquire the skills of seamanship and navigation in fair and foul weather. When they mix with cadets and midshipmen of other navies, they form the acquaintances which mature into friendships in later years.

Captain (later Vice Admiral) VEC Barboza was the Commanding Officer of the training cruiser INS DELHI in 1969. Admiral Barboza's recollections of this cruise convey the flavour of goodwill visits:

> "In the second half of 1969, our cruiser DELHI visited ports in Australia, New Zealand and Fiji in response to long-standing invitations from those countries.

"We set out from Cochin on the 9th September and made for Fremantle, our first port of call in Australia.

"Imagine friendly and inquisitive University students (some doing post-graduate courses) quite seriously asking us if we had automobiles and motor cycles in India, or wide-eyed school children telling us that they had learnt in class that "Indians live in tree tops", or astonished farmers saying: "We thought that Indians were like our aboriginals

"All this was foreseen and, when I briefed my men, I had explained to them that none of these remarks would be made in malice. There was no cause for taking umbrage at them. Only the need to gracefully present the real India of today.

"One evening, as the last group of visitors to the ship left, a police officer walked on board and told the Officer of the Day that he had been on quayside duty and had observed the way the visitors were received and conducted on board. He had seen this happen before, during the visits of other foreign ships, but he had been so struck by the friendliness and smartness of the crew that he wished to demonstrate his appreciation tangibly. He had a free Sunday and had planned to spend it in the countryside with his family. He invited any two of my sailors to join in the outing, promising to deliver them back safely on Monday morning. The offer was willingly accepted and the two sailors returned from their outing, brimming with gratitude and exuberance.

"On another occasion, two well-dressed ladies visiting the ship requested to see the galley, where they were introduced to the Chief Petty Officer Cook. He was a particularly engaging personality, apart from being a very proficient chef. The ladies invited him to spend a day at their residence and arranged for transport to carry him to its location. At the appointed hour an elegant, chauffeur driven limousine arrived to collect him and, as he told us later, he was taken to a palatial building where he was entertained right royally. The meals he was served in their mansion were "haute cuisine", and he reciprocated in the only way he could - by demonstrating the cooking of some choice Indian dishes in their very modern and well-appointed kitchen. They showed him round the city and met him again when the ship visited Sydney, where they renewed their hospitality most generously.

"All over Australia, in shop windows, clubs, schools and other institutions, we saw posters asking for contributions to India's famine. Most of them bore the graphic image of a sad-eyed, skinny, naked Indian child with a distended abdomen and a look of utter wretchedness. We had got over the famine by then and our Government was at pains to thank well-meaning friends for their contributions and to politely inform them that the crisis had passed. But since the stark appeals and exhortations still stared everyone in the face everywhere, the 'idee fixe' continued. Indeed, one Australian newspaper, comparing the lean (but wiry) build of our quite well-fed sailors with the natural burliness of the average Australian, reported that "the Indian sailors looked under-nourished.

"In general, this widespread projection of India as a mendicant country was disturbing and we tried hard to dispel this concept".

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Maintenance, Repair and Refit Facilities

Preamble

When the Navy was partitioned in 1947, its only Dockyard was at Bombay. It provided all the maintenance, repair, docking and refit support that ships needed. The only other ports where rudimentary facilities existed were at Cochin and at Visakhapatnam, each of which had minuscule Repair Shops, having a few machine tools, carpentry facilities for minor repairs of wooden boats, a small slipway and a blacksmith's shop.

In the decades that followed, there were enormous developments:

- The Naval Dockyard Bombay was expanded and modernised.
- Asia's newest Naval Dockyard was constructed in Visakhapatnam.
- The repair workshop at Cochin grew into a Base Repair Organisation and eventually into the Naval Ship Repair Yard (NSRY).
- The small Portuguese Navy workshop in Goa grew into a Base Repair Workshop.
- And in Port Blair, a NSRY came up alongside a newly constructed naval jetty and a floating dock.

This chapter describes the developments during the decade 1965-1975.

Bombay Dockyard

Naval Dockyard Expansion Scheme

The expansion of the Bombay Naval Dockyard was undertaken in two stages. The dates of commencement and completion of works in each stage are shown in the table below.

	Works Involved	Commenced	Completed
	STAGE ONE		
(a)	Dredging of the Inner Tidal Basin	1954	1967 to 1970
(b)	Reclamation of 27 acres in front of Castle Barracks, between the old breakwater and the Ballard Pier	1954	1962 to 1970
(c)	Construction of 2300 feet of wharfage on the reclaimed land for the Barracks and Destroyer wharves.	1954	1962
(d)	Construction of a Cruiser Dry Dock on the reclaimed land.	1963	1966
(e)	Extension of the Ballard Pier by 750 feet and incorporation into the Dockyard Extension of the inner face of Ballard Pier.	1954	1966 to 1970
(f)	Provision of ship support services for the Barracks, Destroyer and Ballard Pier wharves (namely electrical power supplies, fresh water, sea water, compressed air, travelling cranes etc)		
	STAGE TWO		
(a)	Construction of Rubble Mound Breakwater and South Breakwater (Deep Water Wharf)	1967	1974
(b)	Capital Dredging of the Outer Tidal Basin enclosed by the South Breakwater and reclamation of 39 acres of land in the area enclosed by this new break-water, to provide space for a new Dry Dock and an additional 2000 feet of wharfage.	1972	1977
(c)	Enlarging the old breakwater to construct a Fitting Out Wharf	1975	1977
(d)	Provision of ship support services at South Breakwater and Fitting Out Wharf (namely electric power supplies, fresh water, sea water, fuel storage, compressed air, mobile rectifiers, steam supply, travelling cranes, capstans etc)	1976	1981 to 1984

Modernisation of the Bombay Dockyard

In 1969, the National Industrial Development Corporation (NIDC) was selected as the official consultant to prepare a Master Plan for the modernisation of the Dockyard and to prepare a project report for repair facilities required to meet the demands of a rapidly growing fleet. The intention was that all future expansion of the Dockyard would be based on their recommendations.

The NIDC study would:

- Evaluate and analyse present and future workload.
- Assess existing and required capacity.
- Prepare an Overall Master Plan indicating the location of each department, shop, road, storage area, canteen, toilet, office and shore facility for ships under maintenance.

NIDC submitted their report in 1971 and recommended the expansion of the Dockyard in three phases, catering for Immediate, Intermediate and Future requirements. This report has formed the basis for modernising/expansion of the Dockyard.

*Overview of Development - 1965-1975**

The development of the Bombay Dockyard during this decade can be seen from the overview given below:

Year	Improvements in Organisation	Additional Facilities Sanctioned/Established	Modernisation Sanctioned/Implemented
1964	a) The National Productivity Council (NPC) conducted a survey of the Naval Dockyard to suggest ways and means for improving productivity and higher degree of motivation and training for Dockyard personnel.		
	b) The NPC studied the stores inventory system of the Naval Stores Organisation (NSO), of the Spare Parts Distribution Centre (SPDC) and of Naval Headquarters.		
	c) A Planning and Production Control (PPC) Department was set up with NPC assistance.		
1965	The PPC Department started yielding good results	-Life Raft Repair Cell set up -Joiner shop completed	
1966		-Weapon Control and Repair Shop(WECORS) Phase 1 completed and Phase II sanctioned	Commenced phased replacement of old machinery, equipment and machine tools
1967		-WECORS Phase 2 commenced	- do -
			-Workshop facilities augmented
1968		60 Hz power supply extended to Duncan Dry Dock and Wet Basin	- do -
1969		- Boiler Erection Shop set up for Leander boilers	- do -
		- Steam Test House sanctioned to test indigenously manufactured Leander auxiliary machinery and other ships machinery repaired/overhauled in the Dockyard	- Sanction accorded for multi storeyed ICE Repair Shop and two parallel workshops for plate and fabrication work
			- Augmentation of Power Supply and Joiner Shop sanctioned

* "The History of the Naval Dockyard Bombay" by Rear Admiral K Sridharan provides the full details of developments during this period.

		- SPDC Repair Workshop sanctioned for repairing spare gear stocked by SPDC - Boat Repair Workshop sanctioned - Electric Test House for AC generator load test sanctioned - Base Maintenance Unit sanctioned - Service Standards Room and Calibration Facilities established in WECORS	- The National Industrial Development Corporation (NIDC) was appointed to prepare a Master Plan for the Naval Dockyard to provide a basis for augmentation of workshops and allied facilities
1970		- Test House established at Kurla for coastal minesweeper Deltic diesel engines - Computer sanctioned for PPC Department and inventory control of naval stores and SPDC spares	
1971	Naval Stores Organisation and SPDC merged as a result of the recommendations of the Administrative Staff College of India		
1972			
1973	Computer commenced working in double shifts for production and inventory control		NIDC Phase 1 Report under consideration
		- Interim Auto Control Bay established for repair of Leander control equipment - WECORS Phase II completed	
1974		- Mobile diesel alternators provided to conserve running hours of ships' diesel generators - Light ICE Shop completed	

1975	Multiple docking achieved for the first time when four ships, (two Petyas, an ocean going rocket boat and a Leander class frigate) were docked in the Cruiser Dock	Sanction accorded for Dockyard workshops to be augmented for Russian acquisitions based in Bombay - Steam Test House commissioned - Light Diesel Shop, Boat Repair Shop and WECORS Phase II commissioned	NIDC recommendations on Modernisation of Naval Dockyard approved Joiner Shop augmentation completed

Visakhapatnam Dockyard

Preamble

In 1953, the Boat Repair Shop expanded into a Base Repair Organisation (BRO) and shifted to the location at the mouth of the northwest channel.

In 1958, the progress of Bombay Dockyard's expansion scheme was behind schedule. With the arrival between 1958 and 1961 of the eight new frigates and the aircraft carrier, Bombay Dockyard would not be able to berth these ships alongside. Naval Headquarters therefore proposed that a major naval base be established at Visakhapatnam, starting with a new 1120-foot jetty and a repair workshop. In 1962, sanction was accorded for the construction of the new jetty and the workshop building. Sanction was also accorded for the acquisition of 550 acres of land from the Port Trust.

In 1963, survey ships were temporarily based in Visakhapatnam. The decision was taken to set up a Naval Base and a Dockyard. Machinery and equipment was procured for setting up repair facilities. For the first time, the annual refit of a survey ship was undertaken by the BRO Visakhapatnam making use of the dry docks of Hindustan Shipyard and the Port Trust.

By 1964, plans were in hand for establishing a modern dockyard at Visakhapatnam, capable of undertaking the normal refit and dry docking of one modern frigate and four small craft. In 1965, two survey ships JUMNA and INVESTIGATOR were permanently rebased at Visakhapatnam.

The 1965 Agreement on the Russian acquisitions included the preparation of a Project Report for the Visakhapatnam Project comprising facilities for a naval base and ship support facilities, a submarine base and submarine support facilities, torpedo preparation and repair facilities, a training school for the Russian acquisitions and a modern Naval Dockyard to repair and refit ships and submarines. The Project Report was approved in 1968.

The Visakhapatnam Dockyard evolved in five phases:

Phase	Maintenance, Repair and Refit
I	of Petyas, submarines, landing ships, patrol boats, submarine depot ship, submarine rescue vessel
II	Augmentation of Phase I
III	of guided missile frigates
IV	Marine Gas Turbine Overhaul Centre
V	of new submarines, missile craft and minesweepers

Overview of Development - 1965 to 1975

The development of the Visakhapatnam Dockyard during this decade can be seen from the overview given below:

Year	Naval Base & Training Complex	Submarine Facilities	Naval Dockyard
1966			Machine tools sanctioned for augmenting the workshop facilities of BRO Visakhapatnam
1967	- Land acquired	- Construction commenced of single and married accomodation for submarine crews	- Land acquired for the new Dockyard - Construction commenced of additional bays for BRO

			- Capital dredging of existing channel commenced to create additional berthing facilities
1968	- Construction commenced as soon as the Russian Report on the Visakhapatnam Project was accepted. In the draft contracts, it was agreed that : i) Sizeable designing effort would be undertaken in India ii) Large proportion of equipment and machinery would be of indigenous origin. iii) Russian drawings for the Dockyard, and Russian equipment and machinery for the Naval Base, Armament Repair Workshop and Training Complex, would arrive within six months of signing each contract. iv) The development of the Naval Base and the Dockyard, to provide full logistic support, would be spread out over ten years		
	- New 1120 foot wharf completed. Equipment indented for converted power supplies - Construction of Torpedo Preparation Complex commenced	- Single and married accomodation for submarine crews completed - Construction of Submarine Headquarters building commenced	- Dredging of northwest arm commenced - Construction commenced of Civilian Dockyard Workers Colony. 49 quarters completed
1969	- Construction of wharves and jetties commenced - Torpedo Preparation Complex delayed - Construction of Torpedo Repair Workshop commenced in NAD - Training equipment started arriving. Training Complex buildings delayed. Interim arrangements made for stowage of training equipment		- Phase 1 of dredging north west arm completed - Construction commenced of Energy Block(charging submarine batteries and Dockyard power supply) - Construction commenced of Weapon Repair Shop - Design of South Dry Dock commenced - Civilian Dockyard workers colony: 98 quarters completed. EDC 502 more quarters 1973
1970	- Construction of wharves and jetties in progress - Torpedo Preparation Complex completed - Torpedo Repair Complex in NAD nearing completion	- Submarine Headquarters building completed and commissioned as INS VIRBAHU	- Equipment being installed in Energy Block - Additional land being acquired for Dockyard workshops and to cater for adequate waterway for manoeuvering ships and submarines
1971	- Wharves and jetties completed - Slipway wharf completed - Torpedo Repair		- Energy Block completed - Equipment being installed in Weapon Repair Shop - Dockyard Apprentice School and Hostel completed

	Workshop in NAD completed	- Design of South Dry Dock completed - Piling work commenced of the Main Fitting Shop, the Machine Shop and the Store Block
1972		- Construction commenced of South Dry Dock (EDC 1976). When ready, it would be the largest dry dock in India, with facilities for docking ships in compartments and more than one abreast
1973		- High level Steering Commit tee constituted to monitor execution and completion of essential repair facilities by 1977-78 - Phase 1 Weapon Repair Shop completed - Dockyard Apprentice School commissioned - Training commenced of ex ITI apprentices to build up Dockyard technical manpower
1974	- Training Complex commissioned as INS SATAVAHANA - Mobile diesel alternators provided to conserve running hours of ships diesel generators - Construction commenced of Sailors Institute	- In view of steep increase in costs, the construction schedule of various facilities was reviewed and it was decided to progress the works in phases. In the immediate phase, only those items essential for undertaking six yearly refits of submarines and Petyas to be provided - Construction schedule of South Dry Dock delayed due to redesign of dock floor to cater for local soil conditions.
1975	- Construction commenced of Eastern Naval Command Officers Mess - INCS Complex commissioned	- Interim facilities for three yearly refits of Russian ships completed - Workshops to be augmented for major refits of new Russian acquisitions

BRO Cochin

By 1963, plans had crystallised to augment the BRO at Cochin and build a new naval jetty on the Willingdon Island foreshore.

In 1963, the Ministry of Shipbuilding decided to set up the Cochin Shipyard which would have an 1800 foot jetty on the Ernakulam side of the channel. It became necessary to shift the site of the proposed naval jetty on the Willingdon Island foreshore closer to the Ernakulam bridge.

In 1965, the three Hunt class destroyers GODAVARI, GOMATI and GANGA were rebased at Cochin and proposals were put up in 1966 for additional workshop facilities. However, between 1965 and 1975, the large expenditure on the Bombay and Visakhapatnam Dockyards precluded any substantial funds being available for augmenting BRO Cochin.

In 1972, the Training Squadron comprising the cruiser DELHI and the frigate KISTNA was based at Cochin.

In 1975, approval was eventually accorded for the construction of the new naval jetty.

The Developments of Maintenance Facilities at Port Blair

After China's attack in October-November 1962, the responsibility for the seaward defence of the Andaman and Nicobar Islands was assigned to the Navy. The first Resident Naval Officer arrived Port Blair in November 1962. In mid 1963, the first Naval Garrison of five officers and one hundred and fifty six sailors arrived in Port Blair. Until the Navy's Seaward Defence Boats arrived, sea patrols and inter-island transportation were supported by craft of the Central Board of Revenue. Soon, the need was felt for a maintenance and repair facility to sustain these small craft which were operating so far away from the nearest BRO at Visakhapatnam.

In 1964, INS JARAWA was commissioned as the parent establishment at Port Blair. In 1965, the detailed, phased requirements of machinery, personnel, buildings and shore supply facilities for setting up a BRO were included in the overall plan for setting up an advance naval base at Port Blair. This plan envisaged the construction of a 1200 foot wharf, half of which would be for naval use.

After the 1965 war, Landing ship MAGAR started being deployed in the A&N Islands.

In 1966, approval in principle was accorded for setting up a BRO and berthing facilities in three phases. From 1966 onwards, when the newly arrived Russian patrol boats and the Landing ships started operating in the islands, the urgency increased for providing some kind of repair facility at Port Blair. From 1967 onwards, MAGAR took over the role of logistic support for these Russian vessels.

In 1967, sanction was accorded for the construction of the new wharf. Construction commenced in 1968.

In 1969, the old stores ship, DHARINI, which had earlier been converted into a repair ship by equipping her with a workshop, machine tools and repair materials to support the coastal minesweepers, was positioned in Port Blair as an afloat maintenance facility. The arrangement did not prove satisfactory and DHARINI returned to Bombay.

By 1973, it was found that intrusions were occurring mainly in the southern group of the Nicobar Islands and were easier to deal with when ships operated from the island of Kamorta. In 1973, a forward operating base was commissioned as INS KARDIP on the island of Kamorta and patrol craft started operating from there. Soon, it became necessary to set up a SMU in Kamorta.

In 1974, sanction was accorded for establishing a BRO to provide comprehensive repair facilities to ships operating in the A&N islands. This organisation was subsequently commissioned in 1979. As an interim measure, a small Base Maintenance Unit (Electrical) was established separately. This was unable to meet all the requirements of the Landing Ships. A ship maintenance unit was therefore set up.

By 1975, the BRO at Port Blair was able to increase the operational availability of the landing ships and the patrol boats.

Developments After 1975

Bombay Dockyard

	Commenced	Completed
Fitting Out Wharf	1975	1977
Missile Boat Engine Workshop	1972	1979
Auxiliary Machinery Shop	1977	1980
South Breakwater Services	1976	1981
Fitting Out Wharf Services	1976	1984
Controls Engineering Shop	1982	1984
Hull Assembly and Steel Preparation Shop	1981	1985
Electrical Shop	1982	1985
Submarine Battery Commissioning Facility	1984	1988
Heavy Diesel Engine Workshop	1985	1990
Air Conditioning Shop	1986	1993
New Dry Dock and Additional Wharves	1995	Under construction

Visakhapatnam Dockyard

	Commenced	Completed
South Dry Dock	1972	1977
New workshop for Hull, Engineering, Electrical and Submarine auxiliaries	1972	1978
Capital dredging to create space for the new Armament Jetty and the Degaussing Basin	1979	1980
Captive power generation facilities	1976	1983
Augmentation of Weapon Repair Shop	1983	1986
Degaussing Basin	1979	1989
North Dry Dock	1980	1990
Marine Gas Turbine Repair Workshop	1984	1990
New jetty on the eastern bank	1987	1991
Ammunition jetty	1987	1993

NSRY at Cochin

By the end 1970's, the old ships of the Training Squadron had been phased out and replaced by BRAHMAPUTRA, BETWA and BEAS which had been converted to the training role.

In 1982, the six new Russian inshore minesweepers were based in Cochin. They were joined in 1985 by four new srvey craft and the new training ship TIR.

With the number of ships based in Cochin steadily increasing, it became timely to modernise the BRO's facilities. Taking advantage of the special to type equipment being supplied for the maintenance, repair and refit of the Russian inshore minesweepers, new workshops were set up on land adjacent to the old BRO, in such a way that the workshops could maintain, repair and refit larger ships as well, with docking being done in Cochin Shipyard.

The new 1200 foot jetty was commissioned in 1987 and when the new workshops were ready, the BRO Cochin was re-designated as a Naval Ship Repair Yard.

NSRY at Port Blair

- The new workshops were sanctioned in 1975, completed in 1977, and commissioned as a BRO in 1979.
- A Floating Dock was acquired and commissioned in 1987. This saved ships from having to go to Visakhapatnam for annual docking.
- In 1993, the BRO was redesignated as a Naval Ship Repair Yard.

Retrospect

There persists a widespread misperception that the reason why the operational availability of ships was unsatisfactory in the 1960's and 1970's was because the Navy acquired too many ships too quickly and funnelled the budget to acquisitions, thereby delaying the setting up of repair and refit facilities. The reality was different. Basically, two factors are unavoidable:

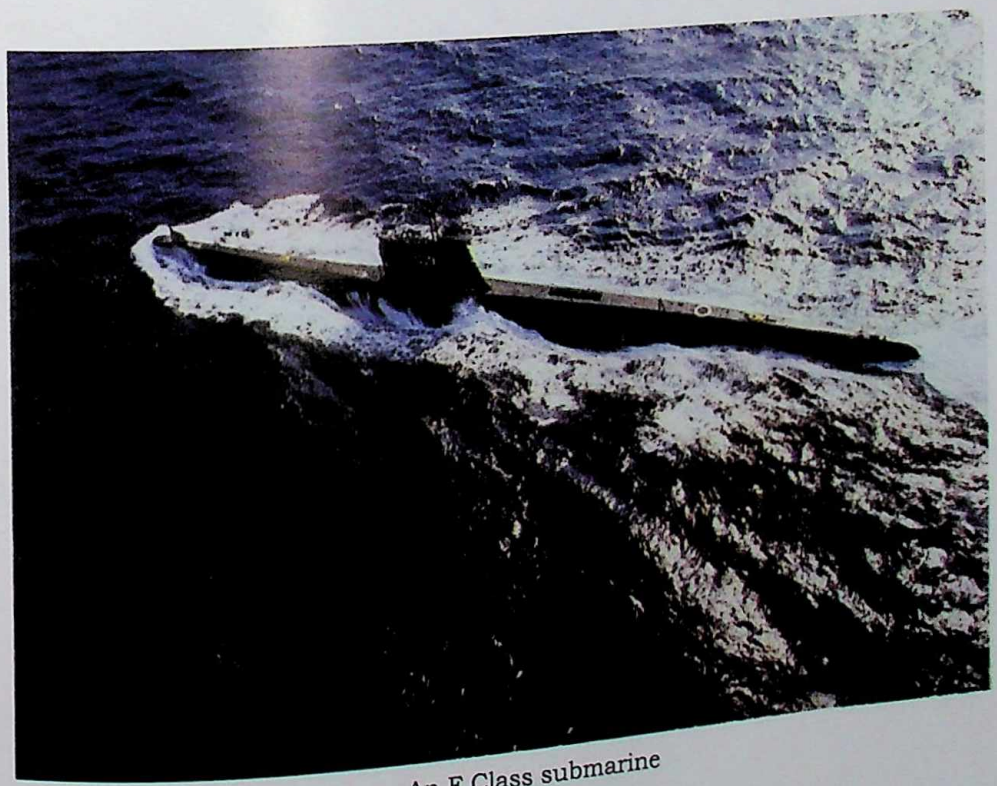
- There will always be a time lag between the induction of vessels and the setting up of their special to type maintenance, repair, refit and logistic support facilities.
- When vessels are acquired from abroad, it is economical to acquire them in sufficient numbers, rather than one at a time. Inescapably, the bunching at the time of their acquisition leads, years later, to the bunching of their major refits. Since refit facilities always lag, operational availability diminishes.

In the Indian Navy's case, unusual civil engineering difficulties retarded the timely completion of the facilities at Bombay, Visakhapatnam and Port Blair:

- In Bombay, the lack of a suitable rock breaker and prolonged litigation by a defaulting contractor delayed the Naval Dockyard Expansion Scheme.
- In Visakhapatnam, the soil conditions were unable to bear the weight of the heavy floors of critical priority workshops. Their floors sank, entailing extensive rework. Later, work on the new South Dry Dock had to be stopped to enable the dock floor to be redesigned because of poor soil conditions.
- In Port Blair, all construction machinery and material had to be ferried from the mainland. This could only gather momentum after the arrival of the first two landing ships in 1966. Moreover, since Port Blair was also being developed on the civil side, the preparation of a Master Plan, the zoning of areas, land acquisition, the funding for water supplies and electricity generation etc all had their own gestation times, because it entailed interaction between several ministries.

Taking all these factors into account, including our insistence on maximum indigenisation, the momentum achieved in the setting up maintenance, repair and refit facilities during the decade 1965-1975 was more than commendable.

A Petya class submarine chaser

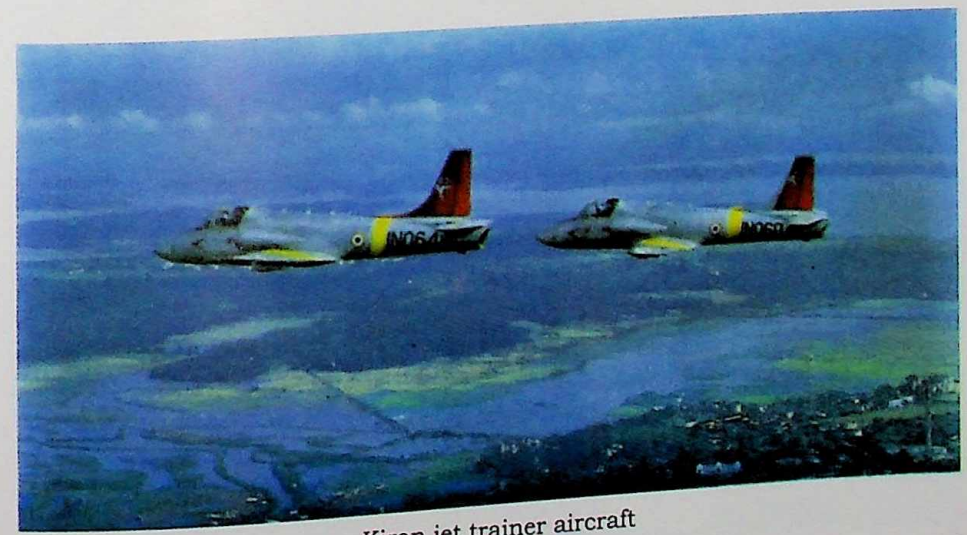


An F Class submarine

A Fleet tanker

An Extended Range missile boat

A Landing ship



Kiran jet trainer aircraft

A Leander class frigate

An Islander training aircaft

21

Personnel

Preamble

The evolution and management of the Navy's personnel policies have been turbulent since 1939. During the Second World War, the Royal Indian Navy had expanded from 114 officers and 1732 ratings in 1939 to 3014 officers and 27,433 ratings in 1945. After the demobilisation of 1945 and 1946 and the partition of the Navy in 1947, the Navy had shrunk to 672 officers and 5508 ratings.

After 1947, the demands for manpower steadily increased. Ever since then, personnel policies have been driven by several considerations, of which the more basic ones have been:

- To overcome shortages by constantly innovating the schemes of intake.
- To raise the educational standards of intake so that personnel can cope with the rising technological levels of naval equipment.
- To minimise the durations of courses, so as to release manpower for manning new acquisitions.
- To minimise the exodus of trained and experienced technical manpower to the Merchant Navy and the civil sector by offering longer careers, better emoluments, more domestic accomodation, more schools for children, canteen facilities, loans from the Indian Naval Benevolent Association (INBA), Group Insurance Schemes etc to induce personnel to remain in service for as long as possible.
- These considerations have had to be juggled within the over-riding constraint of maintaining parity with the Army and the Air Force in physical and medical recruitment standards, pay scales, length of colour service, pensionary benefits, equivalence with civilian trades etc.
- Within the above framework, to devise allowances and perquisites like hardlying money, flying bounty, submarine pay, diving money etc to attract talent into the appropriate specialisations of the Navy.
- On board ships, to maintain parity between the departments, the branches of the Navy and the specialisations/ trades within each Branch, in terms of workload, responsibilities, career prospects and particularly the less liked duties like cleanship and ship husbandry.

The reconciliation of these conflicting considerations was not easy. During the decade 1965 to 1975, unrest and dissatisfaction manifested in diverse forms. The Navy pulled through. Shortages reduced gradually. Reforms were attempted in the procedures for recruitment, training and manning. Some reforms succeeded. Some reforms like fixed commissions and pre commissioning training (PCT) took time to take root. Some reforms like user-maintainer failed to gain acceptance.

As regards training, except for the advanced "dagger" specialisation courses and other highly specialised courses, the entire training of officers and sailors was being undertaken in India by 1965.

The parent schools, by and large, had the equipment they needed to impart training for the older ships. For every new acquisition, however, a balance had to be struck between the cost of setting up new training facilities ashore or making the maximum use of equipment aboard the new ships. The main constraint was that the wear and tear caused by "learning on the job at sea" degraded the life of equipment on board operational ships.

This chapter discusses the "Personnel" developments between 1965 and 1975 under the following headings:

- Officers Intake, Training, Progression and Promotion
- Sailors Intake, Training and Transfers
- Artificers
- Changes in the Navy's Sailor Structure and Branch Responsibilities
- Fixed Commissions
- The Training Reforms of 1974
- Discipline and Morale
- Accomodation
- The Navy's Civilian Personnel
- General
  - Allotment of Personal Numbers to Officers
  - Naval Standing Establishment Committee

- Changes in Regulations Regarding Moustaches and Beards
- Changes in Uniform

- Increase in the Navy's Borne Strength Between 1965 and 1975
- Changes in Sailors' Conditions of Service after 1975
- Retrospect

Officers

Intake and Schemes to Reduce Shortages

In September 1939, when the Second World War started, the Royal Indian Navy had 114 officers. By the time, the war ended in 1945, the number of officers had risen to 3014. After the demobilisation of 1945 and 1946 and the partition of the Navy in 1947, the Navy had 672 officers.

The anticipated expansion of the Navy necessitated recourse to increased recruitment of direct entry officers, as also increasing the intake of regular entry officers. By 1964, the strength had risen to 1870 officers.

The position, in end 1965, was that the Navy was still 26% short and for the next five years a large number would be required to man the Russian acquisitions. A series of steps were taken to meet this looming shortage of officers:

- From 1965 onwards, Direct Entry recruitment was increased: 23 in 1965, 88 in 1966 and 216 in 1967.
- In 1965, the University Entry Scheme, which till then was applicable only to commissions in the Electrical Branch, was extended to the Engineering Branch.
- In 1968, a new Revised Special Entry Scheme (RSES) was introduced for cadets who had reached the Intermediate standard in education.
- In 1969, a Naval Academy was temporarily established at Cochin to train 80 RSES cadet entry officers annually.
- In 1971, shortages continued to persist in the Executive, Electrical and Engineering cadres. To overcome these shortages:
  - Intake was increased through the Revised Special Entry Scheme.
  - The Direct Entry Scheme was made more attractive by offering selected candidates permanent commissions instead of short service commissions.
  - In 1974, the educational level of the Naval Academy's intake was raised. Science graduates were taken in for the Executive Branch under the Graduate Special Entry Scheme (GSES), so as to maintain parity between the NDA graduate cadets and the Naval Academy's graduate cadets.

By 1975, though the overall shortage persisted, intake had improved. GSES for Executive Branch candidates and the Direct Entry Scheme of offering permanent commissions to Engineering and Electrical candidates had received good response. Both schemes were continued.

The residual shortages were made up through the Union Public Service Commission's Combined Defence Services (CDS) Examination, which had been introduced in 1974 to replace the separate examinations which used to be held for cadets to join the Indian Military Academy, the Naval Academy's GSES entry and the Air Force Academy.

Manning Plan for Officers

In end 1975, shortages persisted in the technical branches, albeit at a reduced level. The shortage was particularly acute in the rank of Lt Cdr because of the new acquisitions, Long courses, Staff courses and appointment in the new units like Acceptance Trial Teams, Testing and Tuning Teams, Work Up Teams, Weapon Analysis Teams etc. The shortage of seaman weapon specialist officers had become so acute that these important teams, the sanctions for which had taken years of effort to obtain, were left unfilled. An Officers Manning Plan became inescapable:

- The requirements which would be fully met were those of operational ships, courses and junior officer's sea time.
- The shortages would be shared between shore establishments, Command Headquarters and Naval Headquarters.
- Special Duty List officers would increasingly fill General List billets ashore and also some Instructor billets in the specialist schools.
- Greater responsibilities were to be entrusted to MCPOs.

Training of Officers

Changes in Training at the National Defence Academy (NDA)

Until 1965, the NDA's three year syllabus had a common content for the first two years and an Army/Navy/Air Force syllabus for the third year. The drawback of this syllabus was that cadets who did

not have knowledge of science and mathematics retarded the progress of the others, for whom the syllabus remained elementary.

In 1965, the Chiefs of Staff Committee directed the NDA to introduce a diversified syllabus - one for the Humanities - Social Science stream and one for the Science stream. The Chiefs of Staff also recommended that cadets be awarded a degree on passing out of the NDA.

A Syllabus Revision Committee was appointed in 1968 whose terms of reference were to:

- Revise the NDA syllabus to a three year degree course in Science and in Humanities.
- Ensure that the revised syllabus was both broad based and need based.
- Consider measures for the award of a degree, by affiliation to a university.
- Suggest how the concomitant factors like age limit and minimum education standard on entry would have to be changed.
- Recommend the additional instructional and administrative staff and equipment that would become necessary.

The Committee comprised eminent educationists and service representatives. The Committee also sought suggestions from a wide spectrum of experts. All agreed that better educated officer material was highly necessary and that the award of a degree would also help in the post-service rehabilitation of officers. The Chairman of the University Grants Commission felt, however, that cadets who were good in service subjects and marginal in academics should have the option to pass out without a degree, because the overall development of a cadet's personality as a potential officer would suffer if acquisition of a degree became the primary aim.

The Committee's major recommendations were:

- The age limit and educational qualification at entry should be 16 to 18 years and Higher Secondary respectively.
- The NDA should be affiliated to the Jawaharlal Nehru University (JNU) in Delhi.
- The two streams, Science and Social Sciences, roughly equal in strength, should continue.

The Committee's Report was approved and the three year Degree Course was started in July 1971. The NDA was affiliated to the JNU on 31 August 1973. The 46th NDA course was the first batch of cadets to pass out of NDA as graduates in June 1974.

The Naval Academy and the Revised Special Entry Scheme

By 1968, the shortage of General List officers had started to become a constraint on the Navy's expansion. The anticipated strength of 3500 officers by 1975 required an annual intake of at least 150 cadets. Since the NDA could not take more than 65 naval cadets every year, it became necessary to start a "Revised Special Entry Scheme" and set up a separate Naval Academy. It was decided that the sailor's Basic & Divisional (B&D) Training School would have to move from Cochin to Goa and a Naval Academy set up temporarily at Cochin to meet immediate needs until the Academy's permanent location was chosen.

In 1969, approval was accorded for the institution of the Revised Special Entry Scheme (RSES). Under this scheme, naval cadets in the age group 17 to 20 years who had passed the Intermediate examination could be recruited in the Executive Branch. This scheme was identical to the NDA's "Special Entry Scheme" except that the initial training of one year would have to be conducted at Cochin in the Naval Academy.

RSES training commenced in January 1970 and the first batch of 36 executive cadets passed out of the Naval Academy on 14 December 1970. They joined the NDA's 39th batch of regular cadets for sea training on board the training ships TIR and CAUVERY.

Graduate Special Entry Scheme (GSES)

In 1973, when the NDA got affiliated to the JNU in Delhi, all NDA cadets, on successfully passing their final examinations, received a bachelors degree of the JNU. As a result, the RSES candidate of the Naval Academy was out of phase with his NDA counterpart. It was decided that instead of taking in pre-graduate candidates, it would be more cost effective to recruit Science graduates only and thereby reduce the duration of their training at the Naval Academy.

In July 1974, the first batch of GSES cadets entered the Naval Academy for an initial training period of only 6 months. Whereas the original sanction was for a total of 80 cadets to be trained every year, the Naval Academy now trained 80 cadets every 6 months.

Afloat Training and Training Ships

The Scope and Curriculum of Afloat Training

Afloat training is structured to train each subordinate officer in seamanship, navigation and man management, so that he will be able to:

- Perform the duties of an Officer of the Watch involving the safety and navigation of his ship.
- Supervise the control of his ship's radars, sonars and weapons.
- Take charge of sailors carrying out deck duties involving anchor work, boat work, rigging and ships husbandry.
- Effectively organise, command and look after the sailors in their respective divisions/part of ship.

The training programme for achieving these objectives is time intensive and imparted largely 'on the job' and by performing 'live' tasks.

The curriculum broadly consists of :

- Harbour training, practical/classroom instructions, harbour watches and organised visits to naval/service/harbour/shore installations.
- Sea training comprising exercises, sea watches, attachments to each department of the ship, organised classroom instructions and practical training in navigation and seamanship.
- Man-management in case study/role play modes.

This training curriculum requires individual attention to be given to each trainee for him to be assessed at short intervals throughout the training period. Ships have therefore to be exclusively earmarked and suitably staffed, solely for training purposes.

Training Ships

Since the 1950's, the sea training of officer cadets had been undertaken in the Second World War frigates KISTNA, CAUVERY and TIR. The primary requirement was the endurance to undertake long cruises at sea.

By the end 1960's, these three ships had begun to age. The Navy examined whether the three old Second World War destroyers RAJPUT, RANA and RANJIT could be converted to the training role. It was found that their remaining life did not justify the cost of conversion.

It was therefore decided to convert the ageing cruiser DELHI to the training role. DELHI underwent a major refit from May 1971 to August 1972. DELHI, KISTNA, CAUVERY and TIR comprised the Training Squadron till the end 1970s.

In the mid 1970's, it was decided to convert the three diesel engined frigates BRAHMAPUTRA, BEAS and BETWA to the training role to take over from the older training ships.

Duration of Initial Training

Cadet Entry Officers

The duration of initial training of Cadet Entry Officers was reduced in 1975:

DURATIONS

	Until 1975	After 1975
Cadets Training Ship	6 months	6 months
Midshipmen Training	12 months	6 months
Sub Lts Courses	12 months	40 weeks
Sea attachment for watchkeeping certificate	3 to 6 months	6 months

Direct Entry Officers

The duration of training for Direct Entry Executive Officers was different from that of Cadet Entry Executive officers. It was reviewed constantly, depending on the feedback received from ships of the Fleet. The training duration was increased in 1968:

DURATIONS

Until 1968		After 1968	
Naval Orientation	9 weeks	Naval Orientation	5 weeks
Sea Training	8 weeks	Sea Training (INS DELHI)	15 weeks
Sub Lt's Courses	34 weeks	Sub Lt's Courses	30 weeks
		Leave	4 weeks
		Sea Training (INS CAUVERY)	15 weeks
Total	51 weeks	Total	69 weeks

On completion, DE officers were attached to Fleet ships for obtaining their watchkeeping certificate.

Changes in Training at the Naval Academy in 1974

The Naval Academy continued with the training of Revised Special Entry Scheme Cadets until January 1974.

In the beginning of 1974, it was decided to close down the B & D School in Cochin. All the officer courses conducted by this School were taken over by the Naval Academy. As a result, the Naval Academy, apart from running the basic courses for cadets, commenced conducting the following courses:

- *Initial Training* for Direct Entry officers of the Engineering and Electrical branches.
- *Naval Science Orientation Course* for officers of the Supply Branch and officers from for[illegible] navies.
- *Special Duties (SD) List Post Promotion Course* for sailors promoted to officers in the rank of Ag Sub Lts in the SD Cadre.

- *Divisional & Management Course.* The B&D course done by all Executive Sub Lts during their technical courses was re-designated as the D & M Course when it was transferred from the B & D School to the Naval Academy.
- *Lieutenants War Course.* The B & D School used to conduct a War Course of four weeks duration for Ag Sub Lts of the Executive branch. In 1974, it was decided that this course was better suited to a Lieutenant. The course was re-designated as a Lieutenants War Course and conducted bi-annually at the Naval Academy.
- *Upper Yardmen Course.* Sailors who showed early promise at sea of being officer material were designated "Upper Yardmen" and given special assignments to test their potential. In end 1974, Upper Yardmen of all branches started being sent to the Naval Academy for their initial training.
- *Commanding Officers and Junior Commanders Course.* In end 1974, two new courses were instituted: the Junior Commanders course and the Commanding Officers Course. These courses were conducted at the Naval Academy in 1974, 1975 and 1976.

By 1976, it was found that it was not practical to carry out the initial training of cadets and of Ag Sub Lts of various branches separately. It was therefore decided that all initial training for cadets of the Executive Branch and Ag Sub Lts of all technical branches should be of the same duration, should have a common syllabus and should run concurrently. This was implemented from January 1976 onwards.

Command Examination

Commencing 1974, the Command Examination was introduced for Executive officers. All officers who aspired to command ships had to qualify in this examination. Its aim was to promote self study and to acquire professional competence to fill Command appointments at sea. Officers who failed in this examination would not be appointed in command.

Officers of the Submarine Arm who had qualified in the Submarine Commanding Officers Course were exempted from appearing in that part of the Command Examination which had questions on submarines.

Logistics Management Examination

Commencing 1975, this examination was instituted for Supply Branch Officers. It was analogous to the Command Examination for Executive officers. Its aim was to promote self study of professional subjects and ensure professional competence to fill higher appointments.

Technical Management Examination

Commencing 1975, this examination was instituted for officers of the Engineering and Electrical branches to promote self study of professional and technical management practices and ensure professional competence to fill important assignments both afloat and ashore.

The Select List System of Promotion

In 1969, NHQ promulgated the working principles on the selection of officers for promotion to the ranks of Commander, Captain and Rear Admiral.

Selection Procedure

The Promotion Committee would consider the officers branchwise, batch by batch, for promotion to higher rank, once a year, depending on the likelihood of fresh vacancies during the ensuing year.

The Select List comprised officers who were considered fit for acting/substantive promotion to the next higher rank.

Grading

The Selection Committee would grade each officer as follows:

A - An officer who was "head and shoulders above" his contemporaries.
B - An officer fit for promotion in his turn.
D - Deferred for consideration without loss of seniority
R - Not yet fit for promotion
U - Unfit for promotion - having been considered three times and not found fit for promotion.

An officer graded A would move to the top of his batch in the Select List. In exceptional cases, an officer graded A could be considered for promotion with the batch immediately above his batch.

Sailors

Intake and Schemes to Reduce Shortages

The Navy's procedure for the intake and initial training of ratings had been adopted from the British Navy. Its basic premise was that ratings should be inducted when young and given long periods of initial training to indoctrinate naval discipline and to familiarise them with life at sea. Accordingly, ratings

were inducted as 'boys' and trained in the Boys Training Establishment for two years before going to sea. Artificers were inducted as artificer apprentices and trained for four years before going to sea. The only way of meeting surges in demand was to resort to direct entry intake, curtail the long duration of initial training and accept the attendant consequence of lesser discipline.

In September 1939, when the Second World War started, the Royal Indian Navy had 1732 ratings. When the war ended in 1945, the number of ratings had risen to 27,433. After the demobilisation of 1945 and 1946, and partition of the Navy in 1947, the Navy had 5508 ratings.

The division of personnel between the two Navies necessitated a heavy recruitment drive in 1948, both of direct entry artificers and direct entry ratings as well as regular entry artificer apprentices and boys. This helped to ease the shortage. A decade later in 1958, contrary to expectations, 70% of the 1948 sailor entrants declined to sign on for further service after their initial contract. This shortage was aggravated by the need to find additional personnel for the new frigates and VIKRANT being acquired from Britain.

By 1962, another recruitment drive reduced the shortages. However, the anticipated advantage was offset by new commitments ashore and in the inter services organisations like NCC together with the demands for the Naval Garrison in the Andaman and Nicobar Islands.

In 1965, the shortage in the sailor cadre stood at 17% and a large requirement was looming to man the Russian acquisitions. It was anticipated that the same situation, as in 1948 and 1958, might arise in 1968 also.

The solutions clearly lay in increasing the Navy's capacity to train new entrants, increase the period of initial engagement and offer greater incentives to induce sailors to stay on in service.

Increasing the Period of Engagement

In 1965, a sailor's initial period of engagement was ten years. On completion, he could re-engage for five years and for two years thereafter i.e. up to a total of seventeen years. The authority for re-engagement beyond seventeen years vested in NHQ. Normally all sailors were re-engaged upto twenty years of service if recommended by their Commanding Officer. Re-engagement beyond twenty years was on a selective basis.

In 1966, to cope with the increased need for sailors, subject to the Commanding Officer's recommendation, all sailors could be re-engaged up to a total period of twenty five years or age of superannuation, whichever was earlier. The aim was to promote a greater sense of security of employment amongst sailors and ensure a longer career for those who volunteered for further service.

In 1973, re-engagement was permitted for five years at a time up to the compulsory age of retirement of fifty five years for all.

In 1976, the initial engagement was increased from ten to fifteen years. And, instead of promotion awaiting vacancies, time scale advancement to Leading rate was approved for sailors otherwise qualified.

Training of Sailors

Boys Training Establishment (BTE)

Before the partition of the Navy in 1947, the only BTE of the Royal Indian Navy was located in Karachi. After partition, a temporary BTE was set up in Visakhapatnam. Training was carried out in a New Entry Camp and a Main Camp, both of which were located in temporary barracks in INS CIRCARS.

In 1954, the sanction for the BTE envisaged the training in seamanship of 1645 boy sailors for the seaman, stoker and electrical trades.

In 1962, the BTE started getting congested. Sanction was obtained to expand the BTE and acquire land from the Visakhapatnam Port Trust and from private owners.

In 1965, when the decision was taken to base the Russian acquisitions in Visakhapatnam and build a major naval base with a new Dockyard, it was decided to shift the BTE to Paradip port in Orissa. This could not be pursued because the vacant multi-storey buildings which were to house the BTE, got occupied by the personnel of Paradip port. The Navy then started investigating alternative sites, the primary requirement being proximity to the sea so that boy sailors could be taught boatwork, sailing and basic seamanship.

In 1969, after visiting Chandbali port and Ganjam port, the Navy chose a 1600 acre site on the bank of the Chilka lake in Orissa, where 1200 boys could be trained at a time.

Chilka lake was a sanctuary for migratory birds. The environmentslists sought, and the Navy willingly gave and has meticulously observed, the commitment to safeguard the environment of this bird sanctuary. The Prime Minister laid the foundation stone of the BTE. Construction commenced in 1973 and it was commissioned as INS CHILKA in 1980.

Seaman Training Establishment (STE)

In the 1950's, direct entry sailors started being trained at the Basic and Divisional School at Cochin. As the Navy expanded, the numbers increased and the search started for alternative locations. Here too, the primary requirement was proximity to the sea where young sailors could be taught boatwork, sailing and basic seamanship.

In 1968, the Navy's proposal was accepted to site the new STE at Goa. In 1969, approval was accorded for the construction of the STE on a 230 acre site on a hill at Reis Magos, five miles north of Panaji, close to the northern bank of the River Mandovi. The STE was envisaged to train 500 direct entry sailors at a time.

On 9 Oct 69, the Prime Minister laid the foundation stone of the STE. The STE was formally commissioned as INS MANDOVI in 1976.

Branch Training Schools

By 1965, branch/specialist schools had been established for imparting professional training in their respective specialisations. These schools conducted the courses in which sailors had to qualify before they could be promoted to higher rank.

Whenever new acquisitions were inducted, every effort was made to install the analogous training equipment in the respective schools, subject to cost considerations.

Branch	Specialisation	Parent School	Location
Seaman	Gunnery	Gunnery School	Cochin
	Torpedo & Anti Submarine	TAS School	Cochin
	Communications	Signal School	Cochin
	& Electronic Warfare		
	Navigation & Direction	ND School	Cochin
Engineering	Artificers &	INS SHIVAJI	Lonavla
	Engineering Mechanics		
Electrical	Artificers	INS SHIVAJI (Initial training)	Lonavla
		INS VALSURA (Electrical training)	Jamnagar
	Electrical Mechanics	INS VALSURA	Jamnagar
		INS HAMLA	Marve(Bombay)
Supply & Secretariat	Writers, Stores Assistants, Cooks & Stewards	INS SHIVAJI (Initial training)	Lonavla
Shipwright	Artificers	Shipwright School	INS ANGRE, Bombay
		Regulating School	INS KUNJALI, Bombay
	Provost	School of Music	INS KUNJALI, Bombay
	Musicians	Observer School	Cochin
	Observers	INS SHIVAJI (Initial training)	Lonavla
Air Arm	Artificers	Naval Air Technical School	Cochin
		Naval Air Technical School	Cochin
	Airmen Technical	School for Naval Airmen	Cochin
	Airmen Non Technical		

Petty Officers Leaderships School

In 1959, to ease the congestion in Cochin, the PO Leadership School was shifted to Calicut. In 1965, when HANSA relocated from Coimbatore to Dabolim in Goa, the Leadership School shifted from Calicut to Coimbatore, into the premises vacated by HANSA. The School was named INS AGRANI.

Policy for Transferring Sailors into and out of Ships

The driving wheel of the Navy's management of its sailor cadres was its "drafting" policy. The Annual Training Programme for higher rank courses and the annual programme of Fleet Exercises during which sailors got "sea time" were offshoots of this policy. On the one hand, the promotion regulations required sailors to qualify in higher rate professional courses and to be given adequate sea time. On the other hand, this policy of continuously transferring sailors into and out of ships prevented the consolidation of expertise. The difficult task of providing equal opportunity and of balancing these conflicting requirements was delegated to the Drafting Office.

The Drafting Office took the following factors into consideration when effecting drafts:

- Sufficient opportunity to all sailors to gain the requisite experience for advancement to higher rates.
- Adequate sea time, ensuring alternate tenures at sea and ashore, except in those categories where, due to shortages, alternate tenures at sea and ashore could not be provided.
- Opportunity for all sailors, otherwise qualified, to undergo higher rate professional courses in time.

For optimal deployment of available manpower, the Drafting Office promulgated a "Manning Plan" every year, indicating the allocation of sailors to each ship and establishment. It took into account the shortage in each category of sailors and judiciously distributed whatever was available.

Drafting was divided into two main categories:

- ***Planned Drafting:*** This included:
  - Block drafts to rotate between ship and shore billets and to implement the Manning Plan figures.
  - Drafts for higher rate professional courses.
  - Rotation drafts of sailors, ex-basic and specialist courses, for sea time.
  - Drafts to newly commissioned ships and from ships paid off.
- ***Unplanned Drafting:*** This included:
  - Compassionate drafts.
  - Incidental drafts to make up shortages due to unforeseen incidents such as death, illness, premature release, etc.
  - Sports drafts
  - Emergency drafts in case of hostilities, strikes, national calamities and civil disturbances.

In all cases of planned drafting, the Drafting Office gave approximately three months notice to enable the affected sailors to attend to their domestic affairs. Pleas for deferment or cancellation of drafts on account of sickness, financial hardship or domestic reasons were usually not considered. Where, however, the Commanding Officer was personally of the opinion that the circumstances warranted a deferment or cancellation of a draft, the Drafting Office examined the case on merits. To avoid a chain reaction, the Drafting office rarely acceded to last minute requests for deferment or cancellation of drafts:

- ***Inter Ship Drafts:*** When time did not permit a prior reference to be made to the Drafting Office, the senior officer of a squadron or Fleet could order inter-ship drafts within his squadron and Fleet in cases of:
  - Admission into hospital of a sailor holding a key rate in a ship about to sail independently.
  - Temporary transfer of an experienced sailor to assist in attending to immediate technical defects in a ship.
  - Grant of leave on urgent compassionate grounds to a sailor holding a key billet.

  The Drafting Office was, however, to be kept informed of the probable duration.
- ***Drafts for Instructional Duties:*** The Drafting Office was required to give sufficient notice to the training establishments before sailors employed on instructional duties were drafted.
- ***Drafts for Courses:*** Commanding officers were enjoined to ensure that sailors drafted to attend courses of instruction reached the training establishment in time, as directed.
- ***Compassionate Drafts:*** Drafts were sometimes considered on compassionate grounds. Since such drafts upset the manning structure, it was essential to keep them to a minimum. Commanding Officers, after satisfying themselves that genuine hardship existed, were exhorted to explore other possibilities such as grant of

annual leave, before recommending compassionate drafts.

- ***Grant of Leave Prior to Drafting:*** If by the grant of leave, the reporting date in the new ship or establishment was affected, prior concurrence of the commanding officer concerned was to be obtained.

Artificers

The shortages were most worrisome in the case of artificers. Since much better emoluments and perquisites were offered by private industry and the Merchant Navy, most senior technical artificers left the Navy after having served the minimum time. With the new technology entering service with the Russian acquisitions, the shortage of artificers became a cause of serious concern.

Several proposals were considered to overcome the shortage. One was to recruit holders of diplomas from polytechnics as direct entry artificers. Whilst this would help to meet the immediate need by avoiding the long four year initial period of training that artificer apprentices normally underwent, it had the disadvantage of insufficient naval indoctrination. Another proposal was to create a new rate of Master Chief Petty Officer as an incentive to sign on for longer periods after their initial engagement as also to improve the career prospects of highly trained senior sailors.

In 1966, recruitment commenced of diploma holders as artificers to be trained for 1 1/2 years instead of the 4 years training given to regular entry artificer apprentices.

In 1967, Direct Entry Artificer intake was increased to 120. By 1971, the deficiency in the artificer cadre had reduced from 30% to 10%. From 1972 onwards, the artificer shortage persisted at 10%.

In 1970, the shortage of artificers in the submarine cadre led to the induction of Direct Entry Artificers Acting IVth class of three or four year diplomas in mechanical, electrical and aeronautical engineering. Simultaneously, this entry was permitted for engineering and electrical artificers.

Introduction of the MCPO Cadre

In 1968, as an incentive to re-engagement for longer service, the MCPO cadre was created as the equivalent to JCO's of the Army and Warrant/Master Warrant officers of the Air Force.

The MCPO Cadre was sanctioned as a percentage of the sanctioned cadre of CPO's. These percentages were:

	Technical	Non Technical
MCPO Class I	15%	12 1/2 %
MCPO Class II	25%	25%

Changes in the Navy's Sailor Structure

Within a few years of the arrival from Britain of the MYSORE in 1957, the eight new frigates between 1958 and 1961 and the VIKRANT in 1961, it became clear that the increase in sophistication of ships and equipment called for a comprehensive relook at the existing ranks, rates and trades of the Navy's sailors. A high-powered committee was appointed to review the sailors structure.

By the time this committee convened in 1966, the first of the Russian acquisitions, the Landing Ships, had arrived. It was abundantly clear that there was going to be a severe shortage of bunks. At this very same time, sailors were being selected to undergo training in Russia to man the submarines, the Petyas and the Submarine Depot Ship and problems had arisen on how to accomodate the Navy's numerous trades in the fewer bunks.

The CROSS Committee

The Committee for the Reorganisation of the Sailors Structure (called the CROSS Committee) started its deliberations in 1966. It was headed by Commodore SS Sodhi. He recalls:

> "The basic point that we made in our Report was that user and maintainer should be interlinked. It was no use saying that a maintainer was responsible for total maintenance from A to Z and the user was only to be an operator. The two had to be linked. That basically meant that the educational and the technical input into the user had to be enhanced and the maintainer had to have faith in the user's capability to handle the sophistication of the equipment. That was basically the recommendation which we made. The educational level of the seamen had to come up. Their training had to be modified to take on at least the first line maintenance of the equipment that they were operating.
>
> "We also felt that the Topass trade could be abolished. Our experience showed that our own sailors, when they were operating with other navies, had no inhibitions about cleaning their toilets, and generally being responsible for the hygiene of the surroundings"

Commander VF Rebello was the Deputy Director of Personnel (Manpower Planning) in Naval Headquarters from 1967 to 1969 when the recommendations of the CROSS Committee were examined. He recalls:

> "The Cross Committee went into the whole manning problem of the Navy with great thoroughness. They also examined the manning structure in the American and other Western navies and came up with very good suggestions on how to reorganise the manpower of our Navy. It was operator-maintainer and vertical specialisation. Unfortunately the training requirements for such a scheme were so very expensive and extensive that it was beyond the scope of the Navy of that time to implement. We would require a large number of schools and a very big training schedule. It was estimated that at any one time about 1/3rd of the sailors would be undergoing training and conversion and this the Government simply could not afford to have. Therefore the recommendations of the Cross Committee were kept in abeyance.
>
> "The abolition of Topasses was the only recommendation of the Cross Committee which was taken up"

Changes in Nomenclature of Junior Sailors

With effect from December 1967, the terminology in use to signify junior rates of sailors of the various branches were standardised in "second class" and "first class". For example:

Earlier Nomenclature	***Standardised Nomenclature***
Ordinary Seaman (OD)	Seaman Second Class (Sea II)
Able Seaman (AB)	Seaman First Class (Sea I)
Stoker	Engineering Mechanic Second/First Class ME II/ ME I

Changes in Branch Responsibilities

When the first three Petyas arrived in India, the Navy was able to see, at first hand, the seriousness of the problem which the CROSS Committee had tried to solve:

- The Petyas were very densely packed with electronic equipment.
- The division of responsibilities inherited from the British Navy was well established in the Navy's trade structure. The seaman branch "user" used the equipment and the elctrical branch "maintainer" maintained the equipment. Since a Petya had such a lot of electronic equipment, it needed more electronic maintainers. Since a Petya had so many more weapons, it also needed more users.
- Since a Petya had fewer bunks than were needed even for a normal Indian ships company, it could not accomodate the increased numbers of users and electrical maintainers.
- How then was a Petya to be manned?

Various options were considered like reduce the number of cooks and stewards, abolish topasses, adopt two watch steaming at sea instead of the usual three watches, convert all maintainers into users, teach users the basic maintenance so as to reduce the number of maintainers on board, transfer the less complicated power electric duties of the junior electrical sailors to the Engineering Department and so on. After detailed consideration, the following directives were issued in 1969:

1. ***Re-allocation of Branch Responsibilities and Duties.***

   "Taking a broad perspective, it is important that the various branches of the Navy develop with equitable distribution of workload and responsibility. With increasing sophistication of weapon systems, sensors and data processing, it is imperative that the electrical branch concentrate their energies to master these new fields. Other branches must be made capable of dealing with the diagnosis of faults and the maintenance of less complicated items of systems and equipment. This entails the engineering branch shouldering more responsibilities with regard to the generation, distribution of electric power and allied equipment, the seaman branch being entrusted with the non-artificer care and maintenance of the weapons, radar, and AIO equipment and the communication branch looking after the W/T, R/T and V/S equipment. In addition, the seaman and communication branches must substitute the lower levels of power and radio electrical sailors in assisting the artificers. The Electrical Officer will, however, continue to be the expert technical adviser to the Commanding Officer on electrical and electronic matters. In the initial stages, there may be no saving in manpower, but as experience is gained

and personnel become more confident, the complement of modern ships will show a reducing trend, which will be an added advantage.

"Consequent on this review, detailed instructions will issue from time to time on the measures necessary for the revised training schemes and programme of assumption of new responsibilities. As a first step, the new measures will be applicable only in the "Petya cadre" and, based on the experience gained, will be extended in steps to cover the rest of the service. A start has been made by cross-training a number of engine room personnel of two Petya class ships in looking after certain electrical equipment of these ships.

"It cannot be over-emphasised that the success of this measure will depend largely on the spirit in which this change is undertaken, and the ready cooperation and willingness on the part of all concerned to work to the ultimate goal which will result in added efficiency and well-being in the service.

"Commanding Officers are to ensure that every opportunity is taken by them and their heads of departments to explain the implications of these revised responsibilities to their ship's companies."

2. ***Branch Responsibilites - Transfer of Power Electrical Duties From Electrical to Engine Room Branch Sailors in "PETYA" Class of Ships.***

"It has been decided to cross-train all the Engineering Mechanic sailors of the Petya class of ships in power electrical duties upto the rate of LME. For the present, sailors of the rate of POEL(P), will be provided to the Engineering Branch in the above class of ships from the existing cadre of electrical sailors. It is not intended to cross-train POMEs in electrical duties. POMEs for power electrical duties will be found, in due course, from amongst the LMEs who have already been converted to power electrical duties.

Electrical Equipment to be Maintained by the Engineering Branch in the Petya Class of Ships.

"Power electrics will be transferred to the Engineering branch, in two phases:

- *Phase I:* Lighting, ventilation motors and starters and sound powered telephones.
- *Phase II:* Pump motors and starters, except those directly associated with weapons, compressor motors and starters, Cold Room and Air-conditioning machinery motors, Domestic Equipment, Capstans and Controllers, Motor Boat Equipment and Batteries, excepting those used with weapons, including charging sets and panels."

"The transfer of responsibilities for power electrics from the Electrical to the Engine Room branch will be implemented in stages.

Pre Commissioning Training (PCT) (Engineering) - Eight Weeks

"On joining the Petya Training School, all Engine Room sailors of LME and ME rates are to undergo a PCT for engineering duties. The duration will be eight weeks.

Harbour Training (Engineering) - Four Weeks

"After the PCT (Engineering) sailors will be given four weeks of harbour training to enable them to operate and maintain engineering equipment.

Basic Training in Electrical Engineering - Sixteen Weeks

"On completion of the above training, sailors will be trained in the basic elements of electricity for a period of sixteen weeks.

Familiarisation and Pre-Commissioning Training (Electrical) - Twenty Weeks

"On completion of the basic training in electrical engineering, these sailors will undergo familiarisation training and PCT in electrical duties for a period of twenty weeks. During this period, they are to be instructed by the electrical department of the Petya Training School, to enable them to carry out the maintenance and operation of electrical machinery covered by Phase I and Phase II of the scheme, on board a Petya class of ship.

"At the end of this period, they are to be examined as to their competence to undertake the responsibilities to be entrusted to them.

Task I and II Training

"The first two weeks of each phase will be devoted to Task I training and the next two weeks to Task 2 training pertaining to the equipment relating to the particular phase.

"At the end of this period, the Engineer Officer is to satisfy himself that the sailors are capable of undertaking the maintenance functions relating to the particular phase.

"Thereafter, the equipment is to be taken over by the Engine Room Branch.

Phase I

"During this phase, the equipment referred to in phase I will be taken over.

"During Phase I, sailors are to be given dog watch instructions in equipment for Phase II and may be utilised to assist the Electrical Branch sailors on maintenance of Phase II equipment, as mutually convenient to the two departments.

Phase II

"During this period, sailors will continue to be responsible for the Phase I equipment. On completion of Task I and Task II training, sailors are to take over the responsibilities in respect of the remaining equipment."

The Electrical Branch did not take kindly to these directives. Views still differ on whether all the junior Engine Room sailors who underwent training in compliance with the above directives were deliberately failed in the examination conducted after twenty weeks familiarisation training or whether the non matriculate Engine Room sailors lacked the ability to comprehend electrics. To avoid disrupting the acquisition programme, it was decided to maintain status quo.

The apprehensions about the User-Maintainer Concept centred on three issues:

- Erosion of the responsibilities of the Electrical Branch.
- Demarcation of responsibilities between Executive and Electrical Officers/Weapon Maintenance Officers and between seaman "user" sailors and electrical "maintainer" sailors.
- Possible diminution in the career prospects of electrical officers.

Fixed Commissions in Ships

In the British Navy, a ship commissioned for two years and could be deployed to one of Britain's Fleets anywhere in the world. On completion of two years, the ship returned to her home port in Britain, decommissioned, underwent a thorough refit and the recommissioned for another fixed commission. The two greatest advantages of the fixed commission were that officers and men remained together for the full commission, got to know each others strengths and weaknesses and got to know the capabilities and limitations of their ship's equipment.

The Indian Navy neither had worldwide commitments, nor the number of ships, nor sufficient manpower to adopt Fixed Commissions. Ship remained permanently "in commission" until they were "decommissioned" and for the reasons already discussed, officers and men changed round every twelve to eighteen months.

Successive Fleet Commanders repeatedly recommended the adoption of a Fixed Commission, at least for operational ships. As the following excerpt shows, there were difficulties:

"FOCIF furnished statistics to show that a large number of transfers of officers and sailors from ships continued throughout the year. Transfer of key personnel after the work-up of the ships deprived them of the benefit of the work-up, which had virtually to start again with the arrival of new personnel.

"While the difficulties of the Fleet were appreciated, it was generally realised that so long as the present shortages continued, it was not possible to plan fixed commissions in ships. The appointment of a new ship's company after every refit presupposed the availability of a sufficient number of officers and sailors in the service, which, unfortunately, was not the case.

"Common agreement, however, was found to a suggestion that in spite of the present difficulties, a fixed commission for one of the ships of the Fleet be tried as an experiment. No change in the ship's company was thereafter to be made at least for a year".

General

Allotment of Personal Numbers to Officers

In 1972, the officers in service on 31 December 1971 and those joining thereafter were allotted five digit personal numbers, suffixed by a computer letter.

Blocks of numbers were allotted to each branch in such a manner that the left hand digit would denote the officer's Branch.

General List	Branch	Blocks Allotted
	Executive	00001 to 39,999
	Engineering	40,000 to 49,999
	Electrical	50,000 to 59,999
	Supply & Secretariat	60,000 to 69,999
	Education	70,000 to 74,999
	Medical	75,000 to 78,999
	Dental officers	79,000 to 79,999

SD List	Specialists	
	Seaman	80,000 to 84,999
	Engineering	85,000 to 86,299
	Shipwright	86,300 to 86,799
	Electrical	86,800 to 88,499
	Supply & Secretariat	88,500 to 89,699
	Medical	89,700 to 89,999

Naval Standing Establishment Committee (NSEC)

In 1969, NSEC was set up in the Ministry of Defence, on the same lines as the Army's ASEC and the Air Force's AFSEC.

The three member Committee was chaired by a Deputy Secretary of the Ministry of Defence. The members were a naval Captain and an Assistant Financial Adviser from the Ministry of Finance (Defence).

The Committee's Terms of Reference were to :

- Analyse the extent to which ships' complements and staff of shore and other establishments of the Navy could be cut down and the tail to teeth ratio reduced.
- Examine and approve the temporary and permanent complements of naval ships and establishments, including Naval Headquarters.
- Evolve suitable scales and yardsticks for assessing the complements of various categories of units on a standardised basis.
- Explore practical avenues of economy and make recommendations for organisational or other changes considered desirable.
- Examine the requirement of naval establishments in regard to motor transport and MT staff and evolve yardsticks for sanctioning it.

Changes in Regulations Regarding Moustaches and Beards

The Navy's Regulations on the subject of moustaches and beards had adopted, verbatim, the regulations of the British Navy. These required that a naval officer or sailor :

- had either to have both beard and moustache or neither.
- had to obtain the approval of his Commanding Officer to "discontinue shaving" or to "continue shaving".

As in the case of smartness of uniform, the spirit of these regulations was to ensure that control could be exercised on the tidiness of facial appearance so that personnel did not bring discredit to the Navy by looking untidy.

In 1970 and 1971, the Navy began to be exposed to several influences:

- One of them was the American Navy. As a result of lack of enthusiasm for the Vietnam War, the American Navy allowed relaxations in dress and personal appearance which, they considered, were acting as a disincentive to service in Vietnam.
- The fashions prevalent in America at the time were long sideburns, moustaches with or without beards, flared trousers etc. These fashions were being imitated by Indian youth in the ports where naval ships were based. The Navy's youngsters found themselves being considered as oddities by their civilian peer group. Pressures began to grow to relax the Navy's regulations.
- In mid 1970, the tendency of sailors' to resort to agitation manifested in the Topass incident. This triggered widespread demands for change, the response to which was a series of welfare measures to help cool things down.
- Last, but not the least, was a genuine Indian problem. In India, since time immemorial, the moustache has been a sign of manhood and valour. Many sailors, well before going on leave, sought permission to 'discontinue shaving', so that by the time they reached their homes, they could sport a moustache. On return from leave, they would seek permission to 'continue shaving'. The irksomeness of this procedure found expression after the Topass incident.

Admiral Nanda was the CNS from 1970 to 1973. He recalls:

"One day I was having a cup of tea with the sailors. A Rajasthani sailor came up to me and said, "Sir, it is a great hardship that beards and a moustache must go together. When I go home, if I don't have moustaches, people ask me "Is your father dead ?" Because the tradition in Rajasthan is that if you shave off your moustaches, it is a sign that your father has died and you are in mourning. It is also a tradition that to show your manliness, you have to have a moustache. Therefore to go home, I have to request to grow a beard and only then can I grow moustaches also. Then we cannot go out from the ship on liberty until the beard has grown. The day my leave starts, the first thing I do is to go to a barber and shave off my beard so that I can go home with a moustache and show that I am a man. The day I have to come back to duty, I have to go to a barber

again and tell him to shave my moustache now, because I have got to go to duty and without a beard I cannot have a moustache. So, sir, this is a great hardship. I come to the ship, without a beard, without a moustache and then I have to start growing beard and moustache again two months before I start my next leave." Things like this started me thinking as to what is the validity of the naval tradition we adopted from the British Navy. Should this be pushed down the throats of people who don't like it, who are not with it?"

In early 1971 the regulations were amended to read:

"The following provisions shall govern wearing of moustaches and beards:

- The Captain may permit officers and men to wear moustaches and beards or shave them off, if they so desire. Moustaches and beard shall be worn with or without the beard and moustaches respectively. Side whiskers shall be permitted down to the level of the lobe of the ear. The privilege may be withdrawn in cases of untidy growth.
- Moustaches, beard and whiskers shall be neatly cut and trimmed".

Changes in Uniforms 1965 to 1975

The same pressures for relaxation which led to changes in the regulations for moustaches and beards also led to changes in uniforms, "to bring outdated traditional British uniforms in line with modern trends".

Admiral Nanda recalls:

"Other Navies had moved ahead and modernised their uniforms. I felt that if the American Navy can do it and go along with the times and it works successfully, why should we try to push something down the throats of our own sailors or our own officers.

"We had changed officers uniforms. We had brought in various rigs, different from what the British used to do, because it was convenient for the officers. But we refused to do it with the sailors. How can you convince the sailor that changing uniforms is good enough for you but not for him? When he meets sailors of other Navies and sees that they have changed from the British tradition, he wonders why the British tradition is so sacrosanct with us".

The changes in uniform between 1965 and 1975 are summarised below:

Year	Officers	Sailors
1965	Action rig for officers to be light blue shirt and dark blue trousers, as for sailors Dress No 10	
1967	-Dress No 8A, white shirt, white trousers, white belt and medal ribbons introduced -Miniature ribbons authorised to be worn with evening Dress 6B (Red Sea Rig)(white shirt, black trousers and cummerbund)	
1969	Terycot permitted for white uniforms	(Since sailors were issued uniforms at Government expense, terycot was too expensive to replace cotton uniforms)
	-Name tallies introduced	-Name tallies introduced
1972	Black trousers, black jersey, white shirt and black tie introduced as winter working rig	-Square rig (Jumper, square collar, duck cap) abolished. -Junior sailors permitted to wear jackets/tunics/shirts/ trousers/peak caps etc analogous to petty officers uniforms, with appropriate insignia of rank and trade - Black trousers, black jersey,white shirt, black tie introduced as winter working rig
	- Berets permitted with action working rig and overalls	-Berets permitted with action working rig and overalls

The Training Reforms of 1974 and 1975

To man the new acquisitions, the Navy had to resort to several unavoidable and undesirable measures like perpetual increases in the number of trainess, curtailment in the durations of courses and denying schools of high quality instructors because the best men were needed to man the newest ships. Over the years, this had demotivated the schools; the methods of teaching and training had settled into a rut.

As a result of the lessons learnt in the 1971 war and to cope with the new Russian acquisitions likely to enter service from 1977 onwards, a major reformation of training was undertaken to remedy the ennui that had enveloped naval training. Between 1973 and 1975, the Director of Naval Training and the Director of Combat Policy and Tactics, under the direct guidance of the Vice Chief of the Naval Staff and four flag officers effected what, by 1975, became a revolution in the Navy's training practices. Expectedly, there was resistance to change, mainly by the mediocre, because they would have to work too hard. Some reforms had to be abandoned and restarted in the mid 1980's, when the responsibility for training the entire Navy was entrusted to FOCINCSOUTH.

Training Ashore

The first step was a Training Technology Seminar at Cochin. Many lessons were learnt and promulgated. Schools were directed to select those lessons that pertained to them and show results. In parallel with this, a Status Report on Training was prepared by the Directorate of Naval Training and processed by the Committee of Flag Officers. Three long-ranging schemes were approved: Organisational, Training Schemes and Training Aids.

Organisational - Stream Training

With the induction of the Russian ships, the variety of equipment became so wide that it became necessary to have separate streams for training. The three basic streams were:

- "A" stream for the latest equipment in the Leander class frigates.
- "B" stream for the equipment in the old ships.
- "C" stream for the latest equipment in the Russian acquisitions.

Officers and sailors would be assigned to one of the streams and be trained for selected equipment in that stream. Cross training was allowed at certain senior levels to safeguard career prospects.

There were variations in streams and sub-streams as applicable to branches. For example:

- Engineering branch sailors were streamed into "Internal Combustion Engines (ICE)" and "steam" and sub-streamed into BRAHMAPUTRA ICE or Petya ICE, since the diesel engines in these two types of ships were entirely different.
- Electrical branch sailors were streamed into "power", "radio" and "control" and sub-streamed into specific equipment systems.

The aim was to gradually usher in an era of vertical specialisation and consolidate expertise, ensuring that career prospects were not adversely affected.

Sub-streamed syllabi for the seamen and communication branches led in most cases to changes in duration of courses leading to a general economy in effort. Streamed syllabi in the Engineering and Electrical Branches started being implemented during 1975.

At Cochin,

- All officer training was taken away from the B&D School in preparation for its shift to STE Goa. The NAVAC was reorganised into two wings: Cadets and Other Officers.
- To minimise bureaucratic delays in "chain of command", as a trial measure, the parent schools were allowed to correspond direct with outside authorities on routine matters. Responsibilities were placed on their shoulders by issue of a charter of duties.
- A work study of the Signal School and the TAS School was ordered to improve internal management of training.
- Naval Psychological Research Unit (NPRU) Aptitude Tests were commenced to help select Executive Officers for the different specialisations, as was being done for sailors.
- In the Gunnery Branch, with diminishing utilisation of visual aiming, Gun Layer (GL) and Radar Control (RC) trades were merged.

To keep abreast with the latest developments in technology and exercise quality control, intensive short courses, at about five years interval, were introduced for officers and sailors. These were the Lieutenants War Course, the Junior Commanders Course for officers and revised leadership courses for CPO's and POs and MCPO (Q).

The career and training pattern of Executive officers from midshipman to the rank of Captain was

recast with a twelve week post-Long Course training period and a five week Junior Commanders course as well as a five week Commanding Officers Course.

The gain and loss of seniority rules for all branches were standardised. In the case of cadets and midshipmen, the training period afloat was reduced from 18 months to 12 months. Midshipman's time was reduced to 6 months.

Training Schemes

- Job specialisations were enunciated for all branches.
- A trial, low activity-cum-closed period was started for schools, so as to overcome the problems of shortage of staff and calibre of staff.
- New sub-streamed syllabi were promulgated for executive officers' specialist courses, for war course etc. The first Executive and Supply command examinations were held in August 1975.
- For foreign officers, separate Gunnery, Communication, TAS, Navigation and Direction Long Courses and Sub LTs Technical Courses were run. Other officer and sailor courses, owing to the small numbers involved, were conjoined with classes for Indian personnel.
- New syllabi were implemented for MCPO(Q) and Leadership courses. All these courses were run at AGRANI. Examinations were introduced in these courses to inject quality control.
- On the analogy of Electrical and Supply Branch sailors, seamanship courses were started for L/S (Q) and PO (Q) at the Technical Schools. The examinations were conducted by an external agency, the Basic and Divisional School.
- A 2000-word basic English vocabulary started being taught at the basic sailor schools. The problem was to get the instructors to limit their vocabulary to the 2000 odd words readily understood by sailors. Vocabularies of technical words for various branches were compiled by schools.
- To analyse the syllabi and the quality of material available, quality control agencies were set up in schools. A system of obtaining feed back and evaluation was introduced. In consultation with schools, a feedback proforma was made to gauge efficacy of training in professional courses. Ships were directed to feedback expeditiously so that training methods or syllabi could be adjusted.

Equipment, Training Aids and Methods

The equipment in most training schools was of 1950 vintage and required replacement. In view of the difficult financial situation, it was decided to replace only essential items and improvise the remaining with indigenous models.

To overcome the language problem and disparity in educational levels, training programmes were revised. Overhead projectors were sanctioned and issued to the schools.

The Annual Training Grant was enhanced to enable schools to procure more training aids. In 1975, a new Technical Training Grant was instituted and the Artificer Apprentice and Mechanicians Training Grant increased.

A start for the G,C, TAS, ND Schools was made by forming a Training Aid Team which, under direction from NHQ, visited BEL and ships, and made a plan to deliver Leander training aids.

Cameras, films and projectors, already available at most schools, were to be used to make our own films.

Training management and methods were revitalised by organising courses, seminars and instructional technique programmes.

Review of Educational Policy

The Navy's educational policy was reviewed. It was decided to:

- Set up an Institute of Educational and Training Technology at Cochin for imparting instructions to officers and sailors in Training Technology and Methods.
- Set up a Syllabus Evaluation/Formation Cell in each training school/establishment. A Standing Committee at Naval Headquarters would analyse and approve the recommendations of these cells.
- Set up Language Laboratories for teaching English and Hindi in the establishments conducting initial training.
- Review the HET syllabus to make it more job oriented and to bring it on par with the new higher secondary (10+2) syllabus which was being introduced throughout India.
- Raise the entry qualifications for Education Officers to M Sc/MA in Physics/Mathematics. The duration of their initial training was increased to 36 weeks to provide for a Methods Course and a Naval Scientific Orientation Course.

Assessment of Training Load

To systematise the requirements of officer and sailor instructors, a detailed assessment of Training Loads was commenced. By 1975:

- The training loads of AGRANI and the Naval Academy had been approved and augmentation of their complement was under way.
- The training loads of SATAVAHANA and the NATS were under finalisation.
- The cases for other training schools were under preparation.

Controlling Manpower Costs

By 1974, manpower costs began to cause serious concern. Earlier, the emphasis had been on recruiting manpower as swiftly as possible to meet the new commitments. The Dearness Allowance instalments resulting from the galloping inflation after the 1973 oil crisis, combined with the implementation of the Third Pay Commission's recommendations, necessitated drastic measures. To keep manpower growth under control and ensure the strictest utilisation of available manpower, every single proposal for increase or decrease of service or civilian manpower had to be approved by the concerned Principal Staff Officer in Naval Headquarters before it went to the Ministry.

Discipline and Morale

The rapid expansion of personnel depleted the Navy's officer leadership and particularly that of the CPO and PO cadres. Curtailed training programmes to fill technical officer and artificer shortages eroded basic leadership techniques. Training and discipline suffered.

Between 1965 and 1975, the Navy's personnel were also affected by the turbulence which was affecting the country as a whole. There were several reasons:

- Efforts by extremist political elements to seek a foothold in the armed forces.
- The increasing recourse, across the entire country, to agitational methods to redress grievances.
- The anxiety resulting from the rising prices of daily necessities, combined with the disappointment with the outcome of the Third Pay Commission.
- The combination of these factors with certain well intentioned but culturally unimplementable reforms like the abolition of the Topass Branch.
- The repugnance felt by increasingly better educated sailors to perform the traditional cleanship duties which their predecessors used to do.

Officers

During this period, officers were not immune to this general turbulence. Their misdemeanour manifested in incidents of smuggling and misusing canteen facilities by selling items ashore. A wholely unfortunate and undesirable result was the enfeebling of the officer-man relationship on which discipline and morale depended.

The changing socio-economic climate in the country had a particularly adverse effect on young naval officers. Some junior officers were taking to hallucinatory drugs like charas, bhang, ganja, LSD etc.

The possible reasons for this malaise were attributed to lack of proper guidance, unwillingness on the part of seniors to delegate responsibility which generated lack of job satisfaction, over-complementing of junior officers on board ships, thereby rendering most of them non-effective, communication gap between more senior and junior officers, etc. The non-availability of adequate and proper accommodation and escalating costs of living were also considered to be causes aggravating the situation.

The result was a fall in the professional standards of young naval officers. It was felt that they were not being kept fully occupied, both mentally and physically. Young officers were not participating in games and other activities.

Sailors: Cleanship Duties and the Topass incident

There were several and diverse incidents in ships and establishment during this period. The Topass Incident is significant enough to merit mention, since it was a result of a change in personnel policy.

For socio-cultural reasons, Indian naval ships always had topasses to clean the bathrooms and toilets. Topasses used to be sanctioned as part of ships complement. When ships commissioned in Britain, topasses used to go as part of the commissioning crew.

For similar socio-cultural reasons, there had always been resentment amongst some sailors at having to carry out "cleanship duties". The Inquiry into the Causes of the Naval Mutiny in 1946 had listed this as one of the sailor's grievances.

The Navy used to periodically promulgate its policy on Cleanship Duties. The position in 1965 can be seen from the following directive:

"Cleanship duties comprise the following:

- Holystoning, sweeping and scrubbing of decks, mess decks and flats with any of the approved appliances used in the service for such purpose.
- Cleaning and painting of ship from truck to keel.
- Cleaning of brass work, mess tables and benches, ship's machinery, armament and technical equipment, store rooms, tanks, double bottoms, boats, masts and rigging, cold rooms, cool rooms and various other parts of the ship not mentioned herein.
- Duties of "cook of mess" which entail carrying of food, cleaning of mess utensils, washing of plates of chiefs and petty officers, etc.
- Cleaning of galleys by cooks or other sailors when required.
- Cleaning of officers' cabins by stewards or other sailors when required.
- Cleaning of heads, bathrooms and other wash places, normally by sailors of Topass Branch.
- Disposal of sweepings.
- Cleaning of such other parts of ship as the Commanding Officer of the ship may deem fit.

"It is to be brought home to all concerned that ships' companies are required to perform cleanship duties as part of their normal routine. In the interests of health and hygiene, it is incumbent on all sailors to assist cleaning any part of the ship as may be required. The erroneous impression that such duties are in any way derogatory is to be dispelled and it is to be pointed out that these duties are performed by all navies throughout the world, and further that the cleanliness of their ship is a matter of pride to all, in which each man plays his part.

"The various pleas and objections generally put forward from time to time by certain sailors for their reluctance to carry out "cleanship" duties are neither tenable nor justified on either strictly religious or any other grounds.

"Failure to comply with the instructions on "cleanship" duties will result in disciplinary action being taken against the offenders".

1966/1967 was going to be celebrated as Mahatma Gandhi's Centenary Year. There was a view that the Navy should cease having topasses on board ships. Not only would it be a fitting tribute to the Father of the Nation, it would also mitigate to some extent the shortage of bunks in Russian vessels. It was decided to start by not having topasses in the Russian ships and submarines. In due course, to avoid disparity between Russian and Western origin ships, it was intended to withdraw topasses from British built ships also.

This decision to withdraw topasses from ships was by no means unanimous. Rear Admiral KR Nair was the Chief of Personnel. He recalls:

"I was the Chief of Personnel. Unfortunately Admiral Chatterji never asked me anything about removing topasses from ships before the point was put up in the Senior Officers Conference. So I have only got what he said at the Conference to go by. He told us that "I have already talked to the Prime Minister, this is the year of the Harijan and our contribution will be that we will abolish the Topass Branch. That will be a big boost for the Harijans and I have told the Prime Minister that". Having said all that and having said that he had briefed the Prime Minister, he turned around and asked each one of us our opinion, one by one. You know in a case like this, what used to happen was that everybody said "Yes, yes, this is a very good thing. We should have done it long ago". There was not a single voice of protest.

"Then I thought it my duty to speak up. I said "Look, this will not be a good thing because first of all in the year of the Harijans, all we are doing is to deprive the topasses of one avenue of employment. Let us be thankful that the topasses do their job very well without a grouse. In every ship, the topasses are a happy set of people. They are quite happy to go on with their task. So while we have got topasses, it is an advantage that we have got. Why throw it away? If topasses do not do it, someone else has got to do it. In the lower deck even now, our sailors resent having to sweep up decks. This sort of thing is thought to be infra dig, especially by the Rajputs and people of that class. For them, it is one of the things that makes the Navy an unhappy service. We know it from the days of the RIN Mutiny, that sailors do not like cleanship. If on top of that we abolish the topasses, that is going to have very bad repurcussions". There was a dead silence. Admiral Chatterji got a bit annoyed and said "In that case, I think I will have to insist that you try it out on the East Coast. I am going to withdraw all the topasses from the ships in Vishakapatnam." That is how it started.

"In retrospect, I suspect the CNS, Admiral Chatterji, was trying to please the Prime Minister, Mrs Gandhi. 1966 had been declared as the "Year of the Harijan". CNS told her he would abolish topasses from the Navy within a year. This led to the discussions at the Senior Officers Conference,

my abrupt transfer as CinC East and the withdrawal of topasses from Eastern Naval Command".

In 1968, the directive on Cleanship Duties was modified to omit any reference to the Topass Branch. It read:

"Cleanship is an important duty in the Navy. A clean ship, besides providing hygienic working and living conditions, is a source of pride to her ship's company and a credit to the service.

"It is incumbent on all sailors to keep the ship clean and to participate in cleanship. The erroneous impression that cleanship duties are in any way derogatory is to be dispelled. Various pleas and objections put forward from time to time by certain sailors against carrying out these duties are neither tenable nor justified on strictly religious or other grounds.

"Cleanship duties in the Navy comprise:

- Sweeping, scrubbing, swabbing, polishing, holy stoning, scraping, brushing, oiling and painting of any surface in the ship.
- Wiping and cleaning of equipment and machinery.
- Cleaning of all office and living spaces, store rooms, machinery compartments, oil and water tanks, double bottoms, ventilation trunkings, galleys, bathrooms, wash places, heads, alleyways and passages.
- Cleaning of officers' cabins, CPOs' and POs' messes, pantries and washing of mess utensils and plates.
- Cleaning of upper decks, masts and rigging, aerials, boats and other gear fitted in or carried in or forming part of the ship.
- Disposal of sweepings.
- Any other cleaning duty as the Commanding Officer of the ship may deem fit.

"Failure to comply with the instructions on "cleanship" duties as defined in this order will result in disciplinary action being taken against the offenders".

Whilst in Russia, there were incidents of resentment at having to clean toilets and bathrooms. Commodore, (then Cdr) KS Subra-Manian, the Commanding Officer of the first submarine to commission in Russia, recalls:

"There was a problem. A submarine does not have the luxury of having topasses. Now we had only one toilet for the entire crew, used both by officers and by sailors. At times, this toilet, which normally drains into a sewerage tank to be later blown out to sea, gets clogged up. It becomes our job to clear it up. We can't call any topasses to tackle this sort of messy business.

"At one stage, we had just such a clogging. To clear it up, there was some reluctance on the part of some of the sailors, not all. So my Engineer Officer and I, we decided to set an example. We said we will do it ourselves. When the sailors saw us doing it, then of course the problem immediately vanished. They all came and said "No Sir, we will do it". From then onwards; I had no problem of any sort due to lack of topasses on board. In fact, I did talk to them later also, saying "It is our job to look after our submarine. If anything happens to it, we have to clear it up. We will be following the example set by the greatest Indian of our age, Mahatma Gandhi, who made no bones about doing such menial jobs"

By and large, these resentments were contained by Commanding Officers and officers setting a public example of cleaning their own toilets and bathrooms. However, on arrival in India from 1969 onwards, the resentment on board became more vigorous. To cool the issue, the authorities in Visakhapatnam discreetly sent topasses from the shore establishments to ships whenever they were in harbour.

The resentment soon spread to the other shore establishments in the Navy. Vice Admiral (then Lt Cdr) KASZ Raju, who was serving in the Naval Air Station GARUDA in 1969, recalls:

"Soon after an indication was given from Naval Headquarters that it was intended to abolish topasses, we had several requests from sailors to say that "I would not like to remain in the Navy any more because when I go back home and if it becomes known in my village that I had been employed on latrine duties, I would be treated as an outcast." We were able to promptly get this matter across to the COMSOUTH at that time, who in turn contacted Delhi and before anything could happen in Cochin, I think we were able to nip in the bud anything that might have come about. In this we learnt a good lesson, that it is better to discuss and dialogue with our men, who today are fairly well educated and very knowledgeable, before taking any decisions within the Navy related to social prejudices".

In Bombay, things took a more serious turn when word spread that in early 1970, topasses were to be withdrawn from ships. Sailors in some ships started

desisting from taking meals. This form of protest spread to other ships. There were a few ugly incidents. Firm action was taken and normalcy was restored, when it was made known that the decision to remove/abolish topasses would be reconsidered. Since then, status quo has been maintained.

Admiral Nanda took over from Admiral Chatterji as CNS in 1970. He recalls:

> "I inherited the topass problem when I became CNS. Topasses were still there in ships. We had not abolished them. When the question of removal came, the thing blew up.
>
> "A lot of people felt that topasses were an antiquated system and that when Mahatma Gandhi and others were trying to do away with untouchability, we should not have an untouchable in our organisation. Now the concept was alright, but in practice, the social systems in our country and the thinking of people were different.
>
> "In the Navy, we have people brought up in a social system which does not ask them do these things in their own homes. Even topasses, when they go back to their homes, do not clean their own bathrooms and toilets, even though they have been doing so at sea. The social system is totally different. Therefore in the social environment in which we are living, to impose something which is considered against the way you have been brought up, when you tell a man who is educated, who has been brought up in a particular way of life, in a particular way of thinking, that he has got to clean the latrines, he revolts against it. He says I never knew that I have to do this and this is something which is being imposed on me. Does the Army do it? The answer is no. Does the Air Force to do it? The answer is no. Only the Navy wants to introduce this.
>
> "We all knew it, the officers knew it, that the topass thing would not work out. But they did not have the courage to say that this is not going to work. Eventually we had to accept the inevitable, and bring topasses back"

Accomodation

The fundamental difference between the Navy and the sister services has always been that the majority of the Navy's personnel perforce have to be stationed in major ports where the cost of living is high and civil accomodation is not available within their means.

After China's attack in 1962, a concerted effort was made to better the situation. The capital expenditure for 1964-65 on building accomodation went up to Rs 450 lakhs as compared to about Rs 128 lakhs in 1961-62. Even then, a lot of leeway had to be made up. In 1964, an officer or sailor in Bombay or Cochin had to wait six months to a year before he got some sort of accomodation. By the time he got accomodation, it was time for him to be transferred.

In 1965, the overall shortage in married and single permanent accomodation at major naval ports was:

% Shortages in Accomodation

Location	Married Officers	Single Officers	Married Sailors	Single Sailors
Bombay	28%	47%	10%	72%
Goa	99%	100%	76%	100%
Cochin	30%	18%	95%	12%
Visakhapatnam	75%	100%	80%	100%

Some headway had been made at Bombay and Cochin. Shortages at other ports had to be made up by hiring houses and using old, temporary, wartime buildings and sheds for houses. Unfortunately, the Navy's proposals for building accomodation usually got bogged down over where and how much was to be built.

After the 1965 War, a comprehensive review had been carried out of the shortages of family accomodation in the Army, Navy and Air Force. The deficiencies were found to be so large that it was decided that the aim should be to remove them over a period of 20 to 25 years.

The problem of providing accomodation to married personnel was more vexed for the Navy, than for the Army and the Air Force:

- Whilst the Army and the Air Force could start seeking sanctions to meet their shortages from 1963 onwards (when funds became available after China's attack in 1962), the Navy could only start seeking sanctions in 1966, after the Russian acquisitions increased the Authorised Married Establishment (AME).
- Until 1969, ships were based mainly at Bombay. Constructing married accomodation in suburban Bombay where the Navy had land at Mankhurd, Trombay and Thane would entail lengthy transit times to and from the place of work in the Naval Dockyard. Constructing married accomodation in South Bombay, which was closest to the Dockyard, would further strain scarce civic services like water supply. Moreover, the limited amount of land in what is now Navy Nagar compelled high rise buildings which required

larger allocations of budget than building barracks.

- The Navy's limited budget perforce compelled higher allocation to acquisitions, repair facilities and logistics than to married accomodation. The latter could be hired and Compensation in Lieu of Quarters (CILQ) could be paid to mitigate individual financial burden.
- Whilst the above reasons applied mainly to Bombay and to a limited extent in Goa and Cochin, the local situation in Visakhapatnam and in Port Blair was totally different in regard to availability/acquisition of land, water supply etc. Indeed, for Port Blair, all construction material had to be ferried from mainland India and this could only be organised after the two new Landing ships arrived from Russia in 1966. Similarly the construction of married accomodation in Visakhapatnam had to await the finalisation in 1969 of the Zoning Plan of the entire Visakhapatnam Project.

As a result of all the above factors, the shortage of married accomodation, particularly for sailors, understandably affected their morale. As the following excerpts show, the administration was seized of this pressing need. It was not until 1975 that the shortfall in married accomodation was on its way to being resolved.

Situation in Mid 1968

"The recent increase in authorisation of married accommodation for Leading Rates and below will entitle sailors to draw CILQ and facilities for family passage. This increased authorisation does not, for the time being, permit us to construct additional married accommodation. This restriction has been accepted by the three Service Headquarters as we are already lagging behind in the construction of deficient married accommodation.

"Although large number of officers and sailors are living in hired accommodation or are drawing CILQ, the total shortages of accommodation for building purposes are 940 quarters for officers and 2050 quarters for sailors. This is based on current sanctions and future forecast of likely sanctions. Government approval has been obtained to make good these shortages within 15 years and a sum of Rs 18 crores has been sanctioned for construction of married accommodation for the Navy. Naval Headquarters intend to spend more than the authorised 1.2 crores per year as funds are likely to be available from other sources.

Augmentation of Water Supply at Colaba

"Against a requirement of 12.5 lakh gallons of water, the Naval residential area in Colaba is receiving only 5.5 lakh gallons per day. At the instance of Naval Headquarters, this supply has been increased to 6.5 to 7 lakh gallons per day by carrying out certain modifications to the existing mains.

"The Government have now sanctioned a sum of Rs 20 lakhs for the Municipal Corporation, Bombay to lay an independent main from the Malabar Hill Reservoir to Colaba exclusively for the use of Defence Service personnel. This proposal is likely to be linked with the Vaitarna scheme and may take two to three years before the scheme becomes effective.

Land Requirement at Goa

"Land required for building married accommodation for officers and sailors and other amenities at Goa (except for two small plots) has now been acquired after prolonged litigation. Tenders are being called during May/June 1968 for contract action to commence the building work."

Situation in Mid 1969

"Administrative approval for provision of married accommodation for afloat personnel at Visakhapatnam was issued last year. This accommodation is to be constructed for 122 officers and 406 sailors at a cost of Rs 153.64 lakhs. According to the planning programme, accommodation for 24 officers and 25 sailors will be ready by 31 Jan 70; for 50 officers and 200 sailors by 30 Sep 70 and for 48 officers and 181 sailors by 15 Oct 71.

"Considering the difficulties experienced in hiring a suitable house for Defence Services at Bombay on normal terms, Government have sanctioned that accommodation at Bombay may be hired on Leave and Licence basis with effect from 16 Oct 68 for a period of 2 years. Under the scheme, 16 flats have been hired so far and 100 additional flats are under negotiation. It is hoped that this initial sanction of two years will be further extended".

Situation in Mid 1970

"The proposal for the inclusion of Visakhapatnam in the list of difficult stations for the purpose of providing accommodation to defence civilians to the extent of 15% of their authorised strength has been approved by the Government.

"Orders have been issued by the Government approving the retention of married accommodation by sailors on grounds of their children's education at the last duty station in the event of transfer.

"Government have accepted the requirement of additional married accommodation in Bombay for 152 officers and 246 sailors. Necessary action for issue of administrative approval is in hand.

Dhani Khari Scheme. The Dhani Khari Water Scheme at Port Blair is expected to be completed by end 1972. This scheme will meet all civilian needs as well as those of the Defence Services and costs will be shared on a 1/3 - 2/3 basis, between Navy and Home Ministry".

Situation in Mid 1971

"Scale of Accommodation for Officers. Government have sanctioned the revised scale of plinth area of 2100 sq ft for married officers of the rank of Commander to Commodore against the earlier authorisation of 1500 sq ft.

Deficiency at Cochin. The deficiency of married accommodation for 47 Officers and 141 sailors at Cochin has been accepted by the Government. The case for issue of administrative approval is being progressed. The construction of 60 'G' Type Quarters at Cochin in a multi-storeyed building has been sanctioned by the Government at an estimated cost of Rs 25.68 lakhs.

Provision of Accommodation for Civilians at Cochin. On the analogy of Bombay and Visakhapatnam, a case for the acceptance of Cochin as a difficult station for provision of married accommodation for Defence civilian employees has been taken up with the Government."

Situation in Mid 1972

"The existing deficiencies are:

Rank	Entitlement	Permament Accomodation Available	Accomodation Under Construction	Deficiency
Officers	1791	632	308	851
Sailors	4713	2508	892	1315

There is a distinct improvement in the provision of married accomodation at Goa, VALSURA and Visakhapatnam. The construction of 246 married quarters for sailors at Bombay, 64 at VALSURA and 140 at Cochin will provide considerable relief."

Situation in 1973

"Due to financial stringency, Government banned all sanctions of new married and single accomodation."

Situation in Mid 1975

"Our efforts to improve the domestic accommodation situation in the Navy have met with considerable success. The following projects have been sanctioned recently:

- *Single Accommodation*
  - 168 Sailors at KARANJA
  - 210 Sailors in ANGRE
  - 250 Trainees in SHIVAJI
  - 44 Officers and 429 Sailors at Goa
  - 27 Sailors at W/T Station Goa
  - 70 DSC Personnel at Goa
  - 42 Officers and 325 Sailors in Visakhapatnam
  - 240 Sailors in Cochin
- *Married Accommodation*
  - 152 Officers, 65 CPOs and 116 Junior Sailors in Colaba Bombay.
  - 10 Officers and 24 Sailors at Karanja
  - 2 Officers and 28 Sailors in Thana
  - 82 Sailors in Visakhapatnam
  - 29 CPOs in Cochin"

By 1975, it had been possible to make good some of the shortages in Bombay, Goa, Cochin, Visakhapatnam, SHIVAJI and VALSURA.

The Navy's Civilian Personnel

The basic advantage of civilian personnel has always been their continuity in shore based assignments, as opposed to uniformed personnel whose assignments afloat and ashore change ever so often.

By and large, the Navy's civilian personnel were governed by the same structure as that prevalent in the Army and the Air Force. The administration of civilian cadres was that:

- Groups C and Group D were administered by the Command Headquarters.
- Groups A and Group B were administered by Naval Headquarters.

The recruitment of civilian officers was done initially by direct entry and subsequently through the UPSC.

From the functional point of view, the Navy's dependence on civilian manpower lay principally in the following fields:

- In Naval Dockyards and BROs for the maintenance, repair and refit of ships and submarines, and manning yard craft.
- In the Aircraft Repair Yard - for the maintenance, repair and refit of aircraft.
- In Naval technical functions like Draftsmen, Naval technical specialists in DRDO, laboratories etc.

- In Naval Store Depots, Naval Armament Depots and Weapon Equipment Depots - for the storage, upkeep, accounting, repair and indenting of their respective stores.
- In offices for secretarial and clerical duties.
- In the Naval shore establishments for motor transport drivers and general conservancy duties.

In the case of the civilian personnel performing store keeping duties, not enough systematic career progression training had been organised to better their productivity. The results of this neglect began to show from the 1960's onwards. The induction of new technologies in the Russian acquisitions and the Leander class frigates greatly enhanced the importance of the duties entrusted to civilian personnel. It did not take long for the infirmities in the civilian cadres to affect the operational availability of ships, particularly in the field of spare parts. This helped to identify the measures which, in subsequent years, helped to increase productivity in the depots.

As can be seen from the table below, the increase in the numbers of civilian personnel kept pace with the increase in the number of naval personnel.

Increase in the Navy's Borne Strength Between 1965 and 1975

In round figures, the increase in the Navy's borne strength between 1965 and 1975 was as follows:

	NAVAL PERSONNEL				CIVILIANS			
AS ON 31 DEC	Officers General List	SD List	Sailors	Total in Uniform	Gazetted	Non-Gazetted Industrial	Non-Industrial	Total Civilians
1965	1520	410	16,900	18,830	300	12,390	10,550	23,240
1966	1600	430	18,400	20,430	320	13,340	10,900	24,560
1967	1660	460	20,500	22,620	320	13,820	11,300	25,440
1968	1740	490	22,800	25,030	310	13,990	11,730	25,730
1969	1850	530	25,100	27,480	330	14,000	11,890	26,220
1970	1970	540	26,200	28,710	410	14,040	12,250	26,700
1971	2250	580	26,900	29,730	-	-	-	28,450
1972	2470	600	26,400	29,470	-	- - -		
1973	2550	600	26,300	29,450	510	16,430	13,130	30,070
1974	2700	600	26,900	30,200	510	29,860	-	30,370
1975	2880	600	27,300.	30,780	510	29,860	-	30,370

Changes in Sailors Conditions of Service After 1975

In July 1976, in consonance with the recommendations of the Third Pay Commission, the following changes were implemented in sailors' conditions of service:

- The initial period of enrolment was increased from ten to fifteen years.
- The educational qualification for entry was raised to Matriculation for Boy Entry Sailors of all branches and for Direct Entry Seaman and Engineering branch sailors. As a result:
  - Direct Entry Seamen and Communication sailors, Engineering Mechanics, Electrical Mechanics, Writers, Stores Assistants and Medical Atendents all came on par, educationally and pay wise. Only Direct Entry Stewards, Cooks, Musicians and Topasses could join, without being matriculates, on Group C scale of pay.
  - All future entrants would receive Group B scale of pay.
  - Serving sailors who were already matriculates would remuster into Group B and those who qualified subsequently would also remuster into Group B.
- The age of entry for Boys was revised to 16 - 18 years and that for Direct Entry sailors to 18 - 20 years.
- The compulsary age of retirement for sailors of all ranks was raised to 50 years and that for MCPO's maintained at 55 years.
- Time scale promotion was introduced whereby Seaman First class and equivalents would be promoted to Leading rank on completion of five years service in man's rank, subject to having qualified in the prescribed examinations.

In 1976, the Boy Entry was proposed for abolition. In due course only Direct Entry matriculate sailors were recruited and trained at INS CHILKA.

Retrospect

Given the limits within which Personnel policy must operate, the achievements in the field of personnel management were impressive. Despite the constraints listed in the Preamble to this chapter, the Navy was able to man the Russian acquisitions and the Leanders, man the Submarine and Air Arms and take on new responsibilities ashore like those of coastal defence, garrisons for the A&N islands, expanding the training schools and the NCC.

There is a view that the dilution of expertise could have been avoided. As has been discussed, the endeavour to make the Navy accept concepts like vertical specialisation, fixed commissions and pre-commission training took time. Many believed that with the Navy already fully stretched in inducting and coping with new acquisitions, personnel policies should not be tinkered with. Many believed that the reforms required manpower in such numbers that the shortages would only be aggravated. Many believed that the reforms were filibustered by inter-branch tussles.

There was some truth in each of these points of view. No satisfactory solution could be found. The very same issues raised their ugly heads in the mid 1970's, when the complements of the guided missile frigates, ocean going rocket boats and minesweepers had to be decided. As in the earlier cases, the same unsatisfactory compromises had to be resorted to. The basic issues still remain unresolved.

22

The Growth of the Navy Between 1965 and 1975

Preamble

If one takes a bird's eye view of thirty years of naval planning from 1947 to 1977, three landmarks stand out very prominently. These are:

- 1957 to 1959 when the Navy took several measures to cope with American aid to the Pakistan Navy
- 1963 to 1965 when the Defence Plan 1964 - 1969 was formulated after the Chinese attack in 1962 and the Navy turned to Russia for its acquisitions.
- 1973 to 1975 when the Defence Plan 1974 - 1979 was formulated after the 1971 Indo - Pak war and Indo Russian naval cooperation moved to a higher threshold.

Both the 1964 - 1969 and the 1974 - 1979 Defence Plans were approved after detailed consideration of the threats, the inter service priorities, the scarcity of foreign exchange, the likelihood of deferred credit being available for the requirements which had to be imported and the capabilities and limitations of Defence R & D and Defence Production.

From the outset, three realities affected Defence budgets generally and the Navy's budget in particular:

- The resources required for national development necessarily received higher priority than the resources required for defence.
- The paucity of Free Foreign Exchange (FFE).
- Until 1962, defence preparedness was mainly against attack by Pakistan. After 1962, defence had to cater for threats both from China and from Pakistan.

Highlights of Developments Between 1965 and 1975

The details of the major developments during the period 1965 to 1975 have been discussed in the respective chapters on:

- The Russian Acquisitions 1965 to 1971 and 1972 to 1975.
- The Leander Frigate Project and Indigenous Warship Design.
- The creation of Submarine Arm in 1968.
- The augmentation of the Air Arm with additional aircraft and helicopters.

The highlights are summarised below.

The Submarines

The arrival of the submarines from mid 1968 onwards gave the anti submarine frigates and the anti submarine Alize aircraft their long awaited exercise time with submarines. The increase in anti submarine effectiveness was, however, short of expectations. There were several reasons:

For the first time, the Navy came face to face with the unusual hydrological conditions in Indian waters. These conditions favoured the submarines, who could lurk in shadow zones below sea layers where ships sonars could not penetrate. This highlighted the need for ships to have variable depth sonars and for helicopters to have dunking sonars.

- The submariners were eager not only to demonstrate their offensive potential in pro-sub exercises but also to work out their capabilities and limitations for operational patrols during war. Submarine time had therefore to be shared between anti submarine exercises, pro-sub exercises and training more submarine personnel to enable the fledgling Submarine Arm to grow.
- The annual rotation of ships crews meant that personnel who had acquired precious anti submarine proficiency had to be replaced by others who needed to acquire this proficiency. This retarded the build up of anti submarine expertise.
- The time lag in the setting up of specialised workshops and test facilities resulted in the sonars themselves not being in top condition.

All these factors contributed to the sinking of the KHUKRI in the 1971 War. KHUKRI's disastrous loss awakened the Navy at large to the lethality of the modern submarine and led to extensive measures to increase anti submarine capability.

Meanwhile, four new improved submarines entered service from mid 1973 onwards. These helped sustain the numerous evaluations to improve anti submarine effectiveness.

The Seaking Anti Submarine Helicopters

The Pakistan Navy's acquisition from America of their first submarine GHAZI and its subsequent programme for acquiring Daphne class submarines from France made it clear by 1968 that it intended to concentrate its offensive potential in submarines and use its surface fleet defensively. At this time, Western navies were developing anti submarine helicopters equipped with a sonar which could be lowered into the sea while hovering and armed with an air-dropped, anti-submarine homing torpedo. This innovation was meant to overcome two of the major handicaps which afflicted surface ships. The helicopter, being airborne, could not be hit by the submarines lethal torpedoes. Secondly, by having a sonar whose depth could be adjusted, the helicopter deprived the submarine of its ability to hide below the temperature layers of the sea. The latest Seaking helicopters were being developed for the British Navy. In 1969, orders were placed for six helicopters and their homing torpedoes. These arrived just in time before war broke out in December 1971.

Due to their newness and shortages of technical equipment, they were not utilised to their full potential during the 1971 War. It took another two years for the Seakings potential to be fully realised. By 1975, six new improved Seakings arrived and it become possible to combine the Seaking's potential with that of new anti submarine ships that had entered service.

The Advent of Anti Ship Missiles

The Pakistan Navy's bombardment of Dwarka in 1965 and the International Court's award in 1967, which gave Pakistan a portion of the territory it claimed in Kutch, led the Navy to propose a plan for the Defence of Kutch. In 1969, an agreement was signed for the acquisition of the Russian missile boats which had first been offered in 1964 and whose efficacy had been demonstrated in the 1967 Arab Israel war when an Egyptian missile boat summarily sank an Israeli frigate. By end 1971, the missile boats had arrived and their support facilities had been located in and around Bombay.

The effectiveness of the missile attacks on Karachi led to the withdrawal of the Pakistan Navy's ships into Karachi harbour and to merchant ships seeking from the Government of India in New Delhi assurance of safe passage. This triggered the Navy's efforts to increase the number of vessels fitted with anti ship missiles. To start with, a squadron of new improved missile boats were acquired from Russia. Missile launchers and their fire control systems were cannibalised from the older boats which were non operational, and transplanted into two frigates and a missile coast battery. The frigates which followed the Leanders and the corvettes all had anti ship missiles. In due course, the new improved Seakings and the new Sea Harriers were equipped with anti ship missiles.

The Russian Acquisitions

By 1971, four submarines, a submarine depot ship, a submarine rescue vessel, two landing ships, five submarine chasers and four patrol boats had arrived and were based in Visakhapatnam. Though they had been acquired for the Bay of Bengal and the A&N Islands, they had started being utilised in the Arabian Sea as well.

To support these acquisitions, work had commenced in Visakhapatnam on the construction of a new Dockyard, of submarine support facilities, of torpedo preparation facilities and of training facilities. The progress of Dockyard construction was seriously retarded, however, by the sinking of the floors of the new workshops, due to the inability of the local soil to bear their heavy weight. These delays in setting up maintenance and refit facilities progressively afflicted the operational availability of the Russian acquisitions.

The Leander Frigate Project

The construction of the first three frigates had commenced but was behind schedule due to the teething problems of start up, the changes in radars, fire control systems and AIO from the second frigate onwards and the problems of indigenising major items like the propulsion and auxiliary machinery systems.

Aircraft for VIKRANT

The only aircraft which could replace the ageing Seahawks were the American naval A4 Skyhawks. Efforts to acquire the A4's had not been successful. It was decided therefore to avail of the opportunity to acquire the Seahawks being disposed of by the German Navy. These aircraft arrived in 1968 and were to prove very useful in 1971.

VIKRANT underwent a refit from 1972 to 1975 during which facilities were installed for operating the Seaking helicopters.

The Seahawks phased out in the late 1970s and the Alizes were refurbished to extend their life into the 1980s.

The Defence Reviews of 1973 and 1975

In 1973, a national security analysis was completed by a high level APEX committee. In view of the prevailing maritime situation, the Committee recommended special consideration for naval development and cleared the Navy's proposals for replacing old ships and the development of support facilities.

Unfortunately, the sharp rise in international oil prices after the Arab Israel war of October 1973 seriously dislocated national budgeting and decelerated almost all defence projects. The Navy's discussions with Russia however continued and it was possible to finalise the programme for the next series of Russian acquisitions.

The debilitating impact of spiraling inflation on the non Russian defence projects made it necessary to appoint another high level APEX Committee in 1975. It reviewed defence needs in the light of the strategic developments which had taken place after 1973 and the compulsions of the economic situation. It recommended enhanced allocation of funds to support core naval schemes which otherwise would have languished.

Developments After 1975

The Government's acceptance of the recommendations of the APEX Committees of 1973 and 1975 enabled the Navy to progress the following major schemes in the years after 1975.

Ships

Russian Acquisitions	-	Guided missile frigates, ocean going rocket boats and coastal minesweepers.
Indigenous Construction	-	Improvements to the 5th Leander (TARAGIRI) and 6th Leander (VINDHYAGIRI).
	-	Missile frigates of the GODAVARI class.
	-	Missile Corvettes of the KHUKRI Class.
	-	Survey Ships.
	-	Seaward Defence Boats.
	-	Landing Craft.
Modernisations	-	TALWAR and TRISHUL were fitted with surface to surface missiles.
	-	VIKRANT was fitted with new radars, AIO and facilities to operate the Seaking helicopters and Sea Harrier aircraft.
Conversions	-	The anti aircraft frigates BRAHMAPUTRA, BETWA and BEAS were converted to the Training Role to replace CAUVERY, KRISHNA and TIR.

Submarines

Acquisitions	-	Improved submarines from Russia and Germany.
Modernisations	-	The improvements in the VELA class were retrofitted in the earlier submarines.

Air Arm

Acquisitions	-	Second aircraft carrier VIRAAT from Britain.
	-	Russian IL 38 MRASW aircraft.
	-	Transfer from the Air Force of Super Constellation MR aircraft.
	-	British Sea Harriers to replace the Seahawks.
	-	British Islander and indigenous Kiran aircraft for training aircrew.
	-	TU 142s from Russia for LRMP
Modernisation	-	Refurbishment of Alizes.
Helicopters	-	Acquisition of British Seakings, Russian Kamovs and indigenous MATCH and SAR Chetak helicopters.

Overview of Ships and Submarines Acquired Between 1965 and 1975

ACQUISITION	STANDARD DISPLACE MENT (Tons)	NAME	VINTAGE	YEAR ORDERED	YEAR DELIVERED	SUPPLIER
Landing Ships Tank (Medium)	730	GHARIAL GULDAR	New	1965	1966	Russia
Patrol Boats	80	PAMBAN PANVEL PANAJI PURI PULICAT	New	1965	1967	Russia
Fleet Tanker	22,600	DEEPAK	New	1964	1967	Germany
Inshore Minesweepers	170	BHATKAL BULSAR	New	1961	1968-70	MDL
Submarines	1975	KALVARI KHANDERI KARANJ KURSURA	New	1965	1967-69	Russia
Submarine Depot Ship	5900	AMBA	New	1965	1968	Russia
Anti Submarine Vessels	1000	KAMORTA KADMATT KILTAN KATCHALL KAVARATTI	New	1965	1968-69	Russia
Seaward Defence Boats	150	AMAR AJIT ATUL	New	1963	1969	GRW
Missile Boats	180	VINASH VIDYUT VIJETA VEER NIRGHAT NIRBHIK NASHAK NIPAT	New	1969	1971	Russia
Submarine Rescue Vessel	800	NISTAR	Reserve Stock	1969	1971	Russia
Leander Class Frigate	2950	NILGIRI	New	1966	1972	MDL
Anti Submarine Vessels	1000	ARNALA ANDROTH ANJADIP	1968/69 from Reserve Stock	1971	1972	Russia
Fleet Tug	700	GAJ	New	1968	1973	GRW
Anti Submarine Vessels	1000	ANDAMAN AMINI	New	1971	1973-74	Russia
Submarines	1975	VELA VAGIR VAGLI VAGSHEER	New Improved	1971	1973-74	Russia
Leander Class Frigate	2950	HIMGIRI	New Improved	1968	1974	MDL
Landing Ships Tank (Medium)	1120	GHORPAD KESARI SHARDUL SHARABH	New Improved	1972	1975-76	Poland

23

Epilogue

This volume of the Navy's history 1965 to 1975 was made possible by the unstinted help extended by each of the participants interviewed. It is clear from their recollections that there were successes and reverses, tensions and disagreements. Factions lobbied for their positions and sometimes went too far in one direction. The right solution had to evolve through experimentation. Yet there is no doubt that these were only arguments over ways and means to reach the same end - a strong and modern Navy. This end was achieved by the combined efforts of several people.

The Leander Frigate Project was the achievement of Defence Minister Krishna Menon, exceptional civil servants like Mr HC Sarin and Mr MM Sen and Admirals Nanda and Samson - the first two Managing Directors of Mazagon Docks. The notable progress in achieving indigenisation in these frigates was the achievement of Commodore Paradkar and his team.

The bold decision to replace the obsolescent British radars and fire control systems by modern Dutch equivalents from the second Leander onwards, well before the first Leander had even been completed, was a result of the forceful advocacy of Admiral Ramnath. It gave Bharat Electronics the opportunity to leapfrog into the indigenous production of digital electronic systems. And it built up the confidence of the Navy's constructors like Shri Parmanandan and Captain Mohan Ram and electronic specialists like Admiral Baxi to innovate the interfaces in future frigates and corvettes for the Indian Navy's unique mix of Russian, western and indigenous systems.

In the 1971 War, the Navy's achievements in the Bay of Bengal sprung from Admiral Nanda's insistence that VIKRANT be seen out at sea and Captain Parkash's courage in letting his eager pilots push to the extreme, the safety limits for launching and recovering aircraft in the low wind conditions in the northern part of the Bay of Bengal. To Admiral Sarma and his Eastern Fleet, and the Navy's intrepid minesweepers, belongs the credit of fulfilling so many tasks with so few ships, culminating in the reopening of the port of Chittagong within weeks of the cease fire.

The Navy's achievements in the Arabian Sea evolved from the initial decision to acquire the missile boats, the credit for which belongs to Defence Minister Jagjivan Ram, Admiral Krishnan and Additional Secretary DR Kohli. The success of the missile boat attacks on Karachi, which played such a decisive role in the Navy's victory in 1971 evolved from Admiral Kuruvila's acceptance of the advice to use missile boats offensively. The tactic to use these frail, essentially defensive, small boats as part of the Fleet's spearhead was entirely unconventional, not believed possible and therefore doubly effective. In this part of the epilogue, I can share my feeling of fulfilment at having helped to mutate these fragile but lethal craft into offensive vessels.

As Captain of TIR in April 1971, jointly with Commander Yadav, the Senior Officer of the Missile Boat Squadron, we conducted trials when towing a missile boat from Visakhapatnam to Bombay using large nylon tow ropes at speeds of 14 knots in moderately rough sea conditions.

I was eager to prove that this could be done because their fragile hulls and limited endurance made it impossible for missile boats to sail in distant waters on their own. Towing missile boats safely and successfully was crucial to being able to get them within striking distance of enemy targets. By the time TIR and NASHAK arrived in Bombay, we had mastered the procedures for towing these boats for long hours, sliding hot food and refreshments to them over the tow ropes since their engines were switched off to conserve fuel and engine hours, releasing the missile boats within minutes to motor independently and take them quickly back in tow when required.

In May 1971, I was appointed as the Fleet Operations Officer on the staff of Admiral Kuruvila who was Commanding the Western Fleet. The need to prepare for hostilities was being discussed. I told Admiral Kuruvila of how we had towed a missile boat from Visakhapatnam to Bombay and suggested that taking missile boats in tow with the Fleet would decisively tilt the scales in any encounter between the opposing Fleets. The analogy I used to explain the concept was that this would be similar to a falcon being released to pounce on its prey. He directed Commander Yadav and me to put up a proposal in

writing. Given below is an excerpt from that proposal which he forwarded to Admiral Kohli, the FOCINCWEST in June 1971:

> "I have no doubt whatsoever that the correct utilisation of the missile boats is to use them offensively, two at a time, in company with the Fleet. If I have these boats with me at sea, as your Fleet Commander I can guarantee total victory once contact has been made with enemy surface units, regardless of his superiority in speed and gun power".

Admiral Kohli responded enthusiastically and immediately ordered a series of trials to ascertain the effects of towing on the boats' hull and machinery. In Naval Headquarters, Admiral Nanda who had already resolved that the Navy should take the offensive, also responded positively to the offensive utilisation of missile boats. In the ensuing months, plans crystallised for the deployment of the missile boats. Some boats were to be deployed off Saurashtra to deter hit and run raids and, when ordered, to launch attacks towards Karachi escorted by fast ships of the Fleet. Some boats were to be taken in tow by the Fleet. The end result was that during the war, missile attacks were successfully launched towards Karachi from two widely separated directions, the first from south and the other from the south west.

During both missile attacks, the timing and precision of the air attacks by the Air Force was impeccable and splendid. By sheer chance, on both occasions the naval group arrived off Karachi a little earlier than the pre-arranged time for the coordinated attack. This left the Pakistan side completely perplexed whether the havoc was being wrought by the Indian Navy or the Indian Air Force.

The achievement of Admiral Kuruvila and his Western Fleet in dominating the approaches to Karachi within a week of hostilities, despite the poor material state of his ships and repeated breakdowns at sea, is well known. I would like to place on record my appreciation of this big hearted and courageous man who took the advice of his young advisers and implemented it so successfully.

The success of the first series of Russian acquisitions was the result of the detailed discussions held by Additional Secretary Sheth's Delegation in 1965 and the painstaking resolution of problems by Additional Secretary Mukherjee's Delegations in 1971. The second series of Russian acquisitions owes its success to the prodigious efforts of Admiral Barboza and his Professional Delegation of 1975.

Admiral Bindra's far reaching Reorganisation of Naval Training in 1974 succeeded because of the whole-hearted support it received from Admirals Kamath and Kohli.

Captain (later Admiral) Dawson's single minded dedication to successfully demonstrate during his command of NILGIRI, the great potential of her electronic warfare equipment became the spring board for the Navy's leap frog into this intricate area of naval warfare.

The transfer to the Navy of the control of Maritime Reconnaissance was the outcome of the sustained efforts of Admiral Tahiliani and Captain Puri.

The sound foundations of the Submarine Arm were laid by the highly capable young submariners who manned the first eight submarines, some of whom like Admirals Auditto and Sodhi became Flag Officers Submarines, and Admirals Shekhawat and Ganesh who rose to became Fleet Commanders and Commanders in Chief Admiral Shekhawat became Chief of the Naval Staff in 1993.

The decade 1965-1975 was a crucial one in that it not only established the Navy's credibility in the eyes of the nation but also sowed the seeds for the transition to a deep sea Navy. The foundations built in these ten years have been considerably augmented in the ensuing years. Future volumes will record the acquisition of the Kashin class guided missile frigates, the strengthening of the GRSE as the nation's second frigate building yard and the fruitful outcome of the Navy's commitment to DRDO's Integrated Guided Missile Development programme.

All these achievements were sustained by the commitment with which the Navy's officers and sailors carried out their duties. Most of them were too young then to know what inspired the vision of their elders. It is my hope that this volume has helped them to know what was done and why.

24

The Naval Hydrographic Department

Developments Prior to 1965

General

On account of the seasonal monsoons, the survey year was divided into the Survey Season - November to April - and the Drawing Season - May to September.

Survey at sea used to be done by Survey Groups. Drawing was done by the Drawing office established in Dunmore House in Coonoor since 1900.

The results of hydrographic surveys used to be forwarded to the British Hydrographic Department for publication. These charts were then sent to Bombay. Charts were issued to ships by the Naval Chart Depot located in a corner of the sail loft of the Bombay Dockyard.

Marine Survey was part of the office of the Surveyor General of India.

1947-1948

When the Royal Indian Navy was partitioned in August 1947, its only survey vessel, INVESTIGATOR, was allocated to the Marine Survey of India. In 1947 and 1948, its very first tasks were to survey the approaches to the berths for naval ships in Bombay and Cochin. By mid 1948 however, it became clear that this ship had reached the end of her life and needed to be replaced.

1949-1950

Survey Vessels. In 1949, the Second World War frigate KUKRI was placed under refit to undergo large alterations for conversion to a survey vessel. She was commissioned as a survey ship on 31 October 50.

Surveys carried out. Whilst KUKRI was still under refit, the minesweeper ROHILKHAND, two Seaward Defence Motor Launches (SDMLs) and survey boats carried out in 1949 and completed by 1950, a detailed survey of Kandla and its approaches as part of the project for the development of Kandla as a major port.

Hydrographic Office. Concurrently with this activity, the Navy's seniormost survey officer, Cdr J Cursetji, was deputed to Britain in April 1949 to study the British Navy's Hydrographic Office and prepare a project report on the establishment of a Hydrographic Office in India. He returned to India early in 1950. After visiting all the other survey organisations and facilities in India, he submitted his report in August 1950.

1951-1953

Survey Vessels. KUKRI commenced surveying in December 1950. In July 1951, KUKRI was renamed INVESTIGATOR. She was the fourth consecutive INVESTIGATOR in the Marine Survey of India to bear that name, the first being a twin paddle steamer constructed in Bombay Dockyard in 1881.

The two SDMLs continued to be employed on survey duties. In view of earlier experience that a single survey ship could not cope with survey commitments, the ROHILKHAND was given a temporary conversion for the survey role. She joined the survey fleet in October 1952.

Surveys Carried Out. During 1951 and 1952, surveys were carried out in the Gulf of Kutch, the Andaman islands, the Mahanadi River entrance and Bombay Harbour.

Hydrographic Office. In 1951 Commander Cursetji was appointed as Surveyor-in-Charge, Marine Survey of India. Based on the project report he had submitted, the Government approved the establishment of a Hydrographic Office in phases.

1953-1954

Survey Vessels. Experience with the minesweeper ROHILKHAND showed that she was unsuitable as a self - supporting survey vessel. The sloop SUTLEJ was therefore converted to the survey role. The survey fleet now comprised INVESTIGATOR, SUTLEJ, two SDMLs and new survey boats constructed by the Naval Dockyard Bombay. In addition, plans were crystallizing for the construction in India of a new modern survey ship.

Surveys Carried Out. During 1953 and 1954, surveys continued in the Gulf of Kutch, the Andaman

and Nicobar Islands, the Mahanadi River entrance and Bombay Harbour.

Survey Personnel. During the preceding years, a number of officers had been under basic training and had also undergone training in Britain. The manning of three separate surveying units in 1953 was made possible by the availability of these qualified officers who had previously been under training. The shortage of survey recorder sailors however continued to persist.

Hydrographic Office. Having decided to establish a Hydrographic Office in India for the production of navigational charts and auxiliary publications, the services were obtained on loan of the Assistant Hydrographer of the British Navy to advise and assist in setting up the office. He arrived in India in the capacity of the Surveyor-in-Charge of the Marine Survey of India. After considering alternative sites, it was decided to establish the Hydrographic Office at Dehra Dun, where the printing facilities of the nearby Survey of India could be utilised and close liaison maintained between these two survey organisations.

1954-1958

Survey Vessels. In 1954, survey commitments began to mount. It was assessed that at least four ships needed to be continuously employed on survey duties. During these four years:

- In 1954, Government sanctioned a new 2500 ton survey ship to be built in collaboration with a French firm at Hindustan Shipyard Ltd (HSL) at Visakhapatnam. Its keel was laid in 1957.
- The Ministry of Transport and Communication, on whose request most of the project surveys were being carried out, bore the entire cost of converting the sloop JAMUNA for the survey role. JAMUNA was commissioned as a survey vessel in November 1956.
- SUTLEJ had been doing survey temporarily since 1953. During her 1957 annual refit, her hull and machinery state were so poor as to require a major refit. It was decided to convert her for permanent employment as a survey ship during her D2 refit at MDL.

Surveys Carried Out. Between 1954 and 1958, surveys continued to be carried out in the Gulf of Kutch, the Gulf of Cambay, the Andaman and Nicobar Islands and ports on the east and west coasts.

Survey Personnel. The shortage of survey officers and sailors continued to persist.

Hydrographic Office. The Hydrographic Office was established in temporary accommodation at Dehra Dun in June 1954.

On 15 August 1954, the name of the Marine Survey of India was changed to Hydrographic Branch of the Navy . The designation of the Surveyor in Charge was changed to Chief Hydrographer. Captain J Cursetji took over as Chief Hydrographer in 1956. The office shifted into its new buildings in 1957.

From the outset, it proved difficult to get trained civilian technical personnel for the Hydrographic Office. Surveyors had to be obtained on loan from the Survey of India and draftsman and hydrographic assistants had to be trained on the job. This expedient continued for several years.

Publications. From 15 February 1958 onwards, Indian Notices to Mariners started being published from the Naval Hydrograhic office.

Navigational warnings continued to be issued from the Naval Chart Depot in Bombay.

In 1956, India became a member of the International Hydrographic Bureau. From 1957 onwards, the Chief Hydrographer started representing India at the International Hydrographic Conferences in Monaco.

1959 - 1964

Expansion of the Hydrographic Branch

In 1959, the Navy forwarded to the Ministry its proposals for the expansion of the Hydrographic Branch. Discussions continued till 1963 with no tangible results. In 1963, the Navy put up revised and updated proposals, pointing out that adequate charting of Indian waters was a prime necessity for the maritime defence of India and therefore was the sole responsibility of the Ministry of Defence. The 1963 paper envisaged the requirement of 4 ships for seaward survey and 4 smaller survey craft for inshore coastal survey, phased over a period of 5 years.

On 25 March 1965, the Chief Hydrographer was re-designated as Chief Hydrographer to the Government of India. This gave official recognition to the advice he gave to the various maritime agencies.

Survey Vessels. From 1959 onwards, the survey fleet consisted of JAMUNA and INVESTIGATOR. SUTLEJ rejoined in 1960 after her permanent conversion for survey duties.

The new survey ship being constructed in HSL to a French design was inordinately delayed. Ten years after it had been sanctioned, she was commissioned as DARSHAK on 28 December 1964. She had a helicopter to assist in survey duties; her living and

working spaces were air conditioned; she had fluorescent lighting throughout, automatic telephones and two 35 foot survey launches.

Surveys Carried Out. Between 1959 and 1964, surveys continued of both coasts, the Laccadive Islands and the Andaman and Nicobar Islands.

Survey Personnel. Various steps were tried to overcome the persistent shortage of volunteers for survey duties:

- Officers found unsuitable for the Air Arm were selected for the Hydrographic Branch. These officers however declined to volunteer to stay on as survey officers.
- Junior officers started being attached to surveys ships for periods of 2 to 3 years.
- Officers of the survey branch started being transferred to general service appointments for experience.

Hydrograhic Training School

Until 1959, no proper facilities existed for training personnel in Hydrography. Officers and sailors joined the branch on recommendation by their Commanding Officers. Their skill and dedication was rewarded in accordance with General Instructions for Hydrographic Surveyors.

The first attempt at providing systematic training began in 1959 with the establishment of a Hydrographic Training Unit at the Naval Chart Depot Bombay. It conducted short duration course for quartermaster sailors. Progressively, the shortage of junior recorders eased but the shortage of senior recorders was unavoidable until the junior recorders acquired the qualifications and experience to be promoted.

Due to constraints of space, this unit was shifted to Cochin in 1961. It was temporarily located in a wing of the ND School and named as the Naval Hydrographic School.

Publications. Apart from the publications of new charts, Sailing Directions and Indian Notices to Mariners, the Indian List of Lights was published in 1961.

Developments Between 1965 and 1975

Survey Ships. From 1965 to 1974, the survey fleet consisted of DARSHAK, INVESTIGATOR, SUTLEJ and JAMUNA. INVESTIGATOR was decommissioned on 30 Sep 74.

In 1970, Government sanctioned the replacement of INVESTIGATOR, SUTLEJ and JAMUNA in a phased programme. Orders could not be placed, however, because MDL was fully stretched with the Leander frigate project and GRW was not geared up to construct large ships.

In 1972, when considering the distribution of ship construction work between MDL and GRW, Government decided that new survey ships would be constructed at GRW. The first of the three replacement ships was ordered on GRW in 1972. The ship was to be fitted with modern survey, navigation and manoeuvering equipment, indigenous propulsion machinery with a Pleuger rudder and be fully airconditioned.

In 1973, Government approved the indigenous construction of four survey craft for inshore survey work.

In 1975, due to financial constraints, NHQ rescheduled the placement of orders:

- Survey ships 2 and 3 were deferred to the 1974-79 plan. NHQ timed the orders for these two survey ships to be delivered in 1978 and 1979.
- The four survey craft were deferred to the 1980-84 plan.

Surveys Carried out Normal surveys continued to be carried out on both coasts, and the Andaman, Nicobar and Laccadive Islands.

Other Survey Activities:

In 1967,

- SUTLEJ carried out the survey in connection with the establishment of the DG Range at Goa.
- INVESTIGATOR carried out surveys in Visakhapatnam harbour in connection with the new Dockyard Project.

In 1968 DARSHAK continued the surveys in connection with the DG Range at Goa.

In 1969 JAMUNA carried out surveys of the Submarine Exercise Area off Visakhapatnam.

During the 1968-69 season:

- DARSHAK carried out oceanographic surveys from Bombay to the Gulf of Cambay with scientists from Naval Physical & Oceanographic Laboratory (NPOL) and National Institute of Oceanography (NIO). National Geophysical Research Institute (NGRI) scientists, embarked on board. Observations were made pertaining to physical and chemical properties of sea water, marine biology, bathymetry, geology and magnetic profiles.
- SUTLEJ, carried out oceanographic observations with a team of scientists from NPOL. Magnetic profiles upto 35 miles offshore were obtained.

During the 1973-74 season, DARSHAK was employed on Defence Oceanography and Marine Resource Surveys, in which all maritime research agencies of the nation participated. This was the first venture of its kind and yielded valuable data.

Survey of the Gulf of Kutch. Survey of the Northern portion of the Gulf had begun in 1948. During the 1974-75 season, the Ministry of Transport placed the lighthouse tender MV SAGARDEEP at the disposal of the Chief Hydrographer. Using two Side Scan Sonars provided by the Indian Oil Corporation, DARSHAK and SAGARDEEP surveyed most of the Gulf of Kutch. The results of these surveys enabled delineation of the deep water channel to the off-shore oil terminal at Salaya for use by the Very Large Crude Oil Carriers (VLCCs) which brought crude oil from the Persian Gulf to the refineries in Gujarat.

Electronic Surveying Equipment In 1966-67, the Ministry of Transport provided DARSHAK with a medium range position fixing system, the Hi-Fix chain, to progress surveys in the Gulf of Cambay. Prior to the introduction of Hi-Fix, surveys in mid-ocean used to be done painstakingly by laying beacons and fixing with sextants or taut wire. Hi-Fix was a major milestone in the modernisation of surveying equipment.

Surveys in Bangladesh After the 1971 war, DARSHAK carried out surveys in Bangladesh till March 1972.

Survey Personnel

Direct Entry Survey Officers The intake of officers into the Hydrographic Branch used to be from General Service volunteers. Since far too many officers reverted to General Service after a short stint of surveying, Survey Officers started being directly recruited from 1965 onwards.

Survey Allowance and Survey Bounty In 1968, to attract more volunteers for survey duty, both these allowances were revised upward.

(a) *Survey Bounty for Sailors Employed on Survey Duties*

	Rs per year
Survey Recorder 1 - CPO	Rs 450
Survey Recorder 1 - PO and below	Rs 390
Survey Recorder 2	Rs 330
Survey Recorder 3	Rs 240

(b) *Survey Allowance/Survey Bounty for officers*

Category	*Survey Allowance* Rs p.m.	*Survey Bounty* Rs p.m.	
Asst Surveyor Class 4	50	850	minus Survey Allowance received during the period involved
" " " 3	60	950	- do -
" " " 2	85	1350	- do -
" " " 1	100	1850	- do -
Charge Allowance			
Lt Cdr	100	1800	- do -
Commander	100	1800	- do -
Captain	Nil	1800	- do -

In 1969, Survey Bounty was sanctioned for MCPO's

MCPO 1	Rs 570 per year
MCPO 2	Rs 510 per year

Modernisation of the Naval Hydrographic Office Dehra Dun

To cope with the growing volume of chart production, the complement of officers and technical and administrative civilian staff was increased in December 1966. A 'Morusawa' Photo Typesetting Machine was installed in 1967. All 'letter' and 'figure' work, which previously used to be fair drawn manually, was photographed in original on the photo typesetting machine and the prints were then mounted on the fair-drawing original.

In March 1971, the printing of charts commenced on the new lithographic and letter-press machines.

In 1975, the printing complex was augmented by a double colour, rotary offset machine and allied printing equipment.

The Environmental Data Unit

The Environment Data Unit was established at the Hydro-graphic Office in 1974. During 1975, this unit processed, analysed and interpreted the data received from :

- DARSHAK's Oceanographic Expedition of 1973-74.
- The USA's National Oceanographic Data Centre.
- The International India Ocean Expedition.

In 1975, the Naval Hydrographic Office was nominated by the Government of India as the National Centre for archiving and dissemination of

bathythermograph (BT) data. The Government directed that BT data collected by all vessels of national agencies be forwarded to the Naval Hydrographic Office.

International Co-operation

The International Hydrographic Bureau (IHB) assigned to the Naval Hydrographic Office the responsibility of preparing nine bathymetric plotting sheets, based on source material received from data centres the world over. These were incorporated in the General Bathymetric Chart of the Oceans (GEBCO).

Naval Hydrographic School

Sanction for establisl ing a permanent Hydrographic School at Cochin was first issued in April 1965. Later it was decided to locate the school at Visakhapatnam. Eventually, in 1975, sanction was accorded to establish the School at Goa.

Publications

Lattice Charts. The production of Decca Lattice navigation charts was taken up in 1967. The first of the series covering the approaches to Paradip Port was published in April 1968.

Coastal Charts and Indian Sailing Directions. The publication of the coastal series of charts for the West Coast of India started in 1968. The publication of Indian Sailing Directions for this area commenced in 1970.

Extension of Coverage of Notices to Mariners. Commencing March 1972, the coverage of Notices to Mariners was enlarged to include the entire North Indian Ocean area. This ensured that important information relating to the safety of navigation was available to ships expeditiously .

Bathymetric Chart of the Northern Indian Ocean. This chart was published in July 1973.

Indian Nautical Almanac. In September 1974, the Naval Hydrographic office published the Indian edition of the 1974 Nautical Almanac. It was identical to the Almanac being jointly produced by Britain and the USA and was produced under arrangements with them.

International Arrangements for Exchange of Reproduction Materials. Three charts of the Persian Gulf area and the chart of Malacca Straits, were published in 1973, from reproduction material received from the British Hydrographic Department under a charting arrangement. Publication of the Nautical Almanac, identical to that produced by the UK and the USA, was commenced in 1975 under arrangements with these countries.

Goodwill Cruise

In April - May 1970, DARSHAK undertook a goodwill cruise to Southeast Asia. This was the first time that an Indian built survey ship visited countries in this region.

President's Review of the Fleet

DARSHAK, JAMUNA and SUTLEJ took part in the President's Review of the Fleet at Bombay on 28 December 1969.

International Hydrographic Bureau

Chief Hydrographers have had the distinction of being elected to the International Hydrographic Bureau in Monte Carlo.

Commodore DC Kapoor was the first Chief Hydrographer to be elected to the Directing Committee in April 1972. He then served as a Director in the Bureau till 1982, having been re-elected for two successive terms.

Rear Admiral FL Fraser served from 1982 to 1987 as the President of the Directing Committee.

Developments After 1975

Re-Scheduling of the Survey Season

As a result of refit programmes and employment on other naval duties, it was found that survey ships and craft were not always available in the survey season. Deployments therefore started being made in locations where survey work was feasible even during the monsoon season.

Survey Vessels

DARSHAK, SUTLEJ and JAMUNA continued on survey duties until the new survey vessels commissioned.

In 1977, DARSHAK was fitted with all the new survey equipment which was being fitted in the new survey ships under construction.

In 1977, sanction was accorded for the construction of four 185 ton, survey craft which would not only work in conjunction with survey ships in coastal waters, but also independently carry out surveys of all ports, harbours and their approaches.

New Survey Vessels		Commissioned
SANDHAYAK	Survey Ship(GRW)	26 Feb 81
NIRDESHAK	Survey Ship(GRW)	04 Oct 83
MAKAR	Survey Craft(GSL)	31 Jan 84
MITHUN	Survey Craft(GSL)	31 Mar 84
MEEN	Survey Craft(GSL)	23 Jun 84
MESH	Survey Craft(GSL)	31 Oct 84
NIRUPAK	Survey Ship(GRW)	14 Aug 85
INVESTIGATOR	Survey Ship(GRW)	11 Jan 90
JAMUNA	Survey Ship(GRW)	31 Aug 91
SUTLEJ	Survey Ship (GRW)	19 Feb 93

Old Survey Ships	Decommissioned
SUTLEJ	1 Dec 78
JAMUNA	31 Dec 80
DARSHAK	15 Jan 90

All six survey ships of the SANDHAYAK class were equipped with the latest available electronic equipment and facilities for hydrographic work.

The survey craft were not found to be stable enough for survey work when the weather was not calm.

Naval Hydrographic School Goa

The new school at Goa was constructed within INS GOMANTAK and commissioned in three phases between 1978 and 1987. Meanwhile courses for Direct Entry officers and sailors, and for Civilian Field Assistants, including some from foreign countries, continued to be conducted on facilities borrowed from other Naval units at Cochin.

In 1980, the Hydrographic School was given UNDP aid of 3.5 million US Dollars for acquiring modern surveying training equipment. Thereafter, it was awarded Category A certification by the International Hydrographic Organisation and recognition as the Regional Training Centre for the Asia Pacific region.

The present role of the Naval Hydrographic School is:

- To train Indian Naval officers and sailors in the field of Hydrography and allied instrumentation.
- To conduct courses for Civilian Hydrographic personnel from ports and other Central Marine Agencies.
- As the Regional Hydrographic Training Centre, to conduct courses for civilian and service personnel of Southeast Asian countries.

In 1997, the Naval Hydrographic Office and the Naval Hydrographic School were re-designated as the National Hydrographic Office and National Hydrographic School.

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Naval Scientific Research and Development

Developments Prior to 1965

In 1949, the Government invited Dr JE Keyston of the British Royal Naval Scientific Service to advise on the establishment of a scientific organisation to assist the Navy. In his report on "The Requirements of the Indian Navy for Scientific Assistance", he recommended the setting of an Underwater Science Establishment and a Dockyard Laboratory. He also recommended the immediate appointment of a Chief Scientific Officer at Naval Headquarters. The Government accepted these recommendations

The services were obtained on loan for a period of two years of Dr GE Gale, a Principal Chief Scientific Officer of the Royal Naval Scientific Service. He took over as Scientific Adviser (Navy) in March 1951. Ex officio, he was also the Chief Scientific Officer (Navy) in the Defence Science Organisation of the Ministry of Defence. Three major thrust areas were identified: the INPL, the NCML and the indigeneous production and inspection of Naval Stores. Both laboratories were to function directly under the Naval Research Cell in Naval Headquarters. An Indian scientist was appointed to work alongside Dr Gale and take over from him when he left.

The INPL

A Physical laboratory was set up on Willingdon Island in Cochin to deal with the scientific aspect of undersea warfare including submarine detection, minesweeping, degaussing and harbour defence. The first priority was to be given to work on degaussing, ship noise and magnetic sweeping, development of detector loops, study of thermoclines (bathythermograph data), underwater accoustics, indigeneous production of sonar oscillators and fire control equipment. Oceanographical investigations were also planned.

In March 1952, the Indian Naval Physical Laboratory(INPL) was established in the wartime barracks of one of the Training Schools of INS Venduruthy in Cochin.

The NCML

The Naval Chemical and Metallurgical Laboratory was established in Bombay Dockyard. The laboratory was intended to undertake R & D work related to all materials used in the Navy, other than explosive or foodstuff. The first priority was to be investigations in connection with hull, non-ferrous and boiler corrosion, antifouling composition and methods of hull protection. In due course, the laboratory would be equipped to carry out the mechanical testing of metals, gamma radiography and spectrographic analysis.

By end 1952, an old building in the Dockyard had been converted into a laboratory and a large raft had been constructed to be moored in Bombay harbour for conducting experiments on anti-fouling and protective compositions for underwater hulls.

The Scientific Aspects of the Indigeneous Production of Naval Stores

The first priority was how to make the technical inspection of naval stores more effective and how to attain industrial standardistation. The Scientific Adviser (Navy) was the convenor of the Naval Stores Production Committee at NHQ and his staff represented NHQ on nearly twenty committees, sub committees and panels of the Indian Standards Institution.

Interservice activity was planned in the fields of:

- Radar Research: In due course, this culminated in the establishment of the Electronics Research and Development Establishment (LRDE) in Bangalore.
- Physiological Research: To clarify future lines of research, an extensive study was carried out in 1952 of habitability conditions on board naval ships, obtaining data on personnel working under heat stress in boiler rooms and engine rooms, physiological stress experienced by divers and the question of survival rations.

Initial R & D Studies

R & D work also started in the following areas:

- Material science and marine biology studies with emphasis on corrosion studies, industrial pollutants and their effect on underwater corrosion, chemical cleaning of exhaust systems and toxic gases in submarines and their elimination.
- Studies on the natural deterioration of timber in sea water, rearing of barnacles, toxicants and their inhibition on marine growth and development of dual purpose systems for inhibition of corrosion and fouling.

In 1972, the initial charter of duties was modified:

- Underwater detection studies were deleted since these were already being carried out by NPOL.
- The Material and Marine Biology division was shifted to the NCML, Bombay.

However, in view of the importance of establishing indigenous equivalents for Russian oils and lubricants, a full fledged laboratory was established under the direct control of the Naval Dockyard at Visakhapatnam. In subsequent years, this laboratory grew into a laboratory of repute and met the Navy's requirements in the field of material sciences and studies on vibration in ships etc.

In 1973, the NSTL's charter was revised again and became:

- Underwater weapons
- Underwater test ranges
- Noise and vibration studies
- Studies on underwater explosion
- Electrical and mechanical machinery
- Other major R & D problems pertaining to the Navy. The Laboratory was equipped with facilities for evaluation of data required for warship design, hydro dynamic and hydro ballistic studies and hydrofoils.
- Study on performance of wear of marine propulsion engines under fuels and lubricants of different specifications.
- Scientific support to the Eastern Naval Command.

The major studies carried out by the NSTL between 1969 and 1975 were as follows:

Noise Ranging and Self Noise Measurement Studies

The need had increasingly been felt to undertake noise ranging of the newly inducted ships and submarines. The aim was to measure their underwater radiated noise, pinpoint the sources of this noise and reduce the level so as to minimise the probability of their detection by enemy sonars. Likewise, the self noise level of vessels also needed to be measured and reduced so as to enhance the performance of own sonars. Since no facilities existed in the country for noise ranging and self-noise measurements, NSTL took up a project in 1970 to design and develop the instrumentation system to carry out noise measurements and analyse the self noise of ships.

Noise ranging, self-noise measurements and airborne noise measurements were carried out on the Petyas, the Leanders and the earlier Brahmaputra class frigates:

- The airborne noise measurements gave an indication of the habitability conditions in ships compartments and accordingly, noise-dosage recommendations were given.
- The radiated noise and self noise measurements were recorded and analysed and recommendations made to improve maintenance routines and machinery operating regimes and to adopt noise reduction techniques.
- Performance evaluations were undertaken of noise reduction systems like the Leander's Agouti system and the Brahmaputra class controlled Pitch Propellors(CPP).
- A committee was appointed to recommend the site for a permanent noise range.

Vibration Measurements of Machinery on Board Ships

The vibration signatures of Petyas and Leanders were measured. Analysis of these measurements enabled:

- Preparation of a data bank of base-line vibration signatures.
- Formulation of criteria for acceptance of machinery on new construction ships.
- Life extensions for main propulsion gas turbines.
- Fault diagnosis on machinery having specific problems.
- Recording on the shop floor of base-line levels of new machinery.
- Initiation of techniques for condition monitoring of machinery.

These studies helped not only to pin-point faults but also to assess the health of machinery and thereby forestall failures. This project became a fore-runner to later vibration measurement studies.

Degaussing Range for Mine Sweepers

All the instrumentation and structural frame-work for the minesweeper degaussing range was designed and developed indigenously. The range was installed off Middle Ground at Bombay and a trial ship, INS KAKINADA, was ranged. However, due to ocean engineering problems and shortcomings in underwater cable technology, the structure of the range got damaged and water ingressed into the cable connections. The project yielded important lessons for the setting up of future DG ranges and the DG ranging of ships.

Underwater Shock Studies

The protection of the hulls of own ships and submarines against enemy underwater weapons and the effectiveness of own underwater weapons against the hulls of enemy ships and submarines require knowledge of underwater explosions and their damage potential. Being sensitive and classified, no data was available. NSTL took up this study in 1972.

The laboratory study established the experimental facilities to create scaled explosions, the instrumentation to record and analyse shock data and understand the damage likely to be caused to hulls, machinery and equipment by underwater shock propagation. This study laid the foundation for establishing the extensive facilities for subsequent studies.

Improvements to Torpedoes

In the early 1970's, neither expertise nor infrastructure was available either to redesign or develop torpedoes. NSTL concentrated therefore on improving the capability of the existing British MK 44 and Russian torpedoes.

Initial effort focussed on developing the instrumentation for testing critical parameters. To test the external pressure, NSTL fabricated an autoclave chamber to test sub-systems/shells upto 60 kg/cm sq.

Projects successfully completed included:

- Increasing torpedo range by introducing additional bottles.
- Substituting an oil hydraulic system in place of the pneumatic system.
- the development of indigenous torpedo batteries. To test these indigenous batteries, a Drag Disc test facility was set up to test a torpedo in the static condition. This facility proved invaluable for testing batteries and contra-rotating motors.

A breakthrough was achieved by successfully instrumenting a torpedo for evaluating the torpedo decoy developed by the NPOL, Cochin. The towed decoy was a "Controllable Noise Maker"(CNM). To determine its effectiveness to seduce a torpedo, it was necessary to record the torpedo's underwater track. NSTL scientists designed a digital recorder which optically picked off the track information from the torpedo's course-keeping gyro, converting it into digital data and recording it on a tape recorder. The data, when played back, enabled a complete evaluation, not only of the torpedo but also of the CNM. With this track recorder, it became possible to understand all aspects of torpedo dynamics and the performance parameters of torpedo sub-systems.

This marked the beginning of a multipronged-multidisciplinary approach. Artificial targets were successfully developed to evaluate torpedo firing practices.

What started in 1973 as a project to develop a simple track recorder for recording a torpedo's track eventually enabled scientists to confidently take up projects to enhance the capability of torpedoes in naval inventory.

General Research and Development

In 1969, the Director of Scientific Research (Navy) was redesignated as the Scientific Adviser to the CNS. The technical and administrative control of NPOL and NCML was transferred to the newly appointed Director of Naval Science and Technology, DNST, in DRDO.

With the creation of DRDO in 1958, the interaction with other laboratories synergised and several projects were successfully completed.

Year	Project
1968	(a) Development of Day and Night Distress Signal.
	(b) Development of 6 inch gun shells for practice firing, which on explosion threw up coloured splashes.
	(c) Maintenance particulars for Russian armaments.
	(d) Development of reduced charge propellant for 4 inch guns.
1969	(a) Temperature indicating lacquer to avoid "cook off" in rapid fire Russian guns
	(b) Techniques for reconditioning radio proximity (VT) fuzes held in stock

thereby extending the service life of large quantities of these expensive fuzes.

(c) Modification of a proof cradle for fitting a 4.5" gun in a 4.7" gun mounting for use at the new VT fuze range at Balasore, thereby avoiding the import of a complete 4.5" gun and mounting.

(d) Engineer-in-Chief's branch. Design and construction of a VT fuze range at Balasore with the assistance of DRDO laboratories.

(e) Design and development of a naval VT fuze in coordination with DRDO Laboratories.

1970 (a) Design and production of Russian 76.2 mm ammunition.

(b) Design and production of Russian anti submarine rockets.

(c) Design of chaff rockets and their launchers

(d) Design of radio proximity VT fuzes for anti aircraft gun ammunition

(e) Design of accoustic proximity fuzes for anti submarine rockets.

1973 (a) Improved antenna design to provide high radiation efficiency.

(b) Improved amplifiers to increase the range performance of radars.

(c) A coal-tar epoxy composition as protective coating for bilges of ships.

(d) Rigid PVC piping for sea-water on board ships was found to withstand mechanical deformation, degradation and thermal shocks within limits. The piping was recommended for use in small craft.

(e) Indigenously developed anodes for cathodic protection to ships and submerged structures were found to give protection for a longer period than the imported zinc anodes.

1974 (a) Anti-cockroach lacquers/paints for use against cockroaches in galleys, pantries and living spaces on board ships. User trials indicated that these lacquers/paints were very effective against cockroaches for six months.

(b) NCML developed a shop primer for application on the steel plates used for construction of ships. The composition gave satisfactory performance on ship hulls.

(c) Aeromedical Cell, Bangalore developed:

(i) A light weight stretcher which could be installed in all types of aircraft, helicopters and motor ambulances.

(ii) Protective helmets donned by aircrew for protection against shock and penetration during aircraft accidents.

1975 (a) The Defence Food Research Laboratory, Mysore developed.

(i) An indigenous container for Accelerated Freeze Dried Meat, which gave a shelf life of 9 months.

(ii) An automatic chapati making machine which rolled out fully baked chapaties at the rate of 20 per minute. The machine consisted of two units, one for dough making and kneading and the other for rolling, baking and puffing.

(b) The NCML Bombay developed.

(i) Paints based on sodium silicate which used water as solvent and did not create fire hazards. These paints replaced the epoxy based compositions being used by ships for painting fuel tanks.

(ii) Aluminium alloy anodes based on indigenous high purity aluminium. These anodes, in various designs, were fitted in ships for cathodic protection. Cathodic protection to ships and submerged structures in the Navy brought about an annual saving of Rs 25 lacs.

(iii) A solventless epoxy compound for protection of piling and off-shore structures. The coating dried quickly and was found to withstand the most rigorous conditions of splash and adhere firmly on wet surfaces.

(c) The Textile and Stores Research and Development Establishment, Kanpur developed waterproof smocks and trousers from indigenous materials.

These were found suitable on board submarines.

(d) The Defence Institute of Fire Research, New Delhi, developed indigenous foam liquid to replace the imported foam liquid. It was successfully tried out in a submarine.

(e) The Research and Development Establishment (Engineers), Pune, designed a single-compartment surface-type recompression chamber for divers. The chamber could accommodate 8 men at a time and had a working pressure upto 100 psi.

1975

By 1975, NHQ had formulated its long term requirements in the form of a Missile Plan, a Radar Plan, a Sonar Plan, and an EW Plan to enable these to be dovetailed wherever possible with the long term plans of the other services.

The ASW computer for the 5th and 6th Leanders and the development of on-board simulators were entrusted to the Department of Electronics.

By end 1975:

- Indigenous Sonobuoys, sonic ray plotters and expendable bathy theirographs (XBTs) were entering service.
- Trials of controllable noisemaker torpedo decoys and the modified Sonar 170 were in progress.

Projects Started in 1965-75 but Completed After 1975

Operational Projects	**Started**	**Completed**
Indigenous Expendable Bathy Thermographs (XBT)	1971	1977
Diver Held Sonar	1965	1976
Towed Torpedo Decoy Controllable Noise Maker	1965	1977
Sonic Ray Plotter	1969	1976
Medium Range Sonar for Frigates	1974	1977
Pilot Production of Sonobuoys	1967	1977
Support for Naval Operations:		
DG Range for Minesweepers	1968	1977
High Pressure Underwater Testing Equipment	1969	1977
Repair and Calibration of Magnetostrictive Transducers	1970	1976
Training Projects	**Started**	**Completed**
Echo Injector Procedure Teacher	1967	1976
Submarine Echo Classifier	1967	1976
Electronic Uniselector of ASTT Radar PPI Display		
Ocean Studies	1970	1976
Reverberation and Propagation studies	1972	1984

Oceanographic Research

1953

Oceanographic research commenced in 1953 by:

- Systematising the accumulation of bathythermograph data
- Survey ship INVESTIGATOR taking samples at depths as far down as 1000 fathoms.
- Naval ships taking naval scientific personnel and Andhra University personnel and students to sea on a number of oceanographical cruises.

In 1960, the flag ship of Soviet Oceanographic Research, the VITIAZ, visited Cochin. INPL scientists visited the ship's 13 laboratories and one scientist participated in an oceanographic cruise.

1962

International Indian Ocean Expedition

In recognition of the importance of Oceanographic Research in the Indian Ocean, it was decided that the Indian Navy will take part as a major participant in the International Oceanographic Expedition in Indian Ocean scheduled for 1962-64.

The main tasks allocated to India within the framework of this expedition were:

- Participation by INS KISTNA, a frigate specially fitted for Oceanic Research to the extent of 6 months in each year in 1962 and 1963.
- Provide assistance for radio communication to the vessels taking part in this expedition in the Indian Ocean Area.
- Provide assistance with shore facilities to oceanographic vessels within Indian ports.
- Provide facilities in Naval Laboratories at Bombay and Cochin.
- Make available Naval Scientists for participation in research work both ashore and afloat.
- Provide assistance for the training of scientists as required for the expedition.

Indian responsibilities within the overall framework lay in the waters near the coast of India, both East and West, and intensive investigations on the continental shelf and super-jacent waters. The

maximum limits of the area of Indian responsibility were the Arabian Sea above the Equator with 6 degrees longitude as the western boundary and the Sumatra Coast along with the Andaman and Nicobar Islands as the eastern boundary. Some cruises were made to south of the Equator up to 12 degrees south. Similarly, cruises were undertaken to the east coast of Africa where important oceanic currents originate and which have a bearing on the coastal circulation on the northwest coast of India.

The Indian programme included observations and calculations of energy flux between the ocean and the atmosphere. Studies were also to be made of sun, sky and atmospheric radiations; air pressure, temperature and humidity at deck level; surface temperature of the sun; near surface current; waves; swells; tide; rainfall; evaporation profiles of wet and dry bulbs and wind above sea surface.

India was represented in the expedition by four vessels:

- *INS KISTNA*. The ship was fitted out with the requisite scientific instruments and equipment to cope with the requirements of the various tasks allocated to India.
- *RV VARUNA*, a survey vessel of the Indo-Norwegian Fisheries Project, Kerala.
- *Bangada*, a fisheries vessel.
- *Conch*, a research vessel of the Kerala University.

A total of 20 ships from the following countries participated in the expedition:

Australia, France, India, Indonesia, Israel, Japan, Norway, Portugal, Pakistan, South Africa, Britain, Russia, Zanzibar and West Germany. The USA and Russia between them had the largest contingents of ships.

From these cruises, the Navy hoped to obtain:

- Up to date seasonal sonar charts of our seas.
- Data on sea/swell in the open ocean.
- Bottom contour charts of the ocean for submarine navigation.

In the 1962 cruise, valuable data was collected relating to the propagation of sound through sea water, measurement of tides, waves and currents, the morphology of the sea bed etc.

1963

KISTNA, commenced study cruises in accordance with the programme for the International Indian Ocean Expedition. Eleven cruises covering 251 stations were completed and oceanographic data collected at various depths.

1964

KISTNA participated in six oceanographic cruises. Ten submarine canyons were located on the east coast of India.

1965

KISTNA participated in six cruises for collecting hydrographic and bathymetric data. In two cruises, she collaborated with the German Research Vessel METEOR in seismic refraction experiments in the Gulfs of Cambay and Kutch.

1966

In 1966, the oceanographic data collected during the 1965 expedition was compiled. The data from the seismic surveys carried out by KISTNA and METEOR was processed.

The National Institute of Oceanography was established in 1966.

1972

A committee under the Scientific Adviser to the Defence Minister recommended the formation of a national body for oceanography. Thereafter the Department of Science and Technology was to prepare a paper for Cabinet approval. It took several years to sort out the details. Their proposal for the formation of an Ocean Science and Technology Agency eventually ended up being the present Department of Ocean Development in 1981.

1973

MONEX 73. In collaboration with Russia, the India Meteorological Department organised Monsoon Experiment 1973.

Oceanographic Expedition December 1973

A major step taken for the exploitation of the country's resources in the continental shelf was the commencement of the multi disciplinary Oceanographic Expedition in Dec 73. The institutions which took part in the expedition were:

- National Geophysical Research Institute, Hyderabad.
- National Institute of Oceanography, Panaji.

- Zoological Survey of India, Calcutta.
- Geological Survey of India, Calcutta.
- Oil and Natural Gas Commission, Dehradun.
- Indian Meteorological Department, New Delhi.
- Atomic Energy Department, New Delhi.
- Gujarat Fisheries Department, Ahmedabad.

Naval Oceanographic Programme

Between Oct 73 and Jun 74, Survey Ship DARSHAK undertook an extensive oceanographic expedition from Goa to the Gulf of Oman, covering a coastal belt up to a distance of 200 miles offshore. Several hundred bethythermograph observations were obtained on a 15 mile grid supported by temperature, salinity and depth probes as well as reversing water bottle observations of the entire water column. This enabled construction of the sound velocity structure model of this area and provided basic data for planning future time-series studies of selected stations essential for the purposes of predicting the behaviour pattern of thermal layers.

Indian Ocean data received from the National Oceanographic Data Centre, Washington, as well as data held by the NIO, supplemented the Naval Oceanographic Programme. The data collected was processed by the Environmental Data Processing and Forecasting Cell in the Hydrographic Office at Dehradun and became available in 1975.

Oceanographic Equipment for Survey Ships

Naval Headquarters proposed to the Government the provision of oceanographic equipment for the two existing survey ships. This would help them in carrying out bathymetric, geological and geophysical surveys, measurement of ocean currents, the compilation of temperature, salinity and meteorological data, and a limited study of marine biology, all of which had deep operational implications.

1975

Oceanographic Forecasting

In 1975, Oceanographic forecasting was made the responsibility of the Meteorological officers in the Navy. To begin with, one meteorological officer was trained in th the basic principles of oceanographic forecasting and data processing.

26

The Indigenisation of Naval Stores and Equipment

Evolution of DQA (N) and DQA (WP)

At the time of Independence in 1947, all ships of the Indian Navy were of British origin. Almost all the machinery, equipment, spares and even common user stores were imported from Britain. Meanwhile, after the Second World War, the workload of the Indian Ordnance Factories had reduced drastically and they had substantial idle capacity.

In 1953, a small cell was created under the then Captain Superintendent Naval Dockyard (Bombay) to identify the items which could be produced in the Ordnance Factories or by Indian industry.

In 1955, to boost the indigenisation effort, an independent Directorate of Stores Production (DSP) was created, with cells at Bombay and Calcutta. The DSP functioned under NHQ.

In 1959, the administrative control of the DSP was passed to the Controller General of Defence Production (CGDP).

After China's attack in 1962, a Department of Defence Production & Supplies was created in the Ministry of Defence. The CGDP's functions were divided between the Director General of Inspection (DGI), the Defence Research and Development Organisation (DRDO) and the Ordnance Factories. The DSP was placed under the DGI.

In 1964, the DSP was redesignated as Directorate of Development & Inspection, Marine Stores (DDI(MS)). In addition to indigenisation, its role was expanded to include:

- Authority Holding Sealed Particulars(AHSP) activities,
- Vetting of Annual Review Demands(ARDs) and
- Inspection of indigenised stores.

Prior to this, the inspection of indigenous stores was being done by the Surveyor of Stores under the Commodore Superintendent, Naval Dockyard, Bombay.

The indigenisation of equipment and stores received a major impetus when, along with the decision to build Leander class frigates in Mazagon Docks, the decision was also taken to progressively indigenise all equipment to be fitted in the frigates. This rapidly increased the indigenisation workload and led to the creation of a separate Directorate for the indigenisation and inspection of equipment for warship production. In 1968, the DDI(MS) was bifurcated into:

- Directorate of Production and Inspection, Navy (DPI(N)) - for existing ships
- Directorate of Warship Production(DWP) - for new construction ships.

It soon became evident that these two Directorates were handling similar items, resulting in duplication of effort. In 1975, it was decided to reorganise the DWP and DPI(N) into the Engineering and Electrical disciplines. During the first phase of this reorganisation, only Western origin equipment was taken up and the role of the two directorates was redefined as follows:

- DWP - To deal with Marine Engineering and Hull equipment, including associated electrical machinery.
- DPI (N) - To deal with Electrical/Electronic/ Weapon equipment, their spares and Naval Stores.

During Phase II of the reorganisation in 1983:

- The indigenisation of Russian origin equipment was bifurcated on the above lines.
- The inspection establishments were similarly repositioned under DWP and DPI(N).
- It was intended to place DWP and DPI(N) under one head, the Addl DGI (Navy) and rationalise the field units.

This could not however be implemented.

In 1987, the DGI was redesignated as the Director General Quality Assurance (DGQA). The DPI(N) and DWP were redesignated as Directorate of Quality Assurance (Naval) DQA(N), and Directorate of Quality Assurance (Warship Production) DQA(WP), respectively, under the Ministry of Defence.

27

The International Law of The Sea and Indian Maritime Legislation

Developments till 1965

Over the centuries the international law of the sea had come to be based on the basic principle of "freedom of the seas". Beyond the narrow coastal strip of territorial waters, the seas could be freely used by all nations for fishing and for navigation. Coastal states used to be content with exclusive rights in their narrow belt of territorial waters.

The discovery of petroleum and natural gas in the shallow waters of the continental shelf led the United States to issue the Truman Proclamation in 1945, which claimed sovereign rights over the resources of the continental shelf adjacent to its coast. Around the same time, coastal states found that the fishing areas near their coasts were being poached by larger and better equipped fishing ships of distant foreign states. Both these developments, combined with the emergence of newly independent states after the decolonisation of Asia and Africa, led to a spate of unilateral claims by the coastal states to extend national jurisdiction over large adjacent sea areas to protect their fishery resources.

On attaining independence in 1947, India had been content to proclaim the traditional territorial sea of three miles. In view of the above developments, India issued four presidential notifications to safeguard its interests:

- On 30 August 1955, India claimed full and exlusive sovereign rights over the seabed and subsoil of the continental shelf adjoining the coast but beyond territorial waters. Neither the depth nor the distance from the coastline was indicated.
- On 22 March 1956, India claimed Territorial Waters of six miles from appropriate baselines.
- On 29 November 1956, India claimed a Conservation Zone for fisheries up to a distance of one hundered miles from the outer limit of territorial waters.
- On 3 December 1956, India claimed a Contiguous Zone.

Several other developments were also taking place. The USA and the Soviet Union were unable to agree on the width of territorial waters - the Soviet Union wanted twelve miles whilst the USA wanted only three miles. Technological developments in the industrialised West began to make it possible to extract oil and gas from the seabed. The newly independent nations of Asia and Africa began to feel that the International Law of the Sea would be exploited to their disadvantage. To sort out all these matters, the first United Nations Conference on the Law of the Sea (UNCLOS-1) was convened in 1958.

UNCLOS 1 - 1958

UNCLOS 1 was able to codify the traditional law. It adopted what came to be known as the Geneva Conventions on the Law of the Sea. The four Conventions were:

- the freedom of the seas as long conceived.
- the sovereignty of coastal states in the territorial sea.
- the ancillary physical, customs, sanitary and immigration rights of coastal states in a Contiguous Zone.

The acceptance by UNCLOS 1 of the Continental Shelf convention enabled the countries bordering the North Sea to divide the sea area for extracting oil and gas.

The UNCLOS 1 participants remained divided on several issues:

- The rights of coalitions of coastal states, land locked states and archipelagic states.
- Certain states contested the rights of passage through straits used for international navigation like the Straits of Gibraltar, Hormuz and Malacca.
- Land based mineral producers tried to carve out for themselves as much as they could of the newly found seabed mineral resources.

UNCLOS 1 completely failed to agree on:

- The precise width of the Territorial Sea (three miles or twelve miles) and the extent of the Exclusive Fisheries Zone.
- The prior authorisation and/or notification of the passage of foreign warships through the territorial sea of a coastal state.

The Second Conference, UNCLOS 2, was therefore convened in 1960 to resolve these issues.

UNCLOS 2 - 1960

UNCLOS-2 attempted to extend the jurisdiction of coastal states over territorial waters to six miles, with an additional six miles as an Exclusive Fishing Zone. This failed to gain the required two thirds majority for its acceptance.

After UNCLOS 2 failed to achieve agreement on the width of the territorial sea, many countries unilaterally extended their offshore jurisdiction. The South American countries reaffirmed their earlier claim of their territorial waters extending two hundred miles from the coast. African states like Nigeria, Congo, Mauritius and Ghana also extended their territorial sea to distances much beyond 12 miles.

Passage of Warships Through the Territorial Sea.

At UNCLOS 1, India had proposed that the passage of foreign warships through the territorial sea of a coastal state should be subject to prior authoritisation and notification to the coastal state. As this requirement was not accepted and therefore not included in the 1958 conventions on the Territorial Sea and the Contiguous Zone, India declined to ratify all four Geneva Conventions. In subsequent years, India resiled from this position. As a growing maritime nation interested in the freedom of navigation both for itself and the international community, India sought only prior notification for the innocent passage of foreign warships through territorial waters.

Developments After 1965

India's Extension of Territorial Waters

On 12 September 1967, India extended its territorial waters to twelve miles. This was largely a reaction to Pakistan's extension of her territorial waters from three to twelve miles, rather than an act of maritime policy.

The Seabed Committee

During the 1960s political, technological, economic and naval developments began to change the situation. Advances in seabed exploitation technology made it possible to exploit the seabed much beyond a depth of two hundred metres, thereby rendering the 1958 Conventions outmoded. The deployment of submarine launched ballistic missiles and worldwide apprehensions of a competitive scramble to achieve predominant control over the seabed led the United Nations to discuss the need to evolve means for the peaceful use of the oceans. In 1968, the UN General Assembly constituted a 42 member "Seabed Committee" on the peaceful use of the seabed.

In December 1970, the General Assembly adopted the "Declaration of Principles" governing the Seabed, the ocean floor and the subsoil thereof, beyond the limits of national jurisdiction. The Declaration stated that these areas and their resources are the common heritage of mankind and shall be subject to an international regime as established by an international treaty.

Seabed Mining

India's interest in the mining of polymetallic nodules from the seabed derived from its long term strategy for metals like nickel, cobalt, copper and manganese. In the early 1970, the Indian Government had initiated a programme of scientific investigation and evaluation of the manganese nodule resources in the Indian Ocean.

Offshore Oil and Gas

By the early 1970's, India had discovered oil and gas in Bombay High and promising fields were being forecast in the Godavari, Krishna and Palk Bay basins, as also gas in the Andaman Offshore.

With a view to establish an equitable international regime for the exploitation of seabed resources, the UN General Assembly convened the third conference, UNCLOS 3 in 1973.

UNCLOS 3 - 1973 to 1982

It took UNCLOS 3 nine years of discussions to adopt the United Nations Convention on the Law of the Sea on 30 April 1982. Thereafter this convention took twelve years to formally come into force on 16 November 1984.

UNCLOS 3 aimed to define an agreed set of rules to govern the use of the seas which would strike a fair balance between:

- those who considered that a coastal state should have no right whatsoever over the living resources of the seas beyond a territorial sea of twelve miles and
- others who maintained that a coastal state should have full or limited sovereignty over the sea and its resources out to an Exclusive Exonomic Zone of two hundred nautical miles.

The acceptance of this concept of the Exclusive Economic Zone (EEZ) was a landmark contribution of UNCLOS 3.

At UNCLOS 3, India's stand was that as a developing country centrally located in the Indian Ocean, with a coastline of over 6400 kilometers, its basic national interests were:

- To obtain assurance of smooth and free navigation though traditionally used waters and straits used for international navigation.
- To achieve archipelagic status for the Andaman and Nicobar island group and the Lakshadweep island group which between them, comprised over 1280 islands and islets.
- To protect essential strategic and security interests in the waters around its coast.
- To secure the free mobility of naval warships.
- To preserve the marine environment in the sea areas adjacent to its coast, because the channels of navigation passed near its long coastline.
- To regulate within its EEZ, the conduct of marine scientific research by foreign agencies.

India advocated from the baselines, a territorial sea of twelve miles, an EEZ of two hundred miles and a continental shelf to the outer edge of the geological continental margin. India also made specific proposals on the requirement of prior notification for warships passing through the territorial sea, enlargement of safety zones around offshore oil rigs, designation of special areas for the protection of the resources located therein (as for example the coral lagoons in the Lakshadweep where tankers could run aground) and several other proposals.

The Outcome of UNCLOS 3 - The 1982 Convention on the Law of the Sea

The 1982 Convention on the Law of the Sea met most of India's interests. It adopted:

- Twelve miles as the uniform limit for the width of the territorial sea.
- a two hundred miles EEZ, within which the coastal state exercises sovereign rights and jurisdiction for certain specified economic activities.
- a Continental Shelf extending to the outer edge of the continental margin, to be delimited with reference to either three hundred and fifty miles from the baselines of territorial waters or one hundred miles from the 2500 - meter isobath.
- regimes for the abatement and control of marine pollution, for marine scientific research, for the international seabed area and for unimpeded transit passage through straits used for international navigation.
- The 1982 Convention included India as one of the four states named as "pioneer investor' for seabed mining. On 17 August 1987, India became the first state to be so registered, after having fulfilled the criteria stipulated in the Convention.

There were several areas where India's stand was not accepted. The major ones were:

- ***Passage of Warships Through the Territorial Sea.***
  There was vehement opposition from the USA and the Soviet Union to prior notification before warships transited through territorial waters, on the grounds that it would seriously jeopardise their strategic and security interests. There is therefore no provision in the 1982 UN Convention on the Law of the Sea requiring prior notification or authorisation for the passage of foreign warships through the territorial waters of a coastal state. But by 1977, Pakistan, Bangladesh, Sri Lanka and Burma (Myanmar) had all unilaterally promulgated that prior authorisation and notification was required for the passage of foreign warships through their respective territorial seas.
  India's Maritime Zones Act 1976 also requires foreign warships to give prior notification for passing through India's territorial waters and enjoins all submarines and other underwater vehicles to navigate on the surface and show their flag while passing through these waters.
- ***Archipelagic Status for the Andaman and Nicobar Islands.***
  The Convention granted the status of an archipelago only to those groups of islands that were political entities by themselves as for example Indonesia, the Philippines and the Maldives. This was because of fear of interference with the freedom of navigation through archipelagic waters that might be created if the off-lying islands of continental coastal states were

to be granted archipelagic status. For example, the distance between the Andaman group and the Nicobar group of islands is 76 miles. If archipelagic status had been granted to these groups of islands, India would have had full regulatory control over the navigation of ships passing through the Ten Degree Channel, which would then have been part of India's archipelagic waters, and therefore subject to the restricted regimes of archipelagic sealanes passage.

- ***Enlarged Safety Zones for Offshore Installations.***
  The UNCLOS 1 Continental Shelf Convention had provided for a safety zone of 500 meters around artificial islands, installations or structures on the continental shelf. India's view at UNCLOS 3 was that this zone was inadequate, considering the time that a huge supertanker takes to come to a stop. India therefore advocated Enlarged Safety Zones. The suggestion did not receive adequate support. A provision was however incorporated in the 1982 Convention that if authorised by generally accepted international standards or as recommended by the competent international organisation, then a coastal state may promulgate safety zones larger then 500 metres.

India's Gains After the 1982 UN Convention of the Law of the Sea

Apart from the benefits of an agreed Law of the Sea, India gained in two significant areas:

- India's EEZ became the twelfth largest in the world. The extension of the EEZ to 350 miles or 100 miles beyond the 2500-metre isobath added 2 million square kilometers to India's jurisdiction.
- Pursuant to the 'pioneer investor' status, the International Seabed Authority allotted to India a 150,000 square kilometer mine site in the central Indian Ocean for the seabed mining of polymetallic nodules. The richest area at this site has a density of 21 kilograms of nodules per square metre.

The Genesis of the Coast Guard

While UNCLOS 3 was still in the early phase of discussing the EEZ and well before India had enacted the Maritime Zones Act of 1976, discussions had commenced in India on how the EEZ was going to be safeguarded. In 1974, Naval Headquarters had suggested to the Government to have an armed force on the lines of the US Coast Guard and stressed the importance of inter-ministerial coordination while selecting Coast Guard vessels, recruiting experienced personnel, setting up communication networks, using naval repair facilities, indigenisation etc. Such integrated Navy-Coast Guard development would avoid duplication and economise effort.

On 25 August 1976, India passed the Maritime Zones Act which claimed a 12 mile territorial sea, a 24 mile Contiguous Zone, a 200 mile EEZ and a continental shelf up to 200 miles or the outer edge of the continental margin, whichever is greater.

Soon after this Act, a committee was set up to consider the type of force that should be created to enforce compliance with its provisions. Three options emerged:

- To entrust this responsibility to the marine wing of the Ministry of Finance, which already had a number of Central Board of Revenue (CBR) anti smuggling vessels. This option was not pursued as the functions were too onerous.
- To set up a separate Coastal Command, as a part of the Navy, to oversee these functions. This option was seriously considered since it would avoid the expenditure of raising and maintaining a separate armed force. The Ministry of External Affairs however felt that patrolling of the EEZ and protection of national assets was a peace time role for which defence assets should not be used.
- To set up a separate armed force of the Union, along the lines of the US Coast Guard. This option was finally chosen, as it avoided the Navy being distracted from its primary role of preparing for hostilities.

An interim Coast Guard was constituted on 1 February 1977, which operated under the aegis of the Navy until 18 August 1978. A permanent Coast Guard was constituted as an armed force of the Union on 19 August 1978. The Coast Guard Act 1978 requires the Coast Guard to:

- Ensure the safety and protection of offshore terminals, installations and other structures and devices.
- Provide protection to fishermen, including assisting them when in distress at sea.
- Protect the marine environment by preventing and controlling marine pollution.
- Assist the customs in anti smuggling activities when patrolling the seas beyond Indian customs waters.
- Enforce the Maritime Zones Act of 1976.
- Take measures for the safety of life and property at sea.
- Collect scientific data.

The Coast Guard thus became the principal agency for enforcing all national legislation in the Maritime Zones of India, working in close liaison with other Government authorities to avoid duplication of effort.

During hostilities, India's Coast Guard would function under the overall operational command of the Navy, as is done by other Coast Guards of the world.

Maritime Boundaries

India has maritime boundaries with five opposite states (Sri Lanka, the Maldives, Myanmar, Indonesia, Thailand) and two adjacent States (Pakistan and Bangladesh).

Maritime boundary agreements were amicably concluded with:

- Sri Lanka in 1974 and 1976.
- Indonesia in 1974.
- The Maldives in 1976.
- Thailand and Indonesia, on the trijunction point, in 1977.
- Myanmar in 1982.

Maritime boundary agreements with the adjacent states of Pakistan and Bangladesh have yet to be concluded. Meetings have been held with Bangladesh since 1976 and with Pakistan since 1986.

28

Unified Code for the Three Services

In November 1955, whilst the Navy Act was still under consideration, the Government decided that after the passing of the Navy Act, the Army and Air Force Acts should also be amended to:

- Achieve uniformity in punishments for similar offences in the three services.
- Achieve uniformity in restrictions on fundamental rights and
- Conform to naval court martial procedure, under which an acquittal by a court martial could not be set aside.

Difficulties were encountered in implementing uniformity of punishments for similar offences under the three Acts. A Special Committee comprising the Joint Secretaries of the Ministries of Defence and Law and the Judge Advocates General of the three services was set up in Jun 1965 with the following terms of reference:

- To study thoroughly the historical background of disciplinary cases of the three services, the difficulties encountered, the codes of other democratic developed countries, their experiences, etc.
- To draft a Unified Code in order to rationalise the three service Acts, taking into consideration the developments in criminology and penology and also the fact that members of the Armed Forces would, in due course, come from more educated and politically conscious classes.

To assist in drafting the unified code, a Sub Committee was set up, consisting of the Judge Advocates General of the Army, Navy and Air Force. The Sub Committee held 178 meetings and the Special Committee held 35 meetings to consider various sections of the draft. In February 1970, a draft Unified Code was finalised and sent to the Law Ministry for vetting.

In view of the divergence of opinion between the three services in respect of certain controversial provisions of the draft Unified Code, the matter was placed before the Chiefs of Staff Committee. An ad-hoc Armed Force Unified Code Cell was established in 1972 to redraft the Code. The redrafted Unified Code was completed by January 1978.

When this draft was considered by the three Service Headquarters, the following criticisms were raised:

- The Code was not really unified. It was more a compendium of the existing service laws.
- The Code was not really progressive. The progressive features of the Codes of other democratic countries did not find place in the draft code.
- About 13 years had been taken in drafting the Code and a further delay of of 8 to 10 years could be envisaged.
- The Code was more complicated than the existing Army, Navy and Air Force Acts and may not be understandable by lay service personnel for whom it was really meant.
- The revision of the existing Service Acts was being delayed on account for the Code which was meant to replace the Acts.

After considering these aspects, it was recommended to the Chiefs of Staff Committee that:

- The three service Acts should be suitably amended so as to make them as progressive and uniform as possible, considering the Government directive of 1955.
- The decision whether to progress the Draft Unified Code or abandon it be considered after the work of modernising the three service Acts had been completed.

The Chiefs of Staff agreed that the three service Acts and the statutory rules should be amended before a decision was taken on the Draft Unified Code.

29

The Third Pay Commission

Preamble

Since the Army has been the largest service, the remuneration structure of naval personnel has always been linked with that of the Army. Army rank structure and conditions of service were taken as the datum and the Navy's differences in structure and service conditions had to be reconciled thereafter.

When the Third Pay Commission was constituted in 1970, the remuneration structure for naval personnel was the outcome of successive reviews carried out by three Departmental Committees and the earlier Pay Commissions. The framework evolved by these committees, especially the earliest, largely remained intact. Some of the concepts introduced then had almost become "fixations" and constrained the approach of earlier Pay Commissions.

The Post War Pay Committee of 1946

The first attempt at rationalisation and simplification of the remuneration structure was made by the Post War Committee in 1946. It was given the mandate to produce pay scales related exclusively to Indian conditions, to simplify the pay system and achieve the maximum degree of harmony within each Service and between the three Services. The Government also took a decision that "the future pays of the Armed Forces should be linked with civil pays as determined following the report of the First Central Pay Commission." Based on these parameters and guided by the Post War Pay Code of the British Armed Forces, the Post War Committee recommended a remuneration system based on the following equations:

- Service officers should broadly receive equal treatment with police officers.
- A fully trained infantry soldier with three years service was equated with a semi-skilled worker who in turn was equated with an Able Seaman of the Navy and the juniormost Leading Aircraftman of the Air Force. Whilst fixing the pay however, a higher differential was given to the Naval and Air Force equivalents due to the lack of popularity of these two Services, their higher educational qualification on entry and inherent hardships of life at sea in the Navy.

Officers. The closest comparator to Defence Services officers was identified as the Police for the simple reason that they both wore a uniform. This relativity had no other logic, especially with regard to job content. It continues till today, much to the detriment of the Service officers pay scales. In establishing this relativity, the PWPC deliberated at length as to what should be the linkage points. It was first agreed that the end of the Lieutenant Commanders scale should not exceed the end of the Senior Time Scale of the Police in which the SP was placed, thereby establishing a linkage between the two. The next link in the Police then was the DIG. The Service representatives sought a linkage of the DIG with the naval rank of Commander. However, it was finally accepted that the DIG should be placed between the naval ranks of Commander and Captain. One of the factors in establishing this linkage was that the three pillars of administration, namely the DIG of a Range, the Commissioner of a Division and the Commander of a Military District (of the rank of Colonel) had near identical years of service, were of approximately the same age and required to socially interact with each other. There should, therefore, be some relativity in their pay scales.

On the plea of 'all inclusive' pay and to achieve simplicity, almost all the allowances of officers were withdrawn. No such withdrawal was effected, however, for the Police and the Civil Services. The New Pay Code resulted in considerable reduction in the then existing pay scales of naval officers. Within a year of its implementation, the Government realised that there were inequities and drawbacks in the New Pay Code and sanctioned certain benefits in 1948 and 1950. In practice, the 'all inclusive' concept of pay was found unworkable.

Sailors. The Navy had initially projected a two group structure for sailors namely Artificers and Non-artificers. Amongst the Non-artificers, it was seen that in some trades like Writers, Electrical, Sick Berth Assistant, Stores Assistant and Communications, sailors were matriculates. In 1946, matriculation was a relatively high educational qualification, it needed to be recognised in the pay structure and so a separate pay group was created for matriculates, below the Artificer Group. The Navy

therefore emerged with a three group trade and pay structure as compared to the Army's eight groups and the Air Force's five groups. Another feature recognised by the Post War Pay Committee was the "All of a Company" concept. This was unique to the Navy. It was accepted that since sailors served onboard ships in close proximity with one another and were all combatants, there should not be wide disparity in their pay scales. Accordingly, the pay scales of the non-matric 'C' Group merged with those of the matriculate 'B" Group from the rank of Petty Officer upwards.

In the case of sailors, their updated pay was depressed by 33 percent on account of 'Home Saving Element' for concessions provided in kind. Since certain allowances were admissible as percentage of pay, this resulted in a double depression. However, an addition of Rs 5 was made, which worked out to 12 percent, to compensate sailors for the hazards and hardships of naval life.

While this amounted to a formal recognition of the need for such a compensation, this rationale was not extended to cover all ranks. Thus, officers received no consideration for the peculiar conditions of naval service involving hazards, turbulence and prolonged separations from family. This was possibly due to the perception at that time that in an independent India, the Armed Forces were somewhat of a luxury.

Admiral Soman recalls:

> "In December 1946, I became Naval Member of the Services Pay Commission in the rank of Acting Captain - the first Indian to have reached that rank. I was 33 years old and had never before served in the madhouse that was NHQ.
>
> "The Government had directed and Naval Headquarters had unprotestingly accepted that the Services pay scales be related to the Police pay scales. I appended a dissenting note strongly recommending that the equation be with the Indian Civil Service scales of pay. I was roundly ticked off and informed that I was there to represent NHQ's views not my own. I immediately asked to be relieved of my job but nothing happened and my dissenting note remained on file".

The Raghuramaiah and Kamath Committees

Consequent to the Second Pay Commission's Report in 1960, a Departmental Committee, headed by Shri Raghuramaiah, examined the pay and allowances of the Armed Forces. It stated that:

> "The Service representatives felt that pay scales approximating to the scales prevalent on the civil side were preferable to the existing pay structure, but that a revision would be such a complex and lengthy process that it was not practicable at the present juncture. In view of these practical difficulties, we decided that the present pay structure might be retained until such time as the Government finds it convenient to carry out a detailed review".

Another Departmental Committee under Shri Kamath was set up in 1967 to examine the adequacy or otherwise of various allowances and concessions. The recommendations made by this Committee resulted in an increase in some allowances and concessions, but left the pay structure intact.

Not having had the benefit of a review of their conditions of service and pay scales, the Armed Forces emerged into the post second Pay Commission scene with a mere arithmetical revision of their pay and allowances. At this stage the Civil Services, especially the IAS and IPS, initiated major changes in their cadre structure. A Selection Grade was introduced in the IPS, between the SP and DIG. This grade was equated to the naval rank of Commander and pressure built up for revision on the DIG's pay scale. By 1969, the DIG had overtaken the naval rank of Captain, and started drawing relativity with the ranks of Commodore and Brigadier, thereby lowering the status and relativity of the Armed Service Officer vis a vis the Police.

The Third Pay Commission

In April 1970, the Government announced the formation of the 3rd Pay Commission and, for the first time, decided to entrust the task of reviewing the pay and allowances of the Armed Forces to a Pay Commission and not to a Departmental Committee. However, there was a major difference between the terms of reference as applicable to the Armed Forces and those applicable to civilians. In the case of the Armed Forces, the Commission was not asked to make recommendations on the conditions of service but take them as given. This difference was prominently highlighted by the Commission in their report. Even on the question of the presentation of the Services case,the Commission was keen that the service personnel also should have the liberty to represent their case directly before them like civilian employees. However, their request to the Ministry of Defence to that effect was turned down on the grounds that the requirement of Armed Forces

discipline would not permit such an approach. Thus the three Services could not explain their case directly to the Pay Commission. As a result, many of the anomalies injected by earlier Committees remained uncorrected.

In their approach to the formulation of Armed Forces pay, the Third Pay Commission adopted the following broad principles for determining remuneration:

- Implementation of the Post War Pay Committee's recommendation that future pay should be linked with civil pay and comparable to those of Class I Central Services and Indian Police Service officers.
- An infantry soldier with three years service to be equated with a worker classified as between semi-skilled and skilled.
- Regain the "all inclusive" character of military pay as recommended by the Post War Pay Committee, which had got diluted over a period of time by the grant by the Government of a number of additional allowances.
- Any element of Service life which was a relatively constant factor for the bulk of the service, should be compensated in the pay itself. Allowances were only to be granted in such cases where the conditions did not have uniform applicability, viz service in field areas, at high altitude or at sea. Special allowances were also recommended for the performance of hazardous duties.

Officers. The main thrust of the services was to seek parity in pay scales with the IAS. The Third Pay Commission was of the view, however, that the officer cadre of the Armed Forces was an omnibus group of individuals of varying disciplines, status and job responsibilities. Whilst there would certainly be some categories, though difficult to identify, who could claim parity with the IAS, the 60,000 strong Armed Forces officercadre could at best be compared with the Class I officers cadre which had a similar disparate composition. Parity with IAS was therefore not accepted and the existing relativities were retained.

Expert Cell. The Ministry of Defence created an Expert Cell comprising the Chairmen of the three Services Pay Cells, a Joint Secretary and an Additional Financial Adviser. The Expert Cell was mandated to scrutinise the Memorandum of each Service and give their own views to the Pay Commission. Unfortunately no agreement could be reached between the Service Members on the one side and the Ministry of Defence on the other. Eventually the Expert Committee Report was submitted only by the Service Members. The impact of their report was lost and the Third Pay Commission had to seek the views separately from the Ministry of Defence.

Job Evaluation of Sailors. A comprehensive job evaluation was carried out of the sailors cadre. The Pay Commission however did not accept their recommendations on the grounds that the evaluation had not been done by professional job evaluators. The sailors job description sheets remained in the archives of Naval Headquarters and were eventually used after the Fifth Pay Commission when at short notice, trade rationalisation was required by the Ministry of Defence.

Sailors Trade Structure. The advent of the Air Arm led to the creation of a separate pay group for aviation sailors on scales identical to their counterparts in the Air Force. When the Submarine Arm was formed, submarine sailors were also placed in this group. These measures were ratified by the Third Pay Commission and this new "Special Group" was placed between the Artificers Group and the Matric Group.

Compensation for 'X' Factor. In the British Armed Forces Pay Structure, the 'X' factor compensated for the uniqueness and distinct disadvantages of service life. Service Headquarters sought the extension of the 'X' factor to the Indian Armed Forces. The Third Pay Commission examined the advantages and disadvantages of Service life, considered that the former outweighed the latter and concluded that there was no justification for the 'X' factor. One of the advantages of naval life taken into consideration was the opportunity for naval personnel to visit distant foreign countries at Government expense.

Pension. The Third Pay Commission also equated military pension with the civil pension. Eligibility for pension was related to the civil service requirement of 33 years service. This was despite the fact that in the Defence Services very few individuals could achieve so many years of service. The earlier inbuilt monetary compensation for a truncated career was dispensed with and in lieu, a weightage in years of service was introduced. These measures effectively neutralised the prevailing edge that military pension had.

Commodore RC Bhatnagar who served in the Navy's Third Pay Commission Cell and interacted with the Army and Air Force Pay Cells, recalls:

> "A very important rider that the Ministry of Defence put down before agreeing to Service Headquarters making their projections to the Pay

Commission was that there would be a Ministry of Defence Pay Cell. This cell would receive and examine the proposals of the three Services Headquarters, vet them and project final coordinated proposals to the Pay Commission. Thus we had another body to examine our proposals before these were sent to the Pay Commission in a consolidated form.

"We were formed as a "Pay Commission and Job Evaluations Cell" and we took upon ourselves to carry out a total job evaluation of every single trade at each sailor level that is as an Able Seaman, as a Leading, as a Petty Officer and as a Chief Petty Officer. For each level, we carried out an evaluation of the job content, that is the training, work content and experience requirement of each individual rate and trade. This was all recorded in a Job Evaluation Report. Some of the officers of the Cell were sent to Bombay to the Labour Institute to understand the civilian system of job-skill corelation and on that basis we carried out job evaluation. The Army and the Air Force also did the same exercise. This helped us to project to the Pay Commission, the corelated job content of every single rate in the Service including artificer sailors.

"This job evaluation exercise undertaken by us was somewhat on the pattern of an exercise done by the British Armed Forces just a few months earlier. Despite the fact that all the three British services were using quite sophisticated equipment, their findings were that Naval trades had a broader job content than their counterparts in the other two Services. Thus the Royal Navy's sailors were placed in three higher pay scales as against four scales for Royal Army and Royal Air Force personnel. It was Naval Headquarter's view at that time that we too should try to group our trades likewise, as all sailors on board are actively involved in the actual fighting of a ship vis-a-vis the many trades of the Army and the Air Force. That was the basis of our projections.

"As regards officers, we found that the Pay Commission was recommending a pay scale of an Indian Police Officer in his sixth year of service which would be higher than what was being recommended for a Captain in the Army having six years of service. A very strong representation was made by Naval Headquarters and the anomaly was rectified. A Captain of the Army and equivalents in the Navy and the Air Force in their sixth year of service not only got what the Police officer got, but also got 50 rupees more, which was a part of Special Disturbance Allowance which the Pay Commission had agreed to extend to Service officers.

"We had another peculiar situation. The rank of Captain in the Navy spanned the ranks of Colonel and Brigadier in the Army and Group Captain and Air Commodore in the Air Force. The problem was to devise a pay scale which would cover these two Army scales of Colonel and Brigadier. At one stage this was not readily accepted by the Pay Commission nor by the other two Services and the Ministry of Defence. However, we managed to convince not only the Ministry of Defence but also the Ministry of Finance (Defence) and were able to obtain approval for a combined scale for Captains in the Navy, covering both the ranks of the other two Services".

Developments After 1975

The parameters under which the Third Pay Commission had structured their recommendations envisaged that they would be valid for the next ten years. The oil crisis of the mid seventies and the high inflation thereafter neutralised these parameters. The Government therefore introduced a series of adhoc measures. These did not alleviate matters, especially for officers. The economic position of officers worsened, affecting morale and the quality of intake. By the late seventies, remedial measures became essential. In 1982, the Chiefs of Staff Committee forwarded to Government their paper on "Quality and Morale" whose major recommendation was the extension of free rations to peace areas for officers upto the naval rank of Captain. The Government was inclined to grant this in cash. Admiral RL Periera, the Chairman COSC, was able to persuade Government to sanction free rations in kind.

Re-mustering of Seaman and Engineering Mechanics. In 1977, the Ministry of Defence accepted Naval Headquarters recommendation that to keep abreast with the growth of technology in the Service, the educational qualification of Seamen and Engineering Mechanics be raised to matriculation. The Government not only approved this upgradation in educational qualification, but also directed that they be paid matric rates of pay. Seamen and Engineering Mechanics were remustered from Group 'C' to Group 'B'. This linkage between pay scales and educational qualification eventually became the

keystone for the rationalisation of the sailors trade and pay group structure after the Fifth Pay Commission.

Cadre Reviews. The Armed Services instituted two cadre reviews between 1979 and 1982. These helped quicken promotions of officers and sailors.

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The Navy's Education Branch

The Evolution of the Branch

Developments Until 1965

The Boy Entry constituted the main intake into the sailor cadre of the Royal Indian Navy (RIN). Since their educational standard was well short of what the Navy required, boys were imparted educational training after joining the Navy. Educational attainment was also a mandatory prerequisite for sailors to be promoted. Educational training was therefore provided, for sailors to avail of on a voluntary basis, to help them to qualify educationally for promotion. Two educational tests were prescribed. Educational Test One (ET1) was for boys of all branches. The Higher Educational Test (HET) was for sailors who aspired to be commissioned as officers. The Education Branch was made responsible for organising and imparting all this educational training.

The Branch started in 1928 and, in its early days, was called the Schoolmaster Cadre. By 1935, this cadre consisted of nine Chief Petty Officer (CPO)/ Petty Officer (PO) Schoolmasters, all of whom had a college degree; they were positioned at the Seamen, Stoker and Signals Boys Training Establishments at Karachi and Bombay. In 1938, Headmaster Lieutenant Smith was appointed to head the Schoolmaster Cadre and raise the standard of education in the Navy.

After the Second World War started in 1939, there was a large increase in sailor intake. It was realised that the expansion of the Navy in an environment of changing technology would require greater attention to raising educational standards. By 1941, the Schoolmaster Cadre had increased to one officer, ten Warrant Schoolmasters and fourteen CPO/PO Schoolmasters. Headmaster Lt Cdr Smith had by then revised the HET and ET1 syllabi and recast the general educational syllabi for all naval ships and establishments.

To attract better talent, it became necessary to raise the status and the pay of the cadre. In 1943, Schoolmaster pay scales were raised and a degree in Mathematics or Physics was made an essential qualification for entry into the Schoolmaster Cadre. In Naval Headquarters, a composite Directorate of Training and Education was constituted to plan and coordinate all training and educational activities.

In 1944, Headmaster Commander Smith was appointed to Naval Headquarters in the Directorate of Training and Education as the Deputy Director Education. In the same year, an Instructor Branch was created to broaden the base of educational training and training methodology. The intake into the ranks of Instructor Lieutenant Commander (RINVR)/Instructor Lieutenant(RINVR) was from candidates between thirty and forty years of age, who had an Honours degree in Mathematics/Physics or Mechanical/Electrical Engineering and who had experience of imparting training in a recognised university. This new Instructor Branch was added on to the existing Schoolmaster Cadre.

The strength of the combined Instructor Branch - Schoolmaster Cadre increased to one Headmaster Cdr as Deputy Director of Education, one Headmaster Lt (SP) as Assistant Deputy Director at NHQ, one Headmaster Lt at HMIS BAHADUR in Karachi, four Headmaster Lieutenants (RINVR), forty Commissioned Warrant Schoolmasters and one hundred and eighty CPO Schoolmasters. By then, schoolmasters were borne in all training and base establishments, recruiting centres and in ten sea-going appointments.

In 1948, the Schoolmaster Branch/Cadre was first merged into a new Education Branch and a little later, the Education Branch was renamed as the Instructor Branch. The intake into the Instructor Branch was at two levels. Direct Entry Instructor Sub Lieutenants were required to have an Honours degree in Mathematics, Physics, Chemistry. Warrant Instructor Officers were required to be graduates in these subjects.

Also in 1948, at Naval Headquarters, the Directorate of Naval Training and Education split into two directorates - Directorate of Weapon Training and Directorate of Naval Education. The last of the British naval Instructor Officers on deputation left in 1950. With the formation of the Naval Air Arms's Fleet Requirement Unit in 1951, Education Officers were made responsible for providing meteorological services.

In 1955, the Instructor Branch was reorganised:

- All entries into the Branch were made either in the rank of Commissioned Instructor Officers (CIOs) or as civilians. An Engineering degree was included as an entry qualification. The promotion ladder was CIO - Senior CIO - Instructor Lieutenant and upwards.
- Civilian Education Instructors (CEI's) were posted mainly in the basic training establishments for boy entry sailors.

Many of the direct entry, honours degree Instructor Officers who were inducted from 1955 onwards underwent specialisation courses in the British Navy, in Radar, Radio, Thermodynamics, Advanced Meteorology, Gunnery, Torpedo and Anti Submarine Warfare, Navigation and Direction, Communications and Electronic Warfare. In later years, some of them achieved eminence in the Defence Research and Development Organisation.

The CIO Branch List entry scheme was not well received by the Instructor Branch. In 1963, the Branch List entry was abolished and a limited number of Civilian Education Instructors (CEIs) were inducted. Entry was restarted in the rank of Sub Lieutenant and seniorities of all serving Branch List Instructor Officers were readjusted.

Over time, the responsibilities of the Branch were enlarged to include the conduct of sailors' recruitment tests in shore establishments, organising activities to enhance general knowledge and organising welfare activities at Unit and Command level.

Developments Between 1965 and 1975

In 1968, in Naval Headquarters, the Directorate of Naval Education was redesignated as Directorate of Naval Education and Meteorology.

In 1971, the Instructor Branch was redesignated as the Education Branch.

In 1974, as part of the comprehensive Reorganisation of Naval Training carried out by Naval Headquarters, the major changes implemented were:

- To cope with the increasing level of technology of weapons, sensors and equipment entering service, the minimum educational qualification of Education Officers on entry was raised to a Masters degree in Mathematics, Physics, Chemistry or English with Physics up to graduate level and degree in Electrical/Mechanical Engineering.
- To ensure better understanding and for more effective utilisation, the initial training of Education Officers was increased from 16 to 36 weeks to include Naval Orientation, Navigation and Naval Scientific Orientation courses.
- Oceanographic Forecasting was included in the responsibilities of the Education Branch.

Deputation of Education Officers To Enhance Promotion Prospects

The restricted nature of duties constrained the promotion prospects of Education Branch officers. This constraint was overcome to some extent by deputing them to, and facilitating their secondment to, organisations like Defence Laboratories under DRDO, Sainik Schools, Army Recruitment Organisation, Electronic Data Processing, etc.

Two Education officers attained Flag rank:

- Rear Admiral KN Ramanarasiah became Director of the Naval Science and Technology Laboratory in Visakhapatnam where he did pioneering work on the development of torpedoes.
- Rear Admiral SR Mohan became the Project Officer for the development of the Navy's indigenous Surface to Air Missile TRISHUL, which was a segment of DRDO's Integrated Guided Missile Development Programme.

Education Officers also made significant contributions to the development of the academic faculties of the Ethiopian Navy's Naval Academy and Nigeria's Inter Services Academy.

Educational Activity

Developments Until 1965

In 1944:

- An Examination Office was established in Bombay to conduct HET and ET1 tests and assess sailors' educational attainments before promotion.
- Lectures on training techniques were arranged for CPO and PO Schoolmasters.
- Reference libraries and unit libraries were set up in ships and establishments and provided with publications, both local and from Britain.
- The Inter-Universities Board (India) recommended to all the universities in India that the Navy's HET examination be recognised as equivalent to Matriculation.
- The Inter-Universities Board (India) accepted Naval Headquarters suggestion that Navigation

and Meteorology be introduced as a degree subject in Indian Universities.

In 1954, Naval Headquarters introduced the Educational Test One (Modified), ie ET1(M), for Cook and Steward sailors whose educational standards on entry were lower than those of other sailors.

To help improve their level of scientific and technical knowledge and increase their comprehension of professional training, officers and sailors were imparted training in Electronics, Mathematics, Thermodynamics etc. By 1965, the Instructor Branch was responsible for all scientific and mathematical instruction, including instruction in the theoretical aspects of technical subjects.

Developments Between 1965 and 1975

In 1966, Education Officers were given the responsibility of imparting Russian language training to the personnel being deputed for the Russian acquisitions. Education Officers started being deputed to the School of Foreign Languages in Delhi.

Training Establishments

In the basic training establishments, the Education Department prepared instructional handouts in simple English to help sailors whose knowledge of English was inadequate.

When preparing for the ET 1 and ET 1(M) tests, sailors had to depend on standard text books on Mathematics and English. These text books could not provide standardised subject material to sailors serving in the various naval establishments all over India. The problem was overcome in 1974 by preparing one standard publication each for Mathematics, English language and General Knowledge for the ET 1 test.

Examination Office

Over the years, the Examination Office's responsibility expanded to cover the following additional tests:

	Annual Frequency
(a) ***Recruitment Tests***	
(i) Direct Entry (Matriculate Entry MER) and Artificer Apprentices	Twice
(ii) Direct Entry (Non-Matriculate Entry NMER)	Twice
(iii) Direct Entry (MER/NMER) Sports Entry	Twice
(b) ***Educational Tests***	
(i) HET/ET1/ET1 (M)	Twice
(ii) Navy Entry Artificer Scheme	Twice
(iii) Commission Worthy (CW) Scheme for sailors	Once
(iv) In-service Hindi Examinations (Uchh, Madhyamik and Prarambhik Pariksha)	Twice
(v) Higher Rank (Technical)	Twice
(c) Command/Professional Management and Staff College Entrance (C/PM & SCE) Examinations for officers	Once

Naval Institute of Educational and Training Technology (NIETT)

Education officers used to be trained in "training technology" during their initial training. Later, it was considered necessary that all instructors in training establishments should be acquainted with "training methods". Discussions were held with the Technical Teachers Training Institute at Madras. In 1971, a Naval Institute of Education was set up at Cochin. In 1974, the scope of the Institute was expanded to include "Training Technology" and it was renamed as the Naval Institute of Educational and Training Technology (NIETT). The Institute conducted in-service training for officers and sailors in Teaching Methods and Training Technology.

Reference Libraries and Maintenance Grants

The need for books for self-study whilst preparing for ET1 and HET, and for magazines for enhancing general awareness used to be met by libraries in shore establishments and ships. Due to limited funds, however, they could not be adequately equipped. In 1965, the Government sanctioned Rs 50,000 together with a recurring grant of Rs 10,000 for the next three years for setting up Reference Libraries in the training establishments. In due course, the following reference libraries were established:

- The Central Reference Library in Bombay.
- Command Reference Libraries in Visakhapatnam and Cochin.
- Reference Library in Goa.
- Reference Libraries in major training establishments at AGRANI, CIRCARS, HAMLA, SHIVAJI and VALSURA.

The Central Reference Library at Bomay was established to:

- maintain reference libraries in ships and non-training establishments by issuing books on temporary loan and

- to issue on permanent loan, books of general interest to ships and establishments, to meet the needs of officers and sailors in Bombay.

Similarly, the Command Reference Libraries at Vishakhapatnam and Cochin and the Reference Library in Goa met the requirements of training establishments in their respective stations who were not in receipt of reference library grants.

Developments After 1975

In 1982, "Meteorology" was made the responsibility of a separate Directorate of Naval Oceanology & Meteorology (DNOM).

In 1988, the qualifications for entry into the Education Branch were further broadened to include a post graduate degree in Computers/graduate degree in Computer Engineering.

In 1988, NIETT was augmented with a Centre for Training Aids Production to produce quality training aids for the Navy. Since then, the Institute has grown into the Navy's pioneer organisation for conducting courses on Training Management and providing guidance in the fabrication and effective utilisation of training aids. It conducts Instructional Technique Courses for junior officer instructors and Training Management Courses for middle level officers. It also conducts professional specialist courses for education officers, sailor-instructors and photo sailors. The Institute has earned the ISO 9001 certification for quality training. It also acts as the apex body for standardisation of syllabi, lesson planning and all aspects of Training Design and Evaluation.

In 1990, the Examinations Office shifted from Bombay to Delhi, under the Directorate of Naval Education. In 1991, it was decided that women officers could join the Navy in the Education Branch and the Logistic and Law cadres. The first batch of nine women Education officers joined the Branch in July 1992 on a seven-year short service commission, extendable to ten years.

In addition to the three Command Reference Libraries, there are today thirty eight Naval/Met Reference Libraries in the Navy, apart from unit run libraries.

Future of the Education Branch

With the general rise in the educational standard of officer and sailor intake, the basic function of the Education Branch became diluted. The requirement of the Navy became to train its personnel rather than to educate them. Additional responsibilities like EDP, recruitment, appointments in NCC and resettlement, which could have been done by officers of any other branch, got added on, so that the Education Branch could have enough to do. This did not contribute either towards aspiration for qualification of a level higher than what Education officers possessed at the time of their commissioning or towards job satisfaction vis-a-vis the qualifications they possessed.

Since Education Officers possess high academic qualifications in Science and Engineering, numerous proposals have been considered to optimally utilise their services. The current thinking is to continue with the Branch and induct only Short Service Commission Education Officers to meet the Navy's needs.

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Naval Meteorology and Oceanology

Preamble

The Second World War highlighted the tactical importance of accurately forecasting the meteorological conditions on, above and below the surface of the sea:

- Anomolous propagation conditions affected radars and wireless communications.
- Hydrological conditions affected sonars.
- Humidity, temperature and pressure conditions affected the accuracy of naval gunfire and
- Wind conditions affected naval flying operations.

Developments Till 1975

Meteorology

Meteorological training in the Navy began in 1949 when an Education officer was deputed to the British Navy for a course in naval meteorology. He in turn imparted meteorological training to four officers of the Education Branch and four sailors in 1952. They were taught to keep a continuous weather-watch and record and disseminate meteorological observations to air traffic controllers, aircrew and ships, to code and decode weather messages and to issue weather warnings.

With the advent of the Naval Air Arm, a regular meteorological service started in 1952. Naval air arm sailors were trained as "meteorological observers" They were required to take surface and upper air met observations, do their coding and decoding, receive and transmit observations on teleprinter, and chart and plot the data on met charts. This enabled the "weather forecaster" to analyse the charts and issue forecasts. A teleprinter circuit with the India Met Department enabled met observations to be obtained from all over India and adjoining countries.

Since Education officers usually possessed sound knowledge of mathematics and physics, they were trained as "weather forecasters" by the India Met Department at Poona.

Meteorological offices were established in the Naval Air Station INS GARUDA and onboard the flagship INS DELHI to provide weather and meteorological information to the fleet. In due course, meteorological offices were established in the second cruiser INS MYSORE (1957), the aircraft carrier INS VIKRANT (1961) the second Naval Air Station INS HANSA (1962) and in Port Blair (1969).

At Naval Headquarters, the post of Staff Officer Meteorology was created in 1957 to assist the Director of Naval Education in administering the Meteorological service. In 1966, this post was upgraded to Deputy Director Meteorology in the rank of Commander (Education). In 1968, the Directorate of Naval Education was redesignated as the Directorate of Naval Education and Meteorology.

In 1970, the Naval Met offices at Bombay and Cochin were provided with dedicated meteorological teleprinter channels. This helped to provide uninterrupted meteorological data of the region for briefing aircrew and issuing weather warnings.

In 1973, Automatic Picture Transmission (APT) reception facilities were provided to the meteorological offices at Cochin, Port Blair and onboard INS VIKRANT. APT enabled satellite pictures of the prevailing weather to actually be seen in real time, by day and by night. In due course APT facilities were extended to all naval met offices and the Met Training School.

The Met Training Cell, which had started in the INS GARUDA in 1952, grew in due course into a full fledged Met Training Section by 1968 and was eventually redesignated as the Meteorological Training School in 1974.

In 1977, fascimile (FAX) weather chart recorders were installed in the Naval Met offices at Cochin, Visakhapatnam, Bombay, Goa, Port Blair and on board MYSORE and VIKRANT. This equipment enabled met offices to receive analysed surface and upper air charts from the India Met Department.

Oceanography

In the early 1970's, a met officer was sent to the Royal Naval School of Meteorology and Oceanography (RNSOMO) in Britain for training in oceanography. On return, he was appointed to the Naval Hydrographic Office in Dehradun where he helped to produce a document on oceanography and sonar range prediction. Soon thereafter, a second officer

was deputed to the US Naval Oceanographic Office in Washington DC for training in oceanography. On return, he was appointed to INS GARUDA where the Seaking anti submarine helicopters were based.

In 1974:

- Oceanography was introduced as a topic for study in Met sailors' specialist courses and in Observers and Sub Lieutenant courses.
- Oceanographic forecasting was made the responsibility of met officers.

Developments After 1975

In December 1980, an Oceanographic Forecasting Cell (OFC) was established at Cochin under the operational control of the FOCINCSOUTH. This marked the beginning of oceanographic studies and forecasting in the Navy. The OFC was located in the premises of the Met School and headed by the officer who had been trained by the American Navy. The OFC's terms of reference were to liaise with the National Physical and Oceanographic Laboratory (NPOL) located in Cochin and:

- Provide a general description of the major oceanographic and acoustic factors affecting a specified area of operation for a specified forecast period, the sea state at the beginning of the forecast period and significant changes expected during the forecast period.
- Collect and store processed oceanographic data in the form of atlases, charts and reports issued by the NPOL and the Chief Hydrographer.
- Collect oceanographic information, records and research outputs from agencies like the National Institute of Oceanography, OSTA and ONGC.
- Provide forecasts of thermal structure and salinity profiles based on the available past data and current oceanographic observations received from fleet ships during exercises.
- Devise and standardise codes for transmission of oceanic data and forecasts.
- Undertake selective studies in oceanography to update and validate the forecasting techniques developed by NPOL.
- Undertake studies on air-sea interaction in collaboration with NPOL and other agencies.
- Assist the Met Training School in the training of naval personnel in oceanography.

Although met officers studied "introductory oceanography" as a topic during their Advanced Weather Forecaster's training, it was realised that they needed to be trained in oceanographic forecasting. The first capsule course in Oceanography was conducted in April 1981 by the Cochin University. The second Oceanography capsule course was conducted by IIT Delhi in March 1982.

In 1981, sanction was received for three digital electronic systems to be installed at Naval Air Stations GARUDA and HANSA to enhance safety during landing and take off:

- The Ceilograph which gave digital printouts of the heights of lowest cloud over an air station.
- The Skopograph which gave digital printouts of runway visibility and
- The Current Weather Instrument System (CWIS) which gave digital printouts of weather parameters like humidity, temperature, wind direction and speed.

Formation of the Directorate of Naval Oceanology and Meteorology (DNOM)

In 1982, the need was felt for the establishment of a dedicated Directorate of Oceanology. The rationale was:

- Oceanographic forcasting was vitally important for anti submarine warfare.
- It was necessary to safeguard the security aspects arising out of the increased oceanographic activity in Indian waters.
- The Navy's existing arrangements to plan, co-ordinate and progress oceanographic tasks were inadequate.
- The Navy should assist in ocean development.

A new Directorate of Naval Oceanology and Meteorology was therefore established and the met component of the Directorate of Naval Education and Meteorology was transferred to the new Directorate. Thereafter, this directorate became the single nodal agency dealing with all aspects of naval oceanology and meteorology.

Since its inception the directorate has contributed/undertaken the following:

- Co-ordination of the Navy's help for Second Indian Scientific Antarctica Expedition in 1982-83.
- Rendering consultancy about design of polar research vessels for Department of Ocean Development.
- Monitoring the progress of oceanographic research undertaken by the DRDO and by CSIR's scientific organisations.

- Participation in UNESCO's Inter Governmental Oceanographic Commission at Paris.
- Organisation of the oceanographic course in the Centre for Advance Studies in Atmospheric and Fluid Sciences at IIT, New Delhi.
- Functioned as a think-tank for oceanographic data collection, its utilisation and application for Naval activities.
- Interacted with India Met Department in Conferences of Forecasting Officers.

In 1985, the Meteorology Training School in INS Garuda was renamed as the School for Naval Oceanology and Meteorology.

32

Welfare

Indian Naval Benevolent Association

The Indian Naval Benevolent Association was established in 1942 as a registered charitable organisation. Its object is to relieve financial hardship/distress amongst serving and ex-naval personnel and their dependents. Its sources of income are:

- Subscriptions from serving naval personnel.
- Donations.
- Interest on Investments.
- Contribution from the Armed Forces Benevolent Fund.
- Flag Day Fund.
- Allocations from the IN Amenities Fund for the welfare of ex servicemen and their families from 1988-89 onwards.

In January 1963, membership of the Association was made compulsory for all serving naval personnel. In April 1967, the monthly subscription was raised. The scale ranged from Rs 3.50 for the seniormost officer to Rs 1.50 for the juniormost sailor.

Loans. The Association sanctions loans to officers and sailors for house repairs and marriages of daughter/sister and to sailors only for medical expenses and higher education. Between 1965 and 1975, the following changes took place:

- Interest was waived on loans for marriage.
- Loans were increased for the marriage of a sailor's sister/daughter.
- Benefits were increased to the next of kin of personnel who died in service .
- In 1972, loans were increased for house repairs. Loans for sister's marriage were discontinued.

Grants. Grants are sanctioned only in exceptional cases to serving personnel based on the merits of each case. Sailors having handicapped children can apply for grant for education and special equipment. Sailors can apply for house repair grants after a natural calamity. Grants are normally paid only to retired naval personnel on death, and for economic activity venture. Between 1965 and 1975, the following changes took place:

- Grants were increased to the next of kin on death whilst in service.
- After the 1971 war, an ad-hoc grant was given to the bereaved families.

Command Benevolent Funds

The Association places funds at the disposal of the three Commands and INS India to meet extreme emergent requirements.

Family Assistance Scheme 1969

The Family Assistance Scheme was introduced in January 1969 to provide regular income in the form of a monthly allowance to bereaved families.

The membership of the Scheme was compulsory for all serving naval personnel. Every quarter the Naval Pay Office recovered a contribution of Rs 30 from all serving officers and midshipmen and Rs 6 from sailors.

Officers Family Assistance Scheme

The Officers Family Assistance Scheme provided the following assistance:

- *On Retirement.* A resettlement grant depending on the period the officer was a member of the scheme.
- *In the Event of Death Whilst Serving.* A lump sum grant of Rs 750/- on death and a grant of Rs 150/- per month upto a maximum of 10 years or till successful rehabilitation of the family/dependent whichever was earlier, as per a sliding scale.
- *On Death Within Five Years After Retirement.* A monthly allowance of Rs 100/- per month for the balance of the period of 5 years to those who had contributed to the fund for 10 years or more. For others, the benefit period was reduced as per a sliding scale.

Sailors Family Assistance Scheme

The Sailors Family Assistance Scheme provided the following assistance:

- *New Entrants.*
  - *On Retirement/Release/Discharge from Service.* A resettlement grant not less than the total contribution.
  - *On Death Whilst in Service.* A grant of Rs 50/- per month for a number of years depending on date of admission into the scheme.

- *On Death Within 5 Years of Retirement/ Release/ Discharge from Service.* A monthly allowance of Rs 50/- per month for the balance of the period of 5 years to those who had contributed to the scheme for 15 years or more.

- *Existing Sailors.*
  - *On Retirement/Release/Discharge from Service.* A resettlement grant not less than the total contribution.
  - *On Death Whilst in Service.* Grants as per a sliding scale.
  - *On Death Within 5 Years of Release/ Discharge from Service.* Same as for new entrants.

Naval Group Insurance Scheme 1975

In December 1975, the Officers and Sailors Family Assistance Schemes were changed into the Group Insurance Scheme. The scheme was initially run under aegis of the INBA and in association with the Life Insurance Corporation. From October 1976 onwards, Government accorded approval for Naval Headquarters to run the scheme departmentally as a self run scheme.

Instead of the quarterly subscription of the Family Assistance Scheme, the monthly contributions for Group Insurance were Rs 30 for officers and midshipmen and Rs 10 for sailors.

Benefits of the Group Insurance Scheme

- *On Retirement.* Personnel were paid a survival benefit depending on the quantum of interest/ profit earned and the length of service.
- *Death Benefit.* A lump sum grant to the next of kin/dependent of Rs 30,000 for officers and Rs 15,000 for sailors.

Scholarship Scheme 1972

The Scheme was introduced from the academic year 1971-72 to award scholarships for:

- Undertaking post 10+2 courses. Scholarships were made available for the children of serving sailors and the children of officers and sailors killed in action or who died whilst in Service. In 1971, the annual scholarships for a maximum period of five years were Rs 300 for day scholars and Rs 700 for boarders.
- Undertaking Graduation/Post Graduation degree Courses without imposing any criteria of merit. Scholarships were made available for the daughters of serving and deceased sailors. The number of scholarships is limited to only two daughters of a sailor throughout his entire service career.
- Availing of coaching through correspondence courses for joint Entrance Examinations through authorised institutions. Reimbursement was made available for the children of serving sailors of Rs 2000 for a maximum of two children.

Indian Naval Amenities Fund

The IN Amenities Fund was established in 1946 to provide welfare and amenities for serving and retired personnel and their families.

The INAF's sources of income are:

- Armed Forces Reconstruction Fund.
- Flag Day Fund.
- Profits from Canteen Stores Department (India).
- Profits from Indian Naval Canteen Service.
- Monthly subscription from officers & sailors.
- Any income derived or donations received from other sources for purposes of amenities.

In 1968, the quarterly rate of contribution was fixed at a maximum of Rs 36 for the seniormost officer and 75 paise for the juniormost sailor.

Developments After 1975

INBA's Naval Group Insurance Scheme

The Group Insurance Scheme has been improved from 1978 onwards to provide higher insurance cover:

- The disability cover was introduced for the first time in 1980.
- Additional group insurance schemes for Aviation, Submarine and IMSF personnel were introduced at the behest of the Government from 1 September 1981 to provide additional cover for these high risk groups.
- The Post Retirement Death Insurance Scheme was introduced in 1982.

Being risk-cum-saving schemes, Group Insurance Schemes are intended to provide a meaningful amount to bereaved families and to those invalided out of Service. To facilitate smooth rehabilitation in civil life, the avowed objective is also to give a reasonable amount to naval personnel on their retirement/discharge from Service. Major improvements in the scheme were effected after the first comprehensive actuarial review in 1988. The salient features of the revised scheme, introduced from January 1989, were:

- Higher insurance cover with a relatively lesser increase in monthly premium.
- Parity in insurance cover for death in peace and in war time.

- Payment of saving element in addition to the insurance cover for death and invalidment.

Since over 99.8% of Naval officers and sailors retire hale and hearty, the thrust of the schemes has been to improve the saving element substantially.

After the award of the Fifth Pay Commission and taking into consideration the erosion in the purchasing power of the rupee:

- The insurance cover has been increased to Rs 7 lacs for officers and Rs 3.5 lacs for sailors with a monthly contribution of Rs 500 and Rs 250 respectively.
- The Post Retirement Death Insurance Scheme, which provides insurance cover for death upto 15 years after retirement or 70 years of age whichever is earlier, has been enhanced to Rs 2.5 lacs for officers and Rs 1.5 lacs for sailors with a one-time term premium of Rs 8000 and Rs 2700 respectively.

INBA Housing-loan-Scheme

To meet the essential requirement of a dwelling unit, a Housing loan Scheme, directly financed from NGIF, was introduced in 1988 after the Government had expressed its inability to extend the benefit of a housing loan of Rs 2.5 lacs to Service personnel as was being given to Civilian Central Government employees. In November 1997, the quantum of housing loan was increased to Rs 7 lacs for officers and Rs 3.5 lacs for sailors, subject to repayment capacity.

INBA's Subsidiary Fund

In 1988, a separate INBA Subsidiary Fund was instituted for the welfare of ex-Naval personnel and their families. It started with an initial corpus of Rs 1 crore from the IN Amenities Fund and marked a watershed in the history of the INBA to alleviate financial distress and provide succour to Naval pensioners in distress.

The fund is given an annual allocation from the INAF to augment its resources. Existing schemes have been improved and new schemes introduced:

- Introduction of the Octogenarian Grant and its subsequent enhancement from Rs 18000 to Rs 25000.
- The enhancement of financial assistance for specialised medical treatment from Rs 10,000 to Rs 1 lac each for member and spouse towards surgery and treatment for Cardio-Vascular diseases, Cancer, Renal transplant and complete Hip/Knee joint replacement.
- Enhancement of the ex-gratia grant on death to the next of kin to Rs 10,000 for officers and Rs 5000 for sailors.
- Introduction of ex-gratia grant for the marriage of children of widows of naval personnel who die in service or as pensioners.
- Enhancement in the annual scholarship for higher education to the children of Naval pensioners to Rs 3000 for day scholars and Rs 6000 for boarders.

Indian Naval Amenities fund

The contribution rates have been progressively revised. The present rates of contribution effective September 97 are Rs 60 per quarter by officers and Rs 18 per quarter by sailors.

The major welfare projects presently financed from INAF are:

- Augmentation of Kindergarten and Naval Public Schools.
- Modernisation of service hospitals.
- Augmentation of MI Room and Dental Centres for ex-servicemen and their families.
- Promotion of sports and adventure activities.

Statistics of Disbursements from the Amenities Fund

Year	Loans	INBA Grants	Allowances	Family Assistance Schemes wef 1.4.69	IN Amenities Fund	Naval Group Insurance Scheme
1964	5,64,150	21,610	32,500	-	4,83,300	-
1965	4,85,900	37,060	45,534	-	3,39,720	-
1966	6,23,920	28,864	26,234	-	3,10,485	-
1967	12,13,890		51,878	-	5,08,060	-
1968	15,52,455		77,054	-	6,27,320	-
1969	18,15,086		68,404	13,250	9,88,763	-
1970	18,24,760		54,934	40,000	10,72,239	-
1971	12,79,318		78,257	64,050	6,96,259	-
1972	22,69,551		8,37,175	2,08,800	16,47,815	-
1973	34,78,991		3,28,590	2,32,250	30,80,889	-
1974	21,21,074		2,05,009	2,30,000	30,53,592	-
1975	23,45,285		1,87,808	5,67,326	42,53,000	-
1976	32,22,210		2,00,558	6,74,720	32,84,806	6,83,118

The major projects financed were:

- KG Schools at HAMLA, SHIVAJI, Cochin and New Delhi
- Loans for purchase of buses
- INCS Complex at Cochin and Improvements in Canteen Facilities in ships and establishments.
- Furniture and furnishings in messes.

Educational Facilities For Children of Naval Personnel

Kendriya Vidyalayas in the Navy

One of the colateral responsibilities of the Education Branch was to plan and organise the availability of educational facilities for the children of naval personnel. Naval "Children's Schools" were started at Bombay, Cochin, Goa, Karanja, Lonavala and Visakhapatnam on naval land.

Concurrently, the Central Government's Ministry of Education established a chain of higher secondary schools all over the country under the Kendra Vidyalaya Scheme to prepare students for the All India Higher Secondary Examination of the CBSE. The objective of the KVs was to provide subsidised educational facilities and hostel accommodation for children of Armed Forces personnel, civilians paid from the Defence Services Estimates and other categories of Central Government employees who were liable to frequent transfers. In due course, the naval Children's Schools were taken over by the Ministry of Education and administered as Kendriya Vidyalayas.

By following common text books and a common syllabus, KVs ensure continuity when children move from one KV to another. The medium of instruction is Hindi/English. The KVs charge no tuition fee upto class VIII and the rates of tuition fees for classes IX, X and XI are nominal. The priorities for admission to KV's, as laid down by the Central Schools Organisation, are:

- Children of transferable defence personnel.
- Children of transferable Central Government employees.
- Children of officers of All India Services, autonomous bodies/projects (fully financed by the Government) and public undertakings/ corporations whose services may be transferable.
- Children of non-transferable defence personnel and Central Government employees.
- Other floating population which includes the civilian population desirous of joining the pattern of studies adopted in the KVs.
- Children of the staff of KVs and the KV Organisation, and children of the employees of IITs for KVs located in their campuses, are bracketed with transferable defence personnel.

Naval Public Schools

When the children of Central Government employees became eligible for admission to Kendriya Vidyalayas, problems arose for the admission of naval children in stations where the KVs were not sited within the campus of naval establishments. To overcome this problem, the Navy opened Naval Public Schools, funded from the Navy's Non-Public Funds and affiliated to the Central Board of Secondary Education. Initially, these schools were started in stations which did not have a major naval establishment. Later, Naval Public Schools were also set up at those stations which had KVs located within the campus of naval establishments. At present, there are Naval Public Schools at Delhi, Kochi, Mumbai, Visakhapatnam, Goa, Port Blair, Arrakonam and Lonavala.

Navy Education Society

The Navy Education Society was formed in October 1986. Its objective is to promote education, science, culture and fine arts amongst the children and families of naval personnel. The Society governs the Naval Public Schools and the KG Schools at various naval stations, including reportedly the biggest KG School in Asia at Bombay. It is also responsible for the formulation of broad policies, standardisation of curricula and administration/setting up of educational institutions at naval stations.

Military Schools

Military Schools are located at Ajmer, Bangalore, Belgaum, Chail and Dholpur. These are residential institutions run on public school lines and prepare students for the All India Higher Secondary Examinations conducted by the CBSE and the entrance examination to the NDA. These schools conduct classes from standards V to XI with English as the medium of instruction. The maximum strength of each school is 300 boarders and 30 day scholars except at Ajmer and Dholpur whose boarder strengths are 230 and 200 respectively. 60% of the vacancies of boarders in these schools are reserved for serving JCOs and ORs, NCs(E), civilian clerks etc. 50 seats are reserved for sons of JCOs and ORs and their equivalents in the Navy and Air Force, killed in action. The remaining 40% vacancies are earmarked for the sons of officers and civilians. For the reserved

vacancies, boys are admitted in the V class on the basis of an all India admission test conducted by Army Headquarters. They must have reached the age of 9 years and should not be more than 10 1/2 years on 01 Jul of the year of admission. Some boys can be admitted to higher classes, subject to availability of vacancies.

Sainik Schools

These are residential schools for boys, providing a public school education with a military bias. A chain of Sainik Schools has been established in the various states in the country, primarily to serve as feeder institutions to train boys to enter the NDA. The schools are administered by an autonomous board of governors under the chairmanship of the Minister of Defence. These schools prepare students for the All India Higher Secondary Examination of the Central Board of Secondary Education, and the Entrance Examination of the NDA conducted by the UPSC.

Admission to Sainik Schools is made in Standard V and is restricted to boys between the ages of 9 and 10 years. Boys between the ages of 10 and 11 are also considered for admission to class VI in the few schools which have vacancies in that class, which however is restricted to boys from the state in which the school is located.

67% of the seats in each school are reserved for boys belonging to the state in which the school is situated. A number of vacancies are reserved for the sons of defence service personnel and ex-servicemen. Boys are admitted to the schools on the basis of an all India entrance examination held at various centres in the country in February each year.

Changes in Naval Headquarters Organisation

Soon after independence in 1947, the staff at Naval Headquarters was grouped under five Principal Staff Officers (PSO's) These were the Chief of Staff, Chief of Personnel, Chief of Material, Chief of Administration and Chief of Naval Aviation.

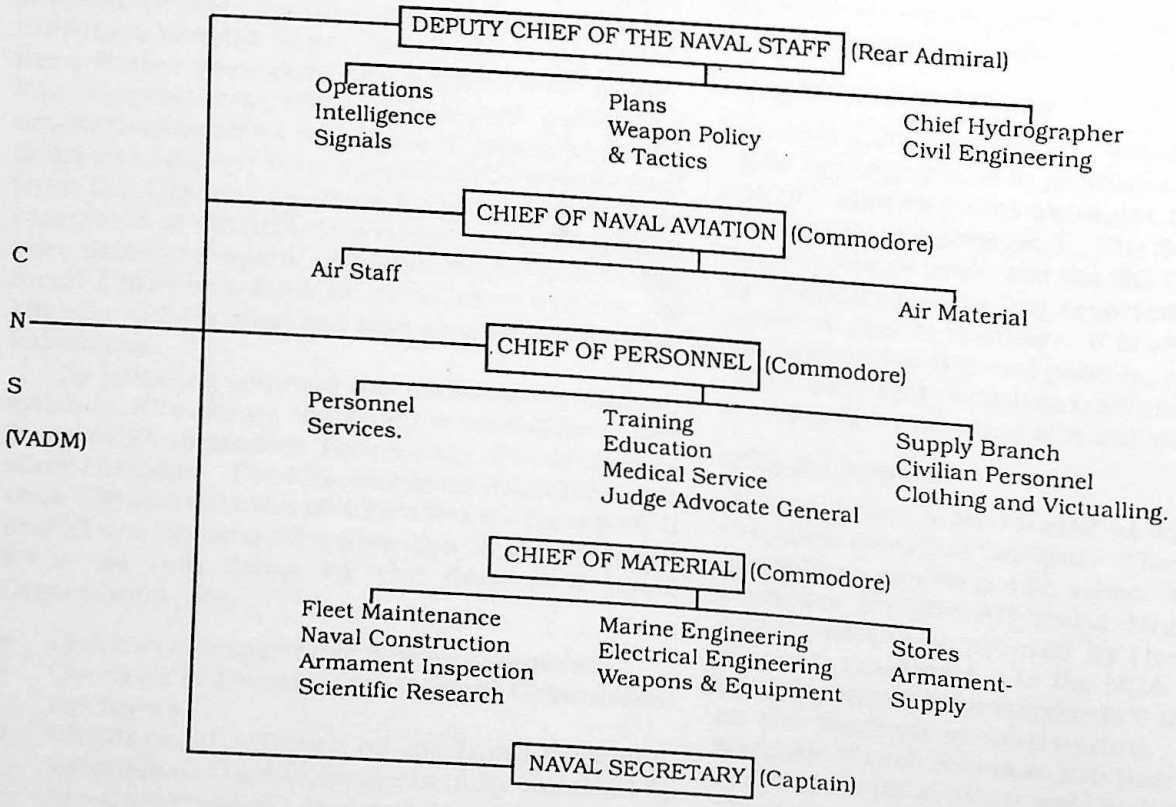
The 1955 Reorganisation

The first major re-organisation of NHQ after independence took place in 1955. The Chief of Staff/ Deputy C-in-C was re-designated Deputy Chief of Naval Staff. The Chief of Administration was abolished and its Directorates redistributed between the Staff, Personnel and Material Branches.

In 1959, DCNS was upgraded to Rear Admiral. This functioned satisfactorily until 1961, when the combined impact began to be felt of growth, modernisation and self sufficiency.

The 1962 Reorganisation

The 1962 re-organisation of NHQ resulted in the following structure:



Changes from 1965 to 1968

In 1965, the Chief of Personnel and the Chief of Material were upgraded in rank to Rear Admiral.

The Defence Plan 1966-71 had accepted in principle the Navy's expansion programme at an estimated total cost of Rs. 440 Crores and increase in manpower from 21,000 to 31,000. With greater emphasis on self sufficiency in the indigenous production of ships, weapons and ammunition, the nature and scope of the workload in Naval Headquarters changed substantially.

In 1966, the Director of the Submarine Arm was sanctioned and placed under the Deputy Chief of the Naval Staff.

In 1967, the Deputy Chief of Naval Staff was re-designated as Vice Chief of the Naval Staff, and the Chief of Naval Aviation was redesignated as Assistant Chief of the Naval Staff.

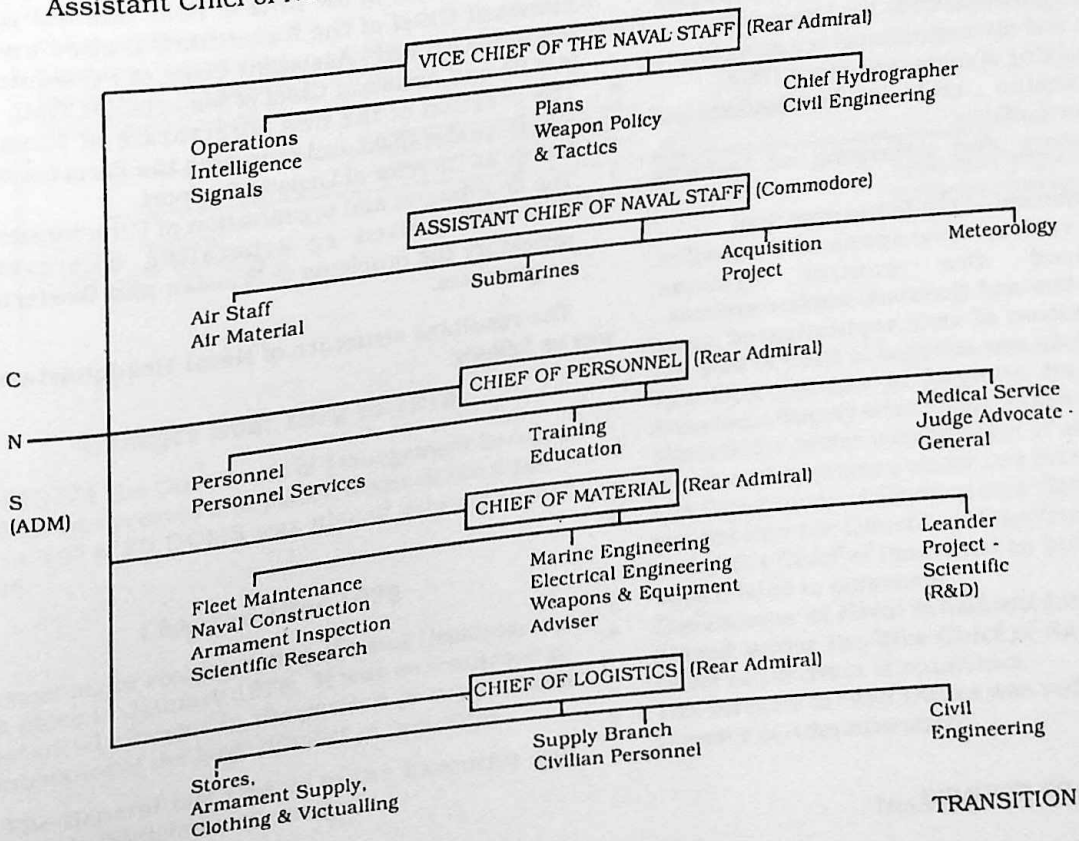
In 1968, the Chief of the Naval Staff was upgraded in rank to Admiral. Also in 1968, two new Directorates were sanctioned. The Director of Acquisition Project, dealing with the acquisitions from the Soviet Union and elsewhere was placed under the Vice Chief of Naval Staff. The Director of Leander Project, dealing with the indigenous construction of the Leander class frigates, was placed under the Chief of Material.

By mid 1968, it became clear that there was need to further rationalise the division of responsibilities and the workload. Some of the anomalies sought to be remedied were:

- The imbalance in distribution of responsibilities between the Vice Chief of the Naval Staff, the Chief of Personnel, the Chief of Material, and the Assistant Chief of Naval Staff and the increasing overload on all of them as a result of the Navy's development.
- The need for the appointment of Vice Chief of the Naval Staff to be tenable by a Vice Admiral so as to better supervise and coordinate work in Naval Headquarters and to enable Government to have a choice between two Vice Admirals (FOCINCWEST and VCNS) when considering a successor to a retiring CNS.
- The need for a new Logistics Branch under a Chief of Logistics in the rank of Rear Admiral to deal with all matters concerning stores, clothing, victualling, supply and civilian personnel.
- The need to re-designate the Assistant Chief of Naval Staff as Deputy Chief of the Naval Staff in the rank of Rear Admiral.
- To relieve the overload of the Directorate of Personnel Services, by splitting it into two directorates.

The 1969 Reorganisation

In 1969, Naval Headquarters was re-organised into the following structure, which included the newly formed Directorate of Leander Project placed under the COM:



Changes from 1970 to 1972

In 1970, a deep examination was launched to reorganise Naval Headquarters on functional lines. Some of the areas examined were:

- Whether the Staff Branch should be comprised of Executive officers only or should Technical officers also participate in taking staff decisions.
- Should the Air and Submarine Arms be separate branches.
- Should Engineering and other specialist directorates look after "Training" in their respective fields or should these branches be represented in the Directorate of Naval Training.

Extensive discussions followed. The organisational lessons learnt during the conflict with Pakistan in December 1971 were incorporated and the revised organisation was implemented in 1972.

The 1972 Reorganisation

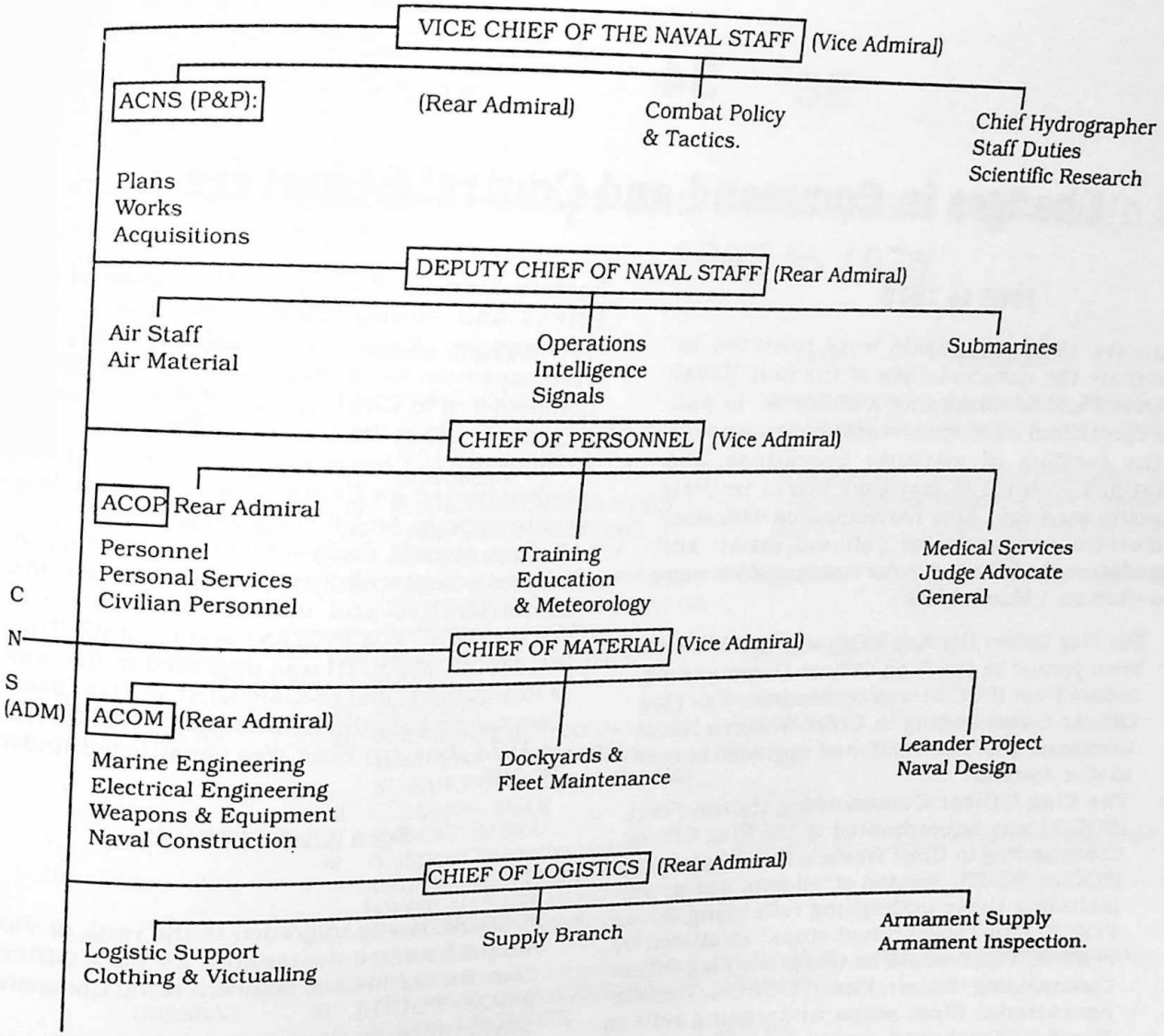
The 1972 Reorganisation took numerous factors into account:

- The need to strengthen the policy making apparatus to respond quickly to situations and also allow larger initiative to the Commands.
- The growth and diversification of sea going forces and the doubling of manpower since 1962.
- The expansion and modernisation of maintenance facilities.
- The updating and enlarging of training complexes.
- The establishment of the Submarine Arm.
- The large variety of weapons and missiles, computerised fire control systems, communication and electronic warfare systems.
- The acquisition of very sophisticated naval aircraft.
- The induction of gas turbine propulsion.
- The acquisition of vessels from Russia with their new philosophies and practices in the fields of maintenance, logistics and training, which were substantially different and distinct and irreconcilable with extant practices.
- The march towards self sufficiency and the indigenous construction programme ranging from 200 ton Seaward Defence Boats, and Landing Craft to 3000 ton LST's, 2000 ton Survey Vessels and the Leander class frigates.

The salient features of the 1972 reorganisation were:

- The creation of the Deputy Chief of the Naval Staff (DCNS) in the rank of Rear Admiral, responsible for "Operations" and the associated disciplines of intelligence and signals, leaving VCNS to concentrate on the policy and planning functions of the Staff Branch.
- The upgradation in rank of Chief of Personnel and Chief of Material to Vice Admiral.
- The creation of three Assistant Principal Staff Officers (APSOs) in the rank of Rear Admiral viz Assistant Chief of the Naval Staff (Policy and Plans) (ACNS P&P) Assistant Chief of Personnel (ACOP) and Assistant Chief of Material (ACOM).
- The creation of the new Directorate of Naval Design under COM and renaming the Director of Stores as Director of Logistic Support.
- The distribution and organisation of Directorates was rationalised eg separating wherever necessary the problems of Russian and Western acquisitions.

The resultant structure of Naval Headquarters was as follows:



Changes from 1972 to 1975

In 1973/74 the Directorate of Management Services (DOMS) was created and placed under ACNS (P&P).

In 1974/75 DOMS was placed directly under VCNS.

Changes After 1975

The next major reorganisation of Naval Headquarters took place in January 1978. It was necessitated by substantial changes in the pattern of support and maintenance of the large number of new ships.

- The General List Cadres of the Executive and Supply Branches were merged.
- The post of Chief of Logistics was abolished.
- The Directorates of Logistic Support and Armament Supply were placed under the Chief of Material for better coordination of all aspects of stores and machinery under one branch.
- The Directorates of Clothing and Victualling were merged into the Director of Supplies and placed under the Chief of Personnel as both functions were related to personnel.
- The Director of Naval Armament Inspection was placed under the Vice Chief of Naval Staff for closer supervision of munitions.
- The Director of Staff Duties was redesignated as Director of Administration.

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Changes in Command and Control Structure

1965 to 1975

In January 1966, proposals were initiated to redesignate the nomenclature of the four Naval Operational and Administrative Authorities. In war, these operational authorities would be responsible for the conduct of maritime operations and operational control of maritime forces in their respective sea areas. After harmonisation with other concurrent proposals for rationalisation and upgradation, the following major reorganisation came into effect on 1 March 1968:

- The Flag Officer Bombay (FOB) who had hitherto been junior to the Flag Officer Commanding Indian Fleet (FOCIF) was re-designated as Flag Officer Commanding in Chief Western Naval Command (FOCINCWEST) and upgraded in rank to Vice Admiral.
- The Flag Officer Commanding Indian Fleet (FOCIF) was subordinated to the Flag Officer Commanding in Chief Western Naval Command (FOCINCWEST). Instead of "all front line ships," including those undergoing refit being under FOCIF, only "operational ships" as alloted by FOCINCWEST would be under the Flag Officer Commanding Western Fleet (FOCWEF). The non-operational Fleet ships undergoing refit in Bombay Dockyard would be administered directly by FOCINCWEST.
- In anticipation of the formation of the Eastern Fleet under the Flag Officer Commanding Eastern Fleet (FOCEF) after the arrival of the Petyas and submarines from Russia, the Commodore East Coast (COMEAST) at Visakhapatnam was re-designated as Flag Officer Commanding in Chief Eastern Naval Command (FOCINCEAST) in the rank of Rear Admiral.
- Commodore in Charge Cochin (COMCHIN) was re-designated as Commodore Commanding Southern Naval Area (COMSOUTH).
- All ships, aircraft, dockyard and logistics support facilities were placed directly under the respective administrative and operational control of FOCINCWEST, FOCINCEAST and COMSOUTH.
- In 1970, COMSOUTH was upgraded to the rank of Rear Admiral and re-designated as Flag Officer Commanding Southern Naval Area (FOCSOUTH).
- In 1971, Eastern Fleet was constituted under FOCEF.

Soon After 1975

In 1977:

- FOCSOUTH was upgraded to the rank of Vice Admiral and re-designated as Flag Officer Commanding in Chief Southern Naval Command (FOCINCSOUTH).
- Naval Officer in Charge, Goa (NOIC GOA) was upgraded to the rank of Rear Admiral and re-designated as Flag Officer Commanding Goa Area (FOGA).

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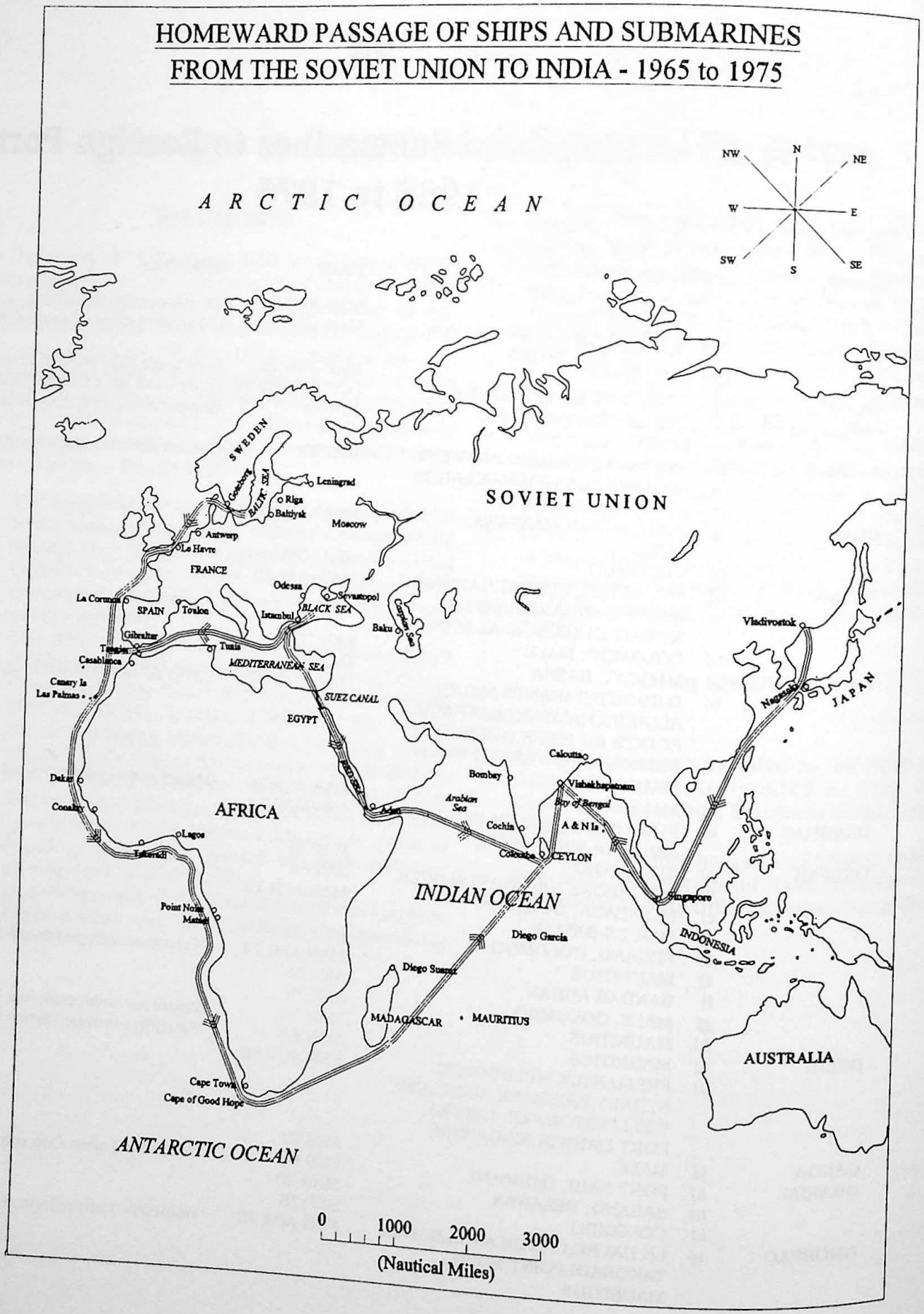
Visits of Ships and Submarines to Foreign Ports: 1965 to 1975

SHIP(S)	PORTS VISITED	YEAR	REMARKS
AMAR	a) PORT LOUIS	MAR-APR 74	On transfer to Mauritius
AMBA	a) ISTANBUL,CASABLANCA, MATADI, MAURITIUS	MAR-MAY 69	Homeward after Commissioning
	b) COLOMBO	MAY-JUN 72	Southeast Asia Sailing Regatta
AMINI	a) KOBE,MANILA,SINGAPORE	DEC 74-JAN 75	Homeward after Commissioning
ANDAMAN	a) NAGASAKI, HONGKONG, SINGAPORE	JAN 74	Homeward after Commissioning
ANJADIP	a) GDYNIA,GOTEBORG,ANTWERP LE HAVRE,LAS PALMAS,LAGOS, MATADI, MAURITIUS	MAY 73	Homeward after Commissioning
BEAS	a) PORT SUDAN,MASSAWA, ADEN	FEB - MAR 71	
	b) COLOMBO	APR - MAY 71	
BETWA	a) ABU DHABI,MUSCAT,BAHRAIN, BASRA,BANDAR SHAHPUR, KUWAIT,DUBAI,RAS-AL-KHAIMA	MAY-JUN 72	
	b) COLOMBO, MALE	FEB 73	
BRAHMAPUTRA	a) MUSCAT, BASRA	MAR 65	
	b) DJIBOUTI,TARANTO,MALTA ALGIERS,HALIFAX,MONTREAL, POINTE AU PIERE,QUEBEC, SUMMERSIDE,FREETOWN, MAURITIUS,	MAY-AUG 67	EXPO 67 at Montreal,Canada
	c) MAURITIUS	MAR-APR 70	Mauritius Independence Day
DARSHAK	a) PORT SWETTENHAM,BANGKOK JAKARTA,SINGAPORE	APR-MAY 70	
DEEPAK	a) SINGAPORE	MAR 68	
	b) SINGAPORE,NAGASAKI,MANILA	JAN 69	
	c) MOMBASA, ZANZIBAR, DAR-ES-SALAM	MAR-APR 73	
	d) PENANG, COLOMBO	OCT 73	
	e) MAURITIUS	MAR-APR 74	Mauritius Independence Day
	f) BANDAR ABBAS	SEP 74	
	g) MALE, COLOMBO	JAN 75	
	h) MAURITIUS	MAR 75	Mauritius Independence Day
DELHI	a) MAURITIUS	MAR 68	Mauritius Independence Day
	b) FREMANTLE,MELBOURNE, SYDNEY,BRISBANE,AUCKLAND, WELLINGTON,FIJI, LATUKA, PORT DARWIN,SINGAPORE	SEP-NOV 69	
GANGA	a) MALE	FEB 71	
GHARIAL	a) PORT SAID, DJIBOUTI	FEB 66	Homeward after Commissioning
	b) SABANG, BELAWAN	MAR 70	
	c) COLOMBO	SEP 75	
GHORPAD	a) LE HAVRE,CASABLANCA,DAKAR, TAKORADI,POINT NOIRE, MAURITIUS	FEB-APR 75	Homeward after Commissioning

HOMEWARD PASSAGE OF SHIPS AND SUBMARINES FROM THE SOVIET UNION TO INDIA - 1965 to 1975



GODAVARI	a)	COLOMBO, MALE, GAN	FEB 69	
	b)	COLOMBO	FEB 71	
GOMATI	a)	COLOMBO, MALE, GAN	FEB 69	
GULDAR	a)	PORT SAID	SEP 66	Homeward after Commissioning
	b)	SABANG, BELAWAN	MAR 70	
	c)	TRINCOMALEE	OCT 70	
HIMGIRI	a)	BASRA, BAHREIN	NOV 75	
KADMATT	a)	NAGASAKI,MANILA,SINGAPORE	JAN 69	Homeward after Commissioning
KALVARI	a)	LE HAVRE, LAS PALMAS, CONAKRY,MAURITIUS	APR-JUN 68	Homeward after Commissioning
	b)	PORT SWETTENHAM,HONGKONG	NOV-DEC 74	To Vladivostok for Medium Repairs
	c)	MANILA, PORT SWETTENHAM	AUG-SEP 76	Homeward after Medium Repairs
KAMORTA	a)	NAGASAKI,MANILA,SINGAPORE	JAN 69	Homeward after Commissioning
KARANJ	a)	LA PALLICE, LAS PALMAS, LAGOS,DIEGO SUAREZ	DEC 69-JAN 70	Homeward after Commissioning
KATCHALL	a)	HONGKONG, SINGAPORE	FEB 70	Homeward after Commissioning
	b)	COLOMBO	FEB-MAR 74	
KAVARATTI	a)	HONGKONG, SINGAPORE	FEB 70	Homeward after Commissioning
	b)	COLOMBO	FEB-MAR 74	
KESARI	a)	LE HAVRE,TUNIS,ALEXANDRIA, ADEN	SEP-OCT 75	Homeward after Commissioning
KHANDERI	a)	ANTWERP,CASABLANCA,MATADI, MAURITIUS	MAR-MAY 69	Homeward after Commissioning
KHUKRI	a)	PENANG	MAR 68	
	b)	ABU DHABI,MUSCAT,SALALAH, BAHREIN, ADEN	FEB 71	
KILTAN	a)	HONGKONG, SINGAPORE	DEC 69	Homeward after Commissioning
KIRPAN	a)	PENANG	MAR 68	
	b)	ADEN	FEB 71	
	c)	DUBAI, DOHA,	NOV 75	
KURSURA	a)	GOTEBORG,LA CORUNNA, TAKORADI,MAURITIUS	FEB-APR 70	Homeward after Commissioning
KUTHAR	a)	KUWAIT	MAR 65	
	b)	BAHREIN, KUWAIT	MAR-APR 67	
	c)	SINGAPORE	MAR 68	
	d)	ADEN	FEB 71	
	e)	COLOMBO	APR 71	
	f)	BANDAR ABBAS	SEP 74	
	g)	COLOMBO	AUG 75	
MYSORE	a)	MALE,COLOMBO	MAY 66	
	b)	SIHANOUKVILLE	FEB 68	
	c)	COLOMBO, MALE, GAN	FEB 69	
	d)	ABU DHABI,DUBAI,MUSCAT, BAHREIN,BASRA,KUWAIT, BANDAR ABBAS, SHARJAH	MAY-JUN 72	
	e)	DJIBOUTI,JEDDAH,MASSAWA	JAN-FEB 73	Ethiopian Navy Day
	f)	MALE	JAN 75	
NILGIRI	a)	JAKARTA,BALI,BANGKOK, SINGAPORE,COLOMBO	JUN-JUL 73	Flag showing goodwill visit after commissioning
	b)	BANDAR ABBAS	SEP 74	
	c)	MAURITIUS	MAR 75	Mauritius Independence Day
NISTAR	a)	TUNIS,TANGIER,LAS PALMAS, DAKAR,POINT NOIRE, MAURITIUS	AUG-OCT 71	Homeward after Commissioning
RAJPUT	a)	BANGKOK	FEB 68	
RANA	a)	MALE	APR 67	
	b)	KUWAIT,DUBAI,ABU DHABI	JAN-FEB 69	
RANJIT	a)	MALE	APR 67	

	b)	SOURABAYA,SINGAPORE, PORT SWETTENHAM	MAR 68	
SHARDUL	a)	LE HAVRE, TUNIS	DEC 75	Homeward after Commissioning
TALWAR	a)	MUSCAT, BASRA	MAR 65	
	b)	ABADAN, BASRA	MAR-APR 67	
	c)	MAURITIUS,TEMA,TAKORADI, DAKAR,GIBRALTAR,CADIZ, ANTWERP,RIGA	FEB-APR 68	To Riga to escort Kalvari home
	d)	LE HAVRE,GIBRALTAR, CASABLANCA,LAS PALMAS,DAKAR, CONAKRY,TAKORADI,MAURITIUS	APR-JUL 68	Escorting Kalvari homeward
	e)	BAHREIN,PORT SUDAN,MASSAWA, ADEN,ABU DHABI,MUSCAT, SALALAH	JAN-MAR 71	Ethiopian Navy Day
	f)	COLOMBO	APR-MAY 71	
	g)	COLOMBO	SEP 74	
TRISHUL	a)	ABADAN, BASPA	MAR-APR 67	
	b)	KUWAIT,BAHREIN,SHARJAH	JAN-FEB 69	
	c)	MANILA,TOKYO,KOBE, HONGKONG,PENANG	APR-MAY 70	EXPO 70 at Tokyo, Japan.
	d)	COLOMBO	MAY 71	
	e)	GAN	MAR 75	
	f)	BUSHIRE, ABU DHABI	NOV 75	
VAGHSHEER		LE HAVRE,DAKAR TAKORADI MAURITIUS	MAR 75	Homeward after Commissioning
VAGIR		LE HAVRE, LAS PALMAS, TAKORADI, MAURITIUS	MAR-APR 74	Homeward after Commissioning
VAGLI		LE HAVRE, POINTE NOIRE, MAURITIUS	NOV-DEC 74	Homeward after Commissioning
VELA		LE HAVRE,LAS PALMAS, TAKORADI, MAURITIUS	NOV-DEC 73	Homeward after Commissioning
VIKRANT	a)	KUWAIT	MAR 65	
	b)	BAHREIN,KUWAIT	MAR-APR 67	
	c)	COLOMBO	AUG 75	
	d)	BANDAR ABBAS, KUWAIT	NOV 75	

Visit of Training Ships to Foreign Ports: 1965 to 1975

SHIP	PORTS VISITED	YEAR	REMARKS
TIR	a) MOMBASA, SEYCHELLES	JAN-FEB 65	
	b) COLOMBO	OCT 65	
	c) ADEN, MASSAWA,ALEXANDRIA, PORT SUDAN	JAN-MAR 67	
	d) MOMBASA,DAR-ES-SALAAM, DIEGO SUAREZ,SEYCHELLES	AUG-SEP 67	
	e) MASSAWA, ADEN, BAHREIN, KUWAIT	FEB-MAR 68	
	f) PENANG, PORT SWETTENHAM, SINGAPORE	FEB 69	
	g) JAKARTA, FREMANTLE, BUNBURY, SOURABAYA	SEP-OCT 70	Captain Cook Centenary
	h) SABANG, BELAWAN, PENANG	SEP 74	
	j) HODEIDA, ADEN	MAR-APR 75	
CAUVERY	a) PORT SWETTENHAM, COLOMBO	SEP-OCT 66	
	b) DAR-ES-SALAAM,DIEGO SUAREZ, SEYCHELLES	AUG-SEP 68	

	c)	PENANG, PORT SWETTENHAM, SINGAPORE	FEB-MAR 69	
	d)	DUBAI, KUWAIT, ABU DHABI, ADEN, MASSAWA	JAN-FEB 70	
	e)	JAKARTA,FREMANTLE, BUNBURY, SOURABAYA	SEP-OCT 70	Captain Cook Centenary
	f)	COLOMBO	MAY-71	
	g)	MOMBASA, ZANZIBAR, DAR-ES-SALAAM	MAR-APR 73	
	h)	PENANG, COLOMBO	OCT 73	
	j)	SABANG, BELAWAN, PENANG	SEP 74	
	k)	PORT LOUIS	MAR-APR 74	Tow of AMAR to Mauritius
	l)	HODEIDA, ADEN	MAR-APR 75	
KRISHNA	a)	DAR-ES-SALAAM,DIEGO SUAREZ, SEYCHELLES	AUG-SEP 68	
	b)	BANDAR ABBAS, BAHREIN, BASRA, MUSCAT, ADEN, MASSAWA	JAN-FEB 70	
	c)	MOMBASA, ZANZIBAR, DAR-ES-SALAAM	MAR-APR 73	
	d)	PENANG, COLOMBO	OCT 73	
	e)	PORT LOUIS	MAR-APR 74	Tow of AMAR to Mauritius
DELHI	a)	MOMBASA, ZANZIBAR, DAR-ES-SALAAM	MAR-APR 73	
	b)	PENANG, COLOMBO	OCT 73	
	c)	ADDU ATOLL, PORT LOUIS	MAR-APR 74	Handing over AMAR to Mauritius
	d)	SABANG, BELAWAN, PENANG	SEP 74	
	e)	HODEIDA, ADEN	MAR-APR 75	

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Commissionings and Decommissionings

Commissioning of Indian Naval Ships: 1965 to 1975

NAME	DATE	SHIP TYPE
GHARIAL	17 FEB 66	Landing Ship Tank (Medium)
GULDAR	13 SEP 66	Landing Ship Tank (Medium)
PAMBAN	18 FEB 67	Patrol Boat
PANVEL	18 FEB 67	Patrol Boat
PANAJI	16 MAR 67	Patrol Boat
PURI	16 MAR 67	Patrol Boat
PULICAT	16 MAR 67	Patrol Boat
DEEPAK	20 NOV 67	Fleet Tanker
BHATKAL	08 JUN 68	Inshore Minesweeper
KAMORTA	21 NOV 68	Petya class submarine chaser
KADMATT	23 DEC 68	Petya class submarine chaser
AMBA	28 DEC 68	Submarine Depot Ship
AMAR	11 JUL 69	Seaward Defence Boat MK I
KILTAN	30 OCT 69	Petya Class Submarine chaser
AJIT	09 DEC 69	Seaward Defence Boat MK I
KATCHALL	23 DEC 69	Petya Class Submarine Chaser
KAVARATTI	23 DEC 69	Petya Class Submarine Chaser
ATUL	11 JUN 70	Seaward Defence Boat MK I
BULSAR	19 JUN 70	Inshore Minesweeper
VINASH	20 JAN 71	Missile Boat
NIRGHAT	29 JAN 71	Missile Boat
VIDYUT	16 FEB 71	Missile Boat
NIRBHIK	20 FEB 71	Missile Boat
NASHAK	19 MAR 71	Missile Boat
VIJETA	27 MAR 71	Missile Boat
NISTAR	29 MAR 71	Submarine Rescue Vessel
VEER	02 APR 71	Missile Boat
NIPAT	26 APR 71	Missile Boat
NILGIRI	03 JUN 72	Leander Class Frigate
ARNALA	29 JUN 72	Petya Class Submarine Chaser
ANDROTH	30 JUN 72	Petya Class Submarine Chaser
ANJADIP	23 DEC 72	Petya Class Submarine Chaser
GAJ	20 SEP 73	Fleet Tug
ANDAMAN	28 DEC 73	Petya Class Submarine Chaser
HIMGIRI	23 NOV 74	Leander Class Frigate
AMINI	12 DEC 74	Petya Class Submarine Chaser
GHORPAD	16 JAN 75	Landing Ship Tank (Medium)
KESARI	15 AUG 75	Landing Ship Tank (Medium)
SHARDUL	24 NOV 75	Landing Ship Tank (Medium)
SHARABH	27 JAN 76	Landing Ship Tank (Medium)

Commissioning of Submarines: 1965 to 1975

KALVARI	08 DEC 67
KHANDERI	06 DEC 68
KARANJ	04 SEP 69
KURSURA	18 DEC 69

VELA	31 AUG 73
VAGIR	03 NOV 73
VAGLI	10 AUG 74
VAGSHEER	26 DEC 74

Commissioning of Naval Air Squadrons: 1965-1975

SQUADRON	DATE	AIRCRAFT TYPE	ROLE
INAS 321	15 MAR 1969	ALOUETTE	Search & Rescue and Logistic Support
INAS 330	17 APR 1971	SEAKING	Anti Submarine
INAS 561	15 SEP 1971	HUGHES 300 SAR ALOUETTE	Helicopter Training
INAS 331	15 MAY 1972	MATCH Role	Frigate borne Helicopter
INAS 336	20 DEC 1974	SEAKING	Anti Submarine
		Soon After 1975	
INAS 312	18 NOV 1976	Super Constellation ex IAF	Maritime Reconnaissance
INAS 315	07 OCT 1977	IL 38	Maritime Reconnaissance and Anti Submarine Warfare (MRASW)

Commissioning of Shore Establishments: 1965 to 1975

ESTABLISHMENT	DATE	LOCATION	ROLE
INS AGRANI	18 SEP 65	COIMBATORE	Petty Officers Leadership School
INHS JEEVANTI	18 APR 66	GOA	Naval Hospital
INS VIRBAHU	19 MAY 71	VISAKHAPATNAM	Submarine Headquarters
INS DWARKA	26 NOV 72	OKHA	Advance Base
INS AGNIBAHU (Earlier TRATA-2 since 1971)	09 JAN 73	BOMBAY (Colaba)	Missile Boat Headquarters
INS KARDIP	28 SEP 73	NICOBARS (Kamorta)	Advance Base
INS TUNIR	07 JUN 74	BOMBAY (Karanja)	Missile Preparation Facility
INS NETAJI SUBHASH (Earlier HOOGHLY since 1959)	05 JUL 74	CALCUTTA	Naval Establishment
INHS DHANVANTARI	07 OCT 74	PORT BLAIR	Naval Hospital
INS SATAVAHANA	21 DEC 74	VISAKHAPATNAM	Integrated Type Training School for Russian Acquisitions
INS MANDOVI	05 JAN 76	GOA	Naval Academy

Decommissioning of Indian Naval Ships: 1965 to 1975

SHIPS	DATE	SHIP TYPE
SHAKTI	31 DEC 67	Tanker
RANA	30 SEP 71	Fleet Destroyer
GOMATI	31 MAY 72	Escort Destroyer (Hunt Class)
GANGA	31 JUL 72	Escort Destroyer (Hunt Class)
KONKAN	31 JUL 72	Minesweeper/Diving Tender
HATHI	30 SEP 72	Fleet Tug
BIMLIPATNAM	31 DEC 72	Inshore minesweeper
RAJPUT	30 JUN 73	Fleet Destroyer
SAVITRI	15 JUN 74	Central Board of Revenue Patrol Boat
SARAYU	15 JUN 74	Central Board of Revenue Patrol Boat
SUVARNA	15 JUN 74	Central Board of Revenue Patrol Boat
SUBHADRA	15 JUN 74	Central Board of Revenue Patrol Boat
INVESTIGATOR	30 SEP 74	Survey Ship
RANJIT	30 SEP 75	Fleet Destroyer
DHARINI	31 DEC 75	Store Ship

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CEREMONIAL

Presidential Reviews of the Fleet

In this tradition inherited from the British Navy, the Supreme Commander of the Armed Forces reviews the Navy as if on parade. Traditionally, the President of India reviews the Indian Fleet once during his tenure in office. There have, however, been two occasions when reviews were done by other personages- by the Shah of Iran in 1956 and by Defence Minister YB Chavan in 1964 on behalf of President Radhakrishnan who was indisposed.

The Presidential Review is an impressive ceremony, second only to the Republic Day Parade. Naval ships and ships from maritime organisations like the Coast Guard, the Merchant Navy, the National Institute of Oceanography, the Oil and Natural Gas Commission, Training Ship Rajendra and Naval Yardcraft are anchored precisely in neat lines and dressed overall.

The President embarks in a naval ship nominated as the Presidential Yacht which flies the President's Colour. After receiving a 21 gun salute, the President reviews the Fleet by cruising past each line of ships. Each ship's side is manned by her ships company in white ceremonial uniform. As the President passes by, each ships company, in unison, 'take off' their caps in salutation and give three resounding 'Jais'.

At sunset, all ships at the anchorage participate in a fireworks display. With the ships covering a wide expanse, the entire harbour appears to be aflame. As darkness descends, all ships, in unison, switch on their garlands of lights which accentuate their silhouettes.

To date, all reviews have been held in Bombay Harbour.

No Fleet Reviews were held for

- President Zakir Hussain during his tenure from 13 May 1967 to 03 May 1969.
- President N Sanjiva Reddy during his tenure from 25 July 1977 to 24 Jul 1982.

As a prelude to the Presidents Review in 1969, naval aircraft gave an aerial fire power demonstration and aerobatic display off Marine Drive in Bombay, from where thousands watched the aircraft decimating anchored targets.

On the day of the Review in 1969, 20 Seahawks, 6 Alizes, 4 Vampires and 7 Alouette helicopters flew past in two formations - one depicting an anchor and the other depicting the letters "IN"

Date	Participants						Reviewed By
	Naval Ships	Submarines	Aircraft & Helicopters	Coast Guard Ships	Yard Craft	Ships of Mercantile Marine & Other Agencies	
10 October 1953	25	-	6 Sealands	7	-	1 (TS Dufferin)	President Dr Rajendra Prasad
06 March 1956	12	-	-	-	-	-	The Shah of Iran
20 April 1964	31	-	-	12	-	9	Defence Minister YB Chavan because President Radhakrishnan was indisposed
10 February 1966	10 at sea	-	-	-	-	-	President S Radhakrishnan
28 December 1969	45	1	33 Navy	5	-	8	President VV Giri
11 January 1976	43	5	5 Navy	-	-	6	President Fakhrudin Ali Ahmed
12 February 1984	45	3	32 Navy	2	7	9	President Giani Zail Singh
15 February 1989	48	8	29 Navy 8 CG	2	4	10	President R Venkataraman

The Presidents Colour

Since ancient times, in all countries, armies and navies, the monarch used to fly his flag to visually indicate his location to his dispersed forces. In India, this flag was called the "dhwaj". The Romans carried flags called "standards" on tall poles topped by eagles. In battle, those flags served as a central point of reference. If the flag ceased to be visible, it indicated that the personage had either been defeated or had fled. The flag therefore was a rallying point, well defended in battle. In peacetime, it was a focus for pageantry because it was a personal symbol of the monarch.

In the British Navy, when the monarch embarked in a naval ship, the 'Royal Standard' was flown at the highest mast. When admirals were embarked in large sailing fleets, they flew their personal flags at the highest points of their respective flagships. These fleets of sailing warships were usually organised in three segments - the van, the centre and the rear, with the seniormost admiral in the centre. The Vice Admiral in the Van (ie front) and the Rear Admiral in the rear. The Rear Admiral's flag had two red roundels on a white flag with red strips dividing it into four quadrants. The Vice Admiral's flag had only one red roundel and the Admiral's flag had just the quadrantal red strips and no roundels. In battle at sea, these personal flags fulfilled the same function of a rallying point, much as a "Standard" did in battles on land.

In Britain, the monarch used to present "colours" to the Navy, Army and Airforce, as well as to the Commanders in Chief of the forces. This "Kings Colour" was paraded ashore on very special ceremonial occasions. In 1924, King George presented his colours to the British Navy. In the following years, Kings Colours were presented to the Commanders in Chief of the main naval ports at Portsmouth, Plymouth and Chatham and to the Commanders in Chief of the British Fleets in Britain and abroad. In 1935, the Kings Colours were presented to the Royal Indian Navy.

India became a republic on 26 January 1950. One day earlier, on 25 January, all 33 of the Kings Colours which had been presented to the Royal Indian Navy, Royal Indian Army and Royal Indian Air Force and their respective Commands were "laid up" at the Indian Military Academy at Dehradun. From 26 January 1950 onwards, the use of the prefix 'Royal' was discontinued.

On 27 February 1951, the British Commander in Chief of the Indian Navy, Vice Admiral Sir Edward Parry, wrote to the Defence Minister:

"As you know, before India became a Republic the Naval custom was to parade the Kings Colours ashore on special ceremonial occasions. On and after January 26th, 1950, however, this practice ceased and the ordinary Indian Naval ensign has been paraded instead. It would be a privilege of which the service would be extremely proud if the President would honour the Indian Navy by presenting to it a special flag which would be paraded on important occasions in the same manner as the King's Colours used to be.

"I am attaching a drawing which shows the Indian Naval White ensign with the Asoka Lion, the emblem of India, in the centre, and an elephant in the lower right quarter. The shape of the elephant is the same as the one which appears in outline in the top right quarter of the President's flag. The elephant symbolises "strength and stability" and has been chosen in lieu of the vase and lotus flower which appears in the lower right quarter of the President's flag. I feel that the lotus emblem representing "peace and plenty" would not be appropriate if shown in a flag belonging to a fighting force.

"If you agree with the proposal for a President's Colour to be presented to the Indian Navy, I should be grateful if you would submit the design to the President, and request him if he would be gracious enough to present the flag when made."

Following the British tradition of the Navy being the senior of the three armed services, the Indian Navy was the first to be presented with the President's Colours on 27 May 1951. In the years that followed, as the Navy grew in size and function, Presidents Colours were presented to the Naval Commands and the Fleet.

Presented to the	By President	On
Indian Navy	Dr Rajendra Prasad	27 May 1951
Southern Naval Command	Giani Zail Singh	26 November 1984
Eastern Naval Command	Giani Zail Singh	25 March 1987
Western Naval Command	Shri R Venkataraman	22 February 1990
Western Fleet	Dr Shankar Dayal Sharma	09 March 1997

From 15 Aug 71, the use of 'Personal Standards' by the President, Governors and Lieutenant

Governors was discontinued. Instead the National flag was to be flown when these standards used to be displayed.

Navy Day

On 21 October 1944, the Indian Navy celebrated Navy Day for the first time. This met with considerable success and aroused enthusiasm not only in the ports where parades were held but also in inland centres where public meetings were organised. Seeing its success, it was decided to organise similar functions every year on a larger scale and later in the season when the weather was cooler. Accordingly, Navy Day 1945 was celebrated in Bombay and Karachi on 1 December.

In due course and until 1972, Navy Day came to be celebrated on 15 December and the week in which 15 December fell was observed as the Navy Week.

At the Senior Naval Officers Conference in May 72, it was decided that :

- Navy Day would be celebrated on 4 December to commemorate the very successful naval actions in the Arabian Sea and the Bay of Bengal during the Indo Pakistan War of December 1971.
- Navy Week would be observed from 1 to 7 December.

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Diving Cadre and the Chariot Project

THE DIVING CADRE

Preamble

The Navy's Diving Cadre was modelled entirely on that of the British Navy. There were two categories - deep divers and shallow divers.

The years till 1965 witnessed a steady rise in the demand for naval diving assistance. The main constraint was the acute shortage of divers, the lack of a diving tender and the lack of diving boats.

Developments 1966 to 1975

The 1964-69 Plan accepted the need for Clearance Diving teams for the major ports and the Fleet.

In 1965, approval was accorded in principle to the formation of three clearance diving teams with additional instructors and the necessary equipment. The cadre of clearance divers and the allowances and dip moneys payable to them was also agreed upon.

In June 1966, sanction was accorded for the setting up of a Clearance Diving Cadre comprising 5 officers and 44 sailors, to form three Clearance Diving Teams, one each for Bombay, Visakhapatnam and the Fleet. These teams could be quickly deployed to render diving assistance to the organisation who sought their assistance.

Diving Tenders

The Defence Plan 1966-71 had provided for two tugs. The sanction for the first Ocean Going Tug, GAJ had provided for it to have a large Recompression Chamber and a Portable One-Man Recompression Chamber.

In 1967, it was learnt that the Pakistan Navy had acquired midget submarines and chariots for clandestine underwater attack by frogmen/ commandos on ships when in harbour. Till then, only one Clearance Diving Team had been raised in Bombay. Immediately, the urgency increased to expand the Diving Cadre and improve its effectiveness and its capability.

In 1968, to attract volunteers for diving duties, the rates of Sailors Retaining Sea and Diving Pay (dip money) were revised upward.

Until 1968, there had been no central organisation responsible either for the repair of diving equipment or to certify its serviceability. In 1968, this responsibility was entrusted to the Weapons Department of the Bombay Dockyard and its staff augmented by experienced clearance divers.

Till 1970, the acute shortage of divers persisted.

In 1971, with the induction of the Submarine Resue Vessel NISTAR and its Deep Diving capability, the Navy's proposal was accepted that the Diving Cadre be reorganised into five categories:

	Monthly Allowance
• Clearance Diving Officers	Rs. 75
• Deep Diving Officers	Rs. 75
• Ship Diving Officers	Rs. 40
• Deep Divers	Rs. 60
• Ship Divers	Rs. 35

The personnel of the erstwhile Deep Diver and Shallow Diver categories were given the option to convert to Clearance/Deep Divers and Ship Divers respectively or retain their existing qualifications till they retired. It was hoped that the monthly allowance for ship divers would encourage volunteers to fill the large Diving Cadre which Government was going to sanction.

In October 1971, sanction was accorded for a revised Diving Cadre of 661 Diving Specialist officers, Clearance Divers and Ship Divers, as against the original total sanction of only 150.

The acute shortage of divers manifested itself during the 1971 war, when ships bottoms had to be searched repeatedly to counter the threat of enemy frogmen.

In May 1972, only 200 divers were borne. The crash diver training programme, prepared to complete the training of over 400 divers by 1977, envisaged:

- Training of 350 divers in Cochin by end 1974.
- Preponing the commissioning of the Submarine Escape Training Tower/Naval Diving School at Vishakapatnam.
- Withdrawing experienced divers to act as instructors.

In early 1972, the Submarine Rescue Vessel NISTAR was positioned in Cochin to train Deep Sea divers and other trainees from the Diving School, Cochin. Practical training was carried out in the deep waters off Kovalam, near Trivandrum.

The biggest difficulty in sustaining the momentum of the crash programme to increase the number of divers was the lack of a diving tender. KONKAN, who had been doing diving tender duties since 1963, had reached the end of its life. On the one hand, the long awaited new ocean going tug, GAJ, had yet to be delivered. In the absence of GAJ, the only other vessel available for diving tender duties was NISTAR. On the other hand, the deployment of NISTAR to Cochin had resulted in her maintenance routines becoming overdue. NISTAR was also due for her guarantee closing refit in March 1972, which, if delayed, would affect the terms of her one year guarantee. A decision had therefore been taken that the old destroyer RANJIT was to be converted for diving duties during her next refit. However the cost of Ranjit's refit was found to be prohibitive. It was therefore decided to make the maximum possible use of NISTAR until GAJ commissioned in end 73.

In 1973, special boards were constituted for the medical examination of divers.

In end 1973, approval was accorded for revised scales of diving equipment for all ships and diving teams, which would provide for the bottom searches of ships against underwater sabotage.

In 1974, one officer and four sailors qualified as Deep Sea Divers from NISTAR in the first such course conducted by the Navy.

In 1975, NISTAR, for the first time, carried out extensive deep sea diving up to a depth of 100 meters.

In 1975, orders were placed for import of the latest diving equipment. Equipment shortages were expected to be made good by 1977.

In end 1975, the borne strength of naval divers still remained well short of what had been sanctioned:

Category	Sanctioned			Borne
Clearance Diver Officer(CDO)	30	(20 + 50%	Reserve)	17
Ships Diver Officer (SDO)	94	(47 + 100%	")	90
Clearance Diver 1st Class(CD1)	39	(26 + 50%	")	20
Clearance Diver 2nd Class(CD2)	53	(37 + 50%	")	22
Clearance Diver 3rd Class(CD3)	103	(69 + 50%	")	48
Ships Diver (SD)	470	(235 + 100%	")	227

Developments After 1975

The Naval Dockyard Bombay delivered four 45 foot diving boats. The Diving equipment ordered in 1975 started arriving from 1976 onwards.

The Chariot Project

In September 1972, a team was sent to Italy to finalise the acquisition of midget submarines and chariots from the same Italian firm which had earlier supplied midgets and chariots to the Pakistan Navy in 1967. The team was tasked to evaluate, negotiate and contract for midget submarines and chariots.

The team did not consider it worthwhile to acquire midget submarines because of :

- Their unsuitability for long range operations in tropical waters.
- The difficult problems of manning these craft.
- The uncertainty of their continued maintainability.

Chariots could however be used for commando operations even without midget submarines.

The team signed a contract for the acquisition of six chariots along with supporting equipment, spares and explosives.

Acceptance trials were carried out in 1974. The chariots arrived in 1975 and were based in Bombay. The first replacement crew was trained by 1976. On 1 May 1980, the newly built chariot complex was commissioned as INS ABHIMANYU.

The basic role of the chariot complex was to determine the defensive measures to be instituted to defend Bombay against possible attack by Pakistan's midget submarine's and chariots. In addition, on an ongoing basis, the chariots were to exercise ships in harbour in Operation AWKWARD procedures. When required, the chariots could also be deployed operationally.

Initially, considerable difficulties were experienced in identifying and earmarking a ship to embark the chariots, take them well out to sea and then lower them safely into the water to go in and carry out dummy attacks on ships in Bombay harbour. Eventually, AMBA, who had by then been re-based in Bombay to support the VELA Class submarines on the West Coast, was found to be most suitable as a chariot launching platform. In tactical exercises, both AMBA and the chariots performed efficiently and successfully.

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Transfer of Naval Ships to Foreign Navies

Bangladesh

After the 1971 Indo Pakistan war, the erstwhile East Pakistan became an independent state called Bangladesh. Bangladesh sought the assistance of the Indian Navy to help start the Bangladesh Navy. In April 1973 and July 1974, Seaward Defence Boats INS AKSHAY and AJAY were transferred to the Bangladesh Navy, who renamed them as BNS PADMA and SURMA respectively.

Mauritius

In the early 1970s, the Government of Mauritius was in need of a vessel which could help protect maritime and fishing rights, help in air/sea rescue, rescue fishermen in distress and check smuggling and other illegal traffic. The Government of India offered to gift the Seaward Defence Boat INS AMAR. The Government of Mauritius accepted the offer. Mauritian officers and sailors were trained in India. AMAR was towed to Mauritius by the Training Squadron and handed over in March 74 to become MNS AMAR to start with and later CGS AMAR.

In 1989, the Mauritius Coast Guard was formed. A marine training establishment was set up and a Dornier surveillance aircraft was acquired from India.

In the early 1990's, the Mauritius Coast Guard expanded. It acquired another Seaward Defence Boat from India and its second Coast Guard aircraft from Britain.

Indian Naval Officers have helped to set up the Mauritian Coast Guard, to man and maintain its vessels, to train Coast Guard personnel to operate the Dornier aircraft, to train Mauritian personnel for the mercantile marine and to render technical assistance whenever requested.

Utilisation of Pakistan Merchant Ships Seized During the 1971 War

Four Pakistani merchant ships were seized - PASNI (GRT 1203) ANWAR BAKSH (GRT 7235), BAQIR (GRT 9326) and MADHUMATI (GRT 3311).

As per international law and practice, these vessels were treated as the property of the Government of India. They were utilised as follows:

- On 17 April 1972, BAQIR was renamed MV HOOGHLY and manned by the Shipping Corporation of India for transporting troops and stores from Bangladesh to India. Thereafter, she transported the Army Garrison to Port Blair. Later in 1972, she was commissioned as INS ADHAR and used for the transportation of stores and material between the mainland and the A&N Islands and between the naval ports. In January 1974, ADHAR was chartered to the Mogul Line for four years at Rs 75000 per month, renamed as LOK ADHAR and used for coastal service. On completion of the charter periods, LOK ADHAR was disposed of by the Navy.
- In June 72, Government decided that ANWAR BAKSH, MADHUMATI and PASNI would be handed over to the SCI who would run these ships and pay the Navy an agreed amount. Later, as a gesture of goodwill, these three ships were handed over to Bangladesh-MADHUMATI and PASNI in April 73 and ANWAR BAKSH in November 74.

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Assistance Rendered by the Navy in Peace Time 1965 - 1975

Naval Assistance to Ships In Distress At Sea

Month & Year	Assistance Rendered to	Nature of Assistance	Location	By IN ships
Jul 65	SS Avra	Rescue of crew before ship sank	Between Bombay and Madras	BEAS
Jul 65	SS Marviki beached near Goa	Rescue of crew	Kola Bay	DHARINI, KARWAR
Aug 65	Customs Launch in distress	Rescue	Between Port Novo and Cuddalore	SHARDA
Sep 66	Ceylonese fishing boat	Rescue of fishermen	Bay of Bengal	DELHI
Sep 66	Fishing Vessel 'Kerala 15'	Search and Rescue. Vessel located and brought to Cochin	Off Quilon	RAJPUT,RANA and Naval aircraft
Apr 67	Dhow Digvijaya Sagar on fire	Rescue of 13 crew	Off Janjira harbour	SUTLEJ
Feb 68	Fishing Vessels	Rescue of 40 fishermen	Off Kakinada	PAMBAN & PANAJI
Mar 68	Canadian Sail Boat	Location of Canadian crew	Off Kardip Island (A & N Islands)	
May 68	SS Bharat Ratna grounded off Gopinath Port	Rescue of entire crew		BEAS
May 68	INS Sukanya aground	Salvage	Off Madras	GHARIAL, GULDAR
Jul 68	SS Vardhini	Assistance for emergency repairs to boilers and pumping out flooded engine room	Off Bombay	DARSHAK
May 69	SS Shujaat	Towing of distressed ship	From off Cannanore to Cochin	GANGA
May 70	SS Damodar Zuari	Towing of ship disabled by leak in engine room	320 km NW of Bombay	KHUKRI
Jul 70	SS Bergehaus	Evacuation of stretcher patients	Off Goa	Naval helicopter
Aug 70	SS Ampuria grounded off Porbander	Salvage of 15,552 tons of crude oil	Saurashtra	DEEPAK,DARSHAK, INVESTIGATOR, Yard Craft DHRUVAK
Nov 70	SS Mahajagmitra	Search for missing ship after cyclone	Off East Bengal Coast	TIR
Jul 71	INS Ajit foundered	Search and rescue of survivors after sinking	Bay of Bengal	CAUVERY
Feb 72	MV Vishwa Kusum	Rescue of crew after ship hit by drifting mine	Off Chittagong	CANNANORE, BULSAR, BHATKAL
Apr 72	Tugs and Barges of Shipping Corporation of India	Salvage of grounded vessels	Off Great Coco Island	MAGAR,AJAY

Sep 72	SS Sanjeevani	Towing	From off Mangalore to Goa	GODAVARI
Jun 73	SS Cosmos Pioneer grounded off Porbandar	Assistance to grounded ship	Saurashtra	BETWA
Aug 73	MT Sea Song	Medical Assistance	High seas	KIRPAN
Sep 73	Fishing Trawler Akshi Maru	Search for missing vessel	Between Madras and Calcutta	Naval ships and IAF aircraft
Dec 73	Fishing Trawler Iswary	Search and rescue	200 miles southwest of Cochin	Naval aircraft
Dec 73	MV Sonavati	Search and rescue of survivors after cyclone	Off Visakhapatnam	KAMORTA
Sep 74	Fishing Vessel Lady of Snow	Search,location and provision of food and water for crew	Off Quilon	Naval helicopter
Sep 74	SS Transhuron, (American tanker) grounded off Kiltan island	Rescue of crew from grounded tanker, unloading of fuel oil and diving assistance	Lakshadweep	GAJ
1974	SS State of Haryana	Medical assistance	600 miles southwest of Bombay	TALWAR
Feb - Mar 75	Two canoes carrying 45 Nicobarese bound for Chowra	Rescue	Bay of Bengal	Naval ships
Apr 75	Alouette helicopter ditched off Oil Rig Sagar Samrat	Salvage	Off Bombay	NILGIRI
Apr 75	MT Evit	Evacuation of sick crew for hospitalisation	-	KUTHAR
Aug 75	SS Bravery	Escorting broken down ship	Off Bombay	AMINI
Sep 75	SS Gulf	Assistance	-	AMINI

Naval Aid to Civil Authorities

Month & Year	Assistance Rendered to	Nature of Assistance	Location	By IN Ships
1965	Andaman & Nicobar Administration	Towing of Passenger Ferry Yamuna	Bombay to Port Blair	BEAS
		Towing of Tug Balwan	Calcutta to Madras	AKSHAY
			Madras to Bombay	INVESTIGATOR
May 65	Garden Reach Work shops	Towing of Ferry Ganga	Bombay to Port Blair	KISTNA
Oct-Nov 65	Mazagon Docks	Coordination of medical, communication and diving support		KONKAN, SHARDA, SUKANYA
Apr 66	Shri Mihir Sen's swim across the Palk Strait	Assistance to swimmers across Palk strait	Mannar to Pamban and Talaimanar to Dhanushkodi	GANGA,SHARDA
Apr 67	Swimming Federation of India		Off Cannanore	CANNANORE & GODAVARI
Apr-May 67	Customs Department, Calicut	Apprehending craft carrying contraband	Off Bombay harbour	MAGAR
Sep 67	Bhabha Atomic Research Centre	Dumping of low lying radio-active waste	From Calcutta to Port Blair	Eastern Naval Command
Mar 69	Explorer's Club of India, Calcutta	Escort of Kanhoji Angre Rowing Expedition to Port Blair		

Mar 70	Andaman & Nicobar Administration	Firefighting assistance	Port Blair	NOIC Port Blair
Mar 70	Gujarat Government	Conveyance of surgical team for earthquake victims	Broach	BULSAR
Jun 70	Karjat Civil Authorities	Firefighting assistance	Karjat Town	SHIVAJI
Dec 70	Customs Department Goa	Salvage and towing of large abandoned dhow	Off Goa	NOIC GOA
Nov 71	Paradip Port Trust	Assistance in restoring normalcy after cyclone	Paradip	KAVARATTI
Sep 72	Government of Bangladesh	Escort of Bangladesh Naval Ship Padma	Visakhapatnam to Chittagong	KAVARATTI
Nov 73	Customs Department Andaman & Nicobar	Apprehending contraband goods	Andaman & Nicobar islands West Coast	PAMBAN
Nov 73	Customs Department	Apprehended a dhow engaged in smuggling		
Jan 74	Andaman & Nicobar Administration	Firefighting assistance	Port Blair Market	NOIC (A&N)
Jun 74	Andaman & Nicobar Administration	Evacuation of seriously injured policeman	Narkondam Island	PANVEL
Jul 74	Bombay Municipal Corporation	Supply of food by naval boats to inundated areas	Railway Hospital near Bombay Central	JAMUNA
Aug 75	Oil and Natural Gas Commission	Towing drilling platform Haken Magnus	To Bombay High	BRAHMAPUTRA
1975	Oil and Natural Gas Commission	Ferry of personnel & stores to and from Bombay High oil drilling rigs	Off Bombay	Two Seakings of INAS 336
Sep 75	Bombay Port Trust	Firefighting assistance	Hughes Dock	VIKRANT
1975	Andaman & Nicobar Administration	Medical assistance during epidemic	Car Nicobar	FORTAN
Sep 75	Andaman & Nicobar Administration	Apprehension of Thai fishing trawler	Off North Sentinel Island	GHORPAD
1975	Andaman & Nicobar Administration	Providing met data to Port Blair airport to enable bi-weekly air service	Port Blair airport	NOIC (A&N)

Sea Transportation

Month & Year	Organisation Assisted	Items/Personnel	Transported From	Transported To	Transported By IN Ships
Apr 66	Military Engineering Service	Heavy equipment stores	Mainland	Car Nicobar & Port Blair	GHARIAL
Sep and Nov 66	Indian Oil Corporation	HSD Oil for filling oil installation	Visakhapatnam	Port Blair	SHAKTI
Oct and Nov 66	Andaman & Nicobar Administration	Football team	Port Blair	Visakhapatnam and back	GHARIAL, GULDAR
Nov 66	Military Engineering Service	MES Stores and CPWD explosives	Visakhapatnam	Port Blair	GULDAR
Apr 67	NCC	NCC Cadets	Cochin	Amini & back	DHARINI
Jul 67	Ministry of Home Affairs	Rescue of 122 stranded personnel from Minicoy, Kavaratti, Amini, Kiltan,Chetlat and Androth islands	Lakshadweep	Mainland	DELHI

Oct - Nov 67	NCC	200 NCC Cadets	Mainland	Port Blair	MAGAR
Nov 67	Andaman & Nicobar Administration	Football team	Port Blair	Calcutta	
Mar 68	Singapore Navy	Sea Training of naval officers and cadets	Singapore	Cochin	DEEPAK
May 68	Indian Air Force	IAF stores	Calcutta	Port Blair	MAGAR
May 68	Military Engineering Service	Heavy equipment & stores	Car Nicobar	Port Blair	MAGAR
Oct 68	National Defence College	10 officers	Visakha-patnam	A&N and back	MAGAR
Oct 68	Indian Army	Personnel and stores	Calcutta	Port Blair	MAGAR
Apr & Nov 68	Ministry of Rehabi-litation	Heavy machinery and stores	Bhtpur	Hut Bay	GHARIAL
Nov & Dec 68	Andaman & Nicobar Administration	Football team	Car Nicobar	Visakha-patnam & back	MAGAR
Feb-Mar 70	Indian Army-Corps of Engineers	Providing SAR and communication cover to sailing boats and crew.	Madras	Port Blair	
Apr 70	NCC	NCC Cadets	Kavaratti	Cochin and back	GODAVARI, GANGA AND GOMATI
1975	Andaman & Nicobar Administration	Two consignments of buffaloes	Visakha-patnam	Campbell Bay	MAGAR

Naval Assistance During Strikes/Bandhs

Month & Year	Organisation Assisted	Nature of Assistance
Jan 65	Calcutta Port Trust	Piloting and berthing of ships during strike by Assistant Harbour Masters
Apr 66	Cochin Port Trust	Maintenance of essential services during strike by Harbour craft crew.
Apr 66	Kandla Port Trust	Operation of cranes tc unload essential cargo during strike by crane drivers.
Nov 66	Civil Administration Visakhapatnam	Guarding of Visakhapatnam Steel Plant during agitation
Jul 67	Bombay Port Trust	Movement of ships during strike by Flotilla crew
Jan 73	Civil Administration Visakhapatnam	Security of vital points in city during Andhra disturbances
Sep 73	Civil Administration Cochin	Manning of power generating stations/ sub stations during threatened strike by Kerala State Electricity Board Employees
Feb-Mar 74	Calcutta Port Trust	Undocking of ships and dry docking of contractor's dredger during Dry Dock Port Worker's strike.
May 74	Central and Western Railways	During strike of employees: • Servicing of electric locomotives,rakes, traction motors and electric fittings. • Repairs and maintenance of boilers and generators in power houses and repairs of air compressors • Watchkeeping and maintenance at power substations
Jan 75	Port Trusts at Calcutta,Visakhapatnam and Madras	Maintenance of essential services during All India Port and Dock Workers strike.

Diving Assistance

Month & Year	Assistance Rendered to	Place/Organisation	Nature of Assistance
1965	Bhakra Nangal Dam, Tungabhadra Dam and Mettur Dam	State Governments	Diving assistance
1966	Hirakud Dam	Orissa Government	Diving assistance
1966	Bhakra Nangal Dam	Punjab Government	Diving assistance
1966	Central Excise Department	Bombay	Diving assistance
1967	Nagarjuna Sagar Dam, Bhakra Nangal Dam, Dhakkam and Dhanpur Dams	State Governments	Diving assistance
Jan 68	Hirakud Dam	Orissa Government	Underwater sealing & cleaning work
Apr-May 68	Dhakrani & Dhalipur Power Stations	Uttar Pradesh State Electricity Board	Modification of trash racks
Apr-Jun 68	Chandbali Port	Port Officer	Salvage of 30 ton boat
May-Jun 68	King Georges Dock Extension	Calcutta Port Trust	Demolition of underwater culverts
Jun-Jul 68	Gandhi Sagar Dam	Madhya Pradesh Government	Underwater cutting/welding of gates & pneumatic removal of reinforced concrete
Aug 69	Western Railway	Bulsar (Gujarat)	Assessment of damage to five railway bridges between Bulsar and Atul.
Jan 70	SS Eagle	Mazagon Docks	Repair to ship's hull
Mar 70	Rajasthan Atomic Power Project ANUSHAKTI	Atomic Energy Commission	Inspection and clearance of underwater debris
Apr 70	Cambata Aviation	Bombay	Recovery of crashed helicopter
Apr 70	Tug Relume (British)	Mazagon Docks	Clearance of fouled propellers
Aug 70	SS Tarreen	Mazagon Docks	Repairs to ships hull
Jan and Sep 70	Oil and Natural Gas Commission	Offshore Project, Bhavnagar	Inspection of legs of drilling platform
1973	Burmah Shell Oil Company	Bombay	Underwater repair on submarine oil pipelines
1973	Rihand Dam Hydro-electric Station	Uttar Pradesh State Electricity Board	Clearing the obstacles in the inlets to the turbines
1973	Kidderpore Dock Extension	Calcutta Port Trust	Search for likely sabotage
1973	Chambal Road Bridge near Agra	Rajastan PWD	Survey and establishing cause and extent of damage to bridge.
1973	Indian Air Force	Brahmaputra River	Recovery of crashed helicopter and crew
1973	MV Robert Wattmiller	Caltex oil Refineries (India Ltd)	Inspection of hull at Vishakhapatnam
1974	Kakinada Port	Port Officer Kakinada	Demolition of wreck
1974	MV Agios Antonios	Port Officer, Karwar	Salvaging 300 tons of fuel oil
1974	Kerala Government	Near Trichur	Recovery of dead bodies from bus fallen into river
1974	MV Jagdoot & MOT Tug	Hindustan Shipyard Visakhapatnam	Diving assistance
1974	Badarpur Thermal Power Project	Delhi Electric Supply Undertaking	Clearance of underwater sump
Feb 75	Cochin Port Trust	Cochin	Salvage of three submerged pontoons

Jun 75	Pullar Dam, Coimbatore	Tamil Nadu State Electricity Board	pontoons Shifting of sluice gates
1975	Badarpur Thermal Power Project	Delhi Electric Supply Undertaking	Clearance of underwater obstructions in the basin
1975	Bhavnagar Port	Port Officer, Bhavnagar	Clearance of channels for shipping
1975	Mercantile Marine Dept. Cochin		Inspection of SS Amindivi's bottom
1975	Ramaswamy Water Headworks Munnar	Kerala State Electricity Board	Clearance of underwater obstructions preventing opening/ closing of shutter
1975	Maini Shipping Co	-	Survey of SS Nityanand's wreck
1975	M/S JM Baxi, Ship Chandlers	Visakhapatnam	Underwater hull inspection of the MV AJP Priya
1975	Customs Department	Bombay	Salvage of Custom Craft Shakti
1975	Paradeep Port Trust	Paradeep	Recovery of dredger's suction pump from the sand
1975	Ramganga Project	Kalagarh	Placing of trash rack on the intake shaft of underground tunnel
1975	Rana Pratap Sagar Dam	Rajastan	Underwater inspection and clearance of stilling basin.

VIP Transportation

Month/Year	VIP	From	To	In Indian Naval Ships
1965	-	-	-	-
May 1966	Indian High Commissioner in Ceylon/Ambassador to Maldives	Colombo	Male	MYSORE
Apr 1967	Defence Minister	Bombay Madras	Goa Port Blair	VIKRANT MYSORE, RAJPUT, RANA, KHUKRI, KUTHAR
Feb 1968	Prime Minister	Colombo	Male	MYSORE, GODAVARI GOMATI
Feb 1969	Indian High Commissioner in Ceylon/Ambassador to Maldives	Madras	A&N Islands	GODAVARI, GOMATI
Apr 1969	Cabinet Secretary Defence Secretary Home Secretary	Goa	LMA Islands	VIKRANT, DEEPAK, TRISHUL, KUTHAR
Oct 1969	Prime Minister	INS DARSHAK	ONGC's off-shore Oil platform at Aliabet	DARSHAK and Naval helicopters
Mar 1970	Prime Minister	Kanyakumari	Vivekananda Rock Memorial	Naval helicopters
1970	President, Vice President and Prime Minister	Goa Port Blair	LMA Islands Great Nicobar	DEEPAK DEEPAK, AMBA, KAMORTA, KATCHALL, KILTAN
Nov 1970	Vice President	Cochin	Kavaratti	DELHI
Jan 1973	Vice President	Cochin	Male	MYSORE, DEEPAK
Apr 1974	Up Raksha Mantri			
Jan 1975	Prime Minister			

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Battle Casualties Indo Pakistan War (1971)

SUMMARY

	Officers	Sailors	Total
INS KHUKRI	18	176	194
Alize 203	2	1	3
BANGLADESH OPERATIONS	1	-	1
INS KILTAN	1	-	1
Total	22	177	199

INS KHUKRI (Sunk by Pakistan Navy Submarine HANGOR on 09 Dec 71)

Rank	Name	Rank	Name
OFFICERS			
Ag Capt(X)	Mahendra Nath Mulla	Cdr(E)	Mukadavil Ommen Ommen
Lt Cdr(X)	Joginder Krishan Suri	Lt Cdr(L)	Prabhat Kumar
Lt Cdr(S)	Rajat Kumar Sen	Lt (SD TAS)	Manbar Singh
Lt(X)	Suresh Hiranand Kundanmal	Lt(L)	Vinod Kumar Jain
Lt	Davinder Kumar Sharma	Surg Lt	Sudhanshu Sekhar Panda
Lt	Madabhushi Sampath Kumar	Sub Lt	Satyedra Pal Singh Kushwaha
Sub Lt	Samvel Abraham	Sub Lt	Sushil Kumar
Sub Lt	Shashi Prakash	Sub Lt	Guru Qal Singh Sandhu
Sub Lt	Subhash Chander Sapra	Midshipman	Ashok Gulab Rao Patil
SAILORS			
MCPO 2	Bansilal	MCELP II	OP Kohli
MAA	KG Nair	SCPO	A Singh
CHME	N Singh	CHYS	MA Prosperian
ERA 2	MK Unnikrishnan	EAP 2	JS Harike
ERA 3	BN Singh	ERA 3	S Mohan
ERA 3	P Balachandran	EAP 3	TR Raju
EAP 3	SK Pathak	SWA 3	SK Verma
WM 3	KS Mankotia	MECH 3	AP Rana
PO	SN Ram	PO	A Latif
PO	Thottapura Chathunni Sidharthan	PO	CD Mandiri
PO	NS Kathait	PO Wtr	R Singh
PO Wtr	HK Singh	SPO	R Piara
POME	M Singh	POME	C Kachchap
POME	MRC Nair	POME	R Singh
POEL(P)	J Raj	POEL(P)	R Singh
PO Tel	KS John	PO Tel	WP Manuel
ERA IV	LS Sharma	ERA IV	GP Singh
EAP IV	S Singh	EAP IV	Inderjit
EAP IV	PR Krishnan	EAP IV	A Singh
EAP IV	B Singh	EAR IV	KB Sadhies
EAP IV	SC Chauhan	AG ERA IV	K Mukhopadya
PO	Dhiman	PO Std	K Singh
PO Std	HR Sharma	POCK(S)	Jabharden
LS	Sridhar	LS	Desondhi Mal
LS	M Singh	LS	MG Pandey

LS	R Singh
AG LS	KR Joshi
LME	Rameshwar
LME	B Malesappar
LME	RS Nimon
LMA	P Singh Shekhawat
L Wtr	K Singh
L Tel	Prakash Kulkarni
L Tel	BD Manna
L Sig	SS Yadav
LEMP	KM Kuria
EAR 5	E John
EAR 5	M Sharma
ERA 5	P Singh
LCK (O)	PK Sen
LCK	M Chand
Sea I	MS Negi
Sea I	BS Tangniya
Sea I	SK Das
Sea I	R Sankar
Sea I	AK Jha
Sea I	I Singh
Sea I	LG Werulkar
Sea I	G Ravindranathan Nair
Sea I	MV Somraj
Sea I	John Thomas
Sea I	RN Sahadevan
Sea I	EP Verghese
Sea I	CP Kurian
Sea I	A Kabilan
Tel I	Parma Nand
Tel I	S Thomas
Sig I	H Singh
SA I	A Ram
ME I	V Singh
ME 1	TR Salunke
ME 1	K Kabbur
ME I	B Singh
ME I	G Venkatesan
EMR I	AK Khanna
STD 1	VR More
STD 1	S Dass
CK (S) 1	TNS Shetty
Wtr I	M Halim
Top I	P Singh
Sea II	V Venugopal
Sea II	Om Prakash Tyagi
Sea II	SS Nirwal
Sea II	R Singh
Sea II	PL Devassy
ME	KP Moideen
ME II	Banshi Lal
ME II	R Srinivasan
EMP II	Ram Anju
EMP II	AP Mahanan
Tel	AG Rajamani
Tel	KP Bhaskaran
Sig	B Das
EMR II	Hiralal Jat

AG LS(TY)	B Sasidharan
LME	SS Malhan
LME	JB Patil
LME	YS Bhardwaj
LME	SBS Chauhan
L Wtr	H Singh
L Tel	RS Parmar
L Tel	A Sebastian
LSIG	PR Lokiaah
LMER	Salg Ram
LEMP	S Lal
EAR 5	Karam Chand Nandh
EAR 5	K Chand
L STD	TO Verghese
LCK (S)	S Shinde
L Top	Om Prakash
Sea I	AK Tripathi
Sea I	AK Sarkar
Sea I	N Samanta
Sea I	SP Dutta
Sea I	Raj Kumar
Sea I	Mohinder Pal
Sea 1	Tilochan Samanta
Sea I	VK Ramadavan Pillai
Sea 1	NS Gopalkrishnan Nair
Sea I	K Gurudas
Sea I	Zainuddin
Sea I	P Chand
Sea I	SB Sami
Tel I	HK Mehta
Tel I	W Ray
Sig I	KK Sud
SA 1	KG Daniel
ME I	SN Pathak
ME I	SK Biswas
ME I	Hari Lal
ME I	KB Singh Guleria
ME I	VN Narayana
ME I	R Gurumurthy
EMR I	PL Sheemar
STD I	P Ram
CK I	BK Mandal
CK1	GB Singh
Top I	A Lal
Sea II	B Singh
Sea II	RB Singh
Sea II	Raghbir Singh Yadav
Sea II	M Ram
Sea II	N Chand
Emp II	SN Krishnan
ME II	PC Maity
ME II	HR Jat
ME II	JNK Nair
EMP II	KS Thakur
Tel	V Deshmukh
Tel	B Singh
Tel	N Balan
Sig	P Chand
EMR II	Hari Mitter

STD II	Jagdish Chand	STD II	R Mahto
CK (S)	H Singh	CK (S)	B Ram
CK(O)	PS Rawat	CK (O)	A Raju
Top II	Nandu Bhai	APP	UC Pandey

Alize 203 Shot Down by Pakistan Air Force F 104 Aircraft on 10 Dec 71

Rank	Name
Lt Cdr(X)(P)	Ashok Roy
Lt(X)(O)	Harbir Singh Sirohi
MCPOII	MK Vijayan

Bangladesh Operations

Lt (X) NM	Samir Das

INS KILTAN

Lt (X)	Suresh Gajanan Samant

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Award Winners 1971 Indo Pakistan War

Key to Abbreviations

NHQ	Naval Headquarters	CO	Commanding Officer	(X)	Executive Branch
WNC	Western Naval Command	XO	Executive Officer	(E)	Engineering Branch
ENC	Eastern Naval Command	EO	Engineer Officer	(L)	Electrical Branch
SNA	Southern Naval Area	LO	Electrical Officer	(S)	Supply Branch
WF	Western Fleet	SO	Supply Officer	(P)	Pilot
EF	Eastern Fleet	MO	Medical Officer	(O)	Observer
BRO	Base Repair Organisation	SEO	Senior Engineer Officer	(S/M)	Submariner
BMU	Base Maintenance Unit	AEO	Air Engineer Officer	(H)	Hydrographer
NARO	Naval Aircraft Repair Organisation	ALO	Air Electrical Officer		
		NO	Navigating Officer		

Rank/Name	Personal Number	Appointment/Where Serving
Padma Vibhushan		
Adm SM Nanda(X), PVSM	00001A	CNS NHQ
Padma Bhushan		
VAdm SN Kohli (X), PVSM	00002B	FOCINC WEST HQWNC
VAdm N Krishnan(X),PVSM DSC	00003B	FOCINC EAST HQENC
Param Vishisht Seva Medal		
RAdm BR Singh (L), PVSM		ADMIRAL SUPERINTENDANT, BOMBAY DOCKYARD
RAdm VA Kamath (X)	00007R	FOCSOUTH HQSNA
RAdm EC Kuruvila(X), AVSM	00009W	FOCWEF WESTERN FLEET
RAdm SH Sarma (X)	00016K	FOCEF EASTERN FLEET
Cmde DR Mehta (X)		ACNS NHQ
Cmde JTG Pereira(E), AVSM	40001K	CSO (TECH) HQ WNC
Cmde BN Thapar (X)	00030T	CHIEF OF STAFF HQ WNC
Capt MS Grewal (X), AVSM	00031W	CHIEF OF STAFF HQ ENC
Mahavir Chakra		
Capt S Parkash (X),	00022Z	CO VIKRANT (EF)
Ag Capt MN Mulla(X) (Posthumous)		CO KHUKRI (WF)
Cdr KP Gopal Rao (X)	00079B	CO KILTAN (WF) KARACHI OPERATION 4/5 DEC
Cdr BB Yadav (X)	00101B	IN COMMAND MISSILE BOATS 4/5 DEC
Cdr MN Samant (X)	00124F	IN COMMAND KHULNA OPERATION 10 DEC
LCdr SK Gupta (X) (P) NM	00311F	CO SEAHAWK SQUADRON VIKRANT
LCdr JPA Noronha (X)	00422H	CO PANVEL KHULNA OPERATION 10 DEC
C Singh, LS CD 2(Diver)	87600	UNDERWATER COMMANDO, KHULNA OPERATION 10 DEC
Ati Vishisht Seva Medal		
Cmde Gautam Singh (X)	00013B	DIR SUBMARINE ARM NHQ
Cmde EJ Debu (X)	00023A	NOIC BOMBAY HQWNC
Cmde TJ Kunnenkeril (X)	00027K	NOIC VISHAKHAPATNAM
Cmde GM Shea (X), AVSM	00029R	DIR OF PERSONNEL NHQ
Cmde VEC Barboza(X),AVSM	00033Z	DIR OF NAVAL PLANS NHQ
Cmde IK Malhotra (E)	40004T	DIR OF MARINE ENGINEERING NHQ
Capt PK Sinha (L)	50004W	DIR OF WEAPONS EQUIPMENT NHQ
Capt OS Dawson (X)	00035B	DIR OF NAVAL OPERATIONS NHQ
Capt DS Paintal (X)	00038K	DIR OF WEAPON POLICY & TACTICS NHQ

Capt MK Roy (X)	00040R	DIR OF NAVAL INTELLIGENCE NHQ
Capt RB Mukherjee (X)	00041T	DIR OF NAVAL SIGNALS NHQ
Capt FL Fraser (X) (H)	00046B	CONTROLLER OF MERCHANT SHIPPING HQWNC
Capt BG Mudholkar (L)	50008B	CAPT MISSILE PREPARATION FACILITY
Capt C Srinivasagopal(AE)	40009B	DIR OF NAVAL AIR MATERIAL NHQ
Capt N Bhalla (E)	40010F	AME NAVAL DOCKYARD BOMBAY
Capt RP Khanna (X)	00062R	NOIC CALCUTTA
Capt ANP Pillai (L)	50012N	AML NAVAL DOCKYARD BOMBAY
Capt KR Menon (L), VSM	50014T	DIR OF FLEET MAINTENANCE NHQ
Capt SK Sinha (S)	60009H	CD SUPPLY OFFICER HQWNC
Capt PJ Barron (X)	00071K	DTE OF SIGNAL INTELLIGENCE NHQ
Capt JP Syal (X)	00078A	NAVAL ADVISER PAKISTAN
Capt JJR Martin (S), VSM	40022H	PRO NAVY NHQ
Cdr NP Mukundan (E),	60025W	OI/C BRO VISAKHAPATNAM
LCdr N Geeverghese (X)	00239T	OI/C WIRELESS DETACHMENT Bombay

Vir Chakra

Capt RKS Ghandhi (X)	00021Y	CO MYSORE (WF)
Capt MP Awati (X)	00037H	CO KAMORTA (EF)
Capt PC Andrews (X)	00045A	CO DEEPAK (WF)
Capt KMV Nair (X)	00051R	CO TRISHUL (WF)
Capt JC Puri (X),	00073R	CO BRAHMAPUTRA (EF)
Cdr SS Kumar (X)	00084R	CO TALWAR (WF)
Cdr BR Chowdhury (E)	40027W	EO VIKRANT (EF)
Cdr Subir Paul (X)	00127N	CO KAVARATTI (EF)
Cdr L Ramdas (X),	00132Z	CO BEAS (EF)
Cdr RS Grewal (X) (P),	00146F	CDR AIR VIKRANT
Cdr KN Zadu (X)	00150R	CO KATCHALL (WF)
Cdr RR Sood (X),	00157F	CO KIRPAN (WF)
Cdr RJ Millan (X) (S/M)	00168F	CO KHANDERI (ENC)
Cdr MO Ommen (E), (Posthumous)		EO KHUKRI (WF)
Cdr VS Shekhawat (X) (S/M)	00189B	CO KARANJ (WNC)
LCdr AK Mehra (X) (P)	00310H	SEAHAWK PILOT VIKRANT
LCdr RD Dhir (X) (P)	00319Z	CO ALIZE SQUADRON VIKRANT
LCdr JK Suri (X), (Posthumous)		XO KHUKRI (WF)
LCdr RK Sen (S), (Posthumous)		SO KHUKRI (WF)
LCdr SP Ghosh (X) (O)	00370R	ALIZE OBSERVER VIKRANT
LCdr P Kumar (L) (Posthumous)		LO KHUKRI (WF)
LCdr S Ramsagar (X) (P)	00379K	SENIOR PILOT ALIZE SQUADRON VIKRANT
LCdr JK Roy Choudhury(X)	00406Y	OI/C PADMA, KHULNA OPERATION 10 DEC
LCdr Vijai Jerath (X)	00409B	CO VINASH (Missile Boat) KARACHI OPERATION 8/9 DEC
LCdr BN Kavina (X)	00416W	CO NIPAT (Missile Boat) KARACHI OPERATION 4/5 DEC
LCdr Inderjit Sharma (X)	00435N	CO NIRGHAT (Missile Boat) KARACHI OPERATION 4/5 DEC
LCdr OP Mehta (X)	00442B	CO VEER (Missile Boat) KARACHI OPERATION 4/5 DEC
LCdr George C Martis(X),NM(Diver)	00445H	UNDERWATER COMMANDO
LCdr Ashok Roy (X),(P) NM (Posthumous)		ALIZE PILOT WNC
LCdr (SDB) Inder Singh(X)	83151B	CO RAJPUT (EF)
Lt RS Sodhi(X) (P)	00540A	SEAHAWK PILOT VIKRANT
Lt BB Bhagwat (X) (O)	00566K	ALIZE OBSERVER VIKRANT
Surg Lt SS Panda (Posthumous)		MO KHUKRI
Lt Arun Prakash (X) (P)	00590R	WITH IAF HUNTER SQUADRON
Lt VP Kapil (X) (Diver)	00667R	UNDERWATER COMMANDO & KHULNA OPERATION 10 DEC
Lt SG Samant (X), (Posthumous)		NO KILTAN(WF)
Lt KS Panwar (X) (O)	00685F	OBSERVER VIKRANT ALIZE
Lt SK Mitter (X)	00723T	OI/C PALASH KHULNA OPERATION 10 DEC
Lt VK Datta (X)-(P)	00838B	SEAHAWK PILOT VIKRANT
Lt Prem Kumar (X) (P)	00717B	SEAHAWK PILOT VIKRANT
SLt Ashok Kumar (X)	01036B	PANVEL KHULNA OPERATION 10 DEC

MN Sangal, MC (EAP) II, No. 50896		NIRGHAT(Missile Boat) KARACHI OPERATION 4/5 DEC
LK Chakarvarty, MECH3, No. 48830		MISSILE BOAT KARACHI OPERATION 4/5 DEC
MO Thomachan, PO(PRI), No. 46337		MISSILE BOAT KARACHI OPERATION 4/5 DEC
RN Sharma, POTEL, No. 8830		MISSILE BOAT KARACHI OPERATION 4/5 DEC
KS Raju, LEMP,	89148	PANVEL, KHULNA OPERATION 10 DEC

Shaurya Chakra

Lt Cdr Sajjan Kumar (X) (Diver)	00413N	CCDT Visakhapatnam DIVING ON GHAZI
BC Mahapatra, MCPOII, NM(Diver)	60128	CCDT Visakhapatnam DIVING ON GHAZI
MB Patel, LME		KUTHAR (WF)
NA Marad, LME	56163	KUTHAR (WF)
AJ Baby, LMA,	80298	GHARIAL (EF)

NAO Sena Medal

Capt VA Dhareshwar (X)	00036F	CO AMBA (SNA)
Cdr RP Bhalla (X)	00070H	AMPHIBIOUS OPERATION(EF)
Cdr CG Francis (X) (H)	00074T	CO DESHDEEP (EF)
Cdr Jogendra Khanna (X) (H)	00090B	CO SUTLEJ (WNC)
Cdr HML Saxena (X)	00093K	XO VIKRANT (EF)
Cdr RR Sood(E), VSM	40026T	EO MYSORE (WF)
Cdr CM Vyas (X)	00097W	FLEET OPERATIONS OFFICER EASTERN FLEET
Cdr TN Singhal (X)	00115M	CO MAGAR (EF)
Surg Cdr GP Christian	75035H	MO VIKRANT (EF)
Cdr GM Hiranandani (X)	00123B	FLEET OPERATIONS OFFICER WESTERN FLEET
Cdr Sukhmal Jain (X)	00130W	CO KADMATT (WF)
Cdr TS Khurana (X)	00133A	FLEET NAVIGATING OFFICER WESTERN FLEET
Cdr RK Chaudhury (X), VSM	00134B	CO BETWA (WF)
Cdr Hardev Singh (X)	00143Z	CO GODAVARI (SNA)
Cdr UC Tripathi (X)	00145B	CO KUTHAR (WF)
Cdr GT Wadhwani(X)	00147H	XO MYSORE (WF)
Cdr VF Rebello(X)	00153Y	AMPHIBIOUS OPERATION (EF)
Cdr SP Kaprawan (X)		CO SAGARDEEP (WF)
Cdr RN Singh (X)(P)	00159K	CO RANJIT (WF)
Cdr MP Wadhawan (X), (P) VSM	00181K	CO SEAKING SQUADRON (WNC)
Cdr RS Huja (E)	40101N	EO BRAHMAPUTRA (EF)
Cdr PP Iyer Sivamani (X)	00279H	FLEET NAVIGATING OFFICER EASTERN FLEET
LCdr Bharat Bhushan (E)	40069R	SEO VIKRANT (EF)
LCdr MB Ghosh (E)	40070T	EO TALWAR (WF)
LCdr NN Anand (X)	00195T	XO TRISHUL (WF)
LCdr YK Satija (AE)	40088H	AEO VIKRANT
LCdr SK Kulsrestha (X)	00285Y	CO GANGA (SNA)
LCdr AK Sharma (X)	00288B	CO GHARIAL (EF)
LCdr KASZ Raju(X) (P)	00304R	XO BRAHMAPUTRA (EF)
LCdr Utful Dabir (X)	00348R	CO GULDAR (EF)
LCdr JW Daniel (X)	00394W	CO POSHAK (Dockyard Oiler) (WNC)
LCdr Janardan Deo (X)	00431B	XO KATCHALL KARACHI 4/5 DEC(WF)
LCdr VK Raizada (L)	50101R	SUPPORT OF MUKTI BAHINI OPERATIONS
LCdr SN Jha (E)	40146R	EO EASTERN FLEET SHIP
LCdr Suresh Soota (E)	40147T	FLIGHT DECK EO VIKRANT (EF)
LCdr M Sharma (X)	00461Y	SIGNALS OFFICER KHUKRI (WF)
LCdr JS Cheema (E)	40166K	EO KADMATT (WF)
Lt PK Jindal (L)	50143K	DEPUTY LO MYSORE (WF)
Lt SH Kundanmal (X) (Posthumous)		NO KHUKRI (WF)
Lt (SDB) Darshan Lal	83160Z	VIKRANT (EF)
Lt VK Chaudhry (E) (S/M)	40181W	EO KARANJ (WNC)
Lt JV Natu (E)	40203W	SUPPORT OF MUKTI BAHINI OPERATIONS
Lt VK Jain (L), (Posthumous)		KHUKRI (WF) IMPROVEMENTS TO SONAR
Lt GAD Duke (X) (Diver)	00621K	CCDT BOMBAY
Lt Gurnam Singh (AE)	40211N	AEO SEAHAWK SQDN VIKRANT
Lt PK Puri (E)	40229B	EO VEER (Missile Boat)

Lt Anthony De Sam Lazaro (X)	00672A	XO NIRGHAT(Missile Boat)
Lt (SDR) Kashmira Singh	87514W	ASSISTANT LO VIKRANT
Lt RK Narad (E)	40244N	EO VINASH (Missile Boat)
Lt SR Sampath Gopal (X)	00691W	XO NIPAT (Missile Boat)
Lt Arvind Lochan (E)	40273B	SEO KUTHAR (WF)
Lt MV Paul (AL)	50196F	ALO ALIZE SQUADRON VIKRANT
Sub Lt KR Girwalkar (E)	40334T	WK EO KIRPAN
Sub Lt BS Thakur (X)(Diver)	00949F	BEACH RECCE AMPHIBIOUS LANDING(EF)
Sub Lt AK Bandhopadhyay (X)	00961H	UNDERWATER COMMANDO & KHULNA OPERATION 10 DEC
Sub Lt MS Ahluwalia (X)	0100Z	KHUKRI (WF)
Sub Lt (SDME) RP Singh	85041Z	EASTERN FLEET - SALVAGE OF MINI LABOUR
Sub Lt Samirakanti Basu(X)	01054W	KHUKRI (WF)
Shiv Singh, MCPO I,	31804	DEEPAK (WF)
MK Vijayan, MCPO (Posthumous)	44971	ALIZE AIRCREW (WNC)
SL Gupta, MCEARI,	47023	MISSILE BOATS (WNC)
NB Thapa, MCERAI,	50529	KILTAN KARACHI OPERATION 4/5 DEC
TVR Nambiar, MCPO II (AH),	61284	CAPTAIN FLIGHT DECK VIKRANT
Abdul Hameed, MCPO II (TASI),	12402	KIRPAN (WF)
SK Sen, MCERA II ,	50831	DEEPAK (WF)
MK Khandpal, MCME II	46958	MYSORE (WF)
KS Salaria, MCPO(AH) II VSM,	35584	HANGAR CONTROL CHIEF VIKRANT
J Singh, MECH II	64721	BMU BOMBAY
T Singh, MECH(P)II	64843	BMU BOMBAY
CK Tiwari, CPO (GI),	44510	KATCHALL (WF) KARACHI OPERATION 4/5 DEC
J Kumar, CPO	45473	NBCD INSTRUCTOR VIKRANT
BS Sandhu, CHEAP,	50916	MISSILE BOATS (WNC)
T Michael, CHERA,	49796	ATUL (WNC)
Devi Prasad, Mech III,	49411	KAMORTA (EF)
R Singh, Mech III,	64220	AMBA (SNA)
PV Lonappan, Mech 3	67488	PANVEL KHULNA OPERATION
Randhir Singh, Mech 3	66233	VINASH (Missile Boat) KARACHI OPERATION 8/9 DEC
RP Singh, Mech 3,	67488	VIKRANT (EF)
KK Goyal, EAR 3,	51198	NIPAT (Missile Boat) KARACHI OPERATION 4/5 DEC
Ishwar Prakash, ERA 3,	51096	INS HOOGHLY Calcutta
Sukhdarshan Singh ERA 3,	52566	KADMATT (WF)
PK Dhole, PO,	49148	UNDERWATER COMMANDO
AP Ravindran, PO Tel,	49018	TRISHUL (WF)
JN Sharma, PO PTI,	86186	KHUKRI (WF)
KP Singh, PO Tel,	48729	KHUKRI (WF)
CS Tyagi, PO (GI),	48039	VIKRANT (EF)
S Kumar, ERA 4	69135	TALWAR (WF)
Abbas Ali Khan, SWA 4,	51437	TALWAR (WF)
LS Mishra, LS, Diver	61782	RANJIT (WF)
Lal Singh, LS, Diver	80352	UNDER WATER COMMANDO
Mahipal Singh, LS Diver	86514	CCDT Visakhapatnam
Karan Singh, LS	86625	UNDERWATER COMMANDO
Sant Ram, LS,	82060	PANVEL KHULNA OPERATION 10 DEC
EJ Princhan, LS, Diver	82811	UNDERWATER COMMANDO
MS Gupta, LS (CD 1),	64915	UNDERWATER COMMANDO
L Prasad, L CK(O),	66441	-DO-
RS Yadav, Sea I,	83406	-DO-
PK Bhattacharya, Sea I,	88900	-DO-
I Singh, Sea I,	92675	-DO-
SC Prabhakar, Sea I,	84388	RESCUE OPERATION NOIC KATHIAWAR
Capt Inder Mohan Narang(Merchant Navy)		MASTER MV VISHWA VIJAY, AMPHIBIOUS OPERATION(EF)

Vishisht Seva Medal

Capt RJ Duckworth (X)	00060K	NOIC MADRAS
Cdr MV Agarkar (X)	00080F	COPO HQ WNC

Cdr N Rajagopal (X)	00075W	DRAFTING CDR, Bombay
Cdr J Ram Rao (L)	50020F	SLO, HQ ENC
Cdr JA Fernandes (S)	60022N	SECY VCNS NHQ
Cdr MS Ratra (X)	00116N	COPO HQ ENC
Cdr CS Narayana Raju (AE)	40040Z	OI/C NARO, Cochin
Cdr GC Thadani (E)	40042B	SEO HQ ENC
Cdr SK Moorthy (L)	50035R	WECORS NAVAL DOCKYARD Bombay
Cdr Amrik Singh(X)	00141B	CO INS INDIA, New Delhi
Cdr SD Sinha (X)	00144A	DEPUTY DIR NAVAL SIGNALS NHQ
Cdr NR Khambatta (X)	00154Z	NOIC KATHIAWAR
Cdr JS Pantle (X)	00161R	DTE OF ARMAMENT INSPECTION NHQ
Cdr Arun Rao (X)	00174W	DDNAS (AIR ORGN & TRG) NHQ
Cdr KC Gairola (X)	00183R	DDOP(X) NHQ
Cdr RK Deshpande (X)	00185W	CAVO HQ WNC
Cdr SW Lakkhar (X)	00191H	DDNO WAR ROOM NHQ
Cdr V Ravindranath (X),(P)	00194R	SENIOR PILOT SEAKING SQUADRON
Cdr MP Ballal (X)		SI DIRECTORATE
LCdr (SDME) James Soares	85000F	BRO, Visakhapatnam
LCdr PV Damodaran (E)	40109F	
LCdr Mehar Singh (X)	00233F	ADNO TRADE WARFARE NHQ
LCdr Kandaswamy Chelliah (X) INR	98002F	-DO-
Surg LCdr (Mrs) Jagmohan Sood	75084W	ANAESTHETIST, ARMY HOSP Delhi
LCdr LK Sharma (X)	00294T	NAVAL SIGNAL CENTRE HQ WNC
LCdr (SDC) PAJ Bento	81853B	COMCEN DELHI NHQ
LCdr Bal Subramaniam (X)	00363Z	DTE OF ARMAMENT INSPECTION NHQ
LCdr GD Mukerji (X), NM	00388F	PLANNING STAFF, HQ EASTERN ARMY
LCdr NK Mukherjee (X)	00397A	
LCdr Suresh Bhandoola (X)	00401K	SI DIRECTORATE NHQ
LCdr Teck Sharma (X)	00433H	
LCdr PP Nandi (X) (H)	00468N	
LCdr Pirthi Singh (S)	60092Y	BASE VICTUALLING OFFICER, Bombay
LCdr D Shahane (AE)	40155K	AEO SEAKING SQUADRON, Bombay
LCdr MM Kaila (L)	50133N	MISSILE TECHNICAL POSITION, Bombay
Lt (SDAE) PN Suri	86002H	
Lt (SDC) Mark D'Souza	81862Z	WIRELESS DETACHMENT, Bombay
Lt PC Bhasin (L)	50155N	MISSILE TECHNICAL POSITION, Bombay
Lt (SDC) MN Raghavan	81864B	WIRELESS DETACHMENT, Calcutta
Lt (SDC) NP Nair	81870T	NAVAL SIGNAL CENTRE, Cochin
Lt (SDC) YKP Charles	81874A	ENC NAVAL SIGNAL CENTRE Visakhapatnam
Lt (SDME) Madan Lal	85029Y	
Surg Lt DK Bose	75131A	
Lt Samir Das (X), NM, (Posthumous)		UNDERWATER COMMANDO
Lt (SDC) Mohan Singh	81892T	WAR ROOM COMCEN NHQ
Sub Lt (SDAR) ER Menon	88304R	
KC Vasandan, MCPO(Tel) II	33805	MYSORE (WF)
UP Madhavan, MCPO(Tel) II	41084	NAVAL SIGNAL CENTRE, Visakhapatnam
VB Pathak, MCPO(AOF) II	46284	INS HANSA, Goa
CS Matiyani, MCERA II	49640	KUTHAR (WF)
TN Chakravorty, SCPO,	64516	INS HOOGHLY, Calcutta
Gurmail Singh, CPO (CD 1)(Diver)	64546	CCDT Bombay
Narinder Singh, AA3,	51233	NARO, Cochin
J Mathew, AA3,	51173	ALIZE DETACHMENT Bombay
Om Parkash, POAF,	66083	ALIZE DETACHMENT Bombay
Amin Chand Chauhan, PO (CD 1),	46196	CCDT Bombay
Sukumaran George, PO Tel,	49667	WIRELESS DETACHMENT Visakhapatnam
Harish Chandra Pandey, PO Tel 65378		WIRELESS DETACHMENT Calcutta
RK Dinesan, YS,	49495	NAVAL SIGNAL CENTRE, Cochin
Ajit Singh, POAH,	48905	NAVAL SIGNAL DETACHMENT, Bombay

Mention in Despatches

Cdr IK Erry (X)	00083N	CO CAUVERY
Cdr KL Chopra (X) (H)	00068B	
Cdr TK Sachdev (X)	00102B	CO CANNANORE MINESWEEPING IN BANGLADESH
Cdr JN Sukul (L)	50027Y	LO TRISHUL (WF)
Cdr Benoy Bhushan (X) (H)	00109Y	CO INVESTIGATOR (WNC)
Cdr Raj Anderson (X), VSM	00118T	CO KISTNA (WNC)
Cdr M Pratap (X)	00135F	CO TIR (WNC)
Cdr AR Parti (X)	00164Y	CO VIJETA (Missile Boat) (WNC)
Lt Cdr V Chakraverty (X) (P)	00222B	
Lt Cdr LV Reddy (E)		EO SAGARDEEP (WF)
Lt Cdr MPS Bhinder (E)	40098F	
Lt Cdr RV Kanakrajan (X)	00322F	XO KAVARATTI (EF)
Lt Cdr Inderjit Bedi (X)	00327T	FCO WESTERN FLEET
Lt Cdr AKS Chitre (X)	00330Z	
Lt Cdr BR Ghosh (X)	00336N	
Lt Cdr BK Malik (X) (P)	00337R	
Lt Cdr SK Parulekar (E)	40113R	EO KAVARATTI
Lt Cdr DK Nandi (X), NM	00358N	
Lt Cdr Gulab Israni (X) (P)	00364A	SEAHAWK PILOT VIKRANT
Lt Cdr RB Suri (X)	00375A	CO NASHAK (Missile Boat) (WNC)
Lt Cdr Rajvir Singh(L)	50081W	LO BEAS (EF)
Lt Cdr(SDB) KL Dogra	83152F	
Lt Cdr RN Sharma (X)	00389H	FCO EASTERN FLEET
Lt Cdr Ashok Sinha (X) (P)	00392R	SEAHAWK PILOT VIKRANT
Lt Cdr Keki Pestonji (X) (G)	00398B	XO TALWAR (WF)
Lt Cdr Bakshish Singh (X)	00399F	
Lt Cdr BB Singh (X)	00404T	CO VIDYUT (Missile Boat) (WNC)
Lt Cdr SC Isssacs (X)	00414Z	CO NIRBHIK (Missile Boat) (WNC)
Lt Cdr PD Sharma (X) (P)	00429Z	SEAHAWK PILOT VIKRANT
Lt Cdr SS Chaudhri (X)	00437T	
Lt Cdr SP Singh (X)	00443F	CO KARWAR MINESWEEPING BANGLADESH
Lt Cdr Y Bhide (X) (P)	00446N	SEAHAWK PILOT VIKRANT
Lt Cdr Daljit Singh (X)	00456N	MYSORE (WF)
Lt Cdr RS Gill (E)	40167N	EO KHANDERI (Submarine) ENC
Lt KN Govindan Nair (X)	00493W	BRAHMAPUTRA (EF)
Lt HS Sirohi (X), (O) (Posthumous)		ALIZE OBSERVER (WNC)
Lt BD Vachha(X)	00503T	
Lt Ranjit Attri (X)	00534N	KATCHALL (WF)
Lt PBS Gujral (X)	00539Z	VIKRANT (EF)
Lt SP Vyas (X)	00595A	CO BIMLIPATAM MINESWEEPING IN BANGLADESH
Lt (SDB) Charanjit Singh	83163F	
Lt C Narayan (X)	00568R	TASO KILTAN (WF)
Lt Raman Puri (X)	00604R	GO KILTAN (WF)
Lt CVS Naidu (X)	00582Y	ALIZE PILOT VIKRANT
Lt AN Karve (X)	00593Y	
Lt R Paralikar (E)	40210K	KILTAN (WF)
Lt VS Shukla (X)	00647W	
Lt SC Dua (E)	40238Z	EO NIRGHAT (Missile Boat)
Lt SK Gupta (X)	00665K	
Lt Kasho Ram (X)	00669W	
Lt SD More (X)	00674F	CO AKSHAY (SDB) (ENC)
Lt SA Bhende (X)	00680W	
Lt AM Gokhale (X)	00686H	XO VINASH (Missile Boat)
Lt CR Jayaraman (X)	00697H	
Lt Shantonu Sen (X)	00714Y	
Lt SC Suresh Bangara (X)	00726Z	XO VEER (Missile Boat)
Lt SC Ghildiyal (X)	00746W	MGO VINASH (Missile Boat)
Lt KB Khanna (X)	00756T	

Lt KM Rao (X)		
Lt Prakash Chandra (X)		
Lt Ratan Singh (X)	00770Z	MGO NIRGHAT (Missile Boat)
Lt AD Rao (X)	00773F	
Lt RPK Pillai (E)		
Lt RC Shahdapuri (L)	40280W	MGO VEER (Missile Boat)
Lt SR Dhareshwar (X)	50216A	EO NIPAT (Missile Boat)
Lt TB Ray (X)	40451H	
Lt TI Punnen (E)	00847Z	
Lt SS Byce (X)	40268T	
Lt Ajit Tiwari (X)	00883F	
Lt NP Singh (X)	00904B	CO SUBHADRA (SDB)
Sub Lt Osmond Titus (X)	00849B	CO BULSAR MINESWEEPING IN BANGLADESH
Sub lt (SDP) Jasbir Singh	00934Y	
PA Nair, MCPO I,	86823Z	NO KATCHAL
Jagmail Singh, MC(EAR)I,	35327	MYSORE (WF)
KT Chami, MC(Mech) I,	50119	VIKRANT (EF)
Tarlok Nath, MC (ERA),	22216	VIKRANT (EF)
David D'Souza MCPOCK I,	86550	RAJPUT (EF)
PKR Pillai, MCPOTEL II	13562	KHANDERI (Submarine) (ENC)
RN Pandey, MCPO II (G1),	23079	BRAHMAPUTRA (EF)
BR Samptah Kumar, MCPO II,	44133	CHIEF TEL FOCWEF STAFF
SS Shukla, MCPO II	50766	KAVARATTI (EF)
K Bhaskaran, MCEAP II	35424	SEAHAWK SQUADRON VIKRANT
Ram Singh Kathait, CPO QMI	50821	SAGARDEEP (WF)
Nasib Singh, CPO,	46444	BETWA (WF)
Shrikant Singh, CPO,	43789	BEAS (EF)
BB Lal , CH YS	64079	MAGAR (EF)
BR Roul, CH YS	51757	DEEPAK (WF)
NL Batra, CPO Tel(WI)	62510	CHIEF YEOMAN FOCWEF STAFF
CT John, CPO Tel	26359	KADMATT (WF)
GA Nair, CHELR	36004	VIKRANT (EF)
Jagmal Singh CHME,	47236	KHUKRI (WF)
JS Sikarwal, CHME	45798	KAVARATTI (EF)
Sudama Tripathi, CHEAP	45953	TIR (WNC)
Jog Raj CHEAP	49858	RANJIT (WF)
Rup Chand, CPO WTR	50847	DEEPAK (WF)
KL Malhotra, CPO WTR	62411	NIPAT (Missile Boat) KARACHI OPERATION 4/5 DEC
Lekh Raj, MECH(W) 3	64957	HQENC
AG Balan, EAR 3	67196	KHUKRI (WF)
PS Gaudu, EAR 3	88342	TALWAR (WF)
MD Mandal ERA 3	87798	TALWAR (WF)
Bakhshish Singh, EAR 3	52583	KHUKRI (WF)
VP Gopalkrishnan, ERA3	51115	BETWA (WF)
Rai Singh, Mech (R)3	51265	KADMATT (WF)
SN Prasad, Mech3	63930	KADMATT (WF)
DS Jaswal, Mech3	49150	KATCHALL (WF)
Om Prakash Singh EAR3	49405	KAVARATTI (EF)
Sikandar Tasildar, ERA3	88809	CANNANORE MINESWEEPING IN BANGLADESH
HM Sharma, ERA3	52571	VINASH (Missile Boat) KARACHI OPERATION 8/9 DEC
Harbans Singh, EAP (C)3	88731	KILTAN (WF)
Sarwan Singh, PO Tel	51305	VIKRANT (EF)
RS Pannu, YS	49551	VINASH (Missile Boat) KARACHI OPERATION 8/9 DEC
NP Biswas, YS	48903	DEEPAK (WF)
LC Khatri, YS	45083	KIRPAN (WF)
US Yadav, YS	49921	NAVAL SIGNAL CENTRE Bombay
Papat Lal Chijaliya, PO (QA1)	49609	KHUKRI (WF)
GD Goirala, PO (TASI)	45482	KHUKRI (WF)
BR Jaskalyan, PO (UW1)	86948	MYSORE (WF)
	49373	BRAHMAPUTRA (EF)
		KHUKRI (WF)

PM Subbaiah, PO Tel	48471	BEAS (EF)
PS Diwana, PO	86086	KATCHALL (WF)
Ram Adhar Singh, PO(GI)	46341	BETWA (WF)
MVR Murty, PO Tel	46048	HQENC
VEB Nambiar, Mech (R)4	87529	BRAHMAPUTRA (EF)
KV Vijayaraghavan, EAR4	90638	RANJIT (WF)
CS Chhetri, SPO	80252	MYSORE (WF)
Badrinath, EAR4	52882	GODAVARI (SNA)
Babu Singh, Ag. SWA4	90594	BEAS (EF)
MR Subramanyam, Mech4	49712	RAJPUT (EF)
P Gangadharan, ERA4	51452	KIRPAN (WF)
PK Bagichi, POELP	69099	KARANJ (Submarine) (WNC)
ND Katakshyam, POELP	65953	KHANDERI (Submarine) (ENC)
DP Dash, POELP	87621	SAGARDEEP (WF)
JN Dass, POME	66368	MYSORE (WF)
Ivan Lowe, POME	44452	RAJPUT (EF)
RK Nair, PO Wtr	92399	FOCWEF STAFF
PT Varghese, LS (UCI)	83170	KAMORTA (EF)
Amarjit Singh, LS (QA1)	82095	KAVARATTI (EF)
MS Gupta, LS(CD1) (Diver)	64915	UNDERWATER COMMANDO
RS Yadav, LS(CD2) (Diver)	83406	UNDERWATER COMMANDO
SB Singh, LS	83842	
MG Prabhu LTel	89797	
T Sudhakaran, LEMP	90893	MYSORE (WF)
RVN Gillet, LEMR	91148	PANVEL, KHULNA OPERATION 10 DEC
V Patankar, LME	88306	RANJIT (WF)
P Singh, LME	69501	KHUKRI (WF)
S Shankar, ERA5	51641	GANGA (SNA)
N Mathews ERA5	51617	KAMORTA (EF)
RS Sidhu, EAR5	51681	KIRPAN (WF)
S Husain, SIG I	55497	BEAS (EF)
PK Dagar, TEL I	91849	TRISHUL (WF)
VM Singha, TEL I	84649	PANVEL, KHULNA OPERATION 10 DEC
Yogendra Jha, Sea I (GL3)	86268	TRISHUL (WF)
MG Vasupillai, SEAI(RP3)	84343	KILTAN (WF)
RK Dogra, SEA I	82617	INS HANSA, Goa
BN Soman, EMR I	56449	BEAS (EF)
SC Sharma, SEA I (RP2)	90586	TRISHUL (WF)
KV Bhava Dasan, ME I	68262	INS CIRCARS, Visakhapatnam
GP Haldhar, ME I	99562	
Nathu Singh, SEA II	94715	PULICAT (Patrol Boat) ENC
Dinesh Dubey, EMP2	57636	KATCHALL (WF)
GV Thumbunkel		Master MV HOOGHLY
RD Hajarnavis		Chief Officer VISHWA VIJAY AMPHIBIOUS OPERATION (EF)
AK Bhattacharjee		Chief Engineer MV HOOGHLY

Commendations by the Chief of the Naval Staff

Cdr SC Bindra (S)	60040B	
Cdr MML Saxena (X)	00192K	
Lt Cdr CS Menon (X)	00277B	
Lt Cdr SJ Contractor (X)	00418Z	NOIC Bombay Staff
Lt Cdr K Suresh (X)	00481T	
Lt Cdr B Nag (X)		
Lt Cdr (SDG) KN Divekar		
Sqd Leader GPU Nair		7287 IAF
Lt Kulwant Singh Bhasin (E)	40163B	VIKRANT (EF)
Lt PJ Jacob (X)	00511K	DIRECTION OFFICER VIKRANT (EF)
Lt RS Pujji (X)	00513R	

Lt PS Nelson (X)	00551A	
Lt HC Medha (X)	00880Z	
Lt SS Kumar (E)	40207B	
Lt K Kamak (E)	40283A	
Lt VK Bhatia (E)	40271Z	
Lt P Jaitly (L)	50166N	
Lt (SDG) Ravinder Singh	80025Z	
Lt (SDG) Avtar Singh	80028F	
Lt (SDAE) VS Chitale	86003K	SUPPORT OF MUKTI BAHINI OPERATIONS
Lt (SDPR) Karnail Singh	81559K	
Lt (SDR) Kewal Krishan	86014K	
Lt (SDR) CP Xavier	87501R	
Sub LT RK Sharma (X)	00920R	
Sub LT KM Nair (X)	01081F	
Sub LT Guru Raj (X)	01116K	
Sub LT Ranbir Talwar (X)	01138K	
Sub LT CR Kutty (X)		
Sub LT EG Govindan (E)	50283B	
Sub LT N Subbarao (E)	40400T	
Sub LT UP Misra (L)	50264K	
Sub LT (SDTAS) Wasi Ahmed Warsi	81269A	
Sub LT (SDS) SR Malik	88531F	
Sub LT (SDAE) RK Sur	86013H	
De Stephan MCPO II(TAS I)	25774	INS VIRBAHU, Visakhapatnam
Lakhan Lal MC SWA II	50711	INS ANGRE, Bombay
KP Masilamani MC ER1	50749	INS ANGRE, Bombay
K Ramkrishnan MC ERA II		
C Arvindakshan Nair Mech II	64413	HATHI (Tug)
GL Narayan AM II No.		
M Arvindakshan CYS	43579	INS INDIA, New Delhi
Jug Lal CPO (G1)	45526	INS TRATA, Bombay
SK Choudhary CPO Wtr	63302	INS HOOGHLY, Calcutta
PN Khanna Ch ERA		
LN Sharma CPO CK(S)	60740	MYSORE (WF)
JC Dutta CYS		
RK Pandey CPO	44523	INS VALSURA, Jamnagar
SK Ghandhi CH(ME)	45585	
SK Bhardwaj CHEL(R)	48074	INS CIRCARS, Visakhapatnam
VS Nair CH(ME)	63922	HATHI (Tug)
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NV Varughese ERA III	52578	DARSHAK (Survey Ship) (WNC)
BK Vashisht EAA III	51209	NARO Cochin
P Dass ERA III	51239	MYSORE (WF)
GD Singh AM (W) III	88049	ALIZE SQUADRON
HC Chandel AM III	49277	VIKRANT (EF)
VK Sharma AA III	51291	VIKRANT (EF)
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KM Nair AA III	88343	VIKRANT (EF)
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M Mahmood PO EL (A)	48890	SEAHAWK SQUADRON
SK Chakraborty Mech (W) III	66062	INS JARAWA, Port Blair
Mohinder Singh PO Tel	86113	INS INDIA, New Delhi
SB Thomas PO Tel	86234	INS ADYAR, Madras
TM Vagnan PO (QM 1)	66838	VEER (Missile Boat)
Vasudeb Nag PO Wtr	81296	TALWAR (WF)
PV Alexander PO EL (P)	67350	KUTHAR (WF)
P Periera PO	48257	INS HOOGHLY, Calcutta

CJ Joseph PO (ME)	82406	VIDYUT (Missile Boat)
KN Venugopalan Nair PO (ME)	67214	GODAVARI (SNA)
BP Shahi Ag PO (ME)	87238	GODAVARI (SNA)
S Bandopadhya SWA IV	51367	INS ANGRE, Bombay
KCN Krishnan EAP IV	51449	VIKRANT (EF)
S Reddy L/Tel	88630	INS HOOGHLY, Calcutta
KD Varghese LEM	68931	KUTHAR (WF)
KL Sebastian LEM	90279	DEEPAK (WF)
B Ram LS	82962	
VK Ghatge LS (QM)	86851	INS ANGRE, Bombay
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VP Balakrishnan ME I	57165	TALWAR (WF)
AS Thathola Sea I	83624	DEEPAK (WF)
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AS Dahiya Sea I	92977	DEEPAK (WF)
K Damodaran ME I	56060	KATCHALL (WF)
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Vidhyadhar Singh Sea I	54201	INS CIRCARS, Visakhapatnam

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