



MINISTRY OF DEFENCE (DGQA)

STANDARD QUALITY ASSURANCE PLAN
HELO LANDING GRID

STANDARD QAP NO. DGQA/DQA(WP)/HELO LANDING GRID/31/2022/REV 0
17 MAR 22

Total Nos. of Pages: 18

ISSUING AUTHORITY

DIRECTORATE OF QUALITY ASSURANCE (WARSHIP PROJECT)
MINISTRY OF DEFENCE (DGQA)
6TH FLOOR, 'B' BLOCK, DEFENCE OFFICE COMPLEX
NETAJI NAGAR PO, NEW DELHI – 110 023



MINISTRY OF DEFENCE /
DGQA

DIRECTORATE OF QUALITY
ASSURANCE (WP)
NEW DELHI – 110 023

HELO LANDING GRID

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RECORD OF AMENDMENTS

<u>Sl. No.</u>	<u>Date of Amendment</u>	<u>Amendments</u>	<u>Authority</u>	<u>Remarks</u>


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MINISTRY OF DEFENCE (DGQA)

STANDARD QUALITY ASSURANCE PLAN **FOR HELO LANDING GRID**




STANDARD QAP NO.
DGQA/DQA(WP)/HELO LANDING GRID/31/2022/REV 0
17 MAR 2022


(S N Alamanda)
Rear Admiral
ADGQA(WP)

Promulgated by:-

DIRECTORATE OF QUALITY ASSURANCE (WARSHIP PROJECT)
MINISTRY OF DEFENCE (DGQA)
6TH FLOOR, 'B' BLOCK, DEFENCE OFFICE COMPLEX
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CONDITION OF RELEASE

1. This standard QAP has been prepared for use of the Indian Navy and of its contractors to follow the specified Quality Assurance procedure during the execution of the contracts. No alteration is to be made to this Standard QAP except by the issue of authorised amendment by DQA (WP).
2. It is to be applied as required in the Quality Assurance procedures covering manufacture of Helo Landing Grid for IN Ships.
3. The website <http://www.dggadefence.gov.in> may also be referred for other QA requirements.
4. The Standard QAP has been prepared on the basis of decisions made in consultations with leading manufacturers of Anchor Capstan, representatives of professional directorates and inspection agencies. Any user of this Standard QAP either within DGQA / Indian Navy or in industry may propose an amendment to it with valid justification. Proposals not applicable to particular contract can be sent directly to DQA(WP), New Delhi, and those directly applicable to a particular contract are to be dealt with using contract procedures.
5. DQA(WP) reserves the right to amend or modify the contents of this Standard QAP without consulting or informing any holder of this document.
6. When this Standard QAP is incorporated into contracts, users are responsible for their correct application and for complying with contractual and other statutory requirements. Compliance with Standard QAP does not of itself confer immunity from legal obligations.
7. Enquiries in connection to these requirements may be made from:

Directorate of Quality Assurance (Warship Projects)
Ministry of Defence
6th Floor, 'B' Block,
Defence Office Complex
Sarojini Nagar P.O.
New Delhi – 110 023



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LIST OF ANNEXURES


<u>Ser.</u>	<u>Annexure No.</u>	<u>Topic</u>
1.	Annexure – I	DQA(N) Policy No. 66301/POLICY/DQA(N)/SG dated 14 Nov 17 regarding inspection of imported items
2.	Annexure – II	DQA(N) Policy No. 12575//POLICY/DGQA/WP-TC dated 12 Oct 20 regarding Qualification of NDT Personnel through ASNT
3.	Annexure – III	DQA(WP) Policy letter 12575/POLICY/DGQA/WP-TC dated 28 Sep 20 regarding Guidelines for approval of SQAPs/QAPs.
4.	Annexure – IV	DQA(WP) Policy letter 12575/POLICY/DGQA/WP-TC dated 14 Jun 21 regarding use of approved QAP for replenishment order.
5.	Annexure – V	DQA(WP) Policy letter 29814/MISC/DGQA/WP-TC dated 24 Feb 21 regarding SOP for Remote Inspection.

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STANDARDS INVOKED


<u>S. No.</u>	<u>Specification No.</u>	<u>Description</u>
1	BR 3021, Vol I & II	Shock Manual
2	BR 67/95	Admiralty Manual of Seamanship
3	NES 723	Tally Diagram Plates
4	NATO : STANAG 1276, Amendment 01, 2014	

Note: - The Standards given are indicative only. The specifications / standards and parameters given in the SOTR / Technical Specification (TSP) / MoM of TNC / Approved drawings will be final and binding.

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SPECIFIC REQUIREMENTS

1. Testing of physical, chemical properties and specific tests (wherever mentioned) has to be done by NABL accredited lab (including firm's NABL accredited lab).
2. Make of the outsourced Items should be as per approved PIL/Detailed Bill of Material (DBOM) or Naval approved sources
3. Imported items will be inspected in accordance with DQA(N) Policy No. 66301/Policy/DQA(N)/SG dated 14 Nov 17 (**Annexure-I**), as amended from time to time. Normally, following documents are inspected: -
 - (a) Bill of Lading / Shipping Bill / Airway bill.
 - (b) Invoice by OEM or Country of Origin Certificate with Packing List
 - (c) Bill of entry to warehousing
 - (d) OEM confirmation Certificate
 - (e) Firm's Guarantee Certificate as per PO
4. All NDT to be performed in accordance with DQA(WP) Policy No. 12575/Policy/DGQA/WP-TC dated 12 Oct 20 (**Annexure-II**) and subsequent amendments as applicable.
5. Ultrasonic Test (UT) are to be carried out by ASNT (ACCP) Level-II/III or ISNT Level-II/III qualified NDT personnel. Interpretation/sentencing of RT and UT reports are to be carried out by ASNT (ACCP) Level-III or ISNT Level-III NDT personnel only.
6. Dye Penetrant Test (DPT) are to be carried out by ASNT (ACCP/SNT-TC-1A) Level-II/III or ISNT Level-II/III qualified NDT personnel. Interpretation/sentencing of MPT and DPT reports are to be carried out by ASNT (ACCP/SNT-TC-1A) Level-III or ISNT Level-III NDT personnel only.
7. If Type Testing have already been done in earlier projects on identical units, it will not be done again & the original reports of earlier tested units will have to be provided for review of Inspection Agency.
8. Guidelines for approval of SQAPs/QAPs, DQA(WP) policy letter 12575/POLICY/DGQA/WP-TC dated 28 Sep 20 (**Annexure-III**) is relevant.
9. For replenishment order, DQA(WP) policy letter 12575/POLICY/DGQA/WP-TC dated 14 Jun 21 (**Annexure- IV**) is relevant.
10. The SQAP along with the proposed inclusions/ exclusions approved by DQA(WP) shall be deemed as the approved QAP for the particular PO.
11. SOP for Remote Inspection, DQA(WP) policy letter 29814/MISC/DGQA/WP-TC dated 24 Feb 21 (**Annexure- V**) is relevant.

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12. Post promulgation of this SQAP. The manufacturer shall be required to submit confirmation to concerned QA Agency and OPA towards acceptance of SQAP either in totality or with some design specific inclusions and/or exclusions, if any, along with the following details.

- (a) Equipment name.
- (b) Equipment technical details (as applicable).
- (c) Purchase Order reference.
- (d) Sub/Sub-Sub Orders reference (as applicable).
- (e) Name of Main Indenter/ Ordering Authority.
- (f) Name of end user, if available.
- (g) Name of firm / manufacturer.
- (h) SOTRs reference, if available.
- (j) Yard No./ Name of ship where to be fitted (if available)/ End user.
- (k) References of relevant drawings.
- (l) QAP No. & Date (as indicated by the firm).
- (m) Contractual delivery date.
- (n) Inspection Authority.
- (p) Inspection Agency.
- (q) Quantity (as applicable).
- (r) Inclusions, if any.
- (s) Exclusions, if any.



MINISTRY OF DEFENCE /
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ABBREVIATIONS


ABN	Air Borne Noise
ACCP	ASNT Central Certificate Program
ASME	American Society of Mechanical Engineers
ASNT	American Society of Non-destructive Testing
ATP	Approved Test Procedure
CHP	Customer Hold Point
CoC	Certificate of Conformance
COTS	Commercial-off-the-shelf
DBOM	Detailed Bill of Material
DFT	Dry Film Thickness
DI	Dimensional Inspection
DPT	Dye Penetrant Test
FATs	Factory Acceptance Trials
GA	General Arrangement
HT	Heat Treatment
I-Note	Inspection Note
IFATs	Integrated Factory Acceptance Trials
IR	Inspection Report by Vendor
ITC	Inspection and Test Certificate
ISNT	Indian Society of Non-destructive Testing
MO	Material Organisation
MoM	Minutes of Meeting
MPT	Magnetic Particle Test
MTC	Manufacture Test Certificate
NABL	National Accreditation Board for Testing and Calibration Laboratories
NDE	Non Destructive Evaluation
NDT	Non Destructive Testing
NSTL	Naval Science and Technological Laboratory
OEM	Original Equipment Manufacturer
OPA	Order Placing Authority
P	Perform by
PIL	Parts Identification List
PO	Purchase Order
PQR	Procedure Qualification Record
QA	Quality Assurance
QAE	Quality Assurance Establishment
QAO	Quality Assurance Officer
QAP	Quality Assurance Plan



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ABBREVIATIONS

R	Review by
RT	Radiography Testing
SBN	Structure Borne Noise
SOTR	Statement of Technical Requirement
SQAP	Standard Quality Assurance Plan
STC	Supplier Test Certificate
TC	Test Certificate
TEC	Technical Evaluation Committee
TNC	Technical Negotiation Committee
TPI	Third Party Inspection
TSP	Technical Specification Particulars
TT	Type Test
UT	Ultrasonic Testing
VI	Visual Inspection
W	Witness by QA Rep.
WPQ	Welder Performance Qualification
WPS	Welding Procedure Specification

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SCOPE

Scope of Quality Assurance. The scope of Quality Assurance will cover witness and review of all manufacturing activities during all stages viz. raw material stage inspection including, bought out items, in-process stage inspection and final inspection stage. The scope also covers the review and witness of Type Test of equipment, wherever applicable.

This Standard Quality Assurance Plan contains comprehensive list of inspections and/or trials that is to be applicable for quality assurance of the equipment. In addition, quality assurance of equipment will also be governed by specific conditions laid down in SOTRs and 'Approved Drawings'. The inspections/ trials must be contemporary to latest technology/ techniques available in the industry at the time of placement of orders

The following quality assurance activities will be carried out during the quality assurance of equipment:


- (a) Visual Inspection.
- (b) Dimensional Inspection.
- (c) Witness of Pouring in absence of integral test bar.
- (d) Review of Lab Test Certificates.
- (e) Witness of in-house Lab Testing, if applicable.
- (f) Witness of Non-destructive testing viz. UT &DPT
- (g) Review of Heat Treatment Charts
- (h) Functional Checks as per approved ATP
- (j) Review of draft documentation and witness/ stamping of final documentation, as applicable.
- (k) Issue of CHP clearance.
- (l) Issue of I-Note/ Form-IV or Dispatch Clearance as applicable.

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SYSTEM DESCRIPTION

Helo Landing Grid allows any helicopter fitted with a harpoon to land or take-off from a Helideck in fully safe conditions, without any assistance, even in rough seas and bad weather. This advantage of Helo Landing Grid is very important for naval platforms.

A Helo Landing Grid in combination with a "Harpoon Securing System" secures a helicopter to the flight deck immediately after touchdown by engaging and locking of the helicopter harpoon onto a landing grid in the flight deck. The helicopter is then pulled toward and fixed onto its parking hanger. While the harpoon is still latched onto the grid, the pilot can start up the helicopter. The pilot will then ensure the helicopter has sufficient take-off power to create tension between the helicopter and the landing grid. At the last moment, the pilot disconnects the harpoon from the Helo Landing Grid, which is controlled from the cockpit. This allows the pilot to immediately reach a safe distance from the vessel. This makes a major contribution to safety, especially in rough weather conditions.

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STANDARD QUALITY ASSURANCE PLAN

Part – I: General Information

1. The following generic information must generally be indicated on each QAP as its identity:-


- (a) Equipment Name
- (b) Equipment Technical Details (as applicable)
- (c) Purchase Order Reference
- (d) Sub/Sub-Sub Orders reference (as applicable)
- (e) Name of Main Indenter/ Ordering Authority
- (f) Name of End User
- (g) Name of Firm / Manufacturer
- (h) SOTRs Reference
- (j) Yard No./ Name of Ship where to be fitted (if available)/End User
- (k) References of Relevant Drawings
- (l) QAP No. & Date (as indicated by the firm)
- (m) Contractual Delivery Date
- (n) Inspection Authority
- (p) Inspection Agency
- (q) Quantity (as applicable)

Part – II: Technical Inspection / Trials

Standard Quality Assurance Plan of Helo Landing Grid

Appendix "A"

STANDARD QUALITY ASSURANCE PLAN FOR HELO LANDING GRID

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		APPENDIX-A Technical Inspection / Trials in form of SQAP Part II (Refers to Page No. 13)		DATE	17 MAR 22

SL. NO	MATERIAL/COMPONENT/ DRG.NO/ QUALITY ACTIVITY	CHARACTERISTIC/ TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA	FORMAT OF RECORD	AGENCIES FIRM QAE	REMARKS
1.00	DRAWINGS/DOCUMENTS/TYPE TEST							
1.01	GA Drawings of all Assemblies & sub assemblies along with DBOM & Binding Data	Check for availability of approved drawings and DBOM & Binding data	100%	As per SOTR/TNC Minutes	All approved drawings along with DBOM & Binding data are available.	List of Approved Binding Drawings	P R	CHP Approved binding data/drawing to be verified
1.02	Type Test reports	Verification of Type Test Report.	100%	Purchase Order, GA drawings, Component drawings & SOTR/TNC Minutes	Equipment should have successfully undergone Type Test (as applicable)	Type Test Report	P R	CHP Shipyard Orders. Type / Qualification test are to be conducted if not undertaken earlier or test certificate not held or equipment has undergone changes. MO Orders. Type / Qualification tests undertaken only, if mentioned in PO.

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							FIRM	QAE	
2.00	RAW MATERIALS INSPECTION/ IDENTIFICATION								
2.01	Raw Materials for: Grid Top Plate Bottom support Plate Support Ring Ribs Support Rod	Raw Material Identification	100%	Approved Drawing	Approved Drawing, SOTR, TSP & PO	MTC/ Import Document	P	R	CHP a) Imported items/ raw materials will be inspected against review of import documents. b) MTC, if manufactured in India.
		Chemical, Mechanical	01 per size (thickness/ dia) / heat	Approved Drawing	Approved Drawing, SOTR, TSP & PO	IR along with TC of Third Party / NABL TC	P	W	CHP a) Imported items will be accepted on the basis of Inspection report and test certificate of third party inspection done abroad. The raw material should have the stamp of third party clearly linked with inspection report and test certificate. The details of third party undertaking inspection has to be cleared in advance during TNC / approved drawing by OPA. If any discrepancy is observed in documents submitted, the raw material will be tested at NABL lab. Samples for NABL testing will be reviewed by QA reps.
									b) If manufactured in India, then raw material will be tested at NABL lab. Samples for NABL testing will be drawn in presence of QA reps. NABL test reports will be reviewed by QA reps.
		UT	100%	Approved Drawing	Approved Drawing, SOTR, TSP & PO	NDE Report / IR	P	W	CHP UT procedure to be approved by Level-III personnel and UT to be performed by ISNT/ASNT level II/III.
									UT is required for imported raw materials also

STANDARD QUALITY ASSURANCE PLAN FOR HELO LANDING GRID

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							FIRM	QAE	
2.02	Bought Out Items As per Detailed Bill of Material (DBOM) Nuts, Bolts, Washer, etc	Chemical and Mechanical (Hardness)	100%	Approved drawing	Approved Drawing	CoC/ MTC /STC/ OEM TC /NABL TC	P	R	The certificate of Conformity (CoC) indicating governing specifications and values to which the items are tested along with Original Equipment Manufacturer (OEM) Catalogue/ Data sheet are acceptable. Otherwise OEM TC/ MTC/ STC/NABL TC is required for review.
3.00	IN PROCESS INSPECTION								
3.01	Fabrication / Welding/ Heat Treatment								
	Welding Procedure and Welder Qualification	Review of Documents. Before fabrication of assemblies - Welding Procedure & Welder Qualification Record	-	Approved Drawing	ASME IX /Approved Drawing	WPS/PQR/ WPQ	P	R	Machined top grid plate and bottom support plate of bottom support assembly (after precision drilling of all holes) to be DP tested.
	All welded and machined (Excluding standard bought out) items	VI & DI	100%	Approved Drawing	As per approved drawings SOTR, TSP & PO	IR	P	W	Supporting rods/ studs and standard bought out items may be exempted from DP test.
		DPT (On weld joints and machined surface)	100%	Approved Drawing	As per approved drawings SOTR, TSP & PO	NDE Report / IR	P	W	DI: For studs, supporting rods & standard bought out items / fasteners, firm to be checked 100% and random by QAE as per IS 2500. Firm to submit 100% VI & DI report for QAE review.
		UT(on all weld joints)	100%	Approved Drawing	As per approved drawings SOTR, TSP & PO	NDE Report / IR	P	W	Policy Letter in vogue be referred for Qualification of NDT Personnel through ASNT (Annexure II).

STANDARD QUALITY ASSURANCE PLAN FOR HELO LANDING GRID

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							FIRM	QAE	
3.02	Bought Out Items As per Detailed Bill of Material (DBOM)	VI & DI	100% by Firm and Random check by QAE as per IS 2500	Approved Drawing	Approved drawing	IR	P	R	
4.00	FINAL INSPECTION								
4.01	Visual & Dimensional of Complete Assembly	Visual and Measurement	100%	Approved Drawing	Approved Drawing	IR	P	W	CHP
4.02	Load Testing	Measurement	100%	Approved Drawing, IHQ MoD(N) approved Load Testing Procedure	Approved Drawing/ IHQ MoD(N) approved Load Testing Procedure	IR	P	W	Pre-Inspection report to be submitted.
4.03	DP Test Post Load Testing	Visual	100%	Approved Drawing	Approved drawing	NDE Report / IR	P	W	DP test of weld joints of Grid support structure to be performed & witnessed by QA reps post dismantling the assembly.
4.04	Painting	Visual Inspection & DFT	100%	Approved Drawing	Approved drawings/ TSP	IR	P	R	
4.05	Weight Recording	Weight measurement	100%	Approved Drawing, PO, SOTR/ TSP	To be within specified limits as per Approved Drawing, PO & SOTR /TSP	Weight Certificate	P	W	DFT to be checked by QAE Reps.
4.06	Packing, Preservation and Marking	Visual Inspection	100%	Approved Drawing, SOTR/TSP, OEM Preservation Plan	Conforms to Approved Packing Procedure / TSP / Approved Drawing	IR	P	W	Policy Letter in vogue be referred for Remote Mode Inspection (Annexure V).
4.07	Submission of As-built Drawings	Verification	100%	Approved Drawing / Concessions & Deviations	As-built drawing are approved and complete	As Built Drawing	P	R	
4.08	Submission of Form IV (I&T Certificate)	Correctness	100%	As per PO, SOTR/ TSP & TNC	As per PO, SOTR/ TSP & TNC	Form IV	P	Issue of Form IV	

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5.00	TYPE TESTING							
5.01	Shock Test	Shock Analysis	One/Model	Approved Drawing, SOTR, TNC Minutes	Approved Drawing, SOTR, TNC Minutes	NSTL Test Report/ NSTL Approved Test Report	P R	Shock calculation report to be submitted to IHQ MOD(N) post approval of NSTL or any nominated agency by IHQ Mod(N).
5.02	Vibration Test	Vibration Analysis	One/Model	Approved Drawing, SOTR, TNC Minutes	Approved Drawing, SOTR, TNC Minutes	NSTL Test Report/ NSTL Approved Test Report	P R	FEA Report approved by NSTL is also acceptable for review.

IMPORTANT NOTE:-

- Bought Out items:** Bought out items are those which are in the regular production range of the manufacturing firm/ sub vendor and manufactured on placement of specific order by main firm and production is covered by main firm's quality control program.
- All NDT procedures are to be approved by ASNT (ACCP) / ISNT Level III qualified NDT personnel based on standards and acceptance criteria specified in SOTR / TSP / Applicable Standards.
- UT to be carried out by ASNT (ACCP) Level-II/III or ISNT Level-II/III qualified NDT personnel. Interpretation/sentencing of RT and UT reports are to be carried out by ASNT (ACCP) Level-III or ISNT Level-III NDT personnel only.
- DPT to be carried out by certified ASNT (ACCP/SNT-TC-1A) Level-II/III or ISNT Level-II/III NDT personnel. Interpretation/sentencing of MPT and DPT reports are to be carried out by ASNT (ACCP) Level-III or ISNT Level-III NDT personnel only.
- No of components/ items (under misc components/ Bought out/ COTS items) may vary from design to design. This list is indicative only. Actual components/ items would be as per approved DBOM/ drawings.
- Witness of inspections can be done in remote mode, wherever feasible. The modalities of remote inspection are to be worked out jointly by the firm and QAO.

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Annexure-I

No.: 66301/Policy/DQA(N)/SG

14 Nov 17

As per distribution list

**REVISION OF ACCEPTANCE CRITERIA FOR IMPORTED
EQUIPMENT/ ITEMS: IMPORT DOCUMENTS**

1. Imported stores are, presently, accepted on the basis of validation of following seven import related documents in accordance with Para 17 of Section-V, Chapter 05 and Para 29 of Chapter 13 of DGQA Standing Orders and DQA(N) letter No 66301/Policy/DQA(N)/SG dated 31 Jul 15:-

- (a) Bill of Lading.
- (b) Shipping Bill.
- (c) Bill of entry to Ware House.
- (d) Country of Origin.
- (e) Original manufacturers certificate conforming that spares are tested for fitment on main equipment for which spares are ordered i.e. PAC firm's confirmation certificate.
- (f) Original manufacturers certificate / Quality Assurance Guarantee certificates
- (g) Firm's guarantee certificate as per Supply Orders (SOs).

2. It has been observed that all of the above documents may not necessarily be needed to assure quality and at times non availability of one or more import related documents has caused undue delay in acceptance of stores. Accordingly, the issue has been examined in detail and it has been decided to rationalise the documents for acceptance of imported stores for ease of doing business yet retaining following essential QA requirements:-

- (a) Establishing the traceability of the item i.e the item is supplied by OEM.
- (b) Confirmation of items to the specification through certification by supplier / OEM
- (c) Guarantee / Warrantee certificate from OEM.

3. In view of the above, the following import documents will be validated for acceptance of imported stores hence forth.

(a) Copy of one among Bill of Lading / Shipping Bill / Airway Bill (A document issued by the transporter of the equipment which clearly indicates the description, quantity, port of collection and port of discharge).

(b) Invoice by OEM or Country of Origin certificate of the equipment with packing list.


(c) Bill of Entry into warehouse.

(d) The Certificate of Conformity (CoC) indicating governing specifications and values to which the items are tested alongwith Original Equipment Manufacturer (OEM) test certificates/test reports/ Catalogue/Data Sheet.

(e) Guarantee / Warrantee certificate from the supplier/OEM as per Supply Order.

4. DGQA standing order has been amended accordingly.

5. In view of the above OPAs are requested to include list of documents as at Para 3 above in the Supply Orders pertaining to imported stores.


(Amit Rasgoti)
Commodore
Offg Addl. Director General
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12575/POLICY/DGQAWP-TC

12 Oct 20

All Field Units of DQA(WP)

QUALIFICATION OF NDT PERSONNEL THROUGH ASNT

1. The American Society for Nondestructive Testing (ASNT) offers two types of NDT certification programs. The same are briefly enumerated below:-
 - (a) ASNT Central Certification Program (ACCP). Under this program ASNT certifies that the NDT personnel on completion of training have acquired the requisite skillset/ qualification for award of ACCP Level II or ACCP Professional Level III in a given NDT method (viz RT, UT, MPT, DPT etc). The evaluation of the NDT personnel is conducted centrally by ASNT.
 - (b) Employer Based Program (SNT-TC-1A). ASNT also facilitates an employer-based certification system SNT-TC-1A, wherein the employer assumes responsibility of certifying their NDT personnel in accordance with their own procedure. The employer-based certification system is tailor-made to meet the company's specific in-house requirements and the certificate is valid till the time the personnel are employed in the company.
2. QAE(WE), Chennai vide e-mail 3001/T/QAE(WE-CH)/565/404 dated 25 Aug 20 sought directives regarding following issues:-
 - (a) Whether NDT Personnel certified through the Employer Based Certification Programme (SNT-TC-1A) can be considered at par with those certified through ASNT Central Certification Programme (ACCP).
 - (b) Whether interpretation/ sentencing of NDT reports by personnel certified through employer-based certification programme (SNT-TC-1A) shall be acceptable during QA inspection.
3. The issue has been examined at this Headquarters and inputs in this regard has also been obtained from all Field Units of DQA(WP). Considering the criticality of NDT procedures for quality and reliability of warship/ submarine equipment, the following directives are promulgated for guidance to QA personnel during inspection.

(a) Certification of personnel for ASNT Level-II/ III through employer based programme (SNT-TC-1A) is not to be treated at par with ASNT Level-II/ III personnel certified through ASNT Central Certification Programme (ACCP)

(b) All NDT test procedures are to be approved by ASNT (ACCP) Level-III or ISNT Level-III qualified NDT personnel.

(c) Radiographic Test (RT) & Ultrasonic Test (UT) are to be carried out by ASNT (ACCP) Level-II/ III or ISNT Level-II/ III qualified NDT personnel.

(d) Magnetic Particle test (MPT) & Dye Penetrant test (DPT) may be carried out by certified ASNT (ACCP/ SNT-TC-1A) Level-II/ III or ISNT Level-II/ III NDT personnel.

(e) Interpretation/ sentencing of DPT and MPT reports may be carried out by ASNT (ACCP/ SNT-TC-1A) Level-III or ISNT Level-III NDT personnel only.

(f) Interpretation/ sentencing of UT and RT reports are to be carried out by ASNT (ACCP) Level-III or ISNT Level-III NDT personnel only.

4. The above directives may be disseminated to the firms during the First Contact Meetings. The same shall also be suitably inserted in the QAPs/ SQAPs approved by DQA(WP).



(Pradeep Biswas)
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12575/POLICY/DGQAWF-TC

28. Sep 20

All Field Units of DQA(WP)

GUIDELINES FOR APPROVAL OF SQAPs/ QAPs

1. Approval of QAPs is an important activity undertaken by DQA(WP) for ensuring that the equipment/ spares supplied to the IV are compliant to the prescribed Quality norms. Prompt concurrence/ approvals of SQAP and QAPs is paramount towards timely commencement of production and the linked QA activities.

2. Promulgation of SQAPs has yielded significant reduction in the lead time for approval of QAPs. Further, all approved SQAPs/ QAPs are now being forwarded to the concerned Field Units and also to the firms so that subsequent activities as per the production plan can be commenced without waiting for approved copy of QAP from the Field Unit.

3. Despite of these initiatives, it is felt that approval of SQAPs/ QAPs can be done in shorter time frame by reducing postal delays. In order to minimise such time lost in postal transit, the procedure that is to be followed by all Field Units under DQA(WP) as regards to approval of SQAPs/ QAPs, is enumerated in the subsequent paras.

4. Concurrence for Inspection Against SQAPs. On promulgation of SQAPs for an equipment/ system, preparation of separate draft QAP for approval is not necessary. The following procedure is to be followed while seeking concurrence for inspection against SQAP:-

(a) The firm is to be advised by the Inspection Agency to submit confirmation regarding acceptance of SQAP either in totality or with some design specific inclusions and/ or exclusions, if any, by e-mail to the concerned Inspection Agency under intimation to DQA(WP).

(b) On receipt of confirmation from firm, the concerned Inspection Agency is to forward the same to DQA(WP) with recommendations by e-mail within seven working days of its receipt. For orders placed by IHQ MOD (Navy) and MOs, legible copy of the PO, approved drawing in A3 size and other relevant documents, if any, are to be forwarded along with the firm's confirmation.

(c) Concurrence for inspection against SQAP with or without design specific inclusions and/ or exclusions shall be accorded by DQA(WP) by e-mail to the Inspection Agency, Firm, OPA, Command Headquarters and IHQ MoD (Navy), as applicable, within **seven working days of receipt**.

5. Concurrence for Use of Previously Approved QAPs/ Revalidation of QAPs
In case SQAP for a particular equipment/ system does not exist and a previously approved QAP is to be used for undertaking inspections, concurrence for the same is to be accorded by DQA(WP). The following procedure is to be followed to obtain concurrence for use of Previously Approved QAPs/ Revalidation of QAPs:-

(a) The firm is to be guided to submit proposal for use of previously approved drawing and QAP along with an undertaking that the equipment/ system has not undergone any changes with respect to design, material specification, duty point and manufacturing process by e-mail to the concerned Inspection Agency under intimation to DQA(WP).

(b) The firm's proposal is to be examined by the Inspection Agency and the same along with recommendations is to be forwarded to DQA(WP) by e-mail within **five working days of receipt**. Legible copy of the PO, approved drawing in A3 size and copy of the previously approved QAP are to be forwarded along with the firm's proposal.

(c) Concurrence for inspection against the previously approved QAP, with or without changes, shall be accorded by DQA(WP) by e-mail to the Inspection Agency, Firm, OPA, Command Headquarters and IHQ MoD (Navy), as applicable, within **five working days of receipt**.

6. Approval of Draft QAP. Approval of QAP, wherein provisions of para 4 and 5 *ibid* are not applicable, would entail submission of draft QAP by the firm. The procedure that is to be followed for approval of draft QAP is as follows:-

(a) The firm is to be advised to submit editable soft copy (in MS Words) of draft QAP by e-mail to the concerned Inspection Agency and DQA(WP). The hard copy of the same can be forwarded concurrently with ink/ digital signature of firm's rep.

(b) The Inspection Agency is to examine the adequacy of the draft QAP in consultation with the firm and forward the final draft of the same to DQA(WP) with recommendations by e-mail within **ten working days of receipt**. For orders placed by IHQ MOD (Navy) and MOs, legible copy of the PO, approved drawing in A3 size and other relevant documents, if any, are to be forwarded along with the draft QAP. Ink/ Digitally signed hard copy of draft QAP is to be forwarded separately by post.

(c) The draft QAP received at DQA(WP) shall be examined and Approved/ Approved-with-Amendment/ commented upon and forwarded to the Inspection Agency and firm by e-mail within **fifteen working days of receipt**.

(d) Ink/ Digitally signed copies of Approved/ Approved-as-Amended copy of QAP shall be forwarded by DQA(WP) separately through Registered Post/ Speed Post by to the Inspection Agency.

(e) When the draft QAP is Approved-with-amendments or returned with comments/ observations, the Inspection Agency shall ensure resubmission of the draft QAP by the firm, duly liquidating the observations .by e-mail. Approval of the revised draft QAP is to be accorded by the Inspection Agency on behalf of DQA(WP) within seven working days of receipt and a copy of the approved QAP is to be forwarded to the firm and DQA(WP) by e-mail. Ink/ Digitally signed copies of Approved QAP is to be forwarded to firm separately through Registered Post/ Speed Post by to the Field Unit.

(f) In case the draft/ approved QAP is being delivered by hand, then a record of same is to be kept and e-copy of the same is also be forwarded by the concerned agency.

7. The date of receipt of soft copy of the approved QAP shall be considered as the date of issue of QAP.

8. It is requested that measures to implement the procedures mentioned above be instituted with immediate effect. Additionally, the contents of this letter are to be discussed and briefed to the firms during the First Contact Meeting and endorsement of the same is to be made in the Minutes of Meeting.



(Pradeep Biswas)
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Captain QA (TC)
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12575/POLICY/DGQA/WP-TC

19 Jun 2021

All Field Units of DQA(WP)

USE OF APPROVED QAP FOR REPLENISHMENT ORDERS

1. Refer to DQA(WP) Policy letter 12575/POLICY/DGQA/WP-TC dated Sep 20.
2. A large number of proposals have been received in the recent past wherein the firms have requested for use of earlier approved QAPs, even though SQAPs have been promulgated subsequently.
3. The issue has been analysed at this Headquarters. Following has been decided: -
 - (a) In case of replenishment orders, the firm who had supplied the system/equipment earlier, can be allowed to use the previously approved QAP, even if SQAP has been promulgated prior to NLC/Placement of order. The firm in such cases has to submit an undertaking that the system/equipment has not undergone any changes in terms of design, architecture, dimension, material specification, duty point, internal configuration, manufacturing process, governing standards/specifications and environmental conditions to which the system/equipment was proved earlier.
 - (b) If the design/production/assembly/testing has undergone any amendment warranting complete/partial repeat of Type Testing, the inspection shall be undertaken against SQAP. However, if the modifications are minor in nature which do not affect the functionality and performance of the system/equipment, HQDQA(WP) is authorised to permit use of earlier approved QAP after receiving the request from OEM through the Field Unit.
 - (c) Cases where the replenishment order for a particular system/equipment is placed on firm who have not supplied the same before, the previously approved QAPs for the system/equipment shall not be applicable if SQAP has been promulgated before the date of NLC. In such cases, only the SQAP is to be used for conduct of QA inspections.

(d) The previously approved QAPs will not be applicable in case of new induction/shipyard orders if SQAP has been promulgated prior to the date of placement of order.

4. Reps of DQA(WP)/DQA(N) attending PC/NLC meetings are to specifically confirm availability of earlier approved QAP and that there have been no material/process changes. In case the clarification is not available during PC/NLC Meeting, the same is to be obtained during FCM. The above requirement has been included in draft Revised QAD-01.

5. It is requested that the above mentioned procedure be instituted with immediate effect.



(Pradeep Biswas)
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29814/MISC/DGQA/WP-TC

20 Feb 21

To
All Field Units of DQA(WP)

SOP FOR REMOTE INSPECTION
WEIGHT MEASUREMENT, PACKING & PRESERVATION AND PAINTING

1. Refer to DQAWP e-mail dated 02 Jul 20 regarding Inspection activities undertaken during the lockdown period.
2. After detailed deliberations by the Field Units with Industries, a list of 20 processes (list placed at Encl 1) where Inspection from Remote location could be undertaken were identified. The Field Units thereafter submitted draft SOPs for nominated processes which have been vetted at this Headquarters.
3. In order to ensure traceability of the Inspection undertaken through Remote Inspections and reliability of the data obtained, it is essential that a standardised methodology in form of Standard Operating Procedure is available. Accordingly, this office is in the process of preparing SOPs for all the 20 processes. The SOPs consist of two parts viz General Pre-Requisites which is common to all the processes (copy placed at Encl 2) and SOPs Specific to each process. The General Pre-Requisites and the specific SOPs for the following 03 processes have been prepared.
 - (a) Weight Measurement (Encl 3)
 - (b) Packing & Preservation (Encl 4)
 - (c) Painting (Encl 5)
4. The SOPs for remaining 17 processes are under preparation and shall be promulgated in due course of time.

5. The Remote inspection of the above mentioned processes are to be implemented forthwith. In case the inspections cannot be undertaken remotely, the same is to be intimated to this office with suitable justification. The effectiveness of the implementation of the above shall be reviewed in Jun 21.

(Pradeep Biswas)
Captain
Capt QA(WP)

Enclosures: As above

Copy to:

✓ DOAN

(Encl 1 to DQAWP Letter 29814/MISC/DGQAWP-TC Dated 27 Feb 21)

Processes Identified for Remote Inspection

SI No	Description
Raw Material Inspection	
1	Pouring of castings and Test pieces
2	Pouring with integral test piece
3	Forging / Extrusion with integral test piece
4	Heat treatment
In-Process Inspection	
5	WPS / PQR / WPQ
6	Measurements checked with Coordinated measuring machine (CMM)
7	Radiography Test
8	Eddy current test
9	Dynamic balancing
Type Test / Performance Test / Final Inspection	
10	Proving Run
11	Performance trial
12	Endurance trial
13	Post-trial test for 01 hour
14	Shock & Vibration Test
15	Structure Borne Noise / Air Borne Noise
16	Tilt test
17	Fatigue test / Cyclic test
18	Weight
19	Painting
20	Preservation & Packing

(Encl 2 to DQAWP Letter 29814/MISC/DGQA/WP-TC Dated 17 Feb 21)

General Pre-Requisites

Pre-operations. On the date of scheduled remote inspection, a short briefing session and job safety analysis be held for all participating personnel. The following to be addressed: -

- (a) Confirm the work scope and plans of the intended Remote Inspection.
- (b) Assess the surrounding conditions to determine if any amendments to the Remote Inspection plan are necessary.
- (c) Verify the responsibilities of all personnel involved in the activity.
- (d) Review identified risks and associated mitigation plans.
- (e) Review emergency escape/evacuation plan.
- (f) Review maintenance records to verify that pre-operations and periodic inspections are up-to-date.
- (g) Review meteorological conditions for external inspections.
- (h) Ensure proper personal protective equipment (PPE).
- (i) Confirm the inspection area is clean and devoid of mud, grime etc.

In-operation. The following actions are recommended to be followed as part of SOP during In-operation Quality Checks: -

(a) **E-Platform for Web Inspection.** Full version of a software be purchased from a good standard e-platform for monitoring and recording of remote inspection through web.

(b) **High Definition Camera.** The cameras used for streaming any inspection should have the capability to capture global view of the inspection without compromising on the resolution and record the intricate details and parameters accurately. Further, the Name Plate details etc of individual equipment should be captured and relayed along with the parameters. It is therefore considered essential to install at least 03 cameras with following minimum configuration for good quality output:-

- (i) HDR video recording at with 24 fps / 30 fps / 60 fps (4k / 720p / 1080p).
- (ii) 10-12 MP camera: $f/2.2$ - 2.4 aperture or $f/1.6$ aperture with minimum 2x optical zoom and 3-5x digital zoom.

(c) Use of Single Console for Integrated Display. All cameras used for viewing individual activity from different angles should feed into an integrated console or display grid (like hardware / software based Network Video Unit of CCTV surveillance system) with selection control feature, thereby allowing the inspector to monitor and analyse all views simultaneously. This could be easily achieved by using an IP based HD cameras connected through network switch or high-end add-on display card on PC / laptop.

(d) Checklist Clearance. The checklist should contain relevant system checks, inspection condition checks, personnel readiness checks and communication equipment checks.

(e) Communication. Continuous communication during the entire operation of Remote Quality Inspection is mandatory and to be recorded. If the communication signal is lost or experiences significant interference, the inspection is to be aborted and rescheduled.

(f) Documentation. All data readings during the remote inspection are to be documented both digitally and manually in the logbooks. Digital Data (Image and Video) should be of adequate quality to make a meaningful assessment of the Quality Inspection undertaken. The date and time is to be stamped on the pictures and videos.

Weight Measurement

Pre-requisites

- (a) 02 HD resolution camera, placed at opposite angles covering all the aspects to provide live feed as well as have video recording facility
- (b) Proper light/ illumination to be maintained during video recording
- (c) Computerized recording of the weighing of items
- (d) Calibration certificates of all measuring equipment from NABL accredited LAB
- (e) Details of the accessories being used (if any; like lifting eyebolts, hooks, slings etc), separate weights of such attachments to be mentioned and verified in the recorded video.
- (f) Make/ Model and serial no of the weighing scales (having digital display and which generates computerized reports is preferred) with weighing capacity, least count and accuracy to be noted.
- (g) Valid calibration certificate

Procedure.

- (a) 02 HD resolution camera are to be placed at opposite angles covering all the aspects to provide live feed as well as have video recording facility. The entire process is to be recorded in a single recording without any editing.
- (b) At the starting of the video, all details as per para 0426 are to be recorded. "0" reading on display of the weighing machine should be shown before taking measurement. Weighing scale surface should be clean.
- (c) Item(s) to be weighed should be seen clearly from all sides including top and bottom, its tally plate and the area having inspection seal (if applicable) before taking measurement.
- (d) If lifting attachments like lifting eyebolts, hooks, slings etc are used, then separate weights of such attachments to be recorded and subtracted from the total weight of the item. (This calculation must be included in the record).
- (e) SI no. & batch no. of item, weight display on the weighing instrument etc should be clearly visible and all the para meters should be recorded.

- (f) If any issue is there during the live feed with video recording, QA agency can ask the firm to do necessary adjustments / corrections or even repeat the procedure.
- (g) In case of item / equipment in which dry weight and wet weight measurement involves difference to be suitably calculated.

Result & Documentation. The following results and documentation are to be logged and maintained for future traceability: -

- (a) Post completion of the above activities, recorded video (in a CD/DVD) of the weight checks along with computerized generated report shall be sealed in an envelope and forwarded to QA agency along with all other documents for records.
- (b) All audio, pictures & video recordings.
- (c) All E-Mail communication pertaining to the test.
- (d) All E-Certificates and I-Notes issued online.

Preservation and Packing

Prerequisite.

- (a) Preservation and Packing Check Requisition from the firm.
- (b) Copy of Purchase Order
- (c) Copy of approved SQAP/QAP/Approved Testing Procedure
- (d) OEM Supplier preservation and packing plan specific to type of equipment/spares and its relevant associated national/ international standard.
- (e) Preservation and Packing Log/check sheet specific to type of equipment /spares in accordance with OEM/Supplier preservation plan.
- (f) 02 HD resolution camera, placed at opposite angles covering all the aspects to provide live feed as well as have video recording facility
- (g) Proper light/ illumination during video recording
- (h) Measurement sheet with details of parameters to be recorded for subject component.
- (i) Good network/Wi-Fi connection to provide high quality video feed.

Inspection.

- (a) Equipment/spare to be identified through serial number/inspection seal.
- (b) Video Recording should cover the complete equipment/spares from all angles.
- (c) Ensure all salient points as per OEM/Supplier preservation plan and preservation log/check sheet are sequentially covered.
- (d) Ensure that the equipment is supplied with initial preservation for a period as mentioned in the PO and packed with high quality material for complete scope of supply.
- (e) Each unit should be identified that it has been marked clearly in English for identification.
- (f) The Packing should indicate identification, labeling & tagging of equipment/ spare, International symbols for handling, transportation, weight, size and storage details etc on packing boxes.
- (g) Ensure that all instrumentation, sensors and meters etc are removed from the equipment and packed separately in a suitable packing with clear identification.

(h) Ensure that the containers/boxes are colour coded equipment wise as mentioned in the SOTR/PO

Result & Documentation. The following results and documentation are to be logged and maintained for future traceability: -

- (a) Preservation and Packing Report as per PO and OEM/Supplier guidelines is to be forwarded by the firm.
- (b) Ensure that a document giving complete details & instruction for storage, preservation, handling & transportation after delivery is supplied along with the shipping document.
- (c) Ensure that a list of actual deliverables is forwarded to the recipient of the items in soft copy with required details of the item.
- (d) All audio, pictures & video recordings.
- (e) All E-Mail communication pertaining to Preservation and Packing.
- (f) All E-Certificates and I-Notes issued online.

Painting

Prerequisite

- (a) Painting Check Requisition from the firm.
- (b) Copy of Purchase Order.
- (c) Copy of approved SQAP/QAP/Approved Testing Procedure
- (d) OEM/Supplier painting specifications for type of equipment/spares and its relevant associated national/ international standard.
- (e) Firm to submit painting report, calibration certificates and details of all the instruments proposed to be used in DFT verification before offering DFT verification through VC.
- (f) Painting Log/check sheet specific to type of equipment /spares.
- (g) 02 HD resolution camera, placed at opposite angles covering all the aspects to provide live feed as well as have video recording facility
- (h) Proper light/ illumination during video recording
- (i) Standard Terms & Condition as promulgated by DQA (WP) to undertake remote monitoring through live feed.
- (j) Measurement sheet with details of parameters to be recorded for subject component.
- (k) Good network/Wi-Fi connection to provide high quality video feed.

Inspection

- (a) Painting certificate be reviewed by QA team for correctness of the painting procedure followed wrt specification mentioned in the approved QAP/Drg/SOT/TNC.
- (b) All the calibration certificates be reviewed for currency of the calibration period.
- (c) Post review and acceptance of the painting report and calibration certificates, VC for the DFT be scheduled with the firm.

Result & Documentation. The following results and documentation are to be logged and maintained for future traceability: -

- (a) Painting inspection report, certificate of conformity along with acceptance criteria duly signed by the firm be submitted to QAE for final clearance and endorsement of reports.
- (b) All audio, pictures & video recordings.
- (c) All E-Mail communication pertaining to Painting checks.
- (d) All E-Certificates and I-Notes issued online.

