

**GOVERNMENT OF INDIA**  
**NAVAL HEADQUARTERS**  
**MINISTRY OF DEFENCE**

Tele : 011 – 26771521  
Fax : 011 – 26771388  
e-mail : [dapp@navy.gov.in](mailto:dapp@navy.gov.in)

Directorate of Air Projects & Plans  
Room No 511, 'D' Block,  
Defence Offices Complex,  
Africa Avenue  
New Delhi – 110023

AP/1611/MiG-29K/ISIS

Apr 25

**INVITATION OF BIDS FOR INDIGENOUS DEVELOPMENT OF REPAIR  
METHODOLOGY FOR REFURBISHMENT OF INTEGRATED STANDBY INDICATOR  
SYSTEM (ISIS) – Pt No. 336MFD1-1 OF MIG 29K/KUB AIRCRAFT**

**REQUEST FOR PROPOSAL (RFP) No. AP/1611/MiG-29K/ISIS dated Apr 25**

1. Bid in sealed cover is invited for **indigenous development of repair methodology for refurbishment of Integrated Standby Indicator System (ISIS), part no. 336MFD1-1 for MiG 29K/KUB aircraft**. Please super scribe the above mentioned title, RFP number and date of opening of the bids on the sealed cover to avoid the bid being declared invalid.

2. The address and contact numbers for sending Bids or seeking clarifications regarding this RFP are given below:-

- (a) Bids/queries to be addressed to : Commodore (Air Projects and Plans)
- (b) Postal address for sending the Bids : Naval Headquarters  
Ministry of Defence  
Directorate of Air Projects & Plans  
Room No 511, 'D' Block,  
Defence Offices Complex  
Africa Avenue  
New Delhi – 110 023
- (c) Name/designation of the contact personnel : Capt Rajpal Saini, Capt (APP)
- (d) Tele numbers of the contact personnel : 011 - 26771521
- (e) e-mail ids of the contact personnel : [dapp@navy.gov.in](mailto:dapp@navy.gov.in)
- (f) Fax Number : 011 – 26771388

3. This RFP is divided into five parts as follows:
- (a) **Part I** - Contains General Information and Instructions for the Bidders about the RFP such as the time, place of submission and opening of tender, Validity period of tender, etc.
  - (b) **Part II** - Contains essential details of the items /services required, such as the Scope of Work (SOW), Technical Specifications, delivery / upgrade time frame, Mode of Delivery and Consignee details.
  - (c) **Part III** - Contains Standard Conditions of RFP, which will form part of the Contract with the successful Bidder.
  - (d) **Part IV** - Contains Special Conditions applicable to this RFP and which will also form part of the contract with the successful Bidder.
  - (e) **Part V** - Contains Evaluation Criteria and Format for Price Bid.
4. This RFP is being issued with no financial commitment and the BUYER reserves the right to change or vary any part thereof at any stage. BUYER also reserves the right to withdraw the RFP, should it become necessary at any stage.

(Rajpal Saini)  
Captain  
Capt (APP)-I

## **Part I - General Information**

1. **Last date and time for depositing the Bids: 1600 Hrs. on 23 May 25.** The sealed Bid should be deposited/ reach by the due date and time. The responsibility to ensure this lies with the Bidder.
2. **Manner of depositing the Bids.** Sealed Bids should be either dropped in the Tender Box marked as "**DAPP**" **PLACED AT RECEPTION OF 'D' BLOCK** or sent by registered post only (and not by courier) at the address given above so as to reach by the due date and time. Late Tenders will not be considered. No responsibility will be taken for postal delay or non-delivery/ non-receipt of Bid documents. Bids sent by FAX or e-mail will not be considered (unless they have been specifically called for by these modes due to urgency).
3. **Time and date for Opening of Bid.** Technical bids will be opened at **1100 Hrs on 30 May 25.** (If due to any exigency, the due date for opening of the Bids is declared a closed holiday, the Bids will be opened on the next working day at the same time or on any other day/time, as intimated by this BUYER). The date of opening of Commercial Bids will be intimated after acceptance of Technical Bids.
4. **Location of the Tender Box.** Reception office of 'D' Block, Defence Offices Complex, Africa Avenue, New Delhi -110023.
5. **Place of opening of the Bid.** ***Directorate of Air Projects and Plans, Room No 514, 'D' Block, Defence Offices Complex, Africa Avenue, New Delhi -110023.*** The Bidders may depute their representatives, duly authorized in writing, to attend the opening of Bids on the due date and time. Rates and important Commercial/ Technical clauses quoted by all Bidders will be read out in the presence of the representatives of all the Bidders. This event will not be postponed due to non-presence of your representative.
6. **Two Bid System.** NA
7. **Forwarding of Bid.** Bid should be forwarded by Bidder under their original memo/ letter pad interlaid furnishing details like TIN number, VAT/CST number, Bank address with EFT Account (mandate form) and complete postal & e mail address of their office. If these details are not found in your quote, your quote will be invalid.
8. **Clarification regarding contents of the RFP.** A prospective bidder who requires clarification regarding the contents of the bidding documents shall notify to the BUYER in writing about the clarifications sought not later than **21 (Twenty One)** days prior to the date of opening of the Bids. Copies of the query and clarification by the purchaser will be sent to all prospective bidders who have received the bidding documents.
9. **Modification and Withdrawal of Bid.** A bidder may modify or withdraw his bid after submission provided that the written notice of modification or withdrawal is received by the BUYER prior to deadline prescribed for submission of bids. A withdrawal notice may be sent by fax but it should be followed by a signed confirmation copy to be sent by post and such signed confirmation should reach the purchaser not later than the deadline for submission of bids. No bid shall be modified after the deadline for submission of bids. No bid may be withdrawn in the interval between the deadline for submission of bids and expiration of the period of bid validity specified. Withdrawal of a bid during this period will result in Bidder's forfeiture of bid security.

10. **Clarification regarding contents of the Bid**: During evaluation and comparison of bids, the BUYER may, at its discretion, ask the bidder for clarification of his bid. The request for clarification will be given in writing and no change in prices or substance of the bid will be sought, offered or permitted. No post-bid clarification on the initiative of the bidder will be entertained.
11. **Rejection of Bid**. Canvassing by the Bidder in any form, unsolicited letter and post tender correction may invoke summary rejection with forfeiture of EMO. Conditional tenders will be rejected.
12. **Validity of Bids**: The Bids should remain valid till **180 days** from the last date of submission of the Bids.
13. **Earnest Money Deposit**. Bidders are required to submit Earnest Money Deposit (EMD) for amount equivalent to 2% of the quote along with their bids as applicable. The EMD may be submitted in the form of an Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the public sector banks or a private sector bank authorized to conduct government business as 171 per Form DPM-16 (Available in MoD website and can be provided on request). EMD is to remain valid for a period of forty-five days beyond the final bid validity period. EMD of the unsuccessful bidders will be returned to them at the earliest after expiry of the final bid validity and latest on or before the 30<sup>th</sup> day after the award of the contract. The Bid Security of the successful bidder would be returned, without any interest whatsoever, after the receipt of Performance Security from them as called for in the contract. EMD is not required to be submitted by those Bidders who are registered with the Central Purchase Organization (e.g. DGS&D), National Small Industries Corporation (NSIC) or any Department of MoD or MoD itself. The EMD will be forfeited if the bidder withdraws or amends impairs or derogates from the tender in any respect within the validity period of their tender.

## **Part II - Essential Details of Items/Services required**

1. **Schedule of Requirements.** Development of indigenous repair methodology for refurbishment of qty. 03 Integrated Standby Indicator System (ISIS), (Part No. 336MFD1-1) of MiG 29K/KUB aircraft as “**Proof of Concept**”.
2. **Scope of Work.** The scope of work involves establishment of comprehensive test, repair and refurbishment facilities for Integrated Stand-by Indicator System (ISIS). This should also include facility for disassembly of the unit modules into their respective sub modules/ sub components and carrying out depot level (repair) activities required for repair and refurbishment of ISIS. The broad scope include following:-
  - (a) Identifying the defect utilising the standard electrical and electronic tests/ fault analysis techniques available in the industry. The work is required to be undertaken by qualified technicians. Support document for qualified technicians may be submitted by the firm. Submission of repair methodology/ repair process undertaken to identify defective component will be required.
  - (b) Replacement of defective BDS by utilising MIL standard serviceable spares supplied by OEM/ OEM authorised vendor. Further colour photographs/ video recording of components replaced during the repairs may be submitted.
  - (c) Submission of report regarding details of testing, if any, carried out for combined indicator ISIS, Part NO. 336MFD1-1 in the firm premises. In case such test has been undertaken at firm premises, then details of the equipment utilised for testing and QA clearance/ calibration certificate (if applicable) of the test set may be submitted.
  - (d) Association of firm's engineers for functional, integration and user acceptance trials at NAY (Goa).
  - (e) Certificate of Conformity (CoC) issued by BDS supplier to be provided for traceability (Certificate for type and quality of BDS utilised).
  - (f) Inspection by Naval QA Agency would be undertaken post completion of repairs during User Acceptance trials.
  - (g) Certificate of origin (if imported spares are used).
  - (h) Warranty certificates (as applicable).
  - (i) Inspection clearance will include inspection for transit damage, correctness and completeness of item along with valid documents as per repair order.
  - (j) Post repair serviceability checks of items is to be carried out on test bench. In case non-availability of test bench, serviceability checks on aircraft (to ascertain the efficacy of repairs) through fitment of ISIS (336MFD1-1) on serviceable aircraft and assessment through ground checks and ten hours of flight operation.

3. **Technical Details.**

<b><u>Ser</u></b>	<b><u>Details</u></b>	<b><u>Remarks</u></b>
(a)	Technical details with technical parameters	<b>Enclosure - I</b>
(b)	Quality Test Procedure (QTP) and Acceptance Test Procedure (ATP)	
(c)	Requirement of installation/ Serviceability checks on test bench	Yes. Vendor team would be required to undertake installation/ Serviceability checks of the system at NAY (Goa).
(d)	Functional trials on aircraft	Yes. Based on test schedule for functional trials of the ISIS.
(e)	Requirement of Technical documentation	Yes (as applicable).
(f)	Requirement of pre-site / equipment inspection/ testing	Yes, as applicable by NAY(Goa)

4. **Eligibility Criteria**

(a) Only Indigenous firms based in India and possessing experience in professional deployment of technical manpower in projects undertaking design, development, repair, overhaul, reclamation & certification of electronic/ mechanical/ electromechanical/ airframe/ aero engine aggregates, avionics (as applicable) used in aircraft whose proposals have been shortlisted by the proposal review committee would be eligible.

(b) The following documents/ evidence are expected to be submitted by interested firms willing to partner with **IN** in their endeavor for '**Self Reliance in Maintenance**':-

(i) **Financial Capacity.** Details of the financial capability of the interested firms in the form of Balance Sheet and ITR of last three financial years including average turnover, certified by a CA.

(ii) **Certification.** Details of ISO 9001/ AS 9100/ DGAQA/ CEMILAC/ RCMA/ RAQAS (GOA)/ Design & Development Agency certification by appropriate agency.

(iii) **Registration.** Details of registration status of the firm as per Companies Act including MSME/ NSIC certification, if any.

(c) **Work Experience.** Following will be considered for evaluation of work experience by the firm:-

- (i) Experience of repair/ refurbishment of Avionics items of Russian origin.
- (ii) Experience of working with ADA on LCA/ TEDBF on similar systems/ components
- (iii) Experience in successful deployment of human resource in undertaking indigenous development/ Repair Reclamation tasks with Defence, Govt, PSUs or any other agencies
- (iv) Details of current/ similar projects in hand, their valuation and completion dates.

(d) **Technical Capability.** The firm responding to RFP should have the following pre-qualification and must submit documents to support their eligibility.

- (i) Must possess experience in proven human and machine/ equipment resources deployment and knowledge about aeronautical design, development, repair, overhaul, reclamation & certification of electronic/ mechanical/ electro mechanical/ airframe/ aero engine aggregates, avionics (as applicable).
- (ii) Familiarity with the supply chains for aeronautical quality components and materials, special tools and machinery.
- (iii) Manufacturing and fabrication facility/ outsourcing (indicate plan and extent of outsourcing) as applicable to the project.
- (iv) In-house test facilities / outsourcing (indicate plan and extent of outsourcing) as applicable to the project.

(e) The following, specifically while deploying technical manpower, are to be noted:

- (i) The mentioned activities shall be carried out at **IN/** company premises, by the industrial partner.
- (ii) Personnel deployed must have basic knowledge of handling life support equipment and accessories and should be aware of safety precautions/ instructions as applicable.
- (iii) Health and safety of industrial partner's personnel deployed on any activity would be the responsibility of the industrial partner. Requisite Personnel Protective Equipment (to be provisioned by the industry partner) are to be worn by the personnel working as required.
- (iv) The industrial partner needs to indemnify NAY(Goa) / **IN** against any injuries to personnel due to accidents/ incidents caused by human error on the part of the personnel employed for the work by the partner.

5. **Compliance Matrix.** Bidder is required to furnish clause- by- clause compliance of specification bringing out clearly deviations from specification, if any. The

Bidder is advised to submit the compliance statement in the following format:-

Para of RFP specification s item-wise	Specification item offered	Compliance to RFP Specification whether Yes/ NO	In case of Non- compliance, deviation from RFP to be specified in unambiguous terms
---------------------------------------	----------------------------	---	---

6. **Delivery Period.** “Development of indigenous repair methodology for Refurbishment of qty. 03 Integrated Standby Indicator System (ISIS), (Part No. 336MFD1-1) of MiG 29K/KUB aircraft as “Proof of Concept” including flight trials and necessary clearance by CEMILAC/ RCMA/ IN agencies, will be completed by the Bidder within a period of **12 months** from the date of signing the contract. The date of work completion would be the date of acceptance of repaired Integrated Standby Indicator System (**ISIS**) unit at NAY (Goa).

7. **INCOTERMS for Delivery and Transportation.** Unless otherwise specifically agreed to by the Buyer and the Seller and incorporated in the contract, the applicable rules & regulations for transportation of goods will be as per the contemporary version of International Commercial Terms (INCOTERMS) evolved by International Chamber of Commerce, Paris. Definition of Delivery terms for this contract/ supply order is as given below:-

<u>TERMS OF DELIVERY</u>	<u>DATE OF DELIVERY</u>
Local Delivery at site {NAY (GOA)} (Inclusive all transportation and transit insurance)	The date on which the delivery is made at the consignee's site mentioned in the contract.

8. **Consignee details.**

**The Commodore Superintendent  
Naval Aircraft Yard  
Dabolim, Goa - 403801  
Tel. 0832 - 2585701  
Email. naygoa-navy@nic.in  
Fax: 0831- 2532405**



### **Part III - Standard Conditions of RFP**

**The Bidder is required to give confirmation of their acceptance of the Standard Conditions of the Request for Proposal mentioned below which will automatically be considered as part of the Contract concluded with the successful Bidder (i.e. Seller in the Contract) as selected by the Buyer. Failure to do so may result in rejection of the Bid submitted by the Bidder.**

1. **Law:** The Contract shall be considered and made in accordance with the laws of the Republic of India. The contract shall be governed by and interpreted in accordance with the laws of the Republic of India.

2. **Effective Date of the Contract:** The contract shall come into effect on the date of signatures of both the parties on the contract (Effective Date) and shall remain valid until the completion of the obligations of the parties under the contract. The deliveries, supplies and performance of the services shall commence from the effective date of the contract.

3. **Arbitration:** All disputes or differences arising out of or in connection with the Contract shall be settled by bilateral discussions. Any dispute, disagreement or question arising out of or relating to the Contract or relating to construction or performance, which cannot be settled amicably, may be resolved through arbitration. The standard clause of arbitration is as per Form DPM-7 (Available in MOD website and can be provided on request).

4. **Penalty for use of Undue influence:** The Seller undertakes that he has not given, offered or promised to give, directly or indirectly, any gift, consideration, reward, commission, fees, brokerage or inducement to any person in service of the Buyer or otherwise in procuring the Contracts or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of the present Contract or any other Contract with the Government of India for showing or forbearing to show favor or disfavor to any person in relation to the present Contract or any other Contract with the Government of India. Any breach of the aforesaid undertaking by the Seller or any one employed by him or acting on his behalf (whether with or without the knowledge of the Seller) or the commission of any offers by the Seller or anyone employed by him or acting on his behalf, as defined in Chapter IX of the Indian Penal Code, 1860 or the Prevention of Corruption Act, 1986 or any other Act enacted for the prevention of corruption shall entitle the Buyer to cancel the contract and all or any other contracts with the Seller and recover from the Seller the amount of any loss arising from such cancellation. A decision of the Buyer or his nominee to the effect that a breach of the undertaking had been committed shall be final and binding on the Seller. Giving or offering of any gift, bribe or inducement or any attempt at any such act on behalf of the Seller towards any officer/employee of the Buyer or to any other person in a position to influence any officer/employee of the Buyer for showing any favor in relation to this or any other contract, shall render the Seller to such liability/ penalty as the Buyer may deem proper, including but not limited to termination of the contract, imposition of penal damages, forfeiture of the Bank Guarantee and refund of the amounts paid by the Buyer.

5. **Agents / Agency Commission:** The Seller confirms and declares to the Buyer that the Seller is the original manufacturer of the stores/ provider of the services referred to in this Contract and has not engaged any individual or firm, whether Indian or foreign whatsoever, to intercede, facilitate or in any way to recommend to the Government of India or any of its functionaries, whether officially or unofficially, to the award of the

contract to the Seller; nor has any amount been paid, promised or intended to be paid to any such individual or firm in respect of any such intercession, facilitation or recommendation. The Seller agrees that if it is established at any time to the satisfaction of the Buyer that the present declaration is in any way incorrect or if at a later stage it is discovered by the Buyer that the Seller has engaged any such individual/firm, and paid or intended to pay any amount, gift, reward, fees, commission or consideration to such person, party, firm or institution, whether before or after the signing of this contract, the Seller will be liable to refund that amount to the Buyer. The Seller will also be debarred from entering into any supply Contract with the Government of India for a minimum period of five years. The Buyer will also have a right to consider cancellation of the Contract either wholly or in part, without any entitlement or compensation to the Seller who shall in such an event be liable to refund all payments made by the Buyer in terms of the Contract along with interest at the rate of 2% per annum above LIBOR rate. The Buyer will also have the right to recover any such amount from any contracts concluded earlier with the Government of India.

6. **Access to Books of Accounts:** In case it is found to the satisfaction of the Buyer that the Seller has engaged an Agent or paid commission or influenced any person to obtain the contract as described in clauses relating to Agents/Agency Commission and penalty for use of undue influence, the Seller, on a specific request of the Buyer, shall provide necessary information/ inspection of the relevant financial documents/information.

7. **Non-disclosure of Contract documents:** Except with the written consent of the Buyer/ Seller, other party shall not disclose the contract or any provision, specification, plan, design, pattern, sample or information thereof to any third party.

8. **Liquidated Damages:** In the event of the Seller's failure to submit the Bonds, Guarantees and Documents, supply the stores/goods and conduct trials, installation of equipment, training, etc as specified in this contract, the Buyer may, at his discretion, withhold any payment until the completion of the contract. The BUYER may also deduct from the SELLER as agreed, liquidated damages to the sum of 0.5% of the contract price of the delayed/ undelivered stores/ services mentioned above for every week of delay or part of a week, subject to the maximum value of the Liquidated Damages being not higher than **10%** of the value of delayed stores/ services.

9. **Termination of Contract:** The Buyer shall have the right to terminate this Contract in part or in full in any of the following cases: -

(a) The delivery of the material/ services to be offered is delayed for causes not attributable to Force Majeure for more than **03 months** after the scheduled date of delivery.

(b) The Seller is declared bankrupt or becomes insolvent.

(c) The delivery of material/ services to be offered is delayed due to causes of Force Majeure by more than **06 months** provided Force Majeure clause is included in the contract.

(d) The Buyer has noticed that the Seller has utilised the services of any Indian/Foreign agent in getting this contract and paid any commission to such individual/company etc.

(e) As per decision of the Arbitration Tribunal.

10. **Notices.** Any notice required or permitted by the contract shall be written in the English language and may be delivered personally or may be sent by FAX or registered pre-paid mail/airmail, addressed to the last known address of the party to whom it is sent.
11. **Transfer and Sub-letting.** The Seller has no right to give, bargain, sell, assign or sublet or otherwise dispose of the Contract or any part thereof, as well as to give or to let a third party take benefit or advantage of the present Contract or any part thereof.
12. **Patents and other Industrial Property Rights.** The prices stated in the present Contract shall be deemed to include all amounts payable for the use of patents, copyrights, registered charges, trademarks and payments for any other Industrial property rights. The Seller shall indemnify the Buyer against all claims from a third party at any time on account of the infringement of any or all the rights mentioned in the previous paragraphs, whether such claims arise in respect of manufacture or use. The Seller shall be responsible for the completion of the supplies including spares, tools, technical literature and training aggregates irrespective of the fact of infringement of the supplies, irrespective of the fact of infringement of any or all the rights mentioned above.
13. **Amendments.** No provision of present Contract shall be changed or modified in any way (including this provision) either in whole or in part except by an instrument in writing made after the date of this Contract and signed on behalf of both the parties and which expressly states to amend the present Contract.
14. **Taxes and Duties.** All taxes, duties, statutory levies and charges which are to be paid for the delivery of goods outside India shall be paid by the SELLER and all taxes, duties, statutory levies and charges e.g. Custom duty /CST/VAT/GST/Service Tax etc which are to be paid inside India are to be paid by the BUYER as applicable.

#### **Part IV - Special Conditions of RFP**

**The Bidder is required to give confirmation of their acceptance of Special Conditions of the RFP mentioned below which will automatically be considered as part of the Contract concluded with the successful Bidder (i.e. Seller in the Contract) as selected by the Buyer. Failure to do so may result in rejection of Bid submitted by the Bidder.**

1. **Performance Guarantee:** The Bidder will be required to furnish a Performance Guarantee by way of Bank Guarantee through a public sector bank or a private sector bank authorized to conduct government business (ICICI Bank Ltd., Axis Bank Ltd or HDFC Bank Ltd.) for a sum equal to 05 % of the Supply Order value within 30 days of signing of this Supply Order/ contract. Performance Bank Guarantee will be valid up to 60 days beyond the date of warranty of the repaired unit or upto 26 months from the date of signing of contract, whichever is earlier. The specimen of PBG is given in Form DPM15, enclosed to Part-IV of this Supply Order.

2. **Payment Terms for Indigenous Sellers.** 100% payment would be made on completion of trials and acceptance of LRUs post refurbishment. It will be mandatory for the Bidders to indicate their bank account numbers and other relevant e-payment details so that payments could be made through ECS/EFT mechanism instead of payment through cheques, wherever feasible. A copy of the model mandate form prescribed by RBI to be submitted by Bidders for receiving payments through ECS is at Form DPM-11 (Available in MoD website and can be given on request). The payment will be made on production of the requisite documents.

3. **Advance Payments.** **No advance payment(s) will be made.**

4. **Paying Authority.** The payments would be made through **CDA (Navy & CG), RK Puram, New Delhi.** The payment of bills will be made on submission of the following documents by the Seller to the Paying Authority along with the bill:-

- (a) 03 Ink-signed copy of Commercial invoice / Seller's bill.
- (b) Copy of Supply Order/Contract with U.O. number and date of IFAs concurrence, where required under delegation of powers.
- (c) JRI report / CRV / work completion / user acceptance certificate (as deemed fit) issued by *IN* agencies in triplicate.
- (d) Inspection note in triplicate.
- (e) Claim for statutory and other levies to be supported with requisite documents / proof of payment such as Excise duty challan, Customs duty clearance certificate, Octroi receipt, proof of payment for EPF/ESIC contribution with nominal roll of beneficiaries, etc as applicable.
- (f) Exemption certificate for Customs duty, if applicable.
- (g) Bank guarantee for advance, if any.
- (h) Guarantee/ Warranty certificate.

- (i) Performance Bank Guarantee.
- (j) DP extension letter with CFAs sanction, U.O. number and date of IFAs concurrence, where required under delegation of powers, indicating whether extension is with or without LD.
- (k) Details for electronic payment viz Account holder's name, Bank name, Branch name and address, Account type, Account number, IFSC code, MICR code (if these details are not incorporated in supply order/contract).
- (l) Any other document/certificate that may be provided for in the Supply Order/Contract.
- (m) User acceptance.
- (n) Xerox copy of PBG.

5. **Fall clause.** The following Fall clause will form part of the contract placed on successful Bidder:-

(a) The price charged for the stores supplied/ services rendered under the contract by the Seller shall in no event exceed the lowest prices at which the contractor sells the stores or offers to sell stores of identical description to any persons/Organisations including the purchaser or any department of the Central government or any Department of the State government or any statutory undertaking of the Central or State government, as the case may be, during the period or till the performance of all Supply Orders placed during the currency of the rate contract is completed”.

(b) If at any time, during the said period the Seller reduces the sale price, sells or offer to sell such stores to any person/organisation including the Buyer or any Deptt, of central Govt. or any Department of the State Government or any Statutory undertaking of the Central or state Government as the case may be at a price lower than the price chargeable under the contract, he shall forthwith notify such reduction or sale or offer of sale to the Purchase/ Contracting authority and the price payable under the contract for the stores of such reduction of sale or offer of the sale shall stand correspondingly reduced. The above stipulation will, however, not apply to:-

- (i) Exports by the Seller.
  - (ii) Sale of goods as original equipment at price lower than the prices charged for normal replacement.
  - (iii) Sale of goods such as drugs which have expiry dates.
  - (iv) Sale of goods at lower price on or after the date of completion of sale/placement of the order of goods by the authority concerned under the existing or previous Rate Contracts as also under any previous contracts entered into with the Central or State Govt. Depts., including their undertakings excluding joint sector companies and/or private parties and bodies.
- (c) The Seller shall furnish the following certificate to the Paying Authority along with each bill for payment for supplies made against the Rate contract – “We certify

that there has been no reduction in sale price of the stores of description identical to the stores supplied to the Government under the contract herein and such stores have not been offered/sold by me/us to any person/organisation including the purchaser or any department of Central Government or any Department of a state Government or any Statutory Undertaking of the Central or state Government as the case may be upto the date of bill/the date of completion of supplies against all supply orders placed during the currency of the Rate Contract at price lower than the price charged to the government under the contract except for quantity of stores/ categories under sub-clauses (i), (ii), (iii) and (iv) of sub-para (b) above details of which are given below - .....

6. **Risk & Expense clause:**

(a) Should the stores or any installment thereof not be delivered within the time or times specified in the contract documents, or if defective delivery is made in respect of the stores or any installment thereof, the Buyer shall after granting the Seller 45 days to cure the breach, be at liberty, without prejudice to the right to recover liquidated damages as a remedy for breach of contract, to declare the contract as cancelled either wholly or to the extent of such default.

(b) Should the stores or any installment thereof not perform in accordance with the specifications/parameters provided by the SELLER during the check proof tests to be done in the BUYERS country, the BUYER shall be at liberty, without prejudice to any other remedies for breach of contract, to cancel the contract wholly or to the extent of such default.

(c) In case of a material breach that was not remedied within 45 days, the BUYER shall, having given the right of first refusal to the SELLER be at liberty to purchase, manufacture, or procure from any other source as he thinks fit, other stores of the same or similar description to make good: -

(i) Such default.

(ii) In the event of the contract being wholly determined the balance of the stores remaining to be delivered there under.

(d) Any excess of the purchase price, cost of manufacturer, or value of any stores procured from any other supplier as the case may be, over the contract price appropriate to such default or balance shall be recoverable from the SELLER. Such recoveries shall not exceed **10%** of the value of the contract.”

7. **Force Majeure clause.**

(a) Neither party shall bear responsibility for the complete or partial non-performance of any of its obligations (except for failure to pay any sum which has become due on account of receipt of goods under the provisions of the present contract), if the non-performance results from such Force Majeure circumstances as Flood, Fire, Earth Quake and other acts of God as well as War, Military operation, blockade, Acts or Actions of State Authorities or any other circumstances beyond the parties control that have arisen after the conclusion of the present contract.

(b) In such circumstances the time stipulated for the performance of an obligation under the present contract is extended correspondingly for the period of time of action of these circumstances and their consequences.

(c) The party for which it becomes impossible to meet obligations under this contract due to Force Majeure conditions, is to notify in written form the other party of the beginning and cessation of the above circumstances immediately, but in any case not later than **30 (thirty)** days from the moment of their beginning.

(d) Certificate of a Chamber of Commerce (Commerce and Industry) or other competent authority or organization of the respective country shall be a sufficient proof of commencement and cessation of the above circumstances.

(e) If the impossibility of complete or partial performance of an obligation lasts for more than **6 (six) months**, either party hereto reserves the right to terminate the contract totally or partially upon giving prior written notice of **30 (thirty)** days to the other party of the intention to terminate without any liability other than reimbursement on the terms provided in the agreement for the goods received.

8. **Specification.** The following Specification clause will form part of the contract placed on successful Bidder - The Seller guarantees to meet the specifications as per Part - II of RFP and to incorporate the modifications to the existing design configuration to meet the specific requirement of the Buyer Services as per modifications/ requirements recommended after the Ground/ Flight Trials. All technical literature shall be amended as the modifications by the Seller before supply to the Buyer. The Seller, in consultation with the Buyer, may carry out technical upgradation/ alterations in the design, drawings and specifications due to change in manufacturing procedures, indigenization or obsolescence. This will however, not in any way, adversely affect the end specifications of the equipment. Changes in technical details, drawings repair and maintenance techniques along with necessary tools as a result of upgradation/ alterations will be provided to the Buyer free of cost within 30 days of affecting such upgradation/alterations.

9. **Earliest Acceptable Year of Manufacture.** NA

10. **Transportation.** All the cost towards movement/ transportation of Seller personnel/ equipment between Goa and Seller site or any other location towards development of repair methodology/ trials will be borne by the Seller. Cost towards delivery of the repaired unit to NAY(Goa) inclusive all transportation and transit insurance will be borne by the firm undertaking repairs.

11. **Packing and Marking.** The following Packing and Marking clause will form part of the contract placed on successful Bidder -

(a) The Seller shall provide packing and preservation of the equipment and spares/goods contracted so as to ensure their safety against damage in the conditions of land, sea and air transportation, transshipment storage and weather hazards during transportation, subject to proper cargo handling. The Seller shall ensure that the stores are packed in containers, which are made sufficiently strong, and with seasoned wood. The packing cases should have hooks for lifting by crane/fork lift truck, in case applicable. Tags with proper marking shall be fastened to the special equipment, which cannot be packed.

(b) The packing of the equipment and spares/goods shall conform to the requirements of specifications and standards in force in the territory of the Seller's country.

(c) Each spare, tool and accessory shall be packed in separate cartons. A label in English shall be pasted on the carton indicating the under mentioned details of the item contained in the carton. A tag in English with said information shall also be attached to six samples of the item. If quantity contracted is less than six then tag shall be affixed to complete quantity contracted of the item. The cartons shall then be packed in packing cases as required.

- (i) Part Number :
- (ii) Nomenclature:
- (iii) Contract annex number:
- (iv) Annex serial number:
- (v) Quantity contracted :

(d) One copy of the packing list in English shall be inserted in each cargo package, and the full set of the packing lists shall be placed in Case No.1 painted in a yellow colour.

(e) The Seller shall mark each package with indelible paint in the English language as follows:-

- (i) EXPORT
- (ii) Contract No. -----
- (iii) Consignee -----
- (iv) Port I airport of destination -----
- (v) Ultimate consignee -----
- (vi) SELLER -----
- (vii) Package No. -----
- (viii) Gross/net weight : -----
- (ix) Overall dimensions/volume : -----
- (x) The Seller's marking.

(f) If necessary, each package shall be marked with warning inscriptions: <Top>, "Do not turn over", category of cargo etc.

(g) Should any special equipment be returned to the Seller by the Buyer, the latter shall provide normal packing, which protects the equipment and spares/goods from the damage of deterioration during transportation by land, air or sea. In this case the Buyer shall finalize the marking with the Seller.

12. **Quality**. The quality of the stores delivered according to the present Contract shall correspond to the technical conditions and standards valid for the deliveries of the same stores for in Seller's country or specifications enumerated as per RFP and shall also include therein modification to the stores suggested by the Buyer. Such modifications will be mutually agreed to. The Seller confirms that the stores to be supplied under this Contract shall be new i.e. not manufactured before 2023 and shall incorporate all the latest improvements and modifications thereto and spares of improved and modified equipment are backward integrated and interchangeable with same equipment supplied by the Seller in the past if any. The Seller shall supply an interchangeability certificate along with the



changed part numbers wherein it should be mentioned that item would provide as much life as the original item.

13. **Quality Assurance.** Seller would provide the Standard Acceptance Test Procedure (ATP) and/ or QTP within **01 months** from of contract, cleared by **relevant stakeholder's i.e IN QA Agency {RAQAS (Goa)}**. Buyer reserves the right to modify the ATP and/or QTP. Seller would be required to provide all test facilities at his premises for acceptance and inspection by Buyer. The details in this regard will be coordinated during the negotiation of the contract. The items/ spares used should be of the latest manufacture, conforming to the current production standard and having 100% defined life at the time of delivery.

14. **Inspection Authority.** The inspection will be carried out by RAQAS(Goa) or any other Naval agency designated by user. The mode of inspection will be user inspection/Joint inspection.

15. **Joint Receipt Inspection.** The following Joint Receipt Inspection clause will form part of the contract placed on successful bidder: -

(a) The Parties agree that the Joint Receipt Inspection (JRI) of delivered goods shall be conducted on arrival in India at a location nominated by the Buyer. JRI shall be completed within 90 days of arrival of good at the Port Consignee. JRI will consist of: -

(i) Quantitative checking to verify that the quantities of the delivered goods correspond to the quantities defined in this contract and the invoices.

(ii) Complete functional checking of the stores/equipment as per specifications in the contract and as per procedures and tests laid down by Buyer but functional checking of spares shall not be done.

(b) JRI will be carried out by the Buyer's representative(s). The Buyer will invite the Seller with a prior notice of a minimum of (15) days to attend the JRI for the delivered goods. The bio data of the Seller's representative will need to be communicated fifteen (15) days prior to the dispatch of goods to the Buyer for obtaining necessary security clearance in accordance with the rules applicable in the Buyer's country.

(c) Upon completion of each JRI, JRI proceedings and Acceptance Certificate will be signed by both the parties. In case the Seller's representative is not present, the JRI proceedings and Acceptance Certificate shall be signed by the Buyer's representative only and the same shall be binding on the Seller. Copy of JRI proceedings and Acceptance Certificate shall be dispatched to the Seller within 30 days of completion of the JRI. In case of deficiencies in quantity and quality or defects, details of these shall be recorded in the JRI proceedings, Acceptance Certificate shall not be issued and claims raised as per Article on Claims in the contract. In case of claims, Acceptance Certificate shall be issued by the Buyer's representative after all claims raised during JRI are settled. If the Buyer does not perform the JRI as mentioned above for reasons exclusively attributable to him, the JRI in India shall be deemed to have been performed and the stores/ equipment fully accepted.

16. **Franking clause.** The following Franking clause will form part of the contract placed on successful Bidder –

**Franking Clause in the case of Acceptance of Goods** “The fact that the goods have been inspected after the delivery period and passed by the Inspecting Officer will not have the effect of keeping the contract alive. The goods are being passed without prejudice to the rights of the Buyer under the terms and conditions of the contract”.

**Franking Clause in the case of Rejection of Goods** “The fact that the goods have been inspected after the delivery period and rejected by the Inspecting Officer will not bind the Buyer in any manner. The goods are being rejected without prejudice to the rights of the Buyer under the terms and conditions of the contract.”

17. **Claims.** The following Claims clause will form part of the contract placed on successful Bidder: -

- (a) The claims may be presented either: -
  - (i) On quantity of the stores, where the quantity does not correspond to the quantity shown in the Packing List/Insufficiency in packing, or
  - (ii) On quality of the stores, where quality does not correspond to the quality mentioned in the contract.
- (b) The quantity claims for deficiency of quantity shall be presented within 45 days of completion of JRI and acceptance of goods. The quantity claim shall be submitted to the Seller as per form DPM - 22 (Available in MoD website and can be given on request).
- (c) The quality claims for defects or deficiencies in quality noticed during the JRI shall be presented within 45 days of completion of JRI and acceptance of goods. Quality claims shall be presented for defects or deficiencies in quality noticed during warranty period earliest but not later than 45 days after expiry of the guarantee period. The quality claims shall be submitted to the Seller as per Form DPM - 23 (Available in MoD website and can be given on request).
- (d) The description and quantity of the stores are to be furnished to the seller along with concrete reasons for making the claims. Copies of all the justifying documents shall be enclosed to the presented claims. The Seller will settle the claims within 45 days from the date of the receipt of the claim at the Seller's office, subject to acceptance of the claim by the Seller. In case no response is received during this period the claim will be deemed to have been accepted.
- (e) The Seller shall collect the defective or rejected goods from the location nominated by the Buyer and deliver the repaired or replaced goods at the same location under Seller's arrangement.
- (f) Claims may also be settled by reduction of cost of goods under claim from bonds submitted by the Seller or payment of claim amount by Seller through demand draft drawn on an Indian Bank, in favour of Principal Controller/Controller of Defence Accounts concerned.

(g) The quality claims will be raised solely by the Buyer and without any certification/countersignature by the Seller's representative stationed in India.

18. **Warranty.** The following warranty will form part of the contract placed on successful Bidder and will cover repair work undertaken by the Bidder as part of Development of indigenous repair methodology for Refurbishment of qty. 03 Integrated Standby Indicator System (ISIS), (Part No. 336MFD1-1) of MiG 29K/KUB aircraft: -

(a) The Seller warrants that the goods supplied under the contract conform to technical specifications prescribed and shall perform according to the said technical specifications.

(b) The Seller warrants for a period of **12 months** for the repair work undertaken by him (including replacement of spares) from the date of acceptance of stores by Buyer's authorized representative that the goods/stores supplied under the contract and each component used in the repair methodology thereof shall be free from all types of defects/failures.

(c) If within the period of warranty, the goods are reported by the Buyer to have failed to perform as per the specifications, the Seller shall either repair/ replace / rectify defective components (part of repair methodology) within a maximum period of **45 days** of acceptance of warranty claim by the Seller, provided that the goods are used and maintained by the Buyer as per instructions contained in the Operating Manual/ or intimated by the Seller. **Warranty of the equipment would be extended by such duration of downtime.** Record of the down time would be maintained by the user in the logbook. Spares required for warranty repairs shall be provided free of cost by the Seller. The Seller also undertakes to diagnose, test, adjust, calibrate and repair/replace the goods/equipment arising due to accidents by neglect or misuse by the operator or damage due to transportation of the goods during the warranty period, at the cost mutually agreed to between the Buyer and the Seller.

(d) During the warranty period, the seller shall provide DI/DR assistance (telephonically/ VC/ written correspondence) for defects encountered during operational exploitation. In the event of defects warranting maintenance beyond the preview of **IN** capacity, onsite assistance is to be provided by the seller within a period of 07 days from the date of formal intimation by **IN**.

(e) The seller shall associate technical personnel of the Maintenance agency and Quality Assurance Agency of the Buyer during warranty repair and shall also provide the details of complete defects, reasons and remedial actions for defects.

(f) If a particular equipment/ goods-fails frequently and/or the cumulative down time exceeds 20% of the warranty period due to defects within the scope of repair work undertaken by the Seller, complete replacement of defective items/ spares shall be undertaken free of cost by the Seller within a stipulated period of **90 days** of receipt of the notification from the Buyer. Warranty of the replaced items/spares would start from the date of acceptance by the Buyer.

19. **Product Support.** NA

## **Part V- Evaluation Criteria & Price Bid issues**

1. **Evaluation Criteria**. The broad guidelines for evaluation of Bid will be as follows:
  - (a) The Bid will be evaluated if found to be fulfilling all the eligibility and qualifying requirements of the RFP, both technically and commercially.
  - (b) The Bids forwarded by the Bidders will be evaluated by the Buyer with reference to the technical characteristics of the equipment as mentioned in the RFP. The compliance of Bids would be determined on the basis of the parameters specified in the RFP.
  - (c) The Commercial bid should include following: -
    - (i) Cost for supply of items as per quantities mentioned in part II of the RFP with their sub systems and accessories; supply of necessary documentation, books, manuals, and essential equipment / tools for undertaking day to day operations and maintenance of all the systems.
    - (ii) Design and development of integration scheme, related documentation, trials, testing, certification, etc.
    - (iii) Administrative charges related to deputation of personnel to /IN units.
  - (d) The Bidder is required to spell out the rates of Customs duty, Excise duty, GST, etc as applicable in unambiguous terms.
  - (e) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected. If there is a discrepancy between words and figures. The amount in words will prevail for calculation of price.
  - (f) The Bid if acceptable will be considered further for placement of contract / Supply Order after complete clarification and price negotiations as decided by the Buyer. The Buyer will have the right to award contracts to different Bidders for being lowest in particular items. The Buyer also reserves the right to do Apportionment of Quantity, if it is convinced that Lowest Bidder is not in a position to supply full quantity in stipulated time.
  - (g) No MOQ to be quoted.

2. **Price Bid Format.** The Price Bid Format is given below and Bidders are required to fill this up correctly with full details: -

Sl.	Items	Qty	Unit cost	Total Cost	Indicative Rates of Taxes & duties		Total Cost including Taxes
					IGST/ GST (%)	Custom Duty (%)	
(a)	Development of indigenous repair methodology for refurbishment of qty. 03 Integrated Standby Indicator System (ISIS), (Part No. 336MFD1-1) of MiG 29K/KUB aircraft						
(b)	(any other cost as applicable)						
(c)	(any other cost as applicable)						
	<b>Total Cost (Total of Serial (a) to ____)</b>						
	<b>Total Cost</b>						

**TECHNICAL SPECIFICATION INTEGRATED STAND-BY INDICATOR SYSTEM (ISIS),**  
**PT NO. 336MFD1-1**

**Introduction**

1. The combined Indicator of Integrated Standby Indicator System (ISIS) is a line replaceable unit (LRU) used as a backup system if a failure in the aircraft's primary flight displays or sensors occur. In normal operation mode the ISIS displays the following: -

- (a) ILS – Glideslope (DDM) and Localizer (DDM)
- (b) VMO/MMO Indication and Exceedance Warning.

2. The magnetic heading is received from an external magnetometer through the RS422 serial data link. Alignment requests are received through an interface with an external repeater unit. The ILS display information is received from an external source through the ISIS ARINC 429 bus. The internal ISIS sensors give all other information. The ISIS is compliant to MIL-STD-3009 and compatible with night vision goggles (NVG) gen III, Type-1 or 2, Class-B or C Google.

**Description**

3. The Functions, output and modes required in the equipment are enumerated in the succeeding paragraphs.

4. Major assemblies include bezel and tube, attitude bay, motherland and pressure bay. The pressure bay assembly should have two ports for the pitot and static pressure quick release pneumatic connectors.

5. The other modules and sensors are as follows: -

- (a) The LCD display with heater, brightness control, NVG and diffuser filters.
- (b) **Pressure Sensors**. The static and differential pressure sensors are to be connected to the aircraft pitot/static system. The static pressure sensor operating range should not be less 1100 MB and the differential pressure sensor operating range should not be less than 2000 MB. The sensor output are to be digitized using analog to digital converters (ADC).

- (c) **Rate and Acceleration Sensors.** The three rate sensors (Pitch, Roll and Yaw) are to be installed with the sensitive axes perpendicular to each other. The rate and acceleration sensor signals are to be digitized.
- (d) **Graphics Processor.** It provides graphics data from the local bus to the LCD display. The graphics processor should control the RS422 interface that is used with an external magnetometer and for reprogramming the operational flight program (OFP) that is stored in the flash memory.
- (e) **Altitude Indicator.** The altitude indicator should have dynamic tape and indicator window. Altitude is to be displayed to the nearest 20 ft as a 5-digit display.
- (f) **Indicated Airspeed Indicator.** The airspeed units should be displayed in knots (kph) or Kilometers per hours (kph) which is to be configurable through settings.
- (g) **Vertical Velocity Indicator.** The vertical velocity is to be displayed in ft/min or m/min (set by table configuration settings).
- (h) **Mach Indicator.** The mach indicator is to active when the aircraft reaches 0.4M.
- (j) **Baroscale Indicator.** The imperial units are to be displayed as in Hg. The metric units are displayed as mb or Pa.
- (k) **Roll Pointer and Scale.** The roll scale is to be an arc of 60<sup>0</sup> with white markings set about the center line above the aircraft symbol.
- (l) **Slip/Skid Indicator.** The slip/skid indicator is to move left or tight depending upon the level and direction of slip/skid to a maximum of  $\pm 0.128$  g.
- (m) **Heading Indicator.** The heading indicator should have a dynamic horizontal tape which displays the full magnetic heading range of 0 to 359<sup>0</sup>.
- (n) **Pitch Ladder.** The ladder should indicator pitch with reference to the aircraft symbol. During inverted flight, the pitch ladder is displayed inverted.
- (p) The Technical specifications of Magnetometer are as follows: -
  - (i) Dimensions 85 x 436 mm
  - (ii) Weight 0.58 kg
  - (iii) Power Voltage 27V, Power not more than 5W
  - (iv) Warm-up time not more than 3 Minutes

6. The equipment has following modes of operation: -

- (a) ILS Mode
- (b) Power up Mode
- (c) Cold Alignment Mode
- (d) Brightness Mode
- (e) Menu Mode
- (f) Maintenance Mode – Maintenance mode should display the following information/functions: -
  - (i) Unit configuration data
  - (ii) Elapsed time
  - (iii) Program pin status
  - (iv) Fault status
  - (v) Allow fault data to be cleared
  - (vi) Allow Initiated BIT to be started
  - (vii) Performs magnetometer calibration.
- (g) Calibration Mode – Calibration Mode should only be done on a test bench.

7. The equipment has following caution/ warnings: -

- (a) Attitude Warning and Failure
- (b) Critical Failure
- (c) Airspeed Failure
- (d) Altitude Failure
- (e) Heading Failure
- (f) Bar scale Indicator Failure
- (g) Mach Failure
- (h) Vertical velocity Indicator Failure
- (j) ILS Glideslope Failure
- (k) ILS Localizer Failure



## **Specifications**

### **9. Physical Dimensions**

- (a) Length (Including knobs and electrical connector) – 276.86 mm
- (b) Width – 83.31 mm
- (c) Height – 83.31 mm
- (d) Weight – Not more than 1.81 Kg

### **10. Functional Parameters**

- (a) Unit Input Voltage (working range): 28 V DC (16 to 32 V DC)
- (b) Heater Input Voltage: 28 V DC
- (c) Lighting Bus Consumption: 25 W (maximum) at 28 V DC
- (e) Heater Power Consumption: 25 W (maximum) at 28 V DC

10. **Operating Envelope.** The equipment should render satisfactory performance in complete operating envelope of aircraft. This includes, but is not limited to, complying to operate up to envelope comprising altitude, speed, g load and environmental conditions of the aircraft. These are enumerated below: -

Sl.	Attribute	Range
(a)	Comprising altitude	18000 mts
(b)	Speed	1400 kmph/ 1.98 Mach
(c)	G Load	(a) Mach below 0.85 : +8g to – 3g (b) Mach below 0.95 : +6g to – 1.5g (c) Mach below 0.95 : +6g to – 2g
(d)	Environmental conditions	-40 to +55°C

### **Qualification Test Requirement**

11. The Qualification Tests and procedures are enumerated at succeeding paragraphs. CoC along with test report from NABL accredited laboratory, containing acceptance test criteria will be scrutinized prior to commencement of trials.

- (a) Power Supply test as per MIL - 704 F
- (b) EMI/EMC tests as per MIL - 461 E
- (c) Component/ PCB Screening – As per directives issued by CEMILAC 5390/1 dated 10 Jan 2004.
- (d) Environmental Stress Screening (ESS) as per MIL – 2164 – as per Quality directives issued by DGAQA 04-03/2015 or Latest

(e) Environmental tests gives below as per MIL – STD – 810F or equivalent: -

(i)	<b>Low Pressure (Altitude)</b>	As per MIL – STD – 810F
(ii)	<b>High Temperature</b>	As per MIL – STD – 810F (a) Storage: +85°C (b) Operating: +71°C
(iii)	<b>Low Temperature</b>	As per MIL – STD – 810F (a) Storage: -55°C (b) Operating: -40°C (c) Duration – 1 cycle of 24 hrs
(iv)	<b>Humidity Test</b>	As per MIL – STD – 810F 5 cycles of 48 Hrs each. Temperature 60°C, RH 95%
(v)	<b>Fungus Test</b>	As per MIL – STD – 810F
(vi)	<b>Salt Fog Test</b>	As per MIL – STD – 810F
(vii)	<b>Sand &amp; Dust Test</b>	As per MIL – STD – 810F
(viii)	<b>Acceleration Test</b>	As per MIL – STD – 810F, Method 513.5 (a) <b>Operational:</b>

		<p>Fore: 3g, Aft: 9g, Up: 13.5g, Down: 4.5g, Lateral left/ right: 6g</p> <p>(b) <b>Structural:</b></p> <p>Fore: 2g, Aft: 6g, Up: 9g, Down: 3g, Lateral left/ right: 4g</p>
(ix)	<b>Gun Fire Vibration Test</b>	<p>As per MIL – STD-810F</p> <p>17.0g (RMS Value), Frequency – 10 to 2000Hz with Power Spectral Density as per aircraft Manual.</p>
(x)	<b>Shock Test</b>	<p>As per MIL – STD-810F (30 g for arrester landing)</p> <p><b>Functional</b></p> <p><b>Crash Hazard</b></p> <p><b>Transit Drop</b></p> <p><b>Bench handling</b></p>
(xi)	<b>Thermal Shock</b>	<p>As per MIL–STD-810F or equivalent based on operating conditions +71 to -40 degree centigrade)</p>
(xii)	<b>Rain Drip Test</b>	<p>As per MIL – STD-810F</p>
(xiii)	<b>Contamination</b>	<p>As per MIL – STD-810F</p>
(xiv)	<b>Crash Hazard</b>	<p>As per MIL – STD-810F</p>