

**REQUEST FOR INFORMATION (RFI) FOR
PROCUREMENT OF NAVAL SHIPBORNE UNMANNED AERIAL SYSTEM
(NSUAS)**

1. The Ministry of Defence, Government of India, intends to procure approximately **15 (Fifteen)** Naval Shipborne Unmanned Aerial System (NSUAS) for Surveillance and Reconnaissance, Sea lines of Communication (SLOC) monitoring and Coastal/ Exclusive Economic Zone (EEZ) surveillance, anti-piracy and anti-terrorism, assistance in Search and Rescue and assistance in Maritime Domain Awareness.
2. This Request for Information (RFI) consists of two parts as indicated below. **Submission of incomplete response format will render the vendor liable for rejection.**
 - (a) **Part I.** The first part of the RFI incorporates broad operational requirements and features that should be met by the equipment. A few important technical parameters of the proposed equipment are also mentioned.
 - (b) **Part II.** The second part of the RFI states the methodology of seeking responses.

PART-I

3. **Intended Use of Equipment (Operational Requirements)**. The NSUAS will be launched from a ship and used for Surveillance including SIGINT, Target Acquisition, Reconnaissance and building MDA (Maritime Domain Awareness) around a Task Group. The secondary roles of NSUAS would include anti-piracy, anti-terrorist activities and assist in Search and Rescue (SAR).
4. **Important Technical Parameters**. Broad operational requirements for NSUAS are placed at **Annexure-I** to this RFI. The vendor is to provide maximum details with respect to each parameter and also specify restrictions or conditions, if any. In addition, additional information may also be provided as feasible. Respondents are to provide detailed, para-wise information on all aspects. The details of information sought is appended below:-
 - (a) Vendors are also to provide availability of equipment/ system/ platform through Inter Governmental Agreement (IGA) or Direct Commercial route.
 - (b) Vendors may utilise this opportunity to recommend the capabilities proposed in terms of Essential Parameters-A and Essential Parameters- B iaw Para 10 of Chapter II of DPP 16, as an input for development of Qualitative Requirements.
 - (c) The vendors should provide an approximate estimation of cost (Applicable Taxes need to be mentioned separately) including an approximate breakdown of all the elements that need to be

structured into the costing of the equipment system (engineering support, spares, training, documentation, product support, etc). The vendors may be required to conclude a Comprehensive Annual Maintenance Contract (CAMC) along with the main contract for maintenance of the system. The cost of CAMC would be taken into account for determining the L1 vendor. Proposal for CAMC is to be included in the response to RFI in detailed format.

(d) In case the vendor propose to progress the case under transfer of technology then the details of ToT including range and depth of ToT and key technologies likely/ proposed to be transferred are to be indicated. In case ToT is being offered, Gol would be desirous of license production of equipment after acquiring ToT in the instant case.

(e) The vendor should indicate whether the proposed equipment is in use by any other Navy/ Air Force/ Defence Forces or offered for use by other Governmental/ Non-Governmental agencies within India or abroad and if so, unit price (without taxes/ custom duties) and year in which it was supplied is to be indicated. The differences between these versions of equipment and equipment presently being offered may also be forwarded in detail.

(f) The vendor is to indicate the feasibility/ willingness to conduct FET in India and modalities for conduct of FET are to be included in the response. Response to include suggested trial methodology and parameters for which evaluation can be done through simulation/ certification/ documentation / demonstration, etc during the FET. Vendors are to indicate suggested trial methodology in tabular format for various systems and aspects.

(g) The manpower required to operate and maintain the system besides modalities of training is to be indicated. Details of training aids, models, software packages, and computer based tutorials, simulators etc which would be used during training is also to be indicated. Inputs on operator and maintainer certification including training for instructional duties and prior qualifications required are to be mentioned.

(h) Willingness for Option Clause including the duration for which the Option Clause would be valid is to be indicated.

(i) The vendor is to indicate whether they would be able to comply with all provisions of DPP 2016 or not. If not, para/clause of DPP 16 which would not be agreed to is to be mentioned, with reasons.

(j) Vendor may consider RFI as advance information to obtain requisite government clearances. This shall include clearances for platform, sensor payloads, ground equipment and all other associated systems. The details related to International Traffic in Arms Regulations (ITAR)/export license clearances and end-user certificate is to be provided.

(j) **Category of Procurement.** One of the purposes of this RFI is to aid in deciding the acquisition category based on Defining Attributes and Decision Flow

Charts as detailed in 'Appendix 'A' of Chapter II of DPP 2016. Vendors are to specify the procurement category under which they would be willing to offer their systems. The vendors are also to indicate the minimum number of platforms to be procured to make the proposal commercially viable (in each category), if the Government of India desires to progress the case under any other category other than Buy 'Global' to promote the 'Make in India' program.

(k) The vendor should indicate the tentative delivery schedule for supply of the equipment after conclusion of contract. **The vendor should indicate the delivery schedule for various procurement categories as specified, in case more than one procurement category is proposed by the vendor.**

(l) Payment Terms. Acceptability to the terms of payment as per DPP 16.

(m) Approximate cost estimation. Vendors are intimated that the cost forwarded should include tax/ custom duty component separately. Indicative cost is to take into account all aspects of supply of production material, manufacture, installation, integration, training, documentation, FET and Onsite Acceptance Tests, life cycle costing, CAMC for 07 years, etc.

(p) The vendor is to provide compliance to MIL or other standards and Ingress Protection (IP) certification for operations, safety and environment for associated Commercial Of-The-Shelf (COTS) grade equipment.

(q) In case joint ventures are proposed, Indian vendors are to indicate the foreign OEM and the name of the system being offered with the OEM. The foreign vendors are to indicate their Indian firm with whom the Joint Venture (JV) is proposed.

5. **Conditions for Solicitation of Offers.** Vendors should confirm that the following conditions are acceptable:-

(a) The solicitation of offers will be as per 'Single Stage Two Bid System'. It would imply that a 'Request for Proposal' would be issued soliciting the technical and commercial offers together, but in two separate sealed envelopes. The validity of commercial offers would at least be 18 months from the date of submitting of offers.

(b) The technical offers would be evaluated by a Technical Evaluation Committee (TEC) to check its compliance with RFP.

(c) The equipment of all TEC cleared vendors would be put through a Field Evaluation Trial on a 'No Cost No Commitment (NCNC)' basis in accordance with Para 65 of Chap II of DPP-2016. A staff evaluation would be carried out by SHQ to analyse the result of field evaluation and shortlist the equipment for introduction into service. Towards this, the participating vendors are to forward a list of equipment that would be made available for NCNC trials.

(d) Vendors are to confirm the feasibility to offer NCNC trials, including at Sea onboard ships of the proposed equipment in India/ abroad, in exact configuration as proposed in response to the RFI. Alternatively, the differences between various configurations and their consequent costs may be highlighted. Vendors may clarify the proposed platform (naval/ non-naval platforms, demonstration of equipment already fitted on any other non-IN platform, etc) and venue (India/ abroad) for conduct of FET.

(e) Amongst the vendors cleared for Staff evaluation, a Contract Negotiations Committee would decide the lowest cost bidder (L1) and conclude the appropriate contract.

(f) Product Support. Vendor would be bound to provide comprehensive product and maintenance support for the supplied equipment for time period as specified in the RFP, which includes spares and maintenance tools/ jigs/ fixture / other equipment for field and component level repairs including a composite repair facility onboard ships. The details are to be included in the response to RFI.

(g) The vendor would be required to accept the general conditions of contract given in the Standard Contract Document at Chapter VI of DPP 16 placed on www.mod.nic.in.

(h) The vendor should indicate willingness to offer offsets, if proposal exceeds Rs 2000 Crores (for foreign vendors only). The vendor confirms to undertake offset contracts in accordance with para 2.2 of Appendix D of Chapter II of DPP 16.

(j) Integrity Pact. An integrity pact along with appropriate IPBG is a mandatory requirement in the instant case.

(k) Performance-cum-Warranty Bond. Performance-cum-warranty bond both equal to 10% value of contract is required to be submitted after signing of contract.

(l) Warranty. The warranty for the NSUAS provided by OEM is to be mentioned.

(m) Technology (ToT). In case the vendor propose to progress the case under transfer of technology then the details of ToT including range and depth of ToT and key technologies likely to be transferred are to be indicated. In case ToT is being offered, Govt would be desirous of license production of equipment after acquiring ToT in the instant case. Vendor is to indicate willingness to provide ToT (know-how and know-why) along with exact scope of ToT that can be provided in each area and budgetary quote for the same item wise is to be indicated. The ToT plan to be submitted shall highlight the following:-

(i) Range, depth and scope of technology transfer providing details to

enable 'know-why' and 'know-how'.

- (ii) Extent of indigenous content.
- (iii) Plans to train skilled manpower.
- (iv) Extent of future R & D planned in India.
- (v) Timelines for delivery, Transfer of Technology and Transfer of Production.
- (vi) Cost of Transfer of Technology and Transfer of Production.

(n) Transfer of Production (ToP). Willingness to provide ToP (including setting up facility for manufacture of components in India, procurement order specifications of proprietary jigs/ fixtures as required, manufacturing drawings, QA/QC procedures, procurement order specification for raw material/ components, etc) as required and training of Indian Production Agency (PA) personnel (if applicable) in all respects of manufacturing process and supervision during initial startup of manufacturing is to be provided. The vendor is to indicate the Budgetary Quote and timelines for ToT and ToP separately. Concurrent activities and total timeline is also to be indicated.

(p) Vendors are to provide availability of applicable key technologies and materials required for manufacturing of the equipment/ system/ platform in the Indian Market, level of indigenisation in design and content, delivery capability, maintenance support, life time support, etc. The extent of availability or accessibility of the above details if not available in India is also to be specified. Indian vendors are to provide capability to indigenously design and develop the required equipment.

(q) Software Codes and Intellectual Property Rights. Willingness to supply software source codes for software used is to be indicated. Respondents are to clearly indicate the details of agency holding Intellectual Property Rights (IPR) for various hardware and software components of the NSUAS.

(r) Confidentiality Clause. Classified information pertaining to the instant case/ items shall not be divulged by vendors to other agencies.

(s) Anticipated Delivery Timeframes. The Indian Navy anticipates that the first system would be delivered within 12 months from the date of signing of contract and one system every month thereafter. Inability to comply with these conditions may be specified. **The vendor should indicate the delivery schedule for various procurement categories as specified, in case more than one procurement category is proposed by the vendor.**

(t) RFP is likely to be issued by Dec 2020.

(u) Additional details as deemed appropriate are to be provided.

(v) **Suggestions**. Suggestions for alternatives to meet the same objectives as mentioned in this RFI may be offered.

(w) **Undertaking**. The prospective vendors must submit an undertaking that information provided by them is correct.

6. Government Agencies or companies are requested to provide quantified technical, operational and maintenance parameters as queried in **Annexure I**, as per existing/ achievable capabilities with time frame. Supporting relevant Documents and literature are to be provided. Vendors are requested to indicate the indigenous content of the product, plan for indigenisation, production capacity along with envisaged timelines for local production (if applicable). Vendors are to complete the Information Proforma at Annexure-II to this RFI.

PART-II

7. **Procedure for Response**. Vendors must fill the form of response as given in **Annexure II** (Appendix B Chapter II of DPP 16). Apart from filling details about company, details about the exact product meeting generic technical specifications should also be carefully filled. Additional literature on the product can also be attached with the form.

8. Vendors are to provide information sought as per form placed at **Annexure III** to this RFI with respect to criteria for vendor selection / pre-qualification.

9. **Rough Order of Magnitude Cost**. The vendors are to provide the Rough Order of Magnitude (ROM) cost of NSUAS, Ground Control Stations (GCS), and payloads and associated equipment including Ground Control Station (GCS), payloads, product support packages, comprehensive maintenance, and training and associated equipment. The costing philosophy and break down is to be provided. Vendors are to specify the cost for two air vehicles per system and three air vehicles per system separately. In case the vendor proposes more than one type of categorisation, the cost in various categories is to be provided.

10. The filled form should be dispatched at under mentioned address:-

The Principal Director Aircraft Acquisition
 Integrated Headquarters Ministry of Defence (Navy)
 Directorate of Aircraft Acquisition (DAA),
 'A' Block Hutments, Dara Shukoh Road, New Delhi - 110011
 Phone: 0112301 0153
 Fax: 0112301 0528 Email ID: daa@navy.gov.in

11. Last date of submission of filled form **should not be later than FOUR weeks** from date of issuance of RFI. The vendors short listed for issue of RFP would be intimated. Vendors are to complete the RFI in all respects prior forwarding the data by the due date. Reasons such as data being classified in nature would not be accepted.

Such data may be discussed if required with the directorate (mentioned at Para 10) after seeking for a meeting within the given timeframe. Vendors are to strictly adhere to the format specified and reply in the same format as provided in the RFI whilst forwarding responses.

12. End User. The Government of India invites responses to this request only from Original Equipment Manufacturers (OEM)/ Authorised vendors/ Government Sponsored Export Agencies (applicable in the case of countries where domestic law does not permit direct export by OEMs). The end user of the equipment is Indian Navy (IN).

13. The companies (including an Indian company forming joint ventures and establishing production on arrangements with OEM) likely to respond may acknowledge the receipt of this RFI to the address specified at Para 10 above.

14. Vendor Interaction. A vendor interaction with the companies would be held at Integrated Headquarters, Ministry of Defence (Navy), New Delhi, if deemed necessary, with the companies who have acknowledged the receipt of the RFI as mentioned in Para 12 above iaw Para 8 of Chapter II of DPP 16.

15. This RFI is being issued with no financial commitment and the Ministry of Defence reserves the right to change or vary any part thereof at any stage. The Government of India also reserves the right to withdraw it should it be so necessary, at any stage.

16. The acquisition process would be carried out under the provisions of DPP-2016 or as an amended from time to time in future.

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(Janak Bevli)
Commodore
Aircraft Acquisition
24 Feb 2020

Annexures: As Above.

BROAD OPERATIONAL REQUIREMENTS FOR NSUAS

Ser	Requirements	Vendor to Specify and provide maximum details possible
1.	<u>General Specifications</u>	
(a)	The Remotely Piloted Aircraft (RPA) and its payloads should be able to undertake the tasks listed at Para 3, Part I of RFI.	--
(b)	The RPA and the payloads should be modular in nature and should be easy to repair in field conditions.	--
(c)	The RPA should have low radar and acoustics signature.	--
(d)	The RPA and all its subsystems should be completely inter-operable amongst all the users of the Indian Navy.	--
(e)	Number of operators required to operate and maintain the system should be minimum. The optimum number of operators required to maintain and operate the system along with specific qualifications/ prior training/ experience is to be specified.	--
2.	<u>Basic Composition of NSUAS.</u> The NSUAS would comprise at least the following components:-	
(a)	<u>Remotely Piloted Aircraft (RPA).</u> Each system is to comprise of air vehicles, which are modular in design, made of composite material and that can be dismantled/ folded for portability and stowage onboard (in a container provided along with RPA) being supplied. The RPA must be easily assembled onboard the ship.	--

(b)	<p><u>Two Control Stations (Main and Standby).</u> Main control station to be fitted onboard the ship (preferably in ops room with a rack design) and shall be powered with onboard ship's supply. Standby control station must be positioned onboard for controlling the air vehicle for redundancy. The Ground Control Station (GCS) must have the facility to record and playback sensor and flight data of at least one complete sortie.</p> <p>What is the storage capacity of the GCS?</p> <p>Can both Main and Standby control station be provided?</p> <p>Do the control stations operate independent of each other?</p>	--
(c)	<p><u>One Launch System.</u> A transportable launch system which can be fitted / assembled when required for launch of air vehicle and stowed when not in use.</p>	--
(d)	<p><u>One Point Recovery System.</u> A point recovery system that could be assembled and extended for recovery of air vehicles and stowed thereafter.</p>	--
(e)	<p><u>Two Ship Data Terminal.</u> Ship Data Terminals to be fixed on the upper deck so as to provide unhindered communication with air vehicle.</p>	--
(f)	<p><u>One set of Engineering Support Package (ESP).</u> ESP comprising Ground Support Equipment (GSE), GHE (Ground Handling Equipment), OBS (Onboard Spares) and tools for operation of the air vehicle onboard and ashore must be stored in a pallet for ease in stowage and transportation for duration as per utilisation rate.</p>	--
(g)	<p><u>One set Specialised Role Equipment.</u> One set of Special payloads of Maritime Patrol Radar (MPR), Communication (COM) relay equipment, ELINT and COMINT payloads.</p>	--
(h)	<p><u>Two Remote Video Terminals (RVT).</u> Two portable RVTs which be carried on a boat when required and capable of being operated independently. The RVT must have portable power source.</p> <p>What is the minimum time of continuous operation of the RVT without spare batteries? At least 03 hours preferred.</p>	--

	What is the endurance of each spare battery?	
3.	<u>Operational Requirements/ Specifications of RPA</u>	
(a)	<p><u>Capability.</u> NSUAS should be capable of operating from ships and shore by day as well as by night and in low visibility conditions. Specify the following:-</p> <p>(i) Provide the name of the system being offered.</p> <p>(ii) Indicate the maximum size and weight of container for RPA.</p> <p>(iii) Indicate the maximum size and weight of containers for stowage of all RPA sub systems, item wise.</p> <p>(iv) Indicate the maximum size and weight of containers for stowage of launch and recovery systems.</p> <p>(v) Indicate the maximum size and weight of containers for stowage of spares for operations for 02 months (250 hrs per month) and Engineering Support Package.</p> <p>(vi) What is the time required for preparation and launch of air vehicle?</p> <p>(vii) What is the turnaround time between two launches of the same air vehicle after landing?</p> <p>(viii) What is the time required for preparation of NSUAS for recovery onboard the ship?</p>	-"-
(b)	<p><u>Fatigue / Service Life.</u></p> <p>(i) What is the service life of NSUAS?</p> <p>(ii) <u>Utilisation.</u> What is the utilization rate for normal and intensive operations?</p>	-"-
4.	<u>Role-wise Configuration.</u> NSUAS should fulfill minimum requirements for undertaking the following payloads:-	-"-
(a)	<u>Electro-Optical and Infra-Red (EO and IR) Payload</u>	

	<p>(i) Is the payload gyro stabilized in at least three (3) axis?</p> <p>(ii) How many gimbals does the gyro stabilised system have?</p> <p>(iii) Does the gyro stabilisation provide 360 deg continuous freedom of movement?</p> <p>(iv) What is the stabilisation accuracy of the gimbal stabilized assembly of EO/IR payload? Please provide in micro radian.</p> <p>(v) What are the elevation and depression angles?</p> <p>(vi) What is the pointing accuracy of the payload at 10 Km distance?</p> <p>(vii) What is the pointing accuracy of the payload in milli radian?</p> <p>(viii) What is steering rates of the EO/ IR payload (i.e. slewing speeds)? Provide in deg/ sec.</p> <p>(ix) What is the angular acceleration of gyro stabilized assembly?</p> <p>(x) What is the temperature range of operations?</p> <p>(xi) What is the optical and digital zoom capacity of Charge-Coupled Device (CCD) day camera?</p> <p>(xii) Is continuous zoom available in colour CCD Day camera?</p> <p>(xiii) What is the Field of view of Day camera?</p> <p>(xiv) Is High resolution camera, digital video and IR imagery available? Can the camera capable of video recording and capture still image as well as FMV (Full Motion Video).</p> <p>(xv) Is video output available in HD 720p?</p>	
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<p>(b)</p>	<p>(xvi) Is the quality of Day and IR camera 1024 x 1024 pixels or better?</p> <p>(xvii) Are video outputs from Day camera and IR camera available simultaneously?</p> <p>(xviii) What is the zoom capability of thermal imager?</p> <p>(xix) What is the range at ambient temperature 28°C and RH 95% visibility 20 Km for detection of a vehicle (2.3m x 2.3 m) by Thermal Imager?</p> <p>(xx) What is the range at ambient temperature 28°C and RH 95% visibility 20 Km for detection of a vehicle (2.3m x 2.3 m) by day camera?</p> <p>(xxi) Does IR Camera have both optical and digital zoom facility? Specify zoom capability. Is continuous zoom facility available?</p> <p>(xxii) Can IR sensor operate in 3-5 micrometer range? Specify the range of operations.</p> <p>(xxiii) Is Line of Sight (LOS) slaving available?</p> <p>(xxiv) Is Geo pointing available?</p> <p>(xxv) Can video tracking of identified marine targets be carried out?</p> <p>(xxvi) What is the search and scan pattern in Auto-tracking mode?</p> <p>(xxvii) Is Joy stick rate mode and Joy Stick position mode available for manual control of EO/IR payload?</p> <p>(xxviii) Is there provision of Eye Safe Laser Range Finder along with EO/IR system in order to find range of targets?</p> <p>(xxix) What is the range availability of Laser Range Finder (LRF)?</p> <p>(xxx) What is the range accuracy of LRF?</p> <p>Automatic Identification System (AIS) Payload. Is</p>	
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	<p>the AIS payload in receive only mode capable of receiving the following information?</p> <ul style="list-style-type: none"> (i) Position, heading and speed. (ii) MMSI, Call Sign, Destination (iii) Type of ship, dimensions and cargo type (iv) Specify any other information provided. <p>(c) <u>Communication Relay Payload.</u> Specify the following details of communication relay payload:-</p> <ul style="list-style-type: none"> (i) What is the Frequency range of the payload? (ii) Is the payload capable of communicating with other units within its Line of Sight (LOS) on V/UHF using the Relay module? (iii) Can NSUAS operator R/T call be transmitted to the NSUAS via uplink and subsequently transmitted using the Communication Relay module? (iv) Can R/T calls by other units in area be received by the Communication Relay and sent to the operator via the down link? <p>(d) <u>Maritime Patrol Radar (MPR).</u> Specify the maritime patrol radar characteristics:-</p> <ul style="list-style-type: none"> (i) Is the MPR capable of operations both by day and night and in light rain up to 4mm/hr? (ii) Is MPR capable of carrying out sector search of areas of interest? Is sector specific transmission programmable? (iii) Is MPR capable of automatic and continuous detection and tracking of targets? Is the display at ground station capable of integrating EO/IR, AIS and MPR data? (iv) What is the minimum azimuth and Elevation angle of MPR? (v) What is the MPR capability of various modes such as ISAR, Range Signature, Sea MTI, weather mode, etc? (vi) Specify the minimum Radar Range (while 	
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operating at 5000 ft) as per target RCS as mentioned below (detection and tracking) :-

- Small targets (RCS 10 sqm):
- Medium targets (RCS 100 sqm):
- Large Targets(RCS 1,000 sqm):

(vii) How many targets can be tracked automatically?

(viii) Can NSUAS generate a search pattern and navigate the RPA?

(ix) Can the NSUAS navigate to a desired waypoint and loiter there as per mission requirements?

(x) Can the ground station display EO/IR, AIS and radar data on a single display.

(e) **COMINT**

Specify the COMINT characteristics:-

(i) Details of COMINT Payload with all parameters should be provided.

(ii) Is the COMINT capable of operations both by day and night and in light rain up to 4mm/hr?

(iii) Is COMINT capable of carrying out automated general sector and automated directed search?

(iv) Is the display at ground station capable of integrating COMINT data?

(v) Is COMINT capable of recording all emitter activities seen during a mission, have the capability of detailed Post Mission Data Analysis of all activity observed during a mission, as well as the capability for generating reports?

(vi) Does the COMINT have the capability to do narrow and wide band searches over the entire frequency band?

(vii) Is COMINT able to provide multiple simultaneous functions and high performance in a rugged and low (Size/Weight/Power) package designed for NSUAS?

(viii) Is COMINT able to be integrated with 3D moving map with aircraft location, artificial horizon, wide / narrow band spectral displays etc?

(ix) Is it designed for rail launches, net or belly landings and operations over 15 knots?

(x) Does COMINT have required Built-In-Test to support maintenance and troubleshooting?

(xi) Information such as Payload size, weight, power, frequency range, sensitivity, demodulation techniques for Analogue and digital signals etc be shared.

Note: Any classified data may be shared separately through a face to face briefing.

(f) **ELINT**

Specify the ELINT characteristics:-

(i) Details of ELINT Payload with all parameters should be provided.

(ii) Is the display at ground station capable of integrating ELINT data?

(iii) Is ELINT capable of recording all emitter activities seen during a mission, have the capability of detailed Post Mission Data Analysis of all activity observed during a mission, as well as the capability for generating reports?

(iv) Does the ELINT have capability to do narrow and wide band searches over the entire frequency band?

(v) Is ESM able to provide multiple simultaneous functions and high performance in a rugged and low (Size/Weight/Power) package designed for NSUAS?

	<p>(vi) Is it designed for rail launches, net or belly landings and operations over 15 knots?</p> <p>(vii) Does ELINT have required Built-In-Test to support maintenance and troubleshooting?</p> <p>(viii) Technical specifications and physical parameters of ELINT proposed to be provided.</p> <p><u>Note: Any classified data may be shared separately through a face to face briefing</u></p>	
5.	<u>Stipulated Conditions for Use</u>	--
(a)	<p><u>Indian Reference Atmosphere.</u> Unless stated otherwise, all performance requirements should be met under the Indian Reference Atmosphere which is defined as follows:-</p> <p>(i) Sea level Mean Temperature (°C) is ISA+20°C</p> <p>(ii) Reference Temperature for Takeoff and landing(°C) is ISA+20°C</p> <p>(iii) Reference Temp for performance at 5000 ft is ISA+15°C</p> <p>(iv) Lapse Rate : 6.5 °C/Km</p> <p>(v) Mean Sea Level Pressure :1005 Hpa</p> <p>(b) <u>Environmental Conditions.</u> Confirm Environmental conditions (operating and storage) as per D0 160 or ED14 indice G or MIL STD 810 or Def Stan 00970 or Def Stan 05-123 or equivalent / better Std.</p> <p>(c) <u>Tropicalisation.</u> Confirm that the NSUAS and its systems are <u>tropicalised</u> and all payloads and air vehicle cleared to operate under ambient temperature range of -20°C to + 55°C.</p> <p>(d) <u>Ship-borne Operations.</u> Can the NSUAS operate (launch and recovery) from all <i>IN</i> ships of length more than 100 meters and having a helo deck, by day and night? What is the maximum area required for launch/ recovery equipment?</p>	--

<p>(e)</p> <p>(f)</p> <p>(g)</p> <p>(h)</p> <p>(j)</p> <p>(k)</p> <p>(l)</p>	<p><u>Shore Operations.</u> Is NSUAS of carrying out operations from the beach and unprepared surfaces by day and night? What is the maximum area and type of surface required?</p> <p><u>Certification.</u> Is the NSUAS should be certified for airworthiness. Is the air vehicle certified for Airworthiness and deck Operations by a Government Authorised Certification Agency of the Buyer or Seller?</p> <p><u>IP and Mil STD Certification.</u> What are the IP and MIL Standard Certification of all components and payloads of NSUAS (to be specified separately for each payload)?</p> <p><u>Environmental Stress Screening (ESS):</u> Confirm that Highly Accelerated Stress Screening has been carried out on all electronics.</p> <p>HAS ESS been carried out on all LRUs as per MIL HDBK 2614A standards?</p> <p>Does the RPA along with the payloads satisfy the JSS 55555 criteria or any other equivalent/ higher standards?</p> <p>Are all COTS electronic components screened iaw JSG 0667/ JSS 50115 or equivalent/ higher standards?</p>	
<p>6.</p> <p>(a)</p> <p>(b)</p> <p>(c)</p> <p>(d)</p>	<p><u>Operational Capability.</u></p> <p>What are the maximum roll and pitch limits for operations from a ship of 100 m in length?</p> <p>Are airframe/ avionic components and associated parts corrosion resistant for operations in marine environment?</p> <p><u>Wind Envelope.</u> NSUAS must be capable of being launched and recovered in wind speeds upto 15 Knots. Wind operating limitations on ships to be specified. Suitable graph wrt wind limitations is to be provided.</p> <p>Is NSUAS capable of landing and taking off from shore with lateral slope of 5 deg?</p>	<p>-“-</p>

	<p>(e) Availability and Reliability. What is the average system and sensor performance assured in percentage? Specify MTBF of air vehicle and each payload separately.</p>	
7.	<p>Basic Design Features. Confirm the following wrt design features of NSUAS:-</p> <p>(a) It should be capable of operating from a ship of greater than 100 meters length with or without a helo hangar.</p> <p>(b) It should be capable of operating in light rain.</p> <p>(c) It should have a fully autonomous flight mode, with pre-programmed or operator initiated mission guidance.</p> <p>(d) Capable of operating as independent detachment from remote areas.</p> <p>(e) The NSUAS should have a provision to return to a designated waypoint or the mother ship in case of Data link loss.</p> <p>(f) The control station of the NSUAS should be modular in construction and should incorporate the latest technology in Digital Map formats, satellite maps and Orthophoto software. The control station should house control and displays to fly the RPV, mission computers for data processing and intelligence deciphering and display information from payloads.</p> <p>(j) Is the integration of maps on NSUAS with those on ECDIS (Electronic Chart Display Information System) use for navigation onboard ships possible?</p> <p>(k) Can the updates for maps wrt obstructions over sea/ wrecks/ oil rigs etc be carried out manually?</p> <p>(l) The Control station should be capable of standalone operations with a provision for integration with onboard systems.</p> <p>(m) The control station should be capable of handing over one air vehicle between two different</p>	--

	<p>stations on two different ships for extending the range of the aircraft. Ability to hand over controls and receive data from the RPA for relay operations must be available.</p> <p>(n) Ability to operate a minimum of two air vehicles from the same control station simultaneously must be available.</p> <p>(p) The NSUAS system and the control station should be in containerized form for portability and ease in stowage onboard.</p> <p>(q) The NSUAS should have primary datalink (Specify Band) and a secondary datalink for redundancy (uplink only, preferably UHF). The primary datalink should have the capability of being encrypted.</p> <p>(r) What is the level of encryption of data uplink and downlink?</p> <p>(s) Airframe should be of composite material. The airframe must be repairable at 'O' level with replacement of parts onboard ship in short time.</p> <p>(t) Is the downlink data of payloads from the NSUAS encrypted?</p> <p>(u) What is the redundancy available to the flight control system? Is there a standby control? When does it come into being?</p> <p>(v) What is the redundancy for the autopilot of NSUAS?</p> <p>(w) What is the minimum data recording capacity in terms of hours of operation and in terms of Giga Bytes in the GCS?</p> <p>(x) What is the total technical life of UAV in terms of landing, operational hours and calendar life of aircraft?</p>	
8.	<p><u>Fuel System.</u> Specify features of NSUAS fuel system:-</p> <p>(a) Capability for Fueling and Defueling.</p> <p>(b) Unusable fuel.</p>	--

	<p>(c) Facility of low level warning in operator console.</p> <p>(d) The quantity of fuel available should be indicated at the GCS.</p> <p>(e) The system should have the provision of fuel gauge in the Ground station. The display in the GCS should be able to indicate the fuel consumed, remaining fuel and remaining endurance.</p> <p>(f) Ability to use AVCAT (Jet A1 or other) as fuel may be indicated.</p>	
9.	<p><u>Navigation.</u> The aircraft navigation system should have the following specifications: -</p> <p>(a) Does the NSUAS have the ability to proceed on a specified navigation route through auto mode defined by waypoints? Specify number of waypoints possible.</p> <p>(b) Is there a return home mode for recovery in case of GPS failure and data link loss?</p> <p>(c) Is it possible for automatic change of height/speed and heading as specified in the navigational route?</p> <p>(d) Is way point navigation available with the NSUAS? Are they configurable?</p> <p>(e) Can NSUAS loiter post navigating to a desired waypoint?</p> <p>(f) Can the NSUAS generate a search pattern to cover a defined area of search and navigate the RPA through the same?</p> <p>(g) Is the NSUAS link through SATCOM possible?</p>	--
10.	<p><u>Crew Composition.</u> What is the crew configuration including maintainers for complete operations (launch, recovery and payload handling) for duration of 08 hours of airborne time with basic payload?</p>	--

11.	Ceiling. What is the service and operational ceiling of the NSUAS (Specify wrt each payload and all available configurations)?	--
12.	Engines. (a) What is the I/O and D level for maintenance of engine? What is the life of NSUAS engine and when is it supposed to be replaced? (b) Is there a monitoring system for engine parameter available in the control station? Is there audio or visual warning should be available to operator for failure of critical systems? (c) Can the engine be relit in air?	--
13.	Speed. What is the maximum, cruising and loiter speed of NSUAS? What is the stall speed of the NSUAS?	--
14.	Range and Endurance. For the range and endurance requirements spelt out below, the reserve shall be 20 minutes of endurance. The minimum endurance with basic payload (EO/IR and AIS) is to be more than 10 hours. What is the NSUAS loiter time at <u>5,000 ft at 100 Km</u> in: - (a) <u>Basic Configuration (EO/IR and AIS).</u> (b) <u>Basic Configuration plus one Special Payload (EO/IR and AIS plus MPR or SAR or COM Relay or COMINT or ELINT).</u>	--
15.	Night Capability. Is the NSUAS capable of night operations (including launch and recovery) from all IN ships greater than 100m in length with helo deck?	--
16.	Maintenance. Confirm the following :- (a) All external electrical supply and fuelling connectors / couplings standard NATO type. (b) Access panel for facilitating front line servicing should be fitted with quick release fasteners to facilitate front line maintenance and captive fasteners should be provided in access panels.	--

	<p>(c) NSUAS systems should have a flight line tester for carrying out system checks after defect rectification and parts replacements.</p> <p>(d) NSUAS systems and equipment should incorporate both on line and off line modes for fault detection and localisation including BITE (Built in Test Equipment) facilities. NSUAS should have Built in Self-Test system for all avionic system. Provide the specific online and offline maintenance diagnostics and health monitoring capability, inbuilt test and fault warning facility.</p> <p>(e) The entire system should have total electro-magnetic compatibility with all equipment onboard. EMI-EMC should conform to iaw MIL STD 461 / 464 or latest FAR or equivalent. The equipment fitted should not interfere with equipment already fitted onboard.</p> <p>(f) Specify the MTBF and MTTR facility of NSUAS and all payloads.</p> <p>(g) Does the NSUAS has facility for BITE and fault diagnosis for air vehicle and all payloads in the GCS if the fault occurs inflight?</p>	
17.	Product Support. What is the duration of product support in terms of spares and upgrades provided by the OEM? What is the period of warranty provided by the OEM?	--
18.	Annual Maintenance Contract. NSUAS would be operated on a Comprehensive AMC model. Would the OEM provide a comprehensive AMC with an ability to maintain 80% full serviceability of NSUAS with sensor performance?	--
19.	<p>Integral Simulator.</p> <p>(a) Is the NSUAS capable of integral simulator?</p> <p>(b) Does NSUAS have features to simulate mission profile sorties for operator training?</p> <p>(c) Can the control station have an integral simulator for maintaining currency of the crew and practicing emergencies?</p>	--

	<p>(d) Does simulator for training of ab-initio operator crew have animated videos and film clips for training of operator in various scenarios and emergencies? Confirm that the following facilities are available in the simulator:-</p> <ul style="list-style-type: none"> (i) Operation of GCS Instrument Bays (ii) Flight Management And Control (iii) Emergencies / Malfunctions (iv) Aircraft subsystem indications / operations (v) Payload handling (vi) Navigation tracking system and simulation (vii) Operations in various weather conditions. 	
20.	<p><u>System Integration.</u> Is the system capable of interfacing indigenous datalink for exchanging real time tracks, images and video? Can the vendor share Interface Control Document (ICD) for integration with indigenous datalink equipment?</p>	-“-
21.	<p><u>Training.</u></p> <p>(a) Can the OEM also provide maintenance and operator training manuals in both hard copy and digital format like CBT?</p> <p>(b) What is the proposed training schedule?</p> <p>(c) Can the NSUAS follow a maintainer cum operator philosophy?</p> <p>(d) Can the same person be provided training for both maintainer and operator?</p> <p>(e) Specify all training literature required including operational manual, preservation instructions, repair manuals, etc.</p>	-“-
22.	<p><u>Flight Data Recorder (FDR).</u> Is the provision of FDR onboard the air vehicle to analyse in-flight data for training and operational value available? What is the recording capacity in terms of hours of operation?</p>	-“-
23.	<p><u>Mission Parameter Recording.</u> Does the air vehicle capable of recording mission parameter data onboard in case of operating beyond datalink connectivity for extraction and analysis of data post flight? What is the recording capacity in terms of hours of operation?</p>	-“-

24.	GPS Denied Recovery. Is there a procedure for recovery onboard the ship in case of GPS and DGPS failure? Please specify how it is undertaken.	--
25.	Ability to float in water and reuse of air vehicle post emergency ditching. Can the air vehicle float on water and be reused (if required after requisite maintenance) in case of emergency ditching on water. Specify conditions for reuse. Also specify duration of floatation in water if ditched. Is the air vehicle water tight? Specify if waterproofing depth in salt water or fresh water is applicable with duration.	--
26.	Reduced Logistic Footprint. What is the weight of NSUAS system in complete packed state including launch and recovery gear, GHE, GSE, Spares and three air vehicles? What are the dimensions of NSUAS system in complete packed state including launch and recovery gear, GHE, GSE, Spares and three air vehicles? Specify for each component when:- (a) Packed (b) Deployed	--
27.	Transportability. What is the method of transportation of the NSUAS from one location to another? Provide the configuration of the capability of NSUAS to be transported by C-130 and C-17 aircraft.	--
28.	Indigenous Content. Specify the following (as applicable) :- (a) What is the indigenous content with respect to (i) Basic cost of NSUAS. (ii) Cost of Manufacturer's recommended list of spares (MRLS) including proportion of MRLS to be made/ assembled in India. Provide itemised list with prices. (iii) Cost of special Maintenance Tools and Special Test Equipment. Provide itemised list with prices. (b) Appropriate ratio of Fully Formed (FF),	

	<p>Completely Knocked Down (CKD), Semi-Knocked Down (SKD) and Indigenously Manufactured (IM) Kits of the entire NSUAS system.</p> <p>(c) What is the percentage indigenous content on cost basis for platform?</p> <p>(d) Range, scope and depth of ToT for providing maintenance infrastructure.</p> <p>(e) The range, scope and depth of system for which ToT is catered.</p>	
29.	<p>FET. Request confirm that Field Evaluation Trials of the NSUAS and all payloads would be feasible in India. If not specify deviations, with reasons.</p>	--
30.	<p>ROM Cost. ROM cost is to be provided for 15 systems. Request provide ROM cost breakdown as specified under:-</p> <p>(b) Cost of one NSUAS consisting of (provide each serial wise)</p> <ul style="list-style-type: none"> (i) Two air vehicles with basic payload (EO/IR plus AIS) (ii) Two control stations (One each of Main and Standby) (iii) One launch system (iv) One point recovery system (v) One ship data terminal (vi) One set of specialised Role Equipment (one each of MPR, COMINT, ELINT and COM relay) (vii) Two Remote Video Terminal (RVT) <p>ESP</p> <ul style="list-style-type: none"> (viii) Additional Quantity of 05 Payloads (EO&IR, AIS, MPR, COMINT, ELINT and COM relay) as Spares 	--

(ix) MRLS (including engines and composite Airframe parts) for sustenance of operations for 2 years as per OEM recommendation with 'Buy Back' option in case of unused spares. Includes 'O', 'I' and 'D' level maintenance ('O', 'I' and 'D' Level to be mentioned separately) as per utilisation rate mentioned below: -

Normal Operations. At least 100 hours per month throughout the year.

Intensive Operations. At least 16 hours per day and at least 300 hrs per month for a period of at least two months in a year.

(x) 'O' level SMT, STE, Jigs, Fixture, etc for operations from ships for 15 systems plus 20% as spares.

(xi) Documentation, Publication and Training Literature for 15 operating ships

(xii) Training Aggregates as follows: -

- One set of Sectionised Equipment, Shop Replacable Units (SRUs), Training Charts/ Slides/ Diagram.
- Two set of Computer based training package based on interactive multimedia
- 07 sets of Tough Books with Maintenance Manual for training of aircrew and technical personnel

(xiii) Training of Operator and Maintainer Crew (approx. 15 teams) (Dual Training) and Instructor grading, by OEM. Only 'O' level training would be required. All crew would be required to be trained as instructors in addition.

(xiv) Comprehensive AMC for 80% serviceability of NSUAS (including payload) for **07** years.

(xv) Cost of vehicles including type and number required at one airbase for transportation (PI specify item wise) of NSUAS

	<p>to ship and back as required. (It is proposed to operate the system akin to embarking squadrons where the systems, other than the ship-fit component, would be stowed in base and embark ships as required).</p> <p>(xvi) Cost of support infrastructure, if any, along with specifications</p> <p>(xvii) Integration cost</p> <p>(c) Any other additional cost as deemed by the vendor.</p>	
31.	<p>Applicable Taxes. All applicable taxes (such as GST etc) need to be mentioned separately.</p>	

REF-NSUAS

Annexure-II
(Refers to Para 9)

INFORMATION PROFORMA (INDIAN VENDORS)

(Refer Appendix B to Chapter II of DPP 16)

1. Name of the Vendor/Company/Firm.

(Company profile, in brief, to be attached. In the eventuality of the firm emerging as L1, contract will be concluded in the name and address of the firm, as indicated here). Vendors are to submit an undertaking that any subsequent proposal for change in name of firm or address, will be intimated to IHQ MoD (Navy) at the first available opportunity and supporting documents be furnished within five working days of approval be relevant competent authority.

2. Type (Tick the relevant category).

Original Equipment Manufacturer (OEM)

Yes/No

Authorised Vendor of foreign Firm

Yes/No (attach details, if yes)

Others (give specific details)

3. Contact Details.

Postal Address: _____ City: _____
 State : _____ Pin Code : _____ Tele
 : _____ Fax : _____ URL/Web Site:
 _____ Email : _____

4. Local Branch/Liaison Office in Delhi (if any).

Name & Address: _____
 Pin code: _____ Tel: _____ Fax: _____
 Email : _____

5. Financial Details.

- (a) Category of Industry (Large/medium/small Scale)
- (b) Annual turnover: _____ (in INR)
- (c) Number of employees in firm:
- (d) Details of manufacturing infrastructure:
- (e) Earlier contracts with Indian Ministry of Defence/Government agencies:

Contract Number	Equipment	Quantity	Cost

4. **Certification by Quality Assurance Organisation.**

Name of Agency	Certification	Applicable from (Date & Year)	Valid till (Date & Year)

5. **Details of Registration.**

Agency	Registration No.	Validity (Date)	Equipment
DGS&D			
DGQA/DGAQA/DGNAI			
OFB			
DRDO			
Any other Government Agency			

8. **Membership of FICCI/ASSOCHAM/CII or other Industrial Associations.**

Name of Organisation: _____

Membership Number: _____

9. **Equipment/Product Profile (to be submitted for each product separately)**

(a) Name of Product:

(Should be given category wise for eg, all products under night vision devices to be mentioned together)

(b) Description (attach technical literature):

(c) Whether OEM or Integrator:

(d) Name and address of foreign collaborator (if any):

(e) Industrial Licence Number:

(f) Indigenous component of the product (in percentage):

(g) Status (in service /design & development stage):

(h) Production capacity per annum:

(j) Countries/agencies where equipment supplied earlier (give details of quantity supplied):

(k) Estimated price of the equipment

10. **Alternatives for meeting the objectives of the equipment set forth in the RFI.**

11. Any other relevant information.

12. **Declaration.**

(a) It is certified that the above information is true and any changes will be intimated within five (05) working days of occurrence.

(b) It is certified that in the past that _____(name of the firm) has never been banned/ debarred for doing business dealings with MoD/ Gol/ any other Government Organisation and that there is no enquiry going on by CBI/ ED/ any other Government Agency against the firm.

(Authorised Signatory)

REF - NSUAS

INFORMATION PROFORMA (FOREIGN VENDORS)(Refer Appendix B to Chapter II of DPP 16)**1. Name of the Vendor/Company/Firm.**

(Company profile, in brief, to be attached. In the eventuality of the firm emerging as L1, contract will be concluded in the name and address of the firm, as indicated here). Vendors are to submit an undertaking that any subsequent proposal for change in name of firm or address, will be intimated to IHQ MoD (N) at the first available opportunity and supporting documents be furnished within five working days of approval be relevant competent authority.

2. Type (Tick the relevant category).

Original Equipment Manufacturer (OEM):

Yes/No

Government sponsored Export Agency:

Yes/No

(Details of registration to be provided)

Authorised Vendor of OEM: Yes/No (attach details)

Others (give specific details)

3. Contact Details.

Postal Address: City : _____ Province : _____

Country: _____ Pin/Zip Code : _____

Tele : _____ Fax : _____

URL/Web Site : _____

Email : _____

4. Local Branch/Liaison Office/Authorised Representatives, in India (if any).

Name & Address: _____

City : _____ Province : _____

Pin code : _____ Tel : _____ Fax : _____

Email : _____

5. Financial Details.

(a) Annual turnover : _____ USD

(b) Number of Employees in firm : _____.

(c) Details of manufacturing infrastructure available.

(d) Earlier contracts with Indian Ministry of Defence/Government agencies.

Agency	Contract Number	Equipment	Quantity	Cost

6. **Certification by Quality Assurance Organisation (If Applicable).**

Name of Agency	Certification	Applicable from (Date & Year)	Valid till (Date & Year)

7. **Equipment/Product Profile (to be submitted for each product separately)**

- (a) Name of Product:
(Should be given category wise for eg, all products under night vision devices to be mentioned together)
- (b) Description (attach technical literature):
- (c) Whether OEM or Integrator:
- (d) Status (in service /Design development stage):
- (e) Production capacity per annum:
- (f) Countries where equipment is in service:
- (g) Whether export clearance is required from respective Government:
- (h) Any collaboration/joint venture/co production/ authorised dealer with Indian Industry (give details):

Name & Address: _____
Tel : _____ Fax : _____

- (j) Estimated price of the equipment

8. Alternatives for meeting the objectives of the equipment set forth in the RFI.

9. Any other relevant information.

10. **Declaration.**

(a) It is certified that the above information is true and any changes will be intimated within five (05) working days of occurrence.

(b) It is certified that in the past that _____(name of the firm) has never been banned/ debarred for doing business dealings with MoD/ GoI/ any other Government Organisation and that there is no enquiry going on by CBI/ ED/ any other Government Agency against the firm.

(Authorised Signatory)

CRITERIA FOR VENDOR SELECTION/ PRE QUALIFICATION

1. **Technical Parameters.**

- (a) Number of years of experience in manufacturing of same/ similar product.
- (b) Details of manufacturing infrastructure for manufacturing the equipment.
- (c) Quality Plan maintained by vendor.
- (d) Details of certification by Quality Assurance Agencies.
- (e) Industrial License details at the time of submission of bid.
- (f) Annual production capacity and capability to increase the production capacity to meet the delivery schedule requirements of Services

2. **Financial Parameters.**

- (a) **Turnover.** Turnover of Rs_____ Crs in last three years.
- (b) **Capital Assets.** Capital Assets of _____.
- (c) **Profit.** Profit/Loss in last three years.
- (d) **Tax Return.** Copy of Income Tax Return filed during last three years.

3. **Additional Parameters.** In addition, information on credentials and status of the entity/vendor may be obtained covering the following:-

- (a) Projects/supply orders successfully executed in last five years.
- (b) Annual reports of last five years.
- (c) Shareholder information.
- (d) Details of promoters, associated, allied and JV companies.
- (e) Details of vigilance action viz ongoing investigation and suspension/debarment/ blacklisting actions against the company, if any.

4. **Undertaking.** Prospective vendors must submit an undertaking that information provided by them is correct. It may also be highlighted that any vendor furnishing false information will be liable for action under Para 93 of Chapter II of DPP 16.