

**INVITATION FOR EXPRESSION OF INTEREST (EOI) FOR PROCUREMENT OF
QUANTITY 142 UNIT LEVEL TARGET SYSTEM - AIR DEFENCE
UNDER MAKE II CATEGORY OF DAP-2020**

References : Defence Acquisition Procedure - 2020.d

Appendices :

- Appendix A :** Preliminary Service Qualitative Requirements for Unit Level Target System – Air Defence.
- Appendix B :** Vendor Evaluation Criteria.
- Appendix C :** Technical Evaluation Criteria.
- Appendix D :** Correctness Certificate.
- Appendix E :** Confidentiality Agreement.
- Appendix F :** Eoi Compliance Certificate.
- Appendix G :** Information Performa.

1. **Introduction.** Target systems ranging from simple ‘aero models’ to Maneuverable Expendable Aerial Target (MEAT) have been exploited towards training of Air Defence persons on various weapon platforms (gun/missile). There is a continuous requirement at the unit level to impart basic training to radar, missile and gun operators/firers. This requirement is met presently by exploiting aeromodels 7.5 cc onwards (combustion engine based). Common factors while exploiting aeromodels are firstly the reqmt of substantial effort towards training of operators flying these target system (aero models) and secondly the inescapable need of Take off/ Landing strips during field firing or unit level training of crew/detachment, and the limited speed the aeromodels can achieve. To obviate the problem, it is envisaged to have a unit level target system with VTOL capability/ Catapult Launch facility so as to reduce the requirement of Take off/Landing area. The system will be user friendly in terms of its operation thus reducing the training man-hours and overall cost incurred for training of operators on these target system. This target system will facilitate conduct of training during peace time for the gunners and the missile firers/ training for field firing/ tactical exercises with considerable ease from a restricted area/ small space. Being a unit level target system the same will not be used for live firing.

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2. **Objective.** The objective of this invitation of Expression of Interest (EoI) is to seek responses from eligible Indian Vendors for the development of prototype and further procurement of Unit Level Target System - Air Defence.

3. **Layout** The EoI has been covered in following parts:-

- (a) Part I : General Information.
- (b) Part II : Scope of the Project.
- (c) Part III : Evaluation Criteria.
- (d) Part IV : Procedure for submission of response to the EoI.
- (e) Part V : Miscellaneous.

PART I : GENERAL INFORMATION

4. **Nomenclature.** Unit Level Target System – Air Defence.

5. **Categorisation.** The project is categorised as under :-

(a) **Prototype Development Phase.** ‘Make-II (Industry Funded)’ iaw Para 5 (b) (i), Chapter III of DAP-2020.

(b) **Procurement Phase.** ‘Buy (Indian-IDDMM)’ with minimum 50% Indigenous Content (IC) iaw Para 6(d), Chapter III of DAP-2020.

6. **Quantity.**

(a) **Prototype Development Phase.**

- (i) Unit Level Target System – Air Defence - 01 (One)
- (ii) Ground Control Station (GCS) - 01 (One)

(b) **Procurement Stage.**

- (i) Unit Level Target System-Air Defence - 142 (One Hundred Forty Two).
- (ii) Ground Control Station (GCS) - 114 (One Hundred Fourteen).

7. **Make II Procedure.** Make-II Procedure is available at Chapter III of DAP-2020.

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PART II : SCOPE OF THE PROJECT

Unit Level Target System – Air Defence

8. **Scope.** The Unit Level Target System – Air Defence is conceived as a target system to facilitate conduct of training in a unit during peace time for the gunners and the missile firers/ training for field firing/ tactical exercises with considerable ease from a restricted area/ small space. Being a unit level target system the same will not be used for live firing. This project is aimed at meeting this requirement indigenously.

9. **Preliminary Services Qualitative Requirements (PSQR) of the Proposed Unit Level Target System – Air Defence.** Extract of PSQR of the Unit Level Target System – Air Defence is attached as **Appendix A.**

Time Line And Critical Activities

10. **Time Lines & Milestones.** Tentative time lines for the project are given at as under :-

<u>Ser</u>	<u>Activity</u>	<u>Remarks</u>	<u>Timelines</u>
(a)	Issue of Eol	By Project Facilitation Team (PFT)	To
(b)	Eol Responses Submission	By Eol respondents (Indian Vendors)	To + 8 weeks
(c)	Eol Responses Evaluation	By Project Facilitation Team (PFT)	To + 8 to To + 14 weeks
(d)	Short listing of DAs and Issue of Project Sanction Order for Development of Prototype	To selected DAs, those meeting evaluation criteria	To + 14 to To + 16 weeks
(e)	User Trial Readiness Review	(i) To confirm completion of design & development of prototypes as per PSQR, prior to commencement of User Trials. (ii) More than one review may be conducted, on required basis. Dates will be promulgated by the PFT, as per progress of the project.	To + 16 to To + 46 weeks
<u>Ser</u>	<u>Activity</u>	<u>Remarks</u>	<u>Timelines</u>

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(f)	Solicitation of Commercial offer	Commercial RFP for 'Buy (Indian-IDDMM)' phase will be issued to all Development Agencies (DAs) for submission of their commercial offer, prior to commencement of user trials.	To + 46 to To + 50 weeks
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Development of Prototype and Trials

11. All possible and reasonable assistance and any clarification related to functional or operational aspect of development as sought by DAs will be provided by Project Facilitation Team (PFT).

12. After the prototype has been developed as per PSQR given at **Appendix A**, the PFT would carry out User Trial Readiness Review of the prototype(s) and freeze the Technical Specifications before conduct of Field Evaluation Trials (FET) on NCNC basis. Evaluation of the equipment will be carried out during the FET to validate the performance of the equipment against the Final Technical Specifications. Service HQ will formulate the 'Trial Directive' which will incorporate the parameters for validating the 'Essential Parameters'. Necessary technical literature pertaining to the design & material will be provided by the DAs for the User Trial Readiness Review as per policy in vogue.

Solicitation of Commercial Offers

13. A commercial Request for Proposal (RFP) for 'Buy (Indian-IDDMM)' phase would be issued to DA(s) prior to commencement of Field Evaluation Trials (FET) for soliciting their commercial offers.

Deliverable

14. The project is envisaged to have the following deliverables:-

(a) **Prototype Development Stage.**

<u>Unit Level Target System – Air Defence</u>	<u>Qty</u>
Unit Level Target System – Air Defence alongwith associated equipment.	
Unit Level Target System – Air Defence	01
Ground Control Station (GCS)	01

(b) **Procurement Stage.**

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<u>Unit Level Target System – Air Defence</u>	<u>Qty</u>
Unit Level Target System – Air Defence alongwith associated equipment.	
Unit Level Target System – Air Defence	142
Ground Control Station	114

Details of Trials/Assistance to be Provided

15. The following trials will be conducted / assistance will be provided :-

(a) **Trials**. The trials will be conducted in two stages :-

(i) **Stage-I : User Trial Readiness Review (UTRR)**. Development of prototype to bring the Unit Level Target System – Air Defence to user trial level. PFT will carry out User Trial Readiness Review (UTRR) of prototype and freezing of Technical Specification as per policy in vogue.

(ii) **Stage-II : Field Evaluation Trials**. To evaluate the performance and assess the suitability of Unit Level Target System – Air Defence to meet operational, technical and safety aspects. User Trials, DGQA Trials, EMI / EMC Trials and Maintainability Evaluation Trials (MET) on NCNC basis will be conducted. Details of the same will be included in the RFP.

(b) **Assistance to be Provided**. Assistance to Development Agencies (DAs) will be provided request received based on merit. In case of provision of ranges/ open spaces/ infrastructure by army any damage occurring to equipment/ property/ personnel resulting from the testing of the job of private entity, the private entity is liable to bear the expenses of repair/ replacement of the facility and all necessary insurance coverage for the job shall be the responsibility of the private entity.

Multiple Technological Solutions

16. Multiple technologies solutions are not acceptable.

PART III : EVALUATION CRITERIA

Vendor Evaluation Criteria

17. Eol respondents will furnish their response to the Vendor Evaluation Criteria as per **Appendix B**.

18. **MSMEs Incentive**. The project is reserved for MSMEs as per para 12 of Chapter III of DAP-2020. However, if at least two MSMEs do not express interest for

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a Make programme earmarked for them, the same shall be opened up for all, as per provisions of Chapter III of DAP-2020.

19. **Technical Evaluation Criteria**. The respondents to this EoI are required to furnish information about their Technical Capability as per Appendix 'C'. Compliance/ information' is also required to be submitted as per the proposed solution offered by the DA against PSQR of Unit Level Target System - Air Defence.

20. **Indigenous Content (IC)**. Indigenous Content \geq 50% is to be achieved. Post successful development under Make-II would result in acquisition from successful DAs through 'Buy (Indian-IDDMM)' category with indigenous design and development. The Indigenous Content \geq 50% in accordance to Para 21 Chapter I of DAP 2020.

21. **Additional Information**. Additional information required to be furnished as part of the EoI response is given at **Appendix G**.

22. **Foreign Collaboration**. If the EoI Respondent is collaborating/plans to collaborate with a foreign technology provider, the nature of such collaboration and the technology areas being transferred must be stated in the response (**please refer Para 14 of Appendix G**).

23. **Rejection Criteria for Selection as DAs**. The following may lead to rejection of EoI response :-

- (a) Failure to meet Vendor Evaluation Criteria given at **Appendix B**.
- (b) Failure to offer meet/ comply with Technical Evaluation Criteria given at **Appendix C**.
- (c) Failure to submit certificate as mentioned at **Appendix D to F** of the EoI.
- (d) Failure to offer compliance to any of the terms and conditions given in the EoI.
- (e) Any other parameter of the response considered inadequate by the MoD, Government of India.

PART IV : PROCEDURE FOR SUBMISSION OF RESPONSE TO THE EoI

24. The response to the EoI shall be submitted as per formats given at **Appendix B to F**.

25. **Guidelines for Submitting EoI Responses**.

- (a) The responses should be submitted strictly as per the formats given in respective Appendices. The vendors will submit their response on **Appendix**

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B to F. The response will be marked by pen on a printout of **Appendix B to F.** Any additional info may be entered by pen in remarks column. Additional information as per **Appendix G** will be submitted separately as per the given format.

(b) All responses and Appendices should be submitted in a single file / folder. Supporting documents / additional references should be submitted in a separate folder with proper reference mentioned against each parameter / sub parameter in respective appendices.

(c) Any supporting document / evidence without any reference to specific parameter of criteria will not form part of the assessment.

26. The Eol respondent shall submit three (03) copies of response to the Eol, clearly marking one copy as '**Original Copy**' and **second & third as 'Duplicate Copy and Triplicate Copy'**. The response will be submitted on print out of **Appendix B to F** uploaded alongwith the Eol. In the event of any discrepancy between them, the original copy shall govern/ prevail. Each page of the response will bear the signatures of the authorised signatory of the company. The DA shall also submit a soft copy of the response to this Eol in a CD/ DVD.

27. **The Envelops shall be Addressed as under :-**

Col Samudra Vijay Sarma, Col AD (TCR), AAD-9,
Secretary, Project Facilitation Team
Army Air Defence Directorate/ AAD-9
Integrated HQ of MoD (Army)
Room No 608, D1 Wing
Sena Bhawan
DHQ PO, New Delhi – 110011
email id – skyplan-94@gov.in
Tele No – 34884

28. The responses to this Eol must be submitted by 04 Oct 2021 at the above mentioned address.

29. **Confidentiality Agreement.** The Company will be required to sign and honour the 'Confidentiality Agreement' with MoD Govt of India. The 'Confidentiality Agreement' will be furnished by each Eol respondent at the time of submission of Eol responses as per format given at **Appendix E.**

PART V : MISCELLANEOUS

30. **Pre Eol Responses Meeting** A pre-response meeting will be held on 13 Sep 2021 at 1100 Hr at Directorate General of Army AD, AAD-9 (TCR & Make), New Delhi-11011. Vendors are required to submit their queries / clarifications / amplifications in writing to this office by 04 Sep 2021.

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31. Guidelines for penalties in business dealings with entities as promulgated by Government from time to time, will be applicable on procurement process & bidders.
32. The Pre-Contract Integrity Pact (PCIP), listed as detailed in Paragraph 119 of Chapter II of DAP-2020, shall apply mutatis mutandis to the 'Buy (Indian-IDDM)' phase of 'Make' project.
33. Respondent would be subject to disqualifications if they make false, incorrect, or misleading claims in their response to this EoI. A 'Correctness Certificate' as per the format at **Appendix D** will be furnished as part of the response.
34. An EoI Compliance Certificate will be submitted as per **Appendix F**.
35. Please acknowledge the receipt of this invitation for EoI.

File No : 50078/MAKE/SUO MOTO/ULTS/GS/AAD-9

Dated : Jul 2021

(Samudra Vijay Sarma)
Colonel

Secretary, Project Facilitation Team
Unit Level Target System –
Air Defence

Enclosures : Appendices A to G

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PRELIMINARY STAFF QUALITATIVE REQUIREMENTS FOR
AIR DEFENCE UNIT LEVEL TARGET SYSTEM

Introduction and Proposed Employment of the System

1. **Introduction.** Target systems ranging from simple 'aero models' to Maneuverable Expendable Aerial Target (MEAT) have been exploited towards training of Air Defence persons on various weapon platforms (gun/missile). There is a continuous requirement at the unit level to impart basic training to radar, missile and gun operators/firers. This requirement is met presently by exploiting aeromodels 7.5 cc onwards (combustion engine based). Common factors while exploiting aeromodels are firstly the reqmt of substantial effort towards training of operators flying these target system (aero models) and secondly the inescapable need of Take off/ Landing strips during field firing or unit level training of crew/detachment, and the limited speed the aeromodels can achieve.
2. To obviate the problems it is envisaged to have a unit level target system with VTOL capability/ Catapult Launch facility so as to reduce the requirement of Take off/Landing area. The system will be user friendly in terms of its operation thus reducing the training man-hours and overall cost incurred for training of operators on these target system. This target system will facilitate conduct of training during peace time for the gunners and the missile firers/ training for field firing/ tactical exercises with considerable ease from a restricted area/ small space. Being a unit level target system the same will not be used for live firing.
3. **Aim.** To define Preliminary Staff Qualitative Requirement of Air Defence Unit Level Target System.

ESSENTIAL PARAMETERS

Operational Parameters

4. **System Visualization.**

An Unit Level Target System is a target system to be utilized for tactical and technical training at the unit level having VTOL capability/ catapult launch capability which will be remotely controllable.



5. The Air Defence Unit Level Target System shall consist of the following components :-
 - (a) Air Defence Unit Level Target.

- (i) Main Fuselage Assembly.
 - (ii) Engine.
 - (iii) Main Wing.
 - (iv) Tailplane.
- (b) Ground Control System (GCS).

6. Air Defence Unit Level Target System should be well adapted for outdoor use. The Air Defence Unit Level Target System should have the following operational parameters/ capabilities :-

<u>Performance Characteristics</u>		
(a)	VTOL Capability/Catapult Launch	The proposed Air Defence Unit Level Target System will have VTOL capability and will be able to takeoff and land in a restricted space or can be catapult launched which will facilitate the unit to conduct training during peace time for the gunners and the missile firers/ training for field firing/ tactical exercises with considerable ease. The Air Defence Unit Level Target System should have day & night capability during fair weather.
(b)	Type	VTOL Capability/ Catapult Launch – fixed wing
(c)	Max Take Off Weight (MTOW)	Max 25 kg
(d)	Cruising Speed (with payload)	25-30 Mtr per second
(e)	Min Flight Time at cruise speed	60 min
(f)	Max Speed (with payload)	35-40 Mtr per second
(g)	Max Flight Altitude	500 m from ground level
(h)	Rate of Climb (Clean Configuration at Sea level)	8 m/sec or more at sea level.
(j)	Number of Landings	200 landings
(k)	Operating Temp	0°C to +50°C
(l)	Storage Temp	0°C to +55°C
<u>Physical Characteristics.</u> The Air Defence Unit Level Target System should have VTOL capability/ Catapult launch facility, be light weight and made of composite material, should have the facility of quick assembly and disassembly and should be recoverable.		
(m)	Parachute Recovery	The solution in which system is catapult launch must have in built recovery system as part of the system which can be triggered as per the requirement.

(n)	Landing	Landing should be soft and not damage the target system.
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7. **Individual Component Requirements.**

(a) **Air Defence Unit Level Target.** The main components are as under :-

(i) **Main Fuselage Assembly.** The fuselage is to be made of entirely composite material. The fuselage assembly will house the avionics suite, fuel tank / battery pack and a recovery system (as applicable).

(ii) **Engine.** Unit Level Target System is to be powered by a twin cylinder engine / electric motors with batteries which are commercially available. The size of the engine is to be selected in order to provide sufficient power to give the Unit Level Target System ability to fly as a target for Max Flight Time of 60 min at cruise speed as indicated above thereby providing a cost effective aerial gunnery training solution.

(iii) **Main Wing.** The main wing of the Unit Level Target System is to be made of composite materials like the fuselage. A moveable, aileron, control surface is to be fitted at the rear of each wing and each control surface is to be made of composite material. The hard points are to be provided under the wing for the carriage of pyrotechnic, coloured smoke tracking flares. A minimum of up to 2 x 24 W halogen bulbs/ 2 x smoke flares which can be remotely triggered are to be carried (1 on each side). The Wing-Tip hard points should allow the installation of pyrotechnic/ Infra-Red tracking flares.

(iv) **Tailplane.** Tail plane piece is to be fitted at the rear of the fuselage of Unit Level Target System. The tail plane should be made from composite material and at the rear of each tailplane will be positioned a moveable control surface and each control surface is to be driven by an electro-mechanical actuator.

(b) **Ground Control Station.** The Unit Level Target System will utilise a Ground Control Station through which the target operator/pilot gives command inputs to control the target. The GCS will have the following capabilities :-

(i) The GCS should be a transportable unit with capability of full Command and Control functions of Air Defence Unit Level Target System.

(ii) Flight control of Air Defence Unit Level Target System will be up to 10 kms from Ground Control Station subject to radio horizon.

(iii) In case of data link failure or on operators command, the target should be able to land automatically or by manual control.

(iv) It should have a recording facility to record data for 60 minutes and display the mission data.

(v) The GCS should be capable of operation from commercial power supply and have inbuilt power line surge protection. It should have online Uninterrupted Power Supply (UPS) system to enable full mission of 30 minutes, in case of power failure.

(vi) **Integrated Display and Control Consoles for Target Presentation.** The GCS will be used to display telemetry information from the Unit Level Target System and this information will include target position information, fuel / bty status (as applicable) and target indicated airspeed.

(vii) **Mission Planning.**

(aa) A lap top computer based mission planning package should be available with the GCS of the Air Defence Unit Level Target System.

(ab) The flight plan/ profile should be suitably depicted in the trajectory display console of the GCS.

(viii) **Post Flight Analysis.** The GCS shall have capability to store playback and analyze flight data. It shall be possible to playback the entire executed mission for post flight analysis and debriefs.

Technical Parameters

8. The Air Defence Unit Level Target System should have the following technical parameters/ capabilities :-

<u>Performance Characteristics</u>		
(a)	Wingspan	2.0 to 2.5 Mtr
(b)	Length	Upto 2 Mtr
(c)	Material	Glass/Carbon Fiber/Kevlar/ Any equivalent mtrl
(d)	Flight Controls	(i) Flight Controls will be by use of remote and by pre programmed flight mode. (ii) The flight controls will be up to 10 Kms.
(e)	GNSS	GLONASS/ GPS/IRNSS
(f)	Pay load (Target Indicators)	1 x flare / 24 W halogen bulb per wing
(g)	Light Weight and made of composite material	The proposed Air Defence Unit Level Target System will be made up of composite material to reduce weight as well as to give it strength.
(h)	Design	The design should be such that the damaged parts should be easily replaceable . It should afford easy accessibility to ensure quick replacement of faulty assemblies / sub assemblies / modules in-situ.

Maintenance and Ergonomic Parameters

9. **Storage and Transportation.** The assembly and disassembly of the parts of the Unit Level Target System should be easy. The Unit Level Target System should be capable of being stored in weatherproof packages in the field conditions (non-air-conditioned) and transportable by land.

10. **Maintenance and Repair.** The Air Defence Unit Level Target System should afford ease of maintenance and repair. An Engineering support package including spares, Special Maintenance Tools (SMTs) / Special Test Equipment (STE) and Test jigs, Technical Literature and training for repair and maintenance upto field level shall be provided by the vendor

11. **Built-in Test Equipment (BITE).** The system should have BITE/Power On Self Test (POST) modes to support diagnostics and repairs through module replacement in field conditions. Audio/Visual alarm be provided to indicate test failure.

12. **Package Material.** Air Defence Unit Level Target System, instruments/ test equipment and spares should have proper package material which should withstand carriage and handling in field conditions.

13. **Miscellaneous.**

(a) **Safety Arrangements.** The design and development agency shall provide fool proof features for the safety of personnel as well as equipment from mechanical and fire hazards during operational maintenance.

(b) Adequate safety stickers must be provided and adequate protection for over loading/short circuit to be provided in the system.

(c) Transport instruction, handling instruction, storage instruction, inspection, maintenance instruction, safety precaution, disposal instruction etc, must be clearly defined for complete system.

DESIRABLE PARAMETER

14. **Desirable Parameter.** The Air Defence Unit Level Target System should have the following :-

(a) It should have return to home option which should be automatically activated in case of disruption in GPS/ Comd links.

(b) It should be capable up to 1600m above Mean Sea Level (MSL).

15. **Conclusion.** No departure shall be made from this qualitative requirement without the prior authority, in writing, of the GSEPC.

16. **Review.** The PSQR may be reviewed by user, if required, to cater for operational requirement and technological improvement/ up-gradation.

Details of Drafting Team

Prepared By	: Col Samudra Vijay Sarma, Col AD (ET & Make)
Verified By	: Brig Vikash Sharma, Brig AD (Proc & EM)
Address	: DG AAD/ AAD-9, Room No 608, D-1 Wing, Sena Bhawan
Contact Details	: 34884

DG AAD (AAD-D)

VENDOR EVALUATION CRITERIA

Vendor Evaluation Criteria

1. Name of the Vendor.
2. Evaluation Criteria

<u>Ser No</u>	<u>Criteria</u>	<u>Vendor Submission</u>	<u>Remarks (if Any)</u>
(a)	Nature of the Company (refer Para 6(b) of Chapter III of DAP-2020)	Indian / Joint Venture	
(b)	Ownership status (refer Para 6(b) of Chapter III of DAP-2020)	Compliant / Non compliant	
(c)	Category of Industry	Large / Medium / Small / Micro / OFB / Start Up	
(d)	Registration Details	Yes / No	
(e)	DIPP License details.		

Station :

Signature

Company Seal

Date :

Note :

1. All submissions must be on printed copy of Appendix as uploaded on MoD website and should be supported by referenced documents duly authenticated.
2. Any input with incorrect or missing reference will not assessed.

TECHNICAL EVALUATION CRITERIA

<u>Ser No</u>	<u>Criteria and Sub Criteria</u>	<u>Vendor Response</u>	<u>Remarks (if Any)</u>
1.	Indigenous content will be more than 50% as per DAP-2020	Compliant/ Non Compliant	
2.	Indigenous design as per provision of DAP-2020	Compliant/ Non Compliant	
3.	<u>Timelines.</u>		
	(a) Development of prototype - 30 weeks	Compliant/ Non Compliant	
	(b) Delivery of items as per delivery schedule - 12 Months.	Compliant/ Non Compliant	
4.	Confirmation of capability to develop and provide equipment to meet user requirements specified in Appendix A (PSQR).	Compliant/ Non Compliant	
5.	Proposed system configuration (broad design details).	Provided/ Non Provided	
<u>PSQR Requirements</u>			
	<u>Introduction and Proposed Employment of the System</u>		
6.	<u>Introduction.</u> Target systems ranging from simple 'aero models' to Maneuverable Expendable Aerial Target (MEAT) have been exploited towards training of Air Defence persons on various weapon platforms (gun/missile). There is a continuous requirement at the unit level to impart basic training to radar, missile and gun operators/firers. This requirement is met presently by exploiting aeromodels 7.5 cc	Compliant/ Non Compliant	

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	onwards (combustion engine based). Common factors while exploiting aeromodels are firstly the reqmt of substantial effort towards training of operators flying these target system (aero models) and secondly the inescapable need of Take off/ Landing strips during field firing or unit level training of crew/detachment, and the limited speed the aeromodels can achieve.		
7.	To obviate the problems it is envisaged to have a unit level target system with VTOL capability/ Catapult Launch facility so as to reduce the requirement of Take off/Landing area. The system will be user friendly in terms of its operation thus reducing the training man-hours and overall cost incurred for training of operators on these target system. This target system will facilitate conduct of training during peace time for the gunners and the missile firers/ training for field firing/ tactical exercises with considerable ease from a restricted area/ small space. Being a unit level target system the same will not be used for live firing.	Compliant/ Non Compliant	
8.	<u>Aim.</u> To define Preliminary Staff Qualitative Requirement of Air Defence Unit Level Target System.	Compliant/ Non Compliant	
	<u>Operational Parameters</u>		
9.	<u>System Visualization.</u> An Unit Level Target System is a target system to be utilized for tactical and technical training at the unit level having VTOL capability/ catapult launch capability which will be remotely controllable.	Compliant/ Non Compliant	

10.	The Air Defence Unit Level Target System shall consist of the following components :- (a) Air Defence Unit Level Target. (i) Main Fuselage Assembly. (ii) Engine. (iii) Main Wing. (iv) Tailplane.	Compliant/ Non Compliant	
	(b) Ground Control System (GCS).	Compliant/ Non Compliant	
11.	Air Defence Unit Level Target System should be well adapted for outdoor use. The Air Defence Unit Level Target System should have the following operational parameters/ capabilities :- (a) <u>VTOL Capability/Catapult Launch</u> - The proposed Air Defence Unit Level Target System will have VTOL capability and will be able to takeoff and land in a restricted space or can be catapult launched which will facilitate the unit to conduct training during peace time for the gunners and the missile firers/ training for field firing/ tactical exercises with considerable ease. The Air Defence Unit Level Target System should have day & night capability during fair weather.	Compliant/ Non Compliant	

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(b) <u>Type</u> - VTOL Capability/ Catapult Launch – fixed wing	Compliant/ Non Compliant	
(c) <u>Max Take Off Weight (MTOW)</u> - Max 25 kg	Compliant/ Non Compliant	
(d) <u>Cruising Speed (with payload)</u> - 25-30 Mtr per second	Compliant/ Non Compliant	
(e) <u>Min Flight Time at cruise speed</u> - 60 min	Compliant/ Non Compliant	
(f) <u>Max Speed (with payload)</u> - 35-40 Mtr per second	Compliant/ Non Compliant	
(g) <u>Max Flight Altitude.</u> - 500 m from ground level	Compliant/ Non Compliant	
(h) <u>Rate of Climb (Clean Configuration at Sea level)</u> - 8 m/sec or more at sea level.	Compliant/ Non Compliant	
(j) <u>Number of Landings</u> - 200 landings	Compliant/ Non Compliant	
(k) <u>Operating Temp</u> - 0°C to +50°C	Compliant/ Non Compliant	
(l) <u>Storage Temp</u> - 0°C to +55°C	Compliant/ Non Compliant	
<u>Physical Characteristics.</u> The Air Defence Unit Level Target System should have VTOL capability/ Catapult launch facility, be light weight and made of composite material, should have the facility of quick assembly and disassembly and should be recoverable.	Compliant/ Non Compliant	
(m) <u>Parachute Recovery</u> - The solution in which system is catapult launch must have in built recovery system as part of the system which can be triggered as per the requirement.	Compliant/ Non Compliant	
(n) <u>Landing</u> - Landing should be soft and not damage the target system.	Compliant/ Non Compliant	

12.	<u>Individual Component Requirements.</u>		
	<p>(a) <u>Air Defence Unit Level Target.</u> The main components are as under :-</p> <p>(i) <u>Main Fuselage Assembly.</u> The fuselage is to be made of entirely composite material. The fuselage assembly will house the avionics suite, fuel tank / battery pack and a recovery system (as applicable).</p> <p>(ii) <u>Engine.</u> Unit Level Target System is to be powered by a twin cylinder engine / electric motors with batteries which are commercially available. The size of the engine is to be selected in order to provide sufficient power to give the Unit Level Target System ability to fly as a target for Max Flight Time of 60 min at cruise speed as indicated above thereby providing a cost effective aerial gunnery training solution.</p> <p>(iii) <u>Main Wing.</u> The main wing of the Unit Level Target System is to be made of composite materials like the fuselage. A moveable, aileron, control surface is to be fitted at the rear of each wing and each control surface is to be made of composite material. The hard points are to be provided under the wing</p>	Compliant/ Non Compliant	

	<p>for the carriage of pyrotechnic, coloured smoke tracking flares. A minimum of up to 2 x 24 W halogen bulbs/ 2 x smoke flares which can be remotely triggered are to be carried (1 on each side). The Wing-Tip hard points should allow the installation of pyrotechnic/ Infra-Red tracking flares.</p> <p>(iv) <u>Tailplane</u>. Tail plane piece is to be fitted at the rear of the fuselage of Unit Level Target System. The tail plane should be made from composite material and at the rear of each tailplane will be positioned a moveable control surface and each control surface is to be driven by an electro-mechanical actuator.</p>		
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	<p>(b) <u>Ground Control Station.</u> The Unit Level Target System will utilise a Ground Control Station through which the target operator/pilot gives command inputs to control the target. The GCS will have the following capabilities :-</p> <p>(i) The GCS should be a transportable unit with capability of full Command and Control functions of Air Defence Unit Level Target System.</p> <p>(ii) Flight control of Air Defence Unit Level Target System will be up to 10 kms from Ground Control Station subject to radio horizon.</p> <p>(iii) In case of data link failure or on operators command, the target should be able to land automatically or by manual control.</p>	Compliant/ Non Compliant	
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	<p>(iv) It should have a recording facility to record data for 60 minutes and display the mission data.</p> <p>(v) The GCS should be capable of operation from commercial power supply and have inbuilt power line surge protection. It should have online Uninterrupted Power Supply (UPS) system to enable full mission of 30 minutes, in case of power failure.</p> <p>(vi) <u>Integrated Display and Control Consoles for Target Presentation.</u> The GCS will be used to display telemetry</p>		
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	<p>information from the Unit Level Target System and this information will include target position information, fuel / bty status (as applicable) and target indicated airspeed.</p> <p>(vii) <u>Mission Planning.</u></p> <p>(aa) A lap top computer based mission planning package should be available with the GCS of the Air Defence Unit Level Target System.</p> <p>(ab) The flight plan/ profile should be suitably depicted in the trajectory display console of the GCS.</p> <p>(viii) <u>Post Flight Analysis.</u> The GCS shall have capability to store</p>		
13.	<p><u>Technical Parameters</u> The Air Defence Unit Level Target System should have the following technical parameters/ capabilities :-</p> <p>(a) <u>Wingspan</u> - 2.0 to 2.5 Mtr</p>	Compliant/ Non Compliant	
	<p>(b) <u>Length</u> - Upto 2 Mtr</p>	Compliant/ Non Compliant	
	<p>(c) <u>Material</u> - Glass/Carbon Fiber/Kevlar/ Any equivalent mtrl</p>	Compliant/ Non Compliant	

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	(d) <u>Flight Controls</u> – (i) Flight Controls will be by use of remote and by pre programmed flight mode. (ii) The flight controls will be up to 10 Kms.	Compliant/ Non Compliant	
	(e) <u>GNSS</u> - GLONASS/ GPS/IRNSS	Compliant/ Non Compliant	
	(f) <u>Pay load (Target Indicators)</u> - 1 x flare / 24 W halogen bulb per wing	Compliant/ Non Compliant	
	(g) <u>Light Weight and made of composite material</u> - The proposed Air Defence Unit Level Target System will be made up of composite material to reduce weight as well as to give it strength.	Compliant/ Non Compliant	
	(h) <u>Design</u> - The design should be such that the damaged parts should be easily replaceable. It should afford easy accessibility to ensure quick replacement of faulty assemblies / sub assemblies / modules in-situ.	Compliant/ Non Compliant	
	<u>Maintenance and Ergonomic Parameters</u>		
14.	<u>Storage and Transportation.</u> The assembly and disassembly of the parts of the Unit Level Target System should be easy. The Unit Level Target System should be capable of being stored in weatherproof packages in the field conditions (non-air-conditioned) and transportable by land.	Compliant/ Non Compliant	

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15.	<u>Maintenance and Repair.</u> The Air Defence Unit Level Target System should afford ease of maintenance and repair. An Engineering support package including spares, Special Maintenance Tools (SMTs) / Special Test Equipment (STE) and Test jigs, Technical Literature and training for repair and maintenance upto field level shall be provided by the vendor.	Compliant/ Non Compliant	
16.	<u>Built-in Test Equipment (BITE).</u> The system should have BITE/Power On Self Test (POST) modes to support diagnostics and repairs through module replacement in field conditions. Audio/Visual alarm be provided to indicate test failure.	Compliant/ Non Compliant	
17.	<u>Package Material.</u> Air Defence Unit Level Target System, instruments/ test equipment and spares should have proper package material which should withstand carriage and handling in field conditions.	Compliant/ Non Compliant	
18.	<u>Miscellaneous.</u>		
	(a) <u>Safety Arrangements.</u> The design and development agency shall provide fool proof features for the safety of personnel as well as equipment from mechanical and fire hazards during operational maintenance.	Compliant/ Non Compliant	
	(b) Adequate safety stickers must be provided and adequate protection for over loading/short circuit to be provided in the system.	Compliant/ Non Compliant	

	(c) Transport instruction, handling instruction, storage instruction, inspection, maintenance instruction, safety precaution, disposal instruction etc, must be clearly defined for complete system.	Compliant/ Non Compliant	
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19. **Compliance Certificates.**

- (a) Correctness Certificate (As per Appendix D) : Compliant / Non Compliant.
- (b) Confidentiality Agreement (As per Appendix E) : Compliant / Non Compliant.
- (c) EoI Compliance Certificate (As per Appendix F): Compliant / Non Compliant.

Station:

Signature

Company Seal

Date :

Note :

1. All submissions must be on printed copy of Appendix as uploaded on MoD website and should be supported by referenced documents duly authenticated.
2. Any input with incorrect or missing reference will not assessed.

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Appendix D

(Refers to Para 32 of EoI)

CORRECTNESS CERTIFICATE

It is certified that information submitted in the documents as part of the response to Expression of Interest for the project of Unit Level Target System – Air Defence is correct and complete in all respects. It is acknowledged that the company will be disqualified from further participation if any information provided is found to be incorrect.

Signature with Company Seal

Note :

1. All submissions must be on printed copy of Appendix as uploaded on MoD website and should be supported by referenced documents duly authenticated.
2. Any input with incorrect or missing reference will not assessed.

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Appendix E

(Refers to Para 28 of Eol)

CONFIDENTIALITY AGREEMENT

1. It is certified that Expression of Interest document for the project of Unit Level Target System – Air Defence will not be shared with any agency in part or full any other agency. Only relevant details, as applicable, will be shared with technology partners including foreign technology partners. However, the Eol document itself will not be shared with any technology partners.
2. The company understands the security sensitivity of such an operational systems and any information pertaining to deployment and usage of the system including system scaling will not be discussed with third party without a written permission from the Project Facilitation Team. The company understands that failure to observe this agreement will lead to disqualification from the project.

Signature with Company Seal

Note :

1. All submissions must be on printed copy of Appendix as uploaded on MoD website and should be supported by referenced documents duly authenticated.
2. Any input with incorrect or missing reference will not assessed.

Appendix F

(Refers to Para 33 of Eol)

Eol COMPLIANCE CERTIFICATE

It is certified that all the aspects mentioned in the Expression of Interest for the procurement of Unit Level Target System – Air Defence are being complied to. It is acknowledged that the company will be disqualified from further participation if any aspect mentioned in Expression of Interest is not complied with.

Signature with Company Seal

Note :

1. All submissions must be on printed copy of Appendix as uploaded on MoD website and should be supported by referenced documents duly authenticated.
2. Any input with incorrect or missing reference will not assessed.

INFORMATION PERFORMA

1. Name of the Company.
2. Name of CEO with Designation.
3. Address of the Registered Office.
4. Address of the Factory / Factories.
5. Company Website(s).
6. Date of Incorporation.
7. Brief History of the Company.
8. Category of Industry (Large / Medium / Small / Micro).
9. Nature of Company (Public Limited/ Private Limited).
10. Nature of Business (Manufacture / Trader / Sole selling or Authorised Agent/ Dealer / Assembler / Processor / Re packer/ Service Provider). Please give broad product range as applicable
11. Details of Current Products :-
 - (a) Type / Description.
 - (b) Licensed / Installed Capacity.
 - (c) Annual Production for Preceding 3 Years.
12. Credit Rating.
13. Details of IPRs if any.
14. Details of Foreign Collaborations if any planned for execution of project.
15. Technology Received from abroad and assimilated / planned for execution of project.

16. Products Already Supplied :-

- (a) To Indian Army / Air Force / Navy.
- (b) PSUs.
- (c) DRDO and its Laboratories.
- (d) Ordnance Factories.
- (e) Any other Defence Organisation.
- (f) To other Principal Customers.

17. Details of Developmental Facilities :-

- (a) R&D Facilities Available.
- (b) Number of Technical Manpower.
- (c) Percentage of Total Turn-Over Spent on R&D during the Last Three Years.

18. Turn-Over during the last Three financial Years.

19. Any other relevant information.

20. Contact Details of the Executive nominated to co-ordinate with the Assessment Team (Please provide telephone, mobile and e-mail address).

Station:

Signature

Company Seal

Date :