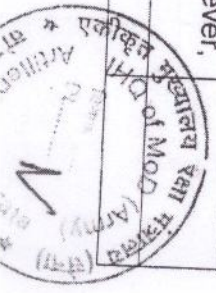


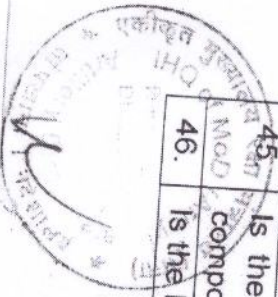
QUESTIONNAIRE : LONG RANGE LOITER MUNITION (LRLM)

S No	Specification Required	Response
1.	General Configuration of LM System	
2.	Can the LM system Operate in Plains, desert, Jungles and hilly terrain in climatic conditions extant in India?	
3.	Is the LM System modular in design and capable of repairs in field?	
4.	What is the Service life of the LM System? Specify in number of years.	
5.	How many years of Product support and provision of spares and maint assistance will be provided?	
6.	Has the System undergone any upgrade, if so, when? Are any upgrades of the systems planned, if so, the details of upgrades and schedule be provided?	
7.	Which Model/Version of equipment is being provided?	
8.	Are Simulators for training of the crew available and is it part of the sys being offered or is to be procured separately?	
9.	Is the system Compliant with the metric system?	
10.	Is the Entire system ruggedized as per military standards 810G and able to operate in conditions prevalent in India?	
11.	Can the System be transported by road, rail, air and ship?	
Specifications of the Aerial Vehicle of LM System		
12.	Is the Aerial vehicle modular in design?	
13.	What is the Material used in manufacture of the aerial vehicle?	
14.	What is the mode of launch i.e. VTOL/ Canister launched/ Rail launched, etc & mode of recovery of aerial vehicle?	
15.	Can the Aerial vehicle be mounted on an in-service vehicle? If so, provide vehicle details.	
16.	How many Aerial Vehicles can be stored in the carrier vehicle	
17.	Can the Ground Data Terminal (antenna) be mounted on carrier vehicle? If so, what would be the max height of mast? the same be shared.	
18.	What is Magnitude of Radar and acoustic signature of Aerial vehicle?	
19.	What is the Absolute Height ceiling of the aerial vehicle?	
20.	What is the Operational ceiling of the aerial vehicle? Minimum operating ceiling required is 5000 mtr.	
21.	What would be maximum range (launch point to target)? Range required is 1000 Km or as close as 1000 Km. However, it should not be less than 500 Km.	
22.	Endurance to engage targets at about 1000 Km range be specified.	

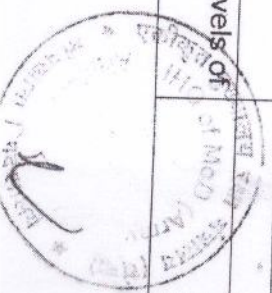


Specification Required

S No	Specification Required	Response
25.	Can the aerial vehicle strike the target in Steep angle (80 +/- 10 deg), Slant angle (65 +/- 10 deg) & Nape of earth (5 deg).	
26.	Specify the Max speed and Cruise speed & Strike speed of the aerial vehicle? Desired speed is minimum 400 Km/hour.	
27.	Specify method of arming/ disarming the warhead placed in the aerial vehicle?	
28.	Can the operator intervene to arm/ disarm the warhead?	
29.	What are the safety measures incorporated to prevent unintentional arming of warhead during launch, in-flight & during recovery of aerial vehicle?	
30.	Does the Aerial Vehicle has capability to Return-To-Home (RTH) in case of communication breakdown?	
31.	Can Aerial Vehicle function in GPS denied environment? Details be specified.	
32.	Does the Aerial Vehicle has Digital Scene Contour Matching/ Terrain Contour Matching/ similar or advance technology?	
33.	Is the Aerial Vehicle reusable post field repair after abort & retrieval (for training, Aerial vehicle)?	
34.	Does the Aerial Vehicle has Artificial Intelligence based target detection capability?	
35.	Can the mission be aborted after locking on to the target? If so, at what minimum distance from target/ launch point, the mission can be aborted?	
36.	In case of line of sight communication breakdown, will the Aerial Vehicle be able to transmit its telemetry location to the operator?	
37.	While approaching the target, uptill what distance from target the Aerial Vehicle will transmit real time video feed?	
38.	What is the accuracy (Circular Error of Portability) of Aerial Vehicle in terms radius in meter from impact point?	
39.	Can the operator vary cruise speed of Aerial Vehicle while approaching the target?	
40.	Specify method of Navigation from Launch Point to Target Area.	
41.	Does the LM System have a satellite based navigation sys and is compatible with Indian Regional Navigation Satellite sys (IRNSS)? Specify counter ECM measures incorporated in the system.	
42.	Specify method of cooling of electro-optical payload in the Aerial Vehicle?	
43.	Does the Aerial Vehicle have inbuilt ECCM capability to prevent interference or spoofing? Details be shared.	
44.	Is the engine of Aerial Vehicle indigenous or ex-import? If ex-import, any plans of its indigenisation being critical component? What are the specification of engine? If ex-import, how its quality has been verified?	
45.	Is the Electro-Optical component indigenous or ex-import? If ex-import, any plans of its indigenisation being critical component?	
46.	Is the Flight Avionics indigenous or ex-import? If ex-import, any plans of its indigenisation being critical component?	

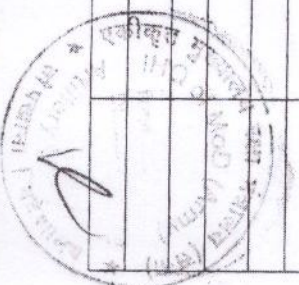


S No	Specification Required	Response
47.	Is the main frame of Aerial Vehicle indigenous or ex-import? If ex-import, any plans of its indigenisation being critical component?	
48.	Types of propulsion system of the Aerial Vehicle be specified e.g Turbojet etc.	
49.	Specify Aerial Vehicle engine specifications.	
50.	Can the Aerial vehicle operate between temperatures of minus 30° to 55°? Specify Operating and storage temperatures.	
51.	What is the max wind speed in which the LM System can operate?	
52.	What are the Take-off, landing parameters?	
53.	Specify Max launch altitude?	
54.	What is the max rain conditions in mm, the Aerial vehicle can operate?	
55.	Specify if there is Power back up available and its duration?	
56.	Does the LM System have identification of friend or foe (IFF) and Traffic Collision Avoidance Sys (TCAS)?	
57.	Specifications of Ground Control Station(GCS) and Equipment	
58.	Is the GCS Modular in design, ruggedized as per mil grade std 810G and capable of operating in conditions prevalent in India?	
59.	Is the GCS containerized and capable of being transported by road, rail or ship? Dimensions of components be specified?	
60.	Specify the Types of control stations with the system and their use in brief?	
61.	Specify the Mission planning capability of the system? How many number of LM can GCS control at one time?	
62.	Do the Control stations have the facility of electronic map display with provision for selection of scales and facility to upload digital maps of an area of minimum 1000 Km?	
63.	Do the Control stations have the software to control the LM and payload in real time, receive inputs from payloads in real time and exploit the data from all payloads?	
64.	Do the Control stations display and record all flight parameters during mission?	
65.	What type of returns to home? Can the bird return to a location from where communication is re-est & then fresh target can be assigned?	
66.	Is Manned and unmanned interface available for controlling payload from other platform? Specify level of interface. Does the System have the capability of integration with other aerial platforms to provide sensor inputs? Are there levels of interface to include active and passive inputs?	



Specification Required		Response
S No		
67.	Do the Control stations provide voice communication facility between the operating crew?	
68.	Does the System have the capability to record video and still images along with map geographical tagging in the control station along with the capability to download on a secondary media. Is the hardware and software of the latest technology? Specify.	
69.	Does System have facility of live streaming of video images with geographical tagging from the station?	
70.	Does the System have a warning system to indicate failures/ emergencies? Does the system provide probable causes & trouble shooting options?	
71.	Is the System Electro Magnetic Interference (EMI)/ Electro Magnetic Pulse (EMP) hardened?	
72.	Is the System compatible with WGS 84 format and capable to incorporate the following map data :-	
	72.1. Vector data - dgn and shp (of scale 1:2,50,000 and 1: 50,000).	
	72.2. Raster data - Geo TIFF (of scale 1:2,50,000 and 1: 50,000).	
	72.3. Digital Terrain Elevation Data (DTED) - Level-I and Level-II.	
	72.4. Defence Series Maps (DSM).	
73.	What is the Specification and configuration of Ground Support Equipment/ Ground Support Test Equipment?	
74.	What is the size and type of display being offered in the GCS?	
75.	Details of any software or sub-component being sourced from countries sharing land borders with India.	
Specification of Data Link		
76.	Give Architecture of the data link system. What are the Frequency bands (non ISM) of the system?	
77.	Does the System have a min of two controlling channels in two separate bands? Are the channels encrypted and secured against jamming? ECCM measures? Anti-interference measures?	
78.	Does the Down link provide essential parameters in telemetric form to monitor the air vehicle and real-time reports of the payloads?	
79.	Does the System have a warning system to identify interference, jamming or interception?	
80.	Does the Data link system provide the facility to create an embedded and encryption layer?	
81.	What is the Effective line of sight range in various combinations of communications?	
82.	Does the System provide fail safe mechanism and return to home feature in case of loss of data link communication?	

S No	Specification Required	Response
83.	Specification of Payloads Electro Optical/ Infra-Red (EO/IR) Payload with Laser Range Finder (LRF):- 83.1. Is the payload an integrated payload on a single gimballed platform with day coloured CCD, FLIR and Laser designator? 83.2. Does the CCD and IR camera have continuous Zoom facility? 83.3. Detection and recognition range by CCD and FLIR be specified? 83.4. Range and accuracy of the laser Range Finder be specified? 83.5. Does the system use Artificial Intelligence for target identifications and fall of shots?	
84.	Warhead Specification (High Explosive/ High Explosive Enhanced Blast/ Penetration-cum-Blast/ Thermobaric) What are types of warhead available? Give specification?	
85.	What would the warhead weight for Killing Radius of 50 mtrs from point of impact (minimum warhead weight required is 25 Kg). NEC be specified.	
86.	Specify Net Explosive Content of Warheads, its UN Hazard Division & number of shrapnel/ splinters in anti-personal warhead? Air burst capability?	
87.	With what speed the shrapnel/ splinters flies after warhead impacts the target & in what direction (in terms of angle)	
88.	Is the warhead indigenous or ex-import?	
89.	Does the firms have license to handle warhead? If not, how it is being sourced?	
90.	Is safety arming devise integrated with warhead?	
91.	Are the warheads tested for penetration (Anti-armor) & arena test (anti-personnel) at TBRL? If so, relevant extract of test report be shared. If not, how its effectiveness has been measured? Details be shared.	
92.	Can the LM with warhead be safely aborted & retrieved?	
93.	Is there a provision of Inert Warhead for training purpose? Can a separate training LM be provided (w/o Warhead ruggedized for training)?	
94.	Simulator for Training. Does the Sys have simulator for training of troops for take-off, landing and training capability?	
95.	Miscellaneous: Indicate if any other payload is being offered with brief description and capability?	
96.	Maintenance 96.1. Briefly describe the maintenance philosophy of the system and echelons of repairs/ maint. What maint & repair philosophy is proposed? 96.2. Does the System facilitate conduct of continuous operations by LM System? 96.3. Specify the overhaul and change time of major components. 96.4. Are spares and repair facilities available in India? 96.5. Is continuous product support for the complete life of the equipment being provided? 96.6. Level of Maint Transfer of Technology (MToT) being offered? 96.7. Specify warranty and Annual maintenance being offered.	



S No	Specification Required	Response
97.	<p>Miscellaneous.</p> <p>97.1. What is the level of maintenance and repair training being offered?</p> <p>97.2. What is Operator/ Crew training being offered in terms of training days and for number of personnel?</p> <p>97.3. What is the percentage of Indigenous content in the system? Give details of the sub components which are indigenous.</p> <p>97.4. What will be the percentage of foreign content in the LM System? Give details of the sub components which will be ex-imported.</p> <p>97.5. What are the critical technologies which will be indigenous in the prototype (for trials) and in final product during delivery? Also specify the critical technologies which will be ex import during delivery stage.</p> <p>97.6. What is the indigenous plan of subcomponents/LRUs being procured from your foreign partner?</p> <p>97.7. What is the indigenous capability of maintenance of components and sub-components in India? Maintenance and upgrade frequencies required of sub components being used in your LM system?</p> <p>97.8. Is any subcomponent of your LM System is interoperable with any in-service equipment?</p>	
98.	<p>Product Support.</p> <p>98.1. What kind of 'Product Support' will be ensured including warranty & AMC proposed? What will be 'Time Period'?</p> <p>98.2. What is the anticipated life of the system in terms of years and hours run? Any base overhaul to the system post the shelf life proposed and is the firm willing to provide the facility?</p> <p>98.3. Does the company have major repair and overhaul facility for major assemblies and component level repair? Is the firm ready to share MTO with Indian Army?</p> <p>98.4. Is the company ready to sign Life Cycle Support Contract (LCSC) with the LM System contract as per DAP 2020? Is the company ready to provide LCSC for entire life of the equipment?</p> <p>98.5. Can ESP (Engineering Support Package) comprising of MRLS (Manufacture Recommended List of Spares), SMT (Special Maintenance Tools) / STE (Special Test Equipment), Technical Manual / Documents, Training Material including Sectionised Models, Training Charts and CBT (Computer Based Test) packages be provided?</p>	



S No	Specification Required	Response
99.	Warning Arrangements. What warning arrangements are incorporated to ensure safe operation and maintenance of the LM system? BITE facility, health check of the bird, payload and War H trouble shooting.	
100.	On Board Test Equipment. Give out the details of following:- 100.1. Off line test facilities for Payload and aerial vehicle. 100.2. Software & Hardware test facilities for GCS.	
101.	Environmental Performance. 101.1. What is the temperature range in which the LM system will function efficiently? 101.2. Does the LM System comply with JSS 55555 standards?	
102.	Standardisation. Please confirm that the assemblies, sub-assemblies, components, parts and materials used in the equipment conform to relevant MILSTD(S) and in the absence of MILSTD(S), other internationally accepted standards.	
103.	Status of Development / Production. 103.1. What is the present status of development of the LM system? 103.2. Please specify timelines for fielding the product for evaluation from date of issue of RFP. 103.3. What is the infrastructure available to produce the LM system in India? 103.4. What is / will be the annual production capability of your firm? 103.5. Please intimate number of Equipment Under Trials (EUT) that can be provided for trials. 103.6. Please clarify whether EUT being provided will be of JV Foreign OEM or of the Indian Vendor?	
104.	Indicative Cost. 104.1. Likely cost of production of one LM System consisting of 15xAerial vehicle, one ADR vehicle with complete payload, one GCS, one GDT, one launcher integrated on in-service carrier vehicle, two FOS & one simulator? 104.2. The indicative cost breakdown in broad percentage to facilitate formulation of PVC formula as given below:- 104.2.1. Fixed Percentage. 104.2.2. Material Percentage. Only two to three major materials to be mentioned. 104.2.3. Labour Percentage.	
105.	What is the minimum quantity which OEM would be willing to offer keeping in mind the financial viability of the project?	



S No	Specification Required	Response
106.	Details of Joint Venture (JV) Partners.	
	106.1. Please specify details of foreign firm(s) as JV partner(s) (if any). If Yes, what are the essential critical technology which are required to be obtained? How much time will the startup/JV take to start production?	
	106.2. What are the critical system for which IPR will be with JV Foreign OEM?	
107.	Whether it is indigenous design and development? If No, whether the vendor has IPR for the eqpt? Maximum IC Content (excluding labour) that can be confirmed by the vendor?	
108.	Please specify if your firm will be able to field their equipment under Buy Indian (IDDM) or Buy Indian Category?	
109.	Is this eqpt in service with any other country? If yes, furnish details of quantity supplied to the country and year of supply? In which country and Def/ Para Mil forces has the eqpt in service and since when?	
110.	What are the enhanced parameters / specification that can be provided?	
111.	Will you be able to offer sectionised /cut models, 3D models, CDs for training whether simulators for the equipment are available and will be provided?	
112.	Any other relevant info in terms of specifications/terms of reference, the OEM/ vendor would like to share.	
113.	Max feasible preservation period, if required? Effect of preservation on warranty?	
114.	Is the firm holding Design IPR of the LM system? Also specify specific IPRs with respect to components and subcomponents of the LM system held with the firm?	
115.	Does the firms have Defence Industrial License to produce LM? If so, what is the monthly & yearly production capability?	
116.	Does the firm have all applicable licences/ permissions by Govt Depts.? To produce & supply the complete eqpt as per current rules & regulations?	
117.	Indigenous Content.	
	117.1. Likely achievable Indigenous Content (IC) at prototype stage & production stage?	
	117.2. Critical technologies identified for the system that will be D&D indigenously.	
	117.3. Details of critical technologies not likely to be available in India, to be sources ex-import, alongwith country & origin.	
118.	Manufacturer.	
	118.1. Details of IPR held for each component/ sub-system of LRLM System.	
	118.2. Whether the company has tie-ups/ JV with foreign vendors?	
	118.3. Details regarding quality certification, date of certification with validity and certifying agency.	

S No	Specification Required	Response
119.	Prototype. 119.1. Likely time for development of the prototype. 119.2. Quantity of prototype recommended for user trials. 119.3. Manufacturing capabilities of developing agency in terms of product per year. 119.4. Cost of prototype and one set of the complete product.	
120.	Miscellaneous. 120.1. Minimum quantity economically viable for business. 120.2. Whether similar equipment has been supplied to any other client (Indian/ Global)? 120.3. Details of company capabilities pertaining to design, develop, manufacture and integrate the product/ system alongwith estimated timelines for various components/ phases of development of product.	
121.	Administrative Assistance. 121.1. Likelihood of assistance that would be required from Indian Army. 121.2. Does the company have adequate infrastructure for testing of equipment and dynamic trials?	
122.	Company Details. 122.1. Category of Company, whether large/ medium/ small/ start-up. 122.2. Years of existence (established in year _____) & annual turnover. 122.3. The credit rating of company. 122.4. Annual profit in last three financial years. 122.5. Experience of the company in related field. 122.6. Average annual turnover of past three years. 122.7. Net worth as on 31 Mar of previous Financial Year.	



v. The contact details on which responses are to be forwarded are as under :-

Mail ID - proctiger.12@gov.in

Mob - 8210641101.