

Document No : LPSC/CSC/RF/2621/23

**Expression of Interest
for
“Operation of IFAT facility at
LPSC, Valiamala in GOCO mode”**

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1. Abbreviations

GOCO	Government Owned Company Operated
JRB	Joint Review Board
CONTRACTOR	Service provider
DEPARTMENT	Liquid Propulsion Systems Centre
Fluid control components	Device employed in the propulsion systems to control flow, as well as regulate pressures of liquids and gases employed in liquid engines and stages
Modules	One or more fluid control components mounted on a common base plate and interlinked through plumbings.
LOX	Liquid Oxygen
LH2	Liquid Hydrogen
C25	Cryogenic stage with 25T propellant loading
LVM3	Geosynchronous Satellite Launch Vehicle (MkIII)
LPSC	Liquid Propulsion Systems Centre
ISRO	Indian Space Research Organisation
IFAT	Integrated labs Fluid components Assembly and Testing.

2. Definitions

Wherever used hereinafter in this Contract, the following expressions shall have the following meanings:

`ISRO' means the Indian Space Research Organisation under the DEPARTMENT of Space.

`DEPARTMENT' means the President of India or his successors, representatives or assigns, in this case THE DIRECTOR, LIQUID PROPULSION SYSTEMS CENTRE, THIRUVANANTHAPURAM - 695 547.

`CONTRACTOR' means the vendor who will finally be assigned this work

`CONTRACT' means an agreement that will be entered into with the CONTRACTOR.

`PART' means individual pieces manufactured as per the supplied drawings, processes and procedures.

`STANDARD PART' means finished product that can be used directly in the assembly.

`TESTING' is a demonstration by test, that a hardware can meet performance requirements when exposed to specified environments.

`TOOLING' means any hardware that is necessary for realizing individual parts or assemblies.

`FIXTURE' means any hardware that is necessary for holding parts or components at any stage of manufacture or for containing the testing media during testing.

`MANUFACTURING' means gamut of all those processes and activities that converts the parts into components or assemblies.

`INSPECTION' means all those processes that confirm by physical measurements, visual assessment and other means to verify that parts have been made to specifications.

`RAW MATERIAL' means a material that has to undergo change in form before it can be used as a part.

`APPROVAL' means documents in the approval category require approval from the `DEPARTMENT' prior to implementation by the CONTRACTOR. Approval is understood to mean permission to proceed unless otherwise specified.

'PQR' means Procedure Qualification Records, which documents the elaborate experimentation attempted to qualify the variables encountered during a process. In this CONTRACT it will primarily refer to welding.

'WPS', means Weld Procedure Specification, which essentially defines the set of qualified parameters to be used in welding.

'FCD', means Functionally Critical Dimension, deviations to which will seriously hamper the rated performance of any hardware.

'PCD', means Process Critical Dimension, which essentially controls the conformity of a process to specification.

'NCR', means Non Conformance Report, which essentially reports the non conformance to specification in a given part or assembly.

'LSC', means Local Salvage Committee, which will be the first level committee to analyse and decide on NCRs.

'WB', means Waiver Board, which will be the ultimate forum of the 'DEPARTMENT' to accept non conformances.

'WBSC', means Waiver Board Sub Committee, which is the forum to analyse and decide on NCRs referred to Waiver Board.

'PRE DESPATCH COMMITTEE', is the forum which authorizes the delivery of finished products after verifying its conformance to the stated needs.

'DOCUMENTS', means all those data held as hard copy and soft copy

3. Preamble

LPSC, Valiamala is engaged in the development, realization and delivery of propulsion systems for the different launch vehicles and spacecraft programme of ISRO. Among others, these propulsion systems require high-precision and high-reliability elements like electro-mechanical valves, pressure regulators, relief valves, thrusters, check valves, filters and other similar products. These elements are broadly called as fluid control components and modules.

LPSC proposes to contract out the operation of the Integrated Fluid components Assembly and Testing facility (IFAT) established at Valiamala for realization of these fluid control components and modules in GOCO mode. The successful CONTRACTOR is expected to deploy his manpower to operate the facility and deliver a targeted number of fluid control components and modules for ISRO's launch vehicles.

Through this EoI, LPSC indents to shortlist vendors in the field of aerospace, defense and space sector with suitable experience. In the next stage RFP will be floated shortlisted vendors in two bid format viz. technical bid and price bid.

4. No Obligation Clause

This call for EOI does not carry with it any obligation on part of the DEPARTMENT toward a contract.

5. Location

The IFAT facility is located at the premises of LPSC at Valiamala, Trivandrum 695547, Kerala.

6. Facility visit

Escorted facility visits and technical discussion can be arranged to prospective respondents before submitting their proposals. The dates of the said visit shall be 15.06.2023 / 16.06.2023. Interested parties shall communicate their intention, well in advance, through e-mail to: pso_1@lpsc.gov.in.

7. Qualifying Criteria

- a) The service provider shall have prior experience of minimum 3 years immediately preceding April 2022 in running their own facility in the field of space, aerospace or defense in manufacturing, inspection, assembly and testing in Engineering (mechanical) discipline. Service provider should be currently in the business related to space, aerospace or defense related products. Relevant copies of PO/contract shall be submitted.
- b) The average annual turnover of the Service Provider during two financial years i.e., 2020-21 & 2021-22 shall be Rs2 Crore or more.
- c) Party must have reported profit in balance sheet at least once in 3 financial years (2019-20, 2020-21 or 2021-22)
- d) The Service Provider shall be an ISO 9001 or AS 9100 certified company. The certification shall be from a reputed agency such as SGS, IQC, UL India, Bureau Veritas, TUV or Lloyds.
- e) The Service Provider shall have implemented a proper Product Management System in their facility.
- f) The Service Provider shall possess a proper organization structure and human resource with adequate knowledge in the areas of manufacturing, metrology, non-destructive inspection and quality control, assembly and testing.

8. Response to EoI

A Compliance Statement or response to the technical and commercial terms of the EoI shall be submitted.

The following documents shall be submitted along with the response

- a. Product portfolio of the company.
- b. Relevant Contract copies as proof of work in space, aerospace or defense sector.
- c. Certified audit copies of the annual financial turnover, IT returns and balance sheet for the years 2019-20, 2020-21 & 2021-22.
- d. Copy of certification for ISO 9001 or AS 9100 from reputed agency such as SGS, IQC, UL India, Bureau Veritas, TUV or Lloyds.
- e. Details of organization structure and human resources
- f. Details of Product Management System

9. Scope of Work

The work is to be carried out at the Integrated Fluid components Assembly and Testing facility (IFAT) of LPSC established at Valiamala by deploying the human resources of the CONTRACTOR.

Under this scope, components and modules need to be assembled using the parts issued as free issue by LPSC and the same needs to be tested for their functional conformance.

The list of components & modules is given as **Annexure 1**

The scope covers the requirement of control components & modules of 12 sets of C25 stage of LVM3 vehicle.

An additional set of selected components and modules shall first undergo qualification testing, as vendor qualification, before further assemblies can be taken up.

The requisite fixtures shall also be realised and supplied by the CONTRACTOR using the drawings and specifications given by the DEPARTMENT. These shall be realised by the CONTRACTOR in their facility/factory or by using external sources and shall be supplied to DEPARTMENT.

Operation of the facility is the responsibility of the CONTRACTOR

The CONTRACTOR shall also implement Production Monitoring System (PMS) software for tracking and archiving.

10. Flow Control Components & Operating Specifications

The flow control components proposed to be manufactured include Pressure Regulators, Check Valves, Relief Valves, Filter assemblies, Pneumatic valves, Solenoid valves, Motor operated valves, Electro pneumatic valves and Fill valves.

The materials of construction include Stainless steels, Aluminium alloys, Aluminium bronze and plastics like PTFE, PCTFE etc.

The functional requirements of flow control components proposed to be manufactured fall within the specification given below

Sl.No.	Parameter	Specification
1	Operating pressure	4 to 330 bar
2	Operating temperature	20 to 800 deg Kelvin
3	Response time	10 to 1000 milli second
4	Internal leakage	$\leq 1 \times 10^{-3}$ scc/s
5	External leakage	$\leq 1 \times 10^{-6}$ scc/s

6	Flow rates	15 g/s of GN2 (max.) 280 g/s of GHe (max.)
7	Test medium	DM Water, Gaseous Nitrogen, Gaseous Helium, Liquid Nitrogen

The above parameters vary from component to component. To meet the above requirement, workmanship of the highest skill, discipline and dedication with a penchant to follow laid down procedures are expected from the resources deployed.

11. Human Resource

The CONTRACTOR's workforce shall be conversant with or trained in precision fabrication, inspection, assembly and essential clean-room practices which are vital in realization of high precision aerospace control components.

Tests like cleanliness verification, leak testing, pressure testing, flow testing, electrical testing bubble point testing etc. need skills and technical understanding.

Quality Control (QC) persons shall be capable of doing inspection with hand held instruments and precision machines and knowledgeable enough to assess/evaluate performance parameters and adhere to stringent quality stipulations.

The Service Provider shall position adequate workforce for executing the work

The workforce shall possess requisite skill-sets for operation of the delicate facilities and to perform production work as specified.

It is anticipated that a work force of about 80 personnel (comprising of Graduate engineers, Diploma Engineers , ITI Technicians, Data entry operator & helper) may be required to be deployed in LPSC for carrying out the above work. This is only indicative.

The human resource shall be broadly classified as fixed manpower and variable manpower.

11.1. Fixed Manpower

This manpower is required to operate the facility at its rated capacity. They will consist of managers, quality control & assurance team and also the support staff like data entry operators and unskilled labour. In addition they will be deployed at the machining facility and Inspection & NDT facility also. Further manpower shall also be deployed at the Assembly related facilities for its operation and maintenance.

It is estimated that a minimum of 2 Graduate Engineers (Contract Manager & Manager), 12 Diploma Engineer, 22 ITI Technicians, 1 Data Entry Operator and 7 Unskilled labours are to be employed as fixed manpower.

11.2. Variable Manpower

This man power is required to carry out the actual assembly and test operations for the deliverables. They will consist of the operational staff deployed for assembly and test operations. The strength of the variable manpower shall be at the discretion of the contractor, who will ensure that sufficient manpower is deployed for the delivery of the stated number of the deliverables.

It is estimated that approximately 2 Graduate Engineers, 14 Diploma Engineer & 28 ITI technicians are to be employed as variable manpower.

12. Deployment of human resource

The estimated man hour requirement for assembly and testing of components and modules is given in Annexure 2 (Variable manpower) and the human resource requirement for facility operation is provided in Annexure 3 (Fixed manpower).

13. HR Policy

The Service Provider shall have a HR policy of retaining trained workforce. This is very essential since attrition would lead to derailment of production activities, affect quality and result in inordinate delay in delivery schedule and lead to uncertainty in contract execution.

Absorbing trained personnel in aerospace fluid control component assembly are preferable.

14. The DEPARTMENT's responsibilities

The DEPARTMENT shall:

Make available all required fabricated parts, standard parts and consumables as free issue for assembly at the DEPARTMENT's site.

Ensure the supply of Electricity, Water, Testing fluids (GHe/GN2) & Consumables such as IPA, TCE etc.

Be responsible for technical training of the CONTRACTOR's personnel in Assembly & Testing of components

Provide all necessary assembly documents and acceptance test documents.

Provide all necessary tooling and fixture drawings.

Permit the use of assembly & testing facilities by the CONTRACTOR for assembly & testing of components

Carryout maintenance & calibration of the machines & Equipments

Verify & approve all process documents submitted by the CONTRACTOR

Verify & approve the quality plans submitted by the CONTRACTOR

Be responsible for clearing of NCRs raised by the CONTRACTOR

Carryout mandatory quality surveillances during assembly & testing, quality auditing & certification of the deliverables

Provide canteen facilities at prescribed rates

Provide necessary logistics and first aid within the DEPARTMENT's premises

15. The CONTRACTOR's responsibilities

The CONTRACTOR shall:

Safely store of free issue materials supplied by the DEPARTMENT with necessary manpower and inventory management system

Prepare necessary process documents and quality plans and submit the same to the DEPARTMENT for approval.

Generate WPS & PQR documents

Carry out inward inspection of Assembly Critical Dimensions (ACD)& Functionally Critical Dimensions (FCD) of parts as defined by the DEPARTMENT and issue clearance of parts for assembly.

Provide adequate number of personnel necessary for carrying out assembly, testing and quality functions.

Acquire technology in terms of functional requirements of Assembly, Testing and documentation.

Generate the Assembly & Testing procedure documents/Checklist based on documents provided by DEPARTMENT during the training period.

Realize adequate sets of tooling and fixtures for assembly & testing,

Carrying out Assembly & Testing jointly by the DEPARTMENT& the CONTRACTOR for identified components as part of training and qualification.

After this, submit the updated documents with revisions, if any, for approval by the DEPARTMENT.

Carry out assembly and testing of the remaining sets as per approved documents meeting all technical specifications.

Refrain from re-deploying the trained personnel during the tenure of the contract.

Establish an independent section to carry out the QA & QC functions

Ensure that all quality procedures are complied with.

Safely & securely pack all components & modules, in containers designed for the purpose

DEPARTMENT reserves the right to verify the adequacy of the training, process requirements etc.

In case of malfunctioning/delay in commissioning of the equipments to be provided by the DEPARTMENT, CONTRACTOR is allowed to bring such equipments for smooth operation of the contract based on prior approval by the DEPARTMENT.

The CONTRACTOR shall ensure strict compliance with the provisions of the applicable Central/State Labour Laws.

Total up keeping of the facility shall be done by the CONTRACTOR including cleaning, moping etc.

In case of any accidents inside the DEPARTMENT premises (during machine operation, material handling etc.) first aid shall be provided by the DEPARTMENT during the normal working hours. For further medical treatment, the CONTRACTOR shall make his own arrangement.

16. Utilization of Spare Capacity

Any spare capacity in Assembly & test facilities can be utilized by the CONTRACTOR for realization of additional components and modules based on JRB decisions.

17. Absolute Responsibility

Throughout the currency of the Contract, the CONTRACTOR shall be solely responsible for the correctness, accuracies and sufficiency of the documents, drawings, tools, jigs, fixtures, bought out consumables etc. Any clearance given by the DEPARTMENT shall not absolve the CONTRACTOR of their responsibility in executing the Contract in full conformity with the specifications.

18. Working Hours

The normal working hours of the facility under this contract shall be from 08.45 hours to 17.15hrs from Monday to Saturday. However necessary work arrangement shall have to be made to run the facility beyond regular working hours based on the requirements arising from time to time.

19. Demonstration and training

The DEPARTMENT shall demonstrate the various operations and impart necessary training for the manufacture of different assemblies by way of documents and person-to-person interaction. This is as part of training the CONTRACTOR's personnel in inspection, assembly machining workshop & assembly and testing at the DEPARTMENT's facilities.

19.1. Reference documents

The following documents shall be made available to the CONTRACTOR for reference during the training and also during the execution of the work.

- Specifications of deliverables
- Design drawings of the parts for the deliverable Assemblies
- Assembly & Delivery condition drawings of Assemblies
- Assembly and test procedure documents

- Assembly and test checklists
- Specifications & operating manuals of assembly and test equipment and facilities

20. Organisation of Work

The CONTRACTOR shall identify key persons for critical activities. They shall be replaced only by persons of equivalent qualification, knowledge and experience and with prior approval of the DEPARTMENT.

The DEPARTMENT shall have the right to withhold its approval for replacement of any/all the above key personnel, if in its opinion; the substitutes offered by the CONTRACTOR do not have the requisite qualification, knowledge and experience. The CONTRACTOR shall ensure that the progress of the work under the Contract shall not be affected due to the absence of the key personnel.

The CONTRACTOR shall identify all the personnel responsible for executing the job with clear demarcation of work and the same shall be informed to the Contract Manager of the DEPARTMENT.

The CONTRACTOR shall provide all Process Documents, Plans, Reports, and Registers etc. as envisaged in this Contract either as hard copy or soft copy

The CONTRACTOR shall arrange qualification of their welders periodically as per standard practice to handle the welding process involved in the realisation of sub-assemblies and assemblies and shall ensure only such qualified welders are engaged to carry out the welding. To the extent possible, the CONTRACTOR shall use the same welders till the completion of the Contract.

21. Hardware Realisation

The CONTRACTOR shall follow the following procedure for hardware realization and clearance.

To carry out an assembly, the fabricated parts as well as the standard parts shall be drawn from the products store and an assembly parts list prepared.

The assembly operation as well as the functional tests shall be carried out as per the respective documents. An assembly checklist shall be maintained to make sure that the processes proceed as per the plan and that all the operations have been carried out. All the activities on a component or module shall be entered in the respective assembly logbook.

The functional test reports along with the assembly checklist and assembly logbook shall be handed over to the CONTRACTOR's QA who shall confirm that only cleared parts have gone into the assembly and that the assembly and functional tests have been carried out as per the approved procedures.

The CONTRACTOR's QA, on screening, shall summarily reject components & modules with major deviations and at the same time accept components & modules with no deviations. For salvageable components & modules, the CONTRACTOR's QA

shall raise an NCR and refer the same to the Local Salvage Committee (LSC) that shall give its disposition. The CONTRACTOR shall be bound to abide by the decision of the LSC. Depending on the disposition, the CONTRACTOR's QA shall clear the components & modules for further processing. All rejections and failures shall be reported to the contract manager.

The components & modules shall then be subjected to environmental tests and post environmental functional tests.

The post environmental functional test reports shall be handed over to the CONTRACTOR's QA that shall confirm that the functional tests have been carried out as per the approved procedures.

The CONTRACTOR's QA shall then present a summary of results and the delivery documentation to the Joint Review Board, which shall give the final stamp of acceptance for the components & modules.

22. Process Flow, Assembly and Testing

The process flow for assembly and testing is detailed below. It may please be noted that on-line quality supervision shall be carried out at all stages of assembly & testing operations.

22.1. Pre assembly

The Pre assembly activities will be carried out in the sub assembly preparation lab. The preassembly activities include the following;

- a. Collection of fabricated and bought out parts from bonded stores.
- b. Preparation of part list and obtaining QA clearance from the DEPARTMENT
- c. Visual inspection of parts.
- d. Thorough de-burring of holes, edges and corners.
- e. Suiting of threads during trial assembly.
- f. Cleaning and purging of parts.
- g. Visual inspection of critical parts (seats, seals, plunger, poppet, sliding area, etc.) under microscope
- h. Lapping of seats, sliding parts, etc.
- i. Inspection of Functionally Critical Dimensions (FCD) and sliding clearance computation
- j. Rework of parts as required
- k. Surface treatment, spring calibration,
- l. Proof pressure test.
- m. Post proof pressure test cleaning.

The details in the assembly process document shall be followed for each activity

22.2. Functional Assembly

The Functional assembly is carried out inside a clean room of class 10,000. The Functional Assembly activities include the following;

- a. Ultrasonic cleaning of parts.
- b. Vacuum drying of subassemblies.
- c. Mechanical assembly

22.3. Electrical Assembly

The Electrical assembly is carried out inside the electrical lab. The electrical Assembly activities include the following;

- a. Epotherm coating,
- b. Coil winding.
- c. RTV filling and cleaning.
- d. Connector wiring and soldering

22.4. Functional Testing

The functional testing is carried at the clean room and the various test labs. The functional testing activities include the following;

Functional tests & flight acceptance tests for various categories of Fluid control components to be done by the service provider are as follows:

22.4.1 Pressure Regulators

- Internal seat leakage test
- Lock-up pressure variation test
- Flow test
- External leakage test

22.4.2 Check Valves

- Cyclic actuation
- Internal seat leakage test
- Cracking pressure test
- Reseat & reseal pressure test
- Reverse seat leakage test
- Low temperature test
- Flow test
- External Leakage test

22.4.3 Relief valves

- Cyclic actuation
- Internal seat leakage test
- Cracking pressure test
- Reseat & reseal pressure test
- Flow test
- External Leakage test

22.4.4 Pneumatically Operated Valves

- Internal seat(s) leakage test
- Cyclic actuation
- Response test
- Flow test
- Minimum command pressure test
- Low temperature test
- Environmental tests
- External leakage test

22.4.5 Motor Operated valves

- Electrical checks
- Internal seat leakage test
- Actuation margin test
- Response test
- Cyclic actuation
- Environmental tests
- External Leakage test

22.4.6 Solenoid valves & Electro pneumatic valves

- Electrical checks
- Internal seat leakage test
- Actuation margin test/ thrust measurement test
- Response test
- Cyclic actuation
- Low temperature tests
- Environmental tests
- External Leakage test

22.4.7 Filter assembly

- Welding and NDT checks.
- Post welding hydraulic & pneumatic proof test
- Flushing & contamination checks using solvents
- Bubble point test
- Pressure drop test

22.4.8 Modules assembly

- Plumbing bending
- Ball check
- Welding and NDT checks
- Post welding hydraulic & pneumatic proof test
- Flushing & contamination checks using solvents
- Functional tests/ Actuation tests

- Flow tests
- Low temperature tests
- Environmental tests
- External leak tests

22.5. Post assembly activities

After completion of flight acceptance testing activities, following activities are also to be completed:

- Interface Control Dimension (ICD) check.
- Wire locking, Weighing of components
- Hardware shall be delivered with entire documents with QA clearance.

23. Facilities at the DEPARTMENTS' site

The facilities available for the GOCO operation include the Assembly facilities, Machining facility, Inspection facility & NDT facility. The facility is also served by a standby power supply of 400 KW as well as piped supply for N2 and GHe supply.

The details of the facilities are listed below.

23.1. Assembly facilities: Assembly & testing facility is equipped with following labs.

1. High pressure gas storage and distribution systems
2. Pre-assembly lab
3. Clean room (class 10000)
4. Spring calibration lab
5. Proof pressure test lab
6. Pneumatic lab 01 & 02
7. Low temperature test lab
8. Water flow test lab
9. Vibration lab
10. Thermal lab
11. Winding lab
12. Instrumentation and data acquisition lab
13. Surface treatment lab
14. Ultrasonic cleaning & flushing lab
15. Leak & actuation lab
16. Sub assy. preparation lab
17. Plumbing lab
18. Deburring lab

23.2. Machining facility

The following equipments are available at the machining facility

1. Weiler Primus VCD, High Precision Manual Lathe - 2 nos.
2. Gee Dee Weller MLZ 250V Manual precision lathe - 2 nos.

3. Fehlman PICCOMAX-21 High precision drilling M/c - 1 no.
4. High precision drilling machine - 2 nos.
5. EBW Machines - 2 nos.
6. TIG welding machine - 2 nos.
7. Specimen preparation lab - 1 no.

23.3. Inspection facility

The following equipments are available at the Inspection facility

1. High Precision CMM - 1 no.
2. Layout Measuring Machine - 1 no.
3. Video Measuring Machine - 1 no.
4. Roundness Tester - 1 no.
5. Form And Surface Finish Tester - 1 no.
6. Stereo Zoom Microscope - 2 nos.
7. Profile projector - Vertical type - 1 no.
8. Portable Surface Finish Tester - 1 no.
9. Height Master - 1 no.
10. Digital Height Gauge 2 nos.
11. Thread Ring Gauges Go & No Go - 50 nos.
12. Thread Plug Gauges Go & No Go - 30 nos.
13. Feeler Gauge - 1 no.
14. Radius Gauge - 6 nos.
15. Thread Pitch Gauges - 6 nos.
16. Surface Finish Comparator - 1 no.
17. Cylindrical Pin Gauges - 1 no. (set)
18. Depth Dial Gauge With Flat Base - 4 nos.
19. Depth Micrometer - 2 nos.
20. Bevel Protractor - 2 nos.
21. Combination Set - 1 no.
22. Bevelled Edge Square - 3 nos.

23.4. NDT facility

The NDT facility is equipped with the following equipment

1. BHGE ISOVOLT NEO Portable X-ray machine - 1 no.
2. Mirion RDS30 Digital Radiation Survey Meter - 1 no.
3. Film Processing tanks - 1 no.
4. Portable Radiographic Film Viewer - 1 no.
5. Digital Densitometer - 2 nos.

24. Realization of Tooling & Fixtures

During the source qualification stage the DEPARTMENT shall supply the necessary tooling and fixtures.

The CONTRACTOR shall realize adequate sets of tooling and fixtures for assembly & testing.

25. Ownership & Custody

25.1. Facilities

All equipment established at IFAT shall remain the exclusive property of DEPARTMENT. The CONTRACTOR shall be the custodian of all the equipment and shall be responsible for preservation and up keeping of the equipment till the completion of the contract.

All equipment and utilities entrusted to the CONTRACTOR shall be handled with due care and caution and any liability whatsoever in nature due to mishandling or otherwise would be borne by the CONTRACTOR. It is also agreed by and between that in any case, any liability arises, neither DEPARTMENT or representative of DEPARTMENT shall be responsible for the same. In case it is found that the damages have been caused due to mishandling or otherwise by the CONTRACTOR, the CONTRACTOR shall be liable to pay the entire damages to DEPARTMENT

The CONTRACTOR can at his own cost bring software and other support equipment for efficient operation of this contract subject to the approval of DEPARTMENT. These equipments provided by the CONTRACTOR, shall be the property of the CONTRACTOR during the operation of the contract. A consolidated list of such items indicating quantity shall be prepared by the CONTRACTOR and certified by the respective contract managers shall be made available to LPSC. The CONTRACTOR shall be permitted to take out such equipment on expiry or termination of the contract whichever is earlier.

The CONTRACTOR is allowed to arrange certain equipments/items from their side for smooth functioning of the activity and also in case of malfunctioning /delay in commissioning of equipments to be provided by the DEPARTMENT. CONTRACTOR is permitted to take out these equipments once the use of the same is completed for execution of this CONTRACT.

25.2. Tooling and Fixtures

All tooling and fixtures realized as per this Contract shall be the exclusive property of the DEPARTMENT. A consolidated list of such items indicating quantity shall be prepared by the CONTRACTOR and certified by focal point of the "DEPARTMENT" and shall be made available to the "DEPARTMENT".

The CONTRACTOR shall be the custodian of all the tooling till the completion of the work.

The CONTRACTOR shall be responsible for preservation and up keeping of the toolings with proper identification till the completion of the scope of work and no additional charges shall be payable towards the same.

On the completion of the scope of work, the CONTRACTOR shall deliver the entire set of tooling to the DEPARTMENT in "as is where is" condition.

25.3. Drawings and Documents

The CONTRACTOR shall be the custodian of all the drawings, documents, and materials issued by the "DEPARTMENT" as well as the documents generated during the currency of work and shall be responsible for their safe custody.

On the completion of the scope of work, the CONTRACTOR shall deliver all the drawings and documents back to the DEPARTMENT in "as is where is" condition.

26. Product Management System

The contractor shall set up a Product Management system including software and peripherals for tracking, data management and archival at his own cost. The DEPARTMENT shall supply the necessary hardware and network. On winding up of the contract the data shall be transferred to the DEPARTMENT as a soft copy.

27. Contract Type & Price

27.1. Contract Type

The contract cost shall remain firm and fixed for the first 18 months. Subsequently the same shall be escalated as per the escalation formula below till effective delivery schedule. No escalation will be applicable beyond the effective delivery schedule.

27.2. Escalation formula

Escalated cost = Order cost x (1+ (CPI delivery- CPI order)/CPI order)

Where,

CPI order : All India Consumer Price Index (Labour Bureau) on date of signing of contract.

CPI delivery : All India Consumer Price Index (Labour Bureau) on the date of delivery of the hardware.

28. Payment

The payment will be regulated as below;

The fixed manpower the cost will be paid monthly based on actual hours of work carried out

Cost towards deliverable will be paid monthly basis for each deliverable on a pro-rata basis. 80% of the cost of each deliverable will be made on completion of the work by the CONTRACTOR and the balance 20% will be made after auditing and acceptance of the product by the DEPARTMENT.

The cost towards realisation of fixtures will be paid upon supply of the same by the CONTRACTOR.

In case control components/modules getting rejected due to FIM issues/ design related issues fully attributable to DEPARTMENT, payment will be made to the CONTRACTOR based on assessment of work executed by the CONTRACTOR by JRB and subsequent clearance by the DEPARTMENT.

In case CONTRACTOR arranges certain equipments/services because of malfunctioning/delay in commissioning of the equipments to be provided by the DEPARTMENT, payment for such services shall be paid extra based on prior approval by the DEPARTMENT.

29. Statutory Duties & Taxes

All Statutory Taxes & levies that may be imposed from time to time by the Government and becomes payable by the CONTRACTOR shall be reimbursed at actual by the DEPARTMENT against documentary evidence.

30. Packing, and Delivery

The CONTRACTOR shall package the Assemblies in containers specially designed supplied by the DEPARTMENT. The CONTRACTOR shall strictly follow the concept of packaging & containerization approved by the DEPARTMENT.

The title of the assemblies shall pass on to the DEPARTMENT only after formal receipt of items in good condition, along with all documents and acceptance thereof.

31. Materials

31.1. Free Issue Material

The DEPARTMENT shall supply qualified fabricated and standard parts for realisation of various assemblies as Free Issue to the CONTRACTOR.

The DEPARTMENT shall also supply necessary materials and filler wires as Free Issue for carrying out welding trials for qualifying the welding processes & generation of WPS.

The DEPARTMENT shall position FIM in stages within the time mentioned in the timelines.

The CONTRACTOR shall receive, handle, store and account for FIM of the DEPARTMENT, which shall be delivered to him.

Any balance FIM shall be segregated and stored separately with proper records for eventual return to the DEPARTMENT.

32. Replacement In Case of Rejection

The DEPARTMENT shall regulate the issue of FIM towards replacement of rejected component as under;

32.1. Standard clause

Being a developmental effort, for qualification hardware, full rejection allowance will be positioned free-of-cost by LPSC till completion of qualification.

During production phase, parts for one additional set of hardware shall be provided by LPSC free of cost as rejection allowance.

Parts to be replenished over and above the specified limit shall be on chargeable basis. The cost of such parts shall be mutually estimated by the DEPARTMENT and the CONTRACTOR.

32.2. Special clause

Parts required for replacement of any part, subassembly, or assembly getting rejected during the course of assembly, and mutually established as not attributable to poor workmanship, shall be replenished free of cost by the DEPARTMENT.

33. Timelines:

The time lines for the project shall be as below:

Id No	Activity	Schedule
T0	Date of placement of order	Start
T1	Deployment of manpower & commencement of work & positioning of FIM for source qualification	T0 + 1 month
T2	Completion of technology demonstration, training, and source qualification	T1 + 6 months
T3	Realization of tooling & fixtures	T1 + 6 months
T4	Positioning of 6 sets of FIM by DEPARTMENT for deliveries.	T1 + 6 months
T6	Delivery of control components & modules for 6 sets.	T2 + 12 months/ T4+ 12 months which ever later.
T7	Positioning of FIM for another 6 sets	T1+ 18 months
T8	Delivery 6 sets of control components & modules.	T4 + 24 months/T7+12 months whichever later.

34. Delivery Schedule

The delivery schedule for the realisation of components and module for the specified quantities shall be as below.

1 set of selected components & modules for source qualification shall be completed within 6 months of supplying FIM for the same.

6 sets of all control components & modules for flight shall be completed within 12 months of completion of qualification/FIM placement whichever is later.

6 sets of all control components & modules for flight shall be completed within 24 months of source qualification/12 months from FIM placement whichever is later.

If in any case the DEPARTMENT is not able to position free issue materials, for a particular assembly as scheduled, then the delivery period for that particular Assembly shall remain extended for the delayed period of FIM delivery.

In case of delays due to technological reasons, the delivery periods, for the undelivered portion, shall stand deferred for the period of the delay for LD purposes. However The CONTRACTOR shall endeavour to make up for such delays.

35. Effective Delivery Schedule

The detailed delivery schedule is defined in the contract document

Time delays accruing owing to scheduling of job, priority change, pending decisions from LPSC, unavoidable equipment break down, FIM supply, FIM defects, as applicable, shall be reckoned as under:

Effective Delivery schedule = Contract stipulated delivery schedule + F + G + H + I.

Where,

- F - Waiting period owing to job scheduling & FIM issues
- G - Time shift owing to priority change from LPSC
- H - Waiting period for want of clarification/clearance from LPSC
- I - Equipment break down period, if any

Whenever LPSC puts a hold for a given FIM or Hardware, then the date of lifting of such hold shall be considered for revision of contract stipulated delivery schedule and in turn the 'Effective delivery schedule'.

36. Administering Authorities

The DEPARTMENT and the CONTRACTOR shall have to identify the following administering authorities for specific functions as mentioned against each.

36.1. Contract Managers

The Contract Manager of the DEPARTMENT and the Contract Manager of the CONTRACTOR shall execute the Contract effectively. They shall also be ultimately

responsible for the function and performance of the Assemblies. A suitable organizational structure shall be put in place to support the Contract managers.

The Contract Manager for the DEPARTMENT shall be identified at the time of finalizing the contract

The Contract Manager for the CONTRACTOR shall also be identified at the time of finalizing the contract.

The Contract Manager for the CONTRACTOR shall not be changed without prior approval of the DEPARTMENT. In case the DEPARTMENT desires to change its Contract Manager, it shall be intimated to the CONTRACTOR in time.

The Contract Manager of the DEPARTMENT or his authorized representative only shall execute the clauses, terms and conditions viz., technical clearances, approvals, decisions and other authentic technical information of the Contract. Any decision involving additional expenditure shall be communicated in writing to the DEPARTMENT. The Contract Manager of the CONTRACTOR shall execute the Clauses and terms and conditions of the Contract on behalf of the CONTRACTOR.

36.2. Joint Review Board

A Joint Review Board (JRB) consisting of key management personnel from both the DEPARTMENT and the CONTRACTOR shall be constituted to co-ordinate the training, technology transfer, schedules and all other activities for smooth execution of the Contract.

The JRB shall address among other things:

Proper co-ordination between all individual agencies

Periodic review of Contract implementation status

The JRB shall co-opt specialists for specific issues. The board shall meet as frequently as possible but at least once in two months.

JRB shall finalise monthly plan and annual plan for execution of the contract

36.3. Technical task team

A core technical support team from DEPARTMENT shall be associated with the CONTRACTOR during the initial 3 months of the contract as the Technical Task Team (TTT). The team shall consist of experts drawn from design, fabrication assembly & test and quality assurance.

The TTT shall demonstrate the complete technical details for assembly and testing of the different types of Fluid Control Components & Modules to the CONTRACTOR as well as familiarize the CONTRACTOR's manpower with all relevant documents.

The TTT shall be closely associated with the CONTRACTOR during the realization of the first set each item, with a view to transfer the necessary skills and technical details.

All the necessary & relevant technical documents (including the standards as applicable for various procedures) shall be provided by the TTT.

Subsequently the CONTRACTOR should be able to deliver the components & modules independently without TTT. Though the TTT will cease to exist over a period of time, a focal point from LPSC shall always be available for any technical clarifications.

Any non-conformances, technical snags etc. shall be addressed by the DEPARTMENT's focal point.

36.4. Local Salvage Committee

A Local Salvage Committee (LSC) consisting of key personnel from both the DEPARTMENT and the CONTRACTOR shall be constituted and authorized to dispose off all non-conformances.

The LSC shall meet, by a suitable arrangement- including video/tele-conferencing, as frequently as required. The LSC shall be authorized to co-opt additional members, if necessary for specific functions.

The DEPARTMENT's Non Conformance Review Board (NCRB) shall dispose off all non-conformances considered as major by the Local Salvage Committee.

37. Force Majeure

Should a part or whole of this Contract be delayed in delivery due to reasons of force majeure, which shall include lock-outs, strikes, riots, civil commotions, fire accidents, acts of god and war, stoppage of deliveries by Government, refusal of or non-receipt of import license for raw-materials, non-availability and/or delay in receipt of inputs from DEPARTMENT, the delivery period referred in this Contract shall be extended by period (s) not in excess of duration of such force majeure.

Each party undertakes to advise the other as soon as it becomes aware of the circumstances of such force majeure, so that actions under the provisions of this Contract can be mutually reviewed and agreed upon between the CONTRACTOR and the DEPARTMENT. If the force majeure condition extends over a period of six months both the parties of the Contract shall mutually discuss and arrive at an agreement for the continuation or the termination of the Contract.

38. Sub-Contracting

The CONTRACTOR shall in general, refrain from sub-contracting any of the activities. However, in case DEPARTMENT facilities are not ready for operation or facilities are under maintenance, the CONTRACTOR may sub-contract that part alone to another agency with the written consent of the DEPARTMENT.

Requests for subcontracting will be agreed to by the DEPARTMENT subject to the DEPARTMENT being satisfied with the capability of the Sub-Contractor. Sub-contracting shall be between the CONTRACTOR and the sub-CONTRACTORS and the DEPARTMENT shall not in any way be responsible for the supervision of the work.

Any sub-contracting agreed by the DEPARTMENT shall not absolve the obligations and responsibilities of the CONTRACTOR.

39. Transfer or Sub-Letting of Contract

The CONTRACTOR shall not be permitted to transfer or sub-let the work under the Contract either in whole or in part, and shall not float a Company nor set-up an association with another company for the fulfillment of the contractual obligations vested with them, except to the extend provided in the clause on sub-contracting.

40. Liquidated Damages

In case supplies/tasks not completed within the delivery period as stated above or any extension thereof, Liquidated Damage @ 0.5% (zero point five percent) of the contract value or part there-of the undelivered portion for each calendar week of delay or part there-of shall be recovered from the CONTRACTOR's bill. However, total Liquidated Damages shall not exceed 10% (ten percent) of the total value of each job.

41. Warranty

The CONTRACTOR shall remedy at their own expense, the defects solely attributable to faulty workmanship that may appear in assemblies under this contract if intimated by the DEPARTMENT within ONE YEAR from the date of delivery of items to the DEPARTMENT.

42. Performance Bank Guarantee

The CONTRACTOR shall furnish a fixed amount, as performance bank guarantee and valid for a period of one year annually.

43. Indemnity

The DEPARTMENT shall have no claim against the CONTRACTOR for any damage suffered by the DEPARTMENT after the acceptance of the hardware except to the extent provided in the warranty clause.

The DEPARTMENT shall indemnify the CONTRACTOR for any patent infringement on the process or know-how provided by the DEPARTMENT.

The CONTRACTOR shall be required to indemnify the DEPARTMENT for any damage to the DEPARTMENT or to third parties whenever the other party to the Contract is required to bear the cost of the indemnity, be bound to join the latter, as co-defendant in the proceedings.

44. Applicable Law, Jurisdiction and Arbitration

The Contract shall be interpreted, constructed and governed by the Laws in India. In the event of any dispute/s, difference/s or claim/s arising out of or relating to the interpretation and application of the Contract, such dispute/s or difference/s or claim/s shall be settled amicable by mutual consultations of the good Offices of the respective Parties and recognizing their mutual interests attempt to reach a solution satisfactory to both the parties. If such a resolution is not possible, within 30 days from the date of receipt of written notice of the existence of such disputes/s then the unresolved dispute/s or difference/s or claim/s shall be settled in accordance with the rules and procedures of Arbitration and Conciliation (Amendment) Act, 2015 and as amended from time to time. The arbitration shall be conducted in Bengaluru in the arbitration and Conciliation Centre- Bengaluru (Domestic and International) as per its rules and regulations. The expenses for the Arbitration shall be shared equally or as may be determined by the Arbitrator. The considered and written decision of the Arbitrator shall be final and binding between the Parties. The applicable language for Arbitration shall be "English" only.

Work under the Contract shall be continued by the Service Provider during the pendency of arbitration proceedings, without prejudice to a final adjustment in accordance with the decision of the Arbitrator unless otherwise directed in writing by the Service Receiver or unless the matter is such the works cannot be possibly continued until the decision (whether final or interim) of the Arbitrator is obtained.

45. Parallel/ Adhoc Contract

DEPARTMENT reserves the right to enter into parallel/adhoc contract(s) simultaneously or at any time during the currency of contract with one or more agencies.

46. Short Closing/Termination of Contract

Under normal circumstances, short-closing/termination of the Contract is not foreseen. However, in case of continued non-performance of the Contract resulting in inordinate delays in the delivery dates in spite of repeated written requests for meeting the delivery schedule as provided in the Contract, DEPARTMENT reserves the right to terminate wholly or partly, the Contract, by giving a notice of not less than one month.

In case of major changes in the policies of the Government of India, as a result of which DEPARTMENT is compelled to curtail its requirements wholly or partly, DEPARTMENT and the CONTRACTOR shall enter into negotiations to mutually agree to terminate this contract wholly or partly.

In the event of short-closing/termination of this Contract, the following procedure shall be followed:

- (i) DEPARTMENT shall give a notice of not less than one month.
- (ii) On receipt of the notice, the CONTRACTOR shall take all necessary steps for winding-up of the Contract in-line with the notice within a reasonable period, but in any case, not exceeding three months from the date of posting the notice.
- (iii) In cases where the termination is due to continued non-performance by the CONTRACTOR, no compensation shall be paid by DEPARTMENT. However, payments for services already provided by the CONTRACTOR and remaining unpaid at the time of termination shall be payable by DEPARTMENT.
- (iv) The compensation to be paid to the CONTRACTOR shall be agreed to by mutual negotiations. DEPARTMENT shall in no circumstances be liable to pay any sum which, when added to the other sums paid, due or becoming due to the CONTRACTOR under this Contract, exceed the amount specified in the Contract.

47. Secrecy

The drawing and documents under the contract shall form part of the vital documents and same should be kept on top secret. Under any situations, the CONTRACTOR should not part with or transfer the technology/contents of drawings and documents whatsoever to any third party/agency/without our prior consent. If at any time, it is brought to our notice that the secrecy has been transferred by the CONTRACTOR intentionally, or otherwise to any third party/agency, the CONTRACTOR shall be liable to identify the loss/damage to Government of India.

48. Intellectual Property

The ownership of intellectual property on design, whether statutorily protected or not and generated in the course of or resulting from work undertaken for the purpose of this contract shall rest with THE DEPARTMENT and THE DEPARTMENT shall have free hold rights on their usage.

The service provider is strictly forbidden to transfer any other related technology gained in the course of executing the contract to any third party without written approval from THE DEPARTMENT.

49. Safety, Security & Hazard Mitigation

The layout of the work stations as well as organization of work shall be based on sound and safe practices for precision assembly and high pressure testing. The CONTRACTOR shall endeavour to inform the operators regarding the hazards involved as well as to train them on safe operating practices. Necessary personnel protection equipment shall be provided to the staff.

THE DEPARTMENT shall be responsible for the security of the equipments as well as the personnel in its campus.

Under no circumstances will THE DEPARTMENT be liable to pay for damages arising out of wrong operations or unsafe operations carried out by the employees of the CONTRACTOR or due to the malfunctioning of the equipment in the facility

50. Correspondence

All correspondences in regard to the proposed Contract shall be addressed to the Senior Purchase & Stores Officer (Purchase), LPSC, Valiamala, Trivandrum- 695 547. All correspondences shall quote the Eol number and date.

Annexures

List of C25 components& modules

SI No	COMPONENTS / MODULES	COMPONENTS & MODULES/SET	TOTAL COMPONENTS & MODULES FOR 12 SETS
CHECK VALVES			
1	Purge check valve	2	24
	LOX turbo-pump purge check valve		
2	Start system check valve	1	12
3	Leak check valve- flight half	7	84
4	LOX fill & drain line purge check valve	7	84
	LH2 fill & drain line purge check valve		
	LOX chill gas supply line check valve		
	LH2 vent line purge check valve		
	Auxiliary command block purge inlet check valve		
	LH2 chill gas supply line check valve		
	LOX thermal conditioning line check valve		
5	Auxiliary command block purge outlet check valve	4	48
	Stage command block relief valve		
	Engine bay region purge check valve		
	Engine command block purge outlet check valve		
6	Thrust chamber purge check valve	1	12
7	Gh2 pressurisation line check valve	1	12
GRAND TOTAL		23	276

FILTERS			
1	High pressure filter assy	1	12
2	Low pressure filter assy	1	12
3	Buffer volume S/A	1	12
4	Filter assembly	1	12
5	Filter assembly	1	12
SUB TOTAL		5	60
ELECTRO PNEUMATIC VALVE			
1	Electro pneumatic command valve	22	264
SUB TOTAL		22	264
MODULES-1			
1	Command block module-CB-04	4	48
2	Command block module CB-06	1	12
3	Cryo gas bottle charge and vent module	1	12
4	Command system regulation module	1	12
5	Ambient gas bottle charge cum vent module	1	12
SUB TOTAL		8	96
MODULES-2			
1	LOX tank pressurisation module	1	12
2	RCS Type-1	2	24
3	RCS Type-2	2	24
SUB TOTAL		5	60

MOTOR OPERATED VALVES-1			
1	Mixture ratio control valve	1	12
SUB TOTAL		1	12
MOTOR OPERATED VALVES-2			
1	Ground half for start system fill valve	6	72
2	Command system isolation valve	1	12
SUB TOTAL		7	84
PNEUMATICALLY OPERATED VALVES-1			
1	Gas generator LOX vent valve	2	24
	LOX turbo-pump bearing chill valve		
2	Start system isolation valve	1	12
3	Start system fill/vent valve	1	12
4	LOX thermal conditioning valve	1	12
5	LH2 auxiliary drain valve	7	84
	LH2 chill gas outlet valve		
	LOX chill gas outlet valve		
	LOX auxiliary drain valve		
	LOX tank flight vent valve		
	LOX auxiliary vent/pressurisation valve		
6	LH2 auxiliary vent & pressurisation valve	2	24
	LH2 tank additional flight vent valve		

7	LH2 tank ground pressurization valve	1	12
8	Gh2 RCS isolation valve	1	12
9	Gas generator purge valve	4	48
	Thrust chamber purge valve		
	LOX turbo-pump purge valve		
	LOX turbo-pump purge relief line isolation valve		
SUB TOTAL		20	240
PNEUMATICALLY OPERATED VALVES-2			
1	Gas generator LOX injection valve	2	24
	LH2 tank pressurization initiation valve		
2	Gas generator LH2 injection valve	1	12
3	Gas generator LH2 vent valve	2	24
	Thrust chamber LH2 vent valve		
4	Thrust chamber LOX injection valve	2	24
	Thrust chamber LH2 injection valve		
5	Thrust chamber LOX vent valve	1	12
6	LH2 fill and drain valve	2	24
	LOX fill and drain valve		
7	Chill valve - LOX	2	24
	Chill valve - LH2		
8	LOX tank isolation valve	1	12
9	Gas charge valve	1	12
SUB TOTAL		14	168

PNEUMATICALLY OPERATED VALVES-3			
1	Control command change over valve	1	12
2	Ullage thruster isolation valve	1	12
3	Ambient gas bottle charge valve	1	12
SUB TOTAL		3	36
REGULATORS-1			
1	Helium reference pressure regulator	1	12
2	Oxygen high pressure regulator	1	12
3	Command system pressure regulator	1	12
SUB TOTAL		3	36
REGULATORS-2			
1	Gas generator LOX pressure regulator	1	12
SUB TOTAL		1	12
RELIEF VALVES-1			
1	LOX turbo-pump relief valve	1	12
2	Diaphragm valve	4	48
3	Safety valve-pressurisation system	1	12
4	High pressure relief valve (RV 2.1)	1	12
SUB TOTAL		7	84
RELIEF VALVES-2			
1	LH2 vent and relief valve	1	12
2	LOX vent and relief valve	1	12
SUB TOTAL		2	24

SOLENOID VALVES			
1	Command gas isolation valve	1	12
2	GHe thruster	2	24
3	Start & stop command valve	1	12
SUB TOTAL		4	48
THRUSTER VALVES			
1	GH2 thruster (RCS Type - 1)	4	48
2	GH2 thruster (RCS Type - 2)	4	48
SUB TOTAL		8	96
TOTAL		133	1596

Man-hour requirement of assy.& testing of C25 components & modules (12 Sets.)

SL NO	TYPE	TOTAL QTY. (12 SETS)	ESTIMATED MAN HOUR		
			TECHNICIAN	DIPLOMA	ENGINEER
1	CHECK VALVE	276	11040	5248	736
2	FILTERS	60	1200	570	80
3	ELECTRO PNEUMATIC VALVE	264	25080	11922	1672
4	MODULES-1	96	9120	4335	608
5	MODULES-2	60	7500	3565	500
6	MOTOR OPERATED VALVE-1	12	1440	685	96
7	MOTOR OPERATED VALVE-2	84	5040	2396	336
8	PNEUMATICALLY OPERATED VALVE-1	240	21600	10268	1440
9	PNEUMATICALLY OPERATED VALVE-2	168	20160	9583	1344
10	PNEUMATICALLY OPERATED VALVE-3	36	2196	1044	146
11	REGULATOR-1	36	2412	1147	161
12	REGULATOR-2	12	984	468	66
13	RELIEF VALVE-1	84	4536	2156	302
14	RELIEF VALVE-2	24	2424	1152	162
15	SOLENOID VALVE	48	4320	2054	288
16	THRUSTER VALVE	96	16128	7667	1075
TOTAL		1596	135180	64260	9012

Manpower requirement for Facility Operation: Fixed man power

SL. NO	ASSIGNMENT	ENGINEER	DIPLOMA	TECHNICIAN	DATA ENTRY	UN SKILLED
1	CONTRACT MANAGER	1				
2	MANAGER	1				
3	COIL WINDING & WIRING LAB		1	1		
4	VIBRATION LAB		1	1		
5	INSTRUMENTATION LAB		2			
6	THERMAL & THERMO VACUUM LAB			1		
7	SURFACE TREATMENT LAB (BSC)		1			
8	SPRING CALIBRATION LAB			1		
9	PROOF PRESSURE TEST LAB			1		
10	HIGH PRESSURE SYSTEM, WATER FLOW, PNEUMATIC SYSTEM LABS		1	2		
11	WELDING LAB (EB+TIG)			2		
12	ASSEMBLY MACHINING LAB		1	7		
13	METROLOGY LAB		4	5		
14	NDT LAB		1	1		
15	DATA ENTRY OPERATOR				1	
16	HELPERS					7
	TOTAL	2	12	22	1	7

ANNEXURE B:**COMPLIANCE STATEMENT**

SL No.	Conditions in EoI/Requirements	Compliance Yes/No	Explanation/ Comments	Details of relevant documents attached
1.	<p>The service provider shall have prior experience of minimum 3 years immediately preceding April 2022 on running their own facility in the field of space, aerospace or defense in manufacturing, inspection, assembly and testing in engineering (mechanical) discipline.</p> <p>Document required:</p> <ul style="list-style-type: none">• Relevant document proving the experience shall be attached.• Product portfolio shall be attached.			
2.	<p>Service provider shall be currently in the business related to space, aerospace or defense related products.</p> <p>Document required: Relevant copies of PO/Contract shall be submitted.</p>			
3.	<p>The average annual turnover of the service provider during two financial year i.e , 2020-21,2021-22, shall be minimum Rs.2 Crore.</p> <p>Document required: Relevant document for assessment of turnover for the above years shall be attached.</p>			
4.	<p>Party must have reported profit in balance sheet at least once in three financial years 2019-20,2020-21 or 2021-22.</p> <p>Document required: Attach certified audit copies of IT return, balance sheets for the above years.</p>			
5.	<p>The service provider shall be an ISO 9001 or AS 9100 certified company. The certification shall be from a reputed agency such as SGS,IQC,UL India, Beuro Veritas, TUV or Lloyds.</p> <p>Document required: Certificate of ISO 9001/AS9100</p>			
6.	<p>The service provider shall have implemented proper product management system in their facility.</p> <p>Document required: Document regarding the product Management System followed.</p>			

7.	The service provider shall possess proper organisation structure and human resource with adequate knowledge in the areas of manufacturing, metrology, non-destructive inspection and quality control assembly and testing. <u>Document required:</u> Organisation structure of the company			
8.	Compliance to Conditions provided in Sections 9 to 50 of Eol document			