

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
LIQUID PROPULSION SYSTEMS CENTRE
VALIAMALA, TRIVANDRUM 695547, KERALA
PURCHASE & STORES**

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Date : 18/06/2020

INVITATION TO TENDER

M/s

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Our Ref No : TD00 2019-033951-01

Tender Due: 14:30 Hrs IST on 22/07/2020

Dear Sirs,

Please submit your sealed quotation , in the Tender Form enclosed here along with the descriptive catalogues / pamphlets / literature ,superscribed with Our Ref.No. and Due Date for the supply of the following items as per the terms & conditions mentioned in Annexure(Form No: DOS:PM:020/DOS:PM):022

S.No.	Description of Items with Specifications	Unit	Quantity
1	Supply, installation, erection, commissioning, demonstrating and imparting training in Pre-cracking Universal Testing Machine	1	1

DELIVERY AT: LPSC Valiamala

MODE OF DESPATCH ON SITE

DUTY EXEMPTIONS EXEMPTED

SPECIAL INSTRUCTIONS NIL

SPECIFIC TERMS DOS:PM:020/DOS:PM:022

INSTRUCTIONS TO TENDERERS:

1. Technical specification of the item to be supplied as per Annexure-I.
2. Instructions for Two part tender as per Annexure-II.
3. General terms and conditions as per Annexure-III.


संध्या आर एस. SANDHYA R S
क्रय व भंडार अधिकारी
PURCHASE & STORES OFFICER

For and on behalf of the President of India
The Purchaser

TECHNICAL SPECIFICATIONS FOR SPECIMEN PRE-CRACKING UTM

This specification is for design, supply, installation, erection, commissioning, demonstrating and imparting training of a Pre-cracking Universal Testing Machine (UTM) at Room Temperature which can pre-crack test specimen for evaluating fracture toughness, Tensile test and High cycle fatigue test and fatigue crack growth testing as per the following specifications.

1. General:

- 1.1. Maximum load capacity: ± 250 KN.
- 1.2. Type: Servo hydraulic.
- 1.3. Operating temperature: Room Temperature (20°C - 35°C).
- 1.4. Test Capabilities(as per ASTM standards): Fatigue Pre-cracking, Crack growth (da/dN)(ASTM E647), K_{Ic} (ASTM E399), J_{Ic} (ASTM E1820), Tensile (ASTM E8) and High cycle Fatigue test (ASTM E466)
- 1.5. Type of specimens: Please refer annexure 1.
- 1.6. Type of test: Load controlled, position controlled and strain controlled.
- 1.7. Power requirements: 440V, 50Hz three phase AC.
- 1.8. Test Materials - Metallic materials like Titanium alloys, Steel alloys, Aluminium alloys, High strength alloys etc.,
- 1.9. Machine shall be capable of running tests in ramp, sine wave, haversine, triangle, rectangle, saw tooth or pulse functions with Amplitude, Frequency, Break & Save Criteria.
- 1.10. The system shall include fully automated control and data acquisition.
- 1.11. The system shall include all components necessary for complete system operation including high stiffness frame and hydraulic actuators, digital control electronics, hydraulic service manifold, Hydraulic Power Pack, Software, Personal computer etc., for control.

2. Load Frame:

- 2.1. Free standing, without any need of special foundation, rated to ± 250 kN in tension & compression.
- 2.2. High stiffness (Equal to or greater than 450 kN/mm when crosshead is at 900 mm with hydraulic grips and specimen mounted), high natural frequency, precision aligned load frame with fixed lower platen and adjustable upper crosshead.
- 2.3. Load frame should include two precision machined hard chrome plated guide columns.
- 2.4. Elastomeric isolation mounts to avoid vibrations during high frequency testing is to be provided.
- 2.5. Upper cross head has to be moved using hydraulics and clamped using hydraulics.
- 2.6. Maximum daylight: 1500 mm (minimum) and distance between two columns should be more than 600 mm.
- 2.7. Alignment fixture of 250 KN has to be provided. (Alignment gauge and software are not needed). Capability to perform alignment adjustments while the load train is fully preloaded.

3. Actuator:

- 3.1. Backlash free, integrated dynamic servo hydraulic actuator. Actuator should be located at bottom.
- 3.2. Force rating: ± 250 KN, dynamic rated double ended double acting equal area servo actuator with suitable bearings at both ends.
- 3.3. Stroke length: minimum of ± 75 mm (total 150 mm).
- 3.4. Accuracy of stroke measurement: $\pm 0.5\%$ of read out value or better.
- 3.5. Resolution of stroke measurement: $\pm 0.1 \mu\text{m}$ or better.

- 3.6. Actuator speed: Minimum 0.001 mm/sec to 6 mm/sec
- 3.7. Coaxially mounted full stroke linear variable displacement transducer (LVDT) for measurement and/or control of actuator displacement and anti rotation assembly.
- 3.8. High response servo valve of suitable rating (Make: Moog or equivalent) and accumulators of suitable capacity to meet the desired performance (Refer 5.1).
- 3.9. Operating frequency: 0.1-60 Hz (amplitude of 0.05 mm at 60Hz with ± 50 KN load and 0.0725 mm at 40 Hz with ± 100 KN load).
- 3.10. Anti-rotation mechanism to be incorporated.

4. Load Cell:

- 4.1. Load cell ± 250 kN dynamic capacity mounted between upper crosshead and grips with suitable attachment fittings/kits to fix to the crosshead. (Shall include wedge washers or spherical washers for locking the load cell mechanically to the crosshead). Self-aligning type wedge washers are preferable.
- 4.2. Non-linearity: 0.08% of full scale or better.
- 4.3. Hysteresis: 0.05% of full scale or better.
- 4.4. Repeatability: 0.03% of full scale or better
- 4.5. Accuracy: As per ASTM E4/ISO 0.5 class load cell.
- 4.6. Range from 1% to 100% of total capacity.
- 4.7. Fatigue life: Greater than 1×10^9 full stress reversed cycles at max load cell capacity.

5. Servo-hydraulic Power pack:

- 5.1. Suitable power pack with flow rate to achieve amplitude of 0.05 mm at 60Hz with ± 50 KN load and 0.0725 mm at 40 Hz with ± 100 KN load.
- 5.2. Proper size of accumulators has to be incorporated to avoid jerks/pressure transients in the event of power failure. Accumulators should be CE certified and certificate should be provided (safety norms).
- 5.3. Hydraulic hoses between hydraulic power pack and actuator control manifold and cooling unit, all safety provisions, pressure indicators, temperature indicators, relays have to be incorporated.
- 5.4. Chiller Unit of sufficient capacity to run the system continuously must be included.
- 5.5. Hydraulic oil of sufficient capacity for the first time filling of hydraulic power pack must be provided.
- 5.6. Anti-Vibration damper should be provided to isolate hydraulic power pack and building floor.
- 5.7. Noise level at 1 meter distance should be equal to or less than 75 dB with the pump operating at high pressure with full flow without any acoustic hood or enclosure.
- 5.8. Pump performance curve should be submitted in the technical bid.
- 5.9. PLC screen to monitor the oil temperature, level and pump pressure shall be located on the front panel of the enclosure of power pack.
- 5.10. The system should include only servo valves.

6. Controller and Data Acquisition:

- 6.1. Integrated closed-loop controller and data acquisition system for simultaneous measurement of load, cross-head displacement and extensometer/strain gauge reading.
- 6.2. Drive should support test specimens under full load at full speed capacity and at different test speeds in a single test from start to finish.
- 6.3. The system should be able to operate with typical cyclic frequency range of 0.1 – 60 Hz.
- 6.4. No. of data acquisition channels (closed loop mode) : 4 (Position, load, strain-1 and strain-2)

- 6.5. Signal conditioner data sampling rate: 100 kHz or faster.
- 6.6. Shall include auto tuning to adjust the PIDs. Ability to save and restore PID tuning settings.
- 6.7. Adaptive controls compensation: Peak-Valley and Null Pacing.
- 6.8. Control Panel: Hand operated control panel interface which enables test ON/OFF. Emergency-stop button and with optional specimen protect features.
- 6.9. Transducers shall include self-identification (recognition) electronics in the connector directly attached to these transducers which automates the calibration of these devices.
- 6.10. Control software shall provide full system control from PC, including calibration, limit setup, DAQ settings, and status monitoring and digital displays.
- 6.11. Closed loop control rate on all channels should be 6 KHz or better.
- 6.12. Data display: up to 4 channels simultaneous live data display.
- 6.13. Cables for hydraulic control, servo valves, conditioners, and communications to personal computer have to be provided.
- 6.14. Two digital inputs for synchronization and two digital outputs for triggering external equipments.
- 6.15. Minimum two Analog output channels must be included to interface with external devices.

7. Grips (Clevis & Hydraulic grips):

- 7.1. ± 50 KN Fracture mechanics clevis grips (Dynamic rated) for fatigue pre-cracking, K_{Ic} & J_{Ic} fracture toughness testing.
- 7.2. Clevis grips for Compact Tension specimens of thickness: 25.4 mm.
- 7.3. Loading pins for Compact Tension specimens of thickness: 25.4 mm.
- 7.4. Clevis grips and loading pins shall be as per ASTM relevant standards.
- 7.5. Materials preferred for clevis grips and pins are EN24 or 17-4PH or High strength aircraft quality steels.
- 7.6. Hydraulic wedge grips of ± 250 KN for HCF test and capability of going through zero load. Wedge jaws should have water cooling facility (required for future use for high temperature testing with furnace attached).
 - Wedge grips for round specimen of grip diameter from 6-16 mm.
 - Wedge grips for flat specimen of thickness from 0-10 mm.
- 7.7. Typical specimen geometries are given in annexure 1.
- 7.8. Gripping pressure must be capable of being adjusted jointly for both grips, but may be activated and monitored via independent controls and pressure gages; the rate of grip closing should be able to be fixed independently for each grip.

8. COD Gauges and Extensometer:

8.1. Clip on COD gauge – Type 1 (1 number) :

- Room temperature, dynamic rated
- Gage length = 5 mm
- Measuring range: +3mm/-1 mm
- Resolution: 0.02% of full scale range.
- Accuracy class: ASTM E 83 class B1.

8.2. Clip on COD gauge – Type 2 (1 number) :

- Room temperature, dynamic rated
- Gage length = 12 mm
- Measuring range: +4 mm
- Resolution: 0.02% of full scale range.

- Accuracy class: ASTM E 83 class B1.

8.3. Axial Extensometer – Type 1 (2 numbers):

- Room temperature dynamic rated
- Gauge length = 12.5 mm
- Measuring range: +/-20% of Gauge length
- Resolution: 0.02% of full scale range.
- Accuracy class: ASTM E 83 class B1.

8.4. Axial Extensometer – Type 2 (2 numbers):

- Room temperature static rated
- Gauge length = 25 mm
- Measuring range: +100%, -10%(max) of Gauge length
- Resolution: 0.02% of full scale range.
- Accuracy class: ASTM E 83 class B1.

9. Testing Software:

- 9.1. Complete software package for conducting various tests indicated below and compatible with Windows 10 or later operating system has to be supplied.
- 9.2. The software should have the capacity to set up the test control parameters, online results display, online graphical display of test plots with auto scaling, zoom-in/out, report generation, data archival and re-analysis features.
- 9.3. Fracture mechanics package as per ASTM standards for fracture toughness KIC (ASTM E399) and JIC (ASTM E1820). Software shall allow for fatigue pre-cracking as per standard, fracture testing validity criteria and fracture toughness calculation and post-processing.
- 9.4. Fracture mechanics application package as per ASTM E647 for fully automated crack growth testing, on-line crack length measurement from unloading compliance, standard specimen geometries, spectrum loading option and post-processing software for spectrum load testing.
- 9.5. Tests must be capable of being done in constant load control, position control and strain control.
- 9.6. Option to perform multiple steps with different loading conditions and different frequencies should be provided.
- 9.7. Online graph of da/dN , load vs COD, crack length vs number of cycles.
- 9.8. The software shall allow exporting the raw data by a single mouse click into MS excel or MS word etc.
- 9.9. Software package to perform Tension test as per ASTM E8.
- 9.10. Software package to perform High cycle fatigue test as per ASTM E466.
- 9.11. Software must support data acquisition modes according to time, peak/valley, cyclic/logarithmic.
- 9.12. System of Units: SI and Metric (user selectable). Time units: minutes and seconds.
- 9.13. Software updates must be provided as long as the warranty and AMC are in force.

10. PC Requirement:

- 10.1. Computer with Intel- i5- 8th gen or better.
- 10.2. Intel motherboard, at least 8GB RAM, 1TB SATA HDD, DVD writer, front and back USB ports (3.0-Type A), 1Gbps Ethernet port.
- 10.3. Graphics card NVIDIA GTX 1060 or better.
- 10.4. Keyboard, Optical/laser scroll mouse.
- 10.5. A4 size Colour laser printer, HP make.
- 10.6. 24" or higher LED/LED backlit monitor

10.7. Preloaded with windows 10 Pro or higher with recovery CD/DVD and necessary driver CD/DVD.

10.8. Latest version Microsoft Office should be included with license key and CD/DVD.

11. Uninterruptible Power Supply:

11.1. A 3kVA Online Uninterruptible Power Supply system (UPS) and adequate no of batteries should be properly integrated in test systems. The UPS should be supplied to cater to load frame, servo controller, PC and any peripheral equipment that is instrumental in safe system operation and shut-down.

12. Safety Provisions and Compliance:

- 12.1. Equipment like goggles, shoes, apron, gloves have to be supplied for 3 persons (of medium build).
- 12.2. The supplier shall submit list of optional accessories (like Return filter and seal kit) along with complete specification with the technical offer.
- 12.3. Should comply with international standards and directives on mechanical and electrical safety.
- 12.4. Safety aspects in case of failure tests. In event of a failure, the actuator should not apply any further load either in tension or compression.
- 12.5. Emergency stop button in the event of abnormal situations to protect the user and equipment.
- 12.6. There must be provision to adjust actuator, auto-offset signals, start/stop test, turn hydraulics on/off.

13. AMC Support and spares and after sales service:

- 13.1. The entire system has to be under comprehensive onsite warranty for a period of 1 year.
- 13.2. Non comprehensive AMC has to be provided immediately after the expiry of warranty for the entire system. AMC charges for next 3 years shall be indicated in the quotation. The AMC can be quoted in Indian rupees.
- 13.3. Availability of spares and after sales service support for 10 years have to be guaranteed.
- 13.4. Detailed operational and service manual in English for all systems and subsystems have to be provided.
- 13.5. Calibration procedures and calibration certificates traceable to national or international standards have to be provided.
- 13.6. List of essential spares and their cost is to be furnished by the supplier along with their offer. The placement of order on these items will be at the discretion of LPSC.
- 13.7. Onsite calibration for load cell, actuator stroke, COD gauges and axial extensometer has to be done and certificate should be provided.
- 13.8. The cost quoted for the AMC will be considered for the arriving at the final price of the bid.
- 13.9. AMC shall include the following :
 - Two preventive maintenance visit every year. Preventive maintenance visit shall include calibration.
 - Atleast one break down call every year.
 - Software update and support.

14. Pre-Delivery Inspection and Acceptance(PDI):

- 14.1. Pre- Delivery Inspection and factory acceptance testing will be done at the premises of the supplier and will involve the following tests.
 - a. Fatigue Pre-cracking of CT- specimen.
 - b. K_{Ic} fracture toughness test.

c. Tensile test specimen (both round and flat)

14.2. All test specimens will be supplied by LPSC- Valiamala.

14.3. Pre-Delivery Inspection schedule has to be communicated at least 8 weeks in advance to make travel arrangements.

14.4. Duration of PDI – 5 Days for 1 Engineer.

14.5. Machine will be authorised to ship only after satisfactory performance of the machine during PDI tests. Else tests should be repeated.

14.6. LPSC shall prepare a minimum of 20 samples for testing, out of which 10 samples shall be used for testing at factory for FAT (factory acceptance Test). Once the machine is shipped and installed at LPSC, the Service Engineer shall do the test with the remaining samples and show that the results match favourably with the tests during PDI. Only then will the system be accepted by LPSC.

15. Commissioning, demonstration, testing and training:

15.1. Entire system has to be supplied, erected, commissioned, calibrated and demonstrated with all features at LPSC Valiamala campus. Demonstration must include:

- Machine performance
- Hydraulic grip through zero testing
- Hydraulic power pack noise level to be met.

15.2. Training for 2 Engineers on the operation of all the systems and features has to be provided for a period of 5 days at LPSC Valiamala. Training should cover all the features of the machines, modules, tests and routine maintenance of the machine.

16. Notes:

16.1. The vendor should be of National/International repute. The vendor shall be an Original Equipment Manufacturer (OEM). In the case of the vendor being the authorized Indian dealer(s)/representative(s) for sales and service, appropriate authorization letter from OEM shall be provided.

16.2. The supply should be complete in all respects. Bids for partial supply will not be entertained.

16.3. The machine must comply with all relevant ISO, ASTM & other national and international standards.

16.4. **The bidder should submit technical and commercial bids separately.**

16.5. **Commercial aspects like price etc., should be furnished in the commercial bid only.**

16.6. **Any information about price given in technical bid will disqualify the party.**

16.7. **Compliance matrixes of our specifications and supplier specifications have to be provided along with the quotation. The party must give detailed description of the items against each specification and numerical values must be given wherever applicable (Simple comply/not comply statement will not suffice)**


16.8. **Once the party states "Complied" in the compliance matrix, it is deemed as part of the quotation. During supply, party cannot claim that it is not part of quotation**

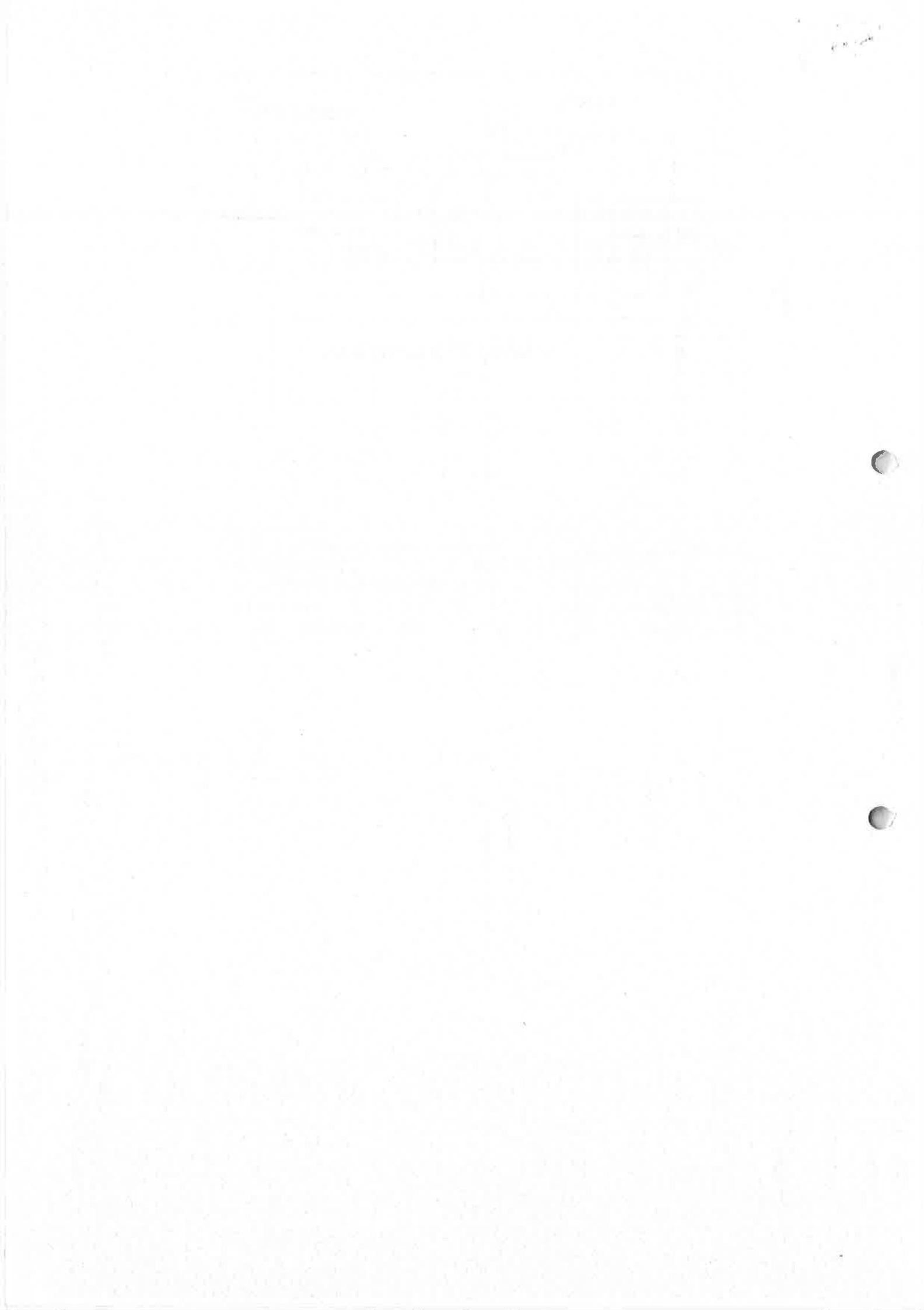
16.9. All essential accessories for the satisfactory operation are to be included and listed. Any additional accessories are to be mentioned separately.

16.10. Vendor has to supply, along with the offer, reference list of Indian customers where similar instruments have been supplied and mentioning broad specifications of supplied instruments.

16.11. Detailed catalogue, sketch/photographs of the instrument and accessories/ attachments in English should be furnished along with the offer.

- 16.12. The vendor or their authorized service representatives shall have trained engineers, preferably stationed in India for commissioning & service for the offered equipment and shall be in a position to provide prompt after sales service and spares support for the equipments.
- 16.13. Vendor should provide necessary catalogues along with the technical bid and will be compared and if any discrepancies are found the vendor shall be disqualified.


संध्या आर एस / SANDHYA R S
क्रय व भंडार अधिकारी
PURCHASE & STORES OFFICER
एलपीएससी/LPSC



Compliance matrix

SL. NO	DESCRIPTION	REQUIREMENT	Compliance (Yes/No)	Additional details/Remarks
GENERAL				
1.	Maximum load capacity	±250 KN		
2.	Type	Servo hydraulic		
3.	Operating temperature	Room Temperature (20°C-35°C)		
4.	Test Capabilities as per ASTM standards	. Fatigue Pre-cracking, Crack growth (da/dN)(ASTM E647), K _{Ic} (ASTM E399), J _{Ic} (ASTM E813), Tensile (ASTM E8) and High cycle Fatigue test (ASTM E466)		
5.	Type of test	Load controlled, position controlled and strain controlled.		
6.	Power requirements	440V, 50Hz three phase AC.		
7.	Test Materials	Metallic materials like Titanium alloys, Steel alloys, Aluminium alloys, High strength alloys etc.,		
8.	Machine shall be capable of running tests in ramp, sine wave, haversine, triangle, rectangle, saw tooth or pulse functions with Amplitude, Frequency, Break & Save Criteria.			
9.	The system shall include fully automated control and data acquisition			
10.	The system shall include all components necessary for complete system operation including high stiffness frame and hydraulic actuators, digital control electronics, hydraulic service manifold, Hydraulic Power Unit, Software, Personal computer etc., for control.			

LOAD FRAME				
1.	Free standing, without any need of special foundation, rated to $\pm 250\text{kN}$ in tension & compression.			
2.	High stiffness (Equal to or greater than 450kN/mm when crosshead is at 900 mm with hydraulic grips and specimen mounted), high natural frequency, precision aligned load frame with fixed lower platen and adjustable upper crosshead.			
3.	Load frame should include two precision machined hard chrome plated guide columns.			
4.	Elastomeric isolation mounts to avoid vibrations during high frequency testing is to be provided.			
5.	Upper cross head has to be moved using hydraulics and clamped using hydraulics.			
6.	Maximum daylight	1500 mm (minimum) and distance between two columns should be more than 600 mm .		
7.	Alignment fixture of 250 KN has to be provided. (Alignment gauge and software are not needed). Capability to perform alignment adjustments while the load train is fully preloaded.			
ACTUATOR				
1.	Backlash free, integrated dynamic servo hydraulic actuator (bolt-on actuator to the frame is unacceptable). Actuator should be located at bottom.			
2.	Force rating	$\pm 250\text{ KN}$, dynamic rated double ended double acting equal area servo actuator with suitable bearings at both ends.		
3.	Stroke length	Minimum of $\pm 75\text{ mm}$ (150 mm)		
4.	Actuator speed	Minimum 0.001 mm/sec to 6 mm/sec .		
5.	Coaxially mounted full stroke linear variable displacement transducer (LVDT) for measurement and/or control of actuator displacement and anti rotation assembly.			
6.	High response servo valve of suitable rating (Make: Moog or equivalent) and accumulators of suitable capacity to meet the desired			

	performance (refer servo hydraulic pack point #1)			
7.	Operating frequency	0.1-60 Hz.		
8.	Resolution of stroke measurement	$\pm 0.1 \mu\text{m}$ or better		
9.	Accuracy of stroke measurement	$\pm 0.5\%$ of read out value or better.		
LOAD CELL				
1.	Load cell $\pm 250\text{kN}$ dynamic capacity mounted between upper crosshead and grips with suitable attachment fittings/kits to fix to the crosshead. (Shall include wedge washers or spherical washers for locking the load cell mechanically to the crosshead). Self-aligning type wedge washers are preferable.			
2.	Resolution	0.02% of full scale reading.		
3.	Non-linearity	0.08% of full scale or better.		
4.	Hysteresis	0.05% of full scale or better.		
5.	Repeatability	0.03% of full scale or better		
6.	Accuracy	As per ASTM E4/ISO 0.5 class load cell.		
7.	Range from 1% to 100% of total capacity.			
8.	Fatigue life	Greater than 10^9 full stress reversed cycles at load cell capacity.		
SERVO-HYDRAULIC POWER PACK				
1.	Suitable power pack with flow rate to achieve amplitude of 0.05 mm at 60Hz with $\pm 50 \text{ KN}$ load and 0.0725 mm at 40 Hz with $\pm 100 \text{ KN}$ load.			
2.	Proper size of accumulators has to be incorporated to avoid jerks/pressure transients in the event of power failure. Accumulators should be CE certified and certificate should be provided (safety norms).			
3.	Hydraulic hoses between hydraulic power pack and actuator control manifold and cooling unit, all safety provisions, pressure indicators,			

	temperature indicators, relays have to be incorporated.		
4.	Chiller Unit must be included.		
5.	Hydraulic oil of sufficient capacity for the first time filling for the use of hydraulic power pack.		
6.	Anti-Vibration damper should be provided to isolate hydraulic power pack and building floor.		
7.	The entire power pack is to be housed inside noise isolation unit. Noise level at 1 meter distance should be below 65 dB with the pump operating at high pressure with full flow. The noise isolation unit should be supplied.		
8.	Pump performance curve should be included in the technical bid.		
9.	PLC screen to manage the hydraulic power pack and monitor the oil temperature, level, pump pressure shall be located on the front panel of the enclosure of power pack.		
10.	The system should include only servo valves.		
CONTROLLER AND DATA ACQUISITION			
1.	Integrated closed-loop controller and data acquisition system for simultaneous measurement of load, cross-head displacement and extensometer/strain gauge reading.		
2.	Drive should support test specimens under full load at full speed capacity and at different test speeds in a single test from start to finish.		
3.	The system should be able to operate with typical cyclic frequency range of 0.1 – 60 Hz.		
4.	No. of data acquisition channels (closed loop mode)	4 (Position, load, strain-1 and strain-2)	
5.	Signal conditioner data sample rate	100 kHz or faster	
6.	Shall include auto tuning to adjust the PIDs. Ability to save and restore PID tuning settings.		
7.	Adaptive controls	Peak-Valley and Null Pacing	

	compensation			
8.	Control Panel	Hand operated control panel interface which enables test ON/OFF. Emergeny-stop button and with optional specimen protect features.		
9.		Transducers shall include self-identification (recognition) electronics in the connector directly attached to these transducers which automates the calibration of these device.		
10.		Control software shall provide full system control from PC, including calibration, limit setup, DAQ settings, and status monitoring and digital displays.		
11.		Closed loop control rate on all channels should be 6 KHz or better.		
12.		Data display: up to 4 channels simultaneous live data display.		
13.		Cables for hydraulic control, servo valves, conditioners, and communications to personal computer have to be provided.		
		GRIPS (CLEVIS & HYDRAULIC GRIPS)		
1.		±50 KN Fracture mechanics clevis grips (Dynamic rated) for fatigue pre-cracking, K _{Ic} & J _{Ic} fracture toughness testing.		
2.		Clevis grips for Compact Tension specimens of thickness: 6.3, 12.7 and 25.4 mm: 1 set each.		
3.		Loading pins for Compact Tension specimens of thickness: 6.3, 12.7 and 25.4 mm: 1 set each		
4.		Clevis grips and loading pins shall be as per ASTM E399, E647, E1820 standards.		
5.		Materials preferred EN24 or 17-4PH or High strength steel		
6.		Hydraulic wedge grips of ±250 KN for HCF test and capability of going through zero load. Wedge jaws should have water cooling facility (required for future use for high temperature testing with furnace attached). <ul style="list-style-type: none"> • Wedge for round specimen of grip diameter from 6-16 mm. • Wedge for flat specimen of thickness from 0-10 mm. 		

7.	Gripping pressure must be capable of being adjusted jointly for both grips, but may be activated and monitored via independent controls and pressure gages; the rate of grip closing should be able to be fixed independently for each grip.			
COD GAUGES AND EXTENSOMETER				
1.	Clip on COD gauge (1 number)	<ul style="list-style-type: none">Room temperature dynamic ratedGage length = 5 mmMeasuring range: +3mm/-1 mmResolution: 0.02% of full scale range.Accuracy class: ASTM E 83 class B1.		
2.	Clip on COD gauge (1 number)	<ul style="list-style-type: none">Room temperature dynamic ratedGage length = 12 mmMeasuring range: 4 mmResolution: 0.02% of full scale range.Accuracy class: ASTM E 83 class B1.		
3.	Axial Extensometer - Type 1 (2 numbers)	<ul style="list-style-type: none">Room temperature dynamic ratedGage length = 12.5 mmMeasuring range: +/-20% of Gauge lengthResolution: 0.02% of full scale range.Accuracy class: ASTM E 83 class B1.		
4.	Axial Extensometer -	<ul style="list-style-type: none">Room temperature static ratedGage length = 25 mm		

Type 2 (2 numbers)	<ul style="list-style-type: none"> Measuring range: +100%, -10%(max) of Gauge length Resolution: 0.02% of full scale range. Accuracy class: ASTM E 83 class B1. 		
TESTING SOFTWARES			
1.	Complete software package for conducting various tests indicated below and compatible with Windows 10 or later operating system has to be supplied.		
2.	The software should have the capacity to set up the test control parameters, online results display, online graphical display of test plots with auto scaling, zoom-in/out, report generation, data archival and re-analysis features.		
3.	Fracture mechanics package as per ASTM standards for fracture toughness KIC (ASTM E399), JIC (ASTM E813), J-R curve (ASTM E1152) and CTOD (ASTM 1290). Software shall allow for fatigue pre-cracking as per standard, fracture testing validity criteria and fracture toughness calculation and post-processing.		
4.	Fracture mechanics application package as per ASTM E647 for fully automated crack growth testing, on-line crack length measurement from unloading compliance, standard specimen geometries, spectrum loading option and post-processing software for spectrum load testing.		
5.	Tests can be done in constant load control, K control, position control and strain control.		
6.	Option to perform multiple steps with different loading conditions and different frequencies.		
7.	Online graph of da/dN, load vs COD, crack length vs number of cycles.		
8.	The software shall allow exporting the raw data by a single mouse click into MS excel or MS word etc.		
9.	Software package to perform Tension test as per ASTM E8.		

10.	Software package to perform High cycle fatigue test as per ASTM E466.		
11.	Software must support data acquisition modes according to time, peak/valley, cyclic/ logarithmic.		
12.	System of Units: SI and Metric (user selectable). Time units: minutes and seconds.		
13.	Software updates must be provided as long as the warranty and/or AMC are in force.		
PC REQUIREMENT			
1.	Computer with Intel- i5- 8 th gen or better.		
2.	Intel motherboard, at least 8GB RAM, 1TB SATA HDD, DVD writer, front and back USB ports (3.0-Type A), 1Gbps Ethernet port.		
3.	Graphics card NVIDIA GTX 1060 or better.		
4.	Keyboard, Optical/laser scroll mouse.		
5.	Colour laser printer for A4 size, HP make.		
6.	24" or higher LED/LED backlit monitor		
7.	Preloaded with windows 10 Pro or higher with recovery CD/DVD and necessary driver CD/DVD		
8.	Latest version Microsoft Office should be included with license key and CD/DVD.		
UNINTERRUPTIBLE POWER SUPPLY			
1.	A 3kVA Online Uninterruptible Power Supply system (UPS) should be properly integrated in hydraulic test systems. The UPS should be supplied to cater to load frame, servo controller, PC and any peripheral equipment that is instrumental in safe system operation and shut-down.		
SAFETY PROVISIONS AND COMPLIANCE			
1.	Equipments like goggles, shoes, apron, gloves have to be supplied for 3 persons (of medium build).		
2.	The supplier shall submit list of optional accessories (like Return filter and seal kit) along with complete specification with the technical offer.		

3.	Should comply with international standards and directives on mechanical and electrical safety.		
4.	Safety aspects in case of failure tests. In event of a failure, the actuator should not apply any further load.		
5.	Emergency stop button in the event of abnormal situations to protect the user and equipment.		
6.	Provides ability to adjust actuator, auto-offset signals, start/stop test, turn hydraulics on/off.		
AMC SUPPORT AND SPARES AND AFTER SALES SERVICE			
1.	The entire system has to be under comprehensive onsite warranty for a period of 1 year.		
2.	Non comprehensive AMC has to be provided immediately after the expiry of warranty for the entire system. AMC charges for next 3 years shall be indicated in the quotation. The AMC can be quoted in Indian rupees separately.		
3.	Spares and guaranteed after sales service support for 10 years have to be provided.		
4.	Detailed operational and service manual in English for all systems and subsystems have to be provided.		
5.	Calibration procedures and calibration certificates traceable to national or international standards have to be provided.		
6.	List of essential spares and their cost to be furnished by the supplier along with their offer. The placement of order on these items will be at the discretion of LPSC.		
7.	Onsite calibration for load cell, actuator stroke, COD gauges and axial extensometer has to be done and certificate should be provided.		
8.	AMC shall include the following : <ul style="list-style-type: none"> Two preventive maintenance visit every year. Preventive maintenance visit shall include calibration. 		

PRE-DELIVERY INSPECTION(PDI)				
1.	Pre- Delivery Inspection and factory acceptance testing will be done at the premise of the supplier and will involve the following tests. d. Fatigue Pre-cracking of CT- specimen. e. K_{Ic} fracture toughness test. f. Tensile test specimen (both round and flat)			
2.	Duration of PDI 5 Days for 1 Engineer			
3.	LPSC shall prepare a minimum of 20 samples for testing, out of which 10 samples shall be used for testing at factory for FAT (factory acceptance Test). Once the machine is shipped and installed at LPSC, the Service Engineer shall do the test with the remaining samples and show that the results match favourably with the tests during PDI. Only then will the system be accepted by LPSC.			
COMMISSIONING, DEMONSTRATION, TESTING AND TRAINING				
1.	Entire system has to be supplied, erected, commissioned, calibrated and demonstrated with all features at site. Demonstration include <ul style="list-style-type: none"> • Machine performance • Hydraulic grip through zero testing • Hydraulic power pack noise level to be met. 			
2.	Training for 2 Engineers on the operation of all the systems and features has to be provided for a period of 5 days at LPSC Valiamala. Training should cover all the features of the machines, modules, tests and routine maintenance of the machine.			
NOTES				
1.	The instrument must comply with all relevant ISO, ASTM & other national and international standards.			
2.	All essential accessories for the satisfactory operation are to be			

	included and listed. Any additional accessories are to be mentioned separately.		
3.	Vendor to supply, along with the offer, reference list of Indian customers where similar instruments have been supplied and mentioning broad specifications of supplied instruments.		
4.	Detailed catalogue, sketch/photographs of the instrument and accessories/ attachments in English should be furnished along with the offer.		
5.	The vendor should be of National/International repute. The vendor shall be an Original Equipment Manufacturer (OEM). In the case of the vendor being the authorized Indian dealer(s)/representative(s) for sales and service, appropriate authorization letter from OEM shall be provided.		
6.	The vendor or their authorized service representatives shall have trained engineers, preferably stationed in India for commissioning & service for the offered equipment and shall be in a position to provide prompt after sales service and spares support for the equipments.		
7.	The supply should be complete in all respects. Bids for partial supply will not be entertained.		
8.	The vendor should provide all technical drawings, data and catalogues for reviewing the technical bid proposal. If there is no published brochure and detail of drawings which describes the above system, it will be recognized by purchaser that the vendor is not qualified.		
9.	Vendor should provide necessary catalogues with the technical bid and will be compared and if any discrepancies are found the vendor shall be disqualified.		

INSTRUCTIONS FOR TWO PART TENDERS

1. We invite your offer duly signed, in **TWO** parts as follows:-

(a) **PART- I : TECHNICAL & COMMERCIAL** (Other than Price)

(b) **PART -II : PRICE BID**

1.1 PART-I : TECHNICAL & COMMERCIAL

1.1.1 **TECHNICAL:** The detailed Technical Specification and Commercial Terms such as delivery date, taxes, duties payable, place of delivery, payment term, validity, guarantee etc and scope of supply shall be covered in this part. Please enclose a copy of the details indicated in price quotation (**WITHOUT PRICES OR BY MASKING THE PRICE**) mainly to know the items/ specifications for which you have indicated prices in price bid. **This part should not contain prices.** The Technical and commercial part of the offer should be kept in a sealed envelope superscribing the following details.

QUOTATION AGAINST TENDER No.TD00 201903395101
DUE ON 22.07.2020 at 14.30 hrs IST
FOR SUPPLY, INSTALLATION, ERECTION, COMMISSIONING, DEMONSTRATING
AND IMPARTING TRAINING IN PRE-CRACKING UNIVERSAL TESTING MACHINE -
1 No.

The cover should indicate" **SENDER'S**" address.

1.2. PART -II : PRICE BID

1.2.1. This part shall contain **PRICE** details only.

1.2.2. The price for the item should be indicated item wise in this part. All the items/ specifications mentioned in the Technical Part should come here and prices indicated against each. The break-up for each item of supply or services should be indicated.

1.2.3. Whenever options are quoted, the same should also be indicated with quantity and unit rate separately. The prices are to be mentioned both in figures and in words. This part should also be kept in a sealed cover superscribing as follows:-

QUOTATION AGAINST TENDER No.TD00 2019033951 01
DUE ON 22.07.2020 at 14.30 hrs IST
FOR SUPPLY, INSTALLATION, ERECTION, COMMISSIONING, DEMONSTRATING
AND IMPARTING TRAINING IN PRE-CRACKING UNIVERSAL TESTING MACHINE -
1No.

THE TWO SEALED COVERS PREPARED AS ABOVE SHOULD BE KEPT IN ANOTHER ENVELOPE, SEALED AND SUPERSCRIBED AS UNDER:-

"Quotation against Tender No.TD00 201903395101Due on22.07.2020,14.30 hrs ISTfor
FOR SUPPLY, INSTALLATION, ERECTION, COMMISSIONING, DEMONSTRATING AND IMPARTING
TRAINING IN PRE-CRACKING UNIVERSAL TESTING MACHINE - 1 No.
containing TWO SEPARATE COVERS PART-1 & PART -II and addressed to:

SR.PURCHASE & STORES OFFICER
Liquid Propulsion Systems Centre
Valiamala (PO)
Thriuvananthapuram- 695 547.

The cover should indicate " SENDER'S " address

For any clarification you may contact us at following phone/Fax Nos or mail to
psa_2@lpse.gov.in

Telephone : 0471 2567726/0471 2567727

Fax : 0472 2800712/0471 2567305

Your offer should reach us on or before the due date and time i.e.22nd,JULY, 2020 at 14.30 hrs IST. *Offers received after the due date and time will not be considered.*

Offers received through fax or email will not be considered.



(RS Sandhya)

Purchase and Stores Officer

For and on behalf of the President of India

(The Purchaser)

GENERAL TERMS AND CONDITIONS:

1. Earnest Money Deposit :

Earnest Money Deposit amounting to **INR 5,00,000/-** shall invariably be submitted by you along with your offer. Offer without EMD will be rejected. The EMD shall be submitted in the form of Demand Draft/Bankers Cheque/FD receipts or Bank Guarantee drawn in favour of Accounts Officer, LPSC and payable at Thiruvananthapuram/Bengaluru. Submission of EMD is exempted in respect of Registered vendors, Foreign vendors, CPSU/CPSE, MSE, KVIC, NSIC. Vendors seeking exemption from payment of EMD shall submit necessary proof like registration number, copy of relevant valid certificates along with your offer, failing which the said offer will be rejected. The EMD of a vendor will be forfeited if the vendor withdraws or amends their tender or deviates from the tender in any respect within the validity period of the tender.

2. Instruction to Indigenous Suppliers:

- a) Our Normal payment terms are 100% within 30 days after receipt and acceptance of the item at our site on pro-rata basis. Please confirm acceptance in your quotation.
- b) ISRO is eligible for payment of concessional rate of IGST as per Ntn. No.47/2017 – Integrated Tax (rate) dtd.14/11/2017. Necessary Concession Certificate shall be issued in case of an order on you. As such you may quote accordingly. LPSC GSTIN is 32AAAGL0045H1ZX.

3. Purchase / Price preference to MSEs

Purchase/Price preference will be applicable to the product reservation admissible to the Micro and Small Enterprises. Purchase/Price Preference shall be extended to the MSEs under the Public Procurement Policy for MSEs formulated under the Micro, Small and Medium Enterprises Development Act, 2006. The participating MSEs in a tender, quoting price within the band of L-1 + 15% may also be allowed to supply a portion of the requirement by bringing down their price to the L-1 price, in a situation where L-1 price is from someone other than an MSE. Such MSEs may be allowed to supply up to 20% of the total tendered value. In case of more than one such eligible MSE, the supply will be shared equally.

4. Instruction to Foreign Suppliers:-

- a) Our normal payment term is **SIGHT DRAFT**, Please confirm acceptance in your offer, if you insist for L/C, and all bank charges shall be to your account. Confirm acceptance.
- b) We are exempted from payment of Customs Duty vide Notification No. 50/2017-CUSTOMS DTD 30.06.2017 and necessary Customs Duty Exemption Certificate will be provided on request.
- c) Please specify whether any export clearance is required in case of an order on you.
- d) Warranty/Guarantee applicable for the item shall be mentioned in your offer
- e) Special Certification for packing Material : as per Plant Quarantine (Regulation of Control into India) Order 2003, Articles packed with packing material of plant origin viz., hay, straw, wood shavings, wood chips, saw dust, wood waste, wooden pallets, Dunn age Mats, wooden packages, coir pith, peat or sphagnum moss etc., will be allowed entry by Customs only with a Phytosanitary Certificate. In case of a Purchase Order, if you propose to us any of the above material for packing such a certificate issued by your local Plant Quarantine Authority shall be furnished.
- f) Confirm whether any Export License is required and for which End User Certificate is to be provided by us, in case of an Order on you. (Enclose format for EUC, if applicable)
- g) Either Indian Agent on behalf of the foreign principles or the foreign principal directly can quote against this order, but not both. In either case an Indian *agent* cannot represent more than one principal against the same tender.
- h) Agency Commission: If any agency commission is involved in the offer, please specify the percentage of agency commission.

5. High Sea Sales

In case any bidder is submitting their offer on High Sea Sale (HSS) basis, the Indian Trader shall submit the following documents **mandatorily** along with the offer. It will be the responsibility of the Party to clear the items from Customs and deliver to us on FOR LPSC, Valiamala basis.

- The Import Export Code of the Indian Trader.
- Bank Authorization Code of the Indian Trader.
- GSTIN of the Indian Trader

6. Warranty

You shall provide applicable warranty for the items offered by you without fail. For the applicable period you shall provide necessary warranty certificate.

7. Performance Bank Guarantee:

You have to submit a PBG from a Nationalized / Scheduled Bank for 10% of the order value towards the performance of the system at the time of supply valid till the completion of warranty period plus 60 days as per the format provided by the Department.

OR

10% of the order value shall be with held till the completion of warranty period plus 60 days.

8. Security Deposit (Only for order value above 5 lakhs)

You have to furnish a Bank Guarantee for 10% of the order value within 10 days of receipt of Order towards the faithful execution of the order valid till the completion of the scope of work as per order plus sixty days. (This will be returned to you immediately on execution of the order satisfactorily as per order terms. In case of non-performance / poor performance, the amount will be forfeited).

9. Force Majeure :-

Should a part or whole work covered under this contract be delayed in delivery/completion of work due to reasons of Force majeure which shall include legal lockouts, strikes, riots, civil commotion, fire, accidents, quarantines, epidemic, acts of God & War, stoppage of deliveries by the Government, freight embargoes etc; the delivery period/completion of work referred to in this Contract shall be extended by a period not in excess of duration of such Force Majeure. The occurrence shall be notified by either party within reasonable time.

10. Liquidated Damages:

If the ordered items are not supplied within the delivery schedule, LD shall be levied from your bill @ 0.5% per week for the undelivered items subject to a maximum of 10% of the order value for the delayed period. **(Note : This is a mandatory clause)**

11. Arbitration:

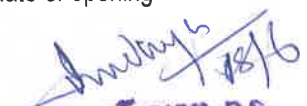
Disputes, if any, shall be settled mutually, failing which it shall be referred to a One-Man arbitrator appointed by Director, LPSC in accordance with the Arbitration & Conciliation Act 1996, whose decision shall be final and binding on both the parties.

12. The Compliance Statement attached along with the enquiry may please be filled and forwarded along with the offer without fail.

13. Offer Validity:-

- a) The validity of the offers should be 90 days (in case of single part tender) from the date of opening of the tenders.
- b) The validity of the offers should be 120 days (in case two part tender) from the date of opening of the tenders.

14. Offers received through fax or email will not be considered.


सेध्या आर एस / SĀNDHYA R S
क्रय व भंडार अधिकारी
PURCHASE & STORES OFFICER
एलपीएससी/LPSC

GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
LIQUID PROPULSION SYSTEM CENTRE
PURCHASE DIVISION
VALIAMALA P.O. THIRUVANANTHAPURAM

Tender No : TD00 2019 03395101
Due on : 22.07.2020
Ref. No :
Date :

TENDER FORM

From :

.....
.....
.....

To: The Purchase & Stores Officer,
Liquid Propulsion Systems Centre
Valiamala P.O.
Thiruvananthapuram – 695 547

Dear Sir,

I/We hereby offer to supply the stores detailed below at the price hereunder quoted and agree to hold this offer open till.....I/We shall be bound to supply the stores hereby offered upon the issue of the Purchase Order communicating the acceptance there of on or before the expiry of the last mentioned date. You are at liberty to accept any one or more of the items of stores tendered for or any portion of any one or more of the items of such stores. I/We notwithstanding that the offer in this tender has not been accepted in whole, shall be bound to supply to you such items and such portion or portions of one or more of the items as may be specified in the said Purchase Order communicating the acceptance:

Sl. No.	Description	Quantity	Unit	Rate Rs.	Delivery Date
---------	-------------	----------	------	----------	---------------

.....
.....

NOTE: All the rates should be given both in figures and words.

Place at which delivery will be made:
Date by which the ordered items will be supplied:.....

2.I/We have understood the items of the tender annexed to the invitation to tender and have thoroughly examined the specification/drawing and / or pattern quoted or referred to herein and /are fully aware of the nature of the stores required and my/our offer is to supply the stores strictly in accordance with the requirements subject to the terms and conditions stipulated in the enquiry and contained in the purchase order communicating the acceptance of this tender either in whole or in part.

Signature of Tenderer
Date.....
(Seal)

GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
LIQUID PROPULSIONS SYSTEMS CENTRE
PURCHASE AND STORES DIVISION

Form No. DOS:PM:20

TERMS AND CONDITIONS OF TENDER

1. Tenders should be sent in sealed envelopes superscribing the relevant tender No, and the due date of opening. Only one tender should be sent in each envelope.
2. Late tenders and delayed tenders will not be considered.
3. Sales Tax and/or other duties/levies legally leviable and intended to be claimed should be distinctly shown separately in the tender.
4. As a Government of India Department, this office is exempted from payment of Octroi and similar local levies. Tenderers shall ensure that necessary Exemption Certificates are obtained by them from the Purchase Officer concerned to avoid any payment of such levies.
5. a) Your quotation should be valid for 90 days from the date of opening of the tender or any other period as specified in the tender enquiry. Offer with validity lesser than that specified is liable for exclusion from the procurement process.
b) Prices are required to be quoted according to the units indicated in the annexed tender form. When quotations are given in terms of units other than those specified in the tender form, relationship between the two sets of units must be furnished.
6. (a) All available technical literature, catalogues and other data in support of the specifications and details of the items should be furnished along with the offer.
b) Samples, if called for, should be submitted free of all charges by the tenderer and the Purchaser shall not be responsible for any loss or damage thereof due to any reason whatsoever. In the event of non-acceptance of tender, the tenderer will have to remove the samples at his own expense.
c) Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensional details are available the same should also be indicated in your offer.
d) **Specifications:** Stores offered should strictly confirm to our specifications. Deviations, if any, should be clearly indicated by the tenderer in his quotation. The tenderer should also indicate the Make/Type number of the stores offered and provide catalogues, technical literature and samples, wherever necessary, along with the quotations. Test Certificates, wherever necessary, should be forwarded along with supplies. Wherever options have been called for in our specifications, the tenderer should address all such options. Wherever specifically mentioned by us, the tenderer could suggest changes to specifications with appropriate response for the same.
7. The purchaser shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portions of the quantity offered and the tenderers shall supply the same at the rates quoted.
8. Corrections, if any, must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall prevail.
9. The tenderer should supply along with his tender, the name of his bankers as well as the latest Income-Tax clearance certificate duly countersigned by the Income-Tax Officer of the Circle concerned under the seal of his office, if required by the Purchaser.
10. The Purchaser reserves the right to place order on the successful tenderer for additional quantity up to 25% of the quantity offered by them at the rates quoted.
11. The authority of the person signing the tender, if called for, should be produced.

TERMS & CONDITIONS OF TENDER

1. DEFINITIONS:

- (b) The term 'Purchaser' shall mean the President of India or his successors or assigns.
- (c) The term 'Contractor' shall mean, the person, firm or company with whom or with which the order for the supply of stores is placed and shall be deemed to include the Contractor's successors, representative, heirs, executors and administrators unless excluded by the Contract.
- c) The term 'Stores' shall mean what the Contractor agrees to supply under the Contract as specified in the Purchase Order including erection of plants & machinery and subsequent testing, should such a condition is included in the Purchase Order.
- d) The term 'Purchase Order' shall mean the communication signed on behalf of the Purchaser by an Officer duly authorised intimating the acceptance on behalf of the Purchaser on the terms and conditions mentioned or referred to in the said communication accepting the tender or offer of the Contractor for supply of stores or plant, machinery or equipment or part thereof.

2. PRICES:

Tender offering firm prices will be preferred. Where a price variation clause is insisted upon by a tenderer, quotation with a reasonable ceiling should be submitted. Such offers should invariably be supported by the base price taken into account at the time of tendering and also the formula for any such variation/s.

3. SECURITY DEPOSIT:

On acceptance of the tender, the Contractor shall, at the option of the Purchaser and within the period specified by him, deposit with him, in cash or in any other form as the Purchaser may determine, security deposit not exceeding ten percent of the value of the Contract as the Purchaser shall specify. If the Contractor is called upon by the Purchaser to deposit, 'Security' and the Contractor fails to provide the security within the period specified, such failure shall constitute a breach of the Contract, and the Purchaser shall be entitled to make other arrangements for the re-purchase of the stores Contracted at the risk of the Contractor in terms of Sub-Clause (ii) and (iii) of clause 10(b) hereof and/or to recover from the Contractor, damages arising from such cancellation.

4. GUARANTEE & REPLACEMENT:

- (a) The Contractor shall guarantee that the stores supplied shall comply fully with the specifications laid down, for material, workmanship and performance.
- (b) For a period of twelve months after the acceptance of the stores, if any defects are discovered therein or any defects therein found to have developed under proper use, arising from faulty stores design or workmanship, the Contractor shall remedy such defects at his own cost provided he is called upon to do so within a period of 14 months from the date of acceptance thereof by the purchaser who shall state in writing in what respect the stores or any part thereof are faulty.
- (c) If, in the opinion of the purchaser, it becomes necessary to replace or renew any defective stores such replacement or renewal shall be made by the Contractor free of all costs to the purchaser, provided the notice informing the Contractor of the defect is given by the purchaser in this regard within the said period of 14 months from the date of acceptance thereof.
- (d) Should the Contractor fail to rectify the defects, the purchaser shall have the right to reject or repair or replace at the cost of the Contractor the whole or any portion of the defective stores.
- (e) The decision of the purchaser notwithstanding any prior approval or acceptance or inspection thereof on behalf of the purchaser, as to whether or not the stores supplied by the Contractor are defective or any defect has developed within the said period of 12 months or as to whether the nature of the defects requires renewal or replacement, shall be final, conclusive and binding on the Contractor.
- (f) Performance Bank Guarantee: To fulfil guarantee conditions outlined in clause 4 (a) to (e) above, the Contractor shall, at the option of the purchaser, furnish a Bank Guarantee (as prescribed by the purchaser) from a Bank approved by the purchaser for an amount equivalent to 10% of the value of the Contract along with first shipment documents. On the performance and completion of the Contract in all respects, the Bank Guarantee will be returned to the Contractor without any interest.
- (g) All the replacement stores shall also be guaranteed for a period of 12 months from the date of arrival of the stores at purchaser's site.

- (h) Even while the 12 months guarantee applies to all stores, in case where a greater period is called for by our specifications then such a specification shall apply in such cases the period of 14 months referred to in para 4 (b) & (c) shall be the 'asked for' guarantee period plus two months.

5. **PACKING FORWARDING & INSURANCE:**

The Contractor will be held responsible for the stores being sufficiently and properly packed for transport by rail, road, sea or air to withstand transit hazards and ensure safe arrival at the destination. The packing and marking of packages shall be done by and at the expense of the Contractor. The purchaser will not pay separately for transit insurance, all risks in transit being exclusively of the Contractor and the Purchaser shall pay only for such stores as are actually received in good condition in accordance with the Contract.

6. **DESPATCH:**

The Contractor is responsible for obtaining a clear receipt from the Transport Authorities specifying the goods despatched. The consignment should be despatched with clear Railway Receipt/Lorry Receipt. If sent in any other mode, it shall be at the risk of the Contractor. Purchaser will take no responsibility for short deliveries or wrong supply of goods when the same are booked on 'said to contain' basis. Purchaser shall pay for only such stores as are actually received by them in accordance with the Contract.

7. **TEST CERTIFICATE:**

Wherever required, test certificates should be sent along with the despatch documents.

8. **ACCEPTANCE OF STORES:**

- (a) The stores shall be tendered by the Contractor for inspection at such places as may be specified by the purchaser at the Contractor's own risk, expense and cost.
- (b) It is expressly agreed that the acceptance of the stores Contracted for, is subject to final approval by the purchaser, whose decision shall be final.
- (c) If, in the opinion of the purchaser, all or any of the stores that do not meet the performance or quality requirements specified in the Purchase Order, they may be either rejected or accepted at a price to be fixed by the purchaser and his decision as to rejection and the prices to be fixed shall be final and binding on the Contractor.
- (d) If the whole or any part of the stores supplied are rejected in accordance with Clause No. 8 (c) above, the purchaser shall be at liberty, with or without notice to the Contractor, to purchase in the open market at the expense of the Contractor stores meeting the necessary performance and quality Contracted for in place of those rejected, provided that either the purchase, or the agreement to purchase, from another supplier is made within six months from the date of rejection of the stores as aforesaid.

9. **REJECTED STORES:**

Rejected stores will remain at destination at the Contractor's risk and responsibility. If instructions for their disposal are not received from the Contractor within a period of 14 days from the date of receipt of the advice of rejection, the purchaser or his representative has, at his discretion, the right to scrap or sell or consign the rejected stores to Contractor's address at the Contractor's entire risk and expense, freight being payable by the Contractor at actuals.

10. **DELIVERY AND LIQUIDATED DAMAGES:**

- (a) The time for and the date of delivery of the stores stipulated in the Purchase Order shall be deemed to be the essence of the Contract and delivery must be completed on or before the specified dates.
- (b) Should the Contractor fail to deliver the stores or any consignment thereof within the period prescribed for such delivery, the purchaser shall be entitled at his option either
 - (i) to recover from the Contractor as agreed liquidated damages and not by way of penalty, a sum of 0.5% per week of the price of any stores which the Contractor has failed to deliver as aforesaid or during which the delivery of such store may be in arrears subject to a minimum of 10%, or
 - (II) to purchase from elsewhere, without notice to the Contractor on the account and at the risk of the Contractor, the stores not delivered or others of a similar description (where others exactly complying with the particulars, are not, in the opinion of the purchaser, readily procurable, such opinion being final) without cancelling the Contract in respect of the consignment (s) not yet due for delivery, or

- (iii) to cancel the Contract or a portion thereof and if so desired to purchase or authorise the purchase of stores not so delivered or others of a similar description (where others exactly if complying with the particulars are not, in the opinion of the purchaser, readily procurable, such opinion final) at the risk and cost of the Contractor.

In the event of action being taken under sub-clause (ii) & (iii) of clause 10 (b) above, the Contractor shall be liable for any loss which the purchaser may sustain on that account, provided that the re-purchase or if there is an agreement to re-purchase then such agreement is made within six months from the date of such failure. But the Contractor shall not be entitled to any gain on such re-purchase made against default. The manner and method of such re-purchase shall be at the discretion of the purchaser, whose decision shall be final. It shall not be necessary for the purchaser to serve a notice of such re-purchase on the defaulting Contractor. This right shall be without prejudice to the right of the purchaser to recover damages for breach of Contract by the Contractor.

11. EXTENSION OF TIME:

As soon as it is apparent that the Contract dates cannot be adhered to, an application shall be sent by the Contractor to the purchaser. If failure, on the part of the Contractor, to deliver the stores in proper time shall have arisen from any cause which the purchaser may admit as reasonable ground for an extension of the time (and his decision shall be final) he may allow such additional time as he considers it to be justified by circumstances, of the case without prejudice to the purchaser's right to recover liquidated damages under clause 10 thereof.

12. ERECTION OF PLANT & MACHINERY:

Wherever erection of a plant or machinery is the responsibility of the Contractor as per the terms of the Contract and in case the Contractor fails to carry out the erection as and when called upon to do so within the period specified by the purchaser, the purchaser shall have the right to get the erection done through any source of his choice. In such an event, the Contractor shall be liable to bear any additional expenditure that the purchaser is liable to incur towards erection. The Contractor shall, however, not be entitled to any gain due to such an action by the purchaser.

13. PAYMENT:

Contractor's bill will be passed for payment only after the stores have been received, inspected and accepted by the Purchaser.

14. MODE OF PAYMENT:

Normally payment will be made for the accepted stores within 30 days from the date of receipt of the materials.

15. RECOVERY OF SUM DUE:

Whenever any claim for the payment of, whether liquidated or not, money arising out of or under this Contract against the Contractor, the purchaser shall be entitled to recover such sum by appropriating in part or whole, the security deposited by the Contractor, if a security is taken against the Contract. In the event of the security being insufficient or if no security has been taken from the Contractor, then the balance or the total sum recoverable as the case may be, shall be deducted from any sum then due or which at any time thereafter may become due to the Contractor under this or any other Contract with the purchaser. Should this sum be not sufficient to cover the full amount recoverable, the Contractor shall pay to the purchaser on demand the remaining balance due. Similarly, if the purchaser has or makes any claim, whether liquidated or not, against the Contractor under any other Contract with the purchaser, the payment of all moneys payable under the Contract to the Contractor including the security deposit shall be withheld till such claims of the purchaser are finally adjudicated upon and paid by the Contractor.

16. INDEMNITY:

The Contractor shall warrant and be deemed to have warranted that all stores supplied against this Contract are free and clean of infringement of any Patent, Copyright or Trademark, and shall at all times indemnify the purchaser against all claims which may be made in respect of the stores for infringement of any right protected by Patent Registration of design or Trade mark and shall take all risk of accidents or damage which may cause a failure of the supply from whatever cause arising and the entire responsibility for sufficiency of all means used by him for the fulfilment of the contract.

17. LIQUIDATED DAMAGES :

The delivery period mentioned is the essence of this order. If you fail to deliver the ordered items satisfactorily within the time specified or any extension thereof, Liquidated Damage @ 0.5%(Zero point five percent) of the order value or part thereof the un-delivered items for each calendar weeks of delay shall be recovered from your bill. However total Liquidated Damage shall not exceed 10% (Ten percent) of the order value.

18. Performance Bank Guarantee :

Towards the performance of the systems during the warranty period, you shall submit a Performance Bank Guarantee equivalent to 10% of the order value to cover the warranty period. This PBG shall be interest free and the same shall be returned to you on successful completion of all contractual obligations. The said PBG shall have a further claim period of 6 months.

19. SECURITY DEPOSIT :

Security @ 10% of the value of the order shall be deposited within 10 days from the date of receipt of order in the form of Bank Guarantee or Fixed Deposit from any of the Scheduled Bank executed on non-judicial Stamp Paper of Rs. 200 /- towards the performance of the contract and shall be valid for a period of 60 days beyond the date of completion of the Purchase Order / Contract. This will be returned by LPSC immediately on execution of the order satisfactorily as per Order terms. Failing which the amount will be forfeited/adjusted.

20. ARBITRATION:

In the event of any question, dispute or difference arising under these conditions or any conditions contained in the Purchase Order or in connection with this Contract (except as to any matter the decision of which is specially provided for by these conditions), the same shall be referred to the sole arbitration of the Head of the Purchase office or some other person appointed by him. It will be no objection that the arbitrator is a Government servant, that he had to deal with matter to which the Contract relates or that in the course of his duties as Government servant he has expressed views on all or any other matters in dispute or difference. The award of the arbitrator shall be final and binding on the parties of this Contract.

If the arbitrator be the Head of the Centre/Unit –

- (i) In the event of his being transferred or vacating his office by resignation or otherwise, it shall be lawful for his successor-in-office either to proceed with reference himself, or to appoint another person as arbitrator, or
- (ii) In the event of his being unwilling or unable to act for any reason, it shall be lawful for the Head of the Centre/Unit to appoint another person as arbitrator.

If the arbitrator be a person appointed by the Head of the Purchase Office – In the event of his dying, neglecting or refusing to act or resigning or being unable to act, for any reason, it shall be lawful for the Head of the Centre/Unit either to proceed with the reference himself or appoint another person as arbitrator in place of the outgoing arbitrator.

Subject as aforesaid the Arbitration & Conciliation Act 1996 and the rules thereunder and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceedings under this Clause. The Arbitrator shall have the power to extend with the consent of the purchaser and the Contractor the time for making and publishing the award. The venue of arbitration shall be the place as purchaser in his absolute discretion may determine. Work under the Contract shall, if reasonably possible, continue during arbitration proceedings.

In the event of any dispute or difference relating to the interpretation and application for the provisions of the Contracts, such dispute or difference shall be referred by either party to Arbitration of one of the Arbitrations in the Department of Public Enterprises. The Arbitration Act 1996 shall not be applicable to arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute provided however any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice, Govt. of India. Upon such reference, the dispute shall be decided by the Law Secretary or the Special Secretary / Additional Secretary when so authorized by the Law Secretary, whose decision shall bind the parties finally and conclusively. The parties to the dispute will share equally, the cost of arbitration as intimated by Arbitrator.

21. COUNTER TERMS AND CONDITION OF SUPPLIERS:

Where counter terms and conditions printed or cyclostyled conditions have been offered by the supplier, the same shall not be deemed to have been accepted by the Purchaser, unless specific written acceptance thereof is obtained.

22. SECURITY FOR PURCHASE OF MATERIALS:

Successful tenderer will have to furnish in the form of a bank guarantee or any other form as called for by the purchaser towards adequate security for the materials and properties provided by the Purchaser for the due execution of the Contract.

INSTRUCTIONS TO TENDERERS

1. The Tenderers should submit quotations in duplicate in a sealed envelope, superscribing the Tender No. and due date of opening and complete in all respects with technical specifications, including pamphlets and catalogues.
2. A Proforma Invoice may also be given which should contain the following information:
 - a) The FOB/FCA value, the C & F value for import by Sea freight / Air freight up to and for air parcel post up to should be separately indicated.
 - b) Agency Commission: The amount of commission included in the price and payable to the Indian Agent of the Contractor shall be paid directly to the Indian Agent by the Purchaser in equivalent Indian Rupees on the basis of an Invoice from him applying T.T. buying rate of exchange ruling on the date of placement of the Purchase Order and which shall not be subject to any further exchange variations. This payment will be released to the Indian Agent immediately after Customs clearance of the goods in India.
 - c) The Contractor shall invoice only for the net amount payable to him, after deducting the amount of Agency Commission included in the invoice which will be paid to the Indian Agent directly by the Purchaser. However, the Contractor's invoice should separately reflect the amount of commission payable to his Indian Agent.
 - d) The earliest delivery period and country of origin of the Stores.
 - e) Banker's name, address, telephone/fax Nos. & e-Mail ID of the Contractor.
 - f) The approximate net and gross weight and dimensions of packages/cases.
 - g) Recommended spares for satisfactory operation for a minimum period of one year.
 - h) Details of any technical service, if required for erection, assembly, commissioning and demonstration.
3. The FOB/FCA and C & F prices quoted should be inclusive of all taxes, levies, duties arising in the tenderer's country.
4. The offer should be valid for a minimum period of 120 days from the due date of opening of the tender.
5. Samples, if called for, should be sent free of all charges.
6. Late and delayed tenders will not be considered. Quotations by cable must be followed by detailed offers.
7. Offers made by Indian Agents on behalf of their Principals, should be supported by the proforma invoice of their Principals.
8. The details of Import Licence will be furnished in the Purchase Order.
9. The authority of person signing the tender, if called for, shall be produced.
10. Instructions / Operation Manual containing all assembly details including wiring diagrams should be sent wherever necessary in duplicate. All documents / correspondence should be in English language only.
11. The Purchaser reserves the right to accept or reject the lowest or any offer in whole or part without assigning any reason.
12. It is expressly agreed that the acceptance of the Stores Contracted for is subject to final approval in writing by the Purchaser.
13.
 - a) Part shipment is not allowed unless specifically agreed to by us.
 - b) As far as possible stores should be despatched by Indian Flag Vessels / Air India through any Agency nominated by us.
14. Inspection / Test Certificate should be provided for the goods ~~after~~ testing it thoroughly at the Contractor's works. If any Inspection by Lloyds or any other testing agency is considered necessary, it shall be arranged by Contractors.
15. Where erection or assembly or commissioning is a part of the Contract, it should be done immediately on notification. The Contractor shall be responsible for any loss/damage sustained due to delay in fulfilling this responsibility.
16. For items having shelf life, those with maximum shelf life should be supplied if order is placed

I. TERMS AND CONDITIONS

1. DEFINITIONS:

- a. The term 'Purchaser' shall mean the President of India or his successors or assignees.
- b. The term 'Contractor' shall mean, the person, firm or company with whom or with which the order for the supply of stores is placed and shall be deemed to include the Contractor's Successors, representatives, heirs, executors and administrators unless excluded by the Contract.
- c. The term 'Purchase Order' shall mean the communication signed on behalf of the Purchaser by an officer duly authorized intimating the acceptance on behalf of the Purchaser on the terms and conditions mentioned or referred to in the said communication accepting the Tender or offer of the Contractor for supply of stores of plant, machinery or equipment of part thereof.
- d. The term 'Stores' shall mean what the Contractor agrees to supply under the Contract as specified in the Purchase Order.

2. **PRICES:**
Tenders offering firm prices will be preferred. Where a price variation clause is insisted upon by a tenderer, quotations with a reasonable ceiling should be submitted. Such offers should invariably be supported by the base price taken into account at the time of tendering and also the formula for any such variations.
3. **TERMS OF PAYMENT:**
 - 3.1. Being a Department of the Government of India, the normal terms of payment are by Sight Draft. However other terms of payment like establishment of Letter of Credit may be considered by the Purchaser on such terms and conditions as may be agreed upon.
 - 3.2. The Sight Draft / Letter of Credit will be operative on presentation of the under mentioned documents:
 - a) Original Bill of Lading / Airway Bill
 - b) Commercially certified invoices describing the stores delivered, quantity, unit rate and their total value, in triplicate. The invoice should indicate the discounts, if any, and Agency Commission separately.
 - c) Packing List showing individual dimensions and weight of packages.
 - d) Country of Origin Certificate in duplicate.
 - e) Test Certificate.
 - e) Declaration by the Seller that the contents in each case are not less than those entered in the invoices and the quality of the Stores are guaranteed as per the specifications asked for by the Purchaser.
 - f) Warrantee and guarantee Certificate/s vide Clause 20 herein below
4. **IMPORTANT LICENCE:**
Reference to Import License No. & date and Contract number & date shall be prominently indicated in all the documents vide para 3.2
5. **DEMURRAGE:**
Supplier shall bear demurrage charges, if any, incurred by the purchaser due to delayed presentation of shipping documents as prescribed in para 3.2 to the bankers within a reasonable time (say within 10-12 days) from the date of bill of lading for sea consignments and within 3-4 days from the date of Air Way Bill for air consignments.
6. **ADDRESS OF INDIAN AGENTS:**
.....
.....
7. **GUARANTEED TIME DELIVERY:**
The time for and the date of delivery stipulated in the Purchase Order shall be deemed to be the essence of the Contract. Delivery must be completed within the date specified therein.
8. **INSPECTION AND ACCEPTANCE TEST:**
 - 8.1. The Purchaser's representatives shall also be entitled at all reasonable times during manufacture to inspect, examine and test on the Contractor's premises the material and workmanship of all stores to be supplied under this Contract and if part of the said stores is being manufactured on other premises, the Contractor shall obtain for the purchaser's representative permission to inspect, examine and test as if the equipment were being manufactured on the Contractor's premises. Such inspection, examination and testing shall not release the Contractor from the obligations under this Contract.
 - 8.2. For tests on the premises of the Contractor or of any of his sub-Contractors, the Contractor shall provide free of cost assistance, labour, material, electricity, fuel and instruments as may be required or as may be reasonably needed by the purchaser's representative to carry out the tests efficiently.
 - 8.3. When the stores have passed the specified test, the purchaser's representative shall furnish a certificate to the effect in writing to the Contractor. The Contractor shall provide copies of the test/s certificates to the purchaser as may be required.
9. **MODE OF DESPATCH:**
Generally, stores should be despatched through Indian Flagged Vessel / Air India or through any other Agency nominated by the purchaser. A copy of the invoice and packing list should invariably be kept inside each of the packages.
10. **PORT OF ENTRY:**
Thiruvananthapuram/Chennai/Mumbai/Hyderabad/Bangalore/
11. **CONSIGNEE:**
Purchase & Stores Officer, Stores, (Valiamala, Thiruvananthapuram)

12. SHIPPING MARKS.

The mark on the shipping documents such as invoice, bill of lading and on the packages should be as follow:

PURCHASE ORDER NO.
DATED

GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
LIQUID PROPULSION SYSTEM CENTRE
DESTINATION: THIRUVANANTHAPURAM / MADRAS / BANGALORE
PORT OF ENTRY: THIRUVANANTHAPURAM / MADRAS / BANGALORE

13. INSURANCE OF THE STORES:

The necessity or otherwise of insurance will be as indicated in the Purchase Order.

14. CONTRACTOR'S DEFAULT LIABILITY:

4.1. The purchaser may upon written notice of default to the Contractor terminate the Contract in whole or in part in circumstances detailed hereunder:

- a) If in the judgment of the Purchaser the Contractor fails to make delivery of Stores within the time specified in the Contract/agreement or within the period for which extension has been granted by the Purchaser to the Contractor.
- b) If in the judgment of the Purchaser the Contractor fails to comply with any of the other provisions of this Contract.

15. In the event the Purchaser terminates the Contract in whole or in part as provided in Clause 14 the Purchaser reserves the right to Purchase, upon such terms and in such a manner as he may deem appropriate, stores similar to that terminated and the Contractor shall be liable to the Purchaser for any additional costs for such similar stores and/or for liquidated damages for delay as defined in Clause 19 until such reasonable time as may be required for the final supply of stores.

15.1. If this Contract is terminated as provided in Clause 14 the Purchaser in addition to any other rights provided in this Article, may require the Contractor to transfer title and deliver to the Purchaser under any of the following clauses in the manner and as directed by the Purchaser:

- a) Any completed stores.
- b) Such partially completed stores, drawing, information and Contract rights (hereinafter called manufacturing material) as the Contractor has specifically produced or acquired for the performance of the Contract as terminated. The Purchaser shall pay to the Contractor the Contract price for completed stores delivered to and accepted, by the purchaser and for manufacturing material delivered and accepted.

15.2. In the event the Purchaser does not terminate the Contract as provided in Clause 14, the Contractor shall continue the performance of the Contract in which case he shall be liable to the purchaser for liquidated damages for delays set out in Clause 19 until the stores are accepted.

16. REPLACEMENT:

If the stores or any portion thereof is damaged or lost during transit, the Purchaser shall give notice to the Contractor setting forth particulars of such stores damaged or lost during transit. The replacement of such stores shall be effected by the Contractor within a reasonable time to avoid unnecessary delay in the intended usage of the Stores. In case the purchaser agrees, the price towards replacement items shall be paid by the purchaser on the basis of original price quoted in the tender or as reasonably worked out from the tender.

17. REJECTION :

In the event that any of the stores supplied by the Contractor is found defective in material or workmanship or otherwise not in conformity with the requirements of the Contract specifications, the purchaser shall either reject the stores or request the Contractor, in writing, to rectify the same. The Contractor, on receipt of such notification, shall either rectify or replace the defective stores free of cost to the purchaser. If the Contractor fails to do so, the purchaser may at his option either –

- a) replace or rectify such defective stores and recover the extra cost so involved from the Contractor, or
- b) terminate the Contract for default as provided under clause 14 above, or
- c) Acquire the defective stores at a reduced price considered equitable under the circumstances. The provision of this article shall not prejudice the Purchaser's rights under clause 19.

18. EXTENSION OF TIME:

If the completion of supply of stores is delayed due to reason of *force majeure* such as acts of god, acts of public enemy, acts of Government, fires, floods, epidemics, quarantine restriction, strikes, freight embargoes, etc., the Contractor shall give notice within 15 days to the purchaser in writing of his claim for an extension of time. The purchaser on receipt of such notice after verification, if necessary, may agree to extend the Contract delivery date as may be reasonable but without prejudice to other terms and conditions of the Contract.

19. DELAY IN COMPLETION / LIQUIDATED DAMAGES:

If the Contractor fails to deliver the stores within the time specified in the Contract or any extension thereof, the purchaser shall recover from the Contractor as liquidated damages a sum of one-half of one percent (0.5 percent) of the Contract price of the undelivered stores for each calendar week of delay. The total liquidated damages shall not exceed ten percent (10 percent) of the Contract price of the unit or units so delayed. Stores will be deemed to have been delivered only when all their component parts are also delivered. If certain components are not delivered in time, the stores will be considered as delayed until such time as the missing parts are delivered.

20. GUARANTEE & REPLACEMENT:

- a) The Contractor shall guarantee that the stores supplied shall comply fully with the specifications laid down for material, workmanship and performance.
- b) For a period of twelve months after the acceptance of the stores, if any defects are discovered therein or any defects therein are found to have developed under proper use arising from faulty materials, design or workmanship, the Contractor shall remedy such defects at his own cost provided he is called upon to do so within a period of 14 months from the date of acceptance thereof by the Purchaser who shall state in writing in what respect the stores or any parts thereof are faulty.
- c) If in the opinion of the purchaser it becomes necessary to replace or renew any defective stores, such replacements or renewals shall be made by the Contractor free of all costs to the purchaser provided the notice informing the Contractor of the defect is given by the purchaser in this regard within the said period of 14 months from the date of acceptance thereof.
- d) Should the Contractor fail to rectify the defects, the purchaser shall have the right to reject or repair or replace at the cost of the Contractor the whole or any portion of the defective stores.
- e) The decision of the Purchaser, notwithstanding any prior approval or acceptance or inspection thereof on behalf of the purchaser, as to whether or not the stores supplied by the Contractor are defective or any defects has developed within the said period of 12 months or as to whether the nature of the defects requires renewal or replacement shall be final, conclusive and binding on the Contractor.
- f) To fulfill guarantee conditions outlined in Clause 20 (a) to (e) above, the Contractor shall, at the option of the purchaser, furnish a Bank Guarantee (as prescribed by the purchaser - Bank Guarantee format enclosed) from a Bank approved by the purchaser for an amount equivalent to 10% of the value of the Contract along with first shipment documents. On the performance and completion of the Contract in all respects, the Bank Guarantee will be returned to the Contractor without any interest.
- g) All the replacement stores shall also be guaranteed for a period of 12 months from the date of arrival of stores at purchaser's site.
- h) Even while the 12 months guarantee applies to all stores, in case where a greater period is called for by our specifications, then such a specification shall apply, and in such cases, the period of 14 months referred to in Clause 20 (b) and (c) shall be asked for guarantee period plus two months.

21. REQUIREMENT OF ADDITIONAL NUMBERS OF THE STORES/SPARE PARTS ORDERED:

The Contractor shall also undertake the supply of additional number of items covered by the order as considered necessary by the purchaser at a later date, the actual price to be paid shall be mutually agreed to after negotiations.

22. PACKING:

- a) The Contractor wherever applicable shall pack and crate all stores for sea / air shipment as applicable in a manner suitable for export to a tropical humid climate, in accordance with internationally accepted export practices and in such a manner so as to protect it from damage and deterioration in transit by road, rail or sea for space qualified stores. The Contractors shall be held responsible for all damages due to improper packing.
- b) The Contractor shall ensure that each box / unit of shipment is legible and properly marked for correct identification. The failure to comply with this requirement shall make the Contractor liable for additional expenses involved.
- c) The Contractor shall notify the purchaser of the date of shipment from the port of embarkation as well

as the expected date of arrival of such shipment at the designated port of arrival.

- d) The Contractor shall give complete shipment information concerning the weight, size, content of each packages, etc.
- e) Transshipment of equipment shall not be permitted except with the written permission of the purchaser.
- f) Apart from the despatch documents negotiated through Bank, the following documents shall also be airmailed to the purchaser within 7 days from the date of shipment by sea and within 3 days in case of air-consignments:
 - Commercial Bill of Lading / Air Way Bill / Post parcel Receipt. (Two non-negotiable copies)
 - Invoice (3 copies)
 - Packing List (3 copies)
 - Test Certificate (3 copies)
 - Certificate of Origin.

The Contractor shall also ensure that one copy of the packing list is enclosed in each case

23. ARBITRATION:

If at any time any question, dispute or difference whatsoever shall arise between the purchaser and the Contractor upon or in connection with this Contract, either party may forthwith give to the other notice in writing of the existence of such question, dispute or difference and the same shall be referred to the adjudication of two arbitrators, one to be nominated by purchaser, other by a Contractor and in the event of any difference of opinion, the arbitrators will refer the matter to the umpire. The arbitration shall be conducted in accordance with the rules and procedure for arbitration of the International Chamber of Commerce at Paris. The expenses of the arbitrators and umpire shall be paid as may be determined by them. However, the venue of such arbitration should be in India.

24. LANGUAGE AND MEASURES:

All documents pertaining to the Contract including specification, schedule, notice, correspondence, operating and maintenance instructions, drawings or any other writings shall be written in English language. The metric system of measurement shall be used exclusively in the Contract.

25. INDEMNITY:

The Contractor shall warrant and be deemed to have warranted that all Stores supplied against this Contract are free and clean of infringement of any patent, copyright or trade mark and shall at all times indemnify the purchaser against all claims which may be made in respect of stores for infringement of any right protected by Patent, Registration of design or Trade Mark, and shall take all risk of accident or damage which may cause a failure of the supply from whatever cause arising and the entire responsibility for the sufficiency of all the means used by him for the fulfillment of the Contract.

26. COUNTER TERMS AND CONDITIONS OF SUPPLIERS:

Where counter terms and conditions/printed or cyclostyled conditions have been offered by the supplier, the same shall not be deemed to have been accepted by the purchaser unless specific written acceptance thereof is obtained.

27. SECURITY INTEREST:

On each item to be delivered under this Contract, including an item of work in progress in respect of which payments have been made in accordance with the terms of the Contract, purchaser shall have a security interest in such items which shall be deemed to be released only at the time when the applicable deliverable item is finally accepted and delivered to the purchaser in accordance with the terms of the Contract. Such security interest of the purchaser shall constitute a prior charge as against any other charge or interest created in respect of such items by any entity.

28. BANK CHARGES:

While the purchaser shall bear the bank charge payable to his Bankers (State Bank of India), the Contractor shall bear the Bank charges payable to his Bankers including the cheques towards advising amendment commissions.

29. TRAINING:

The Contractor shall, if required by the purchaser, provide facilities for the practical training of Purchaser's engineering / technical personnel from India and for their active association on the manufacturing processes throughout the manufacturing period of the Contract / stores, number of such personnel to be mutually agreed upon.

30. APPLICABLE LAW:

The Contract shall be interpreted, construed and governed by the laws of India.

31. PERFORMANCE BANK GUARANTEE:

Towards the performance of the software during the warranty period you shall submit a Performance Bank Guarantee equivalent to 10% of the order value to cover the warranty period. This PBG shall be interest free and the same shall

be returned to you on successful completion of all contractual obligations. The said PBG shall have a further claim period of 6 months.

32. LIQUIDATED DAMAGES:

The delivery period mentioned is the essence of this order. If you fail to deliver the ordered items satisfactorily within the time specified or any extension thereof, Liquidated Damage @ 0.5% (zero point five percent) of the undelivered items of each calendar weeks of delay shall be recovered from your bill. However, total Liquidated Damage shall not exceed 10% (ten percent) of the order value.

33. SECURITY DEPOSIT:

Security @ 10 % of the value of the order shall be deposited within 10 days from the date of receipt of order in the form of Bank Guarantee or Fixed Deposit from any of the Scheduled Bank executed on non - judicial stamp paper of Rs 200/- towards the performance of the contract and shall be valid for a period of 60 days beyond the date of completion of the Purchase Order/Contract. This will be returned by LPSC immediately on execution of the Order satisfactorily as per Order terms. Failing which the amount will be forfeited / adjusted.

COMPLIANCE STATEMENT FOR COMMERCIAL TERMS

Sl. No. (1)	Description (Commercial terms & conditions) (2)	Compliance to Col. (2) [YES/NO] (3)	Remarks (4)
1.	P & F charges, if any, (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column)..		
2.	Whether applicable GST percentage mentioned in offer (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column).		
3.	Please specify whether you are a registered vendor (If NO, please mention the same in remarks column)		
4.	ISRO is exempted from payment of Customs Duty vide Notification No.12/2012-Customs dated 17.03.2012. [We will provide Customs Duty Exemption Certificate for bought out items being imported for manufacturing the ordered items (List of items to be imported with quantities to be enclosed along with offer) OR for Orders placed on Foreign Vendors OR for High Sea Sale orders.]		
5.	Installation Charges, if any, (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column).		
6.	Delivery Term :- <ul style="list-style-type: none"> FOR : LPSC, VALAIAMALA In case of Foreign orders, FOB or FCA 		
7.	Freight charges, if any. (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column).		
8.	Delivery Period (If any specific delivery period is mentioned in the tender, please comply the same. If not agreed, please mention your delivery period in remarks column OR if already mentioned in your quote please mention as "already furnished in the quote")		
10.	Payment Term :- <p>(a) 100% payment shall be made through RTGS within 30 days of receipt and acceptance of the item at our site.</p> <p>(b) In case of Foreign orders, Payment term shall be SIGHT DRAFT / 80% BY IRREVOCABLE LETTER OF CREDIT AND BALANCE 20% BY WIRE TRANSFER AFTER RECEIPT & ACCEPTANCE OF THE ORDERED ITEM.</p>		
11.	Liquidated Damages (LD) :- If the ordered items are not supplied within the delivery schedule, LD shall be levied from your bill @ 0.5% per week for the undelivered items subject to a maximum of 10% of the order value for the delayed period. (Note : This is a mandatory clause)		

Sl. No. (1)	Description (Commercial terms & conditions) (2)	Compliance to Col. (2) [YES/NO] (3)	Remarks (4)
12.	Warranty :- Warranty for the offered item shall be from the date of installation/acceptance of the item at our site for a minimum period of one year or as specified in the tender document.		
13.	<p>Security Deposit (SD) :-</p> <p>You have to furnish a Bank Guarantee for 10% of the order value within 10 days of receipt of Order towards the faithful execution of the order valid till the completion of the scope of work as per order plus sixty days. (This will be returned to you immediately on execution of the order satisfactorily as per order terms. In case of non-performance / poor performance, the amount will be forfeited).</p> <p><u>SECURITY DEPOSIT NOT REQUIRED FOR LANDED COST BELOW RS.5 LAKHS.</u></p> <p><i>(NB : If the quoted price is below Rs.5L, please mention NOT APPLICABLE in the Remarks Column. Also, Micro & Small Enterprises registered under NSIC is eligible for exemption from submission of BG. Instead they have to submit Indemnity Bond for 10% of order value. The exemption shall be allowed against production of Documentary Proof upto the monetary limit indicated in the NSIC Certificate. Please mention the same in the Remarks column.)</i></p>		
14	<p>Performance Bank Guarantee (PBG) :-</p> <p>You have to submit a PBG from a Nationalised / Scheduled Bank for 10% of the order value towards the performance of the system at the time of supply valid till the completion of warranty period plus 60 days as per the format provided by the Department.</p> <p>OR</p> <p>10% OF THE ORDER VALUE SHALL BE WITH HELD TILL THE COMPLETION OF WARRANTY PERIOD PLUS 60 DAYS.</p>		
15..	In case, if parties are unable to provide two separate BGs, i.e., one for SD and one for PBG, they can submit a combined BG for SD & PBG within 10 days of receipt of order for 10% of order value valid till the completion of total contractual obligation (i.e., supply period + warranty period + 60 days) as per the format provided by the Department.		
16.	<p>Insurance :-</p> <p>Being a Govt. Of India Dept., Insurance is not required at our cost. Please ensure the safe delivery of the ordered item with proper AIR / SEA / ROAD worthy packing.</p>		

Sl. No. (1)	Description (Commercial terms & conditions) (2)	Compliance to Col. (2) [YES/NO] (3)	Remarks (4)
17.	Validity of Offer :- (a) The validity of the offers should be 90 days (in case of single part tender) from the date of opening of the tenders. (b) The validity of the offers should be 120 days (in case two part tender) from the date of opening of the tenders. Note :- Tenders shorter than offer validity mentioned above will not be considered for evaluation.		
18.	In case of foreign orders, (a) Please specify whether any Export clearance is required. If it is required please provide End User Certificate format along with offer. (b) Please specify whether any Agency Commission is involved or not. If 'YES' mention the percentage of Agency Commission. [Agency Commission shall be claimed by the Indian Agent through an Invoice. The Agency Commission shall be paid to the Indian Agent in Indian Rupees worked out on the basis of Telegraphic Transfer buying rate of exchange prevailing on the date of placement of the Purchase order/Contract and within 30 days from the date of satisfactory acceptance of the item at our site. Distributors are not eligible for Agency Commission]		
19.	Special conditions against Indian Agents submitting quotations in Foreign Currency. (a) Foreign Principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after sales service to be rendered by the Indian Agent. (b) Copy of Agency agreement with the Foreign Principal, precise relationship between them and their mutual interest in the business. (c) The enlistment of the Indian Agent with Director-General of Supplies & Disposals under the Compulsory Registration Scheme of Ministry of Finance.		

