NATIONAL CENTRE FOR EARTH SCIENCE STUDIES
(An Institution under the Ministry of Earth Sciences, Govt. of India)
P.B. No. 7250, Akkulam, Thiruvananthapuram-695 011, Kerala.
PURCHASE & STORES DIVISION

Our Ref : PUR-PROC/176/2024-PUR-NCESS **Dt.04/09/2024**
(To be quoted in all correspondence)

Phone :(0471) 2511531
FAX: (0471) 2442280
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ncesspurchase@gmail.com
website : ncess.gov.in

***Sub*: e-Procurement Tender**

Dear Sirs,

Please send your offer along with descriptive catalogue/ pamphlet for the following items not later than ***01/10/2024 at 06.00 PM (Tender Opening at 11.00 AM on 03/10/2024)***. The terms and conditions governing the tender are given at the bottom.

SI. No	*DESCRIPTION*	*QUANTITY REQUIRED*
1	**Broadband Seismometers**	**15 Nos.**

Bid Eligibility criteria:

Bidder should have supplied a minimum of 15 Nos. of seismograph units with the same specifications during the last three years in India and should represent the same principal/OEM if they are quoting imported products for at least the past three years.

(Detailed specification and conditions are given separately)

INSTRUCTIONS TO THE TENDERERS AND TERMS AND CONDITIONS

1. **The quotation should be submitted by e-procurement in PDF format by 'logging on' on the website eprocure.gov.in/eprocure/app.** The total file size of the documents submitted should not exceed 20 MB.
2. **The Technical and Financial Bids should be submitted separately (Two Bid System).**
3. **In place of a Bid security, the bidders must sign a Bid securing declaration along with the bid stating that "We accept that if we withdraw or modify our Bids during the period of validity, or if we are awarded the contract and we fail to sign the contract, or to submit a performance security before the deadline defined in the request for bids document, we will be suspended for the period of time decided by NCESS from being eligible to submit bids for contracts with NCESS". The bids without this declaration or Udyog Aadhar Memorandum /NSIC will be rejected**.

4. Bidders from a country which shares a land border with India will not be eligible to participate in this tender, unless the bidder is registered with Department for Promotion of Industry and Internal Trade (DPIIT) under Order (Public procurement No. 1) issued by Ministry of Finance, Department of expenditure in line with OM No. F.No.6/18/2019-PPD dt 23rd July, 2020 and F.18/37/2020-PPD, dt. 08.02.2021inserting Rule 144 (xi) in GFR 2017.
5. Preference to Make In India: Preference will be given to the eligible Make in India offered products, in accordance with the CVC letter No. 018/VGL/022-377353 dated 20.04.2018, pertaining to Department of Industrial Policy and Promotion (DIPP) in connection with Preference to Make in India, Order 2017'(PPP- MIIOrder) dated15.07.2017 pursuant to rule153(iii) of General Financial Rules 2017. (Declaration may be submitted).
6. Startups: To promote make in India and startups, the prior turnover and prior experience for all startups shall be relaxed subject to their meeting of quality, technical specifications and tender conditions as per tender. The bidder who intends to participate as "startup" company should enclose the certificate towards startup enterprise registration/recognition issued by Department of Industrial Policy and Promotion, Ministry of Commerce and the certificate should be certified by the Chartered Accountant or should be registered with GeM as startup. Applicable certificate should be enclosed.
7. Fall Clause: An undertaking has to be provided by the bidder that it has not supplied / is not supplying similar product / systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry / Department of the Government of India or PSU and if it is found at any stage that similar product / systems or sub systems was supplied by the bidder to any other Ministry/Department of the Government of India, or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the bidder to NCESS, if the contract has already been concluded.
8. MAF: The authorisation from the manufacturer should be tender specific, i.e., tender reference number and date should be mentioned in the certificate. A bidder shall not have conflict of interest with other bidders. In cases, where the manufacturer has submitted the bid, the bids of its authorised dealer will not be considered and in case of violations, both infringing bids will be rejected.
9. Bids are liable to be rejected as nonresponsive if a Bidder fails to provide and/ or comply with the required information, instructions etc., incorporated in the Tender document or gives evasive information/ reply against any such stipulations. Furnishes wrong and/ or misguiding data, statements(s) etc. In such a situation, besides rejection of the bid as nonresponsive, it is liable to attract other punitive actions under relevant provisions of the Tender Document for violation of the Code of Integrity.
10. During the evaluation of Techno-Commercial or Financial Bids, NCESS may at its discretion, but without any obligation to do so, seek any shortfall information/documents only in case of historical documents which pre-existed at the time of the tender opening and ask the Bidder to clarify its bid by a specified date. Bidder should answer the clarification with in that specified date (or, if not specified, 7 days from the date of receipt of such request). The request for clarification shall be submitted in writing or electronically. If discrepancies exist between the uploaded scanned copies and the Originals submitted by the bidder, the original copy's text, etc, shall prevail. Any substantive discrepancy shall be construed as a violation of the Code of Integrity, and the bid shall be liable to be rejected as nonresponsive in addition to other punitive actions under the Tender Document for violation of the Code of Conduct.
11. From the time of bid submission to awarding the contract, no Bidder shall contact NCESS on any matter relating to the submitted bid. If a Bidder needs to contact NCESS for any reason relating to this tender and/ or its bid, it should do so only in writing or electronically. Any effort by a Bidder to influence the Procuring Entity during the processing of bids, evaluation, bid comparison or award decisions shall be construed as a violation of the Code of Integrity, and bid shall be liable to be rejected as nonresponsive in addition to other punitive actions for violation of Code of Integrity as per the Tender Document.
12. After the award of contract, the supplier encounters conditions hindering timely delivery of the Goods, he/she shall promptly inform NCESS in writing about the same and its likely duration.

NCESS shall examine the situations and, at its discretion, may agree to extend the delivery Schedule, with or without Liquidated Damages (LD). When the period of delivery is extended due to unexcused delay, the amendment extending the delivery period shall, inter alia, be subject LD to a maximum deduction of the 10% of the delayed Goods contract price (all inclusive) and with and without denial clause. Nevertheless, NCESS shall be entitled to the benefit of any decrease in price on account of reduction in or remission of GST, customs duty or foreign exchange rate variation or any other variation clause which takes place after the expiry of the original delivery date.

13. Force Majeure: On the occurrence of any unforeseen event, beyond the control of either Party, directly interfering with the delivery of Goods arising during the currency of the contract, such as war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes, lockouts, or acts of God, the affected Party shall, within a week from the commencement thereof, notify the same in writing to the other Party with reasonable evidence thereof. Unless otherwise directed by the NCESS in writing, the supplier shall continue to perfume its obligations under the contracts far as reasonably practicable and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event, If the force majeure condition(s)mentioned above be in force for 90 days or more at any time, either party shall have the option to terminate the contract on expiry of 90 days by giving 14 days' notice to the other party in writing. In case of such termination, no damage shall be claimed by either party against the other. None of the Party shall seek any such remedies or damages for the delay and/ or failure of the other party in fulfilling its obligations under the contract if it is the result of an event of Force Majeure.

14. The bidder should enclose all relevant documents in a sequential manner as per the tender format.

15. The bid should contain the Bid securing declaration, MII / Startup / Land Border declaration, Authorization from manufacturer, Fall Clause, Details of service Centre, Technical details with make, model and specification of each component, Technical Compliance statement, List of Customers, Brochures etc., wherever applicable.

16. Catalogue/Brochure/Manual should be submitted along with the offer wherever necessary.

17. Warranty / Guarantee Clause needs to be mentioned necessarily wherever applicable.

18. The material should be delivered at NCESS or installed at the specified location and so the quotation should include all the charges for the delivery at NCESS/installation.

19. In INR orders, the Customs Duty Exemption Certificate will be given to the supplier upon request. But the entire responsibility of customs clearance and delivery at NCESS will rest with the supplier. High sea sale is not accepted and should not be quoted.

20. The offer should be valid for 180 days from the due date of opening of tender.

21. NCESS reserves right to accept the tender in part or full without assigning any reasons. The enquiry is not a commitment, and the purchaser reserves the right to reject or cancel any or all offers.

22. Payment Terms:

If Indian Purchase Order

a. 90% upon delivery and acceptance of entire system by NCESS and submission of Invoice, applicable Test Certificate, Installation Certificate, Warranty Certificate.
b. Balance10% will be paid against submission of performance bank guarantee from a nationalized bank for the applicable amount valid for the warranty period plus 60 days or after successful completion of warranty period.

If Foreign Purchase Order

a. LC will be established for 100% of order value against which 90% will be released on submission of Order Acceptance, Proforma Invoice, LC details and other shipping documents etc.
b. Balance 10% will be after submission of performance bank guarantee from a nationalized bank for the applicable amount valid for the warranty period plus 60 days or successful completion of warranty period.

Net payment will be released after statutory deductions. No advance payment will be allowed, and no other payment terms will be considered.

23. **In the event of placement of order, the successful bidder shall provide a Performance Bank Guarantee from a Nationalised Bank for 3% - 5% of the order value (DoE OM No. F.1/2/2023-PPD dated 01.01.2024) wherever applicable. The PBG shall stand valid for the warranty period + 60 days.**
24. Any further changes in the details, like the date of opening or specification, will be posted on our web site only.

Yours faithfully.
Sd/-
Deputy Manager (Purchase &Stores)

Broadband Seismometers		
S.No	**Item**	**Description**
1	Topology	Symmetric tri-axial broadband transducer in a single sealed module with axial accuracy better than 1^{o} for surface vault deployment. All the three components should be permanently mounted in a single watertight and airtight enclosure. The sensor should have an indicator mark on its body to indicate the direction of relative orientation of the seismometer.
2	Type of sensor	Force balance velocity transducer with electronic feedback.
3	Natural period	120 sec.
4	Frequency Response	Flat response (within ±3 dB) to ground velocity in the range of 120 sec to 50 Hz.
5	Dynamic Range	≥140 dB
6	Full scale output voltage	±20 V
7	Damping	0.7 of critical
8	Output sensitivity	≥ 1500 V/m/s
9	Linearity	Less than ±1% of full scale.
10	Mass centering	Motorised mass centering by automatic or on external command locally and remotely. If any external device is required for the mass centering, the bidder should provide that external device also.
11	Mass locking	A robust mechanical mass locking and safety mechanism during transportation.
12	Response and system information	Frequency response curve of the unit along with information regarding transfer function including poles, zeros and normalization factor at 1 Hz should be provided (for each sensor as per the serial number).
13	Instrument Self Noise	Noise response must be below the USGS New Low Noise Model in the frequency range of 100 s to 10 Hz. Test report of the sensor noise over the full pass band should be provided.
14	Leveling indicator	Bubble level indicator for levelling the sensor.
15	Seismometer Control	i. Mass position monitoring from the data acquisition system ii. Mass centering on command from the data acquisition system Calibration of sensor from the data acquisition system
16	Enclosure	i. The sensor should be housed in a shockproof and waterproof enclosure

17	Seismometer-DAS Cable	ii. Low-loss shielded cable (20 meters) with appropriate end connectors.
18	Connectors	iii. All connectors should be waterproof and rust proof.
19	Operating temperature	iv. -10^{o}C to +60^{o}C
20	Humidity	v. Up to 100% RH
21	Power	vi. Input power range 9 – 18V DC vii. Power consumption ≤ 2 watts at 12V DC viii. Reverse voltage protection ix. Over voltage protection x. Built in lightning protection
22	Thermal Insulation	iii. An airtight insulation cover from OEM should be provided
23	Carry case	iv. Rugged field carry case for seismometer should be provided
24	Manuals	v. Detailed user manual / data sheets / calibration data sheet to be provided
25	Reports	vi. The test reports of the quoted model of the seismometer from the international recognized standard test laboratories like USGS Albuquerque seismological laboratory / IRIS should be attached along with technical bid documents.
Part B. Data Acquisition System and its accessories:		
1	Number of Channel	3
2	ADC	Three independent 24-bit digitizers, one for each channel
3	Dynamic Range	≥140 dB at 100 sps
4	Common Mode Rejection Ratio	Greater than 70 dB
5	Input full scale	Range should match the sensor output with full scale at ±20 V.
6	Cannel to channel skew	Zero, Simultaneous sampling of all the channels.
7	Immunity	Immunity to Electromagnetic interference
8	Recording mode	i. Continuous mode and also trigger mode recording including STA/LTA algorithm based or any other type ii. Simultaneous recording in both continuous and trigger mode iii. Trigger parameters should be user selectable. iv. All three channels data in a single file stored in hourly file / 24 files per day.

9	Sampling rate	1.User selectable 1, 20, 50, 100, 200, 500 sps per channel in different data streams (at least two or more) 2.Simultaneous recording at different sampling rates in different streams (two or more), both in continuous and trigger modes.
10	Gain	User selectable multiple gain settings
11	Sensor control	i. Calibration facility for Broadband seismometer ii. Mass position monitoring for Broadband seismometer iii. Mass centering on command for Broadband seismometer
12	Data recording and storage	i. Internal memory: 8GB or more ii. Recording external storage media of capacity 32 GB or more. Two storage media should be supplied with each DAS. iii. Hot swappable storage media iv. The storage media should be rugged and industrial grade suitable to withstand extreme temperature variations. v. The data sheet of the storage media should be attached along with the technical bid.
13	Recording format	i. Standard seismic data format compatible to Windows and Linux platforms with proven compression technique. ii. Conversion utilities to mini seed, SAC, SEISAN and ASCII formats to be supplied.
14	Communication ports	i. USB and / or serial port connectivity to a local terminal for parameter setting and data downloading. ii. Ethernet port (10/ 100 Base- T) supporting TCP/IP. iii. The Ethernet cable to connect DAS to VSAT IDU / cellular modem with end connectors (2m length).
15	DAS firmware should support the mentioned features	i. Web browsing support/ communication over TCP/ IP protocol. ii. Full Duplex communication between field station and Central Recording Station (CRS) continuous or triggered mode data transmission iii. Support off-the-shelf communication equipment iv. Status display individual indicators should be provided on the front/top panel for indicating input power, data acquisition status, GPS status, link status etc.

		v. The DAS should be capable of recording on the external storage media as well as support real-time data telemetry to CRS through VSAT telemetry / cellular network simultaneously. vi. DAS should be capable of streaming data to two Central Recording Stations simultaneously (multicast). vii. DAS should support the retrieval of old data in the storage media from CRS manually through VSAT telemetry / cellular network.
16	GPS Receiver/Clock	i. Timing system with accuracy of ±10 microsecond or better when GPS is locked. GPS receiver must be inbuilt with DAS. ii. Record of GPS status information iii. Antenna cable length should be minimum 20 meters iv. Antenna mounting rod and its accessories
17	Power Requirements	i. Supply voltage 9 – 18 V DC. ii. Power consumption should be ≤1.5 W at 12V DC for recording 3 channels at 100 sps, continuous mode data acquisition. iii. Supply power should be isolated from the signal ground. iv. Reverse voltage protection v. User configurable low voltage disconnect. vi. DAS power cable (2m length) vii. DAS should resume data acquisition automatically when the power is restored after disruption.
18	Operating temperature	-10^{o}C to 60^{o}C
19	Humidity tolerance	Up to 100% RH
20	Enclosure	DAS and GPS units should be enclosed in weather and shock proof sealed enclosures with lightning protection.
21	Accessories	All the hardware, software and cables required for parameter setting, checking the state of health, data retrieval from the DAS at field seismic station and data storage should be provided and described.
22	Manuals	Detailed user manual and data sheet to be provided.
23	Reports	The test reports of the quoted model of the digitizer from the international recognized standard test laboratories like USGS Albuquerque seismological laboratory / IRIS should be attached along with technical bid documents.
Part C. Software for online data acquisition through telemetry (1 Lot)		
The software is required to support the following features		

1	Acquire continuously both waveform data and log information from the field stations in near real-time mode through the VSAT telemetry / cellular network and archive it in ring buffer type storage to be configured in the data acquisition computer in the Central Recording Station (CRS).
2	Continuous error detection monitoring and support for retransmission of data.
3	Command and control of seismographs in the field stations from CRS.
4	Periodically monitor the State-Of-Health of the field stations including the DAS acquisition status, battery voltage, memory used and available, GPS lock status, network delay, broadband seismometer mass position etc. and store the information in a log file as well as graphical display of the information.
5	Near real-time display of the user-selected channels of the waveform data transmitted from the field stations.
6	Generation of statistics such as log files and a graphical display with respect of waveform data availability at the central recording station. (data stored in the data acquisition computer)
7	To provide user-requested transfer of old waveform data and log information from any desired field station.
8	To provide scope for network expandability to add more field stations which may consist of different seismological / communication equipment and standard data formats, in the course of time.
9	To provide a lifetime license for the online data acquisition software and also free updates for the period of five years from the date of installation.
Part D. Other essential requirements:	
1	A point-by-point statement of compliance with the technical specifications of the tendered equipment should accompany the bid along with explanations as to how the compliance is achieved. It should also be supported by illustrative literature/catalogues.
2	The bidder should provide the list of customers to whom the seismographs with the same specifications have been supplied and also submit the equipment performance report from at least three users.
3	The bidder should provide the power consumption details of the Broadband Seismometers and Data Acquisition Systems separately.
4	The bidder should propose & provide any other hardware & software required at the field stations for installation & the efficient operation and maintenance of the seismic stations.
5	The supplier should provide all operation, service and maintenance manuals (in English) along with necessary circuit diagrams.
6	The bidder should demonstrate the quoted model of the seismograph unit and online data acquisition software at NCESS, Thiruvananthapuram for technical evaluation. The technical bids after successful demonstration shall be qualified. The other bids shall be summarily rejected.

7	In case of integration/assembling of the unit in India, the complete testing facility and calibration of the unit should be available at the Indian facility. Our team will qualify the units only after a successful demonstration of the specifications of the equipment such as sensitivity, dynamic range, power consumption, temperature range, etc. as specified in the Tender document at the Indian facility.
8	The supplier should provide training on testing, installation, operation, maintenance and calibration of the seismograph at their facility for a period of five working days.
9	The supplier should provide service support i.e. supply spares and repair defective units of the Broadband Seismometers and the Data Acquisition Systems and accessories supplied for the period of ten years.
10	The supplier should honour the warranty of all hardware and software for a period of two years from the date of acceptance of the equipment.
11	The supplier should quote separately for an extended warranty for three years in addition to the initial warranty of two years, mentioned in point no. 10.
12	The supplier should quote for one unit of an 11” tablet with 16GB RAM, 1TB SSD, LiDAR sensor and a stylus for configuration settings and data retrieval.
13	NCESS, Thiruvananthapuram reserves the right to alter the quantity of Broadband seismograph and spares while placing the purchase order.
14	The bidder should quote the price of one unit of Broadband Seismograph with a full breakup of items of Part A, Part B and Part C and the required cables as per the lengths mentioned.

NATIONALCENTRE FOR EARTH SCIENCE STUDIES
P.B. No. 7250, MEDICAL COLLEGE P.O., AKKULAM, THIRUVANANTHAPURAM-695 011, INDIA

Tel: 91-471-2511531 ***Fax: 91-471-2442280*** e-mail: purchase@ncess.gov.in

TENDER FORM

Tender No. & Date : **PUR-PROC/176/2024-PUR-NCESS Dt.04/09/2024.**

Due Date : ***01.10.2024 (06.00 PM).***

Date of Opening : ***03.10.2024 (11.00 AM).***

Venue of Opening : National Centre for Earth Science Studies, P.B.No.7250, Medical College P.O., Thiruvananthapuram – 695 011.

Description of stores : **Broadband Seismometers**

Quantity : **15 Nos.**

Sirs,

The Senior Manager on behalf of the Director, National Centre for Earth Science Studies (NCESS), invites bids for the supply of stores mentioned above. The tender documents are classified as Annexure-A and Annexure-B. Annexure-A is a specimen tender form meant for suppliers and the bid should contain all the details specified therein. The instructions to the tenderers and the general terms and conditions applicable to the Purchase Orders placed by NCESS are given under Annexure-B. Those who are able to quote for the stores in accordance with the above requirements, may please furnish their offer through eprocurement, on or before the last date and time specified in the tender.

Any deviations from the terms and conditions of the Annexure-B must be clearly indicated in the offer.

Yours sincerely,
Sd/-
Senior Manager

ANNEXURE A

The Senior Manager,
National Centre for Earth Science Studies,
P.B.No.7250, Akkulam, Medical College PO,
Thiruvananthapuram – 695 011.
Kerala, India

Sir,

Sub: Your Tender No ……Dated……

I/We hereby offer you to supply the stores detailed below at the price hereunder quoted and agree to hold this offer open till ……I/We shall bind to supply the stores hereby offered, upon the issue of the purchase order communicating the acceptance thereof on or before the expiry of the delivery date therein. You are at the liberty to accept 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 purchase order communicating the acceptance.

1. **Technical Compliance Statement.**

Required Specification			**Spec offered (with make and model)**	**Whether complied**	**Brochure Page No.**
Broadband Seismometers					
S.No	**Item**	**Description**			
1	Topology	Symmetric tri-axial broadband transducer in a single sealed module with axial accuracy better than 1^{o} for surface vault deployment. All the three components should be permanently mounted in a single watertight and airtight enclosure. The sensor should have an indicator mark on its body to indicate the direction of relative orientation of the seismometer.			
2	Type of sensor	Force balance velocity transducer with electronic feedback.			
3	Natural period	120 sec.			
4	Frequency Response	Flat response (within ±3 dB) to ground velocity in the range of 120 sec to 50 Hz.			
5	Dynamic Range	≥140 dB			
6	Full scale output voltage	±20 V			
7	Damping	0.7 of critical			
8	Output sensitivity	≥ 1500 V/m/s			
9	Linearity	Less than ±1% of full scale.			
10	Mass centering	Motorised mass centering by automatic or on external command locally and remotely. If any external device is required for the mass centering, the bidder			

		should provide that external device also.				
11	Mass locking	A robust mechanical mass locking and safety mechanism during transportation.				
12	Response and system information	Frequency response curve of the unit along with information regarding transfer function including poles, zeros and normalization factor at 1 Hz should be provided (for each sensor as per the serial number).				
13	Instrument Self Noise	Noise response must be below the USGS New Low Noise Model in the frequency range of 100 s to 10 Hz. Test report of the sensor noise over the full pass band should be provided.				
14	Leveling indicator	Bubble level indicator for levelling the sensor.				
15	Seismometer Control	vii. Mass position monitoring from the data acquisition system viii. Mass centering on command from the data acquisition system Calibration of sensor from the data acquisition system				
16	Enclosure	xi. The sensor should be housed in a shockproof and waterproof enclosure				
17	Seismometer-DAS Cable	xii. Low-loss shielded cable (20 meters) with appropriate end connectors.				
18	Connectors	xiii. All connectors should be waterproof and rust proof.				

19	Operating temperature	xiv.-10^{o}C to +60^{o}C				
20	Humidity	xv. Up to 100% RH				
21	Power	xvi. Input power range 9 – 18V DC xvii. Power consumption ≤ 2 watts at 12V DC xviii. Reverse voltage protection xix. Over voltage protection xx. Built in lightning protection				
22	Thermal Insulation	ix. An airtight insulation cover from OEM should be provided				
23	Carry case	x. Rugged field carry case for seismometer should be provided				
24	Manuals	xi. Detailed user manual / data sheets / calibration data sheet to be provided				
25	Reports	xii. The test reports of the quoted model of the seismometer from the international recognized standard test laboratories like USGS Albuquerque seismological laboratory / IRIS should be attached along with technical bid documents.				
Part B. Data Acquisition System and its accessories:						
1	Number of Channel	3				

2	ADC	Three independent 24-bit digitizers, one for each channel				
3	Dynamic Range	≥140 dB at 100 sps				
4	Common Mode Rejection Ratio	Greater than 70 dB				
5	Input full scale	Range should match the sensor output with full scale at ±20 V.				
6	Cannel to channel skew	Zero, Simultaneous sampling of all the channels.				
7	Immunity	Immunity to Electromagnetic interference				
8	Recording mode	v. Continuous mode and also trigger mode recording including STA/LTA algorithm based or any other type vi. Simultaneous recording in both continuous and trigger mode vii. Trigger parameters should be user selectable. viii. All three channels data in a single file stored in hourly file / 24 files per day.				
9	Sampling rate	3.User selectable 1, 20, 50, 100, 200, 500 sps per channel in different data streams (at				

		least two or more) 4.Simultaneous recording at different sampling rates in different streams (two or more), both in continuous and trigger modes.				
10	Gain	User selectable multiple gain settings				
11	Sensor control	iv. Calibration facility for Broadband seismometer v. Mass position monitoring for Broadband seismometer vi. Mass centering on command for Broadband seismometer				
12	Data recording and storage	vi. Internal memory: 8GB or more vii. Recording external storage media of capacity 32 GB or more. Two storage media should be supplied with each DAS. viii. Hot swappable storage media ix. The storage media should be rugged and industrial grade suitable to withstand extreme				

		temperature variations. x. The data sheet of the storage media should be attached along with the technical bid.				
13	Recording format	iii. Standard seismic data format compatible to Windows and Linux platforms with proven compression technique. iv. Conversion utilities to mini seed, SAC, SEISAN and ASCII formats to be supplied.				
14	Communication ports	iv. USB and / or serial port connectivity to a local terminal for parameter setting and data downloading. v. Ethernet port (10/ 100 Base-T) supporting TCP/IP. vi. The Ethernet cable to connect DAS to VSAT IDU / cellular modem with end connectors (2m length).				
15	DAS firmware should support the mentioned features	viii. Web browsing support/ communication				

		over TCP/ IP protocol. ix. Full Duplex communication between field station and Central Recording Station (CRS) continuous or triggered mode data transmission x. Support off-the-shelf communication equipment xi. Status display individual indicators should be provided on the front/top panel for indicating input power, data acquisition status, GPS status, link status etc. xii. The DAS should be capable of recording on the external storage media as well as support real-time data telemetry to CRS through VSAT telemetry / cellular network simultaneously. xiii. DAS should be capable of streaming data to two Central				

		Recording Stations simultaneously (multicast). xiv. DAS should support the retrieval of old data in the storage media from CRS manually through VSAT telemetry / cellular network.				
16	GPS Receiver/Clock	v. Timing system with accuracy of ±10 microsecond or better when GPS is locked. GPS receiver must be inbuilt with DAS. vi. Record of GPS status information vii. Antenna cable length should be minimum 20 meters viii. Antenna mounting rod and its accessories				
17	Power Requirements	viii. Supply voltage 9 – 18 V DC. ix. Power consumption should be ≤1.5 W at 12V DC for recording 3 channels at 100 sps, continuous mode data acquisition. x. Supply power should be				

		isolated from the signal ground. xi. Reverse voltage protection xii. User configurable low voltage disconnect. xiii. DAS power cable (2m length) xiv. DAS should resume data acquisition automatically when the power is restored after disruption.				
18	Operating temperature	-10^{o}C to 60^{o}C				
19	Humidity tolerance	Up to 100% RH				
20	Enclosure	DAS and GPS units should be enclosed in weather and shock proof sealed enclosures with lightning protection.				
21	Accessories	All the hardware, software and cables required for parameter setting, checking the state of health, data retrieval from the DAS at field seismic station and data storage should be provided and described.				
22	Manuals	Detailed user manual and data sheet to be provided.				
23	Reports	The test reports of the quoted model of the digitizer from the international recognized standard				

		test laboratories like USGS Albuquerque seismological laboratory / IRIS should be attached along with technical bid documents.				
Part C. Software for online data acquisition through telemetry (1 Lot)						
The software is required to support the following features						
1	Acquire continuously both waveform data and log information from the field stations in near real-time mode through the VSAT telemetry / cellular network and archive it in ring buffer type storage to be configured in the data acquisition computer in the Central Recording Station (CRS).					
2	Continuous error detection monitoring and support for retransmission of data.					
3	Command and control of seismographs in the field stations from CRS.					
4	Periodically monitor the State-Of-Health of the field stations including the DAS acquisition status, battery voltage, memory used and available, GPS lock status, network delay, broadband seismometer mass position etc. and store the information in a log file as well as graphical display of the information.					
5	Near real-time display of the user-selected channels of the waveform data transmitted from the field stations.					
6	Generation of statistics such as log files and a graphical display with respect of waveform data availability at the central recording station. (data stored in the data acquisition computer)					
7	To provide user-requested transfer of old waveform data and log information from any desired field station.					
8	To provide scope for network expandability to add more field stations which may consist of different seismological / communication equipment and standard data formats, in the course of time.					

9	To provide a lifetime license for the online data acquisition software and also free updates for the period of five years from the date of installation.				
Part D. Other essential requirements:					
1	A point-by-point statement of compliance with the technical specifications of the tendered equipment should accompany the bid along with explanations as to how the compliance is achieved. It should also be supported by illustrative literature/catalogues.				
2	The bidder should provide the list of customers to whom the seismographs with the same specifications have been supplied and also submit the equipment performance report from at least three users.				
3	The bidder should provide the power consumption details of the Broadband Seismometers and Data Acquisition Systems separately.				
4	The bidder should propose & provide any other hardware & software required at the field stations for installation & the efficient operation and maintenance of the seismic stations.				
5	The supplier should provide all operation, service and maintenance manuals (in English) along with necessary circuit diagrams.				
6	The bidder should demonstrate the quoted model of the seismograph unit and online data acquisition software at NCESS, Thiruvananthapuram for technical evaluation. The technical bids after successful demonstration shall be qualified. The other bids shall be summarily rejected.				
7	In case of integration/assembling of the unit in India, the complete testing facility and calibration of the unit should be available at the Indian facility. Our team will qualify the units only after a successful demonstration of the specifications of the equipment such as sensitivity, dynamic range, power consumption, temperature range, etc. as specified in the Tender document at the Indian facility.				
8	The supplier should provide training on testing, installation, operation, maintenance and				

	calibration of the seismograph at their facility for a period of five working days.				
9	The supplier should provide service support i.e. supply spares and repair defective units of the Broadband Seismometers and the Data Acquisition Systems and accessories supplied for the period of ten years.				
10	The supplier should honour the warranty of all hardware and software for a period of two years from the date of acceptance of the equipment.				
11	The supplier should quote separately for an extended warranty for three years in addition to the initial warranty of two years, mentioned in point no. 10.				
12	The supplier should quote for one unit of an 11" tablet with 16GB RAM, 1TB SSD, LiDAR sensor and a stylus for configuration settings and data retrieval.				
13	NCESS, Thiruvananthapuram reserves the right to alter the quantity of Broadband seismograph and spares while placing the purchase order.				
14	The bidder should quote the price of one unit of Broadband Seismograph with a full breakup of items of Part A, Part B and Part C and the required cables as per the lengths mentioned.				

2. **The list of Indian Customers who have bought the same/similar instrument within the last two years, with contact details:**

3. **Details of Service centre: (In case of dealers, also please state whether Authorised Dealership Certificate is enclosed)**

Place of Delivery: Stores, National Centre for Earth Science Studies, P.B.No.7250, Medical College P.O., Thiruvananthapuram – 695 011, Kerala, India.

I / We understand the instructions to the tenderers and General Terms and Conditions of the Contract governing supplies detailed in Annexure-B. I/We have thoroughly examined the specifications of the stores referred above and my/our offer is to supply stores strictly in accordance with and subject to the terms and conditions stipulated in Annexure-B.

Stamp and Signature of the Tenderer

ANNEXURE B

INSTRUCTIONS TO THE TENDERERS AND GENERAL TERMS AND CONDITIONS OF THE CONTRACT

1. **PRICES:** Tenders shall be made in ENGLISH and submitted with price for delivery at National Centre for Earth Science Studies, Akkulam, Medical College PO, Thiruvananthapuram-11, Kerala. The quoted amount should be inclusive of all charges like packing & forwarding charges, inland freight & other related charges, freight, statutory levies, unloading, installation etc.

2. **RIGHTS OF THE PURCHASER:** The Purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reason whatsoever.

3. **VALIDITY OF OFFER:** The prices quoted should be firm and quotation has to be valid for a period of 180 days from the date of opening of tender.

4. **CATALOGUE:** Tenderers shall furnish Leaflet/Technical Literature of the Stores offered by him along with the offer.

5. **TRANSPORTATION:** Stores shall be supplied under supplier's risk.

6. **MODE AND TERMS OF PAYMENT:** Full payment after successful installation/commissioning and acceptance of stores at Purchaser's Site.

7. **WARRANTY:** The supply made by the supplier shall be of best quality and workmanship shall be in accordance with the specifications stipulated in the Purchase Order. Defects/deficiencies shall be made good by the supplier free of cost, notified within the applicable warranty period.

8. **SUBMISSION OF TENDERS: The quotation should be submitted by e-procurement in PDF format by 'logging on' in the website** **eprocure.gov.in/eprocure/app**

9. **ENGINEER'S SERVICE MANUAL AND INSTRUCTION MANUAL:** The Engineer's Service Manual including Circuit Diagram and Instruction Manual (Original Copies) of the equipment shall be supplied along with the delivery/shipment by the supplier in the event of a purchase order. This aspect should be clearly indicated in the offer.

10.DELIVERY/SHIPMENT:

a. The time for delivery of the stores stipulated in the purchase order shall be deemed to be the essence of the contract and delivery must be completed not later than the period specified therein.

b. Failure and termination: If the contractor fails to deliver the stores or any part 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 2% of the price of any stores which the supplier has failed to deliver as aforesaid, for each month or part of a month, during which the delivery of such stores may be in arrears or

ii) to purchase elsewhere, without notice to the contractor on the account and at the risk of the contractor, the stores not delivered or there 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 portion of stores not yet due for delivery.

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

11.**LAW GOVERNING THE CONTRACT:** The contract shall be governed by the laws of India for the time being in force. The marking of all stores supplied must comply with the requirements of Indian Acts relating to Merchandise Marks and all the rules made under such Acts.

12. **JURISDICTION**: The courts within the local limits of Thiruvananthapuram, the place from the purchase order is issued, will be the jurisdiction to deal with and decide any matter arising out of the contract subject to the clause 18 hereof.

13.**INDEMNITY:** The contractor 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 accidents 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 fulfilment of the contract.

14.**ARBITRATION:** Not withstanding anything contained in clause 16 above, in the event of any question, dispute or difference arising under these conditions or any condition contained in the purchase order or in connection with this contract (except as to any matters the decision of which is specially provided for by these conditions) the same may be referred to the sole arbitration of the Director, National Centre for Earth Science Studies, Thiruvananthapuram or some other person appointed by him, there will be no objection that the arbitrator is a Govt. servant, who has to deal with matters to which the contract relates or that in the course of his duties as a Government servant he has expressed views on all or

any of the matters in the disputes or difference. The award of the arbitrator shall be final and binding on the parties to this contract.

Terms of this contract: -

a) If the arbitrator be the Director, NCESS, (i) in the event of his being transferred or vacating his office by resignation or otherwise, it shall be lawful for his successor in the office either to proceed with the reference himself, or to appoint another person as arbitrator to (ii) in the event of his being unwilling or unable to act for any reason, it shall be lawful for the Director, NCESS to appoint another person as arbitrator;

Or

b) If the arbitrator be a person appointed by the Director, NCESS, 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 Director, NCESS, to proceed with the reference himself or to appoint another person as arbitrator in place of the outgoing arbitrator.

Subject as aforesaid, the Arbitration Act, 1940 and the rule there under and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceeding 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 the purchaser in the absolute discretion may determine.

15. **EXERCISING THE RIGHTS & POWERS OF THE PURCHASER:** All the rights, discretions and power of the purchaser under the contract shall be exercisable by and all notices on behalf of the purchaser shall be given by the Director or the Senior Manager of Centre for Earth Science Studies and any reference to 'the opinion of the purchasers' in the terms and conditions contained in this general conditions of the contract shall mean and be construed as reference to the opinion of any of the persons mentioned in this clause.

16. **EXEMPTION FROM PAYMENT OF DUTIES:** The purchaser is eligible for availing customs duty at concessional rate under the relevant rules.

17. **SPARES & ACCESSORIES:** Offers for plant/machinery/equipment/instrument shall also state prices or essential accessories, optional accessories and spares necessary for 5 years of satisfactory operation of the machinery/equipment/instrument offered. Prices for accessories and spares shall be itemised, offers where only lump sum prices are indicated are liable to be ignored. Particular care must be taken to list out each item of spare and quantity recommended and also individual price for these items.

18. **QUANTITY:** The purchaser reserves the right to accept or reject lowest or any offers in whole or in part without assigning any reason. It would therefore be in the interest of the tenderers to clearly understand that the purchaser may accept offers for any quantity of his choice and hence, the percentage of reduction, if any in the price quoted in case of acceptance of tender in whole or part shall be clearly stated.

19. **TRAINING:** The contractor shall, in special cases, if required by the Purchaser provide facilities for the practical training of the purchaser's engineers and technical personnel in respect of repair, maintenance or operation of the plant/machinery/ equipment/ instrument offered at their manufacturing plant in India or abroad. The cost for such training (including travelling, boarding and other related expenses) and the number of trainees and duration of training and any other terms if any, should be indicated separately in the offer.

20. **INSTALLATION & COMMISSIONING:** In the event of an order, the supplier shall arrange satisfactory installation and commissioning of the plant/machinery equipment/ instrument at purchaser's site, free of cost.

21. **SERVICE SOFTWARE/TOOLS:** The service software, tools required if any for the repair/maintenance of the plant/machinery/equipment/instrument shall be quoted separately.

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