MoES PROJECT ON
SEISMIC NETWORK IN KUMAUN HIMALAYA
CENTRE OF ADVANCED STUDY IN GEOLOGY, KUMAUN UNIVERSITY
THE DURHAM, NAINITAL, UTTARAKHAND, INDIA, 263 002

Prof. Rajeev Upadhyay
Principal Investigator

Tel:+91 9411102348,8938864158
E-mails: snkhgeol.ku@gmail.com

Dear bidders,

This is regarding the date of extension for the Broadband seismic instruments tender bidding submission. Due to some of the unforeseen reasons, as a result of the Covid19 pandemic, the last date for tender has been extended to till 10th October 2020. Furthers details of the tender can be seen on the university website https://www.kunainital.ac.in/.

Rajeev 16/09/2020
Principal Investigator
MoES Project on SNKH

Principal Investigator
MoEs Project on SNKH
Geology Department
Kumaun University
NAINITAL-263002

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TENDER NOTICE

Sealed tenders are invited for BROADBAND SEISMOGRAPHS, including accessories under a MoES project on SNKH from sole manufacture or their authorized distributors. The tender can be download from the university website https://www.kunainital.ac.in/.

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TENDER NOTICE

Sealed tenders are invited for BROADBAND SEISMOGRAPHS (Including Sensor, Recorder and required accessories) to be installed in the Kumaun Himalaya, under a MoES project from the sole manufacturer or their authorized distributors. The tender form with specifications, terms and conditions can be downloaded from the University website www.kunainital.ac.in. The duly completed form along with the application fee, a Demand Draft (DD) of US $ 20 or Rs. **1,500.00** (Rupees One thousand five hundred only) inclusive of GST in the name of Assistant Account Officer (AAO) must be attached to the form. Earnest money of Rs. **1,92,000.00** (Rupees one lakh ninety-two thousand only) or US$ **2710** by Demand Draft (DD)/Bank Guarantee will have to be deposited with the tender, drawn in favor of A.A.O. DSB Campus, Kumaun University, Nainital, Uttarakhand- 263002. The duly completed bids should reach the office of the undersigned latest by 10th October 2020.

Rajeev
16/09/2020
Principal Investigator
MoES Project on SNKH

Principal Investigator
MoEs Project on SNKH
Geology Department
Kumaun University
NAINITAL-263002

TENDER DOCUMENT

MoES PROJECT ON SEISMIC NETWORK IN KUMAUN HIMALAYA (SNKH)

DEPARTMENT OF GEOLOGY, CAS, KUMAUN UNIVERSITY, NAINITAL-263002

Bid reference: KU/DG/MoES (SNKH)

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(1) Manufacture's/Supplier's Name
And full address

(2) Tender fee (non-refundable)
(DD No. and date)
In favor of Assistant Account Officer
Kumaun University, Nainital

(3) Earnest money
(DD No. and date)
In favor of Assistant Account Officer
Kumaun University, Nainital

(4) Signature of the Bidder/ Supplier
Date

Note: (i) Each page of the tender document must be signed
(ii) The documents contain nine pages marked 1-9

Sealed Tenders are invited for Broadband Seismographs including Sensor, Recorder and required accessories. (Annexure-I) to be installed in Kumaun Himalaya under the MoES sponsored project entitled "Seismic Network in Kumaun Himalaya" under Prof. Rajeev Upadhyay, Department of Geology, CAS, Kumaun University, Nainital, from sole manufactures or their authorized distributors. The schedule of the procurement is as follows.

(a) Bid reference KU/DG/MoES- This should be referred in all correspondence and also on the top of the envelope containing bid etc.

(b) **Price of the bidding document (non-refundable):**

(c) Commencement of sale of bids : 17th August 2020

(d) Last date of submission of bids : 10th October 2020

(e) Date and time of opening of technical bids : will be communicated later on

(f) Evaluation of technical bids : will be communicated later on

(g) Commercial bid opening : will be communicated later on

(h) Place of opening of bids : Department of Geology, D.S.B Campus, Kumaun University, Nainital

(i) Address of Communication : Principal Investigator
MoES Project on SNKH
Department of Geology, CAS,
D.S.B. Campus,
Kumaun University, Nainital

1. GENERAL CONDITIONS

(1.1) The bids are to be submitted in two parts separately-
(i) Technical (ii) Commercial bids in separate sealed covers enclosed in a sealed packet. The envelope containing the bid should be marked on the top.

(1.2) The bids must be accompanied by earnest money in the form of a Demand Draft in favor of Assistant Account Officer, Kumaun University, and Nainital. Unsuccessful bidder's security money will be returned as early as possible. No interest will be paid on the security money.

(1.3) Bids will be opened in the presence of a committee and interested bidders may also attend the meeting at the specified date and time at their own.

(1.4) The price of the goods should be quoted on CIF New Delhi, India.

(1.5) The price quote shall be either in the currency of the bidder's own country or in **US$**.

(1.6) If a foreign bidder has engaged an Indian agent, it will be required to give the following details in their offer-

(i) Name and address of the Indian agent
(ii) Services to be rendered by the agent
(iii) The amount of remuneration for the agent included in the offer

(1.7) The documentary evidence of the bidder's qualification to perform the contract, if its bid is accepted regarding his financial, technical and production capabilities necessary to perform the contract should be specified properly to the purchaser's satisfaction.

(1.8) Documentary evidence to the jobs and services eligibility shall consist of a statement in the price schedule on the country of origin of goods and services, which shall be confirmed by a certificate of origin at the time of shipment.

(1.9) The documentary evidence of goods and services conformity to the bidding document may be in the form of literature drawing and date and shall furnish a detailed discussion of goods essential technical and performance characteristics.

(1.10) The validity of bids should be for a minimum of 120 days.

(1.11) The expected date of delivery of goods after the award of the contract should be mentioned in the bid.

(1.12) Bids received after the deadline for submission of bids will be rejected.

(1.13) Bids should be submitted with the authorized signature and stamped duly on each page of the bid document.

(1.14) User's list indicating the type of equipment purchased by them and the relevant certificate be enclosed.

(1.15) The equipment's to be procured in the project are to be installed at remote stations and necessary fields testing/ performance will have to be undertaken by the bidder

(1.16) Besides the term and conditions mentioned herein, the import rules as applied by the Government of India will be applicable and in the event of any dispute, the jurisdiction shall be the High Court of Uttarakhand at Nainital.

(1.17) The bidder is expected to examine all instruments, terms and specifications as given in the bidding document including those given in annexure-1. Failure to furnish all information required in the viding document of submission of a bid not substantially responsive to the bidding documents in every respect will be at the Bidder's risk and may result in rejection of its bid.

(1.18) The Principal Investigator reserves the right to accept or reject any of all the tenders without assigning any reason.

2. SEISMIC EQUIPMENTS AND ITS SPECIFICATIONS

2.1 <u>Scope of the project</u>: The scope of the work under the subject proposal includes:

1.	Broadband seismometer (6 nos.)
2.	Data Acquisition System (DAS) and its accessories (6nos.)
3.	Solar Panel (200Watts), Solar Charge Controller, mounting rod and its accessories (6 nos.)
4.	Batteries Indigenous/Local available (each of rating 12V 100AH) (6 nos.)
5.	Battery Charger Indigenous/Local available (6 nos.)
6.	Application software – 1no.
7.	Spares – 1 lot
8.	Delivery, Installation and Commissioning
9.	Two-year warranty from the date of acceptance
10.	Electrical Earthing and Lightening arrestor at each site

2.2 <u>Broadband Seismometer (6 nos.):</u>

The broadband seismograph system is required for studies in a different environment (rocky as well as alluvial) in the field for earthquake/ aftershock/ swarm monitoring as required from time to time.

1.	Type	Triaxial electronic force balanced Broadband type velocity transducer in a single sealed module. Axial accuracy of <0.5 degrees. All the components should be permanently mounted in a single watertight, vacuum-tight enclosure within the specified relative orientation
2.	Feedback	Force balance with the capacitive transducer.
3.	Mass Centering/ Mass locking	a) Automatic or on external command locally or from remote and No mass centering within +/-45 degree C b) Automatic mass locking facility during transportation
4.	Leveling Indicator	Integrated bubble leveling
5.	Frequency Response	Flat (within $\pm$ 3dB) to ground velocity, **at least in the range of 120 sec to 50 Hz**
6.	Sensitivity	Minimum 1000 v/m/s
7.	Dynamic range	Minimum 130 dB
8.	Damping	0.7 Critical.
9.	Clip Level	Better than 10 mm/s from 0.1 Hz to 10 Hz
10.	Output Voltage	$\pm$ 20 V peak to peak or more to match with the input of digitizer (DAS)
11.	Mass Position	Three independent voltage outputs
12.	Calibration	Calibration facility from Das Acquisition System (DAS)
13.	Power	Less than 2 Watts and derived from the DAS
14.	Reverse Voltage protection	Included
15.	Connector	Suitable to Digitizer, Water Proof and Rustproof
16.	Operating temperature	-10 to +50 Degree C
17.	Humidity	0 to 100% RH
18.	Seismometer Cable	High-Quality 10-meter cable with the end connector with low noise cable
19.	Thermal	The Seismometer Manufacture should supply the seismometer PVC

	Insulation	Molded Thermal Insulation cover to avoid the temperature variations
20.	Past Experience	The firm should have supplied a similar seismometer during the past 2 years in India to a reputed Institute or University. Attach the proof of documents
21.	Linearity	+/- 1% of full scale
22.	Frequency response curve and system information	The frequency and phase response curve of the unit along with information regarding transfer function including poles and zeros should be provided as per the serial number of each sensor
23.	Electronic self-noise	Must be below the USGS Low Noise Model over 20 sec to 5Hz range
24.	Housing of instrument	The Equipment is to be placed in a hut/covered. The sensor should be covered properly

Note: Noise level, distortion and linearity may be mentioned.

2.3 Data Acquisition System (DAS) (6 nos.):

1.	Number of Channel	3 Channels upgradable to 6 channels in a single unit
2.	State of Health Channels	Provision for checking the state of health information like sensor mass position, temperature, voltage, condition of GPS time lock, etc., Locally or remotely.
3.	Hardware	User Selectable with various Gain option.
4.	Sampling rate	User Selectable up to at least 200 SPS per channel in different streams both in continuous and trigger modes simultaneously or in one mode as the case may be.
5.	ADC resolution	24-bit independent digitizer for each channel.
6.	Channel to channel skew	a) Zero- Simultaneous sampling of all channels. b) Immune to electromagnetic interference.
7.	System noise	Not more than 3 counts of 24 bit
8.	Filter	Linear phase digital FIR filter
9.	Dynamic Range	135 dB @ 100 SPS or better test report should be enclosed with the technical proposal.
10.	Data Acquisition Mode	Continuous/ Trigger mode
11.	Input range	Match with the all sensor output
12.	Sensor Calibration and mass position Monitoring/ Centering	The digitizer should have the facility to send the signal to the Seismometer to do the calibration and also it should have the facility to do the sensor mass position, mass centering, etc.
13.	Common Mode Rejection	Better than 70dB
14.	RAM	At least 16 MB RAM
15.	Storage Type	Hard disk or Compact Flash (CF) memory card of 32GB or more.
16.	Recording format	The data should be available in miniSEED, SEISAN, ASCII format while downloading the data from the storage media through USB, Card reader, or IP.
17.	GPS timing system	a) GPS receiver electronic circuit should be inside the DAS to avoid the temperature variation with

		UTC timed with digitally controlled precision VCOX clock phase-locked to GPS. b) Time accuracy less than 0.1 mSec when GPS is locked c) Free running TCXO accuracy of 1 ppm over a wide temperature range. An antenna is exposed to the outer side. The antenna cable length should be a minimum of 10 meters d) Antenna enclosed in watertight and work effectively in extreme climate condition e) Antenna mounting rod and its accessories f) The antenna cable should withstand harsh weather conditions
18.	Sensor Control	a) Sensor calibration facility for BB seismometer b) Sensor mass position monitoring for BB seismometer c) Sensor mass centering on command for BB seismometer d) Automatic re-centering while the seismometer deviates from the center position and exceeds the threshold value
19.	State of Health of each channel	Provision for checking the state of health information like sensor mass position, temperature voltage, condition of GPS time lock, etc. locally and remotely.
20.	Gain	Hardware gain selection through software for 0.5, 1, 2 and 4
21.	Trigger	User selectable, independently for each channel at different sampling rates based on triggering criteria as STA/LTA level, etc.
22.	V-SAT connectivity	The DAS should support: a) Ethernet port (10/100 Base-T) supporting TCP/IP and UDP/IP b) Compression of data before transferring to V-SAT c) Continuous and trigger or both d) Duplex communication between field and hubs e) Extensive error correction f) Support for off-the-shelf communication equipment
23.	Power supply	a) Supply voltage 10-15 volts through solar panel activated maintenance-free batteries. b) Power consumption of DAS less than 6 watts at 12 volts in data acquisition mode including the storage media. c) Lower battery voltage protection d) DAS shall resume data acquisition and transmission automatically when power is restored.
24.	Communication	a) Inbuilt communication interface circuitry for provision of remote data acquisition and State-of-Health in near real-time mode through V-SAT

		b) Suitable interface for computer/laptop for parameter setting and data downloading
25.	Housing	GPS and DAS modules should be enclosed in weather and shockproof sealed enclosures with lightning protection.
26.	System Environment	All outdoor equipment should work in harsh weather conditions with the following a) Temperature range -10 to +50 degree C b) Humidity up to 100% RH c) No provision will be provided to keep the remote station seismic equipment's indoor/ air conditioning room
27.	Display	Display indicator status to view power, GPS, data size, etc.
28.	Cables	The supplier should supply a) 10-meter power cable with end connector b) IP cable with end connector c) Seismometer cable with end connector d) 15 meter GPS cable with end connector e) Other necessary cables to connect the digitizer to V-SAT
29.	Spare Storage Media	With each digitizer, the supplier should supply one spare storage media as per the above storage specification or more
30.	Firmware updation	The firm should provide all the update of firmware at free of cost at least for five years from the date of acceptance of the system
31.	Solar Panel and other accessories	a) Solar Panel with an appropriate solar charge controller for charging a battery of 12V 100AH. Installation of Solar Panels is the responsibility of the Bidder b) All outside exposed cables between solar panels and solar charge controller should pass through the good ducting pipe c) Suitable solar panel with each digitizer and battery with indicator, 10 AMPS charge controller, cable to connect the solar charge controller and battery, Solar panel mount, all installation kit, bolt and nuts, etc. d) With each digitizer to run the seismometer equipment at the field at least 7 days without any sunlight.
32.	Data Retrieval Software	The supplier should provide the data retrieval software to download data either from the remote site or the storage media through as per the format required by the user.
33.	Data processing and other Utility software	a) Application software utilities for parameter setting, On-site control panel, sensor calibration, data retrieval into the field computer

		b) Downloading of data as per user criteria from field to central site through GPRS modem/VSAT (if connected) c) Provision to convert the data into SEISAN, ASCII, miniSEED, and other standard formats.
34.	Earthing and Grounding	During the installation, the equipment should be grounded properly to avoid the electrical noise and arrest the lightning also. Also, the Earthing/grounding for the solar panels should be implemented separately.

2.4 <u>Other Conditions:</u>

1.	Additional Condition	In case if the system failed during the warranty period them the local representative should provide the stand by the system to University within a week time to avoid the data loss
2.	Qualification criteria	a) The product should have been installed in India and it should be in a working condition. b) The user contact details should be provided with installation along with an installation certificate to be enclosed with the technical proposal. c) Minimum two customer satisfaction certificates to be attached.
3.	Warranty	a) The successful bidder must own a full warranty of all hardware and software as per terms and conditions for two years after the commissioning of equipment. b) During the warranty period, the bidder must respond within 10 days without any cost to Kumaun University, Nainital for service and correct the problem. The warranty period will be extended proportionally if the down period is beyond 10 Days
4.	Training	a) Operational/maintenance training at Department of Geology, Kumaun University, Nainital for 2-3 working days for the project officials b) During the training period installation and maintenance of the seismic station, application and operating software should be demonstrated c) A detailed training plan about the topics to be covered in the training shall be submitted by the bidder
5.	Final acceptance Test	a) The testing should be done for all the equipment supplied. All individual components should be sufficiently tested before shipment and checked for completeness of the specification quoted

		b) The bidder should successfully demonstrate the performance of all the equipment's after supply as per our tender specification c) The successful bidder must integrate, install and test all the equipment at observatories. The installation, testing and commissioning should start within two weeks after the equipment arrives at the site d) The bidder will perform an on-site test of all the equipment to be designated representative. One side test plan must be submitted by the bidder well in advanced and should be got approved e) After satisfactory completion on-site test, the system will be operated continuously for 15 days. If it functions without any hardware or software failure during this period, the system will be accepted as commissioned
6.	Other Conditions	a) Bidder should also quote any other items that are not included in the above list but are essential for the operation of the system b) Bidder should have servicing capability c) The bidder has to perform the on-site testing of all the equipment's d) The bidder shall submit the list of users and the user certificate of the equipment quoted e) Bidder shall include all relevant literature of the equipment quoted f) The bidder should include the details Para-wise compliance statement along with the bid
7.	**Note**	It should be clarified that for V-SAT connectivity the following may be mentioned a) Ports b) Duplex communication between field and central receiving stations. c) Continuous and trigger mode. d) Extensive error correction. e) Compression of data before transferring to V-SAT

2.5 Procurement Details-:

1. Tenders to be invited under two parts of the tendering system, namely Part-I: Techno-Commercial Bid and Part-II: Commercial Bid.
2. Payment Terms- Payment to be made in two parts.

a. The I Part of 80% payment to be made through an irrevocable Letter of Credit against shipping documents.

b. The II Part of 20% payment to be made on acceptance of the system and submission of Bank Guarantee for equivalent value with validity for two years from the date of acceptance of goods.

3. For any delay in delivery, liquidated damage @ 1% of contract value per week to be levied with a maximum of 10 weeks. Once the maximum is reached termination of the order will be considered.
4. RISK PURCHASE VALUE if the supplier fails to supply the goods within the maximum period specified in the order, the purchase may procure upon such terms and in such manner, as it deems appropriate, goods for services similar to those undelivered and the supplier shall be liable to the Purchaser for any excess costs for such similar goods and services.