REQUEST FOR PROPOSAL (RFP)

For

PROCUREMENT OF EQUIPMENT AND ACCESSORIES

Under

DELINEATION AND ASSESSMENT OF GEOTHERMAL RESOURCES POTENTIAL IN ARUNACHAL PRADESH AS AN ALTERNATE ENERGY RESOURCE.

(The quotes have to be submitted on or before 14-12-2024 at 1400 Hrs)

RFP Document NO.: CES-63/2022-23 Dated: 01/12 /2024

CENTRE FOR EARTH SCIENCES AND HIMALAYAN STUDIES
(An Autonomous Organisation of Department of Sciences and Technology)
Government of Arunachal Pradesh
Itanagar

CONTENT

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GOVERNMENT OF ARUNACHAL PRADESH
CENTRE FOR EARTH SCIENCES AND HIMALAYAN STUDIES
(AN AUTONOMOUS ORGANISATION OF DEPARTMENT OF SCIENCES AND TECHNOLOGY)
ITANAGAR :: ARUNACHAL PRADESH

No. CES-63/2022-23 Dated the Itanagar …… Nov' 2024

Request for Proposals

The Centre for Earth Sciences and Himalayan Studies (CES&HS), Itanagar invites Requests for Proposals for procurement of equipment and accessories in connection with the project for "Delineation and assessment of geothermal resources potential in Arunachal Pradesh as an alternate energy resource." under CES&HS, Govt. of Arunachal Pradesh.

Eligibility criteria are mentioned in the RFP document.

For collection of RFP document on payment of ₹ 1000/- and any further information may contact:
The Director, CES&HS, Itanagar

The deadline for submission of the RFP bid is on or before 14th Dec 2024 at 14.00 hrs. and opening on the 01st Dec 2024 at 15.00 hrs.

Sd/-Secretary
Department of Sciences & Technology
Government of Arunachal Pradesh
Itanagar

Memo No. CES-63/2022-23/ Dated the Itanagar …….Nov' 2024

Copy to:
1. SPA to Secretary, Science and Technology, Govt. of AP, Itanagar for kind information, please.
2. Office copy.
3. Guard file.

Director
Centre for Earth Sciences and Himalayan Studies
Government of Arunachal Pradesh
Itanagar

SCHEDULE OF EVENTS

Sl. No.	Information	Dates & Details
1	Notifying the document on CES&HS Notice Boards/Newspaper/Digital platform	**Within 01-12-2024**
2	Cost of RFP Document (Non-refundable)	Rs.1000/- in the form of DD or from any nationalized Bank in favor of the Director, CES&HS, Itanagar.
3	Earnest Money Deposit (EMD)	EMD, only in the form of a Bank, of any Nationalized Bank, for Rs. 1,50,000/- (Rupees One Lakh Fifty Thousand only), for the Bid of "PROCUREMENT OF EQUIPMENT AND ACCESSORIES" in favor of **Director, CES&HS, Itanagar, Arunachal Pradesh**, valid for 30 days from the date of opening of the technical bid.
4	Address for Submission of Bid	Centre for Earth Sciences and Himalayan Studies, 1st Floor Alexander House, VIP Road, Mowb-I, Opposite to Indira Gandhi Park, Itanagar, Arunachal Pradesh – 791111
5	Last date of receipt of Bids	14-12-2024, 1400 Hrs
6	Opening of Technical Bids, Financial Bids & Declaration of Bidding Results	16-12-2024, 1500 Hrs. onwards

1. Introduction

The Centre for Earth Sciences and Himalayan Studies, Department of Science and Technology, Government of Arunachal Pradesh, Itanagar invites proposals from qualified vendors for the supply, installation, and commissioning of Equipment and Accessories to support the project titled "**Delineation and Assessment of Geothermal Resources Potential in Arunachal Pradesh as an Alternate Energy Resource.**" This project is funded by the Ministry of Earth Science, Government of India, New Delhi a total budget of **₹1,55,30,535**, and aims to identify and assess geothermal resources in Arunachal Pradesh as a sustainable energy solution.

Geothermal energy is one of the most promising clean energy resources with substantial potential in Arunachal state. The proposed proposal will be implemented with technical support and guidance from NGI, Norway, and selected Indian experts. Geothermal energy being a clean and green resource thus has the potential to keep the environment clean. This will have a wider impact on society and the environment for better sustenance, once the project is demonstrated the potential users could be many for various usages.

2. Project Background

The geothermal potential of the Indian region is approximately 10,600 MW of power. However, the development and exploration of geothermal energy in India are still in their infancy, showing only nascent signs of future potential. Given the evolving energy landscape in India, where renewable energy sources are expected to play a pivotal role. The significance of geothermal energy cannot be overstated.

The north-eastern Indian Himalayas is one of the promising areas for geothermal energy development. Arunachal Pradesh in North-Eastern Himalayas is a part of the larger Himalayan Geothermal province. Several hot spring areas and high heat flow provinces are identified in Arunachal Pradesh and bordering states. A climate ideal for using underground thermal energy storage combining the cooling and heating demand and ground source heat pump applications. There is a good scope for developing the capabilities in geothermal cooling and heating of buildings using GSHP (ground source heat pump) and UTES (underground thermal energy storage) technology modified to the local climate, energy demand, and geological conditions. The government of India is giving priority to developing the North-east region of India as it aims to not only develop and enhance the livelihoods of the local people but to increase the tourism sector in the region. This will ultimately result in the economic development of the Northeastern Himalayas.

The proposed project is focused on mapping the subsurface conductivity to identify geothermal anomalies within the region. Magnetotelluric (MT) surveying is a critical component in achieving this goal, as it allows for accurate delineation of subsurface resistivity variations.

Reliable MT equipment with advanced features is essential for capturing high-resolution data and ensuring the success of the project.

3. Project Area

The Study area is in the northeastern part of India and is a part of the eastern Himalayan region. There are two hot springs that have been identified from Dirang in the West Kameng district of Arunachal Pradesh. A location map of the identified hot springs has been presented in Fig. 1. The hot springs in Dirang are on the left bank of the Dirang River. The distance between the two hot springs is 300-400 m. It is found in highly shattered and jointed quartzite emitting a sulphurous smell. One of the springs is situated in the river bed very near to the left bank.

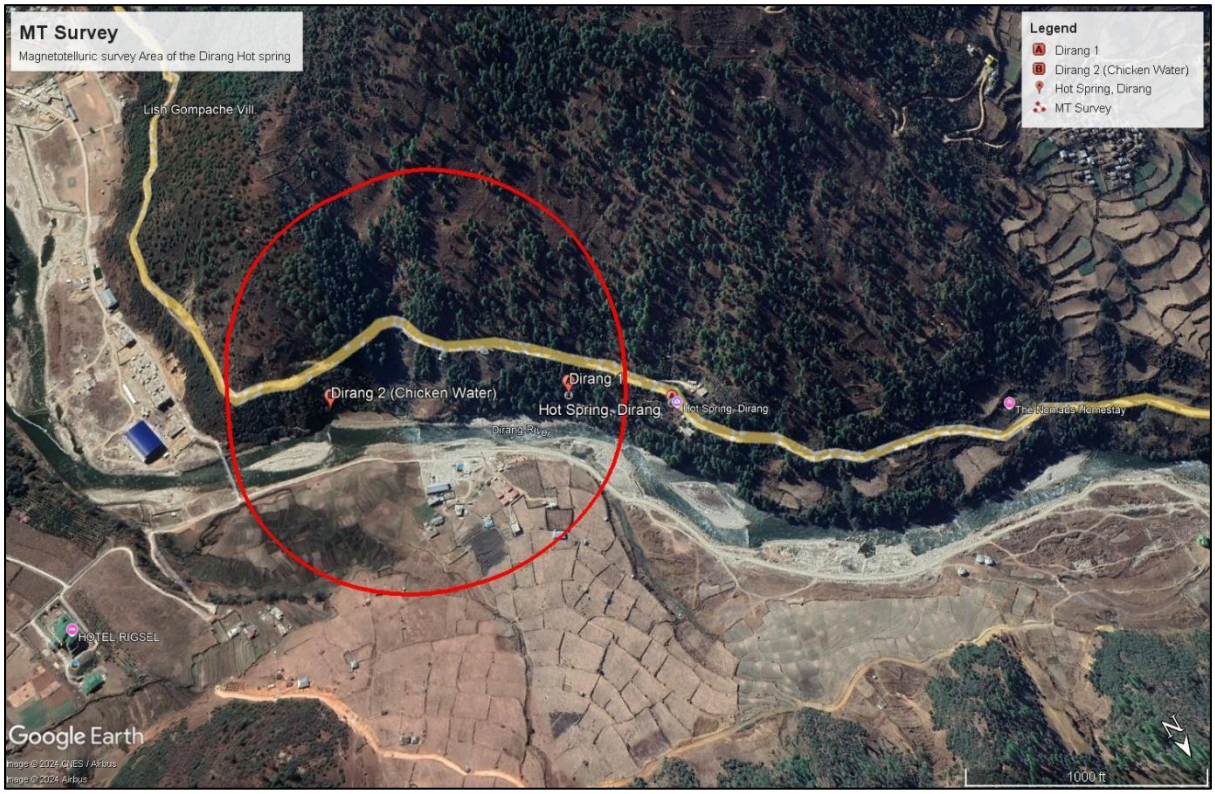

Figure 1: The study area where the MT survey will be conducted.

3.1. Geology

Lithostratigraphically, the rocks exposed in the study area belong to Dirang formation consisting of Garnetiferous mica schist, phyllite, sericite, quartzite, calc-silicate, and tremolite-actinolite marble. The Dirang formation is of Meso-Proterozoic. Structurally the highest unit is Se La Group which is separated from the Dirang Formation to the north by Main Central Thrust (MCT) (Kesari, 2010) and it is unconformably overlying in the south on the Bomdila Group. The MCT is well-defined in the north of the Dirang where the rocks of the Bomdila group are truncated with a conspicuous presence of moderately dipping thrust (Bhusan, 1999). The rocks of the Dirang Formation occur in contact with the MCT continuously from western Arunachal Pradesh

as well as Central Arunachal Pradesh. The Lumla formation in Tawang district and Upper Subansiri district lithologically resembles the Dirang Formation and may be interpreted as isolated tectonic windows implying that the MCT is either curviplanar or is folded later.

4. Scope of Work

The vendor will be responsible for:

I. Supplying high-precision, reliable equipment, and accessories (i.e. MT, Workstations, Software, GPS, Compass, and Camera) capable of performing deep resistivity measurements.
II. Installation, calibration, and initial equipment and software setup at designated Arunachal Pradesh field sites.
III. Providing training and technical support to the CES&HS officers to use the equipment and software efficiently.
IV. Ensuring that the equipment complies with project-specific requirements for data accuracy, reliability, and ease of use in challenging field conditions.
V. The quality of the equipment will be verified by a board of officers/ officials of the CES&HS. Any deviation in the items will attract a penalty on the total cost of the Work Order issued by the CES&HS and will be deducted from the supplier's bill.

5. Technical Specifications

The proposed MT equipment should meet the following minimum specifications:

Sl.No.	**MT equipment specification**	
1	Frequency Range	0.001 Hz to 10,000 Hz
2	Dynamic Range	Minimum 120 dB or higher
3	Channels	Minimum of 5 channels (three magnetic and two electric).
4	GPS Integration	In-built GPS module for precise location tagging
5	Battery Life	At least 48 hours of continuous operation
6	Data Storage	Minimum storage capacity of 64 GB
7	Environmental Durability	IP67 rating or better, suitable for rugged terrains and variable weather conditions
8	Software	Data processing and analysis software with visualization capabilities
9	Accessories	All necessary accessories, including electrodes, coils, cables, and a rugged carrying case.

6. Magnetotelluric Background

MT is a very powerful geophysical method that can image deep into the earth up to 100 km under ideal conditions, and it is possible that MT can image much deeper with a longer recording time. The MT method uses electromagnetic fields that exist naturally and are applied to study the electrical subsurface of the earth that contains appreciable energy over a wide spectrum of the earth (Kaufman & Keller, 1981). MT is a passive exploration technique that applies a comprehensive spectrum of geomagnetic variations that occur naturally as a power source for electromagnetic induction in the earth (Simpson & Bahr, 2005). measures signals at frequencies from 0.001 to 300 Hz were processed and measured with a computer that controlled the MT system and utilized both the electric and magnetic fields of the earth. In the Magnetotelluric method, the orthogonal horizontal magnetic field, Hy, and horizontal electric field, E_x, are measured at the earth's surface in a specified frequency range. MT collects a wide range of frequencies that help us determine rock properties at different depths. Geophysicists that interpret MT data attempt to determine the electrical conductivity structure of the subsurface by interpreting the impedance tensor as a function of frequency and location (Weckmann, 2003).

6.1. Methodology

6.1.1 Procurement of the MT Equipment

- Magnetic X, Y, and Z coils, Antenna for GPS, Central system unit, three noise-canceling cables to hook up the coils to the system unit, and a 12- or 24-volt battery. The main system unit we call "the brain" is made of Electromagnetic Instruments.
- The low-frequency horizontal electric fields were measured using three copper-copper sulfate porous pot electrodes. The porous pot electrodes used an L-shaped array with dipole lengths of 15 meters.

6.1.2 Data Collection

The process involved in the collection of MT data consists of numerous steps, to collect magnetic and electric field data. The system run time at a site has a longer recording time when the survey requires deeper investigation. A typical MT field survey entails the measurement of the time-changing magnetic and electric fields, which are recorded between a day and several months depending on the maximum period needed (Thiel, 2008).

6.1.3 System Set up of MT station

- The MT system has the coil situated and buried according to the magnetic north. The Hz coil can be as long as the Hx and Hy coils, but it must be buried vertically in the ground to prevent movement as movement may create noise in the data.

- MT system layout (plan view) Fig.2 is set up the same way for all the stations on the geophysical survey line which consists of stations that have been measured along a profile
- The HX coil and EX porous pot electrodes are oriented in a way that they are 90 degrees in relation to the HY coil and EY electrode and are also buried to decrease or eliminate wind noise.

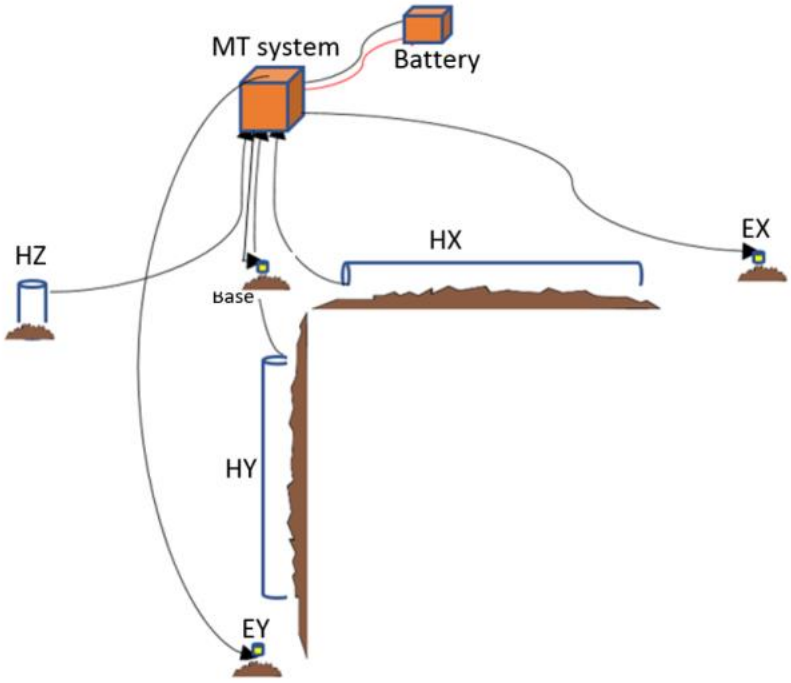

Figure 2: Displaying the outline configuration of a MT system

- Each station location is set up in a similar fashion where the EX and EY distance from the Base electrode (dipole length) is recorded and entered in the software during data processing

6.1.4 Data Processing

- Much of the time MT data is collected and then processed using 3D procedures. This is because the earth is 3D and cannot be fully described using 2D interpretation methods. The options that are available to process MT data are numerous.
- For data cleaning or fixing data remote referencing is used to improve data quality as the apparent resistivity is shown in Fig. 3 and the impedance phase shown in Fig. 4.

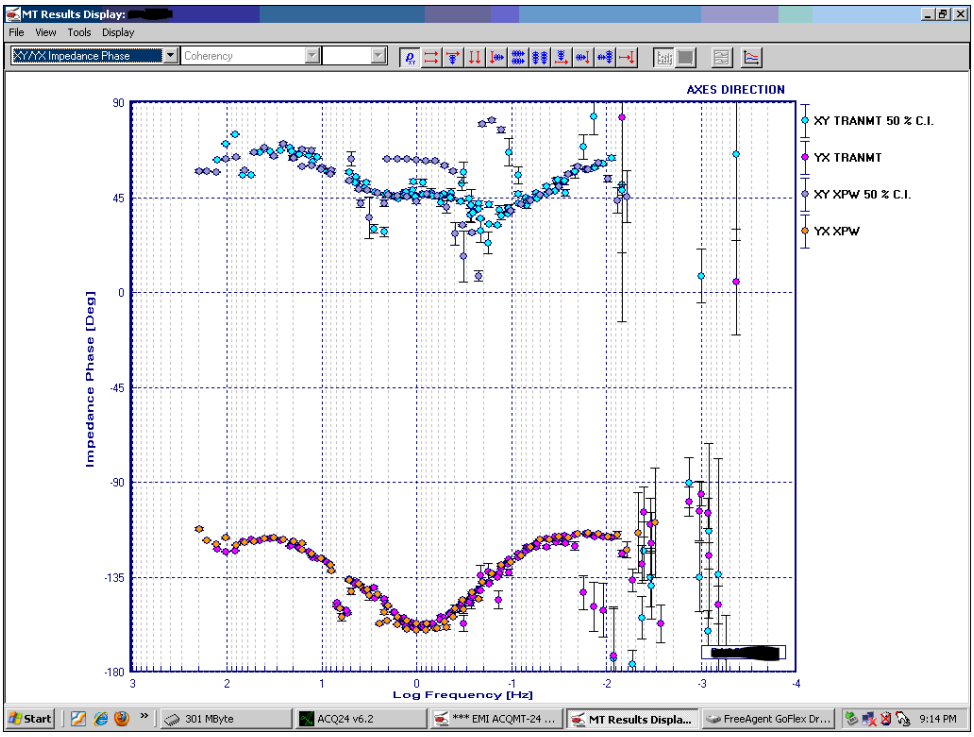

Figure 3: The images displaying the Apparent Resistivity Processed data

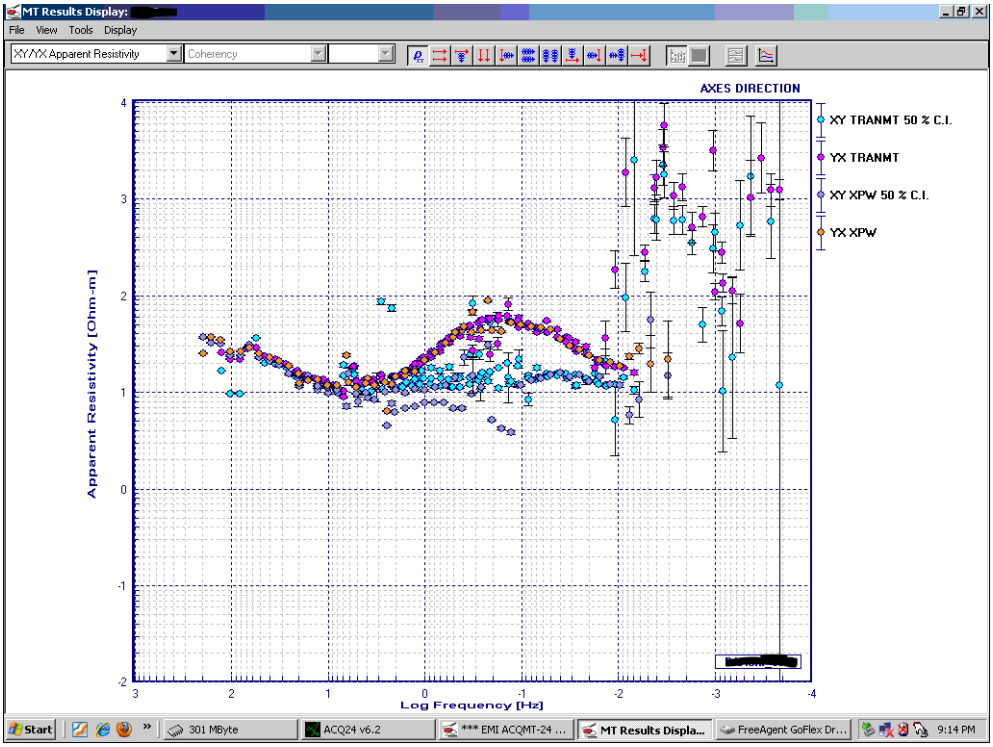

Figure 4: The images displaying the Impedance Phase processed data

6.1.5 Data Plots

- Processing MT data using various software creates different types of data formats (i.e. spectral, transfer function) that can be then input into a program and used to create the cross-sectional

inversion, which is a cross-sectional model image of what is under the ground.

- Lower frequencies are representative of deeper parts of the subsurface, while higher frequencies are representative of the shallower near-surface. Higher apparent resistivity values indicate a more resistive subsurface, while lower apparent resistivities indicate a more conductive subsurface.
- Processing of MT data can be done in many ways; the data can be viewed on the fly at the site to ensure it is good quality and then processed in a wide variety of commercially available software packages.

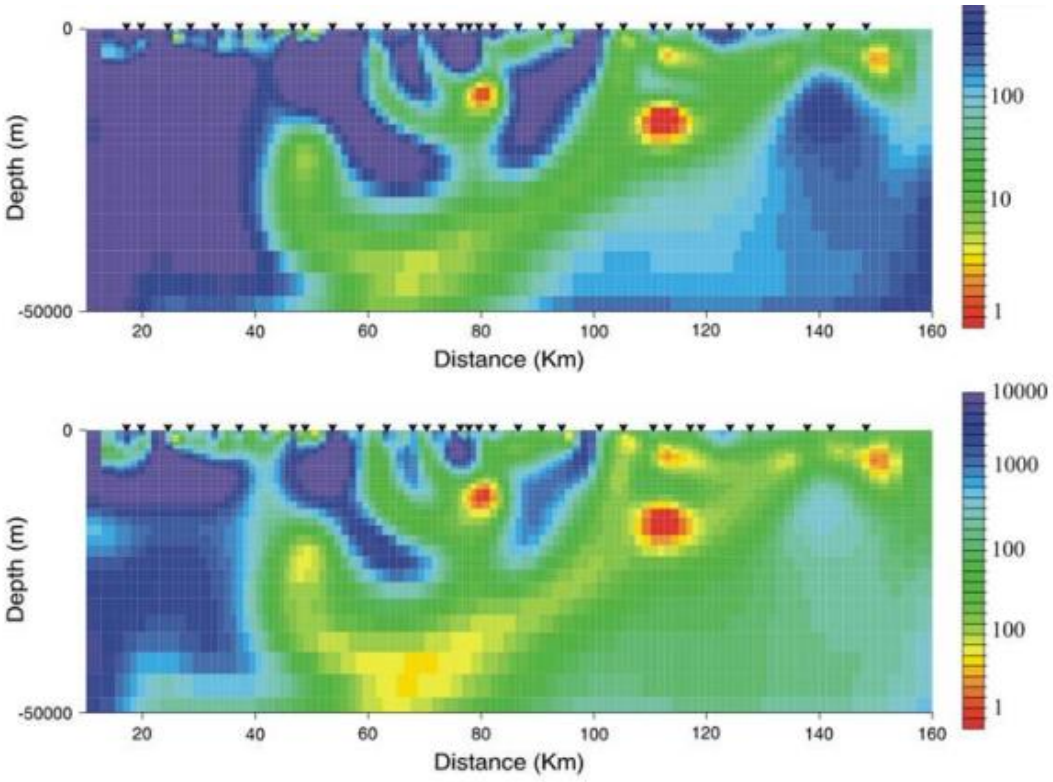

Figure 5: Magnetotelluric resistivity model displayed on two different color scales. The upper panel has a narrow scale (1-1000 Ωm), resulting in saturation at the upper limit on the left side of the model. The lower panel has a wider scale (1-1000 Ωm), causing subtle resistivity changes on the right side of the model to vanish.

- The above inversion is only a mathematical tool to change observed data to a resistivity model. All inversion algorithms share the identical goal of discovering the 'best' model that is geologically interpretable and fitting the data to a satisfactory level (Siripunvaraporn, 2011).

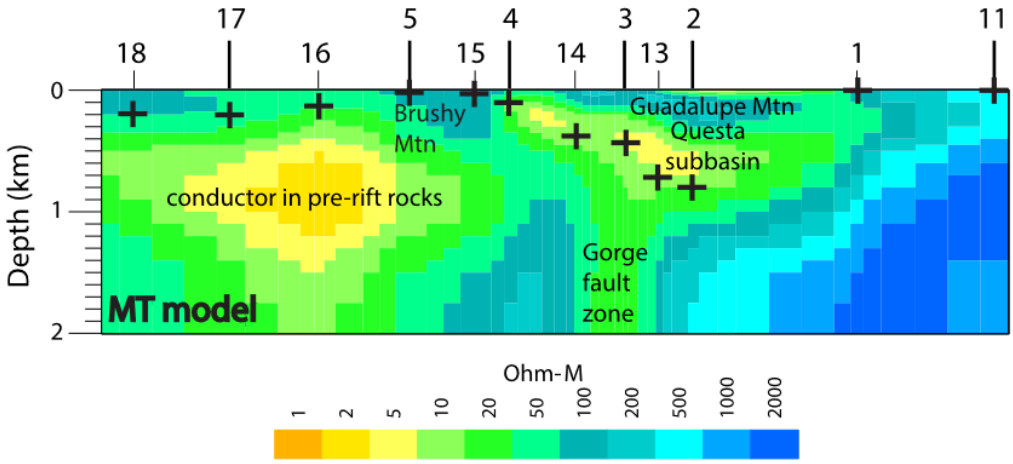

Figure 6: Another inversion of the MT model

- As some of the data representation allowed the inversion shown in Fig. 6.

7. Deliverables

I. Time-series data, processed impedance tensors, and apparent resistivity/phase data, including metadata.
II. Subsurface resistivity 2D/3D Resistivity Models indicating potential geothermal reservoirs and conductive anomalies.
III. Identification of key features (fault zones, fluid pathways) associated with geothermal resources.
IV. Preliminary geothermal model outlining reservoir location, depth, and key characteristics.
V. Comprehensive geophysical report for guiding further geothermal exploration and providing a robust foundation for decision-making in future project phases.

8. Technical Specification of Accessories

The proposed accessories should meet the following minimum specifications:

Sl.No.	**Workstations specification**	
1	Processor (CPU)	Ryzen 7 5800x or Intel core i9-13900K
2	Memory (RAM)	32 GB DDR5; Speed 3 GHz
3	GPU	NVIDIA RTX 3060 12 GB/ AMD Raedon RX 6700 XT 12 GB/ UHD Intel
4	Storage	Primary Storage: 1TB NVMe SSD Secondary Storage: 2TB HDD
5	OS	Windows 10 Pro / Windows 11/ Windows 11 Pro (Licensed)
6	Data Storage	Minimum storage capacity of 64 GB

Sl.No.	GPS specification	
1	Screen Size	3.5 x 4.4 cm
2	Usage/Application	Handheld
3	Type	Wireless
4	Model	Etrex 32x
5	Camera	No
6	Brand	Garmin
7	Access	Mobile Access

Sl.No.	Compass specification	
1	Usage/Application	Handheld
2	Model	TruArc 15 Glow Global Compass or Brass Model
3	Features	Measuring Strike and Dip; Measuring vertical angles with clinometer.

Sl.No.	DSLR camera specification	
1	Brand	NIKON
2	Display Type	LCD
3	Display Size	7.5 cm
4	Lens Type	Wide Angle
5	Shooting Modes	
8	Video Resolution	34K UHD
9	Connectivity Tech	Wi-Fi, USB, HDMI, Bluetooth, Micro HDMI
11	Real Angle of Views	176 degrees
12	Wireless Tech	Bluetooth, Wi-Fi

Sl.No.	Pick hammer specification	
1	Handle Material	Molded Shock Reduction Grip
2	Material	Stainless Steel
3	Usage/Application	Geology & Mining

- **Workstations**

Workstations are essential for the efficient processing, analysis, and modeling of geospatial and geological data. These high-performance systems will support software such as ArcGIS Pro, AquaChem, and 3D geological modeling tools. Their robust computational capabilities ensure seamless handling of large datasets, complex numerical simulations, and data visualization tasks critical for the project's success. The provision of

reliable workstations will enable the team to maintain accuracy and productivity in data-driven decision-making processes.

- **GPS Device**

A high-accuracy GPS device is necessary for georeferencing field locations, marking sampling points, and mapping survey profiles. The device ensures the precision of spatial data collection, which is critical for integration with GIS software during data analysis. It will also facilitate navigation in remote and rugged terrains, ensuring safety and efficiency in field operations.

- **Compass**

A reliable and durable geological compass is required for accurate field measurements, including azimuth, dip, and strike of geological features. This tool is indispensable for on-site geological mapping, orientation determination, and fault and fracture analysis. Its precision ensures the integrity of the collected field data, which is crucial for building accurate geological models and interpretations.

- **DSLR Camera**

A professional-grade DSLR camera is required for documenting field observations, geological features, and site conditions. High-resolution images captured by the camera will provide detailed visual records, aiding in analysis and reporting. The camera is invaluable for creating comprehensive documentation, enhancing presentations, and maintaining a visual log of field activities for stakeholders.

- **Pick-Hammer**

The pick-hammer is a fundamental tool for geological fieldwork, designed to aid in the collection of rock samples and the examination of outcrops. Its robust construction and ergonomic design allow efficient sample extraction from various terrains. The tool plays a vital role in identifying lithological features and acquiring samples for geochemical and mineralogical analysis.

9. Deliverables

1. High-resolution geological maps based on field surveys and GPS data, georeferenced for integration into GIS platforms.
2. Documented visual records of geological outcrops, fault zones, and site conditions captured using DSLR cameras.

3. Detailed geochemical and geophysical analysis reports derived from workstation-supported data processing.
4. Accurate spatial datasets with georeferenced sampling points and survey profiles for subsequent modeling phases.
5. Rock and soil sample logs prepared through field tools like pick-hammers and compasses, supporting laboratory analysis.

These deliverables will ensure a comprehensive understanding of the geological and geothermal potential of the project site, supporting informed decision-making for further exploration and development phases.

10. Technical Specification of Software

Sl.No.	Softwares	
1	ArcGIS Pro	V 3.3.2
2	AquaChem	V 11.0

- **ArcGIS Pro Software**

ArcGIS Pro is an advanced geographic information system (GIS) software critical for spatial analysis, geospatial data visualization, and mapping. It supports data integration, 3D visualization, and advanced geoprocessing required for geothermal exploration. The software will enable the team to analyze spatial datasets, model subsurface conditions, and generate high-quality maps essential for understanding the geothermal potential of the project site. Its capability to handle large datasets and perform complex analysis ensures the accuracy and reliability of the project deliverables.

- **AquaChem Software**

AquaChem is specialized software for water quality analysis and hydrogeochemical interpretation. It is vital for processing and visualizing groundwater data, assessing water chemistry, and identifying key hydrochemical processes. This software will support the analysis of water samples collected during field surveys, facilitating the identification of thermal water sources and their geochemical characteristics. Its ability to model water interactions and generate diagrams ensures accurate representation of the hydrogeochemical framework necessary for geothermal exploration.

11. Deliverables

1. Georeferenced maps and spatial datasets created using ArcGIS Pro, detailing fault zones, thermal anomalies, and potential geothermal reservoirs.

2. Hydrochemical analysis reports generated through AquaChem, including water quality assessments and geochemical diagrams.
3. Integrated geological models combining spatial, geochemical, and geophysical data to guide exploration strategies.
4. 3D visualizations of subsurface structures and fluid pathways prepared using ArcGIS Pro.
5. Comprehensive documentation of geochemical data and interpretations for use in resource estimation and environmental impact assessment.

These deliverables will provide a robust foundation for evaluating the geothermal potential of the project site, supporting both exploration and resource development phases.

12. Timeline

Unless otherwise extended, the equipment shall be delivered within a period of 1(One) month from the effective date.

13. Eligibility Criteria

Eligible vendors should:

1. Have a minimum of 5 years of experience in supplying geophysical tools, Magnetotelluric (MT) equipment, field accessories, and IT related works.
2. Provide documentation of at least three successfully completed projects involving MT equipment and additional field tools (e.g., workstations, GPS devices, pick-hammers, compasses, and DSLR cameras) in challenging terrains, demonstrating their suitability for remote or rugged environments.
3. Demonstrate the ability to supply and provide support for advanced software like ArcGIS Pro and AquaChem, including training and integration with field equipment for data processing and analysis.
4. Have a proven track record of providing post-sales support, training, and maintenance services for supplied equipment and software, ensuring their optimal functionality in project workflows.
5. Submit product certifications, testing standards, and quality assurance documentation for all equipment and software, ensuring compliance with industry standards also submit the Manufacturer Authorization form (MAF) and authorized certificate.
6. Local consortium partners experienced in supplying and managing MT equipment, field accessories, and analytical software for efficient project implementation.
7. Demonstrate prior experience in delivering durable and functional field accessories such as workstations, compasses, GPS devices, pick-

hammers, and DSLR cameras, ensuring their usability in field operations.

14. Proposal Submission Requirements

Interested vendors must submit the following documents in their proposals:

I. Technical Proposal: Detailed technical specifications of the proposed MT equipment, including data sheets and compliance with the required specifications.
II. Financial Proposal: Detailed cost breakdown, inclusive of equipment, installation, training, and any applicable taxes. Ensure the proposal remains within the budget allocation of ₹1,55,30,535.
III. Company Profile: Brief overview of the company, relevant experience, and client references.
IV. Timeline: Estimated timeline for equipment delivery, installation, and training.
V. Warranty and Support: Warranty terms (minimum 2 years preferred), post-sales support options and training plan.

15. Bid Rejection Criteria

Besides other terms and conditions highlighted in the RFP document, bids may be rejected under the following circumstances:

I General Rejection criteria
   a. Bids submitted without RFP document fee.
   b. Financial bids of more than and less than 6% over and above the estimated cost of the project of approximately 1.5 crores + applicable taxes, shall be considered as unreasonable and therefore, liable to be rejected forthwith.
   c. Bids submitted without or proper EMD
   d. Conditional bids are liable to be rejected.
   e. If the information provided by the bidder is found to be incorrect/misleading at any stage/time during the RFP process.
   f. Any effort on the part of the bidder to influence the bid evaluation, bid comparison to contract award decisions
   g. Bids received by the CES&HS after the last date and time prescribed for receipt
   h. Bids without signature of the person (s) duly authorized on required pages of the bid
   i. Bids without power of authorization and any other document consisting of adequate proof of the ability of the signatory to bind the bidder

II Technical/commercial rejection criteria
   a. Technical bid containing commercial details

b. Revelation of financials in any form or by any reason before opening the commercial bid
c. Failure to furnish all information required by the RFP document on submission of the bid not substantially responsive to the RFP document in every respect
d. Solution Provider not quoting for the complete scope of the work as indicated in the RFP documents, addendum if any, and any subsequent information given to the Solution Provider
e. Solution Provider not complying with technical and general terms and conditions as stated in the RFP document
f. The bidder not confirming unconditional acceptance of full responsibility for providing services in accordance with the scope of the work
g. If the bid does not conform to the timelines indicated in the bid
h. Incomplete bid

16. Public Opening and Evaluation of Financial proposals

After the technical evaluation is completed, the CES&HS shall inform the technically short-listed SP(s) who have submitted proposals, the technical scores obtained by their technical proposals, and shall notify those SP(s) whose proposals did not meet the minimum qualifying mark or were considered non-responsive to the RFP document and ToR, and their financial proposals will be returned unopened after completing the selection process.

Financial proposals of only those firms who are technically qualified shall be opened publicly on the date and time specified in the presence of the SP/or their representatives who choose to attend. The financial proposal of the SP(s) who met the minimum qualifying mark will then be inspected to consider that they have remained sealed and unopened.

These financial proposals shall be then opened, and the total financials read aloud and recorded. The CES&HS shall prepare a record of the public opening of financial proposals. SPs should ensure that there are no arithmetic errors or over-writings in the financial proposals as otherwise, the proposal shall be liable for rejection.

I. **Shortlisting SP:** The bidder who obtains 75% marks and above is to be treated as qualified for the Financial Bid. Financial bids of only such qualified SP(s) will be opened.
II. **Evaluation Process:** The financial bids shall be opened only for the Technically Qualified bidders. The date, time, and venue of the opening of financial bids shall be as per the data sheet. The authorized representatives of the Technically Qualified bidders may be present during the financial bid opening process. The financial bids shall be scrutinized for their conformity to the specified formats and signatures. The financial bids not in specified format and/or not with signature of the authorized representatives shall be summarily

rejected. The evaluation of the financial bids will be based on the combined Quality and Cost Based Selection (QCBS) Method. Scrutiny and evaluation of the financial bids shall be conducted as follows.

In the event of a difference between the financial mentioned in figures and words, the financial in words shall be considered valid and binding. Scores of the financial bid evaluation would be weighed on a scale of 20. The Bidder with the lowest Financial Quote shall be awarded 100 marks. The marks obtained by the bidders in the financial bid evaluation shall be considered as Financial Score (FS). The financial bid Score of the other Technically Qualified bidders shall be computed as per the following formula.

$$FS = 100 \times (Pmin / Pb)$$ Where,

FS = Financial Bid Score for the bidder under consideration

Pmin = minimum financial quoted by any bidder

Pb = financial quoted by the bidder under consideration

The Technical Score (TS) and the Financial Bid Score (FS) secured by each bidder shall be subjected to the Technical Weightage WT = 0.80 (the weight given to the technical bid); Wp = 0.20 (the weightage given to the financial bid). The combined score (S) for the bidder shall be computed as per the following formula.

$$S = (TS \times 0.8) + (FS \times 0.2)$$

The bidder securing the highest combined score (S) shall be considered as the successful bidder and considered for award of the contract.

Scrutiny and evaluation of Financial Bids shall be conducted based only on the following criteria:

- The estimated cost of this Work with Tax = Rs. XXXXXXX (In Word)
- Only the Total Quoted financial in the bid inclusive tax, submitted by the bidders will be considered for evaluation as a principle of budgetary constraint.
- Abnormally low quotes below the estimated cost shall be treated as unviable from quality and feasibility considerations and shall be summarily rejected.

III. **Negotiations:** The SPs who are recommended for award of the contract will be called for both technical and financial negotiations, the details of which are outlined below:

Negotiations will be held at the date and address indicated. Representatives conducting negotiations on behalf of the SP must have written authority to negotiate and conclude a contract.

a. **Technical negotiations:** Negotiations will include a discussion of the technical proposal, the proposed technical approach and methodology, work plan, organization and staffing, and any suggestions made by the SP to improve the terms of reference. The CES&HS and the SP(s) will finalize the ToR, staffing schedule, work schedule, logistics, and reporting. These documents will then be incorporated into the Contract as description of services. Special attention will be paid to clearly defining the inputs and facilities required from the CES&HS to ensure satisfactory implementation of the assignment. The CES&HS shall prepare minutes of negotiations which will be signed by the representatives of both CES&HS and SP.
b. **Financial negotiations:** After the technical negotiations are over, financial negotiations should be carried out in order to reflect any change in financials due to change in scope of work or due to clarification on any aspect of the technical proposal during the technical negotiations. Under no circumstance, the financial negotiation shall result in to increase in the financial originally quoted by the SP.

   If applicable, it is the responsibility of the SP, before starting financial negotiations, to contact the local tax authorities to determine the local tax amount to be paid by the SP under the contract. The financial negotiations will include a clarification (if any) of the SP's tax liability and the manner in which it will be reflected in the contract; and will reflect the agreed technical modifications in the cost of the services.

c. **Availability of professional staff/experts:** Having selected the SP on the basis of, among other things, an evaluation of proposed professional staff, the CES&HS expects to negotiate a contract on the basis of the professional staff named in the proposal. Before Contract negotiations, the CES&HS will require assurances that the professional staff will be actually available. The CES&HS will not consider substitutions during contract negotiations unless both parties agree that undue delay in the selection process makes such substitution unavoidable or for reasons such as death or medical incapacity. If this is not the case and if it is established that professional staff were offered in the proposal without considering their availability, the SP may be disqualified. Any proposed substitute shall have equivalent or better qualifications and experience than the original candidate and be

submitted by the SP within the period of time specified in the letter of invitation to negotiate.

d. **Award of contract and commencement of work:** After completing the negotiation, the CES&HS shall issue a Letter of Acceptance/Intent, notifying the award of contract to the selected SP, who is L1, and promptly notify all other SP(s) who have submitted proposals about the final decision. After the Contract signature, the CES&HS shall return the unopened financial proposals to the unsuccessful SP(s).

   After fulfilling all the formalities/ preconditions mentioned in the standard form of contract, the SP will sign a contract on a stamp paper worth 100/- within 15 days of issuance of the letter of acceptance. The project completion period is with respect to the date of signing of the contract.

e. **Security Deposit:** Within 15 days after receipt of the Letter of Acceptance/Intent, the successful SP will have to furnish along with the agreement a security deposit @ 3 % of the value of the Contract, in the form of a Bank Guarantee in DD on any Nationalized Bank (drawn in favor of Director, Centre for Earth Sciences & Himalayan Studies, Govt. of Arunachal Pradesh) valid for 18 months from the date of the letter of intent with a provision of its further extension/ revalidation up to the period of warranty of the total solution whichever is later.

   The SP is expected to commence and complete the assignment/job at the location specified within 6 months after signing the contract.

17. Evaluation Criteria

Proposals will be evaluated based on the following criteria:

Sl. No.	Criteria	Maximum Marks
1	Technical capabilities and equipment features	**20**
2	Cost-effectiveness and adherence to budget	**10**
3	Authorization Certificate from the OEM of the equipment. Manufacturer Authorization from (MAF) is to be attached (Signed and Sealed)	**20**
3	Vendor experience and past performance a. Experience in the supply of the equipment. b. Experience of a consultant working in North East India relevant to the scope of the RFP Document	**10** 5 5
	Empanelment and Certifications and documents:	**20**

	a. Registered Company/Firms, GST b. Empanelment with any department of Arunachal Pradesh Govt. c. ISO 9001:2015 & ISO 27001:2013	10 5 5
4	Warranty, support, and training offerings	**10**
	Based on Company Strength Average annual turnover of Rs. 10 crores during the last 3 financial years (FY 2020-21; 2021-22; 2022-23) • 5 – 9 crore – 5 marks • 10 crore and above – 10 marks	**10**
	Total Marks	**100**

FINANCIAL BIDS FORM

Sl. No.	Components	Unit	Amount (Rs.)
1.	Magnetotelluric Equipment	1	
2.	Workstation	4	
3.	GPS	2	
4.	Compass	2	
5.	Pick Hammer	5	
6.	DSLR Camera	2	
7.	ArcGIS Pro v 3.3.2 Software	-	
8.	AquaChem v11.0 Software	-	
		Sub-Total	
		GST @18%	
		Grand Total	
	In words:		

** If you have any further questions, please contact the concerned officials of CES&HS. We look forward to your participation in this procurement process.*