

Sl. No.	Item	Specifications	Quantity
A	SEISMIC DATA ACQUISITION UNIT	Wireless recording system capable of recording minimum 36 channels and expandable <b>atleast</b> upto 2000 channels. The wireless system should be fully portable for easy transportation in cross country and each acquisition module should have features of recording, amplifying, digitizing and transmitting the acquired seismic data through wifi to the central recording system. Also the acquisition modules should have the capability of <b>transferring the data/QC</b> while recording without stopping for the production. The central recording system should have a rugged Laptop provided with concerned licensed software and other modules/accessories necessary to operate the system optimally as per specifications/requirements such as Internal/External Storage Devices, data harvesting system from recording modules, shooting systems with radios etc.	1
<b>MAIN CABLELESS SEISMIC DATA EQUIPMENT SHOULD HAVE</b>			
1	Portable Central recording System/Unit	Central recording unit capable of initializing and setting up of recording parameters of the data acquisition units/modules with easy to use graphical user interface and capability of providing graphical & numeric display of the acquisition spread configuration. The acquisition system should have the facility to record 2D/3D data in cable less mode. The recording system must support impulsive energy sources such as <b>Dynamite, heavy weight drop</b> and <b>Sledge Hammer</b> etc..	1
2	Acquisition Modules/Units	The data acquisition modules/units should be rugged, waterproof and must support single element type geophone & string type geophones or equivalent with the option of connecting external battery (for prolonged acquisition) along with integrated internal battery . It should be capable of providing on the fly QC status, fault detection of data acquisition units (GPS, Battery , WLAN frequency signal, self-diagnostic test) , Battery status, Geophones status etc. at the ground station unit level.	36 or more
3	Data harvesting & field QC unit with software	Tablet PC with compatible software capable of collecting seismic data from the acquisition modules and performing necessary on-field QC, diagnostics on field unit modules through wifi or other wireless modes	1
4	Shooting System	The radio blasting system fully compatible with the recording system must include an encoder (1 No) and decoder (1No).	1 set
5	Radio set	VHF Radio set fully compatible with shooting system must be provided as per the requirement.	2
6	Charging units	Smart charger which can charge minimum 20 acquisition modules (Internal Batteries) at a time must be provided with sufficient charging cables	2
7	Geophones	Single element 5HZ or lower high performance verticle geophone fully compatible with the acquisition system	36 or more
<b>SEISMIC DATA ACQUISITION SYSTEM FEATURES</b>			
1	Number of Channel per ground station	1(One) Channel (High fidelity)	1
2	Operation mode	Autonomous	
3	Clock synchronization	GPS	
4	Sample rate	0.5, 1, 2 and 4 milliseconds or better	

5	Record Length	Selectable up to 25 seconds @ 2ms Sample interval (SI).	
6	Pre amp gain	User-selectable 0db & 12db or better	
7	Memory autonomy	480 hr minimum @ 2ms sampling rate or Better	
8	Data Recording Format	SEGD/SEGY	
9	Filters	No Low cut filter, High cut Filter 0.8N user-selectable Linear or minimum phase.	
10	Roll Along Operation	Built in roll along, Selectable through controller software	
11	Stacking	+ve or -ve vertical stack and can sum up no of stacks with unstack/restack	
12	Input Impedance	20 K ohm or better	
13	A/D convertor	24 bit	
14	Frequency response	1 to 20K or better	
15	Distortion	<a href="#">0.0005% @2ms</a> or better	
16	Dynamic range	120 db or better	
17	Maximun input signal	2.8 V PP 0 db or better	
18	In built instrument test	Internal digital tests, amplifier,noise, gain, accuracy, trigger verification etc	
19	In built spread test	cable leakage ,noise,resistance,tilts etc	
20	Ground Station Unit self diagnostic tests	The following system tests including data quality control must be available at ground station level during complete layout of the spread through standard line tester at ground station level:	
		a) Leakage, continuity	
		b) Impulse response,	
		c) Sensor resistance,	
		d) Battery voltage status,	
		e) Noise and distortion,	
		f) Hardware diagnostic tests etc.	
g) GPS status and wifi signal strength tests.			
21	Operating Power	Single module or each module should be operational with DC rechargeble power supply.	
22	Battery	Internal with <b>minimun autonomy of 140hr</b> and provision to expand it to external battery.	
23	Battery Charging unit	Smart Battery Charger capable of charging minimum 20 acquisition units (Internal Batteries) at a time.	
24	Operating temperature range	-40°C to +60°C or better	
25	Data Hravesting & Field QC tool	1 Field QC tool compatible with ground station units proposed for wireless field status collection need to be provided wherever applicable.(Communicate Field QC Status to Central Recording System or available at ground station level)	
26	Humidity	0-95% or better	
27	Acquisition Module case	Solid shock proof ,water proof housing deployable in any surface	

		environment.	
28	System Internal/Extrnal Storage	Storage facility should be provided with suitable Internal or optional external storage device compatible with the main central recording equipment having actual storage capacity of minimum 500 GB or more capable of storing QC status / Log file data etc. from ground electronics.	
<b>Central Recording System Specifications</b>			
1	RUGGDIZED LAP TOP FOR FIELD OPERATION	Lap top should be ruggedized suitable for field operation. It should be certified by either European/Amercain standard	
2	CPU & RAM	Latest State of the art CPU with atleast 4 GB of RAM or better.	
3	Hardisk	Atleast 500 GB or More	
4	Operating sytem	<b>Linux</b>	
5	Interface	USB, Ethernet or any advanced technique	
6	Display Lap Top	Minimum 15 inch Screen (LCD or LED) or latest	
7	Data Recording Retrieval software	Linux based software which can control seismic data acquisition,transfer,display and storage in SEGD,SEGY formats,capable to support SEGD Rev 1.0 Rev 2.0.	
8	Data Analysis software	Linux based software, QC software should be a part of the data Recording retrieval software.	
<b>Geophone Specifications</b>			
1	Geophone	<b>Atleast 36 nos. of high Performance &amp; high Fidelity low distortion (LD) Industry standards</b> single vertical geophone with natural frquency of <b>5Hz or lower</b> only should be provided. The single element geophone have to be comparable to the output sensitivity of a parallel /series element array. The quoted Geophone should be fully compatible with seismic data acquisition system along with interface / station unit.	
2	Geophone Type	Low Distortion ( $\leq 0.1\%$ ) or better	
3	Geophones	Single Sensors	
4	Length of Geophone connector	Atleast 2-3 meters (Cable length of Geophone connector) or longer	
5	Natural frequency	<b>5 Hz or lower, Tolerance</b> + 7.5% or better	
6	Tilt	0° to 10° or better	
7	Coil Resistance	1850 $\Omega$ $\pm$ 5 % or better ( Bidders should mention the specific value of the coil resistance)	
8	Open Circuit Damping	0.60 $\pm$ 5.0 % or better	
9	Sensitivity	80V/m/s $\pm$ 5.0 %. or better.	
10	Polarity	Standard SEG	
11	Operating Temperature	-20 to+ 80°c or better	
<b>Shooting System Specifications</b>			
1	Blaster	Radio blasting sytem	
2	Firing accuracy	Firing accuracy- better than 25 $\mu$ s	
3	Decoder Operating power	12 Volt standard battery or better	

4	Firing voltage	400 V max provision to choose other ranges 150, 250, 200, 350	
5	Charging Time	< 2 second or better	
6	Type of test	CAP and Geophone test	
7	Operating temp.	-40° to +60°C or better	
<b>Training , Installation &amp; Commissioning with Field Testing</b>			
1	Training	Training of 2 people for 1 week at the factory or OEM place which will have to be arranged by supplier/maufaturer on operation, field layout and preventive maintenance of supplied items. Cost of boarding/lodging to and fro for the trainee will be borne by IIT-K.	
2	Installation and Commisiong and Field testing	The supplier has to arrange for commissioning and field testing of the complete offered system along with its components by actually carrying out CDP seismic survey at users place. All infrastructure support to be provided by IIT Kanpur to carry out survey. Commissioning should be done within one month from the date of intimation by IIT K to the supplier.	
<b>General Conditions: Following general condition are to be considered</b>			
1	Documentation	One copy of hard and soft operating manual.	
2	Warranty & Guaranty	Minimum 1 year from the date of comissioning or more.	
3	After Sales Service	Supplier should have its repair center in India and has to attach an undertaing affirming that repairing, if required of the supplied items, will be attended within 15 days once its defect is received by them.	

**NOTE: All bidders are requested to submit their specifications using the above format.**