

OIL & GAS DEVELOPMENT COMPANY LIMITED



TENDER ENQUIRY NO. PROC-SERVICES/CB/EXPL-5050/2021

***Hiring Advance Seismic Data Processing Services for
Tanda Jabbi-3D and Shekhan-3D***

Note:

Bid bond of **USD 6,000/- (US Dollar Six Thousand Only)** to be submitted with the technical bid. Please see tender documents for further detail.

The master set of tender documents (services) uploaded on OGDCL website (www.ogdcl.com) is the integral part of this TOR.

TOR for Hiring Advance Seismic Data Processing Services for Tanda Jabbi-3D and Shekhan-3D



Kohat E.L

**TERMS OF REFERENCE (TOR)/TECHNICAL SPECIFICATIONS FOR
CRAM/RTM/CBM) AND DI (OPTIONAL) OF ~318.569 SQ.KM LAND 3D SEISMIC
DATA IN KOHAT E.L.**

1.0 Introduction:

Oil and Gas Development Company Limited (hereafter referred as Company), a Government of Pakistan Enterprise, is a premier E & P Company engaged in exploration and production of crude oil and natural gas in different parts of Pakistan. The company intends to hire 3D seismic data processing services from an internationally reputed seismic data processing company (hereafter referred as Contractor) for Tanda Jabbi 3D & Shekhan 3D of Kohat E.L in Upper Indus Basin (Kohat sub basin) of Pakistan. These are the two different projects of the same Kohat EL (as shown in Base map) so all testing of processing parameters should be done separately for each project, Base map with 3D survey boundary of Tanda Jabbi & Shekhan 3D is provided in **Annexure-I**.

1.1 Introduction to the area:

The area of interest lies in Kohat E.L (Kohat District, Nowshera District of KP Province, and Orakzai, Adamkhel agencies, FR KOHAT and FR PESHWAR of former FATA region of Pakistan). OGDCL as operator has made sizable discoveries of gas/condensate in Togh-01 and Togh Bala-01 exploratory wells (Shekhan 3D area) in Kohat E.L from three stratigraphic units Lockhart, Lumshiwai and Hangu Formations. The discovery area is located in District Kohat of Khyber Pakhtunkhwa Province. Kohat Joint Venture Partners identified multiple leads in Kohat E.L on the basis of 3D seismic data interpretation. Kohat block lies just south of the MBT and is part of the active foreland fold and thrust belt consisting of several structural-tectonic subdivisions and exhibits very complex geology. Subsurface seismic imaging is a major problem due to high dip strata and lateral velocity variations.

Earlier OGDCL acquired and processed 2D/3D seismic surveys in Kohat E.L in which conventional Migration does not provide adequate seismic images to effectively de-risk the reservoir geometry, fault definition and strong dipping coherent noise/diffraction in Tanda Jabbi & Shekhan 3D area.

The intended 3D seismic data reprocessing campaign comprises of surface coverage of approximately 318.569 Sq. Km of 3D (87.266 Sq. Km Shekhan-3D and 231.303 Sq.Km Tanda Jabbi-3D). Details of the survey is provided in **Annexure-II**.

Time range of potential reservoir targets is 1300 – 3500 ms (SRD at 1200 meters AMSL). The area falls in active foreland fold and thrust belt where compressional tectonics related to thrust anticlines, fault bounded structures and imbricated features are present.

2.0 Objectives:

- 2.1 The primary objective of the **CRAM/RTM/CBM AND DI (OPTIONAL)** processing is to have best quality, well focused/image data in Time and Depth domains which are representative of true subsurface picture.
- 2.2 Obtain noise free, high quality land 3D seismic image with enhanced S/N ratio and improved frequency band width.
- 2.3 Obtain reliable well to seismic tie. Well with VSP is available for the project area.
- 2.4 Define accurate reflector character in terms of vertical and horizontal resolution & continuity.
- 2.5 Identify and assist in mapping the major and minor thrust faults with respect to shallow and deep Exploration/Development targets. Fault plane definition is extremely critical in the project area.

3.0 Scope of Work:

- 3.1 The contractor shall process the data with Time and Depth domain with sequence of **Annexure III (A & B)**, along with other processing modules offered by the contractor. On the basis of Time and depth results, the client will decide for further DI processing. Any step in the processing workflow may be modified with mutual consent without affecting the cost of the project. The processing sequence may be modified by addition or deletion or reordering of any module as and when required to achieve the optimum results without any additional cost and subject to approval of the Company.

- 3.2 The data is required to be processed at sampling interval of 2ms for PSTM and 5m for CRAM/RTM/CBM with full record length of 6 seconds along with true amplitude recovery.
- 3.3 The contractor shall provide digital copies of all the outputs, parameter testing, intermediate and final processing results, in acceptable format. The complete volume of each iteration will be shared in SEG-Y format for review/QC. The contractor shall also provide data as per detailed list of deliverables provided in **Annexure-V, Annexure-VI**. The contractor shall also submit a comprehensive processing report including description of each step in the applied processing sequence along with testing details after completion of the project. The contractor is also required to provide weekly progress reports along with Gantt chart in a timely manner.
- 3.4 Contractor will execute the complete project within turnaround time given in the TOR.
- 3.5 These are the two different projects of the same Kohat EL (as shown in Base map) so all Testing of processing parameters should be done separately for each project.
- 3.6 Contractor will provide FTP site for uploading and downloading of SEG-Y data volumes and processing reports for QC of data as per data requirement.

4.0 3D Advance seismic data processing Sequence:

The processing steps would be required to be applied in a manner so that amplitude, frequencies and phase of the data remain preserved and output yield is of enhanced S/N ratio, improved broadband spectrum and high resolution. However, a proposed standard processing sequence for Time, Depth and DI processing is provided in the **Annexure-III (A, B & C)** and can be modified according to the requirement with no cost effect. However, the actual sequence will be determined at each step of processing in consultation with the company representatives.

5.0 Parameters Testing/QC:

The contractor shall submit the data in the form of power point presentation and SEG Y for comparison of qualitative results and decision making. The contractor would be required to submit its recommendations regarding processing sequence/parameter selection. The final

decision, however, would be of the Client. Client's professionals will participate in the project for QC purpose at the stages as proposed in the **Annexure-VII** (During processing the land 3D seismic data processing tests, the contractor will perform a standard processing sequence and the contractor would be required to provide the QC display of each processing step of time and depth processing after extensive testing in order to select the optimum parameters, if there is some additional information obtained from Test Cube Processing then that will also be included, The company can ask for the provision of data in SEGY/PPT/TIFF/CGM etc. when and where required without any additional cost).

6.0 Rates of Processing

The contractor shall specify Lump sum rates in US \$ per Sq. Km for 3D up to Time domain and Depth domain as per **Annexure-IV**. The processing rate should be inclusive of all applicable taxes (except PST/ICT on services in Pakistan) and deliverables as per **Annexure V and VI**. Any additional processing module may be applied in processing flow for improvement of data quality with mutual consent of the company and contractor without affecting the cost of the project.

8.0 Technical Evaluation Criteria:

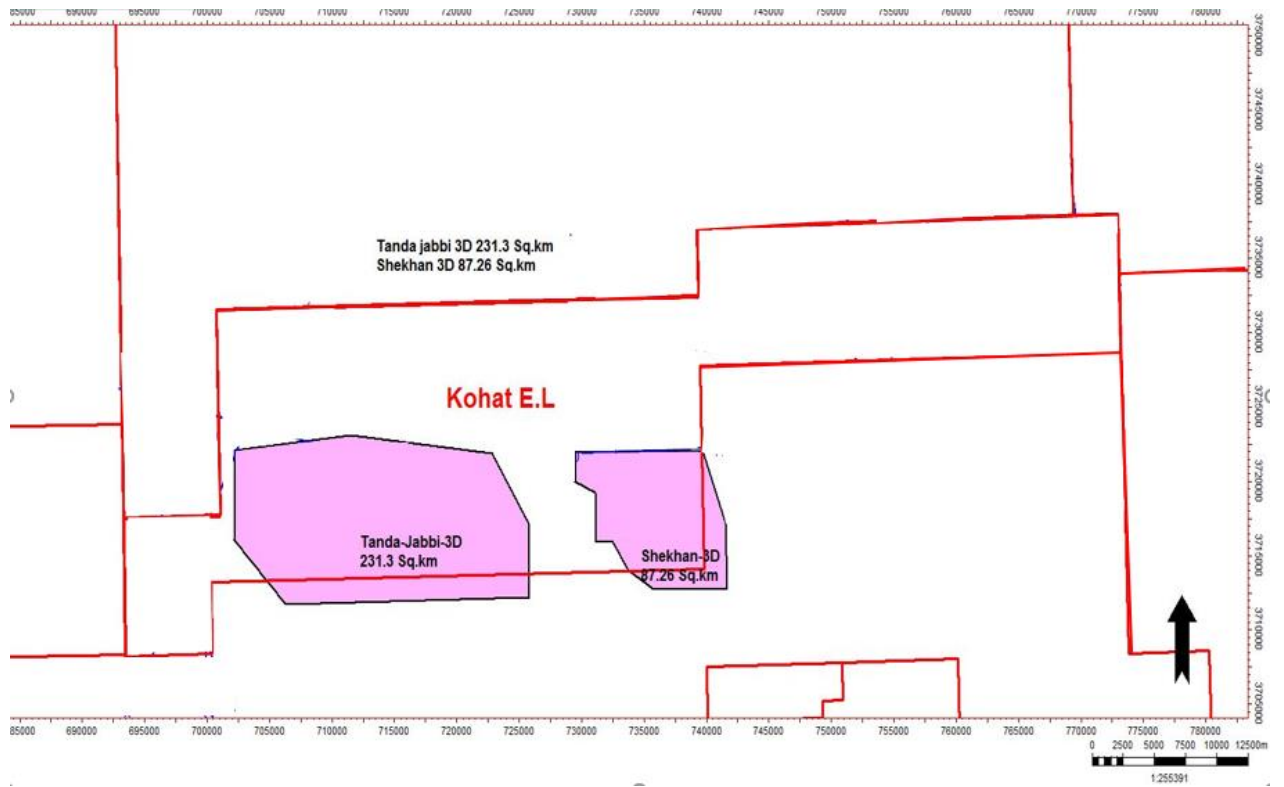
- 7.1 The Technical evaluation will be based on the technical evaluation table **Annexure-VII**. The potential bidders are required to strictly follow the sequence of Technical Evaluation Criteria and submit their proposals accordingly.
- 7.2 For final bid evaluation **80%** weightage would be given to Technical Evaluation **Annexure VII** and **20%** for financial evaluation at **Annexure-IV**. The lowest bidder will attain the maximum points in financial evaluation and others would be ranked on sliding scale. The points obtained in technical evaluation, and financial evaluation will then be combined and the contract will be awarded to the bidder obtaining maximum points.
- 7.3 The contractor should mention the project execution centre.
- 7.4 The contractor must have workable project schedule and turnaround time for Tanda Jabbi 3D & Shekhan 3D project. The bidders should submit project schedule in the form of Gantt chart.

7.5 The contractor must provide schedule for the participation of professionals from the Client for the QC of the processing steps. Contractor shall provide a phase wise work program for the participation of the client professionals in line with **Annexure-VII**. Contractor will be bound to take all necessary measures to facilitate the Client's participation process. Any delay due to visa, air tickets etc. will be accommodated by the contractor, however cost of traveling and lodging will be borne by the Client itself.

8.0 **Data Confidentiality/ liability**

The contractor shall be solely responsible for secrecy, loss or damage of data due to any reason including fire, theft etc. of any documents/cartridges/soft copies and other important documents/CDs etc. pertaining to the contract while in their custody or control. Neither contractor is liable to reproduce the same data for any other business reasons other than specified by the Client.

Base Map Showing Operational areas of Tanda Jabbi and Shekhan 3D Seismic data processing



Seismic Acquisition Parameters of the acquired 3D Data Volumes (Shekhan-3D and Tanda Jabbi 3D) in Kohat E.L:

Country of origin: Pakistan

3D Km ² to be processed	Shekhan-3D (87.266 Sq. Km)
	Tanda Jabbi-3D (231.303 Sq.Km)
Vintage	2016
Acquired by	SENSHE
Source	Shekhan-3D(Dynamite and Vibroseis)
	Tanda Jabbi-3D(Dynamite, Vibroseis and Air gun)
Shot spacing	50m
Station spacing	50m
Receiver line spacing	250 m
Source line spacing	300 m
No. of Live Channels	3600
Fold (inline x cross line)	150 (15*10)
Sampling rate	2 ms
Inline Maximum Offset	4475m
Max Largest offset	5114m
Bin size	25m*25m
Record length	6 sec

Supporting documentation:

Observer reports, Survey listings (Co-ordinates / elevation lists), SPS files, Up-hole data, Horizons interpretation (based on existing 3D processing), VSP velocity and sonic log of project wells, Stack of previous processing as a reference, etc.

(A) Basic/Standard Processing Sequence for PSTM Processing

The main basic processing steps to be taken into account: The contactor will process the land 3D seismic data through following basic processing sequence which also forms the basis for price quotation. The proposed basic processing steps to be performed are listed below:

Sr.No.	Time Processing Sequence
1	Reformat
2	Geometry application
3	Grid Define
4	Minimum phase conversion and match filter
5	Manual and Automatic Trace Editing
6	Amplitude Recovery
7	Despike /Wild Noise Removal
8	Refraction Static computation and application (refraction tomography or diving wave tomography, etc.)
9	Coherent/Non Uniform Coherent noise removal in different domains preserving reflection amplitudes
10	Scattered/dispersive, random and high frequency noise attenuation.
11	Surface consistent amplitude compensation &Q compensation
12	Surface consistent Deconvolution/Robust Deconvolution
13	1st Velocity analysis every at 1.0 Km x 1.0 Km
14	1st Surface Consistent Residual Static Correction
15	2nd Velocity Analysis at 0.5 Km x 0.5 Km
16	2 nd Surface Consistent Residual Static Correction (and more passes if required)
17	Pre-stack Random noise attenuation in different modes
18	Multi-dimensional 5D interpolation (OVT, COF planes etc.) and OVT splitting.
19	Regularization in OVT Domain
20	Surface consistent residual amplitude compensation in OVT
21	Stacking and Post Stack Time Migration
22	Final gather conditioning and velocity preparation for initial Pre-Stack Time Migration
23	Initial PSTM

24	First PSTM Velocity analysis at 0.5 Km x 0.5 Km
25	2 nd pass and more Pre-stack Time Migration (Anisotropic Turning-Wave Kirchhoff) and Velocity analysis with higher order NMO correction in order to have adequate results.
26	Final PSTM (Anisotropic Turning-Wave Kirchhoff) & Final PSTM Stack
27	Foot print removal (FKxKy), and Filtering and Scaling on Final PSTM Stack
28	Run Final post Stack time Migration with Final PSTM velocities

NOTE:

Q Compensation, 5D MPFI and OVT processing will be finalized subject to testing results.

- All final output will have to be in zero phases and SEG standard normal polarity.
- Any advance processing module suggested by bidder to be used in place of above mention module that gives best results will be free of cost.

B) Depth Processing Sequence for PreSDM (Velocity Modelling and CRAM/RTM/CBM)

The contactor will process the land 3D seismic data through following basic Depth processing sequence PreSDM (Velocity Modelling and CRAM/RTM/CBM) which also forms the basis for price quotation.

Sr. No.	Depth Processing Sequence
1.	Data preparation and gather Conditioning for PSDM and RMO picking
2.	Near Surface Velocity Model Building (NSM): A new shallow velocity model shall be required which can handle complex near surface velocity variation Merge the near surface & deeper velocities to form an integrated model suitable for depth migration workflows
3.	Initial Isotropic PSDM Velocity Model <ul style="list-style-type: none"> ○ Convert Final velocity model to depth interval ○ Smooth and insert near surface model. ○ Isotropic PSDM using the initial velocity model.
4.	Iteration 0 Migration <ul style="list-style-type: none"> ○ Isotropic PSDM
5.	Tomographic Inversion (Gridded base / Layers base) to be tested
6.	Iteration 1 Migration <ul style="list-style-type: none"> ○ Isotropic PSDM ○ Calculation of Anisotropic parameters ○ Anisotropic PSDM
7.	Iteration 2 Migration <ul style="list-style-type: none"> ○ VTI/TTI Anisotropic PSDM
8.	Iteration 3 Migration <ul style="list-style-type: none"> ○ TTI Anisotropic PSDM
9.	Iteration 4 Migration <ul style="list-style-type: none"> ○ TTI Anisotropic PSDM
10.	Iteration 5 Migration <ul style="list-style-type: none"> ○ TTI Anisotropic PSDM ○ Migration (KPSDM Full Volume)
11.	Final Migration (CRAM/RTM/CBM (with final PSDM velocities with minimum 40 Hz frequency) subject to the testing results) <ul style="list-style-type: none"> ○ TTI Anisotropic PSDM
12.	Rerun PSTM with final PSDM velocities
13.	Convert depth to time domain
14.	Spatially Continuous Velocity Analysis

15.	NMO Correction
16.	Stack
17.	Post stack processing
18.	Wells Calibration
19.	Convert back to Depth
20.	Run POST PSDM Stack

(C) Optional Processing Steps:

- 1) Diffraction imaging processing
- 2) Any other additional processing modules proposed by bidder, without any additional cost exposure.

The Following are the grid size (cell size) which will be followed during the Depth processing

Final Depth Image (cube) Sampling		
X, Y	20	m
Z	5	m

Migration Velocity Sampling		
X, Y	80	m
Z	40	m

Travel Time Generation- Multi offset Picking		
X, Y	80	m
Z	80	m

Tomo-graphic Grid		
X, Y	80	m
Z	40	m

NOTE:

- a) Contractor shall use dense grid of gathers, since this is important in PreSDM (CRAM/CBM/RTM)) Project as this helps define the lateral velocity resolution and incorporate the thin velocity layer variation/ anomalies through the Inversion into the tomo-graphic model (if required) without any additional cost.
- b) Number of Tomo iterations may increase based on the satisfactory results without any additional cost.
- c) In case; if the PreSDM (CRAM/RTM/CBM) TTI solution are not able to resolve the velocity anisotropy accurately than Tilted ortho-rhombic tomo solution will be tested/ used. Contractor may also suggest better solution at that time based on the test results of advance processing stack using updated velocities without any additional cost exposure.

However, time taken for additional advance modules/iterations will be compensated without any additional cost exposure.

- d) Success of any iteration shall be based on improvement over the last update in term of image quality, resolution and faults definitions. Any iteration which is not showing the improvement over the last update (better image quality, faults definitions and resolution) shall be considered failed and contractor must revise it until to improve the image quality, faults definitions and resolution) without any additional cost.
- e) PreSDM (CRAM/RTM/CBM) Dip angle Gathers (with preserved azimuth and offset information) output is mandatory.
- f) Near offset contains very heavy noise. Special attention and processing flow shall be required to treat it properly.
- g) Since transition zone (dam of 5 sq.km) exist in mid of project where air gun was used as source, special attention will be required to address the difference of source signature.
- h) Final depth image should Correlate with the existing wells data (horizons depths, structural dip, fault positions, etc.)
- i) The Contractor will be required to check and evaluate the polarity of the recording system for all tapes recorded by the seismic crew. The processor should ensure that the polarity of the processed data should represent SEG normal polarity (increase in impedance correspond to peak and vice versa.

Special Instruction to Bidders

1. For final bid evaluation, **80%** weightage would be given to Technical Evaluation **Annexure VII** and **20%** for financial evaluation at **Annexure-IV**. The lowest bidder will secure the maximum points in financial evaluation and others would be ranked on sliding scale. The points obtained in technical evaluation, and financial evaluation will then be combined and the contract will be awarded to the bidder obtaining maximum points.
2. Contractor would be bound to provide detailed processing sequence/flow applied with information of all parameters.
3. After the final approval of PSTM results, the contractor will proceed for production run of PreSDM (CRAM/RTM/CBM) with consent of the company. However, the time gap between approval of PSTM results and go ahead for the PreSDM (CRAM/RTM/CBM) will be excluded from the total project time.
4. Provision of FTP site is mandatory for uploading and downloading of SEG-Y data volumes and QC PPTs.
5. Maximum Final Deliverable time is 02 months after completion of the project.

Financial Bid Format

Rates for land 3D seismic data Time Processing (PSTM) & PreSDM (CRAM/ RTM/CBM) shall be provided as per given table.

S.No	Processing Sequence Description	COST in US \$ per Sq. km (3D)
1	Time Processing Sequence as per Annexure-III(A) (Lump Sum)	
2	i PreSDM (Velocity model Building +KPSDM) as per Annexure-III (B)	
	ii CRAM/RTM/CBM as per Annexure-III (B)	
3	Total Lump Sum cost (Sr No.1+ Sr No.2)	
Optional Processing		
4	Diffraction imaging (Optional)	

NOTE:

- i. After reviewing Migration (KPSDM Full Volume) results, client will decide to proceed for further processing (CRAM/RTM/CBM). However, provision of (CRAM/RTM/CBM) rates are mandatory.
- ii. Financial bids will be evaluated on the basis of total cost Sr. No.3, above in the **Annexure-IV**, on the basis of lump sum turnkey rate (LSTK) basis.
- iii. Separate invoices need to be generated for Sr. No.1 and 2 of **Annexure-IV**. 60% Payments will be made against verified invoices after successful completion of time processing against the quoted rates at Sr No.1. The remaining invoices will be cleared

after successful completion of Sr No. 2 processing sequence and DI (If required) against quoted rates.

- iv.** Total square kilometres for charged rates will be calculated on the basis of subsurface coverage
- v.** Prices must be quoted inclusive of all Taxes, duties, courier charges and levy etc. except provisional sales tax / ICT Tax on services where applicable will be borne by OGDCL at actual.
- vi.** The diffraction imaging is an optional processing and bidders are bound to quote the Price for this module separately, this will not be included in the main financial evaluation criteria of bid.
- vii.** The final PSTM (with Different Velocity percentage)/PreSDM(CRAM /CBM/RTM) and DI data set of cube including SEG-Y, velocity (ASCII & SEG-Y) & report will be provided either on Hard disk or through FTP soon after completing the job within time period of two weeks.

Time Processing Deliverables For The Project				Annexure-V
Sr. No.	Description	Format	Recommended Media	No. of Copies.
1.	a) First Break Picks b) Refraction Statics	ASCII	DVD	5 sets
2.	a) Final Stacks (Unmigrated) Full Volume with Gain & filter b) Final Stacks (Unmigrated) Full Volume without Gain & filter	SEGY	HD & LTO	five sets on HD and three sets on LTO
3.	a) Final POSTM Stacks Full Volume with Gain & filter b) Final POSTM Stacks Full Volume without Gain &	SEGY		
4.	a) Final PSTM Stacks Full Volume with Gain & filter b) Final PSTM Stacks Full Volume without Gain & filter	SEGY		
5.	a) Final PSTM stacking Velocity Full Volume(ASCII) b) Final PSTM stacking Velocity Full Volume(SEG-Y)	SEG-Y & ASCII		
6.	a) Final PSTM CMP gather full volume with NMO Correction Without Filter and Gain b) Final PSTM CMP gather full volume without NMO Correction Without Filter and Gain	SEGY		
7.	a) Final Un-migrated CMP gather full volume with NMO Correction Without Filter and Gain b) Final Un-migrated CMP gather full volume without NMO Correction Without Filter and Gain	SEGY		
8.	a) PSTM Processing Report	MS Word/ PDF		

Depth Processing Deliverables for the Project			Annexure-VI	
Sr. No.	Description	Format	Recommended Media	No. of Copies.
1.	a) Final PreSDM(CRAM/RTM/CBM) Stack Calibrated with wells without post stack sequence b) Final PreSDM(CRAM /CBM/RTM) Stack Calibrated with wells with post stack sequence c) Final PreSDM(CRAM/CBM/RTM) Stack uncalibrated with wells without post stack sequence d) Final PreSDM(CRAM/CBM/RTM) Stack uncalibrated with wells with post stack sequence	SEGY	HD & LTO	five sets on HD and three sets on LTO
2.	a) Final PreSDM(CRAM/CBM/RTM) Stack calibrated with wells stretch to time without post stack sequence b) Final PreSDM(CRAM/CBM/RTM) Stack calibrated with wells stretch to time with post stack sequence c) Final PreSDM(CRAM/CBM/RTM) Stack uncalibrated with wells stretch to time without post stack sequence d) Final PreSDM(CRAM /CBM/RTM) Stack uncalibrated with wells stretch to time with post stack sequence	SEGY		
3.	a) Final PreSDM(CRAM /CBM/RTM) Gathers	SEGY		
4.	a) Final PreSDM(CRAM/CBM/RTM) velocity before calibration b) Final PreSDM(CRAM/CBM/RTM) velocity after calibration	SEG-Y & ASCII		
5.	a) Final POST PSDM Stack Calibrated with wells without post stack sequence b) Final POST PSDM Stack Calibrated with wells with post stack sequence c) Final POST PSDM Stack uncalibrated with wells without post stack sequence d) Final POST PSDM Stack uncalibrated with wells with post stack sequence	SEGY		
6.	a) Final POST PSDM Stack calibrated with wells stretch to time without post stack sequence b) Final POST PSDM Stack calibrated with wells stretch to time with post stack sequence c) Final POST PSDM Stack uncalibrated with wells stretch to time without post stack sequence d) Final POST PSDM Stack uncalibrated with wells stretch to time with post stack sequence	SEGY		
7.	Final PreSDM(CRAM/CBM/RTM) Processing Report	MS Word/ PDF		

Technical Evaluation:

Cat. No.	Description of Technical Information	Qualifying Criteria		Max. Marks
1	Company History & Profile			35
	No. of Years in PSTM Processing of land 3D Seismic Data belonging to Fold and thrust Belt/Salt Tectonics (compressional regime) area	PSTM	More than 10 years = 04 marks Less than 10 years= 00 marks	4
	No. of Years in KPSDM Processing of land 3D Seismic Data belonging to Fold and thrust Belt /Salt Tectonics (compressional regime) area	KPSDM	More than 10 years = 04 marks 8 to10 years = 03 marks 4 to 7 years =01 marks Less than 4 years=00 marks	4
	No. of Years in CRAM/RTM/CBM Processing of land 3D Seismic Data belonging to Fold and thrust Belt/Salt Tectonics (compressional regime) area	CRAM/RTM/CBM	More than 5 years =03marks 4 to5 years =02 marks 2 to 3 years =01marks Less than 2 years=00 marks	3
	No. of Years in Diffraction Imaging Processing of land 3D Seismic Data belonging to Fold and thrust Belt/Salt Tectonics (compressional regime) area	DI	More than 3 years = 02marks 2 to3 years = 01 marks 1 year =0.5 marks Less than 1 years=00 marks	2
	No. of land 3D projects for PSTM in the last 5 years in the fold and thrust Belt (compressional regime) area (Please provide Client list as per Annexure IX)	PSTM	More than 10 projects =05 marks 10 to 7 projects =04 marks less than 7 projects =00 mark	5
	No. of Land 3D projects for KPSDM in the last 5 years in the fold and thrust Belt/Salt Tectonics (compressional regime) area (Please provide Client list as per Annexure IX)	KPSDM	More than 10 projects =05 marks 10 to 7 projects =04 marks less than 7 projects =00 mark	5
	No. of Land 3D projects for Diffraction Imaging in the last 3 years in the fold and thrust Belt/Salt Tectonics (compressional regime) area (Please provide Client list as per Annexure IX)	DI	More than 05 projects =02 marks 03 to 05 projects =1 marks less than 3 projects =00 marks	2
	No. of Land 3D projects for CRAM/RTM/CBM in the fold and thrust Belt/Salt Tectonics (compressional regime) area (Please provide Client list as per Annexure IX)	CRAM/RTM/CBM	More than 05 projects = 7 marks 04 to 03 projects =5 marks 02 to 01 projects =02 marks less than 1 projects =00 marks	7
	Number of processing centers worldwide (Detailed Locations Must Provide)	WORLDWIDE	03 or more Processing center = 03 marks Less than 03 Processing center = 02 marks	3

2	Processing Facilities Software and Work Flows		20	
	List of all Processing modules applied for Land 3D seismic data processing upto PSTM must be Provided	Software/Module version used land 3D processing(PSTM) Less than 1-years old=02 marks 01 to 02 years old=1.5 mark More than 02 years old=1 marks	2	
	List of all Processing modules applied for Land 3D seismic data upto KPSDM processing must be Provided	Software/Module version used land 3D processing(KPSDM) Less than 1-years old=02 marks 01 to 02 years old=1.5 marks More than 02 years old=1 marks	2	
	List of all Processing modules applied for Land 3D seismic data processing upto CRAM/RTM/CBM processing must be Provided	Software/Module version used land 3D processing (CRAM//RTM/CBM) Less than 1-years old=03 marks 01 to 02 years old=02 marks More than 02 years old=01 marks	3	
	List of all Processing modules applied for Land 3D seismic data processing upto DI must be Provided	Software/Module version used land 3D processing(DI) Less than 1-years old=03 marks 01 to 02 years old=02 marks More than 02 years old=01 marks	3	
	Details of PSTM processing sequence for mentioned project including optional steps.	Cover 100% of proposed processing flow for PSTM with optional steps=02 marks Cover 100%-90% of proposed processing flow for PSTM with optional steps=01 marks Cover less than 90% of proposed processing flow for PSTM with optional steps=00 marks	2	
	Details of Depth processing sequence for mentioned project including optional steps.	Cover 100% of proposed processing flow for Depth with optional steps=02 marks Cover 100%-90% of proposed processing flow for Depth with optional steps=01 marks Cover less than 90% of proposed processing flow for Depth with optional steps=00 marks	2	

	Details of CRAM/RTM/CBM/ for mentioned project including optional steps.	Cover 100% of proposed processing flow for CRAM/RTM/CBM/ with optional steps=03 marks Cover 100%-90% of proposed processing flow CRAM/RTM/CBM/ with optional steps=01 marks Cover less than 90% of proposed processing flow for CRAM/RTM with optional steps=00 marks	3	
	Advance processing steps for land 3D PSTM processing.	Advance processing modules used for processing other than already proposed = 01 marks	1	
	Advance processing steps for land 3D KPSDM processing.	Advance processing modules used for processing other than already proposed = 01 marks	1	
	Advance processing steps for land 3D CRAM/RTM/CBM processing	Advance processing modules used for processing other than already proposed = 01 marks	1	
	Hardware		06	
3	Provide List of hardware / machines / equipment in operating condition owned by the company, available with contractors used in land 3D seismic data Time and Depth processing as per Annexure-XII	Hardware/equipment version not older than 02 years=06 marks Hardware/equipment version not older than 03 years=05 marks Hardware/equipment version not older than 05 years=04 marks Hardware/equipment version older than 05 years=00 marks	06	
	Manpower (Qualification of 16 Years Degree in Geophysics/ Geology) and having experience in 3D PSTM,KPSDM,CRAM/RTM/CBM		18	
4	Attached the resume of the contractor permanently employed manpower for land 3D PSTM processing projects (Give complete detail experience belonging to Fold and thrust Belt/Salt Tectonics and Processing Center name where professional has worked as per attached Annexure X).	More than 10 professionals with minimum experience of 10 years=04 marks 07 to 10 professionals with minimum experience of 10-years =03 marks 04 to 06 professionals with minimum experience of 10-years =02 marks 02 to 03 professionals with minimum experience of 10-years =01 marks Less than 02 professionals with minimum experience of 10-years =00 marks	4	
	Attached the resume of the contractor permanently employed manpower for land 3D KPSDM processing projects (Give complete detail experience belonging to Fold and thrust Belt/Salt Tectonics and Processing Center name where professional has worked as per attached Annexure X).	More than 10 professionals with minimum experience of 10 years=04 marks 07 to 10 professionals with minimum experience of 10-years =03 marks 04 to 06 professionals with minimum experience of 10-years =02 marks 02 to 03 professionals with minimum experience of 10-years =01 marks Less than 02 professionals with minimum experience of 10-years =00 marks	4	

	Attached the resume of the contractor permanently employed manpower for land 3D CRAM/RTM/CBM processing projects (Give complete detail experience belonging to Fold and thrust Belt/Salt Tectonics and Processing Center name where professional has worked as per attached Annexure X).	05 to 07 professionals with minimum experience of 3-years =08 marks 03 to 04 professionals with minimum experience of 3-years =07 marks 01 to 02 professionals with minimum experience of 3-years =03 marks Less than 01 professionals with minimum experience of 3-years =00 marks	8	
	Attached the resume of the contractor permanently employed manpower for land 3D Diffraction imaging processing projects (Give complete detail experience belonging to Fold and thrust Belt/Salt Tectonics and Processing Center name where professional has worked as per attached Annexure X).	More than 10 professionals with experience of 3 years=02 marks 07 to 10 professionals with minimum experience of 3-years =1.5 marks 04 to 06 professionals with minimum experience of 3-years =01 marks 02 to 03 professionals with minimum experience of 3-years =0.5 marks Less than 02 professionals with minimum experience of 3-years =00 marks	2	
	Work Plan/Project Schedule		10	
	Availability/Start time of Project after receipt of dataset.	Less than 02 weeks =03 mark 02 to 03 weeks = 01mark More than 03 weeks = 00 marks		
5	Total Turn Around Time 18 Months + 02 months for Deliverables Note: 2 months additional will be for Optional processing DI	PSTM 7 Months =04 marks 8 Months =03 marks More than 8Months =00 marks	4	
		Two months break will be for the interpretation of PSTM data by OGDCL for Depth inputs		
		KPSDM, CRAM/ RTM/CBM processing 7 Months = 03 marks 8 Months = 01 marks More than 8 Months =00 marks	03	
6	TOR Compliance	<u>Bid Prepared as per TOR Format</u> 100 % Compliance=02 marks Below 100%=00 Marks	02	
7	OGDCL professional participation in the 3D seismic data processing (PSTM, KPSDM, CRAM/ RTM/CBM) project.		04	
	Submit workable QC schedule for OGDCL professionals.	<ul style="list-style-type: none"> During Noise attenuation & refraction statics. (Two Professionals for 02 weeks) During PSTM processing & finalization. (Two professionals for 02 weeks) During Near Surface and Deep Modeling. (Two Professionals for 02 weeks) During KPSDM, CRAM/CBM/RTM processing & finalization / well calibration. (Two Professionals for 	04	

		02 weeks) Agreeing with the schedule will earn maximum marks.		
8	HSE		05	
	Compliance to HSE policy	Provide HSE Compliance manual.	05	
	TOTAL MARKS (Qualifying Marks 70%)		100	

MANDATORY REQUIREMENTS:

1. Contractor/ bidder shall not be eligible, if the Contractor / bidder including any of its shareholders, directors, employees, partners, associated company or affiliated company is or has been blacklisted. A sworn affidavit confirming that the Contractor/bidder is not ineligible as per the above shall be furnished to OGDCL.
2. Seismic data processing companies and team leaders must have an experience of on-shore projects as per **Annexure VII**
3. In case of multiple processing centers the OGDCL will select the processing center to undertake the project.
4. In case of multiple processing centers the CVs of the professional of all the centers will be provided separately center wise as per Annexure-X
5. Filling of Questionnaire as per **Annexure-VIII**

NOTE:

1. Contractor should provide documentary evidences for all above requirements including CVs of staff, procedures, manuals etc.
2. Contractor shall be declared as disqualified for Non Compliance against mandatory requirements.
3. Company shall allocate dedicated team for OGDCL projects. At the time of award of contract company shall ensure to provide professionals of same level on which they have been awarded the contract.
4. In case of JV, the JV leader should be professionally a Processing Company.

		<u>Questionnaire</u>	Annexure- VIII
Sr#		<u>Questions</u>	Answer
1		Registered Name of the Firm/Company.	
2		Permanent Address of Head Office and Branch Offices (if any) with telephone no(s)/fax no(s).	
3		Date and place of establishment of Company. (Please attach appropriate proof)	
4		Name and address of Foreign Associates (if any)	
5		Name, Designation and Qualifications of the person(s) authorized to represent the firm in Contractual Matters. (Authorization letter from Chief Executive of the Firm to be attached).	
6		Financial status of the Company with supporting documents.	
	a.	Last 3 years audited financial statements of the Company. (Please attach Audit Reports with the Balance Sheets).	
	b.	NTN Certificate and statement/proof of income tax deduction for last 3 years. (Please attach copies)	
7		Name and address of the Bankers	
8		Performance of the firm on at-least 5 recently completed jobs / contracts of similar nature (Certificates of satisfactory performance from organizations/owners to be attached)	
9		Number of processing centers worldwide with names address etc.	
10		Number of processing staff available at above centers	
11		Specify land 3D PSTM, KPSDM, (CRAM/CBM/RTM) and DI projects undertaken by each processing centers in the last Five years with brief details about each job / project.	
12		Specify Number of projects undertaken and completed in Compressional regime tectonic settings worldwide during the last five years	
13		Average turnaround time for about 500-600 sq.km 3D PSTM, KPSDM, (CRAM/CBM/RTM) and DI data projects. Mention turnaround time for last 05 similar projects along with project volume.	
14		Availability of Innovational processing flow for any processing project	
15		Do you have a facility for remote/interactive data QC?	
16		Do you have a facility for Video Conferencing?	
17		Do you have 3D seismic data visualization facilities?	
18		Do you have an FTP site for transfer of data	

		from processing centers to clients office for QC	
19		Are your clients allowed to select more than one processing centers available?	
20		Details of any litigations/cases in which the Firm/Company has been involved.	
21		Any other information.	
Note:	1	List of Facilities, ownership of contractor's machineries/equipment, availability of technical and skilled personnel, support capabilities and experience of the contractor may be checked and verified physically through technical audit.	
	2	Mis-statement by the contractor will lead to subsequent disqualification at any stage.	

List of Works/Contracts during The Last Ten Years

Annexure-IX

(Mention complete detail of 3D PSTM, KPSDM, CRAM /CBM/RTM and DI processing projects belonging to Fold and thrust Belt/Salt Tectonics)

S.NO	CLIENT NAME With address , email & Contact Number	SATISFACTORY REPORT OF THE CLIENT	DESCRIPTIO N OF WORK	AMOUNT (Million US \$)	CURRENT STATUS OF THE CONTRACT	VALIDITY	
						FROM	TO
1.							
2.							
3.							
4.							
5.							

List / Resume Of Manpower Permanently Employed By The Contractor

<u>Center -1. Location and List of Resume of Staff</u>							
(Mention complete detail experience of 3D PSTM, KPSDM , CRAM/CBM/RTM) and DI processing belonging to Fold and thrust Belt/Salt Tectonics)							
S.NO	NAME OF THE STAFF	DESIGNATION	ACADMIC QUALIFICATION (YEARS)		PROFESSIONAL QUALIFICATION	CERTIFICATE ACQUIRED (COPIES TO BE ATTACHED)	EXPERIENC E/JOB DESCRIPTION
			DEGREE	OTHERS			
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Center-2. Location and List of Resume of Staff

(Mention complete detail experience of 3D PSTM, KPSDM , CRAM/CBM/RTM) and DI processing belonging to Fold and thrust Belt/Salt Tectonics)

S.NO	NAME OF THE STAFF	DESIGNATION	ACADMIC QUALIFICATION (YEARS)		PROFESSIONAL QUALIFICATION	CERTIFICATE ACQUIRED (COPIES TO BE ATTACHED)	EXPERIENC E/JOB DESCRIPTION
			DEGREE	OTHERS			
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

Center-3. Location and List of Resume of Staff

(Mention complete detail experience of 3D PSTM, KPSDM ,CRAM/CBM/RTM) and DI processing belonging to Fold and thrust Belt/Salt Tectonics)

S.NO	NAME OF THE STAFF	DESIGNATION	ACADMIC QUALIFICATION (YEARS)		PROFESSIONAL QUALIFICATIO N	CERTIFICATE ACQUIRED (COPIES TO BE ATTACHED)	EXPERIENC E/JOB DESCRIPTION
			DEGREE	OTHER S			
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

Details of Software used by the contractor for 3D land Seismic Processing

S.NO.	SOFTWARE NAME	ACQUIRED BY THE COMPANY ON	QUANTITY	VERSION YEAR	REMARKS
1.					
2.					
3.					
4.					
5.					
6.					

Details of Hardware used by the contractor for 3D land Seismic Processing

S.NO.	HARDWARE NAME	ACQUIRED BY THE COMPANY ON	QUANTITY	CONDITION	REMARKS
1.					
2.					
3.					
4.					
5.					
6.					