OIL & GAS DEVELOPMENT COMPANY LIMITED

TENDER ENQUIRY NO. PROC-SERVICES/CB/EXPL-4729/2020

HIRING TANDA JABBI 3D SEISMIC DATA COMMON REFLECTION ANGLE MIGRATION/COMMON BEAM MIGRATION PROCESSING SERVICES

Note:

Bid bond of **USD 4,650/- (US Dollar Four Thousand Six Hundred Fifty 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 Tanda Jabbi 3D Seismic Data
Common Reflection Angle Migration/Common Beam Migration Processing Services

Kohat E.L

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TERMS OF REFERENCE (TOR)/TECHNICAL SPECIFICATIONS FOR COMMON REFLECTION ANGLE MIGRATION OR EQUIVALENT AND DI (OPTIONAL) PROCESSING OF ~231.303 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 of Kohat E.L in Upper Indus Basin (Kohat sub basin) of Pakistan. Base map with 3D survey boundary of Tanda Jabbi 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 discovery of gas/condensate in Togh-01 exploratory well (Shekhan 3D area) in Kohat E.L from two stratigraphic units Lumshiwal 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 3D area.

The intended 3D seismic data reprocessing campaign comprises of surface coverage of approximately 231.303 Sq. Km of 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 thrusted anticlines, fault bounded structures and imbricated features are present.

2.0 Objectives:

2.1 The primary objective of the Common Reflection Angle Migration/CBM 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 Common Reflection Angle Migration/CBM processing sequence upto 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/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.

4.0 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 Common Reflection Angle Migration/CBM 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 taxes 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 and Annexure-VIII.** 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 & VIII** 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 project. The bidders should submit project schedule in the form of Gantt chart.

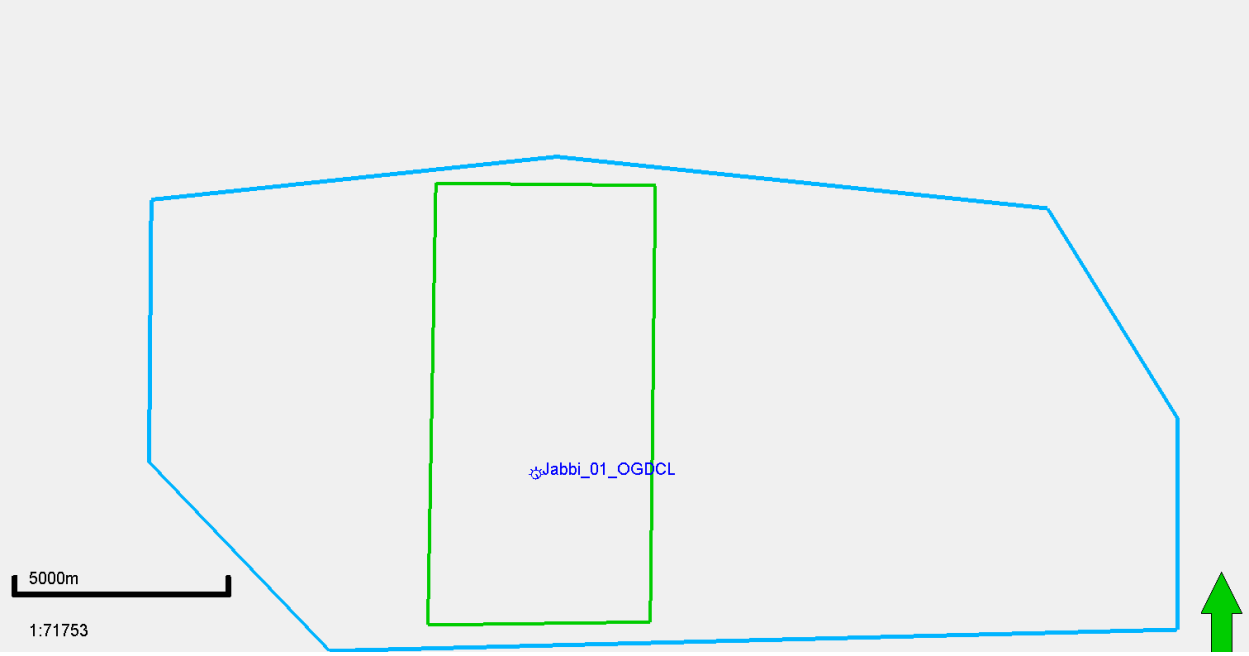
7.5 The contractor must provide schedule for the participation of professionals from the Client for the QC of the processing steps. Contractor shall provide a phase wise work program for the participation of the client professionals in line with **Annexure-VII**. Contractor will be bound to take all 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.

Annexure-I

Base Map Showing Operational areas of Tanda Jabbi 3D (Blue) and parameter testing (Green) Seismic data processing



Tanda Jabbi 3D area (In Green color) for parameters testing Coordinates in UTM-42		
Corners	X-Coordinates	Y-Coordinates
A	708824.23	3722494.83
B	708638.53	3712360.79
C	713750.71	3712429.29
D	713868.15	3722444.03

Annexure-II

Seismic Acquisition Parameters of the acquired Tanda Jabbi 3D Data Volume:

Country of origin: Pakistan

3D Km^2 to be processed	**Tanda Jabbi-3D (231.303 Sq.Km)**
Vintage	2016
Acquired by	SENSHE
source	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 2D/3D processing), VSP velocity and sonic log of project wells, Stack of previous processing as a reference, etc.

Annexure-III

(A) <u>Basic/Standard Processing Sequence for PSTM Processing</u>

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 Modeling and CRAM /CBM)

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

Sr. No.	Depth Processing Sequence
1	Data preparation and gather Conditioning for PreSDM (Velocity Modeling and CRAM/CBM)
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 PreSDM(Velocity Modeling and PreSDM(CRAM/CBM) migration)workflows
3	Building of initial isotropic interval velocity model based on smoothed PSTM velocities; CVI initial velocity model to be set with appropriate balance data/trend(from possible well data)
4	initial isotropic interval velocity model update based on gridded or layer based tomography approach(upto 5 updates)
5	PreSDM(CRAM/CBM) depth migration parameters testing • Aperture,opening angle,structure angle,anti-aliasing filter,specular weighting
6	Isotropic (CRAM/CBM) migration and generation of 3D full azimuth reflection angle gather for the whole data with decimated parameters
7	select the main horizons for initial anistropic model creation based on data complexity and available well information
8	interpretation of selected main horizons in depth domain using result of isotropic (CRAM/CBM) migration with decimated parameters
9	Estimation of thomsen anistropic parameters(Epsilon, Delta, Azimuth and Dip)
10	VTI/TTI Anistropic Parameter Update(5 Updates)
11	VTI/TTI Anistropic (CRAM/CBM) production migration and generation of 3D full azimuth reflection angle gathers for the whole data
12	Azimuthally depended RMO correction
13	Post Migration Processing of migrated gather(Residual noise and multiple attenuation, time variant residual phase correction etc)
14	Final Mute and stack
15	Post migration processing of migrated volume (spectral balancing, footprint removal etc)

16	Convert back to Depth

(C) Optional Processing Steps:

1) Diffraction Imaging processing (test cube processing is free of cost)
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) 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) Incase; if the PreSDM (CRAM(TTI)/CBM(TTI)) solution are not able to resolve the velocity anisotropy accurately, CRAM (Tilted ortho-rhombic tomo) or CBM(Tilted ortho-rhombic tomo) solution will be tested/ used. However, contractor may also suggest better solution at that time based on the test results of conventional PSDM/ CRAM/CBM stack using PSDM velocities 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/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, **Annexure VII** is the mandatory part while **80%** weightage would be given to Technical Evaluation **Annexure VIII** 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/CBM) with consent of the company. However, the time gap between approval of PSTM results and go ahead for the PreSDM (CRAM/CBM) will be excluded from the total project time.

4. Maximum Final Deliverable time is 02 months after completion of the project i.e. 09 months.

Annexure-IV

Financial Bid Format

Rates for land 3D seismic data Time Processing (PSTM) & PreSDM (CRAM/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	PreSDM (CRAM/CBM) Processing Sequence as per Annexure-III (B) (Lump sum)	
3	Total Lump Sum cost (Sr No.1+ Sr No.2)	
Optional Processing		
4	Diffraction imaging (Optional)	

NOTE:

i. 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.

ii. Separate invoices need to be generated for Sr. No.1 and 2 of **Annexure-IV**. Payments will be made at actual after successful completion of the project against the verified invoices.

iii. Total square kilometers for charged rates will be calculated on the basis of subsurface coverage

iv. 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**.**

v. 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.

vi. The final PSTM (with Different Vel percentage)/PreSDM(CRAM/CBM) /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	DVD & Hard Copy	Five sets on media

Depth Processing Deliverables for the Project				**Annexure-VI**
Sr. No.	**Description**	**Format**	**Recommended Media**	**No. of Copies.**
1.	a) Final PreSDM(CRAM/CBM) Stack Calibrated with wells without post stack sequence b) Final PreSDM(CRAM/CBM) Stack Calibrated with wells with post stack sequence c) Final PreSDM(CRAM/CBM) Stack uncalibrated with wells without post stack sequence d) Final PreSDM(CRAM/CBM) 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) Stack calibrated with wells stretch to time without post stack sequence b) Final PreSDM(CRAM/CBM) Stack calibrated with wells stretch to time with post stack sequence c) Final PreSDM(CRAM/CBM) Stack uncalibrated with wells stretch to time without post stack sequence d) Final PreSDM(CRAM/CBM) Stack uncalibrated with wells stretch to time with post stack sequence	SEGY		
3.	a) Final PreSDM(CRAM/CBM) Gathers	SEGY		
4.	a) Final PreSDM(CRAM/CBMt) velocity before calibration b) Final PreSDM(CRAM/CBM) 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)Processing Report	MS Word/ PDF	DVD & Hard Copy	five sets Each

Annexure-VII

Technical Evaluation:

Cat. No.	Description of Technical Information	Qualifying Criteria		Max. Marks	
1	**Company History & Profile**			**20**	
	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 = 01 marks Less than 10 years= 00 marks	1	
	No. of Years in PSDM Processing of land 3D Seismic Data belonging to Fold and thrust Belt /Salt Tectonics (compressional regime) area	**PSDM**	More than 10 years = 03 marks 8 to10 years = 02 marks 4 to 7 years =01 marks Less than 4 years=00 marks	3	
	No. of Years in CRAM/CBM Processing of land 3D Seismic Data belonging to Fold and thrust Belt/Salt Tectonics (compressional regime) area	**CRAM/CBM**	More than 10 years =03marks 8 to10 years =02 marks 4 to 7 years =01marks Less than 4 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 to 2 years =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 05 projects =01 marks less than 5 projects =00 mark	1	
	No. of Land 3D projects for PSDM in the last 5 years in the fold and thrust Belt/Salt Tectonics (compressional regime) area (Please provide Client list as per Annexure IX)	**PSDM**	More than 05 projects =03 marks 03 to 05 projects =1.5 marks less than 3 projects =00 mark	3	
	No. of Land 3D projects for CRAM/CBM in the last 5 years in the fold and thrust Belt/Salt Tectonics (compressional regime) area (Please provide Client list as per Annexure IX)	**CRAM/CBM**	More than 05 projects = 03 marks 03 to 05 projects =1.5 marks less than 3 projects =00 marks	3	
	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 =01 marks 03 to 05 projects =0.5 marks less than 3 projects =00 marks	1	
	Number of processing centers worldwide(Detailed Locations Must Provide)	WORLDWIDE	03 or more than Processing center = 03 marks Less than 03 Processing center = 01 marks	3	

2	**Processing Facilities Software and Work Flows**			**22**	
	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=01 marks More than 02 years old=0.5 marks		2	
	List of all Processing modules applied for Land 3D seismic data upto PSDM processing must be Provided	Software/Module version used land 3D processing(PSDM) 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 CRAM/CBM must be Provided	Software/Module version used land 3D processing(CRAM/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=03 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		3	
	Details of PSDM processing sequence for mentioned project including optional steps.	Cover 100% of proposed processing flow for PSDM with optional steps=03 marks Cover 100%-90% of proposed processing flow for PSDM with optional steps=01 marks Cover less than 90% of proposed processing flow for PSDM with optional steps=00 marks		3	
	Details of CRAM/CBM processing sequence for mentioned project including optional steps.	Cover 100% of proposed processing flow for CRAM/CBM with optional steps=03 marks Cover 100%-90% of proposed processing flow for		3	

		CRAM/CBM with optional steps=01 marks Cover less than 90% of proposed processing flow for CRAM/CBM with optional steps=00 marks		
	Advance processing steps for land 3D PSTM processing.	Advance processing modules used for processing other than already proposed = 0.5 marks	0.5	
	Advance processing steps for land 3D PSDM processing.	Advance processing modules used for processing other than already proposed = 0.5 marks	0.5	
	Advance processing steps for land 3D CRAM/CBM processing.	Advance processing modules used for processing other than already proposed = 0.5 marks	0.5	
	Advance processing steps for land 3D DI processing.	Advance processing modules used for processing other than already proposed = 0.5 marks	0.5	
3	**Hardware**		**08**	
	Provide List of hardware / machines / equipment in operating condition owned by the company, available with contractors used in land 3D seismic data PSTM and PSDM processing as per Annexure-XII	Hardware/equipment version not older than 02 years=08 marks Hardware/equipment version not older than 03 years=07 marks Hardware/equipment version not older than 05 years=06 marks Hardware/equipment version older than 05 years=00 marks	08	
4	**Manpower (Qualification of 16 Years Degree in Geophysics/ Geology) and having experience in 3D PSTM ,PSDM,CRAM/CBM and DI Processing**		**26**	
	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=07 marks 07 to 10 professionals with minimum experience of 10-years =06 marks 04 to 06 professionals with minimum experience of 10-years =03 marks 02 to 03 professionals with minimum experience of 10-years =02 marks Less than 02 professionals with minimum experience of 10-years =00 marks	7	
	Attached the resume of the contractor permanently employed manpower for land 3D **PSDM** 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=08 marks 07 to 10 professionals with minimum experience of 10-years =06 marks 04 to 06 professionals with minimum experience of 10-years =04 marks 02 to 03 professionals with minimum experience of 10-years =02 marks Less than 02 professionals with minimum experience of 10-years =00 marks	8	

	Attached the resume of the contractor permanently employed manpower for land 3D **CRAM/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).	More than 10 professionals with minimum experience of 10 years=08 marks 07 to 10 professionals with minimum experience of 10-years =06 marks 04 to 06 professionals with minimum experience of 10-years =04 marks 02 to 03 professionals with minimum experience of 10-years =02 marks Less than 02 professionals with minimum experience of 10-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 minimum experience of 3 years=03 marks 07 to 10 professionals with minimum experience of 3-years =02 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	3	
5	**Work Plan/Project Schedule**		**13**	
	Availability/Start time of Project after receipt of dataset.	Less than 02 weeks =04 mark More than 02 weeks =00 marks	04	
	Total Turn Around Time 10 Months + 02 months for Deliverable	**PSTM** 4 Months =04 marks 5 Months =03 marks More than 5 Months =00 marks	4	
		One month break will be excluded during which OGDCL will provide the interpretation for PSDM		
		PSDM or CRAM/CBM and DI 4 Months =5 marks 5 Months =4 marks More than 5 Months =00 marks	5	
6	**TOR Compliance**	Bid Prepared as per TOR Format 100 % Compliance=02 marks Below 100%=00 Marks	**02**	
7	**OGDCL professional participation in the 3D seismic data processing (PSTM, PSDM, CRAM/CBM and DI) project.**		**04**	
	Submit workable QC schedule for OGDCL professionals.	• 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 PSDM/CRAM/CBM/DI & finalization /	04	

		well calibration.(Two Professionals for 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 involved or has been involved in the past in litigation with OGDCL or any of its joint venture partners; or
2. 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.
3. Seismic data processing companies and team leaders must have an experience of on-shore projects as per **Annexure VII**
4. In case of multiple processing centers the OGDCL will select the processing center to undertake the project.
5. 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**
6. 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.

Questionnaire

Annexure-VIII

Sr#		Questions	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, PSDM, CRAM/CBM 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, PSDM, CRAM/CBM 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.	

Annexure-IX

List of Works/Contracts during The Last Ten Years

(Mention complete detail of 3D PSTM, PSDM, CRAM/CBM 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	DESCRIPTION OF WORK	AMOUNT (Million US $)	CURRENT STATUS OF THE CONTRACT	VALIDITY	
						FROM	TO
1.							
2.							
3.							
4.							
5.							

Annexure-X

List / Resume Of Manpower Permanently Employed By The Contractor

Center -1. Location and List of Resume of Staff (Mention complete detail experience of 3D PSTM, PSDM , CRAM/CBM 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**
1			DEGREE	OTHERS			
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, PSDM , CRAM/CBM 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
1.			DEGREE	OTHERS			
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, PSDM ,CRAM/CBM 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
1.			DEGREE	OTHERS			
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

Annexure-XI

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.					

Annexure-XII

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