

CLARIFICATION#1 AGAINST TENDER # PROC-SERVICES/CB/EXPL-640000084/2022 INTEGRATED SEISMIC DATA INTERPRETATION, STRUCTURAL GEOLOGICAL MODELLING AND FRACTURE MODELLING ANALYSIS OF SOGHRI AND FATEH JANG E. L' S.

Following Clarifications have been made in the subject tender:-

Note: The clause 3.2 “Petrophysical interpretation of all available raw wireline logs will be available; however, image log interpretation of one well be required from the contractor” may please be read as “**Petrophysical interpretation of all available raw wireline and image logs of all the wells to be carried out by the contractor**”.

Sr. No.	Bidder Query	OGDCL Reply
1	What is the expected start date of the project?	The project is likely to start from April 2023.
2	Start date is considering delivery of “major” portion of data. Can OGDCL confirm that this means all necessary seismic data and all well data to be delivered prior project start?	Yes it contains seismic and all the basic well data necessary to start the project.
3	What are the preferred locations for the visits/workshops, in Pakistan or abroad?	No particular preference. Vendor is bound to make sure the availability of all relevant resources and presence of project team professionals at a single location for each visit.
4	Is it acceptable to perform these workshops at a conference facility instead of office?	Yes only after the consent of OGDCL.
5	Provision of IT resources (Computer, Internet) will be limited to the visit of OGDCL at SLB facilities and limited to project related tasks. Is this acceptable?	Yes.
6	How flexible is total timeline mentioned in the TOR (180 days)?	The project completion duration is time bounded and can be extended in case of unavoidable scenario after the consent of OGDCL.
7	Is it possible to provide a map with location of available wells, 2D seismic lines and 3D seismic cubes including adjacent blocks?	Can be provided for the project area which is already addressed in TORs. Provision of the well location and seismic data map of adjacent blocks is subject to the permission by operator/ JV of that block.
8	Is there any prior interpretation done on any of the seismic lines and 3D data? Will this interpretation be provided?	In house seismic interpretation will not be shared as the contractor has to perform their own interpretation.
9	How many horizons to be interpreted in the study area?	05 to 06 horizons to be interpreted on seismic data including Chorgali & Sakesar (Eocene Carbonates), Patala & Lockhart (Paleocene Carbonates), Datta (Jurassic Clastics) and Wargal (Permian Carbonates).
10	Indicate about the horizon interpretation intensity (Ninline and Nxline) for the study area.	Interpretation on every 5 th inline and Xline including Inline, Cross Line passing through wells is enough for structural mapping.
11	2D and 3D seismic velocities availability within the study area?	Yes available and can be shared.
12	Is any 3D velocity model available for depth conversion covering study area?	3D Velocity Model of the area is not available.
13	Which log data (type of log, depth and stratigraphic coverage) is included in “conventional well logs”?	All the well log data (including all wireline logs and mud logs, gas logs or pressure logs) other than image logs is to be considered as conventional logs.

14	Are there any well reports and was any interpretation of well data done which will be provided?	Well reports, available raw data and DST data will be shared. Interpretation to be carried out by the contractor.
15	Which sections of the wells are covered by image logs?	Image logs are mostly available in reservoir sections.
16	Have the image logs been interpreted in respect of fractures & structural features?	The available image logs have been interpreted. Service provider has to relook and re-interpret the image logs.
17	Is there any geochemical data available (wells, fluids, outcrop samples). Are there any reports on structural geology available?	Geochemical analysis are not available. General field geology reports including structural features of the area are available which will be shared.
18	Is there a conceptual regional cross section available, describing the general structural style?	Cross sections are available covering parts of the area.
19	Has there been any prior restoration of cross sections and will it be provided?	Cross section restoration work or data is not available.
20	Is it possible to provide the data in a Petrel project or is the data compatible and ready to be loaded in a Petrel project?	No. The data will be provided and can easily be loaded on contractor workstation.
21	Is all seismic data provided also in depth or is there time/depth conversion requested too?	PSDM data is also available. It will be decided with mutual consent whether to use PSTM by using velocity model for depth conversion or PSDM data directly.
22	Is it necessary to only use kinematic restoration methods or is it acceptable to use geomechanics driven restoration with kinematic validation?	As clearly mentioned in TORs, the contractor is required to perform kinematic restoration.
23	What is meant with "successful borehole intervention job"? Is it possible to elaborate on expected deliverables to cover this?	Multiple dry holes have been drilled in the project area. After detailed dry hole analysis of all these wells, contractor is required to present the reasons for failure with clear evidence and examples. Proposals and solutions for all the possibilities of re-entry/ Sidetracking/directional plans and well intervention to be presented with multiple solutions necessary to successfully exploit and produce the hydrocarbons by overcoming the reasons behind failures.
24	Does the identification of new leads and prospects only expect the definition of structural traps, or does it include the identification of other trap styles (stratigraphic/combined) too?	All types of structural traps needs to be looked under this category along with the focus on identification of fracture networks and locating highly fractured zones.
25	Will the risk evaluation of identified prospects have to include also non-structural risk elements like seal and reservoir rock properties, charge, and possible migration challenges? If so, will there be data made available to assess these risks (sedimentology, paleo)	In terms of risk evaluation major focus is the structural element and reservoir quality (fractures & matrix porosity). Seal, charge & migration challenges also to be investigated in the context of structuration. The available sedimentology & paleontological data will be shared.
26	Data Table shows minimum available data set, please clarify expected size of additional volume that needs to interpret from adjacent area.	The data volume contained in project area is specified in TOR. Outside of the block area can also be provided for better understanding of the subject area in regional prospective, however, seismic interpretation of 3D specified Cubes is required and some 2D lines where 3D coverage is missing.

27	Please Clarify Study Area only includes the part of Fateh Jang EL that fall within red circle as shown on Location map?	Yes mainly the encircled part includes detailed study area.
28	As per our understanding tectonic block is usually refer to a fault bounded compartments within a structure, please elaborate the "Identification of tectonic blocks with the same type of structure."	Yes it means the same. It also includes the structures of similar geometry, shape and their associated nearby structures.
29	Is seismic data OVT processed and what is the quality of seismic data for the fracture modelling?	Part of data is OVT processed. Seismic Data quality is fair to good.
30	Please Clarify how many horizons to be picked in this study.	Five to six horizons.
31	Are PSDM interval velocities cubes and Stacking Velocities cubes available?	Velocity data is available.
32	Does PSDM Volume Calibrated to well tops?	Not necessarily
33	Which edge detection attributes cubes are available for fracture modelling?	No
34	Is interpreted image log Data of 9 wells available in Digital format (DLis)?	Image log raw data of 04 wells will be provided in DLis form. Image log data of 03 wells is available in PDF form. Image log data of 02 wells will be provided in PDF form if available.
35	How many formations have image log data and what are the target zones?	Image log data is mostly acquired in reservoir horizons. The target intervals include Chorgali, Sakesar, Patala, Lockhart, Datta & Wargal formations.
36	Please clarify If image log data contains following in single file for each well; Static and dynamic image, interpreted features, Azimuth and inclination, Fracture Aperture, Fracture density, Frac area, Frac length, Frac Porosity. We need single file containing the said data for the fracture modelling.	Image log data of available wells will be shared in raw form and have to be interpreted by the Contractor.
37	As per clause 3.2 please specify the depth interval of well in which image data is required to be interpreted.	The clause 3.2 "Petrophysical interpretation of all available raw wireline logs will be available; however, image log interpretation of one well be required from the contractor" may please be read as " Petrophysical interpretation of all available raw wireline logs and image logs of all the wells to be carried out by the contractor ". Image log data have been acquired in selected target horizons and all the available image log data needs to be fully relooked and interpreted.
38	Please advise about the required Stages for the Reconstruction?	After the development of regional structural models of the area, reconstruction of the deformational history will be based upon the different detachment levels in subsurface.
39	Please clarify the duration of the project. As per section 9 the project needs to be completed in 180 calendar days (6 months), however at title page the duration of contract/ completion period is 1 year.	One year time is typo error.

40	<p>We proposed the project may be split into the following four milestone/phases and the payment to be made after the signing off each phase/milestone?</p> <p>Milestone-I: Seismic Interpretation (40% of the quoted price).</p> <p>Milestone-II: Restoration and balancing of the 20 Transects (30% of the quoted price).</p> <p>Milestone-III: Fracture Modelling (20% of the quoted price).</p> <p>Milestone-IV: Final Deliverables (10% of the quoted price).</p>	<p>Payment Schedule and procedure clearly mentioned in TORs will be followed.</p>
41	<p>In bid evaluation criteria (Annexure-I) both lead geoscientist and team members should have experience of 20 and 14 years. However, in description it is required to produce 25 years of experience which may be a typo? (Please attach resume listing (project name, location, client name and year) executed during last 25 years to justify experience).</p>	<p>The evaluation & marking criteria for project is clearly mentioned in terms of relevant experience, software used and qualification in Annexure-I.</p>
42	<p>If the data room is not available, maybe it is possible to share a presentation illustrating the geological structure and seismic profiles?</p>	<p>The data will be shared with the contractor after signing CA/NDA as mentioned in clause 10.3 of the tender document. However, Seismic Profiles/ Conceptual Geological Models can be reviewed at OGDCL Head Office, Islamabad.</p>
43	<p>For the strain calculation, MOVE uses only stretching magnitude to predict fracture orientations and intensities. Is it what you need from the strain analysis?</p>	<p>Detailed analyses as mentioned in TORs are required irrespective of the limitations of software or module.</p>
44	<p>I would also kindly ask you to share Annexure-II mentioned in the tender document.</p>	<p>Annexure-II is already available on the very first page of the tender document/ TORs.</p>
45	<p>Does each consortium member need to provide a financial annual turnover or a consortium leader only?</p>	<p>Yes each consortium member is required to provide their annual turn-over.</p>
46	<p>Do we need an official tender agent for the application?</p>	<p>Anybody who fulfills tender & TOR requirement can participate in the tender. No official tender agent is required as all the tender documents are available at the OGDCL website.</p>
47	<p>Are taxes deducted by OGDCL or we should pay them from invoices on our own?</p>	<p>For payment examine TOR clause 12 & master setup of tender document-service draft contract section 5 with regard to taxes.</p>
48	<p>Could you please confirm the study area corresponds to the red circle covered by the two pink polygons (3D seismic coverage)?</p>	<p>Yes</p>
49	<p>Could you please specify the target units to be studied (number, name, nature, average thickness,...)?</p>	<p>Target units are five to six in number, their names are Chorgali, Sakesar, Patala, Lockhart, Datta and Wargal. All the formations are mostly Carbonates except Datta which consists of Clastics (Sandstone, Shale & Claystone). Their average thickness is variable as the area is structurally complicated.</p>

50	At least 20 transects have been requested for the study. In our experience, in very complex zones such as the proposed one, around 5 restored/balanced cross-sections are necessary to properly address the structural complexity (coherent geometries by solving of space problems and structural inconsistencies, kinematics, deformation history). Those are then combined with the 3D seismic interpretation to validate the structural grids.	The number of required transects are as per TORs.
51	Could you please precise what is expected for Fracture model? Does it correspond to DFN model?	The purpose of fracture model is to identify best potential reservoir zones in terms of maximum conductive fractures so that future wells be placed to produce commercial hydrocarbons. It also includes all the fracture attributes and their relationship with structural setting and association with faulting/ folding.
52	How many dry holes have to be analyzed in the point 3.20?	Total number of dry wells to be analyzed are 06.