

**CLARIFICATION NO: 01**

**AGAINST TENDER ENQUIRY NO: PROC-SERVICES/CB/RMD-3132/2017**

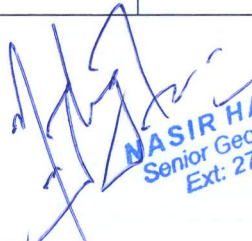
**HIRING OF SERVICES FOR CONSTRUCTING GEO-MECHANICAL EARTH MODEL AND PERFORMING FRAC FEASIBILITY & DESIGN STUDY OF TIGHT SML, SUL & HRL RESERVOIRS IN QADIRPUR GAS FIELD 2017**

With reference to subject mentioned tender enquiry and further to clarifications sought by few of our prospective bidders the following clarification is hereby communicated to all prospective bidders for their review and preparation of bid accordingly.


	<b>Query</b>	<b>Reply</b>
1	We shall be grateful if the bid submission date is extended for at least for 10 days	Bid submission date has been extended till 02nd January, 2017
2	In view of our request for the clarification of On Site Supervision of Frac Job as per Clause 3.1.12 (Page 18) and Phase Activity – Financial Section (page 24) response of which is still awaited Kindly clarify Scope of the Study – Clause 3.1.12 of Page 18 and Financial Section” on Page 24 (Phase Activity) “Onsite Supervision of Frac Job.	Qadirpur wells, where frac jobs may be required, are located in remote area and where communication infrastructure is not well developed, so timely decisions / modifications through communication or video conferencing from consultant's office may not be very effective. Secondly, as the field operations run round the clock, so any delayed response of the consultant may result in loss of time and standby charges of equipment, therefore, it is better to bring in the consultant for onsite supervision.
3	Section-2.1: Will OGDCL provide the petrophysical interpretation for QP wells that will be part of the study? If yes in which format?	OGDCL will provide the interpretation, both in PDF and LAS format, however, consultant should run its independent interpretation on some key wells.
4	Section-2.1: Is there are a tentative number of wells identified by OGDCL for construction of multiple 1D MEM models that will be used for 3D MEM full scale model? If yes how many wells out of 75 wells?	Consultant will screen out the number of wells based on the log interpretation to be used for the construction of 1D and 3D MEM full scale model. However the per well cost may adjusted accordingly

  
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5	Section-2.1: Is OGDCL focused in part of QP field for this study or its extended to the whole field and all formations?	As per Clause 3.2 of TOR, the consultant will construct 3D Geo-Mechanical Earth Model and Fracture Feasibility study based on 1D models and provided surfaces, for all available wells/data of tight SML, SUL & HRL reservoirs in the tentative Area of Interest (AOI) as shown in Enclosure-2 for each reservoir (review the area of interest i think it should be full field
6	Section 2.2.: Is there any fracture gradient or Leak off test data available for potential wells that can be used for model calibration?	No leak off test data for the mentioned reservoirs is available, however, Formation Integrity Test (FIT) and Shoe Bond tests has been carried out and available. Similarly, pressure and temperature gradient estimates, due to overburden, can be provided based on the history and experience of the field.
7	Section 2.3: Is Petrophysical Interpretation part of the analysis for the final list of selected wells?	Same interpretation to be used as in section 1
8	Section 2.3: Does OGDCL require an analytical approach for production forecast?	Consultant will generate the incremental production based on FRAC design and based on that incremental production generate a simulated production profile
9	Section 2.4: How many hydraulic fracturing design models are anticipated by OGDCL and potentially how many future wells will be included in this task?	The bidders may quote unit price per stage considering at least 3 stages in vertical and horizontal well. However bidder can recommends number of stages based on its analysis.
10	Section 2.4: Is OGDCL expecting to do execution with the same contract or as separate contract is expected for it? If a separate contract then please clarify what OGDCL expects in terms of optimization of hydraulic fracturing during execution? Will the execution happen in parallel with this study?	Execution of the Frac Job is not covered in scope of work. Yes optimization of hydraulic fracturing during the execution job is part of this study and that why OGDCL has included onsite supervision in the Financial Proposal.
11	2.5.4: Is a daily rate anticipated for the fracture engineer consultant for this task? Please clarify	The bidders may quote per day rate for at least two professionals, along with their experience and credentials, for onsite supervision: 1. Frac Expert/Supervisor 2. Geomechanical Engineer At the time of execution, OGDCL will decide which professional to bring in for onsite supervision of job execution.

  
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12	3.1: Is OGDCL anticipating only Tight layers in SML, SUL and HRL for hydraulic fracturing execution or it can be extended to the conventional layers as well?	Scope of work is mainly focused on tighter part of mentioned reservoirs. However, the tight facies of HRL can be looked into based on the Sedimentological study and well log interpretation.
13	3.1.3: Are the reservoirs producing with commingled flow or with separate completions?	Save for the recently drilled and completed two wells, most of the wells are single producers and dedicated to a single reservoir.
14	3.1.5: Is seismic interpretation data available with the horizons mapped for the whole field? Will that be provided to the consultant? If yes which and how many horizons?	OGDCL will provide the mapped horizon data on top of each reservoir. Top HRL, Top SUL, Top SML-1 & Top SML-3.
15	Is input and interpreted data available for shallow horizons above the reservoirs which is required in the construction of 3D MEM. If yes, how many horizons?	Interpreted data for one shallow reservoir (Pirkoh Limestone) is available.
16	Is wellbore stability part of this evaluation or the work is only limited to hydraulic fracturing in the three reservoirs mentioned?	The scope of work is limited to hydraulic Frac but consultant should look into the hole stability while designing a pilot well.
17	3.1.9: Is OGDCL willing to use any other software for Fracturing design other than FracProPT?	The consultant may use a compatible software other than FRACProT which is used world wide and acceptable in E&P.
18	3.1.12: Please clarify the extent of onsite support, when will that be expected? After the completion of this study or in parallel?	Reply given at Question-11 above
19	3.2: Is AVO Inversion work already completed by OGDCL or will Schlumberger perform the AVO inversion?	This AVO work is complete and was performed to carry out rockphysics and pre-stack inversion to quantify the elastic properties - acoustic impedance, Vp/Vs ratio and density - over 315 Km <sup>2</sup> in the Qadirpur-3D area. Standard AVO attributes including Intercept (P), Gradient (G) and Poisson's Ratio Contrast (PRC) are available
20	3.3.3.: Is there any test data available on Ditch cuttings? If not, does OGDCL requires Consultant to do any required testing?	Bidder should clarify the nature/type of tests, for OGDCL to check the availability of data.
21	What core testing data is available for these reservoirs and is there any geomechanics core testing done? If not is this part of the scope of work?	Routine core analysis and special core analysis reports are available. Geomechanics testing on cores is not part of scope of work, however, bidder should clarify what kind of geomechanics testing on cores the bidder is asking about, then OGDCL can check whether those tests have already been done or not and if they are required now.

  
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22	Phase:2: Does OGDCL require fracture design on 1D MEM models and then on 3D MEM models separately? Or one final fracture design from the 3D MEM?	Fracture design for 1D MEM is part of Phase-I and for 3D MEM is part of Phase-II of the study, therefore, both are required if warranted by the results of the preceding activity/activities as per Clause 2.5 of TOR
23	Out of total wells in the field, how many 1D MEM will be required? If OGDCL isn't sure about the no. of 1D MEM, wondering if bidder may quote unit price i.e. price / 1D MEM?	As per Clause 2.5.1, the consultant will review the data and select suitable candidate well/ wells for 1D MEM, however, for financial proposal the bidders may quote unit price per 1D MEM
24	We do understand that the Frac feasibility studies will be performed on best candidate wells, but at this point in time not sure how many wells will meet the candidate's criteria. Not knowing the number of wells for the frac feasibility studies, it is difficult to quote the lump sum cost. Wondering if the OGDCL can quantify the no of candidate wells. Further if the candidate wells are vertical or horizontal? Also please let us know if the prices be quoted for single stage or multiple stages. If multiple, how many stages? If OGDCL isn't sure about the quantities, wondering if bidder may quote unit price i.e. price /feasibility study/vertical well/single stage, price/feasibility study/vertical well/multi-stage, price/feasibility study/horizontal Well/single stage, price/ feasibility Study/horizontal well / Multi-stage.	As suggested by M/s Weatherford, the bidders may quote unit price i.e. Price per feasibility study per vertical well per single stage, Price per feasibility study per vertical well per multi-stage, Price per feasibility study per horizontal Well per single stage, Price per feasibility study per horizontal well per Multi-stage. However, in case of Multi-stage, the discount per stage after first stage shall be quoted by the bidders
25	Same question for the Frac design as stated above at no. 2.	Same answer as above, along with discount in case of multiple frac designs
26	Onsite supervision cost is directly linked with the number of operational days which may vary. It is requested if the number of days may be quantified for the quotation purpose or let the bidder quote per day rate.	The bidders may quote per day rate for at least two professionals, along with their experience and credentials, for onsite supervision: 1. Frac Expert/Supervisor 2. Geomechanical Engineer At the time of execution, OGDCL will decide which professional to bring in for onsite supervision of job execution
27	As per ITT, 3D MEM is required if warranted by Phase-1. In such scenario, will OGDCL provide the Geo- Static model or shall it be generated by contractor?	OGDCL will provide the mapped horizon data on top of each reservoir. Top HRL, Top SUL, Top SML-1 & Top SML-3.

  
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Please provide details on the type of pre-stack AVO inversion performed and the output parameters available for the 3D Geo-Mechanical model.

The objective was to carry out rockphysics and pre-stack inversion to quantify the elastic properties - acoustic impedance,  $V_p/V_s$  ratio and density - over 315 Km<sup>2</sup> in the Qadirpur-3D area. Standard AVO attributes including Intercept (P), Gradient (G) and Poisson's Ratio Contrast (PRC) are available.



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