XRD, XRF, TOC, PYROLYSIS, VITRINITE REFLECTANCE RO (GROUP A1 & A2) AND GAS SORPTION ANALYSIS, CORE HANDLING & CORE PRESERVATION TE # PROC-SERVICES/CB/ML-2092/2017

CLARIFICATION # 01

Query No1: The wellsite XRD, XRF and Pyrolysis job consists of 3 sets of analytical instruments besides the sample prep and sample catching job and requires 4 personnel each for B and C services in two shifts. Will OGDCL allow 4 personnel on wellsite?

Response 1: It is mentioned clearly in simple English about two persons (as OGDCL has in existing contract). However, to run the equipment does not mean a specialist. OGDCL would like that specialist should interpret all the results/analyses at wellsite.

Query No2: a) Will LECO TOC be required at base lab as well as calculated TOC from Pyrolysis? b) Please elaborate Original TOC with reference to published literature to make sure WFT may not provide the undesired proposal. c) (Comparison of kerogen determined by R0 and Tmax by SRA or RockEval.) is something that will be tailored for OGDCL. Will OGDCL pay for it? If yes, the price may be included in commercial table. d) S2 values less than 0.5 mg/g are indicative of either over mature or organically lean source rock and will yield unreliable Tmax values. In that case calculated R0 will not match the measured R0. Further this technique was established for Barnett Shale with Kerogen Type-II only. Will OGDCL still require it as it is not practiced elsewhere in the world?

Response 2: a) Yes. OGDCL requires the accurate TOC value whatever be the equipment is used.
b) This is very simple to search by google.
c) This is meaningless to ask for payment of "tailoring". OGDCL require the services. Accept or decline.
d) All the observations may be documented at the time of bidding/reporting.

Query No3: which particular method OGDCL wants to be adopted for quantitative clay typing and please elaborate. Please also elaborate Original TOC with reference to published literature to make sure WFT may not provide the undesired one.

Response 3: This is matter of education and experience. OGDCL required all possible ways to determine the clay typing which can be used in frac design. Bidder is required to be educated regarding Clay Typing and determination of Original TOC before any type of bidding.

Query No4: a) Core Description (Texture, core recovery, core logs, core image, digitized data, Oil fluorescence/cut, etc) requires the core to be slabbed into 1/3 and 2/3 and then it further requires 24-36 working hours to describe it. Further the digitized log requires 2-4 weeks to be completed. In case of wellsite shale core handling and desorption, the slabbed core will be of no use as the desorption is done on whole core sample or if even the desorption is done on slabbed core, the lost gas will be surely huge. Therefore the wellsite core handling and gas content measurement will be meaningless. Further is Oil Fluorescent cut

required for Shale Gas reservoirs. We would recommend taking this requirement out because it will not serve the purpose of gas content measurement at wellsite. b) Gas Content (Canister Gas) Sample Collection is given in the TOR but the price has not been requested for sampling tubes rental. The relevant price line may be added in the appropriate table. c) The Residual Gas/Crushed Gas is the component of the gas contant without which the analysis are incomplete. There is no price requested against it as well. The price line may please be added in the commercial table. Also, please let us know if OGDCL will want residual/crushed gas done at wellsite or at WFT lab in Karachi? d) Will OGDCL pay for transportation of cores to its G&R Laboratories/core house? If yes, it may please also be mentioned in the commercial table.

Response 4: a) This is OGDCL standard practice to describe (**Texture, core recovery, core logs, core image, Oil fluorescence/cut, etc)** core in general, without slabbing at wellsite.

b) This is part of the services.

c) As the crushed gas/residual gas is part of the canister gas, so no separate price list is required.

Query No5: a) Is there any technical reference or example of "Desorption isotherm"? If yes please share. b) GIP is not something measured but calculated from different parameters. Kindly share technical reference where GIP is measured from samples so that the technical proposal and its availability may be checked. c) The Gas composition, Gas/Oil Saturations, water saturation, Porosity and permeability of shale plugs is a paid item but there is no price requested for it. d) Please elaborate the requirement of wettability. e) Will OGDCL ship the samples by itself? f) Further will OGDCL ship whole core or plug abroad. g) If OGDCL will want the contractor to ship the core abroad (these analysis are not done in Pakistan by any Lab), there is no line item in the commercial covering the cost of shipment. The cost of may please be added in commercial and amendment may be shared accordingly.

Response 5: Bidder is to evaluate the GIP based on isotherm generated by Canister analyses. Gas Saturation can be determined by calculating the difference of porosity and water saturation. In case, Core or its plugs will be indispensable for analyses abroad, OGDCL will pay the actual cost+ 8% of handling charges (or as per practice, which ever be lower). However, weightage will be given to the bidder who has all the facilities in Pakistan.

Query No6: Please let us know if the contract will be shared among more than one contractors? If yes, does PPRA rules allow that?

Response 6: OGDCL has in existing contract as group wise.

Query No7: Will OGDCL issue letter supporting the contractor to declare the requirement is for OGDCL's work to get approvals from competent authorities?

Response 7: Yes. OGDCL, Will issue letter supporting the contractor to declare the requirement is for

OGDCL's work.

Query No8: In 3.3 the quantum of work is confirmed at wellsite against 1.9?

Response 8: In 3.3, scope of work is “planned” but in 1.9, it is not “guaranteed”. This is simple English.

Query No9: The wellsite XRD, XRF and Pyrolysis job consists of 3 sets of analytical instruments besides the sample prep and sample catching job and requires 4 personnel each for B and C services in two shifts. Will OGDCL allow 4 personnel on wellsite?

Response 9: Please refer to Response 1.

Query No10: Will OGDCL pay for the diffractograms?

Response 10: Diffractrograms and their interpretation are the part of Standard XRD analyses.

Query No11: The interpretation/integration of Base Lab results is not part of day rates or wellsite services and hence has an associated cost but the cost for it has not been requested in the commercial table which may please be added and amended copy of the TOR be shared. Further the time of report preparation is less than its review by the client which may be other way around.

Response 11: OGDCL considers the data integration/interpretation and report writing are part of the analyses whether they are done at Wellsite or in Base Labs.

Query No11(a): As explained above, the personnel required for both the services would be 4+4.

Response 11(a): Please refer to Response 1.

Query No12: By moving between locations does OGDCL mean one round trip from its lab to wellsite and back?

Response 12: Moving between locations means from one well to another well. This is simple English.

Query No13: Will OGDCL require separate TOC equipment at wellsite besides pyrolysis equipment?

Response 13: Please refer to Response 2 (a).

Query No 14: Mobilization for Canister Services to wellsite is not covered in the commercial table. It may please be added and amended TOR may please be shared.

Response 14: Bidder may claim one time mobilization charges from base camp to OGDCL’s location.