

CLARIFICATION#2 AGAINST TENDER # PROC-SERVICES/CB/EXPL-5351/2022 A
GEOCHEMICAL EVALUATION OF THE PETROLEUM SYSTEM OF THE KOHAT-POTWAR FOLD BELTS
(UPPER INDUS BASIN)

Following Clarifications have been made in the subject tender.

Sr#	Questions for Clarification	OGDCL Reply
1	Please specify which data base format are suitable to load to OGDCL machines	An appropriate Data base format will be decided in later stage to load data to OGDCL machines
2	Are the TOCs measured with other methods as well? (e.g., TOC-LECO Analyzer?)	TOC data have been acquired by using LOI/LECO/RE Methods.
3	Can you please provide details on the type of data to be expected under "Oil analytical data"?	"Oil analytical data" are the distillation products along with oil physical properties i.e. gravity, viscosity, Hydrogen sulfide, salt and water content, R. Index, RVP, Pour point etc.
4	Can you please provide details on the type of data to be expected under "Well report"?	"Well report" include End of well reports/completion reports having details on stratigraphy, lithology, testing etc
5	Is there any log data in raw format (not PDF) available?	Yes. Log data will be in LAS and or in ASCII Formats.
6	Are any of the GC and GCMS data available in raw format (original run file from the analytical instrument) or only as numerical values in tables and graphs (excel and/or pdf)?	Only as numerical values in tables and graphs
7	Are there any rock (cores, side wall cores, cuttings) and fluid samples available for additional analyses or will all the new analysis require new sampling? Can the list of available rock and fluid samples be shared with the consultant during Phase I?	Cores, Side wall cores and cuttings are available while outcrop and fluid samples will be collected on the recommendation of contractor.
	<u>Phase II</u>	
8	Please confirm that for organic petrographic analysis only vitrinite reflectance measurements are included (hence excluding visual kerogen general assessment).	Visual kerogen analysis (VKA) is the part of VR and is included.
9	Can any additional analysis be proposed (as optional) in the lab work section? Should these be added to the existing table or as a separate table?	Yes, any additional analysis can be proposed (as optional) in the lab work section as a separate table.
10	Do OGDCL plan to include pressurized samples collection? Please note that pressurized sample bottles require handling by trained personnel to ensure safety and quality.	Oil and gas samples will be collected from well heads.
11	As part of the lab analysis, for Gas Samples: please confirm that item #26 "Isotopic analysis of sulfur" is expected to be measured on H ₂ S. Is this measurement expected to be performed on pressurized gas samples? What	Sulfur is available in elemental and H ₂ S forms. Objective is to know the origin and genesis of H ₂ S in a part of the basin. H ₂ S will be collected from well head.

	kind of pressurized cylinders are planned to be used by OGDCL for sampling in case of positive answer, please specify model and manufacturer as we are familiar with most of the pressurized cylinders from various vendors.	
12	What is the expected H2S level? What is the expected reservoir pressure? Depending on the pressure and H2S level different type of metallurgy need to be considered for sample containers to manage HSE risks properly.	H2S level varies up to 12 mol%. Samples will be collected from wellhead.
13	Would OGDCL please confirm if collection of samples need to be included in the price according to the table Phase-III, which contradicts with the statement in section 13, item iii –“Collection, transportation of samples and supporting study material from Pakistan to consultant office (abroad) will be responsibility of OGDCL.”	Collection of samples from contractor end is not required. OGDCL will collect samples. Price according to the table Phase-III include the provision of required stuff at OGDCL head office, for collection of oil and gas samples
14	Since there is no separate line for transportation of the samples, would OGDCL please confirm we do not need to include transportation costs in the prices according to section 13, item iii –“Collection, transportation of samples and supporting study material from Pakistan to consultant office (abroad) will be responsibility of OGDCL.”	Yes.
15	Since gas isotopic analysis samples are mostly collected in isotubes, will OGDCL need Bidder to provide sampling manifold or OGDCL will acquire the manifold themselves and only need bidder to quote isotubes for gas?	Complete set
	<u>Phase III</u>	
16	Please explain if the phrase as stated in tender (section 3.3 b, p. 4) is correct - “1D OR multi-layer map-based BPSM”. A fully coupled 3D BPSM will model – as requested in the tender – “Generated and expelled volume and nature of hydrocarbons (per square kilometer)”. A modelling approach solely based on 1D models can be used to assess the generation potential of source rocks at well and pseudo-well locations but will not be able to model hydrocarbon quality or quantity. A coupled approach with 1D BPSM AND multi map-based modelling would be possible, assuming that “multi map-based modelling” refers to 3D BPSM. Is that what the OGDCL is asking for? If not, could you please further specify the modelling approach that is suggested?	Objectives of 1D and 2D modelling are to model the maturity histories and to establish the relationship among source kitchens and accumulations. Hydrocarbon generation potential will be calculated by considering the net source thickness, area, organic matter richness and its oil/gas potential etc. etc. Assessment of generated and expelled hydrocarbons will be based on the maturity level and transformation of organic matter into hydrocarbons.
17	Could you please clarify the amount of structural complexity of the area? Can this	As locations of 2D transects for modeling will be decided latter, then the selected lines will reveal the amount of structural

	area be modelled without taking any structural restoration methods into account?	complexity. Structural restoration will need to be accounted for.
18	How many source rocks are to be expected?	This will be outcome of the study
19	How many reservoir levels are to be expected?	Please see Figure-3 of Annexure-A
20	Can you please provide a base map displaying the location of 2D/3D seismic surveys and any additional information regarding seismic lines/volumes (location, status /interpreted, depth converted, etc./).	Seismic base map along with required data will be provided to successful bidder if required
21	Regarding BHT, are all the necessary recordings incorporated in the log headers for (Horner) corrections (BHT measurements, circulation time, time since circulation)?	Regarding BHT, Log headers with required information are available
22	According to the tender, part of the available supporting data include: "Interpreted seismic lines of the structures". Related to the seismic lines: Are there 5 regional 2D seismic lines available with a regional extend appropriate for 2D PSM?	Seismic sections/lines are available however appropriate transects will be constructed during the study after finalization of locations
23	Are all the horizons relevant for PSM (Top Basement to surface, e.g. reservoirs rocks, source rocks, seals) fully interpreted in 5 regional seismic lines?	No.
24	Is the seismic and interpretations available in-depth domain?	No. Seismic will be converted in depth.
25	Given our understanding for the structural complexity of the area structural restoration will be required as an input for 2D PSM. Is OGDCL going to provide the structural restorations for the 5 2D PSM models or the task is expected to be undertaken by the contractor?	By the contractor
26	Regarding the mention "Consultant will provide (if required) the bottles /ampules /tubes for collection and shipment of oil and gas samples", please specify if the cost of any bottles/ampules/tubes or sample containers in general should be included in the financial bid.	Already included in financial bid format.