PROCUREMENT DEPARTMENT, ISLAMABAD FOREIGN SECTION C

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ANNEXURE 'A'

Material

QUANTITATIVE INTERPRETATION SOFTWARE WITH M&SS.

Tender Enquiry No

PROC-FC/CB/EXPL/HO-3179/2017

Due Date

Evaluation Criteria

FULL

SCHEDULE OF REQUIREMENT

	D CALL.	
Sr No. Description	Unit	Ouantity : Unit Price : Cotal Price : Unit Price : Cotal P
QUANTITATIVE INTERPRETATION SOFTWARE PURCHASE.	Number	
TWO YEARS MAINTENANCE AND SUPPORT SERVICES (INCLUSIVE OF SOFTWARE TRAINING) as per TOR.	Number	1

Note:

Terms Of Reference

FOR

QUANTITATIVE INTERPRETATION SOFTWARE

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IT'S MAINTENANCE & SUPPORT SERVICES AGREEMENT

M/s OGDCL Exploration Department intends to procure Quantitative Interpretation (QI) software along with hiring for its Maintenance and Support services. QI techniques are being used worldwide and are considered as established tools for hydrocarbon identification. In light of this development the specifications for a QI Software and its M&SS are as follows;

- The software language should be English only and there must not be any grammatical / spelling mistake in the whole software.
- M/s OGDCL intends to purchase 01 Software licence, Afterwards OGDCL shall become the owner of the intellectual property without paying any extra fee/charges.
- QI software version should be the latest available.
- Software updates, upgrades and modifications will be sent to OGDCL via any convenient, fast and reliable media, to upload by bidders technical team accordingly.
- Any fault, bug in software reported should be rectified within 48 hours.
- On the startup, when required, provide technical advice on atleast 03 projects by bidder's resource through any media or onsite.
- Provide details of relevant resources presently working in your organization along with their Resumes,
- Initial term of M&SS contract will be for 02 years and can be extendable further with mutual consent).
- The bidder shall be able to provide M&SS throughout the 2 years-contract period onsite (locally) and online as well (internationally even when required).
- The M&SS rates (for all modules, etc.) shall be quoted in tabular form as unit rates, monthly, annual and for the whole contract, and shall remain same for the whole period of contract.
- In case of award of contract, the vendor will have to provide project workflows.
- M&SS start date will be set as the date of signing of agreement after installation of software on hardware.
- Bug fixes, patch, new version and updates, should be installed as they become available, free of cost during M&SS contract period.

- Any updates and enhancement to existing documents may also be shared, as soon as they are available.
- Online, and call center help and guidance should remain available on 24/7 basis.
- OGDCL shall make all payments quarterly against verified invoices.
- OGDCL shall pay clean invoices, within Thirty (30) days after the receipt of invoice.
- OGDCL will not make any advance payment.
- About 04-08 M/s OGDCL relevant professionals will be provided adequate training on the software for achieving expertise (in house / abroad), without training cost.
- Payment for software purchase will be made after signing of agreement and its installation whereas payment for software maintenance and support services charges will continue for period of 02 years.

Technical & Financial Evaluation Criteria

• Technical and Financial evaluation criteria (undermentioned) has been set to qualify for the tender. For final bid evaluation, 70% weightage will be given for technical evaluation and 30% for financial evaluation. 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.

Technical Evaluation:

The Technical evaluation will be based on the criteria under mentioned in technical Evaluation table. The potential bidders are required to strictly follow the sequence of Technical Evaluation Criteria Table and submit their proposals accordingly.

With respect to TEC Table; in <u>Description of Technical Terms</u>, bidders software must fulfill/score for all terms to qualify other than "Any additional valuable Features" terms. Else the bidder will be declared as technically non-responsive. However "additional features" carry extra points and will count in Technical qualification.

With respect to TEC Table; in the listed <u>General Terms</u> atleast **01 point** each in A, B and C Terms respectively is required for scoring, else the bidder will be declared as technically non Responsive and its financial proposal will not be opened. The qualifying marks in Technical Evaluation are therefore **83 points**.

Technical Evaluation Criteria Table

Sr. No	Description of General Terms	Does the Function Exist? Type 'Y' for Yes and 'N' for No	Marks Allocated	Marks Obtained	Total Marks Scored
Α	Number of years in QI Software	101110	≥15 years = 3 marks,		
	sales and M&SS projects all over the world.	-	10-15 years=2 marks, 05-10 years=01 mark.		
В	No. of Quantitative Interpretation projects performed by bidder for clients throughout the world	_	100-150projects=3mk, 75-100 projects=2 mk 50-75 projects=1 mk.		
С	No. of Quantitative Interpretation centers around the world	-	06-08 centers = 4 mk, 04-06 centers = 3 mk, 02-04 centers = 2 mk, ≤ 02 centers = 1 mk.		
	Description of Technical Terms	Y/N	90		
1	General		46		
	Well data conditioning, processing and				
	 Cross-plotting Single and multi-well cross-plots should be interactively connecting to the well logs 	Y	0.5		
	 Cross-plot display by well or Working Interval 	N	0.5		
	 Display 2D/3D seismic and well data in the same display panel 	Y	0.5		
	 Cross-plotting capable of handling 3D volumes 	u	0.5		
	 Viewing of data in MD, TVD or time 		0.5		
	■ Data density display		0.5		
	 Add and save polygons and best fit lines within the cross- plot 		0.5		
	 Polygons could provide classification highlight overlays on well and seismic 		0.5		
	displays ■ Matrix cross-plot		0.5		
	Measure 'maximum correlation' and 'lag' from		0.5		or with

cross-correlations between		
any two logs belonging to the		
same well		
 Histogram plot with statistics 	0.5	
and standard		
deviation/percentile options		
Cross-plots without any data	0.5	
point limits		
■ De-spiking and log	0.5	
conditioning		
■ Vp, Vs, and Rho log	0.5	
prediction		
 Vs prediction from Vp 	0.5	
Litho-facies classification	0.5	
■ Vp, Vs, and Rho log	0.5	
prediction		
Elastic log calculation	0.5	
■ Facies log creation, QC and	0.5	
analysis		
 Log calculator 	0.5	
■ Programmer for logs,	0.5	
discrete value sets, and		
horizons		
 Zero-incidence synthetics 	0.5	
and log filtering		
Any additional valuable	01	
features		
Domain Conversion		
MD to TVD – measured	0.5	
depth to true vertical depth	0.3	
(standard minimum curvature		
method)		
TVD to TWT - Could	0.5	
optionally make a time-depth	0.5	
conversion in the absence of		
checkshot		
Time depth conversion tool to	0.5	
calibrate seismic and well		
Any additional valuable	01	
features		
Seismic gather conditioning	2.5	
■ Muting	0.5 0.5	
■ Filtering	0.5	Ļ

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NMO correction and velocity	0.5	
analysis		
Filtering	0.5	
■ De-convolving	0.5	
Stacking	0.5	
Scaling	0.5	
Smoothing	0.5	
Flattening	0.5	
 Time-depth conversion 	0.5	
■ Any additional valuable	01	
features		
Horizon data conditioning		
Horizon picking	0.5	
 Interpolation 	0.5	
Smooth	0.5	
Copy and rename	0.5	
Time depth conversion	0.5	
 Advanced smoothing with 	0.5	
specified filter size		
 Snap horizons to well markers, 	0.5	
Horizon calculator and creation	0.5	
using existing 2D		
 horizons, points values, or well 	0.5	
markers		
■ Any additional valuable	01	
features		
Well tie and wavelet extraction		
Statistical wavelet	0.5	
 Rickor wavelet 	0.5	
 Well based wavelet 	0.5	
 Use stretch and squeeze to tie 	0.5	
and update wavelet		
Scale wavelet	0.5	
■ Horizon calculator and	0.5	
creation using existing 2D		
horizons, points values, or		
well markers		
Data import/export as LAS,	0.5	
ASCII, SEGY, and XLS, from		
.rok files, OpenSpirit or Petrel		
plugin links,		

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	•	Multi-well visualisation, input,		0.5		
		analysis and QC				
	•	Built-in comprehensive log		0.5		
		editing and conditioning,				
		including anisotropy				
		correction				
	=	Seismic traces for wavelet		0.5		
		extraction can be vertical				
		traces around the wellbore or				
		well path following composite				
		traces				
		Field-wide wavelet and		0.5		
		synthetic archival and				
		retrieval at any time,				
	•	Wavelet averaging, provided		0.5		
		for inversion				
	-	Any additional valuable		01		
		features				
	2D Feat	ures				
	•	Quick creation of tuning		0.5		
		wedge and layer cake				
		models from well markers				
	•	Creating model along seismic		0.5		
		line (inline/crossline, 2D				
		survey, or digitised arbitrary			:	
		line)				
		Range of zone fill options		0.5		
		(rock physics models, log				
		data, constant, quantity,				
		neural network)				
	•	Zone properties could be		0.5		
		varied laterally and				
		orthogonally				
	•	Zone property interpolation		0.5		
		between events, guided by				
		user defined sequence				
		stratigraphic layering				
		Vertical smoothing,		0.5		
		Gassmann dry rock and		0.5		
		unconventional fluid				
		substitution,				
		Dynamic model updates		0.5		
		enabling interactive				
		modelling of changing zone				
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properties, fluid contacts and			
saturations			
 User could interactively move 	0.5		
fluid contact and			
automatically recalculate fluid			
substitution,			
Porosity perturbation	0.5		
■ Synthetic reflectivity and	0.5		
impedances			
Gather stacked trace display	0.5		
with AVO attribute plot	0.5		
 Instantaneous attributes 	0.5		
calculation from synthetic	0.5		
and seismic			
 Polygon indicator allows 	0.5		
cross-plot polygons to be	0.5		
highlighted on 2D model			
Ability to measure and cross-	0.5		
•	0.5		
plot attributes Sight display (display second			
orgin diopia) (diopia) cocord	0.5		
quantity in a small resizable			
dragable window)			
Create linked viewers for	0.5		
easy comparison of attributes			
Quantity calculator and	0.5		
residuals functionality			
Able to extract pseudo wells	0.5		
(vertical or user digitised			
deviation) from 2D model and			
save to project			
 Any additional valuable 	0.5		
features			
3D Functions			
■ Software must have 3D	0.5		
Visualization			
■ Loading in external 3D	0.5		
volumes (inversion results			
etc.) and have full QC and			
analysis capabilities			
To relaunch existing sessions	0.5		
and create 3D sessions from			
3D surveys, 2D surveys			
Seismic spectra plot	0.5	:	

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	- M	lap Viewer should allow for	0.5		
	aı	ny volume in a 3D session to			
	b	e drawn at a given time			
	sl	lice/depth, or horizon (with			
	O	r without offset). Linked to			
	a	ctive 3D session, as well as			
		ther Map Views that are			
		pen for quick yet accurate			
:	·	omparison. Pre-measured			
		·			
		ttributes can also be			
		isualised	0.5		
		ny additional valuable	0.5		
	f€	eatures			
2	AVO			09	
	•	AVO attributes plot from	0.5		
		gathers or partial stacks,			
	-	Rapid modelling of AVO	0.5		
		attributes or any single			
		interface,			
	-	Dynamic AVO response	0.5		
		windows shown in all log	2.5		
		gather display for rapid			
		comparison of responses			
		at two attributes plot lines,	_		
		AVO response and elastic	0.5		
		property variations			
	-	AVO modeling	0.5		
	•	AVO synthetic	0.5		
	-	Wedge modelling	0.5		
		3D AVO volumes	0.5		
	-	AVO analysis	0.5		
		Gradient analysis	0.5		
	-	Intercept	0.5		
	-	AVO attributes mapping	0.5		
	-	AVO volumes 3D	0.5		
	-	Gassmann fluid	0.5	·	
		substitution,			
	-	3D synthetic generation	0.5		
	-	Spectral merge with two	0.5		
		quantities being merged	- · · -		
		above/below given or peak			
		frequency	01		
	•	Any additional valuable			
		features			

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 Rock physics built-in templates Petrophysical elastic model Facies and fluid classification Gassmann dry rock modelling, plus heavy oil and anisotropic Gassmann calculations Calibrating elastic properties of water, oil & gas 	
 Petrophysical elastic model Facies and fluid classification Gassmann dry rock modelling, plus heavy oil and anisotropic Gassmann calculations Calibrating elastic properties of water, oil & gas 	
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 Gassmann dry rock modelling, plus heavy oil and anisotropic Gassmann calculations Calibrating elastic properties of water, oil & gas 	
■ Calibrating elastic properties of water, oil & gas	
■ Relative Rock Physics to decompose log to trend	
log and relative log Lithology based up 0.5	
scaling, Neural Net (train on wells with full data, apply on	
wells with partial data) Log prediction using Rock 0.5	
Physics Model Templates, Up scaling data from carbonate modelling to give a carbonate model with multiple pores and a	
fracture set Grouping of Rock Physics Models into RPM	
templates External Interface Plug-in based RPMs (in addition to the existing User Programmer and Point Based RPMs), allowing	
multiple inputs/outputs Could be coded by the user	
Plot models in many cross-plot spaces when a	

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,	model has multiple		
	outputs		
	 Pass pre-mixed fluids and 	0.5	
	minerals into suitably		
	written plug-in RPMs		
	using standard mineral		
	and fluid sets and mixing	0.5	
	Dynamic user interface	0.5	
	for the control of all RPM		
	variables including sliders		
	for the fine tuning of		
	constants (primarily for		
	models with multiple		
	inputs)		
	Ability to export and	0.5	
	import RPM templates		
	and to have common		
	shared sets of templates		
	Ability to link constant	0.5	
	values between multiple		
	RPMs within a template		
	■ Ability to create RPM	0.5	
	meshes that provide the		
	basis for classification		
	polygons and the 1D/2D		
	reverse modelling functions		
	 Any additional valuable 	01	
	features		
A		10	
4	Reservoir Characterization (Inversion)	18	
	Simultaneous Inversion - PP inversion using	0.5	
	angle stacks and	0.5	
	various algorithms		
	- Model based	0.5	•
	inversion		
	- Band-limited	0.5	
	inversion		
Ì	- Spars-spike inversion	0.5	
	- Coloured inversion	0.5	
	- Extended Elastic	0.5	
	impedance inversion		
			Jane 1
			Janes .

The module should		
have a workflow		
like:		
- Input data	0.5	
- Seismic scaling	0.5	
- Wavelet/multi-well	0.5	
wavelet extraction		
and well tie		
- Low frequency model	0.5	
- Inversion	0.5	
parameterization		
- Inversion analysis	0.5	
- QC results	0.5	
,	01	
features		
Stochastic Inversion	0.5	
Create robust 3D models	0.5	
and simulation inputs from		
wells		
Model geometry to make it	0.5	
compatible with other		
geological and reservoir		
simulation models,		
Sharing well database and	0.5	
cross-plot functionality,		
■ Seismic property	0.5	
calculation: reflectivity, Al		
& GI, EEI, LambdaRho &		
MuRho,		
 Spectral inversion, 	0.5	
 Post Inversion Property 	0.5	
Prediction Features	_	
 Bayesian classification of 	0.5	
rock types		
Reservoir properties from	0.5	
impedances through Rock		·
Physics Models		
 Multi-realisation analysis 	0.5	
 Facies and fluid probability 	0.5	
trends (PDF)		
Stochastic inversion to	0.5	
integrate high frequency		
detail from the logs and		
lower frequency		

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	information in the seismic		
	bandwidth,		
	Multiple realisations	0.5	
	capture uncertainty in		
	reservoir heterogeneity,	_	
	A rapid QC on 2D sections	0.5	
	at the click of a button.		
	This allows the user to QC		
	the results of a single or		
	multiple 2D stochastic		
	inversions before running		
	multiple 3D realisations		
	 Well QC testing of 	0.5	
	stochastic inversions		
	available for single and		
	multiple inversion	0.5	
	 Advance tools to calibrate 	0.5	
	seismic and well velocity,	2 -	
	Software should handle	0.5	
	laterally varying trends		
	and handle overlapping of		
	facies (minimum 5),	2 -	
	Respect and follow trends	0.5	
	of horizontal and vertical		
	variograms,		
	■ Produce a number of	0.5	
	probabilistic realizations		
	and user must have		
	control to choose the best		
	realizations according to		
	certain criteria	0.5	
	Ranking of realisations to	0.5	
	capture the prospect		
	location	01	
	Any additional valuable		
	features		
5 Ir	nterpretation of Inversion Results	01	
	 3D volumes of facies and fluid probabilities 	01	
	Net of to Gross volume	01	
	Geo bodies	01	
	 Volumetric calculation 	01	
	 Stratigraphic slices 	01	

Financial Evaluation:

Bidder shall quote for Software licence cost along with M&SS in the following format;

	Quantitative Interpretation (QI) Software						
Licence Modules		Licence	Mainte	nance and	Support Se	rvices (M&SS) of	QI software
	Licence Module Types	(Price)	Unit Rate (Price)	Monthly Rate (Price)	Annual Rate (Price)	One Year Price (Incl. Licence cost)	Two Year Total (Price)
	Quantitative						
	Interpretation						
	Software						
	Total =				Total =		