

## **Final Deliverables**

### PreSTM (all 2 copies)

- Nav-merged shot gather
- Shot gather without (before) regularization
- CMP gather with (after) regularization, before migration
- Raw CMP gather after migration
- Final CMP gather after migration, noise attenuation, gather flattening
- Raw stacks (full, near, mid, far angles)
- Final stacks with signal enhancement, filter and gain (full, near, mid, far angles)
- Migration velocity
- Stacking velocity
- Anisotropy eta

### PreSDM (all 2 copies)

- Raw CMP gather after migration
- Final CMP gather after migration, noise attenuation, gather flattening
- Raw stacks (full, near, mid, far angles)
- Final stacks with signal enhancement, filter and gain (full, near, mid, far angles)
- Migration velocity model
- Anisotropy model delta and epsilon, dip and azimuth

### FWI (optional)

- 3D FWI interval velocity model in Depth Domain as 3D volume (2 copies)
- Average velocity derived from 3D FWI interval velocity model in Time Domain and in Depth Domain as 3D volume (2 copies)
- Final Processing report in digital and paper versions (2 copies). The final processing report shall include, but not be limited to, a description of the methodology, summary on each processing sequence, parameter test results and decisions and conclusions of the processing.

### FWI Processing Sequences (Optional)

- Minimum phase high-cut filter as appropriate for FWI inversion frequency range
- Resample as appropriate for FWI inversion frequency range
- Mute as appropriate for FWI-inversion
- Set up initial TTI-velocity depth model
- Ten(10) inline and Ten(10) crossline target-line-APSDM
- Refracted Wave FWI inversion run 2-8 Hz or 2-10 Hz frequency ranges (to be quoted as separate price for each option). Minimum three(3) frequency sub-bands within 2-8

Hz or 2-10 Hz frequency ranges and ten(10) iterations per sub-band are the basic requirements of the TTI-FWI-Scope-of-Work.

- Ten(10) inline and Ten(10) crossline target-line-APSDM
- Reflection FWI inversion run 2-8 Hz or 2-10 Hz frequency ranges
- Ten(10) inline and Ten(10) crossline target-line-APSDM

TENDER NO. : ITB/TG-Offshore/016/001  
TENDER TITLE : TIMOR GAP OFFSHORE BLOCK, UNIPESSOAL, LDA  
SUBJECT: CLARIFICATION NO. 2  
DATE : 30 March 2016

Item No.	Tender Clause No.	Description as per Tender Document	Bidder's Clarification	Company's Response
1	Addedum-1	Final Deliverables	<p>It is mentioned that 2 copies of final deliverables need to be submitted.</p> <p>Please specify the media in which the each copy of deliverables needs to be submitted.</p>	3592 tapes. Bidder may propose other media / tapes which has higher storage capacity
2	Clarification No.1	AVO and Inversion	<p>It is mentioned in Clarification no. 1 that pricing need to be submitted for AVO and Inversion option.</p> <p>Please confirm the followings regarding the same:</p> <ol style="list-style-type: none"> <li>1. Scope of work for AVO</li> <li>2. Please confirm the volume and time window on which AVO to be carried out</li> <li>3. Provide list of deliverable for AVO</li> <li>4. Inversion Scope of work (whether pre stack or post stack inversion is required)</li> <li>5. Please confirm the volume and time window on which inversion to be carried out</li> <li>6. Please confirm the number of wells to be integrated for inversion and provide details of available log data for each well.</li> <li>7. Provide list of deliverables for Inversion</li> </ol>	<ol style="list-style-type: none"> <li>1. See below (Appended into this clarification)</li> <li>2. Volume up to 2780 sqkm, the work shall be decided post APSTM – APSDM job award</li> <li>3. See below (Appended into this clarification)</li> <li>4. Pre stack inversion required. See below (Appended into this clarification)</li> <li>5. Volume up to 2780 sqkm, the work shall be decided post APSTM – APSDM job award</li> <li>6. 3 wells. The well data (measured shear data etc.) shall be provided after job award</li> <li>7. See below (Appended into this clarification)</li> </ol>

3	PART D: Content of Proposal 4.	The fee proposed must be a fixed price quoted indicating a total gross amount in USD which is 10% withholding tax included	Please confirm that the applicable withholding tax is 10%.	Yes, the fixed price quoted indicating a total gross amount in USD which is included 10% withholding tax.
4	Draft Service Agreement 12.4	Penalty Fees: Should the CONTRACTOR be in breach of any or all of its obligations in providing the Services within time specified under the conditions stipulated in this Agreement, the CONTRATCOR consents to pay the COMPANY a penalty corresponding to 0.3% of Contract Price per day, but not exceed 10% of Contract Price.	Common industry standard for Penalty is 0.5% per week, not exceeding 7.5% of the total contract price.  Request to review and suitable modification.	Please change and modify draft service agreement clause 12.4 <i>(Should the CONTRACTOR be in breach of any or all of its obligations in providing the Services within time specified under the conditions stipulated in this Agreement, the CONTRATCOR consents to pay the COMPANY a penalty corresponding to 0.3% of Contract Price per day, but not exceed 5% of Contract Price).</i>
5	Appendix II Schedule of Fees and Insurance Coverage 5. Penalty Fees	In connection with article 12.5 of the Service Agreement, if CONTRACTOR fails to deliver the final report within three (3) months after receipt of Environmental Impact	As the scope does not involve Environmental Assessment study, this should be deleted.	Yes, the scope does not contain Environmental Assessment Study. So, please ignore the mentioned part (Environmental Assessment Study).

		Assessment study, the CONTRACTOR agreed to pay a penalty corresponding to 0.3% of Contract Price per day, but not exceed 5% of Contract price		
6	Appendix II Schedule of Fees and Insurance Coverage 7. Bank Guarantee	Bank guarantee shall be valid from contract Effective Date and expiry twelve (12) months after acceptance of the final report.	For service contracts, Bank Guarantee validity should be 1 month beyond the contract period. Also Bank Guarantee should be returned back to contractor upon receipt and acceptance of final deliverables including reports.  Hence, please modify this clause accordingly.	<i>No. We stick on our draft contract. (The Bank Guarantee must be submitted and approved by the COMPANY's representative. This guarantee will be returned to the CONTRACTOR within two (2) weeks, without interest, starting from the date which the CONTRACTOR has relieved from all obligations under the Agreement and the final Work Acceptance Certificate has already been issued. Bank guarantee shall be valid from contract Effective Date and expire twelve (12) months after acceptance of the final report.)</i>

The scope of work will perform forward modelling from the available well data to develop a correlation between well logs and seismic derived rock properties. This correlation will be used to derive meaningful attributes for both reservoir and lithology classification. The rock properties observed in the local wells(s), together with the available seismic interpretation will be used to parameterize a seismic reservoir characterization workflow to predict the presence and distribution of possible reservoirs, and their lithology and fluid content from simultaneous seismic AVO inversion results.

The seismic inversion results will be interpreted using the previously determined rock physics analysis and a prediction of the probability of lithology and fluid prediction will be made.

### **Methodology**

- Contractor is requested to recommend following steps:

- 1) Data Loading & Verification
- 2) Log Generation, Rock Physics & Cross plot analysis
- 3) Well-Seismic Ties
- 5) Gather Conditioning, if required
- 6) Pre-stack Inversion
- 7) Probability Analysis for lithology and fluid content discrimination
- 8) Reporting

- Contractor may propose alternative approaches and new technologies with potential to improve the outcomes of the seismic QI study.
- Proposed software should be listed.

### **Deliverables**

- Contractor to provide lists of standard and additional deliverables, with proposed formats  
These should include but not be limited to:

#### Rock Physics analysis:

- All final edited, computed and interpreted log curves (.las)
- Petrophysical cross plots and probability distribution functions (PDFs) for lithotypes/fluids

### Well-Seismic Ties

- Final time depth curves (ascii)
- Final well synthetic trace (segy)

### Conditioned Seismic data

- Final conditioned gathers / angle stack data as appropriate (segy)

### Pre-stack Global Simultaneous Inversion (segy + zgy)

- Low-frequency models; P-impedance, Vp/Vs, and Density
  - Absolute and Relative - P-Impedance
  - Absolute and Relative - S-Impedance
  - Absolute and Relative - Poisson's ratio
  - Absolute and Relative - VP/VS Ratio
  - Absolute and Relative - Density
  - Derived attributes as required.
  - Final wavelets used in the inversion (ascii)
- Velocity Model – used to generate the low frequency models

### Lithology and Rock Properties Prediction ( segy + zgy)

- Gas sand probability volume
- Water sand probability volume
- Shale probability volume

### Final Report

- PowerPoint style report (PDF)

All of these data components to be delivered in a Petrel project.

TENDER NO. : ITB/TG-Offshore/016/001  
TENDER TITLE : TIMOR GAP OFFSHORE BLOCK, UNIPESSOAL, LDA  
SUBJECT : CLARIFICATION NO. 3  
DATE : 06 April 2016

Item No.	Tender Clause No.	Description as per Tender Document	Bidder's Clarification	Company's Response
1	Clarification No.2	Deliverables	it is mentioned under deliverables that the data need to be provided in 'segy +zgy' format. As 'zgy' is a specific vendor format we would submit the deliverables in standard 'segy' format. Further it is mentioned that "All of these data components to be delivered in a Petrel project". We will submit the deliverable in industry standard format instead of a Petrel project. Please confirm if this is acceptable.	Accepted
2	Technical Questionnaire Form	Item 14	In the Item 14 of technical questionnaire has the SOW completing in 9 months, however in the tender invitation (page 4 of 5) stating the project completion in 6 months. Please confirm	Project completion shall be in 6 months
3			Is Bidder allowed to combine proposal or Bidder needs to submit 2 separate proposals of one for Technical and one for Commercial?	Bidder may submit a combine proposal