



**ऑयल इंडिया लिमिटेड**  
( भारत सरकार का उद्योग ) पंजीकृत कार्यालय: दुलियाजन, असम  
**Oil India Limited**  
(A Government of India Enterprise) Registered Office: Duliajan, Assam

**Rajasthan Project**  
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*(Forwarding Letter)*

To,

1. M/s. Western Geco/Schlumberger, Mumbai
2. M/s. ION-GXT, USA
3. M/s. CGG Veritas, Mumbai
4. M/s. Fugro Jason, Mumbai
5. Mr. Miles Leggett, GGR, Calgary, Canada
6. Prof. Subhashish Mallick, University of Wyoming, USA
7. Prof. Mrinal Sen, University of Texas at Austin, USA

**Tender No. JCO7600L11**

Tender Date : 1<sup>st</sup> April 2010

Bid Closing Date: 4<sup>th</sup> May 2010

**Sub: Tender No. JCO7600L11 for carrying out Pre-Stack Inversion Studies  
in Baghewala Area of Rajasthan, India**

Sirs,

- 1.0 OIL INDIA LIMITED (OIL), a Government of India Enterprise, is a premier National E&P Company engaged in the business of Exploration, Development, Production and Transportation of Crude Oil, Natural Gas and LPG with its Headquarters at Duliajan, Assam in the northeast of India. The company today has its presence in 10 (ten) states of India and in 8(eight) countries (Libya, Sudan, Gabon, Nigeria, Iran, Egypt, Yemen & East Timor) outside India as well. Its Rajasthan Project is engaged in exploration hydrocarbon in Bikaner-Nagaur Basin and production of Natural Gas from Jaisalmer Basin of Western Rajasthan.
- 1.1 Reservoir Characterizations is one of the emerging technology in today's E&P scenario that tend to answer some of the key questions such as the characteristics of the lithology of reservoirs, litho-logical sensitivity to change of type of fluid, lateral continuation of sand distribution and the type of fluid content, its lateral distribution and the fluid content. Such advanced technology is used by all the Major Oil Companies worldwide for prospect identification and reservoir characterization, e.g. to investigate reservoir distribution and reserves over the prospect or field area, which in turn helps in maximizing the success of exploration, appraisal and development. This type of specialized studies involve integration of well and seismic data (Pre-stack and Gather) and thereafter, inversion of offset dependent seismic amplitudes. This is expected to provide a detailed analysis of the reservoir rock properties, fluid properties, predict lithology and fluid types for better prospect evaluation, estimate lithology response to change of fluid types and hence forms an important element in formulating a full-scale field development plan.

1.2 In line with such industry practice worldwide, OIL is also planning to carry out such type of specialized studies for its heavy oil bearing Baghewala Field in Rajasthan (India) initially for about 50 Sq. km area in Phase-I and extend the same to its adjoining area in Phase-II, if the result in the Phase-I are found encouraging. The prospective reservoirs in this field are the Infra-cambrian Jodhpur Sandstone and Lower Bilara Dolomite/Limestone occurring in the depth range of 1050-1250 mtrs.. The application of this new technology in the field is expected to help in resolving some of these issues and thereby maximizing success in appraisal/development of the field.

1.3 **Objective of the Study:** The basic objectives of the study are;

- (a) To map the Infra-Cambrian Jodhpur sandstone and Lower Bilara Carbonate formations in spatial & Temporal domain for better understanding of the reservoir heterogeneity.
- (b) To assess the hydrocarbon limits in the reservoirs in Infra-Cambrian Jodhpur sandstone and Lower Bilara Carbonate formations.
- (c) Identification of new hydrocarbon pools in Baghewala area.

2.0 The Rajasthan Project of OIL invites competitive bids from reputed and competent firms for carrying out Pre-Stack Inversion Studies in Baghewala Area in Rajasthan. One complete set of bid document for hiring of above services is being forwarded herewith. You are requested to kindly participate in the tender by sending your most competitive bid well before the scheduled bid closing date and time. For your ready reference, few salient points (covered in detail in this Bid document) are high-lighted below:

- (i) TENDER NO. : JCO 7600 L11 dated 1<sup>st</sup> April, 2010
- (ii) TYPE OF BID : Composite Bid (Technical & Commercial Bid together)
- (iii) BID CLOSING DATE & TIME: 4<sup>th</sup> May, 2010 (15:00 hrs IST)
- (iv) BID OPENING DATE & TIME: 4<sup>th</sup> May, 2010 (15:15 hrs IST)
- (v) BID SUBMISSION PLACE: Bid should be submitted on/or before Bid Closing date & time to:

CHIEF MANAGER (M&C)  
OIL INDIA LIMITED  
Rajasthan Project,  
12, Old Residency Road, JODHPUR – 342 011, Rajasthan (INDIA)

- (vi) BID OPENING PLACE : Office of the  
CHIEF MANAGER (M&C)  
OIL INDIA LIMITED  
Rajasthan Project,  
12, Old Residency Road, JODHPUR – 342 011, Rajasthan (INDIA)

- (vii) AMOUNT OF PERFORMANCE GUARANTEE: 7.5% of the total contract value.
- (viii) QUANTUM OF LIQUIDATED DAMAGE FOR DEFAULT IN TIMELY COMPLETION OF THE WORK/STUDIES: 0.5% of the total contract value per week or part thereof subject to maximum of 7.5%.
- (ix) COMPLETION PERIOD: Phase-I: 9 (Nine) weeks  
Phase-II: 4 (four) weeks
- (x) BIDS TO BE ADDRESSED TO : CHIEF MANAGER (M&C)  
OIL INDIA LIMITED  
Rajasthan Project,  
12, Old Residency Road,  
JODHPUR – 342 011, Rajasthan (INDIA)
- (xi) INTEGRITY PACT: OIL shall be entering into an Integrity Pact with the bidders as per the format enclosed vide PROFORMA-VII of the tender document. Each page of this Integrity Pact Proforma has been duly signed by OIL's Competent Signatory. The Proforma has to be returned by the Bidder (along with the Technical Bid) duly signed by the same Signatory who sign the bid. Any bid not accompanied by the Integrity Pact Proforma duly signed by the Bidder shall be rejected straight away. All pages of the Integrity Pact is to be signed by the bidder's authorised signatory who sign the bid.
- (xii) NAME OF INDEPENDENT EXTERNAL MONITOR:
- (a) Shri N. Gopaldaswami, IAS (Retd.).  
Phone: +91-44-2834-2444 (Res), 96001 44444 (Mobile).  
E-mail: gopaldaswamin@gmail.com
- (b) Shri Ramesh Chandra Agarwal, IPS.  
Phone: +91-9810787089, 91-1122752749.  
E-mail: rcagarwal@rediffmail.com

3.0 OIL now looks forward to your active participation in the tender.

Thanking you,

Yours faithfully,  
OIL INDIA LIMITED

(P. Das)  
CHIEF MANAGER (M&C)  
FOR EXECUTIVE DIRECTOR (RP)

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- iii. Representative Gather Data from the Area (Fig-1c)
- iv. Well Correlation (Fig-2)

## **PART-1**

### **INSTRUCTIONS TO BIDDERS**

1.0 Bidder shall bear all costs associated with the preparation and submission of bid. Oil India Limited, hereinafter referred to as Company, will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

#### **A. BIDDING DOCUMENTS**

2.0 The services required, bidding procedures and contract terms are prescribed in the Bidding Documents. This bidding document includes the following:

(a) A forwarding letter highlighting the following points:

- (i) Oil India Limited 's Tender No.
- (ii) Bid closing date and time.
- (iii) Bid opening date, time and place.
- (iv) The amount of performance guarantee.
- (v) Quantum of liquidated damages for default in timely mobilization.

(b) Instructions to Bidders (Part-1)

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(l) Letter of Authority-( Proforma-VI)

(m) Integrity Pact (Proforma-VII)

(o) Annexure-I: List of Available Data (3 pages)

(p) Attachments:

- i) Representative Seismic Section from the area of proposed study (Fig-1a)
- ii) Representative Gather Data from the Area (Fig-1b)
- iii) Well Correlation (Fig-2)

2.1 The bidder is expected to examine all instructions, forms, terms and specifications in the Bid Documents. Failure to furnish all information required in the Bid Documents or submission of a bid not substantially responsive to the Bid Documents in every respect will be at the Bidder's risk & responsibility and may result in the rejection of their bid.

**3.0 AMENDMENT OF BIDDING DOCUMENTS:**

3.1 At any time prior to the deadline for submission of bids, the Company may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bid Documents by the issuance of an Addendum.

3.2 The Addendum will be sent in writing or by Fax/E-mail/Courier /Post to all prospective Bidders to whom Company had issued the bid documents. The Company may, at its discretion, extend the deadline for bid submission, if the Bidders are expected to require additional time in which to take the Addendum into account in preparation of their bid or for any other reason.

**B. PREPARATION OF BIDS**

**4.0 LANGUAGE OF BIDS:**

4.1 The bid as well as all correspondence and documents relating to the bid exchanged between the Bidder and the Company shall be in English language, except that any printed literature may be in another language provided it is accompanied by an English version which shall govern for the purpose of bid interpretation.

**5.0 DOCUMENTS COMPRISING THE BID:**

5.1 The bid submitted by the Bidder shall comprise of the following components:

- (i) Complete technical details of the services and requisite state-of-the-art hardware and software to carry out such seismic inversion studies.
- (ii) Documentary evidence established in accordance with Para 9.0.
- (iii) Statement of non-compliance as per Proforma -I.
- (iv) Schedule of Rates in Proforma-II
- (v) Bid Form as per Proforma-III,
- (vi) Integrity Pact duly signed by the bidder's Authorized Signatory to sign the bid in Proforma-VII.

6.0 **BID FORM:**

6.1 The bidder shall complete the Bid Form (Proforma-III) and the appropriate Price Schedule furnished in the Bid Document.

7.0 **BID PRICE:**

7.1 Unit prices must be quoted both in words and in figures.

7.2 Price quoted by the Successful Bidder must remain firm during its performance of the Contract and is not subject to variation on any account.

7.3 All duties (except customs duty which will be borne by Company) and taxes (excluding service tax) including corporate income taxes and other levies payable by the Contractor under the Contract for which this Bid Document is being issued, shall be included in the rates, prices and total Bid Price submitted by the bidder, and the evaluation and comparison of bids shall be made accordingly. For example, personal taxes and/or any corporate taxes arising out of the profits on the contract as per rules of the country shall be borne by the bidder.

8.0 **CURRENCIES OF BID AND PAYMENT:**

8.1 A bidder expecting to incur its expenditures in the performance of the Contract in more than one currency, and wishing to be paid accordingly, shall so indicate in the bid. In such a case, the bid shall be expressed in different currencies and the respective amounts in each currency shall together make up the total price.

9.0 **DOCUMENTS ESTABLISHING BIDDER'S ELIGIBILITY AND QUALIFICATIONS:**

9.1 These are listed in Part-2.

10.0 **PERIOD OF VALIDITY OF BIDS:**

10.1 Bids shall remain valid for 120 days after the date of bid opening prescribed in the Forwarding Letter.

10.2 In exceptional circumstances, the Company may solicit the Bidder's consent to an extension of the period of validity. The request and the response thereto shall be made in writing (or by Fax or telex). A Bidder may refuse the request. A Bidder granting the request will neither be required nor permitted to modify his bid.

11.0 **FORMAT AND SIGNING OF BID:**

11.1 The Bidder shall prepare four copies of the bid clearly marking original "ORIGINAL BID" and rest "COPY OF BID". In the event of any discrepancy between them, the original shall govern.

11.2 The original and all copies of the bid shall be typed or written in indelible inks and shall be signed by the Bidder or a person or persons duly authorized to bind the Bidder to the contract. The letter of authorization shall be indicated by written power of attorney accompanying the bid. The person or persons signing the bid shall initial all pages of the bid, except for unamended printed literature.

11.3 The bid should contain no interlineation, white fluid erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such correction shall be initialed by the person or persons signing the bid.

**C. SUBMISSION OF BIDS:**

**12.0 SEALING AND MARKING OF BIDS:**

12.1 The tender is being processed according to a Composite Bid (Technical & Commercial Bid together) procedure.

12.2 The Bidder shall seal the original and each copy of the bid duly marking as "ORIGINAL" and "COPY" in one sealed envelope bearing the following on the right hand top corner.

(i) Tender No. JCO 7600 L11 dated 1<sup>st</sup> April, 2010

(ii) Bid closing date: 4<sup>th</sup> May, 2010

(iii) Bidder's name \_\_\_\_\_

12.3 All the conditions of the contract to be made with the successful bidder are given in various Sections of this document. Bidders are requested to state their compliance/ non-compliance to each clause as per PROFORMA-I.

12.4 Timely delivery of the bids is the responsibility of the Bidder. Bidders should send their bids as far as possible by Registered Post or by Courier Services. Company shall not be responsible for any postal delay/ transit loss.

12.5 Cable/ Fax/E-mail/ Telephonic offers will not be accepted.

**13.0 INDIAN AGENTS**

13.1 Bidders are requested to clearly indicate in their quotation whether they have an agent in India. If so, the bidders should furnish the name and address of their agents and state clearly whether these agents are authorized to receive any commission. The rate of the commission should be indicated which would be payable in non-convertible Indian currency according to Import Trade Regulation of India. Unless otherwise specified, it will be assumed that an agency commission is not involved in the particular bid. Further, Bidders are requested to quote directly and not through their agents in India.

**14.0 DEADLINE FOR SUBMISSION OF BIDS :**

14.1 Bids must be received by the Company at the address specified in the Forwarding Letter not later than 15-00 Hrs. (Indian Standard Time) on the bid closing date mentioned in the letter.

**15.0 LATE BIDS:**

15.1 Any Bid received by the Company after the deadline for submission of bids prescribed by the Company shall be rejected.

**16.0 MODIFICATION AND WITHDRAWAL OF BIDS:**

16.1 The Bidder, after submission of bid, may modify or withdraw its bid by written notice prior to bid closing.

16.2 The Bidder's modification or withdrawal notice shall be prepared sealed, marked and dispatched in accordance with the provisions of para 12.0. A withdrawal notice may also be sent by email or cable or fax but followed by a signed confirmation copy, postmarked not later than the deadline for submission of bids.

16.3 No bid can be modified subsequent to the deadline for submission of bids.

16.4 No bid may be withdrawn in the interval between the deadline for submission of bids and the expiry of the period of bid validity specified by the Bidder on the Bid Form.

**17.0 BID OPENING AND EVALUATION**

17.1 Company will open the Bids, including submission(s) made pursuant to para 16.0, in the presence of Bidder's representatives who choose to attend at the date, time and place mentioned in the Forwarding Letter. However, the Bidder's representative must produce an authorization letter from the bidder at the time of opening of tenders. Unless this Letter is presented, the representative will not be allowed to attend the opening of tenders. The Bidders' representatives who are allowed to attend the bid opening shall sign in a register evidencing their attendance. Only one representative against each bid will be allowed to attend.

17.2 Bid(s) (if any) for which an acceptable notice(s) of withdrawal has/have been received pursuant to para 16.0 shall not be opened. On opening the remaining bids Company will examine them to determine whether the same are complete, requisite documents have been properly signed and the bids are generally in order.

17.3 At bid opening, Company will announce the Bidders' names, written notifications of bid modifications or withdrawal, if any, and other details as the Company may consider appropriate.

17.4 Company shall prepare, for its own records, minutes of bid opening including the information disclosed to those present in accordance with the sub-para 17.2.

17.5 To facilitate examination, evaluation and comparison of bids the Company may, at its discretion, ask the Bidder for clarifications of its bid. The request for clarification and the response shall be in writing and no change in the price or substance of the bid shall be sought, offered or permitted.

- 17.6 Prior to detailed evaluation, the Company will determine the substantial responsiveness of each bid to the Bidding Documents. For purpose of these paragraphs, a substantially responsive bid is one which conforms to all the terms and conditions of the Bidding Document without material deviations. The Company's determination of bid's responsiveness is to be based on the contents of the Bid itself without recourse to extrinsic evidence.
- 17.7 A Bid determined as not substantially responsive will be rejected by the Company and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
- 17.8 The Company may waive minor informality or nonconformity or irregularity on a bid that does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder.
- 17.9 The Company will examine the Prices in the Bids to determine whether they are complete, any computational errors have been made, required sureties have been furnished, the documents have been properly signed, and the bids are generally in order.
- 17.10 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price (that is obtained by multiplying the unit price and quantity) the unit price shall prevail and the total price shall be corrected accordingly. If any Bidder does not accept the correction of the errors, his bid will be rejected. If there is a discrepancy between words, and figures, the amount in words will prevail.
- 18.0 **CONVERSION TO SINGLE CURRENCY:**
- 18.1 While evaluating the bids, the closing rate of exchange declared by State Bank of India on the day prior to price bid opening will be taken into account for conversion of foreign currency into Indian Rupees. Where the time lag between the opening of the price bids and final decision exceeds three months, the rate of exchange declared by State Bank of India on the date prior to the date of final decision will be adopted for conversion.
- 19.0 **EVALUATION AND COMPARISON OF BIDS :**
- 19.1 The Company will evaluate and compare the bids as per Part-2 ("Bid Rejection Criteria/Bid Evaluation Criteria") of the tender document.
- 20.0 **REPATRIATION OF RUPEE COST:**
- 20.1 In respect of foreign parties rupee payments made on the basis of the accepted rupee component of their bid, would not be repatriable by them. The Company would incorporate a condition to this effect in the Contract.
- 21.0 **CONTACTING THE COMPANY :**
- 21.1 Except as otherwise provided in para 17.0 above, no Bidder shall contact Company on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded except as required by Company vide para 17.5.

21.2 An effort by a Bidder to influence the Company in the Company's bid evaluation, bid comparison or Contract award decisions may result in the rejection of their bid.

**D. AWARD OF CONTRACT**

**22.0 AWARD CRITERIA:**

22.1 The Company will award the Contract to the Contractor whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

**23.0 COMPANY'S RIGHT TO ACCEPT OR REJECT ANY BID:**

23.1 Company reserves the right to accept any bid and to reject any or all bids.

**24.0 NOTIFICATION OF AWARD:**

24.1 Prior to the expiry of the period of bid validity or extended validity, the Company will notify the Bidder in writing by registered letter or by email or telex or fax (to be confirmed in writing by registered / courier letter) that his bid has been accepted.

24.2 The notification of award will constitute the formation of the Contract.

**25.0 SIGNING OF CONTRACT:**

25.1 At the same time as the Company notifies the successful Bidder that his Bid has been accepted, the Company will either invite the bidder for signing of the agreement or send the Contract Form provided in the bidding documents. The form will be accompanied by the General & Special Conditions of Contract, technical specifications, schedules of rates and all other relevant documents.

25.2 Within 30 days of receipt of the final contract document, the successful Bidder shall sign and date the contract and return the same to the Company.

**26.0 PERFORMANCE SECURITY:**

26.1 Within 30 days of the receipt of notification of award from the Company the successful Bidder shall furnish the performance security for an amount specified in the Forwarding Letter in the performance Security Form as provided in the Bidding Documents or in any other form acceptable to the Company from a Bank located in India. The performance security shall be payable to Company as compensation for any loss resulting from Contractor's failure to fulfill its obligations under the Contract.

26.2 The performance security specified above must be valid for 6 (six) months after the scheduled date of completion of Phase-II of the study to cover the warranty and other obligations and to lodge claim, if any. Company not later than 30 days following its expiry will discharge the same.

26.3 Failure of the successful bidder to comply with the requirements of para 25.0 or 26.0 shall constitute sufficient grounds for annulment of the award and forfeiture of the Bid Security. In such an event the Company may award the contract to the next evaluated Bidder or call for new bid or negotiate with the next lowest bidder as the case may be.

27.0 **ADVANCE PAYMENT:**

27.1 Request for advance payment shall not be considered.

**END OF PART-1**

## PART-2

### BID REJECTION CRITERIA/ BID EVALUATION CRITERIA (BRC/BEC)

#### A. BID REJECTION CRITERIA ( BRC ) :

The Bid shall conform generally to the specifications and terms & conditions given in the bidding document. Bids will be rejected in case services offered do not conform to the required parameters stipulated in the technical specifications/Scope of work/Terms of reference. Notwithstanding the general conformity of the bid to the stipulated specifications, the following requirements will have to be particularly met by the bidders without which the same will be considered as non-responsive and rejected.

#### 1.0 TECHNICAL :

- 1.1 Any offer which does not include all the jobs/services mentioned in the Terms of reference/Technical specifications will be considered as incomplete and rejected.
  - 1.2 The Bidder must have fifteen (15) years or more industry and/or academic experience in carrying out 3D seismic processing and interpretation work, out of which three (3) years experience in similar seismic inversion studies as on the scheduled bid closing date. Bidder must submit documentary evidence in support of the same.
  - 1.3 The Bidder must have experience in handling at least three (3) 3D seismic data pre-stack inversion projects in last three years using state-of-the-art software as on the scheduled bid closing date. Bidder must submit documentary evidence in support of the same.
  - 1.4 The study will be carried out by a team of experienced Geoscientists who have carried out such type of studies earlier. The minimum requirement and experience of the Team members should be as under;
    - (a) **Geophysicist:** Overall experience of 15 years as on bid closing date, during which he must have handled at least three (3) projects of similar nature of Pre-stack 3D seismic inversion study for reservoir characterization.
    - (b) **Geologist:** Overall experience of 15 years as on bid closing date, during which he must have handled at least one (1) project of similar nature of Pre-stack 3D seismic inversion study for reservoir characterization.
    - (c) **Petrophysicist:** Overall experience of 10 years
- Bidders must submit the details/bio-data of each Team members to be associated with the Project.
- 1.5 Bidder must have requisite state-of-the-art hardware and software to carry out such seismic inversion studies. Details to be furnished alongwith their Bid.

- 1.6 The Bidder should be able to start the work within 30 days of notification of award of contract by Company. Categorical confirmation must be provided in the offer.
- 1.7 **OIL shall be entering into an Integrity Pact with the bidders as per format enclosed vide PROFORMA-VII of the tender document. Each page of this Integrity Pact Proforma has been duly signed by OIL's competent signatory. The Proforma has to be returned by the bidder (along with the technical bid) duly signed by the same signatory who signed the bid i.e. who is duly authorized to sign the bid. Any bid, not accompanied by Integrity Pact Proforma duly signed by the bidder shall be rejected straightway. All pages of the Integrity Pact to be signed by the bidder's authorized signatory who sign the bid.**
- 2.0 COMMERCIAL :**
- 2.1 The bids are to be submitted in composite bid system i.e. technical and commercial details are to be furnished together in a single bid.
- 2.2 Rates quoted by the successful bidder must remain firm during the entire period of execution of the contract and not subject to variation on any account whatsoever. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.
- 2.3 Bids received after the scheduled bid closing date and time will be rejected outright.
- 2.4 The Bid documents are not transferable. Bids submitted by parties to whom the tender document was not issued by the Company will be rejected.
- 2.5 Any bid received in the form of Telex/Cable/Fax/E-Mail will not be accepted.
- 2.6 Bids shall be typed or written in indelible ink and Original bid shall be signed by the bidder or his authorized representative on all pages, failing which the bid may be rejected.
- 2.7 Bids shall contain no interlineation, erasures or overwriting except as necessary to correct errors made by bidder, in which case such corrections shall be initialed by the person(s) signing the bid. However, white fluid should not be used for making corrections. Any bid not meeting this requirement shall be rejected.
- 2.8 Bids must be kept valid for a minimum period of 120 days from the date of scheduled bid closing. Bids with inadequate validity will be rejected.
- 2.9 Bidders must quote clearly and strictly in accordance with the price schedule outlined in "Schedule of Rates" (Proforma-II) of bidding documents, otherwise the bid will be summarily rejected. The Bids in which the rates for any part of the work are not quoted shall be rejected. However, if no charge is involved for any of the work/item, 'NIL' should be mentioned against such part of work.

- 2.10 Bidder must accept and comply with the following clauses as given in the Bidding Document in toto, failing which offer will be rejected-
- a) Performance Bank Guarantee clause.
  - b) Force Majeure clause
  - c) Tax liabilities clause
  - d) Arbitration clause
  - e) Applicable Law
  - f) Liquidated Damage clause

**3.0 GENERAL:**

- 3.1 **Proforma -I:** The Compliance statement must be filled up by bidders and to be submitted alongwith their bids. In case bidder takes exception to any clause of the bidding document not covered under BEC/BRC, then the Company has the discretion to load or reject the offer on account of such exception if the bidder does not withdraw/modify the deviation when/as advised by Company. The loading so done by the company will be final and binding on the bidders. No deviation will, however, be accepted in the clauses covered under BRC.
- 3.2 To ascertain the substantial responsiveness of the bids, Company reserves the right to ask the bidder for clarification in respect of clauses covered under BRC also and such clarification fulfilling the BRC clauses in toto must be received on or before the deadline given by the company, failing which the offer will be summarily rejected.
- 3.3 If any of the clauses in the BRC contradicts with other clauses of bidding document elsewhere, then the clauses in the BRC shall prevail.

**B. BID EVALUATION CRITERIA (BEC):**

- 1.0 The bids conforming to the technical specifications, terms and conditions stipulated in the bidding document and considered to be responsive after subjecting to Bid Rejection Criteria (BRC) will be considered for further evaluation as per the Bid Evaluation Criteria given below.
- 1.1 Commercial Evaluation of bids submitted by the technically qualified bidders will be done on the basis of rates quoted by them as per the enclosed Price Schedule Format (Proforma-II) to ascertain the inter-se-ranking on total value basis considering all the items. However, it is to be clearly understood that the quantity indicated against each item therein is based on estimates/assumptions of the Company and valid for bid evaluation purpose only. Payment will be made by OIL on actual job done/studies carried out during execution of the contract.
- 1.2 In the event of computational error between unit rate and total price, the unit rate as quoted by the bidder in original bid shall prevail. Similarly, in the event of any discrepancy between words and figures, the unit rates as quoted in words shall prevail.
- 1.3 For evaluation of the bids, B.C Selling (market rate) of State Bank of India prevailing one day prior to the bid opening will be considered. Where the time lag between the bid opening and final decision exceeds three months, the rate of exchange prevailed on the date prior to the date of final decision will be adopted for conversion in to single currency.

**END OF PART-2**

## **PART-3**

### **SECTION – I**

#### **GENERAL CONDITIONS OF CONTRACT**

##### **1.0 DEFINITIONS**

1.1 In the Contractual document, the following terms shall be interpreted as indicated hereunder:

- a) "Contract" means agreement to be entered into between Company and Contractor, as recorded in the contract document signed by the parties, including all attachments, annexure and appendices thereto and all documents incorporated by reference therein;
- b) "Company" or "OIL" means Oil India Limited, 12 Old Residency Road, Jodhur, Rajasthan, India;
- c) "Contractor" means the individual or firm or Body incorporated performing the work under the Contract.
- d) "Contract Price" means the price payable to Contractor under the contract for the full and proper performance of their contractual obligations;
- e) "Work" means each and every activity required for the successful performance of the services described in Section-II, the Terms of Reference.
- f) "Contractor's Personnel" mean the personnel to be provided by Contractor to render the services as per the contract.
- g) "Company's Personnel" mean the personnel to be provided either by OIL or by OIL's service provider other than the Contractor executing this contract.
- h) "Company's representative" means the Company's personnel authorized to execute this contract.

##### **2.0 EFFECTIVE DATE, COMMENCEMENT OF CONTRACT, PROJECT TIME SCHEDULE/COMPLETION TIME AND WORKING SITE:**

2.1 **EFFECTIVE DATE OF CONTRACT:** The Contract shall become effective from the Date Company notifies the Contractor in writing (through Letter of Award) that it has been awarded the Contract. This date shall be treated as the Effective Date of the Contract.

2.2 **COMMENCEMENT OF CONTRACT:** Contractor's domain expert shall visit Company's office at Jodhpur (Rajasthan) for collection of data and QC within thirty (30) days from the effective date of the contract. The Commencement Date shall be considered to be the date on which all data in its desired format as required for by the Contractor is made available by the Company.

2.3 **PROJECT TIME SCHEDULE/COMPLETION TIME AND WORKING SITE:** A detailed Project Time Schedule/Completion time and Site for job execution is furnished below;

<b>PHASE/Milestones</b>	<b>Completion Time (Weeks)</b>	<b>Work Site</b>
<b>PHASE – I :</b>		
<b>Milestone-1 :</b> Visit to OIL’s office at Jodhpur (Rajasthan, India) for Data Collection & QC.	One	OIL’s office at Jodhpur
<b>Milestone-2 :</b> (a) Well Log conditioning Petrophysical Modeling & Rock Physics Modeling and analysis of the reconditioned logs of four (4) Wells. (b) Seismic data conditioning & modeling for about 50 sq. Km Baghewala field area.	Four	Contractor’s Base/ Facilities using its own resources.
<b>Milestone-3:</b> (a) Pre-stack inversion (AI, EI & Density volumes), reservoir property characterization/ calibration & interpretation of initial 50 Sq. Km area. (b) Report generation, presentation/discussion and interim Report submission.	Four	Contractor’s Base/ Facilities using its own resources.
<b>PHSAE – II (OPTIONAL) :</b>		
(a) Well Log Conditioning Petrophysical Modeling & Rock Physics Modeling and analysis of the reconditioned logs of one (1) Well. (b) Seismic data conditioning & modeling for about 50 sq. km area adjoining Baghewala field. (c) Pre-stack inversion (AI, EI & density volumes), reservoir property characterization/calibration and interpretation of additional 50 sq. Km area, report generation, presentation and Final report submission.	Four	Contractor’s Base/ Facilities using its own resources.

3.0 **GENERAL OBLIGATIONS OF CONTRACTOR:** Contractor shall, in accordance with and subject to the terms and conditions of this Contract:

3.1 Perform the work described in the Terms of Reference (Section-II) in most economic and cost effective manner.

- 3.2 Except as otherwise provided in the Terms of Reference and the special Conditions of the contract provide all personnel as required to perform the work.
- 3.3 Perform all other obligations, work and services which are required by the terms of this contract or which reasonably can be implied from such terms as being necessary for the successful and timely completion of the work.
- 3.4 Contractors shall be deemed to have satisfied themselves before submitting their bids as to the correctness and sufficiency of its bid for the services required and of the rates and prices quoted, which rates and prices shall, except in so far as otherwise provided, cover all its obligations under the contract.
- 3.5 Contractor will provide all necessary supervision for better performance of the work throughout the period of this contract till the warranty period for proper fulfilling of Contractor's obligations under the Contract.
- 3.6 The equipment, if any, will be used exclusively for OIL's operation during the entire contract period and any extension thereafter.
- 3.7 Contractor shall strictly follow all the statutory norms and guidelines issued by the various Government agencies in regards to safety & environmental issues.
- 4.0 **GENERAL OBLIGATIONS OF THE COMPANY:** Company shall, in accordance with and subject to the terms and conditions of this contract:
- 4.1 Provide all the relevant data, viz. seismic, well logs and reports, at Jodhpur
- 4.2 Pay Contractor in accordance with terms and conditions of the contract.
- 4.3 Allow Contractor and his personnel access, subject to normal security and safety procedures, to all areas as required for orderly performance of the work.
- 4.4 Perform all other obligations required of Company by the terms of the contract.
- 5.0 **PERSONNEL TO BE DEPLOYED BY CONTRACTOR**
- 5.1 Contractor will provide competent, qualified and sufficiently experienced personnel to perform the work correctly and efficiently and shall ensure that such personnel observe applicable Company and statutory safety requirement. Upon Company's written request, Contractor, entirely at their own expense, shall remove immediately without dissent any personnel of the Contractor determined by the Company to be unsuitable and shall promptly replace such personnel with personnel acceptable to the Company without affecting Company's work.

5.2 The Contractor shall be solely responsible throughout the period of this contract for providing all requirements of their personnel including but not limited to their transportation to & fro Jodhpur, enroute boarding, lodging, medical attention etc. Company shall have no liability or responsibility in this regard.

5.3 Contractor's key personnel shall be fluent in English language (both writing and speaking). The Contractor shall not engage any language Interpreter for verbal communication.

## 6.0 **WARRANTY AND REMEDY OF DEFECTS**

6.1 Contractor warrants that they shall perform the work in a professional manner and in accordance with the highest degree of quality, efficiency and current state of the art technology/oil field practices and in conformity with all specifications and standards set forth or referred to in the Terms of Reference and with instructions and guidance which Company may, from time to time, furnish to the Contractor.

6.2 Should Company discover at any time during the tenure of the Contract or within 6 (six) months after completion of work that the Work does not conform to the foregoing warranty, Contractor shall after receipt of notice from Company, promptly perform any and all corrective work required to make the services conform to the Warranty. Such corrective Work shall be performed entirely at Contractor's own expenses. If such corrective Work is not performed within a reasonable time, the Company, at its option may have such remedial work performed by others and charge the cost thereof to Contractor which the Contractor must pay promptly. In case Contractor fails to perform remedial work, or pay promptly in respect thereof, the performance security shall be forfeited.

## 7.0 **CONFIDENTIALITY, USE OF CONTRACT DOCUMENTS AND INFORMATION:**

7.1 Contractor shall not, without Company's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing pattern, sample or information furnished by or on behalf of Company in connection therewith, to any person other than a person employed by Contractor in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far, as may be necessary for purposes of such performance.

7.2 Contractor shall not, without Company's prior written consent, make use of any document or information provided by the Company except for purposes of performing the contract.

7.3 Any document supplied to the Contractor in relation to the contract other than the Contract Itself remain the property of Company and shall be returned (in all copies) to Company on completion of Contractor 's performance under the Contract if so required by Company. All information obtained by Contractor in the conduct of operations and the information/maps provided to the Contractor shall be considered confidential and shall not be divulged by Contractor or its employees to anyone other than the Company's personnel. This obligation of Contractor shall be in force even after the termination of the contract.

8.0 **TAXES:**

- 8.1 Tax levied as per the provisions of Indian Income Tax Act and any other enactment/rules on income derived/payments received under this contract will be on Contractor's account.
- 8.2 Contractor shall be responsible for payment of personal taxes, if any, for all the personnel deployed.
- 8.3 The Contractor shall furnish to the Company, if and when called upon to do so, relevant statement of accounts or any other information pertaining to work done under this contract for submitting the same to the Tax authorities, on specific request from them. Contractor shall be responsible for preparing and filing the return of income etc. within the prescribed time limit to the appropriate authority.
- 8.4 Prior to start of operations under the contract, the Contractor shall furnish the Company with the necessary documents, as asked for by the Company and/ or any other information pertaining to the contract, which may be required to be submitted to the Income Tax authorities at the time of obtaining "No Objection Certificate" for releasing payments to the Contractor.
- 8.5 Tax clearance certificate for personnel and corporate taxes shall be obtained by the Contractor from the appropriate Indian Tax authorities and furnished to Company within 6 months of the expiry of the tenure of the contract or such extended time as the Company may allow in this regard.
- 8.6 Corporate income tax will be deducted at source from the invoice at the specified rate of income tax as per the provisions of Indian Income Tax Act as may be in force from time to time.
- 8.7 Corporate and personnel taxes on Contractor shall be the liability of the Contractor and the Company shall not assume any responsibility on this account.
- 8.8 All local taxes, levies and duties, sales tax, octroi, etc. on purchases and sales made by Contractor (except customs duty) shall be borne by the Contractor.
- 8.9 **Service tax:** Service Tax as applicable shall be extra on Company's account. However, liability for payment of the service tax in case of Indian Contractor will lie on contractor while in case of the foreign Contractor, the liability shall lie on the Company.

9.0 **INSURANCE:**

- 9.1 The Contractor shall arrange insurance to cover all risks in respect of their personnel, materials and equipment belonging to the Contractor or its subcontractor during the currency of the contract.
- 9.2 Contractor shall at all time during the currency of the contract provide, pay for and maintain the following insurance amongst others:

- a) Workmen compensation insurance as required by the laws of the country of origin of the employee.
  - b) Employer's Liability Insurance as required by law in the country of origin of employee.
  - c) General Public Liability Insurance Act 1991 covering liabilities including contractual liability for bodily injury, including death of persons, and liabilities for damage of property. This insurance must cover all operations of Contractor required to fulfill the provisions under this contract.
  - d) Contractor 's equipment used for execution of the work hereunder shall have an insurance cover with a suitable limit (as per international standards).
  - e) Automobile Public Liability Insurance covering owned, non-owned and hired automobiles used in the performance of the work hereunder, with bodily injury limits and property damage limits as governed by Indian Insurance regulations.
- 9.3 Contractor shall obtain additional insurance or revise the limits of existing insurance as per Company's request, if insurance coverage is found to be not adequate for performing jobs under the contract, in which case additional cost shall be to Contractor's account.
- 9.4 Any deductible set forth in any of the above insurance shall be borne by Contractor.
- 9.5 Contractor shall furnish to Company prior to commencement date, certificates of all its insurance policies covering the risks mentioned above.
- 9.6 If any of the above policies expire or are cancelled during the term of this contract and Contractor fails for any reason to renew such policies, then the Company will renew/replace same and charge the cost thereof to Contractor. Should there be a lapse in any insurance required to be carried out by the Contractor for any reason whatsoever, loss/damage claims resulting there from shall be to the sole account of Contractor.
- 9.7 Contractor shall require all of his sub-Contractor to provide such of the foregoing insurance coverage as Contractor is obliged to provide under this Contract and inform the Company about the coverage prior to the commencement of agreements with its sub-Contractors.
- 9.8 All insurance taken out by Contractor or his sub-Contractor shall be endorsed to provide that the underwriters waive their rights of recourse on the Company.
- 10.0 **CHANGES:**
- 10.1 During the performance of the work, Company may make a change in the work mutually agreed within the general scope of this Contract including, but not limited to, changes in methodology, and minor additions to or deletions from the work to be performed. Contractor shall perform the work as changed. Changes of this nature will be effected by written order (Change Order) by the Company.

10.2 If any change result in an increase in compensation due to Contractor or in a credit due to Company, Contractor shall submit to Company an estimate of the amount of such compensation or credit in a form prescribed by Company. Such estimates shall be based on the rates shown in the Schedule of Rates (Section-IV). Upon review of Contractor's estimate, Company shall establish and set forth in the Change Order the amount of the compensation or credit for the change or a basis for determining a reasonable compensation or credit for the change. If Contractor disagrees with compensation or credit set forth in the Change Order, Contractor shall nevertheless perform the work as changed, and the parties will resolve the dispute in accordance with Clause 13 hereunder. Contractor's performance of the work as changed will not prejudice Contractor's request for additional compensation for work performed under the Change Order.

11.0 **FORCE MAJEURE:**

11.1 In the event of either party being rendered unable by 'Force Majeure' to perform any obligation required to be performed by them under the contract, the relative obligation of the party affected by such 'Force Majeure' will stand suspended as provided herein. The word 'Force Majeure' as employed herein shall mean acts of God, war, revolt, agitation, strikes, riot, fire, flood, sabotage, civil commotion, road barricade (but not due to interference of employment problem of the Contractor) and any other cause, whether of kind herein enumerated or otherwise which are not within the control of the party to the contract and which renders performance of the contract by the said party impossible.

11.2 Upon occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid thereby, shall notify the other party in writing within Seventy Two (72) hours of the alleged beginning and ending thereof, giving full particulars and satisfactory evidence in support of its claim.

11.3 Should 'Force Majeure' condition as stated above occur and should the same be notified within seventy two (72) hours after its occurrence the 'Force Majeure rate' shall apply for the first ten (10) days. Either party will have the right to terminate the contract if such 'Force Majeure' condition continues beyond ten (10) days with prior written notice. Should either party decide not to terminate the contract even under such condition, no payment would apply after expiry of ten (10) days period unless otherwise agreed to. Time for performance of the relative obligation suspended by the 'Force Majeure' shall then stand extended by the period for which such cause lasts.

12.0 **TERMINATION:**

12.1 **TERMINATION ON EXPIRY OF THE TERMS (DURATION):** This contract shall be deemed to have been automatically terminated on the expiry of duration of the contract or extension, if any, thereof.

12.2 **TERMINATION ON ACCOUNT OF FORCE MAJEURE:** Either party shall have the right to terminate this Contract on account of Force Majeure as set forth in Article 11.0 above.

- 12.3 **TERMINATION ON ACCOUNT OF INSOLVENCY:** In the event that the Contractor at any time during the term of this Contract, becomes insolvent or makes a voluntary assignment of its assets for the benefit of creditors or is adjudged bankrupt, then the Company shall, by a notice in writing have the right to terminate this Contract and all the Contractor's rights and privileges hereunder, shall stand terminated forthwith.
- 12.4 **TERMINATION FOR UNSATISFACTORY PERFORMANCE:** If the Company considers that, the performance of the Contractor is, not as per the scope of the work as specified in the contract, the Company shall notify the Contractor in writing and specify in details the cause. The Company shall have the option to terminate this Contract by giving 15 days notice in writing to the Contractor, if Contractor fails to comply with the requisitions contained in the said written notice issued by the Company.
- 12.5 **TERMINATION DUE TO CHANGE OF OWNERSHIP & ASSIGNMENT:** In case the Contractor's rights and / or obligations under this Contract and/or the Contractor's rights, title and interest to the equipment / material, are transferred or assigned without the Company's consent, the Company may at its absolute discretion, terminate this Contract.
- 12.6 If at any time during the term of this Contract, breakdown of Contractor's equipment results in Contractor being unable to perform their obligations hereunder for a period of 30 successive days, Company at its option, may terminate this Contract in its entirety without any further right or obligation on the part of the Company, except for the payment of money then due. No notice shall be served by the Company under the condition stated above.
- 12.7 Notwithstanding any provisions herein to the contrary, the Contract may be terminated at any time by the Company on giving 15 (fifteen) days written notice to the Contractor due to any other reason not covered under the above clause from 12.1 to 12.6 and in the event of such termination the Company shall not be liable to pay any cost or damage to the Contractor except for payment of services as per the Contract upto the date of termination.
- 12.8 **CONSEQUENCES OF TERMINATION:** In all cases of termination herein set forth, the relative obligations of the parties to the Contract shall be limited to the period upto the date of termination. Notwithstanding the termination of this Contract, the parties shall continue to be bound by the provisions of this Contract that reasonably require some action or forbearance after such termination.
- 12.9 Upon termination of this Contract, Contractor shall return to Company all of Company's items, which are at the time in Contractor's possession.
- 12.10 In the event of termination of contract, Company will issue Notice of termination of the contract with date or event after which the contract will be terminated. The contract shall then stand terminated and the Contractor shall demobilize their personnel & materials.
- 13.0 **SETTLEMENT OF DISPUTES AND ARBITRATION:**
- 13.1 All disputes or differences whatsoever arising between the parties out of or relating to the construction, meaning and operation or effect of this contract or the breach thereof shall be settled by arbitration in accordance with the Rules of Indian Arbitration and Conciliation Act, 1996. The venue of arbitration will be Duliajan, Assam. The award made in pursuance thereof shall be binding on the parties.

14.0 **NOTICES:**

- 14.1 Any notice given by one party to other, pursuant to this Contract shall be sent in writing or Fax or e-mail and confirmed in writing to the applicable address specified below :

**COMPANY**

**CONTRACTOR**

OIL INDIA LIMITED  
12 OLD RESIDENCY ROAD  
JODHPUR 342 011  
RAJASTHAN (INDIA)  
Fax No. +91-291-2431689  
Email: mat\_rp@oilindia.in

- 14.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

15.0 **SUBCONTRACTING / ASSIGNMENT :**

- 15.1 Contractor shall not subcontract, transfer or assign the contract, in full or any part under this contract, to any third party(ies) except with Company's prior approval. However, Contractor shall be fully responsible for complete execution and performance of the services under the Contract.

16.0 **MISCELLANEOUS PROVISIONS:**

- 16.1 Contractor shall give notices and pay all fees at their own cost required to be given or paid by any National or State Statute, Ordinance, or other Law or any regulation, or bye-law of any local or other duly constituted authority as may be in force from time to time in India, in relation to the performance of the services and by the rules & regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the services.
- 16.2 Contractor shall conform in all respects with the provisions of any Statute, Ordinance of Law as aforesaid and the regulations or bye-law of any local or other duly constituted authority which may be applicable to the services and with such rules and regulation public bodies and Companies as aforesaid and shall keep Company indemnified against all penalties and liability of every kind for breach of any such Statute, Ordinance or Law, regulation or bye-law.
- 16.3 During the tenure of the Contract, Contractor shall keep the site where the services are being performed reasonably free from all unnecessary obstruction and shall store or dispose of any equipment and surplus materials and clear away and remove from the site any wreckage, rubbish or temporary works no longer required. On the completion of the services, Contractor shall clear away and remove from the site any Contractor's surplus materials, rubbish or temporary works of every kind and leave the whole of the site clean to the satisfaction of the Company.

- 16.4 Key personnel cannot be changed during the tenure of the Contract except due to sickness/death/resignation/termination etc. of the personnel in which case the replaced person should have minimum experience as defined in Part-2 “Bid Rejection Criteria” (Article A.1.4), which will be again subject to approval, by the Company.
- 17.0 **LIQUIDATED DAMAGES FOR DEFAULT IN TIMELY COMPLETION OF STUDY:**
- 17.1 Time is the essence of this Contract. In the event of the Contractor’s default in timely completion of the studies in each phase (Phase-I & II) within the stipulated period, the Contractor shall be liable to pay liquidated damages at the rate of 0.5 % of the total contract value of the uncompleted phase per week or part thereof of delay subject to maximum of 7.5% of the total contract value of the phase. Liquidated Damages will be reckoned from the date after expiry of the scheduled completion period till the date of completion of the study as per the Contract as defined in Clause No. 2.0 of Section -I.
- 17.2 The Company also reserves the right to cancel the Contract without any compensation whatsoever in case of failure by the Contractor to commence operation within the stipulated period.
- 18.0 **PERFORMANCE SECURITY:** The Contractor has furnished (to be furnished as detailed in Part-1) to Company a Bank Guarantee No. \_\_\_\_\_ dated \_\_\_\_\_ issued by \_\_\_\_\_ for \_\_\_\_\_ (being 7.5% of estimated total Contract Price of Phase-I & II) valid till \_\_\_\_\_ towards performance security. The performance security shall be payable to Company as compensation for any loss resulting from Contractor's failure to fulfill their obligations under the Contract. The bank guarantee will be discharged by Company not later than 30 days following its expiry.
- 18.1 In the event of extension of the Contract period beyond the scheduled time, the validity of the Bank Guarantee shall also be extended correspondingly by 6 (six) months after the extended date for completion of the work.
- 19.0 **ASSOCIATION OF COMPANY'S PERSONNEL:** Company's personnel will be associated with the work throughout the operations. The Contractor shall execute the work with professional competence and in an efficient and workman like manner and provide Company with a standard of work customarily provided by reputed international oil companies in the petroleum industry.
- 20.0 **LIABILITY:**
- 20.1 Except as otherwise expressly provided, neither Company nor its servants, agents, nominees, Contractors, or sub-contractors shall have any liability or responsibility whatsoever to whomsoever for loss of or damage to the equipment and/or loss of or damage to the property of the Contractor and/or their Contractor or sub-contractors, irrespective of how such loss or damage is caused and even if caused by the negligence of Company and/or its servants, agent, nominees, assignees, Contractor and sub-Contractors. The Contractor shall protect, defend, indemnify and hold harmless Company from and against such loss or damage and any suit, claim or expense resulting there from.

- 20.2 Neither Company nor its servants, agents, nominees, assignees, Contractor, sub-contractors shall have any liability or responsibility whatsoever for injury to, illness, or death of any employee of the Contractor and/or of its Contractor or subcontractor irrespective of how such injury, illness or death is caused and even if caused by the negligence of Company and/or its servants, agents nominees, assignees, Contractor and sub-contractors. Contractor shall protect, defend, indemnify and hold harmless Company from and against such liabilities and any suit, claim or expense resulting there from.
- 20.3 The Contractor hereby agrees to waive its right to recourse and further agrees to cause their underwriters to waive their right of subrogation against Company and/or its underwrites, servants, agents, nominees, assignees, Contractor and sub-contractors for loss or damage to the equipment of the Contractor and/or its sub-contractors when such loss or damage or liabilities arises out of or in connection with the performance of the contract.
- 20.4 The Contractor hereby further agrees to waive its right of recourse and agrees to cause its underwriters to waive their right of subrogation against Company and/or its underwriters, servants, agents, nominees, assignees, Contractors and sub-contractors for injury to, illness or death of any employee of the Contractor and of its Sub-contractors and/or their employees when such injury, illness or death arises out of or in connection with the performance of the contract.
- 20.5 Except as otherwise expressly provided, neither Contractor nor its servants, agents, nominees, Contractor or sub-contractors shall have any liability or responsibility whatsoever to whomsoever for loss of or damage to the equipment and/or loss or damage to the property of the Company and/or their Contractor or sub-contractors, irrespective of how such loss or damage is caused and even if caused by the negligence of Contractor and/or its servants, agents, nominees, assignees, Contractor and sub-contractors. The Company shall protect, defend, indemnify and hold harmless Contractor from and against such loss or damage and any suit, claim or expense resulting there from.
- 20.6 Neither Contractor nor its servants, agents, nominees, assignees, Contractors, sub-contractors shall have any liability or responsibility whatsoever to whomsoever for injury or illness, or death of any employee of the Company and/or of its Contractors or sub-contractors irrespective of how such injury, illness or death is caused and even if caused by the negligence of Contractor and/or its servants, agents, nominees, assignees, Contractors and subcontractors. Company shall protect, defend indemnify and hold harmless Contractor from and against such liabilities and any suit, claim or expense resulting there from.
- 20.7 The Company agrees to waive its right of recourse and further agrees to cause its underwriters to waive their right of subrogation against Contractor and /or its underwriters, servants, agents, nominees, assignees, Contractor and subcontractors for loss or damage to the equipment of Company and/or its Contractor sub-contractors when such loss or damage or liabilities arises out of or in connection with the performance of the contract.
- 20.8 The Company hereby further agrees to waive its right of recourse and agrees to cause it underwriters to waive their right of subrogation against Contractor and/or its underwriters, servants, agents, nominees, assignees, Contractors and sub-contractors for injury to, illness or death of any employee of the Company and of its Contractors, sub-contractors and/or their employees when such injury, illness or death arises out of or in connection with the performance of the Contract.

21.0 **CONSEQUENTIAL DAMAGE:** Except as otherwise expressly provided, neither party shall be liable to the other for special, indirect or consequential damages resulting from or arising out of the contract, including but without limitation, to loss or profit or business interruptions, howsoever caused and regardless of whether such loss or damage was caused by the negligence (either sole or concurrent) of either party, its employees, agents or sub-contractors.

22.0 **INDEMNITY AGREEMENT:**

22.1 Except as provided hereof Contractor agrees to protect, defend, indemnify and hold Company harmless from and against all claims, suits, demands and causes of action, liabilities, expenses, cost, liens and judgments of every kind and character, without limit, which may arise in favour of Contractor's employees, agents, Contractors and sub-contractors or their employees on account of bodily injury or death, or damage to personnel/property as a result of the operations contemplated hereby, regardless of whether or not said claims, demands or causes of action arise out of the negligence or otherwise, in whole or in part or other faults.

22.2 Except as provided hereof Company agrees to protect, defend, indemnify and hold Contractor harmless from and against all claims, suits, demands and causes of action, liabilities, expenses, cost, liens and judgments of every kind and character, without limit, which may arise in favour of Company's employees, agents, Contractor and sub-contractors or their employees on account of bodily injury or death, or damage to personnel/property as a result of the operations contemplated hereby, regardless of whether or not said claims, demands or causes of action arise out of the negligence or otherwise, in whole or in part or other faults.

23.0 **INDEMNITY APPLICATION:** The indemnities given herein above, whether given by Company or Contractor shall be without regard to fault or to the negligence of either party even though said loss, damage, liability, claim, demand, expense, cost or cause of action may be caused, occasioned by or contributed to by the negligence, either sole or concurrent of either party.

24.0 **PAYMENT, MANNER OF PAYMENT, INVOICES:**

24.1 Company shall pay to Contractor, during the term of the contract, the amount due calculated against successful completion of each milestone as mentioned in Performa-II (Price Schedule) according to the rates of payment set and in accordance with other provisions hereof. No other payments shall be due from Company unless specifically provided for in this contract. All payments will be made in accordance with the terms hereinafter described.

24.2 All payments due by Company to Contractor shall be made at Contractor's designated bank. All bank charges will be to Contractor's account. **Payment of invoices, if undisputed, shall be made within 30 days following the date of receipt of invoice by the Company.**

24.3 Payment of any invoices shall not prejudice the right of Company to question the validity of any charges therein, provided Company within one year after the date of payment shall make and deliver to Contractor written notice of objection to any item or items the validity of which Company questions.

- 24.4 Contractor will submit six sets of all invoices to Company's address given under para 14.1 in Part-3 Section-I above for processing of payment.**
- 24.5 The Company shall within 15 days of receipt of the invoice notify Contractor of any item under dispute, specifying the reasons thereof, in which event, and payment of the disputed amount may be withheld until settlement of the dispute, but payment shall be made of any undisputed portion within 30 days. This will not prejudice the Company's right to question the validity of the payment at a later date as envisaged in Para 24.3 above.
- 24.6 The acceptance by Contractor of part payment on any billing not paid on or before the due date shall not be deemed a waiver of Contractor's rights in respect of any other billing, the payment of which may then or thereafter be due.
- 24.7 Contractor shall maintain complete and correct records of all information on which Contractor's invoices are based upto 2(two) years from the date of last invoice. Such records shall be required for making appropriate adjustments or payments by either party in case of subsequent audit query/objection. Any audit conducted by Company of Contractor's records, as provided herein, shall be limited to Company's verification (i) of the accuracy of all charges made by Contractor to Company and (ii) that Contractor is otherwise in compliance with the terms and conditions of this Agreement.
- 25.0 **SET-OFF:** Any sum of money due and payable to the Contractor (including Performance Security refundable to them) under this or any other Contract may be appropriated by Company and set-off against any claim of Company (or such other person or persons contracting through Company) for payment of a sum of money arising out of this contract or under any other contract made by the Contractor with Company (or such other person or persons contracting through Company).
- 26.0 **WITHHOLDING:** Company may withhold the whole or any part of the amount due to Contractor, after informing the Contractor of the reasons in writing, on account of subsequently discovered evidence in order to protect Company from loss on account of :
- a) For non-completion of jobs assigned as per Section-II.
  - b) Contractor's indebtedness arising out of execution of this Contract.
  - c) Defective work not remedied by Contractor.
  - d) Claims by sub-Contractor of Contractor or others filed or on the basis of reasonable evidence indicating probable filing of such claims against Contractor.
  - e) Failure of Contractor to pay or provide for the payment of salaries/ wages, contributions, taxes or enforced savings with-held from wages etc.
  - f) Failure of Contractor to pay the cost of removal of unnecessary materials, tools, or machinery from the work site.
  - g) Damage to another contractor's man and materials working for the Company.
  - h) All claims against Contractor for damages and injuries, and/or for nonpayment of bills etc.
  - i) Any failure by Contractor to fully reimburse Company under any of the indemnification provisions of this Contract. If, during the progress of the work Contractor shall allow any indebtedness to accrue for which Company, under any

circumstances in the opinion of Company may be primarily or contingently liable or ultimately responsible and Contractor shall, within five days after demand is made by Company, fail to pay and discharge such indebtedness, then Company may during the period for which such indebtedness shall remain unpaid, with-hold from the amounts due to Contractor, a sum equal to the amount of such unpaid indebtedness. Withholding will also be effected on account of the following:

- i) Order issued by a Court of Law in India.
- ii) Income-tax deductible at source according to law prevalent from time to time in the country.
- iii) Any obligation of Contractor which by any law prevalent from time to time to be discharged by Company in the event of Contractor's failure to adhere to such laws.
- iv) Any payment due from Contractor in respect of unauthorized imports. When all the above grounds for withholding payments shall be removed, payment shall thereafter be made for amounts so with-hold. Notwithstanding the foregoing, the right of Company to withhold shall be limited to damages, claims and failure on the part of Contractor, which is directly/indirectly related to some negligent act or omission on the part of Contractor.

#### 27.0 **APPLICABLE LAW:**

27.1 The Contract shall be deemed to be a Contract made under, governed by and construed in accordance with the laws of India for the time being in force and shall be subject to the exclusive jurisdiction of Courts situated in Jodhpur.

27.2 The Contractor shall ensure full compliance of various Indian Laws and Statutory Regulations, to the extent applicable, as stated below, but not limited to, in force from time to time and obtain necessary permits/licenses etc. including Road Permits from appropriate authorities for conducting operations under the Contract:

- a) The Mines Act -as applicable to safety and employment conditions
- b) The Minimum Wages Act, 1948
- c) The Oil Mines Regulations, 1984
- d) The Workmen's Compensation Act, 1923
- e) The Payment of Wages Act, 1963
- f) The Payment of Bonus Act., 1965
- g) The Contract Labour (Regulation & Abolition) Act, 1970 and the rules framed thereunder
- h) The Employees Pension Scheme, 1995
- i) The Interstate Migrant Workmen Act., 1979 (Regulation of employment and conditions of service)
- j) The Employees Provident Fund and Miscellaneous Provisions Act, 1952
- k) Rajasthan Tax Act including VAT & Entry Tax Act
- l) Service Tax Act
- m) Customs & Excise Act & Rules
- n) Environment Protection Act
- o) Public Liability Act

- 27.3 The Contractor shall not make Company liable to reimburse the Contractor to the statutory increase in the wage rates of the contract labour appointed by the Contractor. Such statutory or any other increase in the wage rates of the contract labour shall be borne by the Contractor.
- 28.0 **RECORDS, REPORTS AND INSPECTION:** The Contractor shall, at all times, permit the Company and its authorized employees and representatives to inspect all the Work performed and to witness and check all the measurements and tests made in connection with the said work. The Contractor shall keep an authentic, accurate history and logs including safety records at all reasonable times for inspection by the Company's designated representatives and its authorized employees and representatives. The Contractor shall provide the Company designated representatives with a daily written report, on form prescribed by the Company showing details of operations during the preceding 24 hours. The Contractor shall not, without Company's written consent allow any third person(s) access to the said records, or give out to any third person information in connection therewith.
- 29.0 **SUBSEQUENTLY ENACTED LAWS:** Subsequent to the date of submission of bid by the Contractors, if there is a change in or enactment of any law or interpretation of existing law, which results in additional cost/reduction in cost to Contractor on account of the operation under the Contract, the company/ Contractor shall reimburse/pay Contractor /Company for such additional/reduced costs actually incurred.
- 30.0 **ROYALTY AND PATENTS:** Each party shall hold harmless and indemnify the other from and against all claim and proceedings for or on account of any patent rights, design, trade mark or other protected rights arising from any use of materials, equipment, processes, inventions and methods which have not been imposed on the attending party by the terms of the contract or the specifications or drawings forming part thereof.
- 31.0 **WAIVER & AMENDMENTS:** It is fully understood and agreed that none of the terms and conditions of the contract shall be deemed waived or amended by either party unless such waiver or amendment is executed in writing by the duly authorized agents or representatives of such party. The failure of either party to execute any right of termination shall not act as a waiver or amendment of any right of such party provided hereunder.

**END OF SECTION – I**

## PART-3

### SECTION – II

#### TERMS OF REFERENCE/SCOPE OF WORK

##### 1.0 Preamble:

- 1.1 Reservoir Characterizations is one of the emerging technology in today's E&P scenario that tend to answer some of the key questions such as the characteristics of the lithology of reservoirs, litho-logical sensitivity to change of type of fluid, lateral continuation of sand distribution and the type of fluid content, its lateral distribution and the fluid content. Such advanced technology is used by all the Major Oil Companies worldwide for prospect identification and reservoir characterization, e.g. to investigate reservoir distribution and reserves over the prospect or field area, which in turn helps in maximizing the success of exploration, appraisal and development. This type of specialized studies involve integration of well and seismic data (Pre-stack and Gather) and thereafter, inversion of offset dependent seismic amplitudes. This is expected to provide a detailed analysis of the reservoir rock properties, fluid properties, predict lithology and fluid types for better prospect evaluation, estimate lithology response to change of fluid types and hence forms an important element in formulating a full-scale field development plan.
- 1.2 In line with such industry practice worldwide, OIL is also planning to carry out such type of specialized studies for its heavy oil bearing Baghewala Field in Rajasthan (India). The prospective reservoirs in this field are the infra-Cambrian Jodhpur sandstone and Lower Bilara dolomite/limestone. The application of this new technology in this field is expected to help in resolving some of these issues and thereby maximizing success in appraisal/development of the field. Moreover, if successful, in the long run the same can be extended to other adjoining areas of Tavriwala etc. within the Baghewala Mining Lease (ML) area of OIL in future.

##### 2.0 Objective of the Study: The basis objectives of the study are;

- (a) To map the Infra-Cambrian Jodhpur sandstone and Lower Bilara Carbonate formations in spatial & Temporal domain for better understanding of the reservoir heterogeneity.
- (b) To assess the hydrocarbon limits in the reservoirs in Infra-Cambrian Jodhpur sandstone and Lower Bilara Carbonate formations.
- (c) Identification of new hydrocarbon pools in Baghewala area

##### 3.0 Scope of Work:

The study would be carried out over a 50 Sq. Km area using 3D seismic data of bin size 25m x 25m over a 500ms TWT window and using 4 wells. The data set required for the same would be;

**Seismic data** : 3D seismic data Pre-STM gathers without NMO correction, migration and stack velocities, Pre-STM stack data, Bin size is 25m x 25m.

**Wells :** Four wells drilled down to the target reservoirs. Only P-sonic data recorder over entire well section. S-sonic not recorded in these wells. However, S-sonic of offset well is available in the same basin.

Following data/information is enclosed:

(a) Annexure-I: List of Available Data (3 pages)

(b) Attachments:

- i) Index Map of the Baghewala Area (Fig 1a)
- ii) Representative Seismic Section from the area of proposed study (Fig-1b)
- iii) Representative Gather Data from the Area (Fig-1c)
- iv) Well Correlation (Fig-2)

The representative 3D seismic data (Section & Gather) and wells are enclosed (as Figure-1 & Figure-2) to have a preliminary idea about the quality of data to be used in study. The Phase-wise broad scope of work to achieve the objective of the study is as follows;

### 3.1 **PHASE – I :**

#### 3.1.1 **Milestone-1: Data Collection, Loading and Quality Control**

Milestone-1 will comprise of a visit of the domain Expert to OIL's Office at Jodhpur (Rajasthan, India) for review and collection of available data and for detailed discussions regarding the Project objectives.

#### 3.1.2 **Milestone-2:**

Milestone-2 will comprise of;

- (a) **Well Log conditioning, Petrophysical Modeling, Rock Physics Modeling and analysis of the reconditioned logs of four (4) Wells :** The main objective is to have a quantitative understanding of the properties of the reservoir rocks and how they respond seismically when different fluids are present and when porosity and lithology varies. This understanding will provide the cornerstone for the interpretation of the inversion results. Additionally, quality control of density, P-sonic and s-sonic measurements will be carried out at this stage and synthesize missing logs and replace poor quality data.
- (b) **Evaluation & conditioning of seismic gathers and well to seismic ties in and around the well locations :** This will involve conditioning of the seismic data viz; removal of the noise, application of trim statics, fine velocity analysis etc. depending on the requirement after QC of input data. This will also involve a well-based analysis to understand the elastic response to lithology/fluid at Wireline and seismic scales of resolution to achieve well to seismic ties and evaluate seismic gathers in and around the well locations.

The detailed Project Plan during **Milestone-2** will be as follows;

- Load and QC well log data for the 4 wells.
- Condition well logs data as necessary
- Carry out petrophysical analysis and/or QC existing analysis.
- Additional detailed petrophysical analysis of the well logs including non-reservoir zones for use in Rock Physics modeling.
- Conduct rigorous rock physics modeling using appropriate software to ensure all logs with missing intervals, if any, in the P-sonic, S-sonic, Density and Shear logs are modeled based on the calibrated recorded logs to complete the full length of the recorded logs. The Rock Physics model will incorporate any depth trends observed and will compensate for fluid invasion and sonic to seismic dispersion if necessary.
- QC results of generated Shear wave by different methods and confidence building in input petrophysical model.
- QC results with respect to well-to-seismic ties to the new seismic data.
- Simulation of missing and/or bad data using the developed Rock Physics model and calibration of model to good data.
- Generate crossplots of different well attributes (Insitu recorded and internally derived attributes) for separation of lithology, understanding the behaviors of different elastic properties for analysis of feasibility of Pre-Stack Inversion.

### **3.1.3 Milestone-3 : Pre-Stack Inversion**

**Pre-Stack inversion (Acoustic Inversion & Elastic Inversion Volumes, Density Volume), reservoir property characterization/calibration and interpretation of 50 Sq. Km area :** During Milestone-3, pre-stack inversion will be carried out over 50 Sq. Km area using appropriate work-flow to estimate a consistent set of elastic layer parameters. The construction of these elastic parameter models involves the simultaneous inversion of angle stack data over three or four angle ranges. The process will yield 3 volumes of rock properties : P-Impedance and S-Impedance or  $V_p/V_s$  and density.

Area : 50 Sq. km

Objectives : Quantitative prediction of the lithology and fluid distribution/content of the reservoirs by converting multiple partial stack seismic reflection data volumes to calibrated elastic rock parameters.

Time window : 500ms (Over the Jodhpur and Bilara formations interval)

Bin size : 25m x 25m

The detailed Project Plan during Milestone-3 will be as follow;

- Data input and QC
- From the Input Pre-stack gather data generate Super gather, correspondingly generate Angle Gather with the help of Input Seismic Velocity volume. Closely examine range of angles at reservoir interval and subsequently decide optimum angle ranges for angle limited partial stack generation.
- Tie the wells to the seismic and estimate wavelets for each partial stack. Check wavelets consistency at each well location with all range of limited stack volumes.

- Conduct Multi Well analysis to optimally choice the best wavelet for all ranges of partial stack to be used for final inversion.
- Conduct AVO Analysis to understand the Rock physics modeling concept, Fluid replacement modeling to know the response of lithology against change of type of fluid content. We have to compare the synthetic AVO response with recorded seismic super gathers.
- Generate AVO Attributes like Intercept-Gradient volumes,  $I^*G$ ,  $I+G$ , Fluid Factor Volumes to understand the type/call of sands.
- Build geological models for horizons, well logs and stacking velocities.
- Align all cubes to a common datum (bulk shift) or datum's (Stretch and squeeze).
- Run prestack inversion on all partial stacks simultaneously over the Jodhpur and Bilara formation interval to produce P-Impedance and S-Impedance cubes along with density cubes.
- Conduct Geostatistical Analysis.

**Deliverables at the end of *Milestone-3* :**

1. Conditioned Seismic Gather Data
2. Angle Stacks
3. Calibrated and Modeled logs for four (4) wells
4. Well crossplots showing lithology separation with different attributes plot and feasibility study for Pre-stack Inversion.
5. QC Plot for optimum wavelets selection for all ranges of partial stack from multi well analysis with frequency and phase information.
6. P-Impedance Cube-Relative
7. S-Impedance Cube-Relative
8. Density Cube-Relative
9. P-Impedance Cube-Absolute in Time
10. S-Impedance Cube-Absolute in Time
11. Density Cube-Absolute in Time
12. Inverted Velocity Volume
13.  $V_p/V_s$  Volumes
14. Poisson's Ratio Volumes
15. Intercept & Gradient
16.  $A*B$ ,  $A+B$  product
17. AVO errors
18. Fluid Factors
19. Elastic Impedance
20. Fluid Saturation, Porosity Volume
21. All crossplots for deciding the cut offs from different elastic parameter plots to understand the results of Inverted Output Interpretation
22. Results of Geostatistical analysis
23. Report detailing the methodology for seismic-well ties, inversion processing, inversion algorithm, quality control, data quality issues, parameter selection, and error estimation, results/findings of the study and recommendations thereof. (Three hard copies and one soft copy).

- 3.1.4 **Presentation of Results/Report** : Following the completion of Milestone-3, the Contractor will make a presentation of its results and recommendations thereof to OIL at its offices in Jodhpur/Delhi alongwith an interim report. The report (3 hard copies and one soft copy) will provide details of methodology adopted, results/findings of the study, recommendation etc.
- 3.1.5 **Decision/Exit Point** : Following completion of Milestone-3 and based on the results/findings & recommendations, OIL will decide whether to extend the inversion study to another 50 Sq. Km adjoining area or not.

### 3.2 **PHASE – II** :

Following completion of Milestone-3 under PHASE-I and depending upon its results, the same Prestack Inversion could be extended to another 50 Sq. Km of adjoining area to make the total area of study to 100 Sq. km. Should OIL decide to go for the additional 50 Sq. Km area, it will involve all the jobs as mentioned in the Milestone-2 (one well) and Milestone-3 above.

**Area** : 50 Sq. km

**Objectives** : Quantitative prediction of the lithology and fluid distribution/content of the reservoirs by converting multiple partial stack seismic reflection data volumes to calibrated elastic rock parameters.

**Time window** : 500ms (Over the Infra-Cambrian Jodhpur and Bilara formations interval)

Bin size : 25m x 25m

#### 3.2.1 **Deliverables at the end of PHASE-II** :

1. Conditioned Seismic Gather Data
2. Angle Stacks
3. Calibrated and Modeled logs for one well
4. Well crossplots showing lithology separation with different attributes plot and feasibility study for Pre-stack Inversion.
5. QC Plot for optimum wavelet selection for all ranges of partial stack from multi well analysis with frequency and phase information.
6. P-Impedance Cube-Relative
7. S-Impedance Cube-Relative
8. Density Cube-Relative
9. P-Impedance Cube-Absolute in Time
10. S-Impedance Cube-Absolute in Time
11. Density Cube-Absolute in Time
12. Inverted Velocity Volume
13. Vp/Vs Volumes

14. Poisson's Ratio Volumes
  15. Intercept & Gradient
  16. A\*B, A+B product
  17. AVO errors
  18. Fluid Factors
  19. Elastic Impedance
  20. Fluid Saturation, Porosity Volume
  21. All crossplots for deciding the cut offs from different elastic parameter plots to understand the results of Inverted Output Interpretation
  22. Results of Geostatistical analysis
  23. Report detailing the methodology for seismic-well ties, inversion processing, inversion algorithm, quality control, data quality issues, parameter selection, and error estimation, results/findings of the study and recommendations thereof. (Three hard copies and one soft copy).
- 3.2.2 Presentation of Results/Report after completion of PHSAE-II:** Following completion of PHASE-II, the Contractor will make a presentation of its results and recommendations thereof to OIL at its offices in Jodhpur/Delhi alongwith the Final Report. The Final Report (3 hard copies and one soft copy) will provide details of methodology adopted for the study, results/findings of the study and its analysis towards depicting reservoir heterogeneity, its distribution (both vertical and lateral) and assessment of hydrocarbons within the reservoir etc. alongwith recommendations thereof.

**END OF SECTION – II**

## **PART-3**

### **SECTION -III**

#### **SPECIAL TERMS AND CONDITIONS OF CONTRACT**

##### **1.0 ASSOCIATION OF COMPANY'S PERSONNEL:**

- 1.1 Company reserves the right to depute its personnel to the Contractor's work site at any time during the contractual period. The Contractor shall execute the work of with professional competence and in an efficient and workman like manner and provide Company with a standard of work customarily provided by reputed Geophysical Contractors to major international oil companies in the petroleum industry.

##### **2.0 PROVISION OF PERSONNEL AND FACILITIES:**

- 2.1 The Contractor shall provide the Key personnel, as given in Part-2 "Bid Rejection Criteria" (Article A.1.4) .
- 2.2 All the personnel mentioned in Part-2 "Bid Rejection Criteria" (article A.1.4) must have requisite experience in respective fields and should be fluent in English language. On Company's request, Contractor shall remove and replace at their own expenses, any of their personnel whose presence is considered undesirable in the opinion of the Company.

- 3.0 CONFIDENTIALITY OF INFORMATION:** All data and information viz. reports maps etc received by Contractor during the execution of work, provided by the Company to the Contractor shall be considered confidential and shall not be divulged by Contractor or its employees to any one other than the Company's personnel. This obligation of Contractor shall be in force even after the termination of the contract.

##### **4.0 OBLIGATIONS OF THE BIDDER:**

- 4.1 Company reserve the right to supervise the work carried out under this contract at Bidders working site at company's own cost.
- 4.2 All deliverables mentioned in Section-II "TERMS OF REFERENCE/SCOPE OF WORK" will be provided to Company at no extra cost.
- 4.3 The bidder should use latest versions of software packages for carrying out the job, out during the period of the contract.
- 4.4 Company will provide working space, at Jodhpur for the bidder's representative(s) during data collection/final report presentation. However bidder has to arrange accommodation and local transport at its own expenses during the same.
- 4.5 Any other work required for efficient and successful execution of work shall be carried out by the bidder except those enumerated under the Para 5.0 "Obligations of the Company" herein under.

- 4.6 The bidder's expatriate and technical personnel must have thorough knowledge of English.
- 4.7 The bidder's personnel must have specified experience to provide above services in professional manner failing which Company reserves the right to ask for removal of bidder's any personnel with 24 hours notice.
- 4.8 Bidder must provide adequate office space for the Company representatives involved during supervision of the work. They also must provide fax, telephone and internet facilities to Company representatives at their office.
- 4.9 Bidder shall arrange for collection and air-shipment/ dispatch of data to the bidder's working site. However, Company will provide necessary support to obtain necessary clearances from authorities from Government of India, if required.
- 4.10 Bidder will be required to make presentation after completion of the Milestones as defined in Section-II "TERMS OF REFERENCE/SCOPE OF WORK".
- 4.11 Bidder shall follow all HSE norms as prevalent in the geophysical industry globally.
- 5.0 OBLIGATIONS OF THE COMPANY:** Administrative help will be provided by the Company for clearances and permits required from Govt. of India, if any, for the execution of the work, provided the bidder shall make available the required details for the permits well in time.

**END OF SECTION-III**

## SECTION-IV

### SCHEDULE OF RATES

Lumpsum Charges as indicated in Proforma-II for collection of data and studies under different milestones as detailed below shall be applicable to this contract.

#### **PHASE – I : Study of Baghewala Area**

##### **Milestone-1 :**

Visit to OIL's office at Jodhpur for data collection and QC.

##### **Milestone-2 :**

1. Well Log conditioning Petrophysical Modeling and Rock Physics Modeling and Analysis of the reconditioned logs of four (4) wells.
2. Seismic data conditioning & modeling for about 50 Sq. Km Baghewala field area.

##### **Milestone-3 :**

- (a) Pre-stack inversion (AI, EI & density Volumes), reservoir property characterization/calibration and interpretation of initial 50 Sq. Km area.
- (b) Submission of Report and presentation/discussion with OIL Officials at Jodhpur/Delhi.

#### **PHASE-II : Study of adjoining area of Baghewala (OPTIONAL)**

- (a) Well Log conditioning Petrophysical Modeling & Rock Physics Modeling and Analysis of the reconditioned logs of one (1) well.
- (b) Seismic data conditioning & modeling for about 50 Sq. Km field area.
- (c) Pre-stack inversion (AI, EI & density Volumes), reservoir property characterization/calibration and interpretation of additional 50 Sq. Km area.
- (d) Submission of Report and presentation/discussion with OIL officials at Jodhpur/Delhi.

END OF SECTION-IV

**STATEMENT OF NON-COMPLIANCE**

(Only exceptions/deviations to be rendered)

**Tender No. JCO 7600 L11 Dated 1<sup>st</sup> April, 2010**

1.0 The Bidder shall furnish detailed statement of **exceptions/deviations**, if any, to the tender stipulations, terms and conditions in respect of each Section of Bid Document in the following format:

Section No.	Clause No. (Page No.)	Non-Compliance	Remarks

2.0 In addition to the above the Bidder shall furnish detailed information pertaining to construction, operational requirements, velocity-pattern, added technical features, if any and limitations etc. of the Inspection Tool proposed to be deployed.

**Authorized Person's Signature:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Designation:** \_\_\_\_\_

**Seal of the Bidder:**

**NOTE:** OIL INDIA LIMITED expects the bidders to fully accept the terms and conditions of the bid document. However, should the bidders still envisage some exceptions/deviations to the terms and conditions of the bid document, they should indicate the same as per above format and submit it along with their bids. If the **“Statement of Non-Compliance”** in the above Proforma is left blank (or not submitted along with the technical bid), then it would be construed that the bidder has not taken any exception/deviation to the tender requirements.

**PRICE SCHEDULE FORMAT / SCHEDULE OF WORK**

<b>PHASE – I : Study of Baghewala Area</b>		
<b>PHASE/MILESTONE</b>	<b>PRICE (Currency)</b>	
<b>Milestone-1 :</b> Visit to OIL's office at Jodhpur for data collection and QC.	Lumpsum	
<b>Milestone-2 :</b> (a) Well Log conditioning Petrophysical Modeling and Rock Physics Modeling and Analysis of the reconditioned logs of four (4) wells.  (b) Seismic data conditioning & modeling for about 50 Sq. Km Baghewala field area.	Lumpsum  Lumpsum	
<b>Milestone-3 :</b> (a) Pre-stack inversion (AI, EI & density Volumes), reservoir property characterization/calibration and interpretation of initial 50 Sq. Km area.  (b) Submission of Report and presentation/discussion with OIL Officials at Jodhpur/Delhi.	Lumpsum  Lumpsum	
<b>PHASE-II : Study of adjoining area of Baghewala (OPTIONAL)</b>		
<b>PHASE/MILESTONE</b>	<b>PRICE (Currency)</b>	
(a) Well Log conditioning Petrophysical Modeling & Rock Physics Modeling and Analysis of the reconditioned logs of one (1) well.	Lumpsum	
(b) Seismic data conditioning & modeling for about 50 Sq. Km field area.	Lumpsum	
(c) Pre-stack inversion (AI, EI & density Volumes), reservoir property characterization/calibration and interpretation of additional 50 Sq. Km area.	Lumpsum	
(d) Submission of Report and presentation/discussion with OIL officials at Jodhpur/Delhi.	Lumpsum	
<b>TOTAL VALUE OF CONTRACT (Sum Total of all above) :</b>		

Note : Rates to be quoted inclusive of all taxes and duties, excluding Service Tax, if applicable.

**BID FORM**

To  
M/s. Oil India Limited,  
12, Old Residency Road  
Jodhpur, Rajasthan – 342 011  
INDIA

Sub: Tender No. JCO 7600 L11 dated 1<sup>st</sup> April, 2010

Gentlemen,

Having examined the General and Special Conditions of Contract and the Terms of Reference including all attachments thereto, the receipt of which is hereby duly acknowledged, we the undersigned offer to perform the services in conformity with the said conditions of Contract and Terms of Reference for the sum of \_\_\_\_\_ (Total Bid Amount in words and figures) or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this Bid.

We undertake, if our Bid is accepted, to commence the work within (\_\_\_\_\_) days calculated from the date both parties have signed the Contract.

If our Bid is accepted, we will obtain the guarantee of a bank in a sum not exceeding \_\_\_\_\_ for the due performance of the Contract.

We agree to abide by this Bid for a period of 120 days from the date fixed for Bid opening and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof in your notification of award shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any Bid you may receive.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 2010.

Authorised Person's Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Seal of the Bidder:

**FORM OF PERFORMANCE BANK GUARANTEE**

To:  
M/s. OIL INDIA LIMITED,  
[Executive Director (RP)]  
12, Old Residency Road, Jodhpur, Rajasthan, India, Pin – 342 011.

WHEREAS \_\_\_\_\_ (Name and address of Contractor) (hereinafter called "Contractor") had undertaken, in pursuance of Contract No. \_\_\_\_\_ to execute (Name of Contract and Brief Description of the Work) \_\_\_\_\_ (hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee as security for compliance with Contractor's obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee; NOW THEREFORE we hereby affirm that we are Guarantors on behalf of the Contractor, up to a total of (Amount of Guarantee in figures) \_\_\_\_\_ (in words \_\_\_\_\_), such amount being payable in the types and proportions of currencies in which the Contract price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of guarantee sum as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein. We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or the work to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way cease us from any liability under this guarantee, and we hereby waive notice of such change, addition or modification.

This guarantee is valid until the date \_\_\_\_\_ (calculated at **6 months** after Contract completion date).

SIGNATURE AND SEAL OF THE GUARANTORS \_\_\_\_\_

Designation \_\_\_\_\_

Name of Bank \_\_\_\_\_

Address \_\_\_\_\_

Witness \_\_\_\_\_

Address \_\_\_\_\_

Date .....

Place \_\_\_\_\_

**AGREEMENT FORM**

This Agreement is made on \_\_\_\_ day of \_\_\_\_\_ between Oil India Limited, a Government of India Enterprise, incorporated under the Companies Act 1956, having its registered office at Duliajan in the State of Assam, hereinafter called the "Company" which expression unless repugnant to the context shall include executors, administrators and assignees on the one part, and M/s. \_\_\_\_\_ (Name and address of Contractor) hereinafter called the "Contractor" which expression unless repugnant to the context shall include executors, administrators and assignees on the other part,

WHEREAS the Company desires that Services \_\_\_\_\_ (brief description of services) should be provided by the Contractor as detailed hereinafter or as Company may requires;

WHEREAS, Contractor engaged themselves in the business of offering such services represents that they have adequate resources and equipment, material etc. in good working order and fully trained personnel capable of efficiently undertaking the operations and is ready, willing and able to carry out the said services for the Company as per Section-II attached herewith for this purpose and

WHEREAS, Company had issued a firm Letter of Intent No. \_\_\_\_\_ dated \_\_\_\_\_ based on Offer No. \_\_\_\_\_ dated \_\_\_\_\_ submitted by the Contractor against Company's Tender No. \_\_\_\_\_.

All these aforesaid documents shall be deemed to form and be read and construed as part of this agreement/contract. However, should there be any dispute arising out of interpretation of this contract in regard to the terms and conditions with those mentioned in Company's tender document and subsequent letters including the Letter of Intent and Contractor's offer and their subsequent letters, the terms and conditions attached hereto shall prevail. Changes, additions or deletions to the terms of the contract shall be authorized solely by an amendment to the contract executed in the same manner as this contract.

NOW WHEREAS, in consideration of the mutual covenants and agreements hereinafter contained, it is hereby agreed as follows

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. In addition to documents herein above, the following Sections attached herewith shall be deemed to form and be read and construed as part of this agreement viz.:
  - (a) Section-I indicating the General Conditions of this Contract;
  - (b) Section-II indicating the Terms of Reference;
  - (c) Section-III indicating the Special Conditions of this Contract;
  - (c) Section-IV indicating the Schedule of Rates

3. In consideration of the payments to be made by the Company to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Company to provide the Services and to remedy defects therein in conformity in all respect with the provisions of this Contract.

4. The Company hereby covenants to pay the Contractor in consideration of the provision of the Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of this Contract at the times and in the manner prescribed by this Contract.

IN WITNESS thereof, each party has executed this contract at Duliajan, Assam as of the date shown above.

Signed, Sealed and Delivered,

For and on behalf of  
Company (Oil India Limited)

for and on behalf of Contractor  
(M/s. \_\_\_\_\_)

Name:

Name:

Status:

Status:

In presence of

In presence of

1.

1.

2.

2.

**PROFORMA LETTER OF AUTHORITY**

TO  
**Executive Director (RP)**  
Oil India Ltd.,  
12, Old Residency Road,  
Jodhpur, Rajasthan, India, Pin – 342 011.

Sir,

**Sub: OIL's Tender No.** \_\_\_\_\_

We \_\_\_\_\_ confirm that Mr. \_\_\_\_\_ (Name and address) are authorized to represent us to Bid, negotiate and conclude the agreement on our behalf with you against Tender Invitation No. \_\_\_\_\_ for hiring of services for \_\_\_\_\_.

We confirm that we shall be bound by all and whatsoever our said representative shall commit.

Yours Faithfully,

**Authorized Person's Signature:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Designation:** \_\_\_\_\_

**Seal of the Bidder:**

**Note:** This letter of authority shall be on printed letter head of the Bidder and shall be signed by a person competent and having the power of attorney (power of attorney shall be annexed) to bind such Bidder. If signed by a consortium, it shall be signed by members of the consortium.

**INTEGRITY PACT**

Between

Oil India Limited (OIL) hereinafter referred to as "The Principal"

And

(Name of the bidder).....hereinafter referred to as "The Bidder/Contractor"

**Preamble:**

The Principal intends to award, under laid down organizational procedures, contract/s for -----  
----- . The Principal values full compliance with all relevant laws and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder/s and Contractor/s.

In order to achieve these goals, the Principal cooperates with the renowned international Non-Governmental Organization "Transparency International" (TI). Following TI's national and international experience, the Principal will appoint an external independent Monitor who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

**Section: 1 -Commitments of the Principal**

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:

1. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for him/herself or third person, any material or immaterial benefit which he/she is not legally entitled to.
2. The Principal will, during the tender process treat all Bidders with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidders the same information and will not provide to any Bidder confidential/additional information through which the Bidder could obtain an advantage in relation to the tender process or the contract execution.
3. The Principal will exclude from the process all known prejudiced persons.

(2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the relevant Anti-Corruption Laws of India, or if there be a Page 2 of 6 substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

## **Section: 2 -Commitments of the Bidder/Contractor**

(1) The Bidder/Contractor commits itself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

1. The Bidder/Contractor will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or immaterial benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
2. The Bidder/Contractor will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, Subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
3. The Bidder/Contractor will not commit any offence under the relevant Anticorruption Laws of India; further the Bidder/Contractor will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
4. The Bidder/Contractor will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

(2) The Bidder/Contractor will not instigate third persons to commit offences outlined above or be an accessory to such offences.

## **Section 3 -Disqualification from tender process and exclusion from future Contracts**

If the Bidder, before contract award has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or credibility as Bidder into question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

1. If the Bidder/Contractor has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal is entitled also to exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the circumstances of the case, in particular the number of transgressions, the position of the transgressions within the company hierarchy of the Bidder and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.

2. The Bidder accepts and undertakes to respect and uphold the Principal's Absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.

3. If the Bidder/Contractor can prove that he has restored/recouped the Damage caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely.

4. A transgression is considered to have occurred if in light of available evidence no reasonable doubt is possible.

#### **Section 4 -Compensation for Damages**

1. If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover from the Bidder liquidated damages equivalent to 3 % of the value of the offer or the amount equivalent to Earnest Money Deposit/Bid Security, whichever is higher.

2. If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3,the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

3. The bidder agrees and undertakes to pay the said amounts without protest or demur subject only to condition that if the Bidder/Contractor can prove and establish that the exclusion of the Bidder from the tender process or the termination of the contract after the contract award has caused no damage or less damage than the amount or the liquidated damages, the Bidder/Contractor shall compensate the Principal only to the extent of the damage in the amount proved.

#### **Section 5 -Previous transgression**

1. The Bidder declares that no previous transgression occurred in the last 3 years with any other Company in any country conforming to the TI approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

2. If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

#### **Section: 6 -Equal treatment of all Bidders/Contractor/Subcontractors**

1. The Bidder/Contractor undertakes to demand form all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.

2. The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors and Subcontractors.

3. The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

**Section: 7 -Criminal charges against violating Bidders/Contractors/ Subcontractors**

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor, which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

**Section: 8 -External Independent Monitor/Monitors**

(three in number depending on the size of the contract)

(to be decided by the Chairperson of the Principal)

1. The Principal appoints competent and credible external independent Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

2. The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the Chairperson of the Board of the Principal.

3. The Contractor accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder/Contractor/Subcontractor with confidentiality.

4. The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or heal the violation, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

6. The Monitor will submit a written report to the Chairperson of the Board of the Principal within 8 to 10 weeks from the date of reference or intimation to him by the 'Principal' and, should the occasion arise, submit proposals for correcting problematic situations.

7. If the Monitor has reported to the Chairperson of the Board a Substantiated suspicion of an offence under relevant Anti-Corruption Laws of India, and the Chairperson has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8. The word 'Monitor' would include both singular and plural.

**Section:9 -Pact Duration**

This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made/ lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by Chairperson of the Principal.

**Section:10 -Other provisions**

- 1. This agreement is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. New Delhi.
- 2. Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 3. If the Contractor is a partnership or a consortium, this agreement must be, signed by all partners or consortium members.
- 4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

.....  
**For the Principal**

.....  
**For the Bidder/Contractor**

Witness 1: .....

Witness 2: .....

Place. JODHPUR.  
Date .....

## DATA FOR PRE-STACK INVERSION Seismic Data

	<b>DATA</b>	<b>MEDIA</b>	<b>FORMAT</b>
1	Pre-STM un NMO corrected Gathers	USB Drive	In SEG Y Format
2	Full Stack	USB Drive	In SEG Y Format
3	Seismic Processing Report	CD ROM	In PDF/Word Format
4	Navigation Data	In header of SEG Y DATA	
5	Final Stacking Velocities	CD ROM	ASCII FORMAT
6	Final Migration Velocities	CD ROM	ASCII FORMAT

### INTERPRETATION FORMAT

	<b>HORIZON</b>	<b>FULL</b>	<b>NEAR</b>	<b>MID</b>	<b>FAR</b>	<b>MEDIA</b>	<b>FORMAT</b>
1	HORIZON - 1	√	X	X	X	CD ROM	ASCII FORMAT
2	HORIZON - 2	√	X	X	X	CD ROM	ASCII FORMAT
3	HORIZON - 3	√	X	X	X	CD ROM	ASCII FORMAT
4	HORIZON - 4	√	X	X	X	CD ROM	ASCII FORMAT
5	FAULT PLANE	√	X	X	X	CD ROM	ASCII FORMAT

### ADDITIONAL DATA

	<b>HORIZON</b>	<b>FULL</b>	<b>NEAR</b>	<b>MID</b>	<b>FAR</b>	<b>MEDIA</b>	<b>FORMAT</b>
1	Base map					CD ROM	PDF
2	Well log correlation passing through the weels					CD ROM	PDF
3	Earlier Interpretation/Basin Analysis Report					CD ROM	PDF / WORD

## Well Data Available

LOG	WELL NAME					
	Well-1	Well-2	Well-3	Well-4	Well-5	Well-6
Bit Size Log	No	No	No	NO	NO	No
Caliper Log(CALI, CAL, HCAL etc)	CALI	yes	yes	yes	yes	Yes
Gamma Ray Log	Yes	Yes	yes	yes	yes	yes
Spontaneous Potential Log(SP)	Yes	No	No	No	No	No
Density Log(RHOB)	Yes	yes	yes	yes	yes	Yes
Density Correction Log (DRHO)	Yes	No	No	No	No	No
P-Sonic Log	Yes	Yes	yes	yes	yes	yes
S-Sonic Log	No	No	No	No	No	No
<b>NGS LOG</b>						
Thorium	Yes	No	No	No	No	No
Potassium	Yes	No	No	No	No	No
Uranium	yes	No	No	No	No	No
CGR	Yes	Yes	Yes	Yes	Yes	Yes
SGR	Yes	No	No	No	No	No
<b>RESISTIVITY LOG</b>						
Micro	Yes	Yes	Yes	Yes	Yes	Yes
Shallow	Yes	Yes	Yes	Yes	Yes	Yes
Deep	Yes	Yes	Yes	Yes	Yes	Yes
<b>POROSITY LOGS</b>						
Neutron Porosity (NPHI, TNPH etc.)	Yes	No	No	No	No	No
Sonic derived	No	No	No	No	No	No
Density Derived	yes	Yes	Yes	Yes	Yes	Yes
Others						
<b>PEF Log</b>	No	No	No	No	No	No
<b>Interpreted curves &amp; Formation Evaluation/Petrophysical Evaluation Report</b>						
Water Saturation Log	Yes	Yes	Yes	Yes	Yes	Yes
Sxo Log	yes	Yes	Yes	Yes	Yes	Yes
Volumetric Log (VCL, VILLI, VKAOL, VDOL, VQUA, etc)	Yes	Yes	Yes	Yes	Yes	Yes
<b>LITHOLOGY LOG</b>	Yes	Yes	Yes	Yes	Yes	Yes
Effective Porosity	Yes	Yes	Yes	Yes	Yes	Yes
Total Porosity	Yes	Yes	Yes	Yes	Yes	Yes
<b>Core data report</b>						

## Rock Physics Modeling

Parameters for each Rock and Fluid Type (for each Reservoir Level)

No.	Parameter	Reservoir - 1	Reservoir -2
1	<b>Density (Kg / m<sup>3</sup>)</b>		
	Brine		
	Gas		
	Steam		
	Dead Oil		
	Live Oil		
	Sand		
	Clay		
2	<b>Mu (N/m<sup>2</sup>)</b>		
	Sand		
	Clay		
3	<b>Alpha Aspect Ration</b>		
	Sand		
	Clay		
4	<b>API</b>		
	Dead Oil	√	
	Live Oil		
5	<b>Specific Gravity</b>		
	Gas		
	Steam		
	Live Oil		
6	<b>Salinity</b>		
	Brine	√	√
7	<b>Reservoir Pressure or Reservoir Pressure Gradient</b>	√	
8	<b>Reservoir Temperature or Reservoir Temperature Gradient</b>	√	√
9	<b>Gas Oil Ratio at Reservoir</b>		
10	<b>Mud Filtrate</b>		
	Density	√	√
	Salinity	√	√
	Viscosity	√	√