ऑयल इंडिया लिमिटेड
( भारत सरकार का उद्यम )
Oil India Limited
(A Government of India Enterprise)

*Conquering Newer Horizons*

**NEF Project, P.O.- Duliajan, Assam, India**

**NOTICE INVITING GLOBAL EXPRESSION OF INTEREST (EOI)**
**(EOI NO.: OIL/NEF/GLOBAL/EOI/026/2015)**

**SUB: SEISMIC DATA PROCESSING & INTERPRETATION OF 3D SEISLOOP DATA**

**OIL INDIA LTD (OIL)**, a premier Public Sector Undertaking, Govt. of India, engaged in exploration, production & transportation of hydrocarbons, invites Expression of Interest (EOI) from reputed and established E&P Service Providers meeting the prequalification criteria as mentioned below for empanelment/short-listing of Vendors/Contractors to issue tender document for hiring of services for **3D Seismic Data Processing & Interpretation** of 600 Sq. Km data acquired through Seisloop technique from *Hilly/Thrust Belt/Logistically Difficult Area* (NELP Block: MZ-ONN-2004/1) in the state of Mizoram, India.

**Seisloop Technique:** *In this survey method, the receivers are placed all along the loop at a uniform interval of 25m and shots are placed at a uniform interval of 100m along the loop. All the receivers remain active for every shot and the loop is covered by successive shots one after the other in seriatim. Some receivers and shots will also be kept in the area within the loop.*

**The main objective of the processing and interpretation of Seisloop 3D Seismic data for delineation of hydrocarbon prospects in this thrust / fold belt area:**

The objective of **Seisloop 3D seismic data processing** is to provide best and adequate processed inputs conform to realistic image of subsurface geology for meaningful interpretation.

The objective of **Seisloop 3D seismic data interpretation** is to delineate, map, analyze supra & sub-thrust structural & stratigraphic prospects, prioritize and rank the prospects and provide the drilling locations.

**The zone of interest lies between 2500 – 5000 meters.**

## 1.0 PROJECT INFORMATION :

Pursuant to the committed Minimum Work Program(MWP) to the Govt. of India, Oil India Ltd (OIL) being the Operator in the above mentioned NELP block, plans for **Processing and Interpretation of Seisloop 3D seismic data** covering an area of about 600 Sq. Km within specific time frame.

Mizoram has the most variegated hilly terrain in the north-eastern part of India with 21 hill ranges of different altitudes (maximum altitude of around 1800m and in general 900 m to 1200 m) with succession of long valleys running mostly from North to South covering the entire state. The hills are very steep and rugged with intervening deep gorges. Two major roads namely NH-54 and State Highway funded by World Bank run almost parallel to each other in North–Southern direction through the centre of the state as well as OIL's NELP block. Both the

roads emanate from Aizawl and converge at Lunglei, the second largest town in Mizoram after Aizawl. The roads are in hilly terrain full of sharp curves with steep gradient. The other connecting roads are narrow having sharp horizontal curves with steep gradient in many places.

## 2.0 GEOLOGY OF THE AREA:

2.1 Assam-Arakan region, Mizoram, Manipur and Tripura have drawn the attention of exploration geologists ever since the discovery of Digboi and Makum oil fields in Upper Assam around 1890. The Badarpur oil field in Cachar district of Assam, presently abandoned, was discovered in 1901. This discovery followed a spate of other discoveries in Assam since Sixties of the last Century. Gas occurrence in Tripura is very relevant to the exploration of the region. Commercial gas in this state was discovered during the late seventies of previous century within the Surma sequence of Miocene age. Several other gas fields have also been found since then.

2.2 Cachar-Tripura-Mizoram fold belt constitutes a distinct part of Assam-Arakan tectonic system. Myanmar's Shan Plateau and the Ophiolite complex extend to the east of it. The Bangladesh flood plains are to the west. The Naga Schuppen belt of Assam forms the northern extreme and Chittagong hill track (Bangladesh) lies to the south of it.

2.3 The area of operation is a part of Tripura–Cachar–Mizoram fold belt of Assam-Arakan Basin. The Mizoram fold belt is composed of tight linear folds with their axes almost in north-south direction. The intensity of folding increases from west to east where the rocks of Indian plate sub-ducted below the Burmese plate. The anticlines are long, narrow and tight, whereas the synclines are broad and gentle. As per the geological section of the area of operation, the area has Tipam formation exposed in the central part and Bokabil formation is exposed in the eastern and western part. The Bhuban formation is divided in three formations as Lower, Middle and Upper Bhuban formations. Lower Bhuban formation is mainly alternations of sandstones and shale. The Middle Bhuban consists of mainly shale with subordinate sandstones. The Upper Bhuban consists of alternations of sandstones and shales.

## 3.0 LOCATION OF THE AREA:

The block: MZ-ONN-2004/1 is situated in the Mizoram state and covers an area of 3213 Sq km. Aizawl is the Capital town of Mizoram and is connected to the other places by motorable roads and highways. The nearest railhead is at Bhairabi close to the border within Cachar district of Assam. Aizawl is linked by Air to the rest of India, the nearest international airport being located at Kolkata in West Bengal. The proposed area lies in between the following broad coordinates:

**Co-ordinates of Block MZ-ONN-2004/1**

| Points | Latitude (N) | | | Longitude (E) | | |
|---|---|---|---|---|---|---|
| | Deg. | Min. | Sec. | Deg. | Min. | Sec. |
| A | 23 | 40 | 00 | 92 | 32 | 54.85 |
| B | 23 | 00 | 00 | 92 | 35 | 58 |
| C | 23 | 00 | 00 | 93 | 00 | 00 |
| D | 23 | 40 | 00 | 93 | 00 | 00 |
| A | 23 | 40 | 00 | 92 | 32 | 54.85 |

## 4.0 TYPE OF AREA:

4.1 Mizoram has an area of approximately 22500 Sq. Km. This state forms the eastern continuation of Tripura system of folds and sedimentary packages. Logistic constraints have so far hampered sustained exploration efforts in this state. However, improved communication should definitely accelerate the pace of exploration.

4.2 The surface topography of the proposed area of seismic operation is that of typical north-eastern rugged hilly terrain of India. The topographic features are highly undulating with thick forest cover. The hillocks are very steep with intervening deep gorges. Small seepages of water from sharply cut hillocks are found to be the only source of water. The Dhaleshwari River is crossing through the southwest corner of the area.

## 5.0 BRIEF SCOPE OF WORK:

5.1 The Vendor is required to process and interpret around 600 Sq. Km ± 10 % of high quality Seisloop 3D seismic data in the area by deploying the latest state-of-the-art Processing and Interpretation system of logistically difficult, geologically complex and highly thrust belt area of Mizoram.

5.2 Company would expect the vendor to meet the following requirements:

- Processing and interpretation of 600 Sq. Km of 3D Seisloop seismic data.
- Meeting processing & interpretation quality as per international standards.
- Vendor's global & sufficient experience.
- Vendors infrastructure & expertise.
- Vendors's financial strength.
- Time frame
- Turn Key contract
- Company's option to increase the volume by upto 10 % of the proposed work quantum in same or similar areas, if necessary.

Company shall check the quality, monitor the progress and accept the data as per the set standards.

## 6.0 MANPOWER:

The vendor must have the key personnel with requisite experience and qualifications as specified in enclosed **Annexure-I** for deployment throughout the contract period and will be solely responsible to provide all necessary requirements of their personnel. Working personnel must have adequate knowledge and command in their respective field and should be proficient in English.

## 7.0 HARDWARE, SOFTWARE & ACCESSORIES:

7.1 Vendor shall confirm that it will be able to deploy latest state-of-the-art hardware and software, with compatible accessories to carry out the 3D seisloop seismic data processing & interpretation work.

7.2 Vendor shall confirm that it will be able to arrange to mobilize all their resources at the processing and Interpretation centre within **30 (Thirty) days** from the date of issue of Letter of Award (LOA) by Company, in case the contract is awarded to the vendor.

7.4 The key personnel to be engaged by the vendor should be capable of processing and interpretation of 3D seisloop seismic data and completing the assigned work within the stipulated time period of **twelve (12) months** after mobilisation.

## 8.0 PRE-QUALIFYING CRITERIA:

8.1 For the purpose of empanelment/short-listing and issue of tender document for 3D Seisloop Seismic Data Processing and Interpretation Services by OIL, the Vendor/Contractor must have the **following experiences during the last seven (7) years as on EOI Submission Date**.

(a) The Vendor must be in the business of Seismic Data Processing & Interpretation at least for the last three (3) years calculated upto the date of submission of EOI.

(b) The Vendor must have experience of processing a minimum of 2000 Sq. Km of 3D Seismic Data, out of which fifty percent should be in 3D Land Seismic Data Processing as on the date of EOI submission.

(c) The Vendor must have successfully completed at least one Project in 2D/3D Seismic Data Processing pertaining to fold/thrust belt areas as on submission of EOI.

(d) The Vendor must have executed at least five (5) Projects of 2D/3D Seismic Data Interpretation, out of which minimum one (1) Project should be for fold/thrust belt areas as on the date of EOI submission.

(e) The Vendor should have experience of Processing Beam Migration/Short WEM or Reverse Time Migration (RTM).

8.2 The Vendor must confirm deployment of adequate number of qualified and experienced personnel for the Project in compliance to the minimum requirement specified in enclosed **ANNEXURE-I**.

8.3 The Vendor must identify a Data Processing Centre (not essentially but preferably in India) and also a Data Processing Centre for this Project. Details of the proposed Data Processing Centre and Data Interpretation Centre alongwith the available Hardware & Software Packages therein for use in this Project must be furnished in the EOI.

8.4 Vendor's average annual financial Turnover during the previous three (3) completed financial years to the date of submission of EOI shall be minimum INR 7.52 Crore or equivalent foreign currency.

8.5 In case the Vendor/Contractor who participates against this EOI is an Indian company/Indian joint venture company, either the Indian company/Indian joint venture company or its technical collaborator/joint venture partner should meet the experience criteria laid down in para 8.1 above.

8.6 In case the Vendor/Contractor who participates against this EOI is a consortium of companies, the Leader of the Consortium should satisfy the minimum experience criteria as per para 8.1 above.

8.7 Vendors/Contractors who meet the above pre-qualifying criteria may submit their EOI with supporting documents as under:

(a) Details of jobs completed during last seven (7) years prior to submission of EOI in tabular form as per format attached vide **ANNEXURE-II**.

(b) Details of current work in hand in tabular form as per format attached vide **ANNEXURE-III**.

(c) Details of the Data Processing Centre and Data Interpretation Centre with complete technical specifications of available Hardware & Software for use in execution of this Project.

(d) Financial standing of the Vendor/Contractor in terms of annual financial turnover for previous three (3) accounting years as per format attached vide **ANNEXURE-IV** or copy of audited Balance Sheet, Profit & Loss Accounts etc.

**GENERAL NOTES:**

(i) All copy of documents submitted alongwith the EOI must be self certified by Vendor and should be clear & legible.

(ii) OIL INDIA LIMITED reserves the right to check physically the original documents.

(i) The EOI is liable to be ignored in case of submission of any misleading/ false representation by the Vendor/Contractor in the form of attachments and statements.

(ii) OIL INDIA LIMITED reserves the right to ignore any or all EOIs without assigning any reasons thereof.

**9.0 SUBMISSION OF EOI:**

9.1 The EOI together with the information/documents as mentioned above should be submitted in a closed envelop super-scribing **"EOI for Seisloop based 3D Seismic Data Processing and Interpretation - NELP Block in Mizoram"** should reach the following address on or before **12th August, 2015 (15:00 hrs – IST).**

**HEAD - NEF**
**North East Frontier Project**
**OIL INDIA LIMITED**
**Duliajan-786602, Assam, India**
Ph: 91-374-2800405/2801799, Fax: 91-074-2801799,
Email: nef@oilindia.in Website: www.oil-india.com

9.2 However, in case the above date happens to be a Holiday/Bandh in Duliajan, EOI will be received up to the next full working day till 03.00 PM (IST). EOI may be sent by post/courier service, delivered personally or dropped in the tender box placed at the office of NEF Project, Oil India Ltd, Duliajan-786602, Assam. However, for the delay in receipt or non-receipt of the same, Oil India Ltd will not be responsible.

10.0 Oil India Limited reserves the right to (a) either accept or reject any / all EOI/(s) (b) cancel the process, without assigning any reason what so ever.

**&&&&&&&&&&&&&&&**

**ANNEXURE - I**

## LIST OF KEY PERSONNEL TO BE DEPLOYED BY VENDOR/CONTRACTOR

### SPECIALIST STAFF

**A. DATA PROCESSING:**

| POSITION | MINIMUM WORK EXPERIENCE | MINIMUM NUMBER OF PERSONNEL |
|---|---|---|
| 1. Processing Supervisor | 10 yrs | One |
| 2. Project Manager | 7 yrs | One |
| 3. Processing Geophysicist | 5 yrs | One |

**The project team should have following processing experience:**

1. **Processing Supervisor** Should have at least 10 years of experience in 3D Seismic Data processing and should have processed at least 3(three) 3D Land Pre-stack Time and Depth Imaging projects on data.

2. **Project Manager** should have at least 7 years of experience in 3D Land and Marine Data processing and should have processed at least 2 (two) 3D Land Pre-Stack Time and/or Pre-Stack Depth Imaging project on data.

3. **Processing Geophysicists** should have at least 5 years of experience in processing 3D Land and Marine Data processing and should have processes at least 1 (one) 3D Pre-Stack Land Time or Pre-Stack Depth project on data.

In case vendor is proposing separate Pre-Stack Time and Depth Imaging teams then each should have relevant experience in Time and Depth imaging projects as mentioned above.

**B. DATA INTERPRETATION:**

| POSITION | MINIMUM WORK EXPERIENCE | MINIMUM NUMBER OF PERSONNEL |
|---|---|---|
| 1. Team Leader | 10 yrs | One |
| 2. Senior Interpretation Geologist | 5 yrs | One |
| 3. Interpretation Geophysicist | 5 yrs | One |

The team leader shall be responsible for data interpretation and coordinate interpretation related activities. He/she will also interact with the processing group to get the best-processed outputs for interpretation. He/she must have experience of interpreting seismic data of at least two (2) projects.

Notes:

1. The above list indicates the minimum requirement of key personnel and their experience. The Contractor may deploy the required number of processing geophysicists & Interpretation Geologists / Geophysicists to accomplish the job as per the defined parameter and time frame.
2. All the key personnel must be proficient in English.

C) HARDWARE, SOFTWARE AND ACCESSORIES

The vendor shall have a state-of-the-art latest processing centre (not essentially, but preferably in India) to carry out data processing with latest processing software packages, presently used globally.

The vendor shall have state-of-the-art latest interpretation centre to carry out data interpretation & analysis of processed seismic data using latest software packages.

Note: The vendor shall submit the details of the equipment and accessories to be deployed for the processing and interpretation jobs alongwith the EOI.

**&&&&&&&&&&&&&&&**

**ANNEXURE-II**

## EXPERIENCE STATEMENT OF VENDOR/CONTRACTOR

### 3D Seismic Data Processing and Interpretation
**(Jobs completed during last seven years)**

| Sl No | Contract No | Name of client | Area of Survey | Normal or Thrust-fold belt hilly region | Volume of seismic data processing and interpretation (Quantity) | | Commencement of contract | Completion of contract |
|---|---|---|---|---|---|---|---|---|
| | | | | | 2D | 3D | | |
| **A.** | **SEISMIC DATA PROCESSING :** | | | | | | | |
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |
| 5. | | | | | | | | |
| 6 | | | | | | | | |
| **B.** | **SEISMIC DATA INTERPRETATION:** | | | | | | | |
| 1 | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |
| 5. | | | | | | | | |
| 6. | | | | | | | | |

N.B: 1. Please add rows in case of more experiences.

2. Please enclose self-certified copies of contracts/work orders & completion/ payment Certificates etc. issued by clients.

**&&&&&&&&&&&&&&&&**

**ANNEXURE-III**

## DETAILS OF CURRENT WORK IN HAND

### 3D Seismic Data Processing and Interpretation

| Sl No | Contract No | Name of client | Area of Survey | Normal or Thrust belt hilly region | Volume of seismic Data processing and interpretation (Quantity) | | Period of contract (from–to) | Commencement of contract |
|---|---|---|---|---|---|---|---|---|
| | | | | | 2D | 3D | | |
| **A. SEISMIC DATA PROCESSING:** | | | | | | | | |
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| **B. SEISMIC DATA INTERPRETATION:** | | | | | | | | |
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |

N.B: Please add more rows if required. Please attach notarised & self certified copies of contract documents.

**&&&&&&&&&&&&&&&&**

**ANNEXURE-IV**

## TURNOVER CERTIFICATE

TO BE ISSUED BY PRACTISING **CHARTERED ACCOUNTANTS' FIRM** ON THEIR LETTER HEAD

TO WHOM IT MAY CONCERN

This is to certify that the following financial positions extracted from the audited financial statements of M/s.....(Name of the Vendor) for the three (3) accounting years previous to the date of EOI submission are correct.

| **YEAR** | **TURN OVER** In INR (Rs.) Crores or US $ Million) | **NET PROFIT** In INR (Rs.) Crores or US $ Million) |
|---|---|---|
| | | |
| | | |
| | | |

Rate of Conversion (if used any) : USD 1.00 = INR.....

Place:
Date:

Seal:

Membership Code/ Registration No. :

Signature

**&&&&&&&&&&&&&&&&**