



**Rajasthan Field**

2A, District Shopping Centre,

Saraswati Nagar, Basni, Jodhpur-342005,

Rajasthan, India. Phone-0291-2729466, Fax:0291-2727050

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**EXPRESSION OF INTEREST (EOI) NO. OIL/RF/EOI/014/2024 FROM INTERESTED ENTITIES FOR EXPLOITATION AND MONETIZATION OF HEAVY OIL FROM CARBONATE FORMATION OF BAGHEWALA FIELD, RAJASTHAN OF OIL INDIA LIMITED.**

**1. PREAMBLE**

Oil India limited (OIL) a “Maharatna” Category, Government of India Enterprise is a fully integrated National Oil Company operating under the Ministry of Petroleum and Natural Gas. With an impeccable credential spanning over six decades, OIL is actively involved in exploration, production and transportation of crude oil and natural gas as well as refining, petrochemicals and renewable energy generation.

OIL have its operation spread across the country including Rajasthan where OIL is engaged in exploration and production of Heavy oil from Jodhpur sandstone of Baghewala field in Bikaner- Nagaur basin (of Infracambrian age).

Besides, Jodhpur Sandstone, Baghewala Field has Upper Carbonate Formation where exploitation is in nascent stage. The crude of Carbonate Formation is heavier than that of Jodhpur Formation. OIL is producing from Jodhpur sandstone reservoir mainly with Cyclic steam stimulation (CSS)& downhole heating. Attempts were made to produce from Upper Carbonate Formation as well with the help of CSS. However, application of CSS in the upper carbonate wells produced only the traces of crude oil.

**2. OBJECTIVE**

Estimated reserve of upper carbonate reservoir is 52.9 MMSKL as per study conducted by M/s PDVSA in 2008.

As part of its strategy, OIL intends to find out possibilities for exploitation and monetization of the Upper Carbonate Formation of Baghewala structures with proper understanding of the carbonate reservoir through Reservoir Characterization and state-of-the-art technology. OIL is looking for expert services for end-to-end solutions from seismic interpretation to production for the carbonate reservoir.

OIL invites Expression of Interest (EOIs) from reputed and established E&P Service Providers/Agencies/Firms having expertise in exploration, development & production from Carbonate Reservoir to undertake reservoir and geological studies and suggest a suitable technique for exploitation & monetization of the reserves. (Details as per SoW; Point no 4)

**Capabilities:** Interested parties to demonstrate their capabilities in providing solutions for exploration, development& production from Carbonate Reservoir. Parties should have experience of field development and Surface Facility design to handle heavy crude.

**3. FIELD PARAMETER:**

**A. GEOGRAPHIC LOCATION**

Baghewala area is located at the western part of India and in the States of Rajasthan. Rajasthan encompasses most of the area of Great Indian Desert (Thar Desert), which has an edge paralleling the Sutlej-Indus river valley. The nearest airport to the operating area is

Jaisalmer which is located at a distance of 180 kms and Jodhpur Airport is located at a distance of around 350 km.

**B. ENVIRONMENTAL CONDITIONS:**

Components	International System (SI)
Ambient Temperature (Max. / Min.)	50 / -1 Deg C
Humidity (Max.)	40-60%
Average Rainfall	25 mm (about 0.98 in)/year
Wind velocity (Max.)	128 KM/Hr.
Frequency of Sandstorm	March to September and occasional during the remaining period.
Seismic Zone	III, Moderate
Weather	Four distinct seasons-Pre monsoon, monsoon, post-monsoon, and Winter
Topography of Site	Part of Thar Desert

**C. RESERVOIR / ROCK MATRIX/PETROPHYSICAL CHARACTERISTICS OF CARBONATE & SANDSTONE RESERVOIR:**

Description	Upper Carbonate		Jodhpur Sandstone	
	Parameters	Value	Parameters	Value
Reservoir Parameters	Reservoir Depth	450 – 550 m	Reservoir Depth	1050 – 1300 m
	Lithology & Geometry	Dolostone/ Dolomitic Limestone (Mud loss prone formation) with wide variation in porosity, as well as hydrocarbon saturation due to presence of fractures with vugs /voids of various sizes).	Petro-physical Characteristics	Deg API: 14-18 Pour Point(°C): 21 – 27 deg Sp. Gravity: 0.9679 – 0.9229 Viscosity (cp) Approx.: 13000 cp at 50 deg C
	Gross Thickness	250-300 m	Pay Thickness	5 – 23 m
	Pay Thickness	20 – 50 m	Bottom Hole Pressure	1600 psi @ 1100m

	Bottom Hole Pressure	750 psi (just above Hydrostatic)	Bottom Hole Temperature	50°C – 52°C
	Bottom Hole Temperature	40°C – 42°C	Crude Characteristics	Resin: 12.5 % Asphaltenes: 7.25 %; Paraffin: 17.5%
Rock Matrix/ Petro-physical Characteristics	Porosity	10 – 18% (based on log data) 20-25 % (based on Core data)	Porosity	18 – 20%
	Permeability	Less than 1000 md (For vuggy/fracture zone: >1000 md	Permeability	Less than 1000 MD

At present OIL is producing around 600 bbls/day from 26 numbers of oil wells using CSS and artificial lift from Jodhpur sandstone.

**D. WELL DRILLED IN UPPER CARBONATE RESERVOIR:**

Well No.	Initial Testing Details / Production History
BGW-2	Drilled in the year 1991 (same plinth of BGW-1). During initial testing produced only formation water. <b>Cumulative Oil Production:</b> Nil, <b>Present Status:</b> Abandoned
BGW-6	Drilled in the year 2005 as a pilot well for CSS application. However, during experimental steam injection for CSS during 2006-07, the operation had to be suspended due to the elongation of the casing and steam leakage. Later on the well was converted to water disposal well in the year 2018. <b>Cumulative Oil Production:</b> 0, <b>Present Status:</b> Water Disposal Well
BGW-12	Drilled in the year 2019, with several work over operations & two cycle of CSS in the year 2020 & 2022, well produced 60 (45+15) bbls (Cum.) of heavy oil (API gravity @ 15 deg: 8.6 & Dynamic Viscosity at 40 degC : 38174 cp) with formation water. As on date, the well is kept shut-in due to production of water only. <b>Cumulative Oil Production:</b> 60 bbls, <b>Present Status:</b> Shut in.

**\*Note:** Drilling of additional two wells for UC have been recently completed in 2024. Detailed production testing yet to be completed.

**E. CARBONATE CRUDE OIL PROPERTIES (FROM ONE & ONLY TESTED WELL)**

<b>Characteristic</b>	<b>As such</b>
Density at 15° C, kg/liter	1.0094
Specific Gravity at 60/60°F	1.0100
°API gravity	8.60
Reid vapor pressure, kPa at 38°C	Not possible
Kinematic Viscosity, cSt at 100° C	6301.7
Kinematic Viscosity, cSt at 135° C	700.52
Pour point (°C)	+72
Salt content, Lb/1000 bbl (PTB)	1.2
Sulfur, Total, % wt	2.86
Micro carbon residue, % wt	17.23
Asphaltene content %(w/w)	8.96
Wax content % (w/w)	0.83
Water content, % vol.	25
BS&W, %V	29.69
Total acid value, mg KOH/g	8.26
Dynamic Viscosity, (cp)at 40° C	35240
Dynamic Viscosity, (cp) at 50° C	26852

**4. BROAD SCOPE OF WORK**

The scope of work/services includes but not limited to the following:

**For Part- A (Study): Tentative timeline of study – Four (04) Months**

The details of the study to be covered are as follows:

**I. Reservoir Characterization**

- QC of available G&G data (Seismic Data & well data).
- Sequence Stratigraphy
- Petrophysical Evaluation, Rock Typing and Facies classification
- Seismic Interpretation for Fault and Horizon Mapping

- Well to Well Correlation & Well-to-seismic tie, Velocity Modelling, Depth Conversion
- Seismic Attribute Analysis, Seismic Inversion (Geostatistical /post/pre stack inversion based on feasibility)
- 3D Geo-mechanical Model and Geo-Cellular Model with Fracture Modelling

**II. Resource Volume & Risking with Techno Economics Analysis**

- Estimation of Resource, recoverable and risk volumes
- Identification of key risks and perform geological risk assessment of sub-surface parameters.
- Techno Economics Analysis of estimated Resource Volume

**III. Location identification & Future Exploitation Strategy**

- Design Basis Memorandum including Production Plan strategy for optimum exploitation from UC Reservoir.
- Find locations (sweet spots) suitable for drilling based on pore distribution and connectivity.
- Propose suitable well plan, drilling technology, well design / completion (with detailed testing & completion)
- Project Execution Plan for drilling and production from two pilot wells.
- Material & service selection & scouting.
- Water & H<sub>2</sub>S Management.

**IV. Report submission & presentation.**

**For Part- B (Supervision during Execution for the first two wells proposed under Part-A):**

- Provide expertise in drilling & completion services.
- Provide Expertise in Commissioning of proposed technology for production.
- Provide expertise in thermal completion, Production surface set up.
- Assess existing production infrastructure of the field.
- Developing a strategy for further development of the fields based on the existing and future wells.

**V. Service Provider/ Contractor/ Vendor will demonstrate their experience and capability against this EOI.**

- Interested Party will provide the following Information:
  - A. Details of Company Incorporation along with Date and Place of Incorporation.
  - B. Documentary evidence for past experience of executing similar project providing end to end solution for exploitation and production of extra heavy oil from carbonate/ sandstone reservoir.
  - C. Company's financial performance
  - D. Contact Details

- Name of concerned person
- Designation
- Telephone number.
- Mobile number
- Fax number
- Address e-mail.

E. If a Joint Venture/Consortium is proposed, Name, Address, Phone, E-mail of all Joint Venture partners /consortium members.

F. Any other relevant details

#### **5. General Notes:**

- All documents submitted along with the EOI should be clear & legible and in English.
- The EOI is liable to be ignored in case of submission of any misleading / false representation by the Service Provider/ Contractor/ Vendor/ Company.
- OIL INDIA LIMITED reserves the right to ignore any or all EOIs and also to curtail/ enhance the scope of work stated above, if required, without assigning any reason thereof.
- This EOI is not an invitation for bids. The EOI is issued for technical proposals only.
- This EOI is non-binding in nature and submission of information should not be considered as shortlisting / selection for company in any subsequent RFP/ Tender/ Bid process that may be undertaken in future.
- OIL reserves the right to terminate the EOI process at any point of time without assigning reason.
- No participant shall contact OIL on any matter relating to the EOI after the last date of submission of EOI unless requested for so in writing. Any effort by the service provider to influence OIL in the decision making in respect of EOI will result in the rejection of that service provider.
- Based on the responses received against this invitation, a virtual meeting/ offline discussion (as per convenience of OIL) will be held with the responding Service Provider/ Contractor/ Vendor/ Company to discuss on the information/ views submitted. Date and time shall be intimated separately.

#### **6. Submission of EOI**

- Interested parties meeting the stated experience as above are invited to submit their EOI at our e-mail id: [tonmoydutta@oilindia.in](mailto:tonmoydutta@oilindia.in) and [niponsarma@oilindia.in](mailto:niponsarma@oilindia.in) within 09.07.2024, followed by hard copies of the same through courier/post super-scribing “Expression of Interest No.: “OIL/RF/EOI/014/2024” at the following address:

ASSET MANAGER – RAJASTHAN ASSET  
OIL INDIA LIMITED  
2A District Shopping Centre,  
NH62, Saraswati Nagar, Jodhpur, Rajasthan 342005  
Email: [tonmoydutta@oilindia.in](mailto:tonmoydutta@oilindia.in) , [niponsarma@oilindia.in](mailto:niponsarma@oilindia.in)



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- The offer(s) may also be uploaded in Parties' FTP server/ File sharing website (portal) and the link(s) may be provided to us at our e-mail within above specified period.
  - The offer(s) should have clear indication of meeting the requisite experience as mentioned in stated experience.
7. All Corrigenda, addendum, amendments, time extensions to the EOI will be hosted on OIL's website [www.oil-india.com](http://www.oil-india.com) under- for Vendors ---> Expressions of Interest and no separate notification shall be issued in the press. Prospective participants against the EOIs are requested to visit the website regularly to keep themselves updated.

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