

**DETAILS OF THE EXPRESSION OF INTEREST(EOI)
for offering A Commercially Viable Technology
for Exploitation of High Pour Point(HPP)
and High Viscous(HV) Crude
in Oil India Limited(OIL)**

1.0 Expression of Interest:

Expression of Interest is requested from Turnkey Solution / Service Providers (TSP) for offering suitable & commercially viable technology for exploitation of High pour point and high viscous crude from the Eocene/ Palaeocene sandstone reservoirs at around 4000 metres depth in the oilfields of Oil India Limited, Assam, India and proving the same in the field through a pilot scale application.

2.0 Preamble:

Oil India Limited (OIL), a national oil company in India engaged in exploration, drilling, production & transportation of oil & gas and production of LPG intends to hire the services of a competent Turnkey Solution/ Service Provider (TSP) for offering a suitable and economic technology for exploiting high pour point and high viscous crude oil from one of its sandstone reservoirs at a depth of around 4000 meters located in upper Assam, India. The technology will have to be proved in the field through a pilot scale application.

3.0 Background:

OIL has established considerable quantity of High pour point (HPP) and high viscous (HV) reserves in Eocene age sand bodies (at a depth of around 4000 metres) in the state of Assam, India. These reserves are found in the smaller structure having acreages in the range of 2 to 5 sq km. Currently there are about 20 wells drilled in such structures where presence of HPP & HV crude oil has been established. Current conservative estimates of oil in place of such HPP & HV crude are around 45 Million Barrels.

4.0 Project Overview:

OIL, with a view to develop a most suitable and economic method of exploitation of HPP & HV reserves, intends to hire the services of a Turnkey Solution/ Service Provider (TSP) for offering fit for purpose technology and proving the same through a pilot scale field implementation project. This Project is to be carried out in a small size deep seated structure. The TSP shall undertake requisite studies, recommend suitable techniques and implement the same through a pilot project for exploitation of High Pour Point / High Viscosity (HPP / HV) crude. The relevant data relating to the well/ structure are provided in Annexure 1, 2, 3 and 4. Based on the success of the pilot project, the technology will be extended to other such structures in the oilfields of Oil India Limited.

5.0 Scope of Work for the Pilot Project:

Under the Pilot Project Scheme, the Turnkey Solution/ Service Provider (TSP) is expected to perform the activities outlined (but not limited to) below in 3 different phases.

- Phase-I:** Review all available data and recommend a suitable technology to be tried out through a pilot project in one reservoir.
- Phase-II:** To provide detailed plan of action for the Pilot project, undertake its implementation, evaluation and documentation.
- Phase-III:** To provide Master plan for exploiting HPP/HV oil from the entire structure / other structures, in case the pilot project is successful.

6.0 Qualification Criteria for the Turnkey Solution Providers:

6.1 The Interested parties must have experience of undertaking and completing similar pilot / field projects successfully elsewhere in respect of exploitation/ production of HPP and HV crude oil in any part of the globe at least for a period of 5 years, out of which 3 years must be in the exploitation/ production from deep reservoirs of atleast 3000 metres depth..

6.2 The interested parties must have experience of executing similar projects over the last 5 years of the magnitude of :

- i) A single contract of value INR 10 crores (2,500,000 USD)
- ii) Two contracts of value INR 6 crores each (1,500,000 USD each)

6.3 The interested parties must have a core group/ team of multidisciplinary technical experts having wide experience in the execution of similar projects independently or through the participating interested parties/ other reputed organization. Relevant documents

6.4 The interested parties who do not meet the experience criteria vide para 6.1 through 6.3 for carrying out all the functions independently but has experience in any one or more such related functions in matters of exploitation of HPP/ HV Crude oil may also show interest on the strength of collaboration/joint venture partners to cover the shortfall in experience. Such collaborators or associates must have relevant experience in the areas where the primary interested parties falls short. This kind of collaboration shall be through a pre-tender bi-partite Agreement or Memorandum of Understanding between the primary interested parties and the collaborators, well documented.

6.5 The interested parties meeting above requirement must forward their letter of intention along with initial proposal and relevant supportive documents meeting the qualifications given in para 6.1 to 6.4 above.

6.6 Further, the interested parties are to attend a discussion and give a presentation about their technical capabilities, credentials, experience of working in similar such project anywhere in the world, and tentative technical cum commercial proposal in a conference to be organised by OIL in one of the three locations Kolkata/ Delhi/Mumbai. The suitable participating parties will be short listed based on the merits of the discussions for further participations in the tender.

7.0 Interested firms are requested to submit their Expression of Interest in two copies in a sealed cover superscribing with “**Expression of Interest(EOI) for a Commercially Viable Technology for Exploitation of High Pour Point(HPP) and High Viscous(HV) Crude in Oil India Limited**” so as to reach Head-Contract’s office at following address on or before 1.00 PM(IST) on 27th October, 2008:

HEAD (CONTRACTS)
OIL INDIA LIMITED,
DULIAJAN – 786602,
ASSAM, INDIA
Email: contracts@oilindia.in
Fax: 91-374-2803549
Tel : 91-374-2800548

Interested parties may also contact Head –Contract at the above address for any information & clarification on the EOI.

Well # XXX 1: Location - Assam, India

The well was drilled to probe the Paleocene/ Lower Eocene hydrocarbon prospects down to basement in the year 2001. The structure has an areal extent of 2.3 sq Km. The well was constructed with 3 stage casing and with an S bend hole profile.

Reservoir → Sandstone, Eocene age group (Regional Langpar, Lakadong + Theria)

Well Completion details.

Hole Profile: S Bend deviation. (between 170 m to 1642 m)
Total horizontal displacement at 1642 m = 453.58

Casing details:

13.3/8 inch Casing shoe at 146.5 m: Cemented up to surface (Hole size 17 ½ inch)

9.5/8 inch Casing shoe at 1648.0 m: Cemented up to surface (Hole Size 12 ¼ inch)

5.1/2 inch Casing shoe at 3866.0 m : Cemented up to 2910 m (Hole Size 8 ¼ inch)

Perforations: 3812.5 – 3814.5 m (Plugged back with BP at 3808 m)
 3792 – 3793 m) Open
 3793.5 – 3795.5 m) Open
 3757 – 3759 m (Isolated with Retainer Packer at 3788 m)

**Wireline Logs available: DL, CNL, GR, SP,CAL, Neutron Porosity, Bulk density etc
TEMP, GR, CCL, CBL, VDL etc (Cased hole)**

Chronology of Initial Testing Operations.

(1) Testing of 3813 m (LK + TH) sand

Perforated with 2 1/8 inch deepstar gun in the range 3812.5 m to 3814.5 m.
(Total 40 shots @ 6 SPF)

The well did not displace. Bottom hole sample collected using wireline run sand bailer.

Laboratory testing of the collected sample indicates presence of heavy and high pour point oil. (API: 12.1; Pour Point: 42⁰ / 48⁰ C; Aromatics: 40.1%; Saturates: 34.2%; Resin + Asphaltene: 25.7 %).

Plugged for testing higher up sand.

(2) Testing of 3757 m (LK + TH) sand

Perforated with 2 1/8 inch dynastar gun in the range 3757.0 m to 3759.0 m. (Total 40 shots @ 6 SPF)

Minor displacement was observed. Unloaded well fluid with Nitrogen unit. Unloaded fluid sample indicated 100% water. (Salinity 3700 ppm & bicarbonate 122 ppm).

As the unloaded fluid was found to be formation water, it was decided to test the 3792 m sand by isolating the 3757 m sand.

(3) Testing of 3792 m (LK + TH) sand

Perforated with 2 1/8 inch shogun NT (deep penetration gun) in the range 3792.0 m to 3793.0 m and 3793.5 to 3795.5 m (Total 60 shots @ 6 SPF)

No fluid displacement was observed. Collected two bottom hole samples by running sand bailers twice.

Laboratory testing of the collected sample indicates presence of heavy and high pour point oil.

Analysis of 1st Sample (31.08.2001)

API: 15.5; Pour Point : 42 C

Analysis of 2nd sample (01.09.2001)

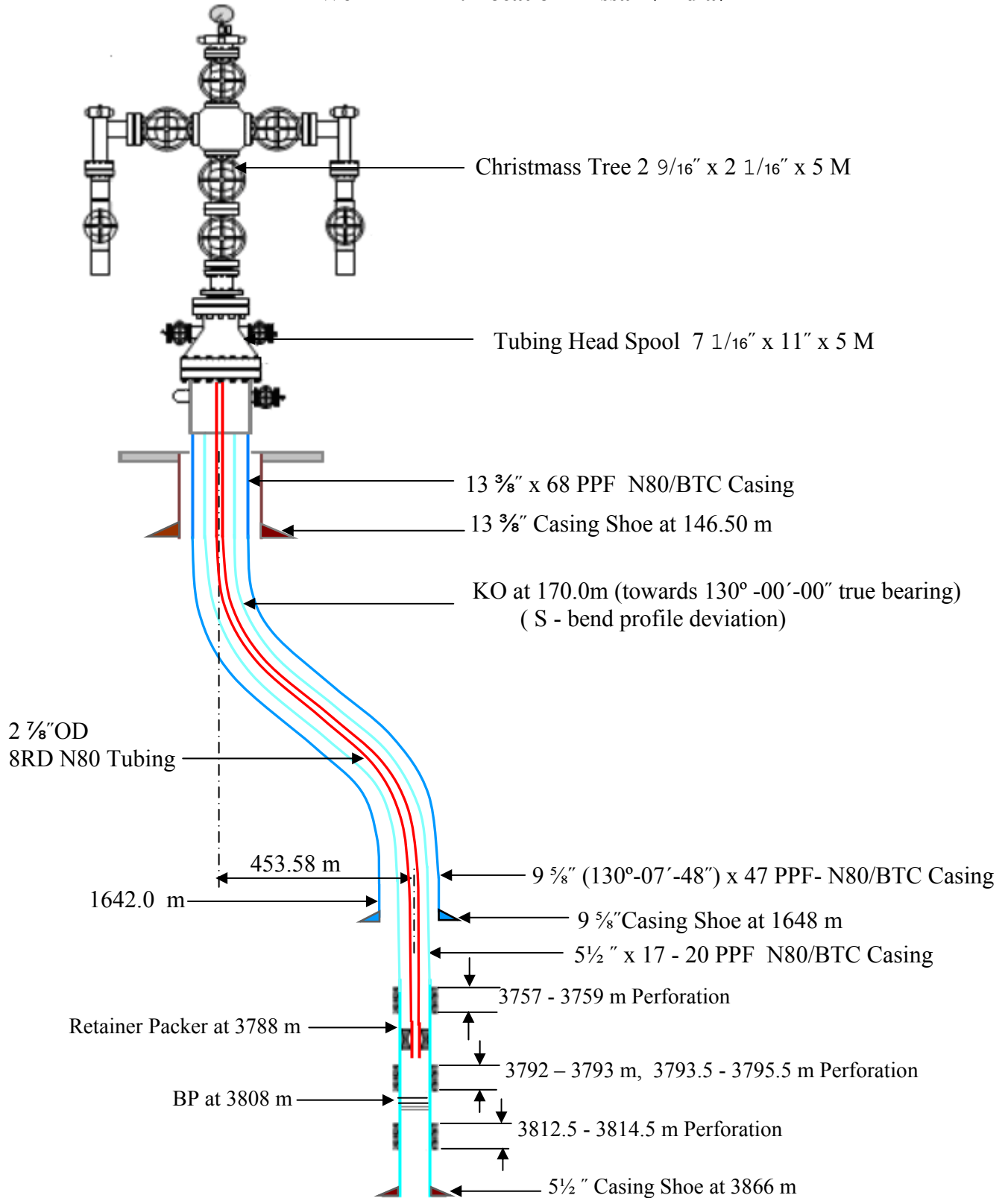
API: 14.2; Pour Point : 42 C

The laboratory testing of bottom up sample collected during killing operations indicated presence of crude oil having API gravity of 13.10 degrees

Oil in Place:

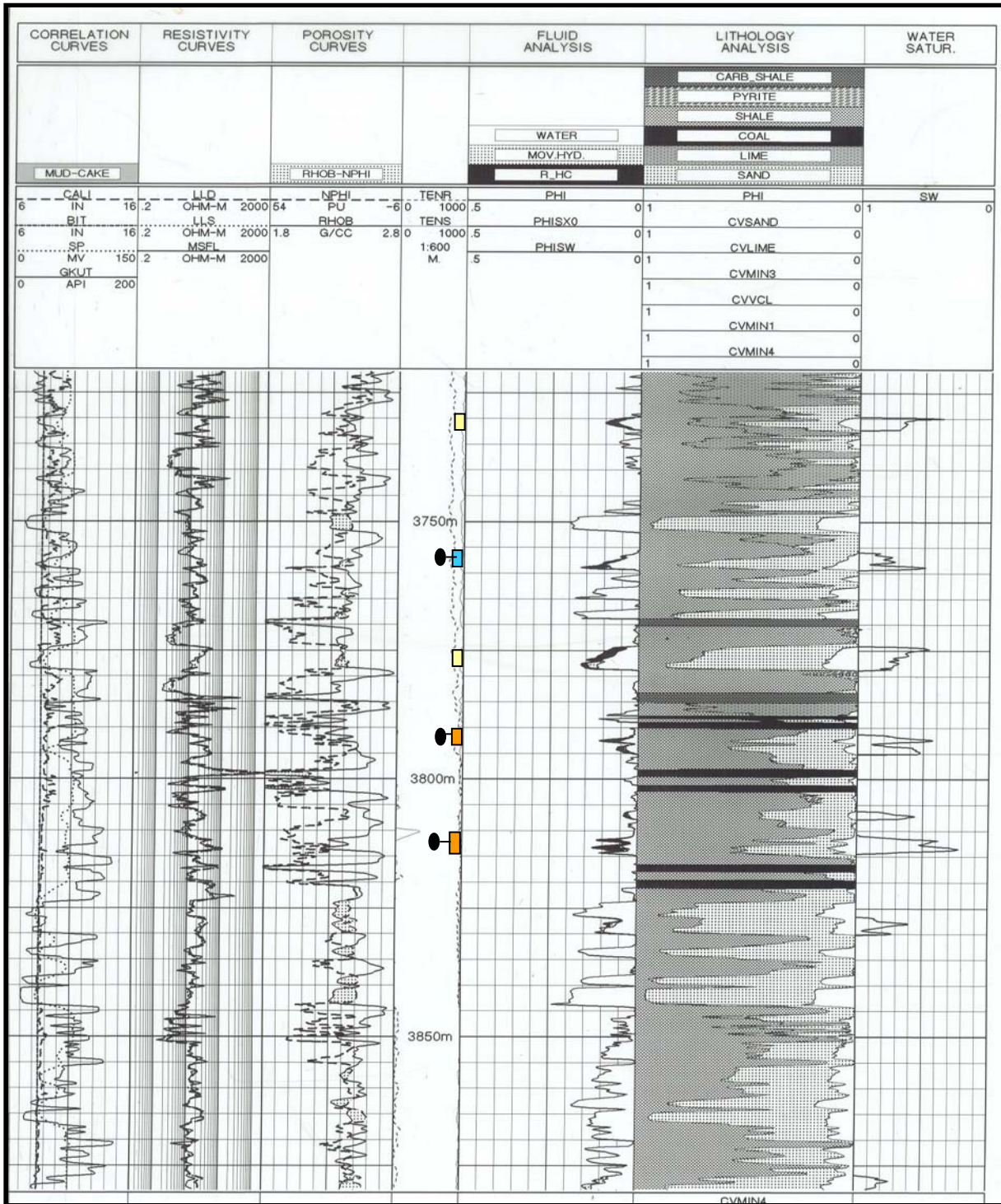
Estimated oil in place considering 17.5 % porosity, 500 m radial extent and 7 m pay thickness is around 300,000 kilolitres (1.80 MMBbls.)

Well # XXX 1: Location - Assam, India.



Vertical hole upto : 170 m
 Kick off point: 170.0 m (TVD)
 Angle build up: 170 m – 660 m
 Angle hold up: 660 m-979 m
 Angle drop down: 980 m – 1640 m
 Vertical hole below: 1642 m
 Horizontal Displacement at 1642.0 m = 453.58 m
 Maximum drift 36° at 975 m.

**Well # XXX 1: Location - Assam, India
Composite Logs and Interpretation Results**



Annexure 4
 Well # XXX 1: Location - Assam, India,
 Open hole Logs

