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DETAILS OF EXPRESSION OF INTEREST (EOI)
for
Out-sourcing Production Engineering Services to Produce Heavy Oil by means of artificial lift arrangements from Baghewala Well #1

COLD PRODUCTION OF HEAVY OIL

Oil India Limited, a premier National oil Company engaged in the exploration and production of oil & Natural gas has discovered Heavy oil in Baghewala field in the western Rajasthan in India in 1991-94.During initial exploration period, Production testing were carried out for a very short duration and were discontinued due to high viscosity & poor inflow of oil to the well bore. Now in order to establish production potential of the wells drilled in 1991-94, OIL invites tender from the prospective bidder to carryout the following on turnkey basis.

Location :

The Baghewala oil field is located in Jaisalmer district in North-West part of Rajasthan province. The mining lease area is a part of Thar desert in India. It is well connected by road and is at a distance of about 350 KM from Jodhpur.

General climatic condition of the area is as under:

i) Topography of site :The site is part of the Great Thar Desert.

ii) Presence of sand dunes : Common occurrence in the vicinity.

iii) Nature of top soil : Usually wind blown sand.

iv) Highest recorded wind velocity : 128 KM/Hr.

v) Frequency of sand storm : Frequent from March to September and occasional during the remaining period.

vi) Maximum recorded ambient Temperature : 60 deg.C

vii) Minimum recorded ambient Temperature : (-) 5 deg. C

viii) Average annual rain fall : 1" (25 mm)

ix) Humidity : Maxm. : 40 %

Oil Field: A total of 5 Nos. wells were drilled during 1991-1994 and tested for a brief period, out of which 2 wells viz., Baghewala well #1 & #4 were proved to be good producers of Heavy oil. However, prolonged testing could not be carried out due to various reasons. Now OIL intends to out-source suitable Production Testing and Operations with complete equipment, tools and experts for at least one well i.e., Baghewala well #1 for a period of about 3 months with an option for extension by three more months. The broad SCOPE OF WORK and various input data for the intended operations are highlighted below:

Broad Scope of Work (Services, which OIL intends to hire) :

1.0 On studying the history of the well and reserves, bidder to decide upon the modalities of Production operation and infrastructure required for cold production of Heavy oil from well No#1.

2.0 Bidder to arrange for all the infrastructure and facilities required for producing the well for a period of minimum three (3) months, extendable by another three months at the option of OIL.

3.0 All resources required for the job including suitable artificial lift-pump for cold production, Electrical power generator, bowser loading pump and other surface facilities shall be arranged by the service provider.

4.0 Man power required for continuous operation of the well for the initial three months shall be arranged by the Service Provider.

5.0 All the necessary and relevant parameters, information pertaining to well performance, and data shall be generated by the service provider for OIL.

6.0 For Workover operation of the well, OIL will provide Rig with crew and wireline logging services. Artificial lifting pump etc., and job supervision shall be done by the service provider. Also, the Production Tubing (2 7/8"O.D.) and surface Shut-in Valves for completion will be provided by OIL.

OIL will provide :

1.0 The well complete with downhole production tubing (2 7/8" O.D.) and surface shut-in valve. (Service provider shall have the option to use higher size tubing to be arranged by themselves)

2.0 Well plinth in leveled condition and free from any encroachment and the approach road.
3.0 Boundary fence and security hut, security Gate.
4.0 Bowser loading pad.
5.0 Open pit with PVC lining, approx. size 15M X 20 M X 1.5 M deep.
6.0 Basic Fire fighting facility with crew at site.

Results of the initial production testing carried out in 1991-1995 at well#1 and well details are as under:

Total Depth : 1395M
20" Casing shoe at : 64 M, cemented to Top (with API Class G cement).
13 3/8" Casing at : 541 M, cemented to Top, (with API Class G cement).
9 5/8" Casing at : 915 M, Cemented to 225M, (with API Class G cement & 40% Silica)
7" Casing shoe at : 1383 M, Cemented to 27M, (with API Class G cement &40% silica).
7" Float collar at :1371 M
Perforations in the range : 1104-1110 M & 1111- 1117 M.
2 7/8" O.D. Tubing with PCP stator & anchor catcher : 1104.25 M

Note: PCP (not in working condition) with sucker Rods and Rotor is in Place, Surface motor has been removed)

Reservoir Data :

Payzone: Jodhpur Sand Stone (Of Cambrian age)
Payzone : 1104 M – 1117 M.
BHP: 1690 psi
BHT : 45 deg C.

Tentative oil characteristics (As predicted by PDVSA through simulation of core samples) :

API gravity at 15 deg C : 14-17 deg.
Pour Point : > 27 deg C
Viscosity at 60 deg C : 7187 cp.
Sulphur content : 1.5-3.0%
Water content : 5% Max.
Wax Content : 1.7%

Report on analysis of oil sample collected during initial Production Testing:

Density : 0.9491- 0.9725 Kg/ litre at 15 deg C
(For dehydrated Crude : 0.9414 gm / ml at 15 deg C)
Specific gravity at 60/60 deg F :0.9496- 0.9731
API Gravity at 60/60 deg F : 13.92 – 17.52 (18.79 for dehydrated Crude)
Reid Vapour Pressure (Kg/cm2 at 38 deg C) : NIL

Pour Point : 27 deg C
Viscosity , Kinematic, cSt at 70 deg C : 23926.2
At 100 deg C : 1682.4

Water Content (Dean & Stark) % vol: 0.2
Salt Content , % weight : 1.51
Salt content, lbs/1000 bbl: 5033.
Sulphur , wt % : 3
Nitrogen, wt% : 0.47
Carbon Residue (Conradson), wt% : 15.14
Asphaltene, wt % : 7.8
Ash Content ,wt % : 1.84
Wax Content (Engler Holde), wt % :1.7
Congealing Point of wax , degC : 68.
Sediment & Water (BS & W), vol% : 1.6
Total Acidity, mg KOH / gm : 9.12
In-organic Acidity, mg KOH / gm : 0.032
Characterisation Factor, (Kuop): 11.85

Other Terms:

1.0 Fluid produced from the well shall be OIL's property. While the surface storage facility shall be arranged by the service provider, OIL will arrange for end use/disposal of the same. Loading of produced fluid to the tanker for disposal shall be service provider's responsibility.

2.0 All statutory clearances for production operation from competent authorities shall be made available by OIL.

3.0 During production operation, the service provider shall ensure that No statutory rules were violated. This shall be monitored on routine basis by OIL.

4.0 All the necessary data pertaining to drilling & completion record of the well including well Logs and reservoir data shall be made available to the interested parties during Pre-bid conference for their study.

5.0 Basic infrastructure at site like site camp etc., to carryout the production operation shall be arranged by OIL or service provider on mutually agreed terms.

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