

Part-3
SECTION: II
TERMS OF REFERENCE / TECHNICAL SPECIFICATIONS

- 1.0 **INTRODUCTION:** This section establishes the scope and schedule for the work to be performed by the Contractor and describes the specifications, instructions, standards and other documents including the specifications for any materials, tools or equipment, which the Contractor shall satisfy or adhere to in the performance of the work.
- 2.0 **DEFINITION OF WORK:** To provide 05 (Five) Nos of Compact Effluent Treatment Plant(ETP) with centrifuge and Management service in onshore drilling wells for a period of 3 (three) years. Capacity of each ETP unit be sufficient to handle minimum of 150 cubic meters of liquid effluent per day and 50 cubic meters solid effluent input per day. The Effluent Treatment Plant with associated tools/equipment & accessories and service provided by the Contractor will be utilized in different drilling rigs in its operational areas of Oil India Limited under Field Head Quarter (FHQ) at Duliajan, Assam for treatment and management of liquid effluent as well as solid waste generated during drilling operations of wells either straight or deviated and a cluster of minimum 2 (two) wells having maximum depth 5500 meters. Depth of the wells, where operations are to be carried out, may somewhat single or cluster location at the discretion of the Company. The mobile Effluent Treatment Plant and associated tools/equipment and accessories shall be in efficiently operating condition from the day of completion of mobilisation to the day of issuance of demobilisation notice.
- 2.1 **SCOPE OF WORK INCLUDING BUT NOT LIMITED TO THE FOLLOWING ONLY (For Each ETP):**
- a) Collection of drill cuttings/solid waste & liquid effluent generated from drilling activities during drilling operation for 24 hours a day in a drilling well/ location. (Drilling effluent expected characteristics required for treatment is enclosed in Annexure – IIA & IIB
 - b) Separation and treatment of liquid effluent generated during drilling operation every day.
 - c) Collection & disposal of drill cuttings/solid waste including solid cakes generated from mechanical separation unit of the ETP at the designated area inside wellsite every day.
 - d) Treatment of the liquid effluent so as the output of ETP (final output) shall conform to the standard of SPCB/CPCB (as per Annexure – III).
 - e) To make the treated liquid effluent ready for Re-circulation for industrial use and rig utility.
 - f) The liquid treatment process shall be of chemical separation and of mechanical separation using horizontal centrifuge.
 - h) The liquid and solid output from the ETP shall conform to the recent CPCB (Central Pollution Control Board) and SPCB (State Pollution Control Board) norms and follow MoEF (Ministry of Environment & Forest) guidelines published time to time.

- i) To carry out testing of treated water of well site/ drilling location as per Annexure-IV and provide test results to the Company on regular basis.
- j) Transportation of the unit from one location to the next location to be done by the Contractor. Crane service for loading and unloading at well site will be provided by Company.
- k) To collect oil/grease separated from effluent and store in a suitable container for further disposal by the Company supplied empty barrels. However, OIL shall take responsibility to dispose the collected oil in the barrels.
- l) Provisions for pumps and pipe lines for recirculation of treated water to storage tank of OIL is to be made by the Contractor. To make arrangement for transferring of treated water from the ETP to the designated place within the boundary of the well site/drilling location.
- m) To install Flow meters in both the inlet and outlet are to be fitted on treated water line for monitoring quantities. Minimum one number of additional flow meter should be made available with the plant.

3.0 **AREA OF OPERATION:**

3.1 The area of operation as planned for this contract shall be in Assam and Arunachal Pradesh of India. However, the ETP unit may be required to transfer to any operational area of OIL. If the unit needs to be transferred outside Assam and Arunachal Pradesh, the mobilisation charge for that shall be fixed at mutually agreed rate. All other rates shall remain unchanged.

3.2 The following information is for general guidelines to the bidders. Company is not responsible for any deviation of figures being spelt out or met with for reason beyond their control.

- a) Maximum width of the well site approach road = 3.66 m
- b) Turning Radius = 15m (Generally), 12 m (exceptionally)
- c) Maximum allowable unit load inclusive of tare weight for class AA loading = 50 tons
- d) Maximum overhead clearance = 4.25 m
- e) Highest recorded wind velocity in Assam = 80 km/hour
- f) Max. recorded ambient temp = 45 deg. Celsius
- g) Min. recorded ambient temp.= 5 deg. Celsius
- h) Weather Pattern : Frequent rains from May/June to September/ October and Occasional during the remaining period
- i) Nature of top soil : Usually clay/Alluvium/ Unconsolidated
- j) Source of water - Through shallow bore wells. Usually available at well Site. Otherwise from bore well situated at convenient Locations. Depth of bore well 15/50m.
- k) Average annual rainfall : 250 / 300 cm
- l) Humidity - max. 98%
- m) Allowable axle load rating of weakest section of road # 12 Tons
- n) The approximate well plinth area is 8000 - 9000 sq. m.
- o) The content of solid effluent may be sand, shale, clay, coal, silt, mudstone, sandstone and other minerals/
- p) The approximate volume of solid effluent may be up to 80 cubic mtr during drilling of upper section of the hole.

4.0 **PRESENCE OF CO2 & H2 S:** Presence of CO2 is expected in the wells. The wells are expected to be H2S free. Accordingly, the equipment/tools etc. to be offered by the Contractor shall be for generally H2 S free environment.

5.0 **TECHNICAL SPECIFICATION OF THE EFFLUENT TREATMENT PLANT [ETP]:**

The contract includes supply of ETP package including haulage and transportation and its services. The ETP unit offered against this contract shall have the following -

5.1 **General Requirement**

- a) The ETP unit offered shall be compact in design and skid mounted having capacity to handle minimum 150 cubic meter of liquid effluent and 50 cubic meter of solid waste including solid cakes generated from centrifuge as well as mechanical separation unit every day.
- b) The liquid after treatment shall conform to following three conditions which is the most stringent and for the purpose, the Contractor must consider the cost involvement to achieve such output:
 - (i) SPCB standard as in Annexure - III.
 - (ii) To be reused in PHPA or NDDF or any salt solution and must conform to the Chemicals requirement as per 5.2 below.
 - (iii) The liquid and solid output from the ETP shall meet the recent CPCB (Central Pollution Control Board) and SPCB (State Pollution Control Board) norms and MoEF & CC (Ministry of Environment, Forest & Climate Change) guidelines.
- c) The liquid treatment process shall be of chemical separation and of mechanical separation using horizontal centrifuge as per 5.4 below.
- d) The ETP unit should have proper handling system to transfer the accumulated solid effluent waste.
- e) The unit shall be in full operating condition from the spud in date to the date of issue of ILM of the designated Rig.
- f) The ETP unit offered shall be brand new or of a vintage of 3 years (maximum).
- g) The ETP unit shall have Flow meters in both the inlet and outlet line for monitoring quantities and at least one number of additional flow meter should be made available with the plant as spare.

5.2 **Chemical Requirement**

- (i) No Chemical which is identified banned by GOI or WHO must not be used and OIL reserves right to ask the certification from recognised lab to certify the same.
- (ii) Liquid output after treatment should meet all the criteria as per **Annexure-Chem** so that it can be reused in polymer or NDDF mud system.
- (iii) MSDS and product description of the used chemicals must be submitted to OIL and same to be displayed in the plant.
- (iv) An eyewash as per IS standard to be provided.