2.0 PROJECT DESCRIPTION

2.1 INTRODUCTION

Moinaband POL Depot of IOCL shall be established in 45.74 acres of land provided by Assam Government. The project activities are only limited to receipt, storage and despatch of petroleum products namely MS, HSD, ATF & SKO. The input to the depot shall be obtained from Assam based Refineries namely Digboi Refinery, Guwahati Refinery, Numaligarh Refinery, Bongaigaon Refinery and also from outside as per monthly Production and demand plan.

The petroleum products shall be received through rail wagons in the dedicated railway gantry of about 1 km length within the premises of the Depot. All the required safety and fire fighting features shall be available in the railway siding. A brief description of proposed facilities are as under:

<table>
<thead>
<tr>
<th>Name of the Depot</th>
<th>Moinarband POL Depot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Moinarband, Silchar, Assam beside NH-54 Ext. East West Corridor.</td>
</tr>
<tr>
<td>Products handled</td>
<td>MS, HSD, SKO, ATF (Proposed)</td>
</tr>
<tr>
<td>Mode of Receipt</td>
<td>Rail wagons</td>
</tr>
<tr>
<td>Mode of dispatch</td>
<td>Road tankers</td>
</tr>
<tr>
<td>Tankage Capacity</td>
<td>30,768 KL</td>
</tr>
<tr>
<td>Plant Area</td>
<td>45.74 Acres</td>
</tr>
<tr>
<td>Plant layout</td>
<td>OISD-118</td>
</tr>
<tr>
<td>Tank Inspection</td>
<td>OISD-129</td>
</tr>
<tr>
<td>Fire fighting</td>
<td>As per OISD î 117</td>
</tr>
<tr>
<td>Tank Enclosure wall</td>
<td>Dyke of adequate capacity has been provided for each product tank farm</td>
</tr>
<tr>
<td>DG Sets</td>
<td>2 Nos. (2x250) KVA</td>
</tr>
<tr>
<td>Fire Water Tank</td>
<td>3 Nos. (3000 KL)</td>
</tr>
<tr>
<td>MOC of FW Tanks</td>
<td>MS</td>
</tr>
<tr>
<td>Fire Water Pumps</td>
<td>3x 410 m³/hr</td>
</tr>
<tr>
<td>Discharge Pressure of FWP</td>
<td>105 M Head</td>
</tr>
<tr>
<td>Jockey Pumps</td>
<td>2 Nos (12 kg/Cm² g)</td>
</tr>
<tr>
<td>Capacity</td>
<td>60 m³/hr</td>
</tr>
</tbody>
</table>
2.2 PROPOSED FACILITIES

2.2.1 Product Receipt
All the products like MS, HSD, SKO, & ATF shall be received from Assam based Refineries namely Digboi Refinery, Guwahati Refinery, Numaligarh Refinery, Bongaigaon Refinery of IOCL through BTPN Rail Wagons. The Depot shall be located adjacent to railway track and is connected to it for receipt of products through wagons.

The activity flow chart is summarized as under:

![Activity Flow Chart]

2.2.2 Storage
Moinarband POL depot shall be provided with a total tankage/storage capacity of about 30,768 KL of petroleum products namely MS, HSD, SKO and ATF. The depot comprises 12 nos. of above ground (A/G) tanks (Gross Capacity i.e 30,768 KL). The details of tankage are summarized below in Table - 2.2.

### Table - 2.2
DETAILS OF STORAGE TANKS AND TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Product</th>
<th>Dimension (m)</th>
<th>Capacity (KL)</th>
<th>No. of Tanks</th>
<th>Total Cap. (KL)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>MS</td>
<td>16 ø x 10 (Ht.)</td>
<td>1810</td>
<td>3</td>
<td>5430</td>
<td>IFR</td>
</tr>
<tr>
<td>02.</td>
<td>SKO</td>
<td>20 ø x 12 (Ht.)</td>
<td>3754</td>
<td>2</td>
<td>7508</td>
<td>CR</td>
</tr>
<tr>
<td>03.</td>
<td>HSD</td>
<td>20 ø x 12 (Ht.)</td>
<td>3754</td>
<td>4</td>
<td>15016</td>
<td>CR</td>
</tr>
<tr>
<td>04.</td>
<td>ATF</td>
<td>10 ø x 12 (Ht.)</td>
<td>938</td>
<td>3</td>
<td>2814</td>
<td>CR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total 30768</td>
<td></td>
</tr>
</tbody>
</table>
Storage tanks shall be provided with separate dyke enclosures. The proposed tanks shall be provided with CC/ brick pitching over an impervious layer to prevent oil seepage into the ground in case of any spillage. All the storage tanks shall be provided with 2 nos. of valves in both inlet & outlet lines and suitable venting arrangements. The tanks shall be provided with water sprinkler system and foam cum water monitors for cooling and fire fighting and with foam pouring facility for fighting fire in case of any such situation. All the tank farms shall be provided with fire hydrants & monitors in addition to 02 nos. of foam trolleys and foam generators.

2.2.3 Dispatch

All products shall be dispatched to various retail outlets in Assam and other adjoining areas through Tank Trucks. The details of road tanker loading facilities available at POL depot are as under:

<table>
<thead>
<tr>
<th>Table - 2.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>DETAILS OF ROAD TANKER LOADING</td>
</tr>
<tr>
<td>No. of Bays</td>
</tr>
<tr>
<td>Capacity of road tankers</td>
</tr>
<tr>
<td>Mode of connection between road tanker and installed lines</td>
</tr>
<tr>
<td>Loading Arm dia and length</td>
</tr>
<tr>
<td>Arrangement for Safety &amp; Fire Fighting in TLD Shed</td>
</tr>
</tbody>
</table>

2.2.3.1 Tank Lorry Filling / Parking

Facilities shall be provided for loading of products into tank trucks. The tank trucks are properly earthed before starting the filling operation in TLF bays. The petroleum products to be dispatched are pumped through pipelines which are provided with flow governor and flow meter, to the loading arm for filling in the tank trucks by batch controller process.

Sufficient space shall be provided for parking of tank trucks. Separate drainage with Oil Interceptors shall be provided to the pumps and loading gantries to contain leakage or release, if any, during pumping/loading operations. An Oil Water Separator (OWS) shall be provided for treatment of oily water generated in the TLF Gantry and the pumping area.
2.2.4 TLF / TWD Pumps

Details of TLF pumps are as follows:

**TABLE - 2.4**
**DETAILS OF TLF PUMPS**

<table>
<thead>
<tr>
<th>Product</th>
<th>No. of Pumps</th>
<th>Pump House</th>
<th>Discharge (KL/Hr.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSD</td>
<td>2</td>
<td>TLF</td>
<td>324</td>
</tr>
<tr>
<td>SKO</td>
<td>2</td>
<td>TLF</td>
<td>144</td>
</tr>
<tr>
<td>MS</td>
<td>2</td>
<td>TLF</td>
<td>216</td>
</tr>
<tr>
<td>ATF</td>
<td>2</td>
<td>TLF</td>
<td>144</td>
</tr>
</tbody>
</table>

**TABLE - 2.5**
**DETAILS OF TWD PUMPS**

<table>
<thead>
<tr>
<th>Product</th>
<th>No. of Pumps</th>
<th>Pump House</th>
<th>Discharge (KL/Hr.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSD</td>
<td>2</td>
<td>TWD</td>
<td>-</td>
</tr>
<tr>
<td>SKO</td>
<td>2</td>
<td>TWD</td>
<td>-</td>
</tr>
<tr>
<td>MS</td>
<td>2</td>
<td>TWD</td>
<td>-</td>
</tr>
<tr>
<td>ATF</td>
<td>2</td>
<td>TWD</td>
<td>-</td>
</tr>
</tbody>
</table>

2.2.5 Pipe line Network

Independent pipelines shall be provided to receive different products from the rail wagons. Dedicated pipelines shall be provided from the pump house to individual tanks for storage. Similarly, dedicated pipelines are to be provided from the storage tanks to the pump house for further loading in Tank Trucks under TLF shed.

2.2.6 FIRE PROTECTION SYSTEM

**Design Codes**

b. I. S. Codes i For Fire Fighting Equipment
c. Standard on fire protection Facilities for Petroleum Depots & Terminal i OISD 117
d. NFPA standards
e. M.B. Lal Committee Recommendations.
Design Criteria

- Moinarband POL depot shall be fully covered by hydrant system with hydrants and monitors located as per OISD / CCOE rules, design guidelines given below and safe practice requirements.
- The entire network in and around tank farm area shall be designed for water demand of the tanks as per revised OISD 117 to be protected by water spray and foam system.
- System shall be able to fight two fire contingencies simultaneously.
- Water requirement for fire fighting has been arrived at based on following design criteria as per OISD 117
  
  a). The fire water system shall be provided based on two largest fire contingencies simultaneously.
  
  b). Firewater flow rate at 3 Liters / min. / sq.m of tank shell area of the single largest tank and other tanks within 30M distance from the largest tank in the same dyke area, shall be provided.
  
  c) 1 LPM per sq. mt of shell area of the tanks in the same dyke enclosure but beyond 30M distance from the largest tank.
  
  d) Foam water requirement at 12 LPM/Sq.m of seal area of largest floating roof tank for spraying.
  
  e) Foam water requirement at 5 LPM/Sq.m for the liquid surface of the single largest cone roof tank for spraying.
  
  f) Fire water flow rate for supplementary streams shall be based on using 4 single hydrant outlets. Capacity of each hydrant outlet as 36 m³/hr shall be considered at a pressure of 7kg/cm² (g). (As per OISD 117-3rd amended edition July 2012)
  
  h) Firewater pressure system shall be designed for a minimum residual pressure of 7.0 Kg/sq.cm.g. at the remotest place of application in the plant.
  
  i) Firewater ring main shall be provided all around perimeter of battery limit of high hazard areas with fire hydrants, at every 30 meters distance and fire monitors at all strategic locations like tank farms, TLF gantry area, pump houses. Fire hydrants and monitors shall be installed within 15 meters from the facilities / equipment to be protected.
j) Remote Operated High volume long range water cum foam monitor (capacity 500/750/1000 GPM and above) to fight tank fires shall be provided which shall be of variable flow 1000/750/500 GPM with flow adjustable manually in the field. Provision shall be made for foam induction to the monitor from minimum 60 m distance from the monitor.

k) HC detector shall be provided at suitable locations.

- Firewater pumps and fire water tanks of adequate capacity shall be provided. Suitable Bore wells shall be provided for filling of Fire Water Tanks

2.3 ELECTRICAL FACILITIES

2.3.1 SOURCE OF ELECTRICAL POWER

Power requirement shall be met from nearest available grid of State Electricity Board. The power shall be provided from the four pole structure of ASEB to HT Breaker / 4 pole structure of POL depot by an A/G or U/G cable. In case of any power disruption backup power shall be provided by installing desired capacity of DG sets at Moinarband POL depot.

2.3.2 ELECTRICAL EQUIPMENT ASSOCIATED WITH POWER DISTRIBUTION

A. RECEIVING SWITCHYARD

  ii) The equipment associated with the receiving switchyard at the Moinarband POL Depot including the point of supply ASEB:
  
  iii) A/G or U/G cable
  iv) Four pole structure
  v) Gang operated device (G.O.D.)
  vi) Drop out fuses (D.O.F.)
  vii) Lighting arrestors (L.A.)
  viii) Current transformers (C.T./P.T.)
  ix) Metering cabinet
  x) Outdoors circuit breaker
  xi) Overhead conductor and accessories
PROJECT DESCRIPTION

B. INDOOR HT SWITCHGEAR

I. As the plant is away from the point of supply, an additional isolating device near transformer is required. This is done with help of HT switchgear. The main components of HT switchgear are:

II. Panel housing the breaker / isolator, PT, CT, bus bar, control accessories etc.

III. CS / isolator, indoor trolley mounted type

IV. CT, PTs

V. Following meters are provided:

VI. Ammeter for reading current

VII. Voltmeter for reading voltage

VIII. KWH meter for reading power

IX. PF meter

C. TRANSFORMER

An outdoor type transformer of suitable capacity shall be provided for stepping down the voltage from 11 KV to 430 Volt. The transformer shall be 3 phase, double wound, oil immersed ONAN cooled type with cable connection terminals on the HV/LV side conforming to IS2026 (part I to IV)

D. PCC / MCC

The power control centre / motor control centre shall house necessary switches / circuit breakers and relays for providing power to the various loads available in the plant. Individual cables will be drawn from the panels provided in MCC to the loads

E. LDB

Lighting distribution boards consisting of MCB shall be provided for control of lighting loads. Necessary ELCB shall also be incorporated.

F. CONTROL, PROTECTION & ANNUNICATION

Push button stations will be provided near each motor for operation, Motor feeders will be wired for necessary interlocks.

Transformer feeders, breakers are provided with backup over current and instantaneous earth fault relays apart from the transformer auxiliary devices.

It is assumed that sub station will be unattended. Therefore annunciators for all electrical equipment will be provided in the control room.
Area classification: All areas shall be classified in accordance with the provisions of National Electric code (US), API-RP-500, IS 5572.

2.4 DEPOT AUTOMATION

The scope of Depot automation system includes control of the incoming manifold for directing the product to the storage tanks, monitoring the storage tanks for liquid level, temperature and flow control and management of tank filling gantries. The plant control system shall present the operating personal with graphic displays of depot activities and historical reporting and trending. Colour graphic workstations shall be included as a part of plant control system for operation interface with the control system for monitoring and controlling the tanks, pumps, pipelines, valves and associated equipment. Additionally comprehensive depot automation system software executing on a supervisory computer will be integrated with the workstations. The system shall also support an interface for product and financial accounting system for uploading and downloading transaction data. The depot automation system shall ensure that product receipt and loading at road gantries takes place in a secure, orderly and well-documented manner. It shall perform the following activities at:

- Tank lorry gantry
  1. Entrance / exit validation
  2. Order entry and product movement plan
  3. Support data on tank lorries
  4. Delivery of products
  5. Monitoring safety inputs
  6. Record and store truck loading information
  7. Log events and generate alarms
  8. Generate reports
  9. Communicate with plant control system

2.5 WASTE WATER TREATMENT

Industrial waste and contaminated storm water consisting mainly of spilled over oil from manifolds in tank farms, loading areas etc. will be conveyed through the drains to Oil Water Separator. Any Oil collected at the OWS shall be skimmed as per the standard operating practices. The treated water shall be used for green belt area.
Storm water from roof of the buildings will be collected through gutters and drained through down-take pipes to surface drains. Storm water from open areas will be collected through surface drains which will be of trapezoidal and rectangular sections running alongside of the roads and interconnected across through pipe / RCC culverts and will be disposed of to nearby water course / rain water harvesting system.

Rain water harvesting pond will be provided for recharging the ground water as well as for plant.

2.6 INTERNAL COMMUNICATION SYSTEM

To facilitate proper operational and management control of the simultaneous operation within the installation, a reliable and dedicated communication system should be set up connecting the various stations spread all over the installation like tank lorry filling area, pump houses control room, pipeline receipt area, planning room etc.
PROJECT DESCRIPTION

PLATE-2.1

LAYOUT PLAN OF PROPOSED MOINARBAND POL DEPOT