



RAVITA ENGINEERING SERVICES LIMITED

SITE VISIT REPORT

**HEATING VENTILATION AIR
CONDITIONING & REFRIGERATION
SYSTEM**



SAGAR RATNA JACK-UP RIG-ONGC

Under O&M Contract

PREPARED BY

SUNEEL PRAKASH ARYA

1. ABOUT ONGC

Oil and Natural Gas Corporation Limited (ONGC) is India's largest upstream oil and gas company and a Maharatna Public Sector Enterprise under the Ministry of Petroleum and Natural Gas, Government of India. Established in 1956, ONGC has played a foundational role in developing the country's hydrocarbon resources and strengthening national energy security. Over the decades, it has evolved into a technologically advanced exploration and production (E&P) company with operations spanning diverse geological basins across India.

ONGC contributes approximately 70% of India's domestic crude oil production and over 80% of its natural gas output, making it the principal driver of indigenous hydrocarbon supply. The company operates extensive onshore assets in Assam, Gujarat, Rajasthan, Andhra Pradesh, Tamil Nadu, and Tripura, along with significant offshore operations in the Western and Eastern Offshore basins. Mumbai High, one of India's most prolific offshore fields, remains a cornerstone of ONGC's production portfolio.

The organization maintains robust infrastructure including drilling rigs, offshore platforms, subsea installations, gas processing plants, and an extensive pipeline network. It leverages advanced seismic data acquisition, reservoir simulation, enhanced oil recovery (EOR), and digital oilfield technologies to optimize production and improve recovery factors. ONGC's technical competence is supported by dedicated research and development through the Institute of Reservoir Studies and other specialized centres.

Internationally, ONGC extends its presence through ONGC Videsh Limited (OVL), holding exploration and production interests across multiple countries in Asia, Africa, and Latin America. This global portfolio enhances India's energy footprint and diversifies supply sources.

Beyond hydrocarbons, ONGC is strategically diversifying into renewable energy, including solar and wind projects, green hydrogen initiatives, and carbon management programs. These initiatives align with India's energy transition roadmap and the company's commitment to sustainable development and emission reduction.

With strong financial performance, strategic national importance, and a legacy of operational excellence, ONGC remains central to India's long-term energy strategy. Its integrated capabilities, technological depth, and progressive diversification position the company as a resilient and future-ready energy leader committed to sustainable growth and energy security.

Critical services: Heating, ventilation, air conditioning & refrigeration are highly critical services as the entire jack-up drill rigs are made of mild steel and are functioning in highly saline atmosphere in Mumbai High in Arabian sea about approximately 100 Nautical Miles away from the shores of Mumbai, HVAC system is must to condition the air in terms of cooling and addressing the humidity required for human comfort & management of heat energy evolving out of process machinery and servers irrespective of the ambient air conditions outside the drill rigs. If the heat energy is not addressed by air conditioning then the process machineries and their controls will malfunction and will trip incurring huge losses of production of oil & gas as desired. Further refrigeration systems on-board take care of food supplies and provisions.

2. DETAILS OF THE SITE VISIT

Particular	Details
Date of Visit	20th Mar-2026
Place of Visit	Sagar Ratna Rig
Name of person visiting the site	SUNEEL PRAKASH ARYA
Site Name & Address	Sagar Ratna Rig at Bombay High, Offshore
Purpose of Visit	To undertake mandatory site visit for the proposed SME IPO of Ravita Engineering Services Limited (formerly known as Powermech Services Private Limited).

3. CLIENT & CONTRACT DETAILS

Particular	Details
Contractor Name	Ravita Engineering Services Limited (formerly known as Powermech Services Private Limited)
Client Name	Oil and Natural Gas Corporation Limited
Order No	NOA NO: MUM/DRIL-SER/SCM/2025/2657562 Dt:02-01-2026
Contract Type	Hiring of Operation & Maintenance (O&M) Services
Scope Reference	Annexure–III – Scope of Work (SOW)
Coverage	HVAC, Refrigeration, Unit Coolers & Misc. AC Systems
Rig	Sagar Ratna (Offshore Jack-Up Rig)
Contract Nature	Comprehensive O&M (3P + Breakdown + Overhaul)
Duration	3 Years (from completion of mobilization)

4. INTRODUCTION

This report is prepared strictly in line with **Scope of Work** for O&M of HVAC systems installed on ONGC Offshore Jack-Up Rigs- Sagar Ratna.

The HVAC system onboard Sagar Ratna is designed to:

- Maintain controlled temperature in accommodation areas.
- Ensure positive pressurization of living quarters.
- Prevent ingress of hazardous gases.
- Maintain safe conditions in SCR, VFD, Control Rooms.
- Support refrigeration and provisioning systems.

As per SOW, the O&M contract includes:

- 3P Maintenance (Predictive, Preventive & Planned)
- Breakdown Maintenance
- Supply of Spares & Consumables
- Compressor Overhauling
- Deployment of experienced HVAC Technicians (24x7)

Broad Description of the HVAC/ Other Refrigeration System & Unit Coolers			
Sl. No.	System/ Plant	Equipment/ Sub-Assemblies	
1	Heating, Ventilation and Air Conditioning (HVAC)	i.	Compressor
		ii.	Motor
		iii.	Condenser System:
		·	Heat Exchanger
		·	Elements
		·	Sea Water Circulation
		·	Pump with Motor
		iv.	Chiller System:
		·	Chiller Evaporator
		·	Chilled Water Pump with Motor
		·	AHU Fan
		·	Motor
		v.	Control Panel / Main Electrical AC Panel.
		vi.	SLC/ PLC / VFD
		vii.	Valves & Piping
		viii.	Ducting, Dampers, Grills & Diffuser
		ix.	Exhaust fan,
		x.	Fresh air Fan
		xi.	Pressurization Unit
		xii.	Window /Split Type ACs
2	Other Refrigeration Systems	i.	Cold Storage Unit
		·	Compressor

		·	Chiller Evaporator
		·	Condenser
		·	Control Panel
		·	Piping & Valves
		·	Cold Storage Room Doors& Insulations.
		·	Safety Alarm for Cold Room
		ii.	Refrigerators
		iii.	Cold Water Fountain
		iv.	Ice Cream Machine
		v.	Ice Cube Machine.
		·	Refrigerant type air dryers for utility air System
3	Unit Coolers	i.	Semi-Hermetically Sealed/ Hermetically Sealed Compressor, etc
		ii.	Condenser System:
		·	Heat Exchanger
		·	Elements
		·	Sea Water Circulation
		iii.	Pump with Motor
		iv.	Control Panel / Main Electrical AC Panel
		v.	Valves & Piping
		vi.	Ducting, Dampers, Grills & Diffuser

5. EQUIPMENT AT SAGAR RATNA

The following systems are covered:

5.1. HVAC – Accommodation & Living Quarters

- Make: Carrier
- Model: 5H 60
- Type: Direct Expansion (DX)
- Cooling Capacity: 60 TR
- Refrigerant: R 407C
- Quantity: 3 Nos
- Operation Philosophy: 2 Running + 1 Stand by
- AHU: 02 Nos (Nance Make)

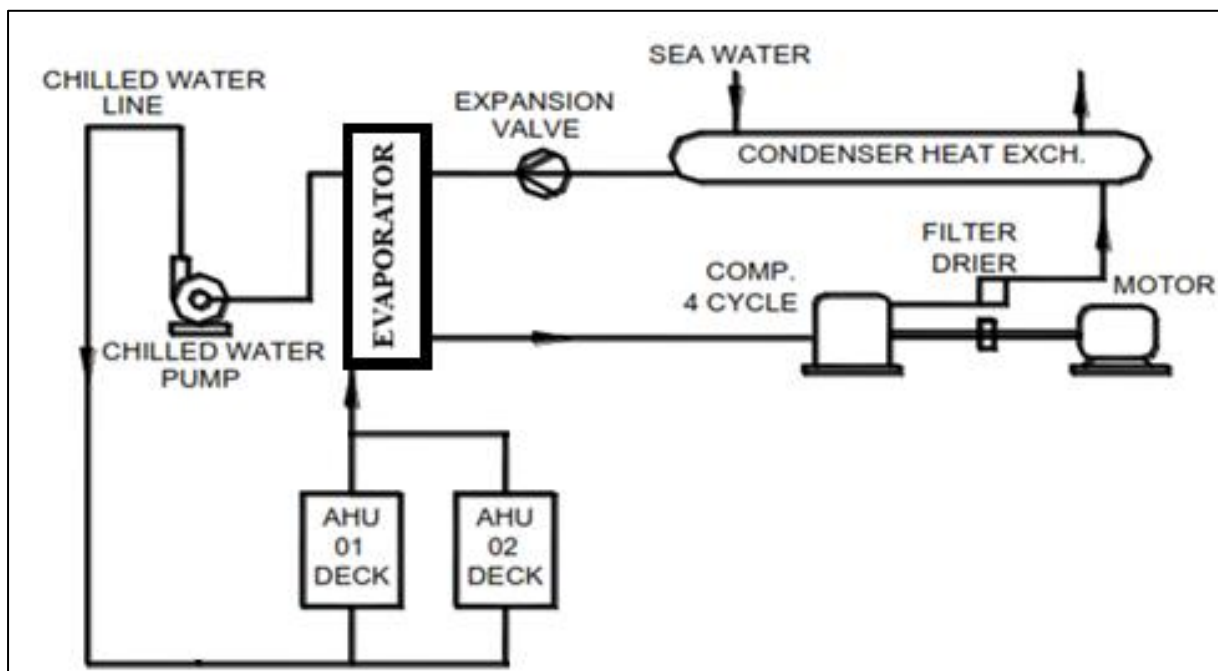


Image 1-Accommodation HAVC Layout

- Cold Storage Units
- Deep Freezers
- Refrigerators
- Ice Cube Machines
- Water Coolers
- Refrigerant Air Dryers



6. MAINTENANCE METHODOLOGY

Maintenance of HVAC & Refrigeration systems onboard Sagar Ratna Rig is executed strictly in accordance with the **Maintenance Activity Catalogue (MAC)**, OEM technical manuals, and the approved maintenance schedule endorsed by the Engineering Superintendent. The maintenance strategy follows a structured 3P framework — Predictive, Preventive and Planned Maintenance — to ensure high equipment availability, operational reliability, and compliance with offshore safety standards.

6.1. Predictive Maintenance

Predictive maintenance is implemented to assess equipment health and anticipate failures before breakdown occurs. Critical rotating machinery such as compressors, condenser pumps and AHU motors are subjected to periodic vibration analysis to detect imbalance, misalignment, bearing wear or mechanical looseness. Lubricating oil samples are analyzed to evaluate contamination, acidity, moisture content and metallic wear particles, thereby ensuring compressor integrity and preventing premature failure.

Electrical health monitoring includes insulation resistance testing of motors, compressors and control panels using calibrated megger instruments to detect insulation degradation. Performance trending is carried out by recording suction and discharge pressures, superheat, subcooling, amperage, temperature differentials and chilled water parameters. Deviations from baseline performance are analysed and corrective action is initiated proactively.

6.2. Preventive Maintenance

Preventive maintenance activities are carried out at scheduled intervals to maintain system efficiency and extend equipment life. Air filters of AHUs and FCUs are cleaned or replaced to maintain air quality and design airflow. Sea water-cooled condensers are periodically descaled and cleaned to prevent fouling, maintain heat transfer efficiency and avoid high head pressure conditions.

Mechanical components including motor bases, couplings and mounting hardware are inspected for tightness and alignment. Electrical panels are checked for loose terminations, overheating marks, and proper functioning of contactors and relays. Refrigerant circuits are inspected using leak detection equipment to prevent refrigerant loss, environmental impact and system inefficiency. All preventive actions are documented in maintenance logs and verified by responsible authority onboard.

6.3. Planned Maintenance

Planned maintenance includes major inspection activities carried out during scheduled shutdowns or designated maintenance windows. Annual comprehensive inspections of compressors, condensers, AHUs and refrigeration units are conducted as per OEM guidelines. Expansion valves, isolation valves and dampers are dismantled, cleaned and serviced where required.

All planned activities are executed under approved work permits, documented in maintenance records and certified by the Engineering Superintendent.

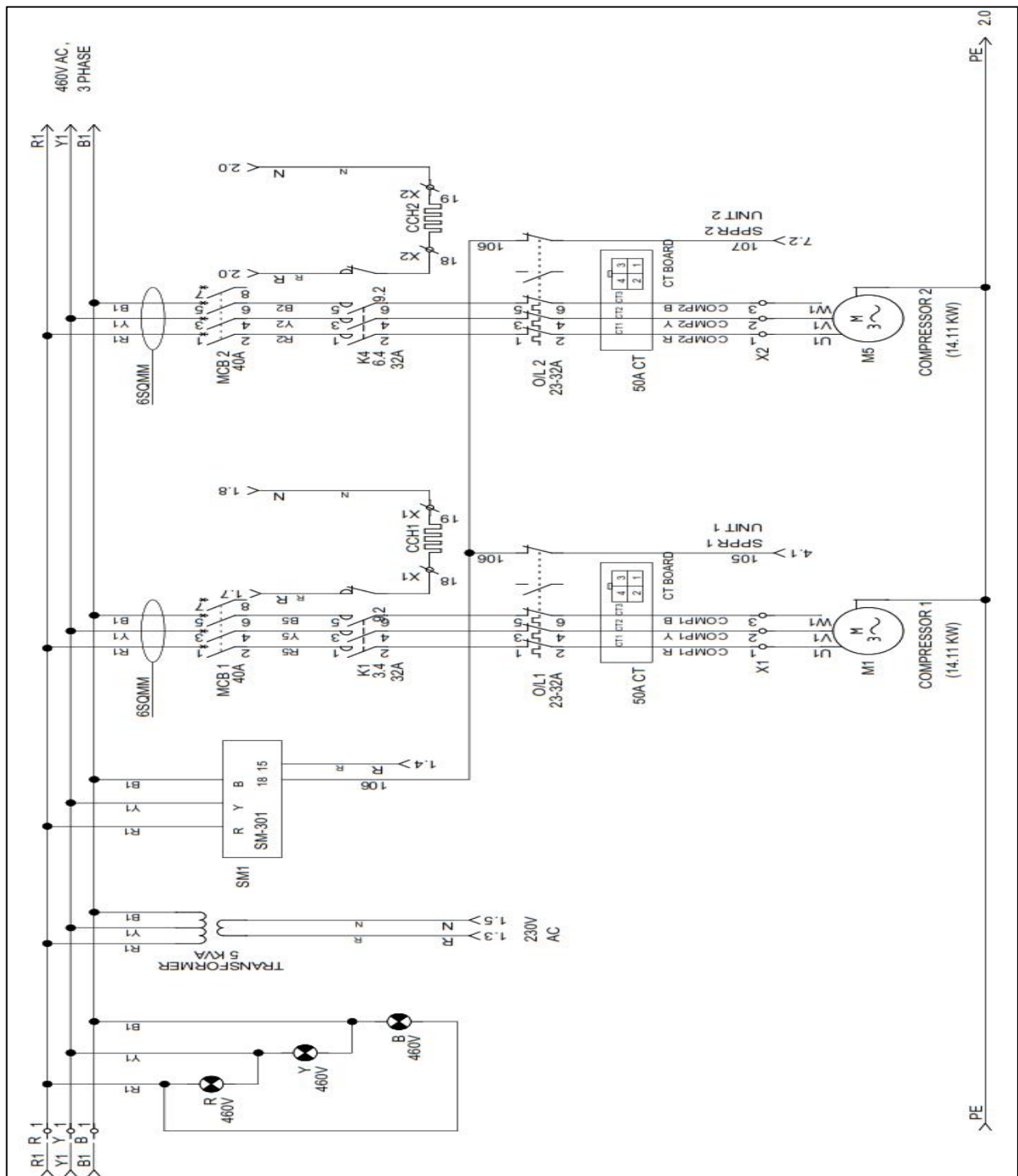


Image 3- Refrigeration Control Layout

7. TECHNICAL CONDITION ASSESSMENT

7.1. Mechanical Condition

A detailed mechanical inspection of the HVAC and refrigeration equipment installed onboard Sagar Ratna Rig was carried out covering compressors, condensers, evaporators, blower assemblies and associated vibration isolation systems. The assessment was conducted through visual inspection, operational checks, and review of maintenance records.

A. Compressors:

All installed compressors were observed to be operational and functionally stable during inspection. No abnormal vibration, unusual noise, excessive heating or oil leakage was detected. Suction and discharge pressures were within design operating range and amperage draw was consistent with rated load conditions. Mounting bolts and base frames were found secure. Overall mechanical condition of compressors is satisfactory and suitable for continued offshore operation.

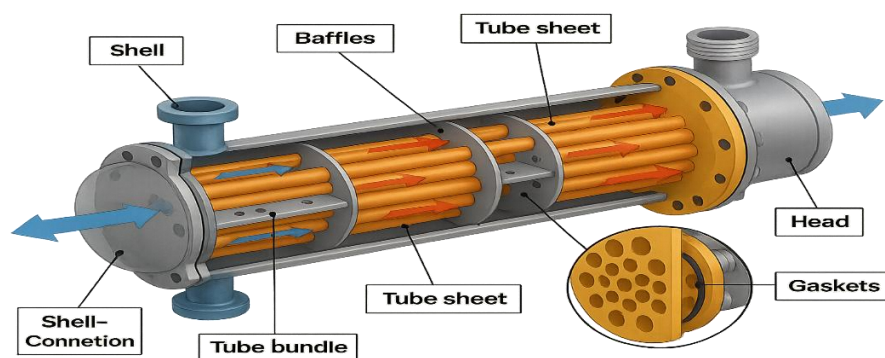


B. Sea Water Cooled Condenses:

Sea-water cooled condensers were inspected for fouling, corrosion and scaling. Minor salt deposition and marine scaling were observed, which is typical for offshore environments. Heat transfer performance remains within acceptable limits; however, periodic chemical cleaning and descaling is recommended to prevent efficiency loss and high head pressure conditions. Structural integrity of condenser tubes and headers is intact.

C. Evaporators/ Chillers:

Evaporators/ Chillers were found clean with no significant dust accumulation or blockage. Airflow across coils is uniform and within design parameters. No evidence of refrigerant leakage, fin damage, or icing was observed. Coil fins are largely intact with negligible deformation. Thermal performance is satisfactory.



D. Blowers & Motors:

Blower assemblies and associated electric motors were checked for alignment, vibration, bearing condition and electrical health. Bearings are adequately lubricated and rotating smoothly without abnormal sound. Insulation resistance values recorded are within permissible limits, indicating good winding health. Couplings and drive components are properly aligned and secured. No overheating or imbalance was observed.



E. Anti-Vibration Mounts:

All anti-vibration mounts supporting compressors, AHUs and blower units were inspected. Mounts are intact, free from cracks or rubber degradation, and maintaining proper load distribution. Equipment stability is satisfactory with no signs of excessive movement or structural stress transmission.

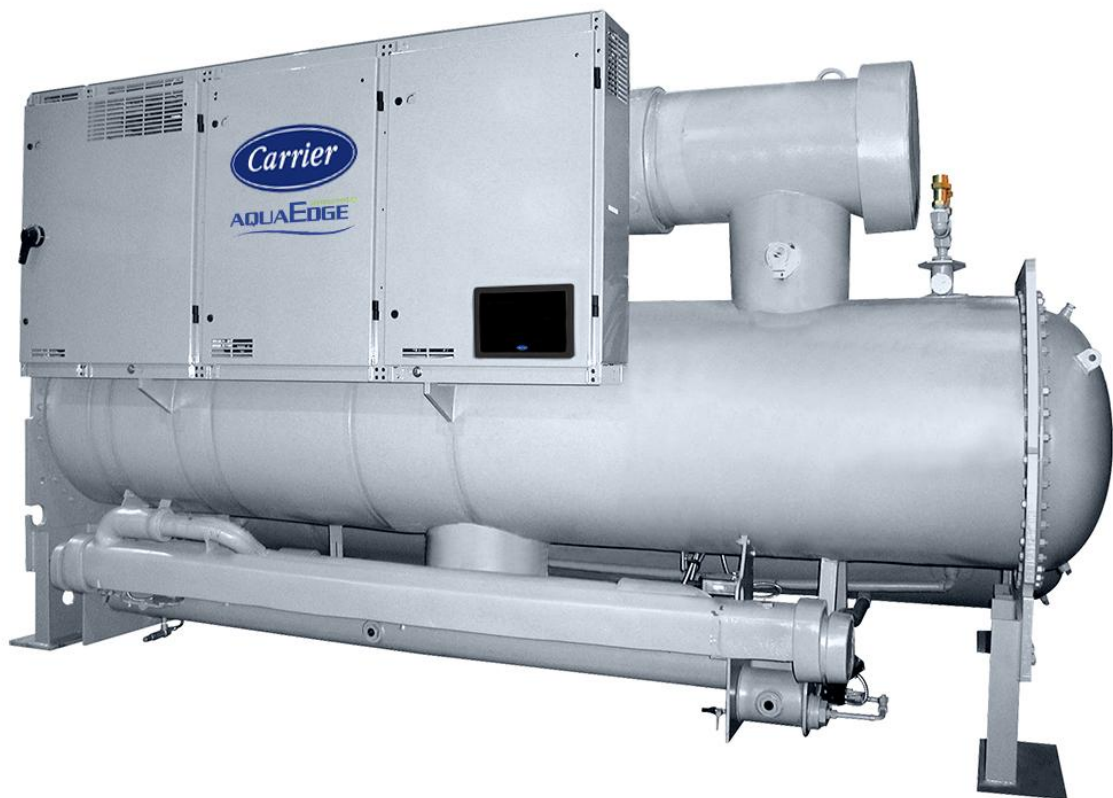
F. Overall Mechanical Condition:

Based on inspection and operational verification, the mechanical condition of the HVAC and refrigeration systems onboard Sagar Ratna Rig is satisfactory and fit for continued service under the O&M contract, subject to routine maintenance and recommended condenser descaling schedule. Detailed report published below:

TECHNICAL ASSESMENT OF HAVC _ SAGAR RATNA RIG				
S. No.	Description	Accommodation AC No. 1	Accommodation AC No. 2	Accommodation AC No. 3
1	Compressor Make	Carlyle - USA	Carlyle - USA	Carlyle - USA
2	Compressor Model	Compressor: 5H 60-C109 Open Type, Reciprocating, Coupling with shims, direct drive. Motor: Emerson, Mexico HP: 75, 460V RPM: 1785 Refrigerant: 407-C, Oil: 3GS-SUNISO	Compressor: 5H 60-C109 Open Type, Reciprocating, Coupling with shims, direct drive. Motor: Emerson, Mexico HP: 75, 460V RPM: 1785 Refrigerant: 407-C, Oil: 3GS-SUNISO	Compressor: 5H 60-C109 Open Type, Reciprocating, Coupling with shims, direct drive. Motor: Emerson, Mexico HP: 75, 460V RPM: 1785 Refrigerant: 407-C, Oil: 3GS-SUNISO
3	Capacity (in TR)	60	60	60
4	Location	Auxiliary Room Stbd side	Auxiliary Room Stbd side	Auxiliary Room Stbd side
5	Foundation & Skid	OK	OK	OK
6	Vibration pads	OK	OK	OK
7	Compressor	Runing OK	Runing OK	Runing OK
8	Comp Motor winding	OK	OK	OK

9	Ampere RBY	R- 51.3 Amps B- 50.4 Amps Y- 49.8 Amps	R- 54.1Amps B- 52.3Amps Y- 51.5 Amps	R- 51.6Amps B- 52.0 Amps Y- 51.8 Amps
10	Insulation at 500 V	65 MΩ	50 MΩ	78 MΩ
11	Cooling Fan & guard	OK	OK	OK
12	Coupling	OK	OK	OK
13	Shaft Seal	OK	OK	OK
14	Suction Valve	OK	OK	OK
15	Discharge Valve	OK	OK	OK
16	Suction Bellow	OK	OK	OK
17	Discharge Bellow	OK	OK	OK
18	Crank Case Heater	Working	Working	Working
19	Control Pannel	Operational	Operational	Operational
20	Compressor Temperature & pressure gauges	All gauges working fine and calibration done once every 6 months.	All gauges working fine and calibration done once every 6 months.	All gauges working fine and calibration done once every 6 months.
21	Comp Suction Pressure	58 PSI	46 PSI	58 PSI
22	Comp Discharge Pressure	210 PSI	230 PSI	210 PSI
23	Comp Oil Pressure	124 PSI	94 PSI	98 PSI
24	LP Protection Cut-Out	OK (Johnson Control Penn Model: P70AA-45 Range: 0 - 100 PSI)	OK (Johnson Control Penn Model: P70AA-45 Range: 0 - 100 PSI)	OK (Johnson Control Penn Model: P70AA-45 Range: 0 - 100 PSI)
25	HP Protection Cut-Out	OK (Johnson Control Penn Model: P70KA-1 Range: 50- 500 PSI)	OK (Johnson Control Penn Model: P70KA-1 Range: 50- 500 PSI)	OK (Johnson Control Penn Model: P70KA-1 Range: 50- 500 PSI)
26	OP Differential Pressure Protection Cut-Out	OK (Danfoss) Model: MP-54 060B2150 Set Diff Press: 13 PSI	OK (Danfoss) Model: MP-54 060B2150 Set Diff Press: 13 PSI	OK (Danfoss) Model: MP-54 060B2150 Set Diff Press: 13 PSI
27	Overhauling status	Overhauling done as per schedule	Overhauling done as per schedule	Overhauling done as per schedule
28	Condensers	Sea water cooled (Shell & Tube Type), 273-KETEMA, Marine Type, Horizontal, shell, low fin tube Total Tubes - 130 Tube Size - 5/8" Qty: 02 Nos (Both Working Fine)		
29	Refrigerant Receiver	Refrigerant level gauge replaced and working fine.		
30	Dryer Filter	DC 48 x 4 Nos. (Found in good working Condition)		
31	Expansion Valve	Make: Emerson Model: TIR HW 100, CPN:038244, Tons: 55, Range: -55 °F to +55 °F, Tube Length 10", External Equaliser: 1/4" sae,		

		Style: Angle, Inlet: 7/8" OD soldering type, Outlet: 1/8" OD soldering type Qty – 2 Set (Both working Ok)
32	Solenoid Valves/coils	Make: Sporlan, Model: MKC-2, 120-288-200-240V, 15W, 60 Hz, 1. 1/8" flare type) Qty – 2 Set (Both working Ok)
33	Evaporator Type	Dx Type with AHU (Working OK)



TECHNICAL ASSESSMENT AHU_ SAGAR RATNA RIG			
SN	Description	AHU No. 1	AHU No. 2
1	Make	NANCE	NANCE
2	Model	DX Type MAHU-1020-C600 Belt driven (BX-65), 20 HP, 415 V, 1770 RPM, 60 Hz, 3 Ph	DX Type MAHU-1020-C600 Belt driven (BX-65), 20 HP, 415 V, 1770 RPM, 60 Hz, 3 Ph
3	Location	Auxiliary Room Stbd side	Auxiliary Room Stbd side
	Ampere RBY	R-14.6 Amps B-14.2 Amps Y-14.0 Amps	R- 16.3Amps B- 16.1 Amps Y- 16.7Amps
4	Foundation & skid	OK	OK
5	AHU Body	OK	OK
	Drain Pan & drain line	OK	OK
6	Coils/ Tubing	OK	OK
7	AHU Filter	OK	OK
8	AHU Motor	OK	OK
	Fan Blower	OK	OK
9	Belt	OK	OK
10	Pulley	OK	OK
11	3 way Actuator	NA	NA
12	Ducting	OK	OK
13	Insulation	OK	OK



TECHNICAL ASSESSMENT REFRIGERATION PLANT_SAGAR RATNA RIG

SN	Description	Refrigeration Unit No. 1	Refrigeration Unit No. 2
1	Compressor Make	Bitzer	Bitzer
2	Compressor Model	Model: 4CES-6Y -40 S Type: Reciprocating, Semi Hermatic Refrigerant: R-404 Oil: BSE-32	Model: 4CES-6Y -40 S Type: Reciprocating, Semi Hermatic Refrigerant: R-404 Oil: BSE-32
3	Capacity In TR	1.5	1.5
4	Location	Auxiliary Room Port side	Auxiliary Room Port side
5	Foundation & Skid	OK	OK
6	Vibration pads	OK	OK
7	Compressor	Operational & Healthy	Operational & Healthy
8	Ampere RBY	R- 6.8 Amps B- 7.0 Amps Y- 6.7Amps	R- 6.5 Amps B- 6.4 Amps Y- 6.5Amps
9	Insulation at 500 V	67 MΩ	50 MΩ
10	Cooling Fan & guard	OK	OK
11	Shaft Seal	OK	OK
13	Solenoid coils	Operational	Operational
14	Comp Valves	Operational	Operational
15	Dryer Filter	(DCL 305 X 1 Nos) Working OK	
16	Expansion Valve	For Veg Room (AEX2345BX, orifice-3/64 Performance good	For Non-Veg Room (068Z3206-646, orifice -3-047) Performance good
17	Control Pannel	Control panel with all the fittings like breaker, contactor, defrosting timer etc. in good condition and working fine.	
18	Compressor pressure gauges	Pressure gauges are operational and found in good condition	
19	Comp Suction Pressure	18 PSI	15 PSI
20	Comp Discharge Pressure	220 PSI	180 PSI
21	Comp Oil Pressure	60 PSI	75 PSI
22	LP/ HP/ OP Protection Cut-Out	Working OK	Working OK
23	Condenser Type	Water Cooled (Working OK)	Water Cooled (Working OK)
24	Evaporator Type	DX type (Working OK)	DX type (Working OK)

**TECHNICAL ASSESSMENT SCR/ Elect& Mech Store/ Air Drier
SAGAR RATNA RIG**

SN	Description	SCR Room AC-1	SCR Room AC-2	SCR Room AC-3	AC unit for Elect & Mech Store	Air Drier
1	AC Unit	Make: DAIYA Model: PSA01M0355 Refrigerant: R-22	Make: DAIYA Model: PSA01M0355 Refrigerant: R-22	Make: DAIYA Model: PSA01M0355 Refrigerant: R-22	Dx Unit Refrigerant: 407 C	Make: Deltech Model: HGD1250 Refrigerant: R-40A
2	Compressor Make	Emerson Coplend Scroll	Emerson Coplend Scroll	Emerson Coplend Scroll	Carlyle USA Semi Hermatic	MANEUROP
3	Compressor Model	ZR94KC-TFD-522	ZR94KC-TFD-522	ZR94KC-TFD-522	06DA8252BA3 650	MPZ64HM4BVE, 460 V, 3 Ph, 15 Amps
4	Capacity In TR	10	10	10	10	10
5	Location	SCR Room	SCR Room	SCR Room	Elect & Mech Store	Auxiliary Room Stbd side
6	Foundation & Skid	OK	OK	OK	OK	OK
7	Vibration pads	OK	OK	OK	OK	OK
8	Compressor	OK	OK	OK	OK	OK
9	Comp Motor winding	OK	OK	OK	OK	OK
10	Ampere RBY	R- 14.2Amps B-12.3 Amps Y- 11.5 Amps	R- 13.0 Amps B-12.1 Amps Y- 12.4 Amps	R- 14.2 Amps B-12.3 Amps Y- 11.2 Amps	R-8.9 Amps B-8.7 Amps Y- 9.0 Amps	R-7.4 Amps B-7.3 Amps Y- 7.5 Amps
11	Insulation at 500 V	52 MΩ	62 MΩ	50 MΩ	90 MΩ	85 MΩ
12	Suction/ Discharge Valve	OK	OK	OK	OK	
13	Dryer Filter	OK, DML-165 Flair Type	OK, DML-165 Flair Type	OK, DML-165 Flair Type	OK, DC-48 Flair Type	OK
14	Expansion Valve	Capillary Type OK	Capillary Type OK	Capillary Type OK	OK	OK
15	Control Pannel	Control panel with all the fittings like breaker, contactor, selector switch etc. in good condition.	Control panel with all the fittings like breaker, contactor, selector switch etc. in good condition.	Control panel with all the fittings like breaker, contactor, selector switch etc. in good condition.	Control panel with all the fittings like breaker, contactor, selector switch etc. in good condition.	Control panel with all the fittings like breaker, contactor, selector switch etc. in good condition.

16	Comp Suction Pressure	0.4	0.3	0.35	N/A	70 PSI
17	Comp Discharge Pressure	1.6	1.9	1.7	N/A	260 PSI
18	Comp Oil Pressure	N/A	N/A	N/A	N/A	N/A
19	LP/ HP Protection Cut-Out	OK	OK	OK	OK	OK
22	Condenser Type	Sea water cooled (Shell & Tube Type)	Sea water cooled (Shell & Tube Type)	Sea water cooled (Shell & Tube Type)	Sea water cooled (Shell & Tube Type)	Sea water cooled
23	Condenser Status	OK	OK	OK	OK	OK
24	Evaporator Type	DX type	DX type	DX type	DX type	OK
25	Evaporator Status	OK	OK	OK	OK	OK

TECHNICAL ASSESSMENT VFD HOUSE/ Driller Cabin AC/ Dog House & Mud Lab- SAGAR RATNA RIG

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8. Performance Parameters

Parameter	Observed	Acceptable Range	Status
Room Temperature	22–25°C	22–26°C	OK
Relative Humidity	45–60%	40–60%	OK
Supply Air Temp	12–16°C	12–18°C	OK
Airflow	As per design	±10%	OK

9. CORROSION & MARINE CONDITION REVIEW

Given offshore exposure:

- Epoxy coating condition: Satisfactory.
- GI ducts: No major corrosion; minor surface rust treated.
- Fasteners: SS fasteners recommended in exposed areas.
- Drain pans: Free from scaling and blockage.

10. SAFETY & COMPLIANCE

- Electrical panels comply with offshore safety practices.
- Proper grounding observed.
- No exposed live wiring.
- Fire dampers (where provided) operational.
- Equipment clearances maintained.

The system conforms to:

- Offshore marine HVAC practices.
- IS/IEC electrical safety standards.
- ONGC operational safety norms.

11. RECOMMENDATIONS

1. Quarterly chemical cleaning of condensers.
2. Annual insulation resistance testing.
3. Vibration analysis once per contract cycle.
4. Periodical Painting due to saline atmosphere

12. CONCLUSION

Based on site inspection, review of maintenance records, and operational verification, the HVAC systems installed at Sagar Ratna Offshore Jack-Up Rig are:

- ✓ Operational
- ✓ Functionally adequate
- ✓ Safe for continuous offshore operation
- ✓ Maintained as per O&M contract scope
- ✓ Systems are operational and maintained as per SOW
- ✓ 3P maintenance implemented as per MAC
- ✓ Breakdown response compliant
- ✓ Compressor overhauling methodology followed
- ✓ Spares & consumables managed as per Clause 13
- ✓ Manpower deployment compliant with STCC
- ✓ Equipment availability maintained above contractual requirement

The HVAC & Refrigeration Systems at Sagar Ratna Rig are technically sound, operationally reliable, and compliant with the O&M Scope of Work.

This is to certify that the HVAC, Refrigeration and Unit Cooler Systems installed and maintained at Sagar Ratna Offshore Jack-Up Rig under O&M Contract of Oil and Natural Gas Corporation Limited have been inspected and reviewed in accordance with Annexure–III Scope of Work.

Based on technical evaluation, maintenance records, and operational verification, the systems are:

- Maintained as per 3P methodology.
- Functionally operational.
- Structurally and mechanically sound.
- Fit for offshore service.
- Compliant with contractual and engineering requirements.

Prepared By

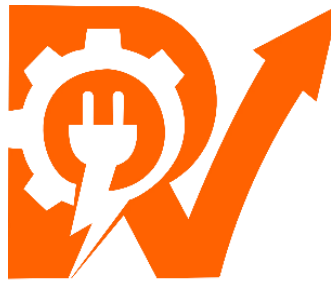
Name: SUNEEL PRAKASH ARYA

Reg. No. M-164343-0

Signature:



Date: 24th March, 2026



RAVITA ENGINEERING SERVICES LIMITED

SITE VISIT REPORT

**4" ETP DISCHARGE PIPELINE LAYING
PROJECT**

**NUMALIGARH
REFINERY
LIMITED**

A GOVERNMENT OF INDIA ENTERPRISE



NRL EXPANSION (PNCPL) PROJECT

PREPARED BY

SUNEEL PRAKASH ARYA

1.0 PROJECT OVERVIEW

M/s Numaligarh Refinery Limited (NRL) is a Government of India Enterprise and a subsidiary of M/s NRL operates a 3.0 MMTPA Refinery at Numaligarh in the district of Golaghat, Assam since the year 2000. NRL is now in the process of executing a major expansion project of capacity augmentation from present 3.0 MMTPA to 9.0 MMTPA. The required additional quantity of water discharge is planned to be imported through Paradip Port in Odisha.

An effluent treatment plant (ETP) is envisaged in the water discharge terminal for the treatment of the various effluents generated in the terminal such as water tank drain effluent, water tank washing effluent, floor washes, contaminated rainwater streams (CRWS) and sanitary sewage. The treated effluent from the ETP shall be sent for disposal to sea.

A pipeline of size 4" for transportation of treated effluent is proposed to be installed. The pipeline consists of onshore and offshore sections. The overall route layout is presented below.

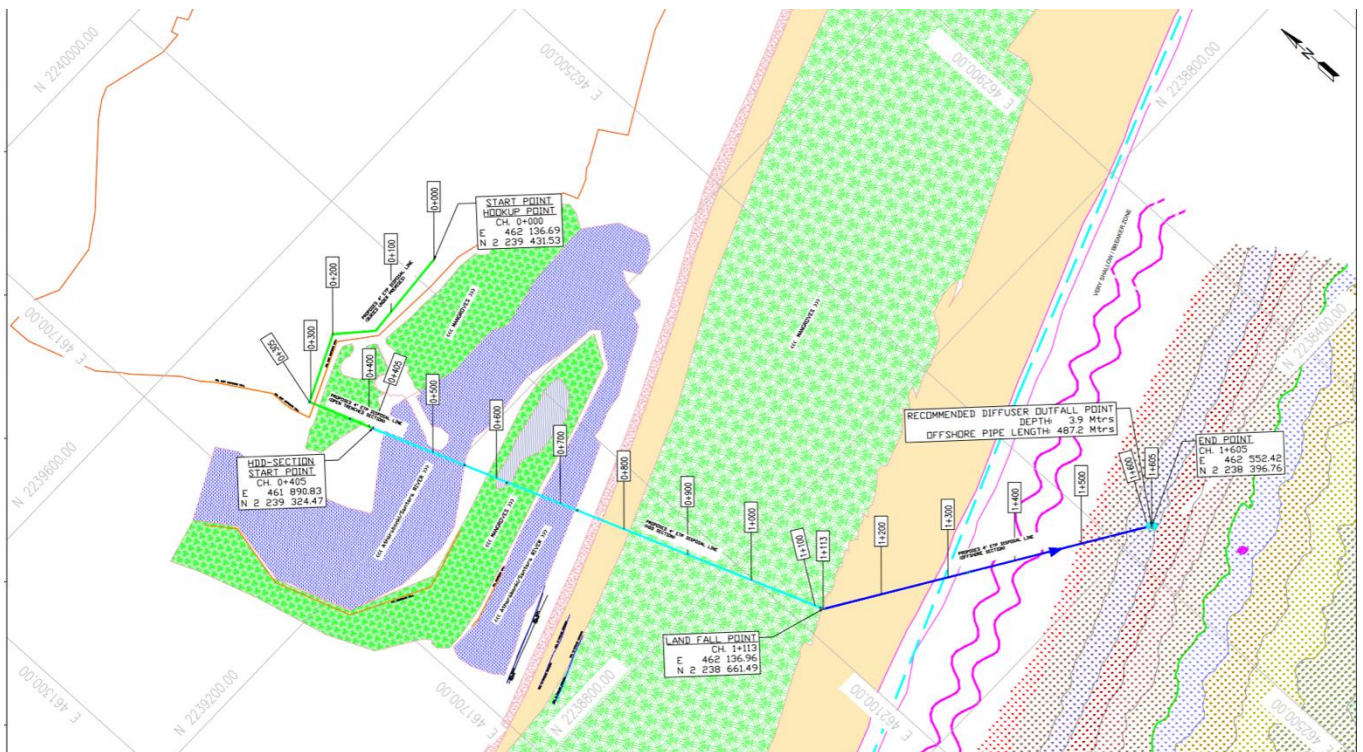


Figure 1 : Overall Route Map

2.0 DETAILS OF THE SITE VISIT

Particular	Details
Date of Visit	21 st March-2026
Place of Visit	NRL – Paradip Orissa
Name of person visiting the site	Suneel Prakash Arya
Company Representative Present	Mr. Abhijit Das (Residence Construction Manager)
Site Name & Address	Paradip, District: Jagatsinghpur, Odisha – 754142
Purpose of Visit	To undertake mandatory site visit for the proposed SME IPO of Ravita Engineering Services Limited (formerly known as Powermech Services Private Limited).

3.0 CLIENT & CONTRACT DETAILS

Particular	Details
Contractor Name	Ravita Engineering Services Limited (formerly known as Powermech Services Private Limited)
Client Name	Numaligarh Refinery Limited
Order No	NOA NO: PUR-PRJNUM-1010889/9524-Powermech dated 07.11.2025
Contract Type	Project- Pipe Line.
Scope Coverage	4” Pipe supply, HDD, Open Cut and laying of pipeline, Hydrotesting and Commissioning.
Project Duration	10 Months

4.0 INTRODUCTION

This report has been prepared post site visit to independently confirm the company’s operational presence and activities at the project location. The visit aimed to physically verify the existence

of project execution activities and to ensure that the operational details represented by the company in its IPO documentation are supported by actual on-ground operations.

During the course of the site visit, the project location, associated infrastructure, and ongoing engineering activities were observed, and interactions were held with project representatives to understand the scope and status of the work being executed. The inspection focused on assessing the availability of manpower, technical resources, and site infrastructure relevant to the project, as well as evaluating the company's capability to undertake and execute such assignments. The observations recorded in this report provide an independent account of the site conditions and project activities at the time of the visit.

5.0 PURPOSE OF SITE VISIT

The purpose of the site visit was to:

- Verify the existence of the ongoing project executed by the company
- Confirm operational presence of the company at the project site
- Review infrastructure, equipment, and manpower availability
- Assess execution capability and technical competence
- Validate the project information disclosed by the company

6.0 RAVITA ENGINEERING SERVICE LIMITED- COMPANY OVERVIEW

Ravita Engineering Services Limited is an engineering services company engaged in the execution of MEP & EPC projects across sectors such as oil & gas, refineries, energy, and industrial utilities. The company provides a range of engineering and project management services covering mechanical works, pipeline installation, industrial infrastructure development, and other related engineering activities for large industrial and energy sector clients.

The company undertakes projects on an engineering, procurement, installation, and commissioning (EPIC) basis, delivering end-to-end project execution solutions that include design coordination, supply of materials and equipment, installation, testing, and commissioning of systems. Through its technical expertise, skilled workforce, and project management capabilities, Ravita Engineering Services Limited supports the development and maintenance of

critical industrial infrastructure for clients operating in sectors such as oil & gas, refinery, petrochemical, and other heavy industries.

7.0 BRIEF SCOPE OF SERVICES

A 4-inch diameter pipeline is proposed to be installed for the transportation and safe disposal of treated effluent from the Effluent Treatment Plant (ETP). The pipeline system comprises both onshore and offshore sections, forming a continuous route from the terminal area up to the designated offshore discharge location.

The onshore section of the pipeline, including the open trench portion, is approximately 1029 meters in length. This segment begins at chainage 0.000 km within the project area and extends up to chainage 1.029 km, where the pipeline reaches the designated landfall point near the coastal boundary. The onshore section involves pipeline routing through designated corridors and may include crossings of internal roads, utilities, and other surface features depending on the final alignment.

Beyond the landfall point, the pipeline continues into the offshore section, which is approximately 740.6 meters long and extends from chainage 1.029 km to chainage 1.770 km. This portion of the pipeline is proposed to be installed beneath the seabed and will transport the treated effluent to the final offshore discharge location. The offshore segment will be designed considering marine conditions, seabed stability, and environmental requirements to ensure safe and reliable operation.

8.0 OBSERVATIONS DURING SITE VISIT

8.1 Physical Verification of Site:

During the site visit, the project location associated with the expansion works of Numaligarh Refinery Limited at Paradip was physically inspected. The proposed alignment of the 4" ETP discharge pipeline was reviewed along key points of the route, including the tie-in location within the terminal area, the proposed Horizontal Directional Drilling (HDD) entry and exit points, and the landfall point where the onshore pipeline transitions to the offshore section. These locations were examined to understand the route feasibility and the surrounding site conditions.

Field indicators such as survey markers, alignment references, and chainage towers placed along the route were observed during the inspection. These markers indicated the proposed

pipeline alignment and provided reference points for survey and engineering activities associated with the project.

8.2 Infrastructure and Facilities

During the visit, several project-related facilities and activities were observed which are associated with the preliminary stage of project development.

- A full-fledged site engineering office were noted.
- A safe pipe storage yard was marked near the work location (Pipes are in order and delivery is awaited at site)
- Survey markers and route demarcation along the pipeline corridor
- Preengineering Surveys has been carried out, and detailed design is in progress.
- Geotechnical investigation activities are being carried out at site.
- Marine geotechnical investigation arrangements near the landfall zone.

These observations indicate that preliminary engineering studies and site preparation activities for the pipeline project have commenced.

8.3 Manpower Deployment

At the time of the visit, project personnel were present at the site, including:

SN	Key Position	Name
1	RCM	Mr. Abhijit Das
2	Safety Officer	Mr. Patap Biswas
3	Quality Officer	Mr. Rakesh Das
4	Lead Mechanical	Mr. Tapas Barik
5	Lead Civil	Mr. Manoj Palai
6	Admin	Mr. Sarojkanta Moharana
7	Survey team	8 Person

Interactions with site personnel confirmed that engineering and survey activities are being conducted in preparation for detailed project execution.

8.4 Equipment and Technical Resources

During the site visit, various technical resources and equipment associated with the preliminary stages of the project were physically observed at the site. This included survey equipment used for route alignment and positioning, which supports the accurate demarcation of the proposed pipeline corridor. Geotechnical investigation machinery was also present at certain locations along the alignment, indicating that subsurface soil investigations were being carried out to determine ground conditions and to support the design of trenching, HDD crossings, and other construction activities.

In addition, arrangements related to marine geotechnical investigation were observed near the landfall zone, including the deployment of a jack-up or similar marine investigation platform intended for seabed analysis. Pipeline route markers and chainage marks were also seen along the alignment, providing reference points for survey teams and engineers during route verification and planning activities. The presence of these technical resources is consistent with activities typically undertaken during the early stages of engineering, survey, and planning for pipeline installation projects.

8.5 Environmental, Health and Safety (EHS)

During the site visit, basic Environmental, Health, and Safety (EHS) practices were observed in relation to the ongoing survey and investigation activities. Personnel present at the site were using appropriate Personal Protective Equipment (PPE) such as safety helmets, safety shoes, and reflective vests while carrying out field operations. Access to specific work locations, particularly areas where geotechnical investigations were being conducted, appeared to be controlled and monitored by site personnel.

Safety supervision was observed during investigation activities to ensure that work was carried out in accordance with standard safety procedures. Based on the observations made during the visit, the safety arrangements appeared to be in line with normal practices adopted for preliminary engineering and survey activities, and no major safety concerns were noted at the time of inspection.

9.0 PROJECT KEY POINTS & PARAMETERS

Table 1: Geodetic Parameters

Item	Description
Local Projection and Grid Parameters	
Datum	WGS 84
Spheroid	WGS 84
Semi-Major Axis (a)	6378 137.000 metres
Semi-Major Axis (b)	6356752.314 metres
First Eccentricity Squared (e^2)	0.006694380
Inverse Flattening (1/f)	298.257223563
Local Projection and Grid Parameters	
Grid Projection	Universal Transverse Mercator
Central Meridian (CM)	87.0° East (Zone 45)
Origin Latitude (False Lat.)	00.0°
Hemisphere	North
False Easting (FE)	500000.0 m
False Northing (FN)	0.0 m
Scale Factor on Central Meridian (CM)	0.999600
Units	Metres

Table 2: Start to End Points Co-ordinates & Chainage

Location	Easting (m)	Northing (m)	Chainage (km)
Start Point (Open Trench Section)	461773.43	2239563.00	0.00
Borehole-1	461779.09	2239483.20	0.080
Start Point of HDD Section	461783.88	2239417.38	0.146
Borehole-2	461793.13	2239290.72	0.273
Borehole-3	461820.55	2238917.72	0.647
Borehole-4	461839.10	2238665.35	0.900
Landfall Point (LFP)	461848.60	2238536.26	1.029
Borehole-5	461992.40	2238195.01	1.400
Recommended Diffuser Fall Out Point (End Point)	462136.21	2237853.76	1.770

Notes: The start point (CH 0+000) is not confirmed yet, it will be confirmed after the geotechnical survey. The location and geotechnical data will be added for 146m of open trench area up to HDD START POINT.

10.0 ROUTE OBSERVATION

The philosophy of the site survey is to establish a systematic, comprehensive, and technically reliable framework for collecting field-based data necessary for the design, engineering, and execution of the proposed 4-inch ETP discharge pipeline, covering both the onshore and offshore sections. The survey forms a critical preliminary activity that provides essential inputs for route selection, construction planning, environmental assessment, and safety considerations. By capturing accurate site conditions and physical constraints along the alignment, the survey helps ensure that the pipeline design, construction methodology, and installation strategy are aligned with project objectives as well as applicable engineering and regulatory requirements.

As per the proposed alignment, the pipeline originates from the T-6 tie-in point within the terminal area of Numaligarh Refinery Limited. From this location, the pipeline route proceeds across an internal access road approximately 4 meters in width, followed by a small canal of approximately 3 meters in width, and subsequently continues beyond the boundary wall of the NRL COIT area. These initial crossings form part of the early section of the onshore pipeline route and were examined during the site survey to understand the local site conditions and to assess the most suitable construction approach for safe and efficient installation.



Figure 2: T-6 Location

11.0 SITE ACTIVITY PHOTOGRAPH



Figure 3: Road and Canal beside T-6 location



Figure 4: Canal



Figure 5: Boundary Wall of NRL COIT



Figure 6: Boundary Wall and Outside Area of NRL COIT

HDD of the 4" ETF pipeline starts around this point shown in the figure below. Then the pipeline crosses the river and road while going down at a depth of around 17m.



Figure 7: Start Point of HDD section of 4" ETP Pipeline

The Pipeline might be installed following the chainage tower.



Figure 8: Pipeline Chainage Tower

The pipeline crosses this IOCL burial pipeline zone after road at a depth suggested by geotechnical team and HDD vendor.



Figure 9: IOCL Buried Pipeline Area and Road

Pipeline entering into the forest following the pipeline chainage tower.



Figure 10: Pipeline Chainage Tower Before Forest
Pipeline will be crosses the forest area through HDD.



Figure 11: Pipeline Route Along Forest

And at the end of the pipeline comes out on the surface at landfall point and then it connects to offshore section of the pipeline.



Figure 12: Pipeline Landfall Point



Fig-13 Geotechnical Investigation at Land



Fig-14 Deployment of Jackup Platform for Marine Geotechnical Investigation

12.0 SUMMARY OF FINDINGS

Based on the site visit and observations made during the inspection, the project location corresponding to the contract awarded by Numaligarh Refinery Limited was physically verified. The proposed alignment of the 4” ETP discharge pipeline and associated project locations were reviewed during the visit to understand the site conditions and the scope of activities being undertaken. Preliminary project activities, including route survey work and geotechnical investigations along the proposed pipeline alignment, were observed at the site. Representatives of Ravita Engineering Services Limited were present during the visit and were engaged in project-related coordination and technical discussions. Infrastructure and technical resources appropriate for the current stage of project development, such as survey markers, investigation equipment, and preliminary site arrangements, were noted during the inspection

13.0 CONCLUSION

Based on the physical inspection of the project location and the interactions held with site personnel during the visit, it is observed that Ravita Engineering Services Limited is actively involved in the execution and preliminary engineering activities associated with the NRL Expansion Project at Paradip. The presence of project-related survey work, geotechnical investigations, and alignment markers indicates that preparatory activities for the proposed pipeline installation are underway.

The site visit confirmed the existence of project-related activities at the location and the operational involvement of the company in connection with the project awarded by Numaligarh Refinery Limited.

14.0 DECLARATION

This report has been prepared based on the site visit conducted on 11 March 2026 and on the observations made during the inspection of the project location, along with discussions held with representatives of Ravita Engineering Services Limited present at the site. The report documents the conditions and activities observed at the time of the visit.

The information contained in this report is based on physical verification and observations to the extent possible during the site inspection and is intended to provide a factual account of the site visit undertaken as part of the verification process.

Prepared By

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Signature:



Date: 24st March 2026