



Indian Oil Corporation Limited Barauni Refinery

Date: 04.11.2023

Sub.: Report on Non-Man Entry Crude Oil Sludge Cleaning and Oil Recovery from bottom sludge of crude tank T-237 of Barauni Refinery by M/s. Arkoil Technologies using Steam Injection Technology.

Project specifics:

- Crude Oil Tank of capacity 40,000 m³ (TK-237), with floating roof.
- Client: Barauni Refinery (BR), Indian Oil Corporation Ltd. (IOCL).
- Total amount of sludge – 5,100 m³ approximately.
- Reason for cleaning: tank maintenance and inspection.
- Final values: BS&W in recovered oil: <4%
Oil content in bottom sludge after oil recovery: <10%
- Objectives: reduction of tank downtime, reduction of the waste to dispose, cleaning of tank internals, oil recovery.
- Steam was provided by IOCL from the refinery stationary steam line.
- Final cleaning (mechanical impurities' removal) was not included in the SOW.

Observations:

- ✓ Experienced Engineers/Technicians.
- ✓ Recovered oil processed along with Crude without any constraints.
- ✓ Inside wall of the tank, underside of the floating roof and roof support legs were found clean and considerably free of Hydrocarbon.
- ✓ No cutting / drilling (hot work) on tank roof / shell is required as all steam injection nozzles are inserted either through roof-leg ports or roof manholes.
- ✓ Arkoil recovered 98% of the sludge organic part (3,600 m³ approximately)

- ✓ Quality of the recovered oil and mechanical impurities, as tested in BR QC laboratory, matches the prior quality criteria set by IOCL, BR
- ✓ Total time taken for the non-man entry cleaning and oil recovery is 22 days (effective time 18 days, 4 days for fitting of accessories).

Demonstration has been successful and as per IOCL criteria.

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