

JPX-CLEANING PROCEDURE CRUDE OIL TANK CLEANING

The following information is based on general tank cleaning practices.

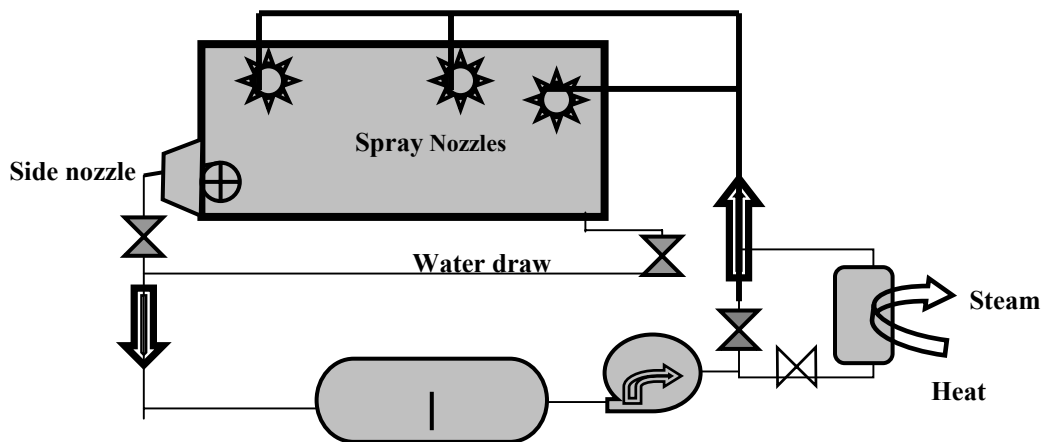
A) Process and Equipment:

- 1st) It is in the best interest of the customer to recover as much oil as possible without significant solids contamination. This oil can be economically processed as crude unit feed rather than as a slop stream which is usually a refinery bottleneck.
- 2nd) The crude remaining in the tank is diluted with an available hydrocarbon like diesel, kerosene or jet fuel and is pumped off until analysis shows that the crude available above the sludge is minimized. This is done in a bath process, and permits maximum economic oil recovery.
- 3rd) The next step is to introduce water and JPX into the tank to wash the sludge and float the dispersed oil to the surface for recovery. In order to contact the sludge with wash mix, the sludge must be agitated to facilitate wash penetration. This is accomplished in various ways like : side entry mixers, butter worth type mixers, and rotary nozzles inside man ways or the roof ports. Many different types of rotating nozzles are available to agitate the sludge and allow wash mix contact. The number and location of the nozzles as well as flow rates would depend on the tank's access port number and location.
- 4th) The wash sludge mix is pumped from the tank and decanted to recover the oil and settle the sludge.
- 5th) If sour odors are present, then an additized version of JPX, JPX-E , can be utilized to eliminate the problem.

B) Products dosage and application:

- 1) **Quantity:** 2% to 5% JPX in the volume of water utilized.
- 2) **Dilution ratio:** ~25-1 With water. Do not use sea-water. Salt will reduce effectiveness of cleaner.
- 3) **Temperature of injection:** Product is effective at room temperature, but it will be increasingly effective at higher temperatures up to 160 F.
- 4) **Application through spray nozzles:** Premix the JPX with water before use.
- 5) **Removal of Benzene , LEL and H2S:** JPX will remove benzene and reduce LEL. Consider application of JPX-E for sour materials.

C) Methods for leveling the uneven sludge height : Use high-pressure nozzles:



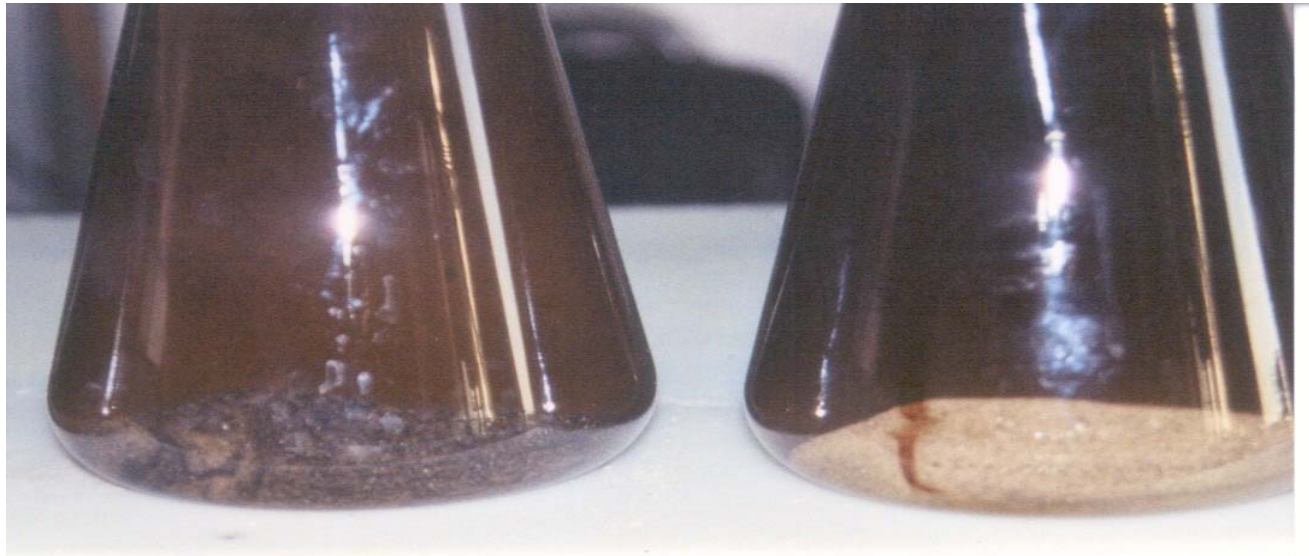
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Baker tanks

Pump at flow rate based on nozzles specifications and number

- D) **Method for heating** : steam via exchanger
- E) **Time for cleaning**: weeks
- F) **Time for de-emulsification**: hours
- G) **Condition of remaining waste**: unknown
- H) **Hazardous waste**: heavy metals
- I) **Sampling**: Obtain sample of sludge by thief device and test with diluents and JPX for concentration impact.
Test sludge for % of oil concentration.
- J) **Disposal**: If refinery has a delayed coker, water and dirt emulsion can be disposed of as quench water to coke drum.

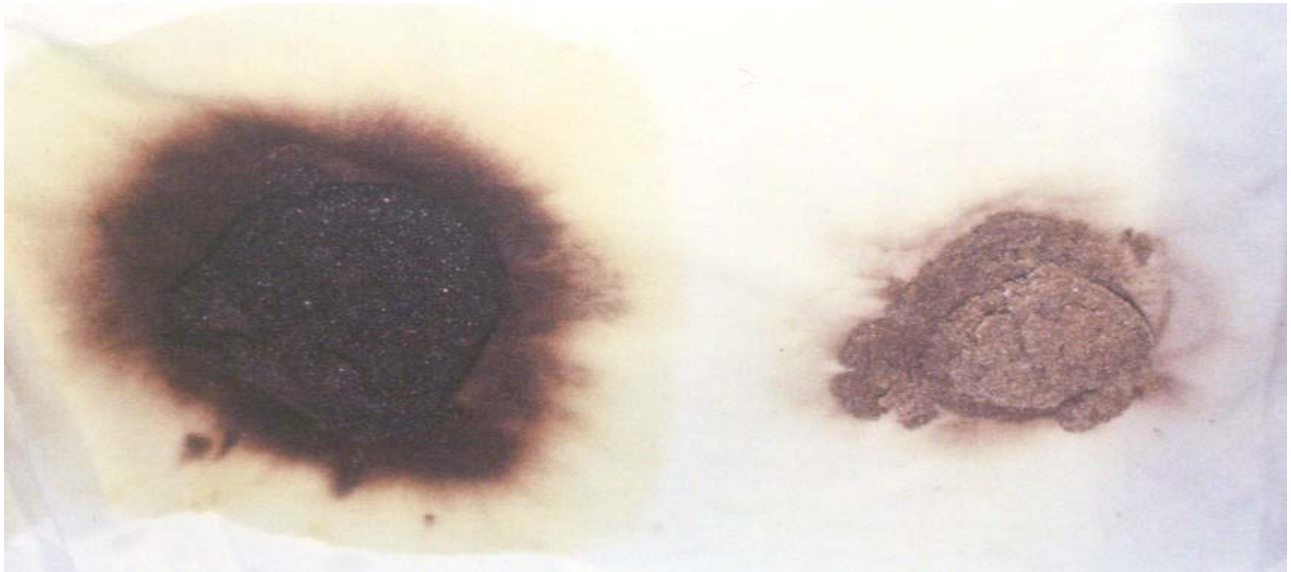
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COMPETITOR

JPX

Comparison of oily sand cleaned with 4% of JPX and competition.



COMPETITOR

JPX

Second comparison of oily sand cleaned with 4% of JPX and competition.

