FluidControl Case Study

WSS FluidControl Cleans Up and Recovers Synthetic-Based Oil from Cuttings in North Dakota

Situation

- Operating at land rig site and under extreme winter weather conditions

Challenges

- To relocate the complete thermal treatment plant on average of once every three months during contract period
- Operate with minimal downtime during harsh winter conditions

Solution & Results

- Mobilization of a fully skid mounted Hot Oil Thermal Unit to be transported by truck between drilling locations
- 24/7 operation to keep up with time line of 8 wells per pad every three months
- Equipment operating efficiency above 90% average
- Reuse of all recovered synthetic base oil in mud system
- Reuse of all surplus water from the cuttings treatment
- All TDU equipment and auxiliary equipment is running on natural gas from tank vessels thus reducing total carbon footprint of the operation and optimizing operational cost

In February 2014, a major North Dakota operator invited WSS FluidControl to complete a rig survey on a pad drilling rig in North Dakota with the task of proposing a rig site thermal treatment of synthetic-based mud cuttings.

The operator was attracted to the TDU process for many reasons, including: the recycling of synthetic-based mud (SBM), reduced waste volumes, decreased waste management liabilities, and the fact that the unit was powered by natural gas rather than diesel. The survey report (technical and commercial proposal) was presented to the operator in March, which was followed by immediate acceptance and final service contract between NOV and the operator.

From the beginning, NOV meticulously adapted the TDU process to provide a customized solution for the operator. We established a detailed client-contractor progress report that was sent to the operator every few weeks to update them on the manufacturing and mobilization timeline. By the end of June, the TDU was pre-assembled in our WSS yard in Dickinson, ND and tested prior to shipment to the Williston rig site. The TDU and supportive auxiliary equipment was shipped to the rig site, mobilized on the pad and ready for operation on July 3.

The TDU is treating and recovering oil from an eight well pad. The recovered oil is pumped directly back to the rig mud tanks and mixed back into the mud. Tons of cuttings processed and bbls of oil recovered are reported on daily and end-of-well reports that are provided to both the drilling contractor and operator. All recovered water from the process is reused, and the only waste stream is the treated solids with maximum 0.2% oil on solids. The input material of cuttings has approximately 11% oil by weight.

After completion of each eight-well pad, the TDU will be moved to another drilling location for the North Dakota operator, and will be processing cuttings through the winter months. A winterization package with heated tent is installed to ensure the TDU will run in the harsh North Dakota winter.

To learn more about NOV's TDU and many other solids control solutions, contact your nearest WSS FluidControl representative.

The package contracted included:

- Cuttings process management and reporting
- Cuttings feed weighing system for reporting
- Laboratory equipment for reporting
- Operation of skid-mounted Thermal Desorption Unit (TDU), including day tank storage of recovered oil and water
- Natural gas burner installation on the TDU with gas supplies from tank vessels
- Recovery of valuable synthetic-based oil for reuse in the rig mud system
- NOV Portable Power Generator Package
- Associated tankage and pipework, excavator for feeding cuttings and ancillary equipment to complete above processes
- Mobilization and demobilization of the complete treatment site approximately every three months

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