Innovative Waste Management System from Baroid Surface Solutions Helps Assure Environmental Compliance and Saves Millions

Location: Caspian East, Kazakhstan

OPERATOR’S CHALLENGE – Use of an oil based mud system at this operator’s well operations required implementation of new waste management strategy to comply with disposal regulations requiring final treated cuttings oil content be less than 1% OOC, as well as to provide cuttings handling in support of drilling operations. The solution had to include 3R processes for “reducing” waste and environmental impact, “recycling,” treatment and “re-use” of recovered products, as well as safe disposal.

HALLIBURTON’S SOLUTION – Environmental requirements and operational needs in this case demanded deployment of Best Available Technology for contaminated drill cuttings. Baroid personnel customized a new waste management strategy to be deployed during mud system changes, using one of the newer thermal desorption technologies, the friction-based, hammermill thermal desorption process, also known as Thermo-mechanical Cuttings Cleaning (TCC) system.

The TCC system differs from other thermal separation technologies in that it heats waste by transforming kinetic energy to heat via friction, exposing the base oil to high temperature for only a few seconds, which results in very high-quality output oil that can be re-used in new OBM.

ECONOMIC VALUE CREATED – For more than four years the TCC system has operated successfully for this operator, handling up to three drilling rig operations, and treating more than 36,000m³ of oil based drill cuttings, with ZERO NPT and no oil spill incidents recorded during cuttings handling and transportation within the 280km² field.

TPH value of treated material for the period has averaged 3000 ppm, far below the permitted level of 10,000 ppm imposed by the Government of Republic of Kazakhstan.

Treated cuttings were disposed of at a dedicated landfill, while all base oil recovered with the TCC system was sent to the Liquid Mud Plant located at the same site, which significantly reduced logistics and decreased waste volume.

The TCC system solution not only enabled compliance with environmental requirements and met all operational needs, but the volume of recovered base oil which otherwise would have been incinerated, totaled 4500m³, or an estimated savings of $5,625,000 USD.