CASE STUDY

DEWATERING Unit Used as the First Part of the Waste Minimization Initiative in Russia

"Application of dewatering technology at Kharjaginskoe field allowed the operator to minimize the volume of liquid waste and reduce the cost of waste treatment."

Alexander Varlamov, Executive Director, EcoArctica

Well Information

Region..... Russia, Nenets Autonomous Area, Kharjaginskoe Field
Date..... June 19, 2009 – July 18, 2009
Well Type .....Horizontal
Depth MD/TVD ..... 2620/1851 m

The Situation

Well construction on the Kharjaginskoe field is under a strict environmental policy on waste utilization. All generated waste must be collected for disposal of at the special facility. In such conditions, the cost of waste disposal becomes a significant part of the total well-construction cost. During the middle of the drilling program of 2008, it was obvious that all efforts should be applied to minimize liquid-waste volume. To address waste-volume reduction, the operator requested that EcoArctica (an M-I SWACO strategic partner in the Komi Republic) develop an integrated fluids management approach.

The Solution

M-I SWACO and EcoArctica developed an integrated technical solution that focused on liquid-waste reduction, based on 15 years of work experience in the region. After detailed technical discussions and analysis, it was decided to install a DEWATERING* unit as the first part of the waste minimization initiative.

The Result

The DEWATERING unit application at the well allowed reduction of the liquid-waste volume by 32% for the first two sections and by 27% for the entire well. Around 350 m3 of water was returned to the system for fresh drilling fluid mixing thus reducing the cost of water delivery. All drilling fluid left after the last section was also processed through the DEWATERING unit and the returned water was used for completion operations. Although application of the DEWATERING unit added additional upfront cost to the well construction, the waste-volume reduction allowed a 20% waste disposal saving as compared to offset wells.

The Details

The two top sections in the Kharjaginskoe field drilled through massive reactive-clay layers. Despite the high efficiency of the solids-control equipment and the use of inhibitive drilling fluid, the high ROP in the top sections lead to dump-and-dilution to maintain the fluid properties at the desired specification. A significant portion of the waste volume generated while drilling came from the dump-and-dilution process. High waste volumes generated while drilling influence waste disposal cost and overall well construction economics.

In order to reduce waste volume, the operator requested the development of an integrated approach for drilling fluid and waste management focused on drilling-waste reduction. After a technical evaluation of the proposed options, it was decided to install a DEWATERING unit and evaluate its performance. To ensure effective performance of the DEWATERING unit, EcoArctica performed a rig audit and developed recommendations for the proper equipment installation to fit the existing solids-control equipment layout. A special polymer was applied for the flocculation of inhibitive potassium chloride-base drilling fluid. The application of new chemicals allowed an increase in the efficiency of the DEWATERING unit and a reduction of chemicals cost.

The total savings on drilling-waste volume utilization of 20% was achieved due to the DEWATERING technology application, the economics of the technology based on processing of the dumped volume and returning of recovered volume back to the active system. Application of the DEWATERING unit not only allowed savings in waste utilization but also a reduction of makeup water consumption. Based on the first well application, the operator requested additional dewatering service from EcoArctica.

Questions? We'll be glad to answer them.
If you'd like to know more about the DEWATERING unit and how it's performing for our other customers, please call the M-I SWACO office nearest you.

M-I SWACO
A Schlumberger Company

P.O. Box 42842
Houston, Texas 77242-2842
www.miswaco.slb.com
Email: questions@miswaco.slb.com