

# Plugged Sand Screens Averted in Horizontal Well Through 124% Gravel-Pack Efficiency at $-51$ degF

AquaPac system ensures no further damage to unconsolidated formation

## CHALLENGE

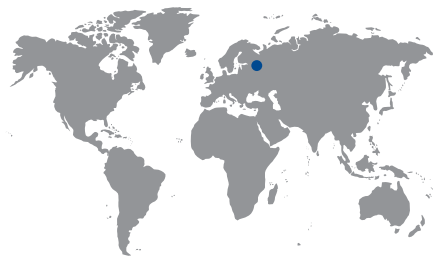
Provide effective sand control in openhole horizontal wells with a history of screen plugging and production decline.

## SOLUTION

Use AquaPac\* integrated water-packing system and MeshSlot\* premium sintered mesh screens for long-term productivity from the unconsolidated formation.

## RESULTS

Achieved 124% gravel-pack efficiency around screens in subzero operating conditions.



## Unconsolidated sands plug stand-alone screens

The Russkoe heavy oil field located in the far north of Russia has permeable but extremely unconsolidated reservoir rock prone to sand production. An operator had completed several wells with wire-wrapped, premium mesh, and slotted stand-alone screens of various sizes, but sand tended to plug the screens and lead to collapse of the open hole over time — sometimes in as little as eight hours — and cause oil production to decline sharply. With such an unstable open hole, a new gravel-packing technique was required to maintain stability and production.

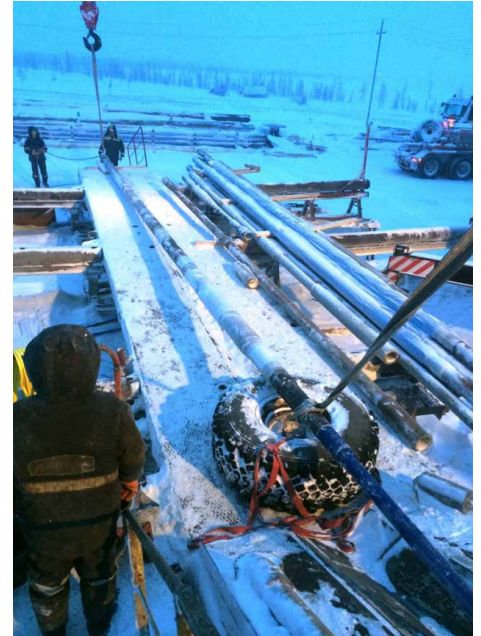
## Low flow rates and antiswab tools ensured complete gravel pack

The operator decided to evaluate the effectiveness of openhole gravel packing in a shallow horizontal well that had a TVD of 2,963 ft [903 m] and an 8 $\frac{3}{4}$ -in openhole lateral of approximately 1,148 ft [350 m]. Schlumberger recommended MeshSlot screens due to their high-flow shroud design that allows efficient flow distribution through the sintered mesh filter medium. The AquaPac system was then deployed to carry and place gravel around the MeshSlot screens. This combination of the AquaPac system and MeshSlot screens reduced friction and enabled lightweight gravels to be transported at lower flow rates, which kept the unstable open hole from collapsing.

To prevent exposing the unconsolidated sandface, the QUANTUM\* gravel-pack packer antiswab service tool was added to the toolstring. This tool maintains constant hydrostatic pressure in the open hole, eliminating the swabbing effects of hardware movement and ensuring filtercake integrity until gravel placement is complete. After the excess gravel was screened out and reversed, the service tool allowed spotting of filtercake removal treatments, eliminating a dedicated cleanup run.

## 124% gravel-pack efficiency solves screen plugging

During the operation, surface temperatures dipped to  $-51$  degF [ $-46$  degC], but upfront planning and good communication between all involved parties resulted in streamlined execution with 124% gravel-pack efficiency, zero injuries, and zero NPT despite the harsh conditions.



*The gravel placement was a complete success, with zero NPT or HSE incidents despite harsh temperatures as low as  $-51$  degF [ $-46$  degC].*