

## **JSC RNG COOPERATES WITH AMERICAN OILFIELD SERVICE COMPANIES TO OPTIMIZE OIL PRODUCTION**

**The joint-stock company RNG extracts oil in the difficult geological conditions of East Siberia. The company's management has more than a decade of experience working with US oilfield service contractors that specialize in cost-effective and sophisticated oil recovery techniques. Maintaining long-term agreements with American partners is part and parcel of the approved strategy of Eastsib Holding group, which includes RNG.**

The list of companies that have been engaged in the projects on RNG's oilfields in recent years features Baker Hughes, Schlumberger, Halliburton, National Oilwell Varco and Scientific Drilling. Emerson is a strategic partner in industrial automation and software for solving geological tasks.

Market leaders use modern software products and provide their own high-tech equipment that is optimal for the development of Yakutia's subsoil.

Over the years of cooperation with American companies, unique R&D products have been put into service. For example, Halliburton specialists took part in integrated projects where they successfully solved the problems related to wells cementing, drilling mud preparation, directional drilling and drill bit support. The applied technologies ensure a long service life and an increase in well production rates. Also, with the help of Halliburton, the advanced Glider technique was introduced. It ensures safe sampling and simultaneously protects the core from drill mud.

A number of key exploration projects are being implemented jointly with Schlumberger: Geoflex – a technology for the in-depth geological surveying of the mineralogical composition of sludge – increases the efficiency of horizontal wells drilling; within the framework of geological prospecting for promising horizons, geographic information systems that use acoustic and nuclear magnetic devices are applied.

Currently, RNG is successfully introducing the method of drilling multilateral horizontal wells with sidetracks, the shape of which is known in the industry as the “fishbone”. This technology has been used to complete six wells with a design of three to eight horizontal wellbores that have the total size of more than 33,000 linear meters.

RNG specialists, along with Baker Hughes, have developed and implemented a unique completion scheme for multilateral wells, and updated seismic and hydrodynamic models for subsequent field development analysis helpful in optimizing production. The latest equipment for geosteering in the process of drilling and unique technologies in the field of rock cutting tools from Halliburton and Schlumberger are also used. The National Oilwell Varco company provides unique drilling equipment that eliminates geological complications and helps minimize mud losses. In the six years of partnership with the Emerson group of companies, RNG has invested over 200 million rubles in automated control systems, devices and sensors. The software products from Roxar, a member of this group, have successfully proved their worth – 3D modeling technologies allow for efficient resource estimation and increase the efficiency of field development.

RNG attracts oilfield service contractors by offering them long-term contracts and impressive volumes of work – the prospects for developing thousands of wells across seven fields. The company is systematically doing supplementary exploration of hydrocarbon reserves. In November 2020, a new field was discovered, which, according to experts, is destined to become one of the largest fields in East Siberia. During previous cooperation, RNG spent \$ 378 million

for the services of American companies, while the drilling itself is carried out by a Russian contractor using the Chinese-made ZJ-40 rigs.

On August 29, 2019, the Eastern blocks of the Srednebotuobinskoye oil and gas condensate field were put into commercial operation, and five months later RNG produced the first million tons of crude oil. This result, achieved in the shortest time possible, shows graphically that by assimilating modern technologies, young and independent oil and gas companies can work effectively in complicated conditions. In Russia, the oilfield services market is going through a difficult period – the creation of their own service divisions is not showing the desired efficiency, while specialized American companies work more fruitfully and faster than their competitors.

High-quality oilfield service is more than just a service. It is the result of long-term cooperation and efficient coordination between the customer and the contractor. RNG regularly brings together representatives of contractors at research and development conferences called “Quality Days”. Such meetings are attended by representatives of almost all the leading American companies working simultaneously in RNG’s fields. This exchange of new industry solutions is of great value, since interaction of this kind helps accumulate the invaluable experience in reduction of development risks at East-Siberian geologically complicated fields and the rapid implementation of best practices in combating drill mud losses, and enables faster drilling through difficult sections of the geological structure.

RNG, for its part, has created all the necessary conditions for successful cooperation. Contractors have access to a transport fleet that includes all types of auxiliary equipment, and to RNG’s logistics infrastructure, which includes various warehouses and transport. In the fall of 2020, the final section of a fiber-optic line connecting the Yakutia oilfields with the outside world was laid. The use of DWDM technology (Dense Wavelength-Division Multiplexing) has made it possible to set up two communication channels as a replacement for expensive and slow satellite communications. The fields are now equipped with broadband Internet access and also have additional opportunities for collecting and processing large amounts of data (Big Data), quality control and video monitoring required for oilfield services.

Despite the difficult market conditions and existing restrictions, RNG continues pursuing its agenda. For this, the company relies on using its successful international experience and adopting top-notch technologies.

Note:

*JSC RNG is an oil and gas producing enterprise in Russia’s Far Eastern Federal District, and a member of EASTSIB HOLDING. The company holds a license for the exploration and production of hydrocarbons in the eastern blocks of the Srednebotuobinskoye oil and gas condensate field located in the Mirny district of the Republic of Sakha (Yakutia), and also does geological exploration under agreements with other companies of the group.*