



# CASPIAN PROJECT YURI KORCHAGIN FIELD



## BACKGROUND

LUKOIL started to carry out geological and geophysical survey in the North and Central Caspian in November 1995, under a state program to study the Caspian shelf.

In 1999, LUKOIL started exploratory drilling using an Astra semi-submersible jack-up rig, which had been modernized at the Krasniye Barrikady shipyard in Astrakhan. The platform has three 66-meter supports and is capable of drilling wells up to 5,000 meters deep at sea depth of up to 45 meters.



The then Russian President, Vladimir Putin, visited the Astra rig on April 26, 2002.



LUKOIL discovered six large oil and gas fields in the North Caspian between 1999 and 2005: Khvalynskoye, 170 km, Yuri Korchagin, Rakushechnoye, Sarmatskoye and Filanovsky. At this stage, the fields are thought to contain 4.7 bln boe of 3P (proven, probable and possible) reserves. The Vladimir Filanovsky oil-gas field is particularly noteworthy – this is the biggest by oil reserves discovered in Russia in the last 20 years. Another ten perspective oil and gas structures have been identified in the North and Central Caspian.

The Company's exploration drilling success rate in the Caspian Sea is now close to 100%.



Some of managers of the Company and its subsidiaries received a 2006 Government Prize for Science and Technology in 2007 for developing and commercially implementing rational geophysical research models and environmentally efficient off-shore well technology, which led to the discovery of the major oil and gas province in the Russian sector of the Caspian Sea and accelerated the preparation of the resource-base for oil and gas production.

## THE YURI KORCHAGIN FIELD

The field is named after Yuri Korchagin, a former Secretary to LUKOIL's Board of Directors. It will be the first of the North Caspian fields to be brought commercially on-stream, scheduled for December 2009. The field is 180 kilometers from the City of Astrakhan and 240 km from Makhachkala at sea depth of 11-13 meters. 3P reserves are 570 million boe. Oil and gas condensate production will peak at 2.3 million tonnes oil and 1.2 bcm gas per year.



## Y. KORCHAGIN FIELD PRODUCTION FACILITIES

The project of the Y. Korchagin field construction for production and transport hydrocarbons incorporates a number of major off-shore facilities.

One of them is an ice-resistant fixed platform (LSP-1), built at the Astrakhansky Korabel shipyard, and intended to drill and operate wells and collect and pre-treat reservoir content. The LSP-1 has a 560-tonne rig capable of drilling up to 7,400 meters wells. Field construction will include 26 production wells, three water-injectors and one gas-injector. The platform also has two 70-tonne cranes. LSP-1 is 95.5 meters long, 72.2 meters wide, 86,6 m height from a sea level and weighs 25,655 tonnes when embedded and filled with liquid ballast.

The LSP-1 will be complemented by a living quarters for up to 105 employees, the LSP-2, built at the LUKOIL-Kaliningradmorneft works, and the two will be joined by a 74.2-meter bridge. The LSP-2 is ice-resistant platform with health care area, service quarters, galley, foodstuff larder and a helipad on the fifth deck. The LSP-2 measures 41.5x40.2 meters and 38 m height from a sea level.

The marine transportation complex consists of a floating storage offloading system (FSO) and tower mooring system for shuttle tankers, which will ship the oil to onshore facilities close to the port of Makhachkala, where it will be fed into the Transneft pipeline system.



The FSO has double bottom and double sides, habitable deckhouse, machinery space and helipad in the aft of the vessel. She has deadweight of 28,000 tonnes. It measures 132x32 m and with hull-height 15.7 m, and is manned by a crew of 25. The oil is fed to the FSO via the mooring after traveling through a submarine pipeline.



The oil is fed from the LSP-1 to the marine transportation complex using 58 km of non-embedded pipeline, 300 millimeters in diameter with walls 16 mm thick.

A conductor-platform with a cluster of 7 production wells and 9 km of 300-mm pipeline to feed product to the LPS-1, and a 9-km 150-mm gas pipeline to feed gaslift gas from the LSP-1 to the conductor-platform should be built during the second phase of field construction.

## ENVIRONMENTAL MONITORING AND THE ZERO DISCHARGE PRINCIPLE

Environmental protection is the watchword of LUKOIL's environmental policy.

Since 1997 LUKOIL has organized 48 comprehensive offshore expeditions covering virtually the entire western part of the North Caspian and 23 expeditions directly in the region where exploration drilling is being conducted.

The monitoring produced an evaluation of the condition of the offshore environment based on three hundred hydrological, hydrochemical, hydrobiological, ichthyological and toxicological indications. The data shows that the level of water contamination in the areas analyzed was lower than 15-20 years ago.

Another important result of the environmental monitoring was the effect of exploration drilling on the offshore environment. It demonstrated that the drilling platforms the company uses for exploration are not sources of contamination thanks to strict compliance with the zero discharge principle, which LUKOIL was the first oil company to apply in the Caspian.

The principle means that no waste is discharged to the sea. All waste is collected in closed containers and transported to shore for disposal.

The zero discharge principle was applied during exploration drilling and will be adhered to during production drilling and commercial hydrocarbon production.

The company conducted 25 public hearings during preparations for the development of the Caspian fields. All the recommendations from state environmental control representatives, academics and the public were incorporated into the final version of the project documentation.

Overall spending under the environmental safety program in the northern Caspian exceeded 40 million rubles in 2004-2008. Spending under the new environmental safety program in this region for 2009-2013 will top 120 million rubles.