

# Polar potential

The Shtokman field represents one of the Arctic's brightest hydrocarbon prospects. In order to make the most of this monumental opportunity and pave the way for further Arctic E&P development, three major energy companies have teamed up to design a safe and eco-conscious operation. Vice-president of Shtokman Development **André Goffart** gives *World Expro* the cold, hard truth about the project.

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**D**eep in the Arctic Circle, the inhospitable crystalline world contains some of the most promising untapped hydrocarbon reserves on the planet. South of the permanent ice cover, the Russian

Barents Sea is home to one such find: the Shtokman field. The field, which lies 370 miles north of the Kola Peninsula, was discovered by scientists aboard the research vessel *Professor Shtokman* in 1981. Seven

years later, a 3,000m test well was drilled and revealed two formations, one of free gas and one of gas condensate. Further investigation revealed the reserves to be among the ten largest gas fields worldwide,

reinforcing the great hope many nations and oil companies had long held regarding the availability of hydrocarbons in the Arctic Circle. The reserves were eventually placed at 3.8 trillion cubic metres of gas and approximately 53.3 million tons of gas condensate.

However, given the field's location high in the frozen north, development was delayed for over a decade while the challenges of Arctic production were overcome.

### Weathering the deep freeze

After several stalled attempts at developing the field, the Shtokman Development consortium was established on 21 February 2008. The consortium is led by Gazprom, which holds a 51% stake in the company, with Total taking a 25% share and Statoil the remaining 24%.

"Shtokman is one of the most ambitious projects in the world. I've participated in many large-scale projects before, but this one is on a significantly larger scale," explains André Goffart, vice-president of Shtokman Development. By sharing the burden of developing the field, the hope is that each partner will be able to bring their own expertise to the project, making each phase of development as smooth as possible.

The planned development of the field has been broken down into three phases, the first of which will see the first gas supplied to shore in 2016 and the onshore LNG plant in operation the following year. This phase of the process, specifically the LNG plant, will be subcontracted to Technip. Gas will then be distributed to Europe via the Nord Stream pipeline. It is hoped phase one will achieve a production rate of 22.5bcm of natural gas a year and 205,000 tons of gas condensate.

#### André Goffart

André Goffart is vice-president of phase one development at Shtokman Development. He previously worked at Total Group, where he occupied many senior E&P roles including deputy general manager and vice-president of development engineering.



The following phases will then see this gradually increase to more than triple the initial production rates.

The development is made all the more challenging given the field's location in the frozen north. It is no secret that Arctic E&P is fraught with potential dangers, and the Shtokman field is no exception – facing water depths of up to 340m, wave heights of up to 27m and annual variations in temperature from -50°C to 33°C.

Aside from these extremes of weather, there is also a very real danger of damage to infrastructure from floating ice. With global temperatures rising, large swathes of the previously secure Arctic ice shelf are becoming detached and floating into open water. Often weighing several million tons, these hulking masses have the potential to wreak havoc upon oil and gas infrastructure. To counter this potential threat, innovative floating production platforms are being designed by WorleyParsons, which can be towed to safety at short notice, should an iceberg loom large on the horizon.

The project is on course to meet its 2016 target, which follows a three-year delay in construction due to the current oversupply of gas to the market. Given this general weakness in the gas market, Shtokman Development has stated it will make its final investment decision regarding when to press ahead with phase one by the end of 2011. In spite of this slight delay in proceedings, the development of the field is still seen as

of vital importance, not only for gas supplies to Europe, but for E&P in the Arctic as a whole.

### Forward thinking

It is hoped that this project will act as a springboard for development of other reserves in the Arctic Circle. Using the techniques established here will allow for more sure-footed development of future fields, without the need for expensive development of new, untested technologies. Goffart cites the innovative floating production platforms as evidence of this: "Building and installing a large floating production facility in the Barents Sea has not been done before," he explains. "In that respect, we are pioneers and our project will be an important milestone for Russia and the entire industry.

"Shtokman is different from everything that has gone before," he continues. "One of its unique objectives is to help the industry hone its capability to investigate further offshore developments in the Arctic."

With an estimated 200 billion barrels of oil equivalent locked beneath Arctic ice – a quarter of the world's undiscovered oil reserves – the impetus is certainly there for future E&P activity and, with the gradual melting of Arctic ice cover, this process should gradually become easier. However, the environment this far north is still not to be underestimated.

To make sure Shtokman is developed with the unique environment in mind, the consortium has invited its environmental contractors to work with local and international environmental protection organisations, such as the WWF and Kola Wildlife Preservation Center, to devise a sound means of extracting hydrocarbons in the region without adversely affecting the ecological

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balance of the area. "Shtokman is the first project being implemented under Arctic conditions and this area's ecosphere is very sensitive to external influence," explains Goffart. "Shtokman Development is committed to adhering to the best standards of environmental protection and, accordingly, we are very carefully selecting contractors."

It is hoped that by doing so this project will become a template for all future E&P projects in the Arctic, thereby allowing access to the much-needed reserves while being conscious of the need to protect one of the globe's few remaining pristine environments. With a few months remaining until the final investment decision is made regarding the project's development, the consortium is poised to cover a lot of new ground in its quest to obtain the gas of the Shtokman field. It is hoped that the groundwork done as part of this development will make the Arctic that bit less inhospitable in the future. ■



The field was first discovered by scientists aboard the research vessel *Professor Shtokman* in 1981.



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