# Wanted: *LNG from Shtokman*

Photo: Onne van der Wal/Corbis

Gazprom is preparing to build a huge LN G facility in the subarctic region of the Shtokman field. The Russian LNG is destined for the US, but it could still go to Europe, if the EU makes the right policy moves.

*by Roman Kazmin*

Since its discovery in 1988, the Shtokman gas and condensate field has been at the forefront of Russia's efforts to enter LNG markets in the Atlantic basin. The field is located in the central part of Russia's sector of the Barents Sea shelf, about 600 kilometres northeast of the port city of Murmansk. Here developers face tough, sub-arctic conditions, but, because of the warm current, the waters remain ice-free throughout the year. On the down side, the 1,400m$^2$ area over which the field is spread is frequently visited by drifting icebergs.

Shtokman is certainly a big prize. The field's proven reserves amount to about 3.8 trillion cubic metres (tcm) of natural gas - more than half of total US gas reserves - and about 37 million tonnes of gas condensate. At the full swing of production, annual output will be in excess of 70 billion cubic metres (bcm) —almost as much as the total current gas consumption of Germany.

From the onset of Shtokman's discovery, the extreme weather conditions and the geological complexity of the location—the sea depth varies between 320 and 340 metres—have rendered the project technologically challenging and capital-intensive. Experts say that it will require the development of ice-breaking LNG tankers or ice-breaking vessels to accompany the tankers. At the same time, arctic temperatures at Shtokman do have their advantage: the low average temperature will significantly reduce liquefaction costs, as very low temperatures are required to liquefy the gas.

Although definitive estimates have yet to be made, particularly in the context of the global financial crisis, the project is estimated to cost anywhere between $10 billion and $25 billion. The exploratory drilling has been carried out between 1990 and 1995 by Sevmorneftegaz, a 100% subsidiary of Gazprom. Following the early discovery of the scope of Shtokman's reserves, Gazprom was anxious to find the right partners. Although quite capable of handling onshore projects in extreme arctic conditions, Gazprom does not have the technology or expertise to carry out an offshore project with Shtokman's complexity on its own. At first, Gazprom decided to partner up with American majors ChevronTexaco, ConocoPhillips and ExxonMobil and the two Norwegian companies, Statoil and Norsk Hydro, which have since merged. But in the end, Gazprom chose Total, and, later, StatoilHydro as the principal partners. Significantly, Shtokman thereby turned into an exclusively European project.

While the choice of Total seemed based on a commercial and conceptual fit, particularly in terms of the company's experience as a global LNG player (Total is estimated to control 40% of the

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global LNG market), StatoilHydro was the obvious partner for its technological know-how as well as its history of hydrocarbon development in arctic conditions. It had experience with the Ormen Lange field and the construction of the Snohvit LNG plant.

Gazprom holds a 51% stake in the joint venture Shtokman Development, Total 25%, StatoilHydro 24%. Shtokman Development will hold all the rights to the first phase of the project for 25 years from the time the field is commissioned. Gazprom will retain an exclusive right to market the production.

## Final investment decision

Despite the clear potential of the Shtokman project and the enormous funds that have been invested in preliminary work, no final investment decision has yet been made. But so far there is no indication that one of them will change its mind. In fact, they have unanimously approved a budget of $800 million for the project development up to the date of the final investment decision. The budget approval coincided with the official announcement that the cost of developing phase one will rise to $20 billion instead of the previous estimate of $13-15 billion. In September, Yuri Komarov, the ceo of Shtokman Development, said that Gazprom Export will sell a large proportion of Shtokman's LNG by the end of 2009. Securing project finance for Shtokman will require that most of the projected LNG production is locked into supply contracts.

Recently, Komarov said that 'liquidity and the possibility of attracting credit resources is a very important issue. I have to say this is one of the most serious issues, which will determine the beginning of the project development start.' He emphasised that the greater part of the capital should be raised in 2009. The availability of credit resources will play an important role in determining whether production will begin in 2014.

Jonathan Stern, director of the gas programme at the Oxford Institute for Energy Studies, is sceptical about the official commencement date. 'Shtokman is an extremely difficult project and the required lead-time will be very long. I don't anticipate production to begin before 2017.' Other industry experts have pushed the date as far as 2020.

## Icebergs

The construction of the LNG liquefaction plant near the small village of Teriberka began in August 2008. Upon completion, it will have a capacity of 7.5 million tonnes per year during the first phase of the project, gradually rising to 30 million tonnes (or 41.4 bcm, equivalent to about half of current total gas consumption in Germany).

Per Kjaernes, field development manager of StatoilHydro in Russia, says that Shtokman 'will be a very tough race.' Kjaernes notes that the drilling platform, currently assembled at Russia's Vyborg Shipyard, is one of the main technological challenges of the project because it has to be detachable for when icebergs approach.

Two companies have already been awarded development contracts. JP Kenny from the UK will do the front-end engineering design (FEED) and will manage the engineering of the pipeline. It will be designing the 600 km 44 inch subsea pipeline that will run from the Shtokman field to Murmansk. French Technip has been awarded the FEED contract for the onshore part of the first phase of Shtokman. Technip will design the onshore gas treatment plant and the first LNG train with a capacity of 7.5 million tonnes per year, as well as an export plant for the Russian and European markets.

Gazprom has indicated that gas production during the first phase will be split evenly between LNG and pipeline transit, 47.5% each. The remaining 5% will be used for regional consumption. Crucial to the pipeline plans is the Nord Stream pipeline, designed to stretch from Russia's Portovaya Bay near the port of Vyborg to Greifswald in Germany. When completed, Nord Stream will have a total carrying capacity of 55 bcm, enough to meet 11% of Europe's projected gas import needs by 2025.

Gazprom, primarily a pipeline company, has been preparing itself for the LNG market. A subsidiary called Gazprom Marketing & Trading (GM&T) was established in September 2005. Over the past three years, this company has delivered a series of LNG spot cargoes to the US, UK, South Korea, Japan, India and Mexico, selling nearly 1 billion cubic metres of gas. With limited commercial relationships in the LNG business, it has been very hard for GM&T to secure sufficient cargoes. This may change very soon. Gazprom is examining the potential for swapping LNG for gas transported by pipeline to Europe.

## Strained dialogue

Gazprom's LNG strategy in the Atlantic basin has so far prioritised entrance into the US market. Gazprom has indicated that LNG produced during the first phase of Shtokman is destined for the

North American markets. The decision does make commercial sense. Russia is less than 4,000 nautical miles from the US east coast and the only other suppliers closer to the US market are Norway, Algeria, Venezuela and Trinidad.

Russia's attempt to expand into the North American markets is also driven by a need to diversify its customer base. The dialogue between Russia and Europe has been strained over the last few years, and, just as Europe is seeking to diversify its sources of supply, Russia is eager to enter new markets.

Yet, there are plenty of reasons why it would be in the mutual interest of Russia and the EU to ensure that the LNG from Shtokman will find its way to Europe rather than the US. For Gazprom, from a purely commercial viewpoint, the US LNG market is not very attractive at present. The price of LNG traded outside of the long-term contracts (the "spot price") hovers just above $9 per million British thermal units (mmbtu) in Europe, whereas the spot price at the Lake Charles hub in the US is currently below $6. The slump in North American LNG prices has been attributed to the discovery of large non-conventional gas reserves. In the US, newly developed shale gas has in recent years played a significant role in keeping LNG demand relatively low. US LNG prices are currently the lowest among the big LNG importers. This situation is not expected to change over the next 5 years, said Jen Snyder, head of North American gas research group at WoodMackenzie, during a recent energy conference in Houston.

European LNG demand, on the other hand, is projected to skyrocket over the next 20 years. Virtually every European state with a coastline is either building or has recently announced plans to construct an LNG import terminal. Economic projections indicate that over the long-term Europe will remain a competitive LNG market not only in the Atlantic Basin, but also in global terms. All major European LNG hubs are trading well above $8 mmbtu. Current projections indicate that European gas prices will remain substantially higher up to the third phase of Shtokman's development.

For the Europeans, the current large-scale development of their LNG import infrastructure in Europe is a risky matter. The major question is where will the supply for all these

*Helge Lund, ceo of the Norwegian oil company StatoilHydro.*
*Photo: Stian Lysberg SOLUM/EPA*

terminals come from. Construction of an LNG import terminal is estimated to cost about €700 million. The shortage of supply means that many of the newly-built terminals might not be

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operating at their full or even half capacity. Still, the Europeans have no choice but to build import terminals, if they want to be able to attract long-term supplies in the first place.

An added incentive for Russia to expand its LNG trade with Europe is that LNG-shipments avoid the transit problems associated with the pipelines.The proximity of European LNG terminals also means a considerable reduction on shipping costs. Thus, despite the early announcements by Gazprom that the US will be the market of choice for Shtokman LNG exports, this policy may undergo a reversal in the current economic environment.

EU policy should be aimed at helping to bring about this reversal. Securing LNG supplies from Shtokman should become a matter of priority for European policy makers.The European Commission has recently been agitating against long-term contracts and has attempted to delink oil and gas prices. These incentives may be of benefit to the end-users, but make the job of procuring long-term LNG contracts a very difficult one. Traditionally, gas buyers and Gazprom have preferred oil indexation because that way gas prices are easier to hedge than if they a linked to a volatile spot price. Brussels would do well to take the larger picture into account. ■

## Who is Roman Kazmin ?

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