ARCTIC OIL & GAS – CHALLENGES AND OPPORTUNITIES

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The Arctic – challenges and opportunities

Norwegian perspective
- Resource potential
- Exploration
- Development
- Production
- Technology
- New areas – delimitation line
- Norwegian policy – an industry for the future

Russian perspective
- Resources
- Exploration
- Shtokman – what next?
- Russian policy
- Russian business culture
- Summary

Source: NPD
Oil and gas resources in the Arctic are large

30% of the world’s undiscovered natural gas and 13% of the world’s undiscovered oil in the Arctic (source: USGS)

1. South Kara Sea
2. North Kara Sea
3. Laptev Sea
4. East Siberian Sea
5. Chukchi Sea
6. Alaska North Slope
7. East Greenland
8. Barents Sea
The Norwegian Perspective – Petroleum activities in the Norwegian Barents Sea

- First exploration activities started in 1980
- Snøhvit gas field in production
- Goliat oil field in production
- Johan Castberg oil under evaluation
- Alta and Gotha oil under evaluation
- Wisting oil under evaluation
- Several smaller gas discoveries made
Petroleum activities in the Norwegian Barents Sea

- First LNG plant in the Arctic
- In production Q4 2007
- Subsea to shore development – 140 km
- First infrastructure for gas in the Barents Sea
- Developed on the basis of comprehensive impact assessment
- Contributed to substantial local/regional employment and ripple effects
- Markets in Europe by LNG tankers
Petroleum activities in the Norwegian Barents Sea

Goliat

- First oil field in the Barents Sea – ENI as operator
- Production with offshore loading started in March 2016
- One of the largest industrial projects undertaken in Northern Norway
- Developed on the basis of comprehensive impact assessments
- Substantial related economic activities and ripple effects locally and regionally
Exploration in the Barents Sea

- 100 exploration wells drilled since 1980
- The majors are returning to the Barents Sea
- Need for a cost effective joint oil transportation system for Barents Sea oil – shuttle tankers and terminal
- Gas transportation challenges
  - Pipe line
  - LNG
- Licence awards in the 23rd round expected in June 2016
The Barents Sea – an emerging petroleum frontier

- The Delimitation Agreement between Norway and Russia in force July 7, 2011
- An area like the North Sea split 50/50
- Impact assessment carried out formally opening the Norwegian part of the Barents Sea East
- Norway applies its concession policy in the new area
- Russia has awarded its “new” acreage to stated owned Rosneft
The Norwegian technological development towards Arctic solutions – step by step

Contractor knowledge / industrial cooperation

Key to successful implementation of technology

Time
Further exploration development in the Norwegian Arctic
The Russian Perspectives – Russian reserves are substantial also in the Arctic

· Large in the world of oil
  - 80 bln bbl
  - 6.3% of the world total
· World champion in natural gas
  - 43.3 tcm proven gas reserves
  - 24% of the world total
· 50-65% of remaining reserves are “hard to develop and produce” – costly!
· Key areas for reserves additions are the Arctic Shelf, the Caspian, East Siberia and the Far East offshore
· Annual reserves replacement has only been achieved twice since 1994
· Little exploration made after the Soviet period

Source: BP Statistical Review

Source: WoodMacKenzie
Business outlook

- Government is an active player, remains a regulator and controls ~ 65% of the petroleum sector
- All significant onshore and all offshore licenses are split between state controlled Gazprom and Rosneft
- International oil companies (IOCs) can only be minority partners to the two state owned champions
- IOC’s participation is limited by minority shares (< 50%) in new projects bigger than 70 mln tons of oil and 50 bcm of gas, and in all offshore projects
- Need for improved fiscal/tax regime for difficult developments and offshore reserves, a predictable legal system and a competitive entry system
- Some economic incentives have been introduced for Yamal, but not for Shtokman
Shtokman – The Mother of all Projects

- Shtokman was discovered in 1988
- Location: 650 km northeast of Murmansk
- Gas reserves: ~3000 BCM recoverable
- Condensate Reserves: 43 mill. Sm³
- Water depth: 340 meter
- Sea Ice every 4th year, Icebergs may occur
- Production start: Depends on F.I.D? 2020?
- Annual gas production: 23.7 BCM for Phase I, including 7.5 MTY LNG?
- Annual production Full field 71 – 90 BCM

A locomotive for new developments in the Arctic has not delivered
Shtokman challenges

- Mega development in the Arctic
- Sensitive ecosystem
- HSE
- Ice conditions
- Arctic cost enormous with no infrastructure
- Market developments
- Time schedule
- Profitability
- No tax incentives given
- Statoil and Total exit from SDAG
- Project has been put on the shelf
- When will Shtokman come back?
Shtokman phase 1 development plans

A combination of Snøhvit and Ormen Lange concept has been studied in detail (Feed) by Gazprom, Statoil and Total

- Field development offshore
  - Pipeline to shore
  - Gas plant on land for processing and export compression

- Pipeline to Europe

- LNG to world markets (not US)

- The owners did not file a PDO as planned

- Shtokman became too expensive to be profitable with no tax incentives in 2012

- What now?

- Can the high costs be driven down by more use of sub-sea installation and efficient multiphase transport solutions?

- The gas market has changed fundamentally after the US shale gas revolution
The Barents Sea: An area of international energy cooperation in practice

- ENI
- Rosneft
Norwegian industrial participation in Russian oil and gas

- Oil and gas companies
- Supplier companies
- Research and development
- Supplier development programs
- The Norwegian model
What Norway can contribute with in Russian oil and gas

- Cutting-edge offshore technology
- Management of large integrated projects
- Harsh environment & arctic experience
- Gas value chain
- Industry’s most strict HSE standards
- Proximity of well-developed Norwegian infrastructure
- Competitive suppliers
- Strong R&D institutions
Russia is another place
Russian business mentality and culture

- Long-term perspective is needed
- What is good for Russia is vital
- Control at any time
- Hierarchy – “the boss is boss”
- Combination of politics and business
- Russian content
- Russian decision making process is not transparent
- Corruption is a big problem
- “The winner takes it all” attitude
- The contract as a starting point for negotiations
- Relations more important than contracts
- The Russians have always good time and often with new negotiation teams towards the end of the process
How to succeed in Russian business

• You have to know much more than your own business
• Russian language
• Russian culture
• Russian history
• Establish friendly relations
• You have to be patient
• Avoid frustration when things take time, as they will
• For the patient, long-term business developer, there are opportunities in Russia
Russian culture and attitude

- Very different from ours
- Long and demanding history between the East and the West
- Want to control
- Centrally governed country – 11 time zones
- Afraid of Smuta – the troubled years
- Do not believe in government as a supporter of welfare
- Family and friends as the basis for security, not the state
Summing up: What are the prerequisites for success in the Arctic?

- Leading international companies have the technology, competence and management tools needed to develop the Arctic offshore.
- The framework conditions (legal, regulatory, tax) must be predictable to secure heavy investments over a long time.
- But you also need to develop relations and understand politics and culture to succeed in doing business in Russia.
- Russia is fascinating, but very demanding.
- The Arctic is a fascinating adventure for our business.
- The Arctic is also fascinating for the individuals being privileged to work in such an environment.
Passion for the Arctic has been a life journey
Summary

The Arctic contains large oil and gas resources and opportunities

**Russia**
- Has a large potential, but needs to invest more in oil and gas offshore
- Cost level is a big challenge in the Russian Arctic, especially for gas projects
- Foreign companies needed to develop the Russian offshore
- Tax incentives and a predictable legal framework area necessary

**Norway**
- Has a predictable oil and gas regime functioning well
- Promising oil and gas discoveries made in the Norwegian Barents Sea in the last years
- Strong competition in the 23rd round – high interest being demonstrated by the majors
- Norway's oil and gas industry is leading in subsea developments and multiphase transport in harsh environment – the key to the Arctic
- Optimism today regarding the oil activity in Northern Norway and its ripple effect for the region
- The Government requests the companies to cooperate in making the oil and gas resources viable
How can we cooperate in practise?