



SHELL - Sakhalin Island Projects

Oil and Gas In Sakhalin Island (Russia)

The two largest projects currently underway in the Sakhalin Region are Sakhalin-1 and Sakhalin-2, operated by ExxonMobil and Royal Dutch/Shell respectively.

Sakhalin-2 is in its second phases of development, while Sakhalin-1 is in its first. The Sakhalin-1 project encompasses transportation of Hydrocarbons to Khabarovsk Krai and Sakhalin-2 is proceeding with construction of **Russia's first LNG plant** – said to be the largest in the world.

The island has always been rich in oil and gas, and though on-land fields now almost depleted, the offshore reserves have attracted a multitude of investment to the island.

Forecasts for 2005 expect extraction of 12 million metric tons of oil in the Sakhalin region, and about 30 million metric tons of oil for 2006 – the vast majority this by the Sakhalin-1 and Sakhalin-2 projects. For 2002, the Sakhalin region extracted 3.2 million metric tons of oil; this is less than 1% of the total for Russia in 2002 – 378 million metric tons.

The oil-gas consortia are planning to invest more than USD 200 million into infrastructure upgrades for instance, Nogliki airport upgrades at an estimated cost of USD 40 million, and USD 13 million more will be necessary for additional roads and dead-end railroad tracks.



The Sakhalin II Project

Sakhalin II project is developed by Sakhalin Energy Investment Company Ltd., a three way Joint Venture among Mitsui & Co., Ltd (Mitsui), the Royal Dutch/Shell Group (Shell), and Mitsubishi Corporation (Mitsubishi).



The Sakhalin II Project includes two phases:

Phase 1

- First production in 1999
- Seasonal oil production : 6 months /year
- Output up to 90,000 barrels/day (11,000 metric tons/day)
- Close to 40 million barrels (5million metric tons) produced by 2002
- Sakhalin Energy became an established exporter to Korea and China

Phase 2

In 2003 Sakhalin Energy consortium made a decision on Sakhalin-2 second phase commencement. In four years, the **LNG plant** in the South of Sakhalin will start full capacity LNG manufacturing. This projected output is said to be covering 10% of all Eastern Asia LNG needs, including China. Sakhalin Energy signed an LNG sales agreement with Tokyo Gas. The final agreement, signed by 2004, with gas deliveries to start in 2007.

All Together, Sakhalin-II , phase 2 includes the following:

- Integrated oil and gas development
- Investment of over \$ 9 billion
- Astokh filed Molikpaq year-round production
- Two new offshore platforms (Piltun-B, Lunskoye-A)
- 800 Km onshore oil and gas pipelines
- First LNG plant in Russia + export terminal
- Largest single LNG trains +export terminal
- Largest single LNG Trains ever built (4.8 mtpa)
- First Russian gas to be shipped to Asia



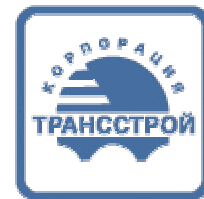
The Sakhalin LNG Project and the role of Unidro

Chief contractor is **Chiyotec Limited** (a JV between **Chiyoda Corporation** and **Toyo Engineering Corporation**), with the major Russian subcontractor Transstroy.

In 2004 the work started on the LNG shipment moorage construction and the plant base concreting. The plant will include two technological lines (total output of 9.6 million tons per year – first train to be put into operation July 2007, second in February 2008), two gas storage tanks (total capacity 200 thousand cubic meters of gas) and the shipping system (mooring lines for tankers). The shipping terminal will be able to serve the largest LNG tanker available in the world.

In the future the third train for the LNG could be constructed as well as the third oil tanker.

Chiyotec Limited



Unidro, as one of the qualified suppliers of both the partners of the EPC consortium (i.e. Chiyoda Corporation and Toyo Engineering Corporation) has been selected to be the subcontractor for the water treatment packages for this highly strategic project. The selection has been reviewed and approved by Shell as end user for the project and brought to the first two contracts signed on November 2003 for the two main water treatment packages. Another contract was signed soon after (December 2003) for an additional item.

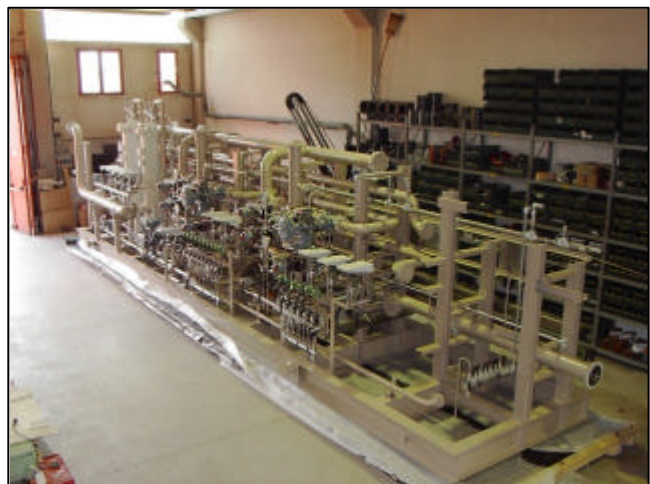
Criticalities of the projects such as

- Severe site conditions (design temperature -33°C)
- Technical requirements: Shell Design Engineering Practices (**DEP**) to be applied extensively)
- Local regulations (Russian Ghost design codes as well as certificates requirements and import regulations to be applied)

were crucial in the subcontractor selection and involve close monitoring by the appointed Project Team during the whole project execution period.

Project Milestones

- First Contract Award Date: November 2003
- Delivery completed by August 2005
- Erection scheduled Q4 2005
- Start-up scheduled Q2 2006



One of the Unidro skids for Sakhalin Project at shop, ready for shipment