

## **HSE Challenges operating in the Sakhalin Environment while installing the Piltun B Platform**

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### **Resymé av foredrag:**

Sakhalin is a remote island located in East Siberia in the sea of Okhotsk and has a sub Arctic climate. The extreme climate shows Temperatures ranges from +25° C in summer to –40 ° C in winter. Offshore ice along the coast exists from December till June, while autumn storms can create waves up to 10 metres significant. Early summer in June/July is characterized by frequent fogs and strong currents.

The HSE challenges in this region include : 1) in winter sea-ice and snow accumulation, which prohibits all marine construction work 2) in the short summer season, fog prohibits helicopter flight, so crew boats have to be used 3) strong currents impact subsea construction work 4) cyclone storms in autumn limit the workability severely 5) Cold water, in summer the water temperature does not rise above 3° C at the surface, while at the seabed water temperatures can be below zero 6) Remoteness is an issue, as there is no port or natural shelter on east coast and it takes 2-3 days sailing to the nearest logistics port.

Under these circumstances the Sakhalin II Phase II development project, which is one of the largest integrated oil and gas project in Arctic regions, was realized in the period 2003-2008. A major milestone was the transport and “float over” installation of the 28,000 ton Piltun B topside early July 2007. This topside was installed on a 4 leg GBS in 40 m Water depth. The GBS had been installed already in summer 2005. In summer 2006 Lunskeye’s 26,000 ton topside had been installed end July using a heavy lift vessel for preparations early July, when water were ice free. End July was rather late as it leaves less than 5 months to achieve “habitation” before the ice comes in December.

For Piltun B, a different approach was used. Preparatory works for the floatover were executed in May and June 2007 in the ice infested waters, using a modified icebreaker with crane capacity to prepare the GBS. This icebreaker with crawler crane was certified by DNV for this one-off task. Preparatory tasks: Several packages had to be lifted off the GBS and DCL caps had to be removed. The modified icebreaker with crawler crane was capable of lifting 10 ton packages at 30 m height and it was man riding. With support of other ice breakers to keep the flow of ice under control, all liftwork was completed mid June successfully and allowed the topside floatover to take place in the first week of July 2007. This success added 20% to the “ice free time” for “hook-up” and “habitation” of the Piltun B platform, which was fully operational and ready for drilling/winter operations by end of 2007.

The transport and installation of the Piltun B topside took 500,000 man hours including some of the more dangerous offshore works such as diving and lifting in ice infested waters. All work was delivered LTI free.

To achieve this with a fleet of Ice class vessels and offshore workforce of 500+, numerous HAZIDs/HAZOPs, RA’s and SIMOPS meetings were held and following key HSE plans, amongst others, were in place and tested prior to execution :

- Clear Communication plans
- Agreed Adverse Weather procedure
- Personnel transfer plan incl Rescue
- Marine Operations manual
- Vessel Inspection & Certification
- Personnel Travel briefing pack
- Emergency Response Plan incl Medivac / Test
- Oil Spill prevention and response plan