



■ • BASF Group

Report title:

PL474 Relinquishment Report

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Key License History

The PL 474 consists of part of block 6406/1 and 6406/2. It was awarded to Wintershall Norge AS as operator (40% W.I.) during the APA 2007 on the 29th February 2008, with Maersk Oil Norway AS (30%) and from 22.12.2009, Det Norske Oljeselskap AS (30%, before was Aker Exploration AS, 30%) as partners. The license area is located West of Kristin and Erlend Fields and East of Sklinna Field as shown in Figure 1.

The work obligation was to reprocess 3D seismic data over the entire license area and a Drill or Drop decision had to be taken before 28th February 2010. The reprocessing was completed in June 2009. The license evaluation continued throughout 2009, but due to the structural complexity, more time was required to complete the license evaluation. A half year extension of the Drill or Drop decision was subsequently requested and granted until 01.09.2010.

One Prospect has been identified within the license area, the Sokna prospect. Targets are represented by the Jurassic Sandstones of Garn, Ile, Tofte and Tilje Formations. The mean technical recoverable reserves are calculated to 25 MMboe of Gas and condensate with a GPOS of 43% (at least one).

Due to the high risk, small volumes and high drilling cost (HPHT well) associated with the identified prospect the license was relinquished with unanimous decision within the JV Partners.

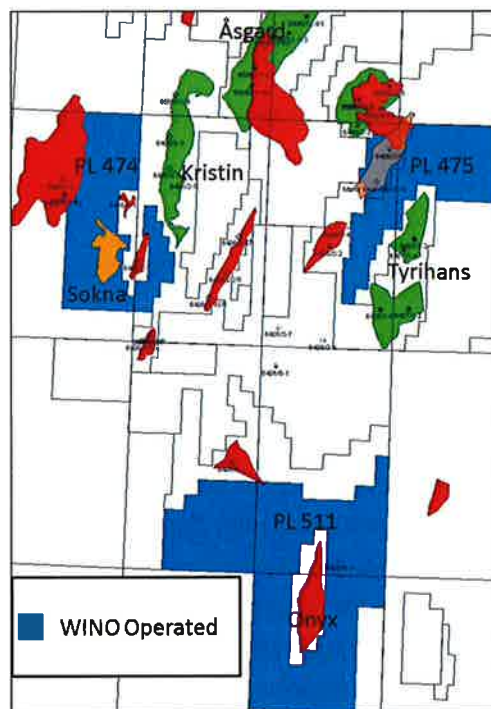


Figure 1 PL474 location map

Database

The PL474 is covered completely by 3D Survey. As part of the Work Commitment a re-processing of the available 3D data covering an area of 1800 kmsq has been performed from Field Tapes to Pre-Stack Time Migration (completed in May 2009 – WIN09M01). Outputs have been full and partial stacks (Near-Mid and Far) with and without Spectral Whitening (Figure 2).

Seismic Interpretation of the whole area was completed together with revised structural maps.

Well information was available from the nearby Sklinna, Kristin, Erland, Ragnfried and Lavrans Discoveries/Fields and integrated in the new seismic interpretation and depth conversion.

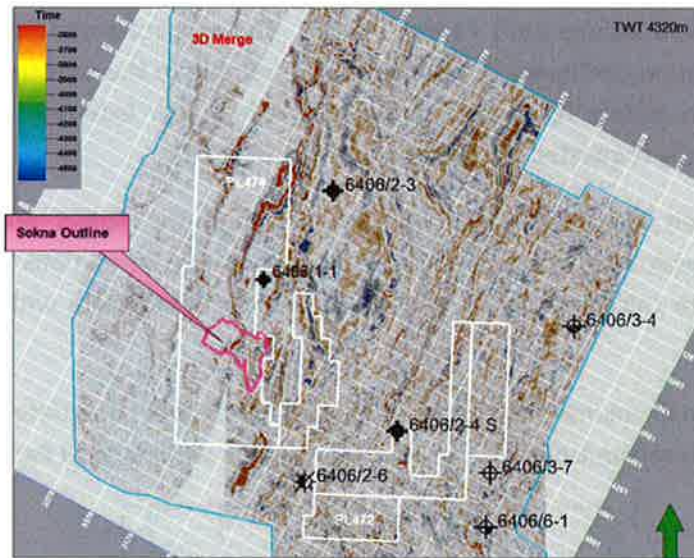


Figure 2 The figure shows the PL474 license with the outline of the Re-processed seismic

Review of geological framework

License 474 is located in the Haltenbanken area next to the Statoil operated Kristin field, containing about 325 MBOE of gas/condensate and about 40 km northwest of the Wintershall operated license PL 511(Mjøsa).

Main G&G activity was focused first in improving the 3D Seismic quality through Re-processing of the available Surveys from Field Tapes, especially to gain better resolution at the Jurassic Section level, representing the main target in the License and better imaging of the faults and discontinuities below the Base Cretaceous Unconformity. With this objective in mind, a Pre-Stack Time Migration approach was selected which enabled an overall improvement in the Seismic Image below the BCU and allowed the seismic interpretation to be performed on a Full Stack and three Partial Stack Volumes: Near, Mid and Far. A total of eight horizons have been mapped to accurately control the structure and distribution of the key Jurassic reservoirs (Figure 3).

WNW

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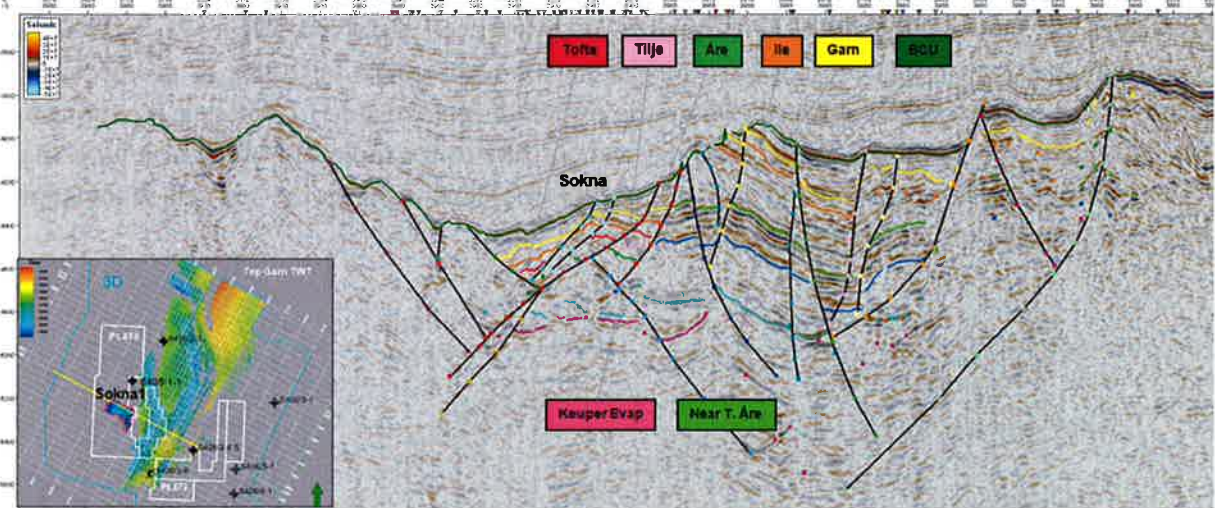


Figure 3 Seismic Section over Sokna 1 Prospect and interpreted horizons

The main play in the License area, represented by preserved sections of Mid Jurassic (Garn and Ile) and Lower Jurassic reservoirs (Tofte) below the BCU, was confirmed to be present also after Seismic Interpretation of the reprocessed Seismic. The main change in the understanding of the potential in PL474 License was related to the decrease of such preserved Mid and Lower Jurassic Section below the BCU in comparison with the 2007 APA Application (Figure 4) leaving, from the eight possible Prospects/Leads, only two, reducing sensibly the block overall potential

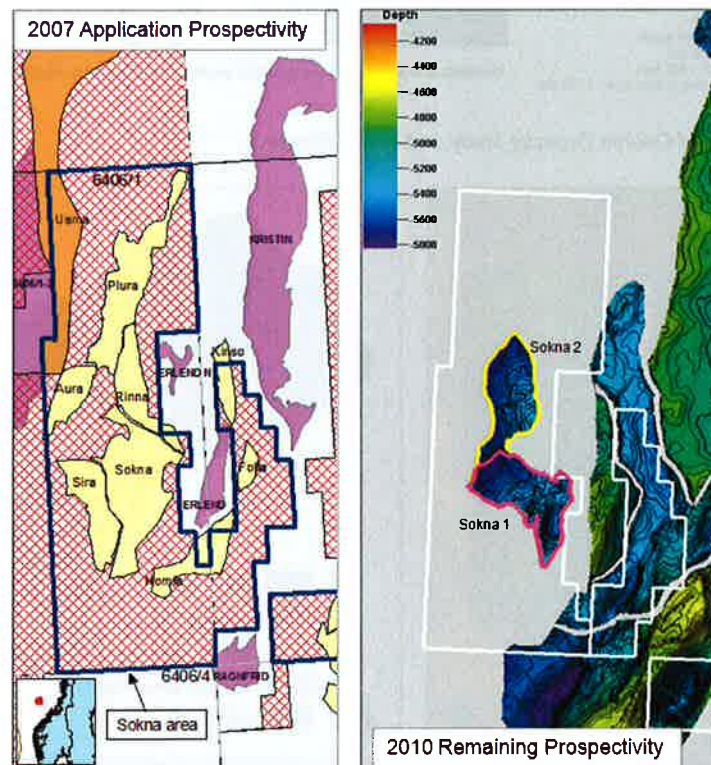


Figure 4 Prospectivity maps showing the change in prospectivity in PL474 from 2007 Application to after Seismic Interpretation of the re-processed 3D seismic surveys.

A detailed Top Seal Integrity and Column capacity study has been performed (Figure 5). Results from such study indicate that, at present day, there is no risk of hydraulic fracturing or geomechanical failure of the top seal or faults. Furthermore the column heights related to hydraulic fracturing are far larger than closure height. When assuming a more silty Lange top seal instead of a pure shale facies capillary leakage becomes the critical factor so, the dependent on the top seal lithology the max column height ranges from below 100m to almost 600m.

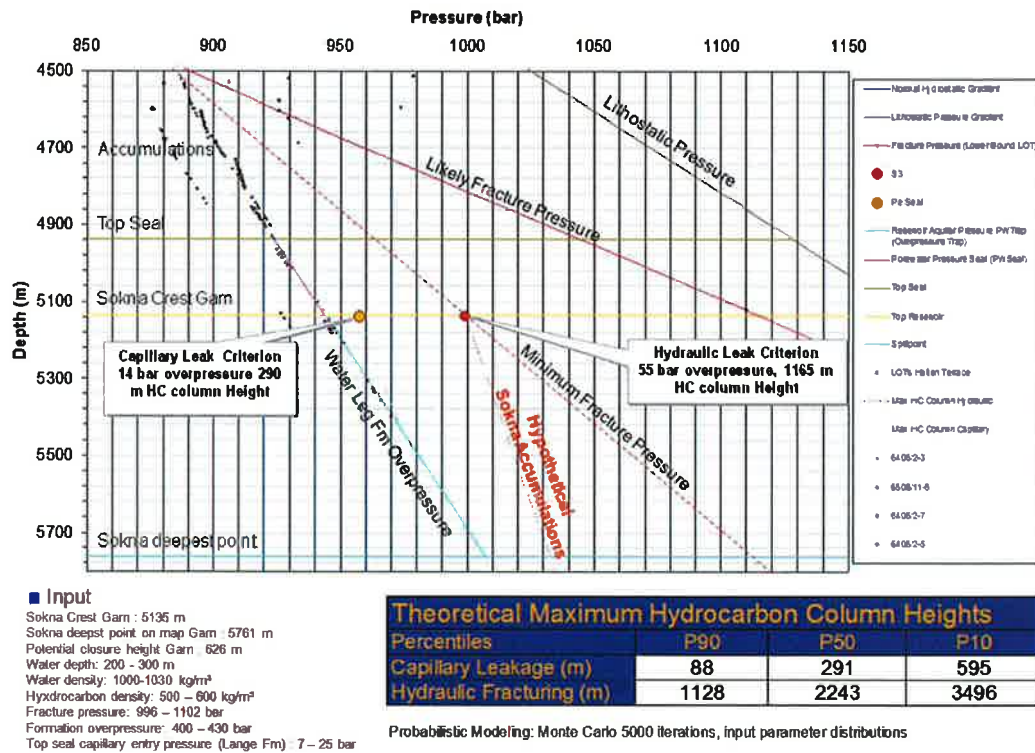


Figure 5 Top Seal Integrity and Column Capacity Study on Sokna 1 Prospect.

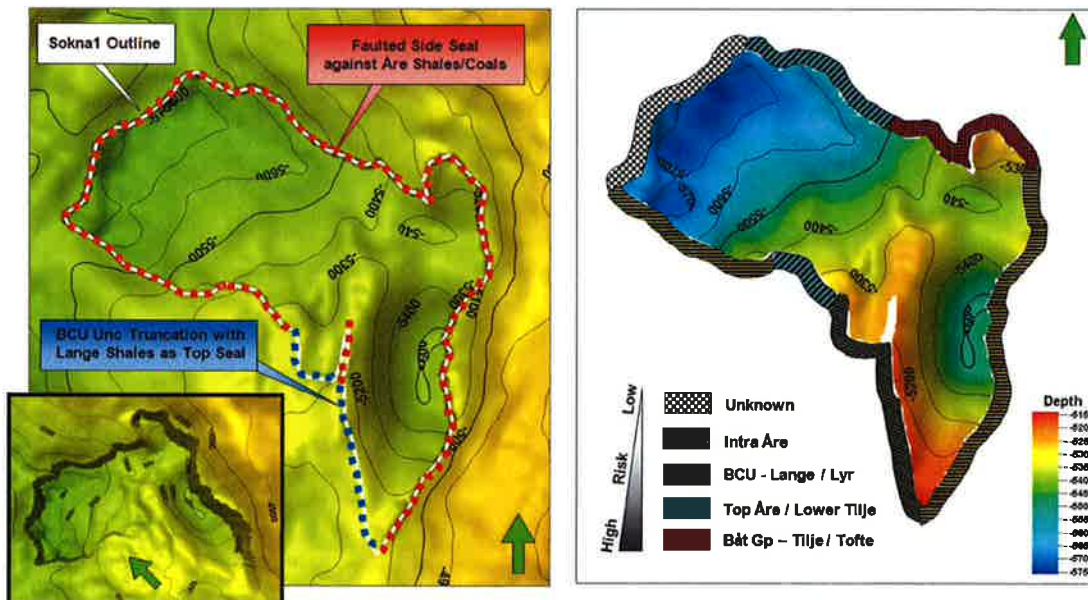


Figure 6 Fault Juxtaposition on Sokna 1 Prospect

Fault Juxtaposition analysis has been performed on Sokna 1 (Figure 6). Results show that fault sealing is favored by having the Reservoir section juxtaposed mostly against low permeable intra Åre Fm levels. The critical leak point lies in the NE of the structure where the side seal consists of Upper Åre/Lower Tilje.

Cretaceous section has also been evaluated but nor structures nor amplitudes of interest have been identified.

From the current evaluation it can be concluded that the above mentioned Mid and Lower Jurassic Section, providing the best reservoirs in the area (Garn, Ile, Tofte Fms.) is largely removed from PL474 and it is preserved only inside two graben structures (Sokna 1 and 2) both of similar size and sub economic volumes, located at deep burial depths and in an HPHT environment.

Prospect Update

The evaluation of the PL474 license has been done on re-processed 3D seismic. The interpretation of the improved seismic data has shown that the Garn and Ile reservoir are preserved only in two relatively small pocket related to two graben structures west of Erlend structure (Figure 7), the Sokna Structure.

Structure. The Sokna structure is composed of two identical sized pockets (i.e. Sokna 1 & 2), approximately 14 km² in size. There is a narrow sliver of Fangst sediments draping over a Triassic evaporite dome (Figure 8), which could connect both Sokna 1 and 2. However, this interpretation is quite ambiguous and since both structures would require a separate well anyway, they are treated as separate prospects. Sokna 1 contains all four reservoir levels, respectively, Garn, Ile, Tofte, Tilje, but in Sokna 2 the latter two are most likely absent due to fault cut-outs (Figure9).

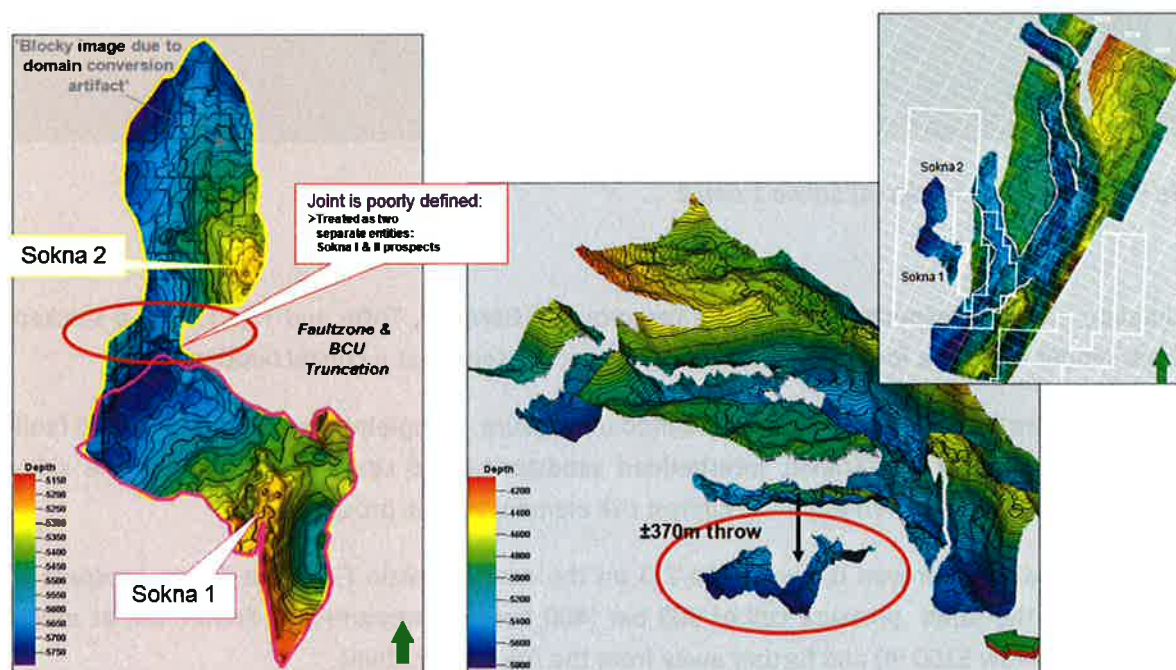


Figure 7 Sokna 1 and 2 Prospects, Top Garn Fm. Maps (Depth)

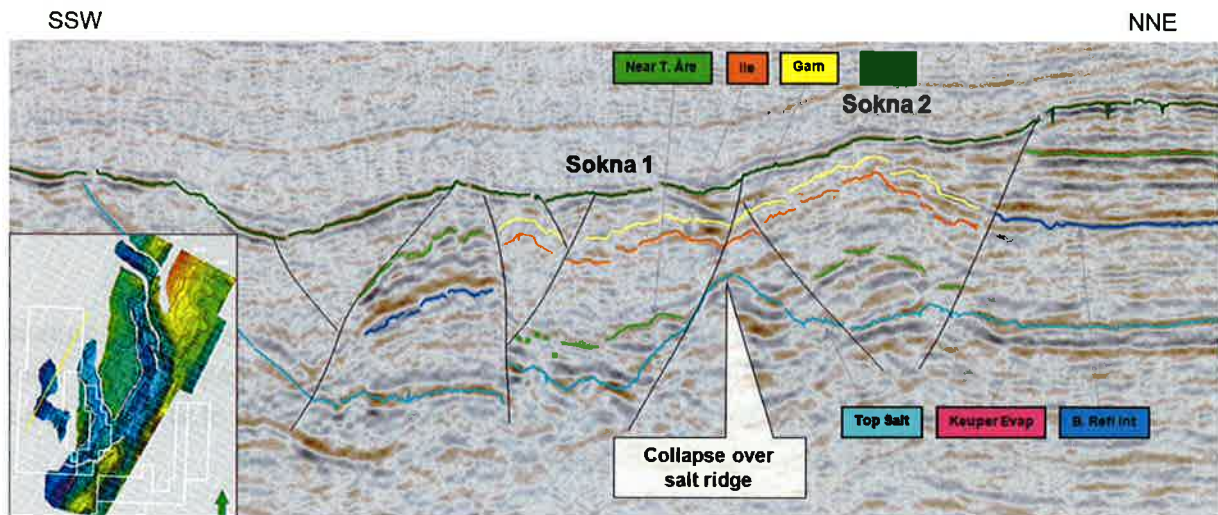


Figure 8 Seismic cross section of Sokna 1 and 2

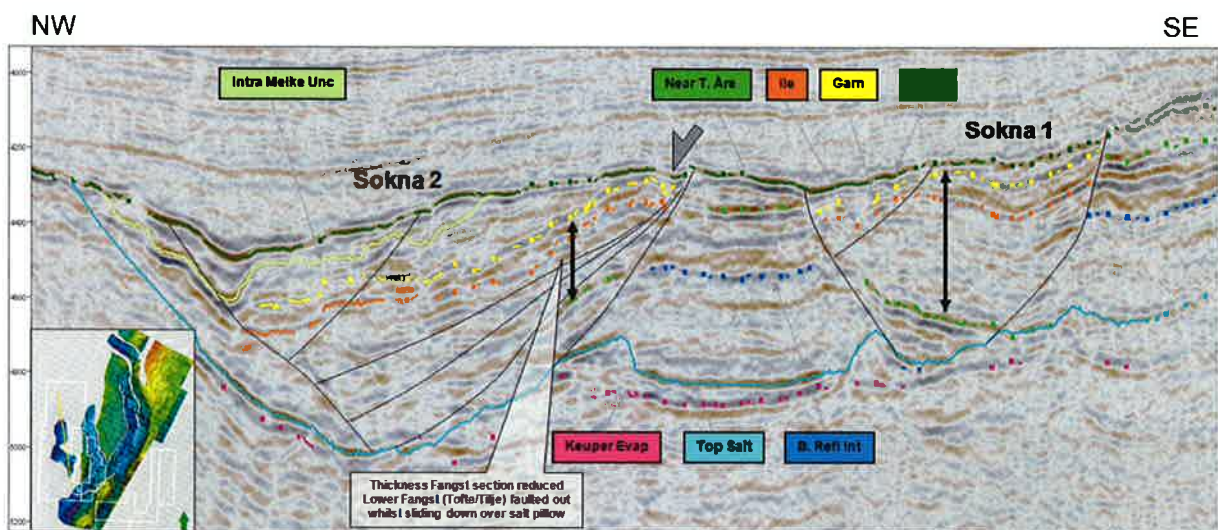


Figure 9 Seismic cross section of Sokna 1 and 2

The Jurassic Sokna prospects comprise the reservoirs of Garn, Ile, Tofte and Tilje Fms in a stacked reservoir model with intra formational seal between each reservoir at a crestal depth of 5100.

The trap configuration consists of an down-faulted dip-closure, completely dependent of up-dip fault seals against Lower Jurassic/Triassic interbedded sandstones and coaly shales. Hence, the side-sealing (Trap) risk is considered to be the highest risk element for the prospect.

Effective top sealing is proven by well 6404/2-3 on the nearby Kristin Field, the Sokna prospect is located within the same pressure cell of 900 bar (400 bar overpressures) as Kristin, but at much deeper burial (below 5100 m) and further away from the fracture gradient.

Reservoir. The Jurassic section contains a series of four stacked reservoir-seal pairs within the Fangst and Båt Groups. The youngest Garn Fm sandstones reflect a lowstand facies of fluvial braided river deposits being sourced from the East. The Garn is on average some 95 m thick but is truncated by an intra-Jurassic and base Cretaceous unconformity. The underlying Not shales separate the second sandstone reservoir level of the Ile Fm, which reflect a highstand with tidal flat deltaic facies, showing generally good porosities. The third sandstone reservoir level consists of Tofte Fm sandstones which are separated from the overlying and underlying Ile and Tile Fm's by respectively Upper and Lower Ror Fms shales. The Tofte Fm reflects a lowstand with more distal settings compared to Garn Fm. It is sourced from the west and exhibits generally good porosities and reaches the thickest sequences amongst the four stacked reservoir levels. The oldest Tilje Fm sandstones reflect a highstand, similar to Ile, sourced from the west, but laterally more extensive. Permeabilities and porosities within the Tilje may still be good, but become rather poor away from the tidal channels.

The reservoir risk is moderate and depends largely on the effectiveness of the reservoir. Most drilled Fangst and Båt Group reservoirs in the area are found above 4800 m depth, hence petrophysical data is limited and permeability prediction is based largely on extrapolation.

Source. The prolific Upper Jurassic Spekk formation is the main source in the area, but the Upper Jurassic Melke Fm and the Lower Jurassic Åre Fm are also contributing to charge generation, all source rock intervals are restricted to the prospect area inside the closure, but mass balance and maturity studies showed that the amount of source rock in the prospect area itself is sufficient to generate enough hydrocarbons to fill the trap. In addition, the Åre Fm is fully juxtaposed around the trap.

The source rocks presently reside inside the gas-condensate window and source risk is moderate and depends largely on successful charge migration into the trap. Expected HC phase is Gas & Condensate.

Volumetrics and Risking. Reserves and risk figures below present the consolidated volumes calculated for the total structure (Sokna 1&2).

Figure 10 Recoverable reserves and Risks for Sokna 1 & 2

Reserves	P90	P50	P10	MSV
Total MMBOE	1.57	13.35	63	25

Risks / Reservoirs	Trap	Top Seal	Reservoir	Charge	GPOS
Garn	30	90	49	50	7
Ile	30	100	56	50	8

Tofte	45	100	64	50	14
Tilje	45	100	48	100	22
Consolidation					43

Technical evaluations

No technical evaluation was performed, regarding possible development of prospects in the License.

Conclusions

Due to the high risk, small volumes and high drilling cost (HP/HT well) associated with the identified prospects in PL 474, WINO recommended dropping the license without committing to a firm well. The initial license period expired 1st September 2010. The other partners' position was supportive of this recommendation.