PL 832 / PL 832 B

License Status Report

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1. PL832 and PL832 B History

1.1 License Summary

PL832 and PL832 B (in this report referred to as PL832/B) are situated on the Ormen Lange Dome in the Møre Basin, approximately 30 km north of the producing Ormen Lange Field. The license includes block 6304/3 and parts of blocks 6404/12, 6405/10 and 6305/1 (total of 1141 km^2) for PL832, and parts of blocks 6404/11 and 6304/2 for PL832 B (total of 121 km^2). Blocks 6405/10 and 6305/1 include the 2007 Midnattsol gas discovery (6405/10-1) (Ref. Figure 1). The license was awarded 05.02.2016 (APA15 application) to A/S Norske Shell (Operator 45%), Spirit Energy Norge (20%), Petoro AS (20%) and Wintershall Dea Norge AS (15%), with an initial 3-year phase including an obligation to acquire 3D seismic followed by a Drill-or-Drop decision by 05.02.2019. The additional acreage in PL832 B was awarded 02.03.2018, with same partnership and work program. The license work program has been completed according to work program commitments.

License partnership elected to relinquish the licenses based on lack of Egga Fm reservoir in the 2018 Coeus well (6304/3-1) and the overall significant uncertainty of Nise Fm reservoir presence and poor reservoir quality impacting the assessment of the remaining prospectivity. Coeus post-well analysis concluded that the seismic AVO Class III response (as defining the Coeus prospect) did not relate to the presence of reservoir with gas as initially interpreted.

The Nise play assessments also included a 2020 re-evaluation of the Midnattsol gas discovery, confirming the low volume range as reported by the previous operator (StatoilHydro). Economic and development evaluations concluded that the discovery remains sub-commercial.

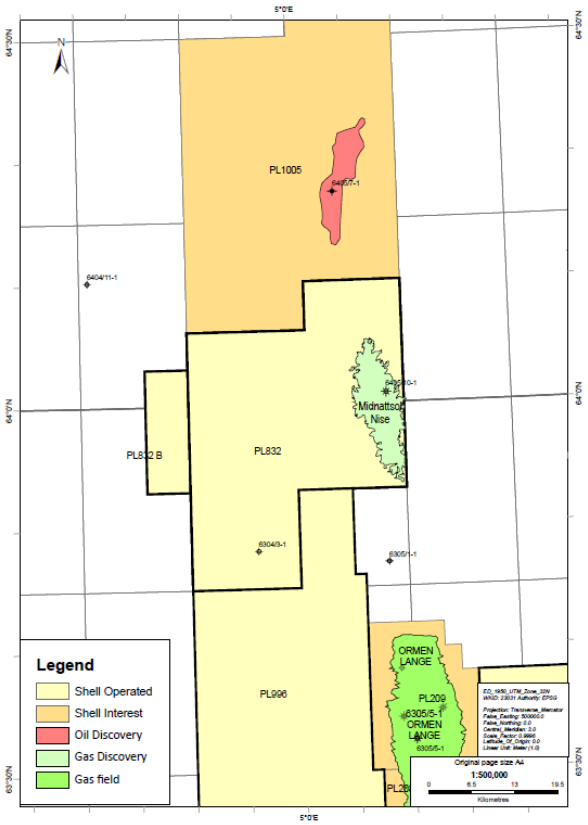

Figure 1 – PL832/B Location Map

1.2 Status of Work Commitment

The firm work program for the initial 3-year phase was to acquire new 3D seismic. This was completed by the acquisition of the new 3D SH16001 broadband seismic (~1200 km^2) already in 2016. Seismic interpretation and evaluation concluded a drill decision of the high graded Coeus prospect, a decision which continued the license with 2 years to BoK by 05.02.2021. The Coeus well (6304/3-1) was spudded 7th July 2018, and P&A as a dry well on 7th August 2018. A 14 m thick Egga member equivalent was penetrated but the unit was dominated by shales and limited sand stringers. The trace to minor amounts of silt to very fine/fine sandstones that were encountered were interpreted to be water wet and confirmed by LWD. An evaluation of the remaining potential of the license was undertaken, with key emphasis on the Nise play including a re-evaluation of the Midnattsol discovery. All work program commitments have been completed.

1.3 Licence Meetings

The following PL832/B Management and Exploration committee meetings have been held:

- 2016, February 25th, EC/MC Committee meeting
- 2016, June 9th, EC/MC Committee meeting: SH16001 acquisition and processing planning
- 2016, October 21st, EC/MC Committee meeting: SH16001 acquisition and processing updates
- 2016, December 12th, EC Work Meeting: SH16001 Processing and Sub-surface evaluation updates
- 2017, March 7th, EC Work Meeting: SH16001 Processing and Sub-surface evaluation updates
- 2017, August 25th, EC Work Meeting: SH16001 Processing and Sub-surface evaluation updates
- 2017, September 19th, EC Work Meeting: Coeus Prospect Value Evaluation (Volume to Value, V2V)
- 2017, October 3rd, EC Work Meeting: Coeus Maturation Update
- 2017, November 11th, EC Work Meeting: Coeus Maturation Update
- 2017, December 5th, EC Work Meeting: Coeus Maturation Update
- 2017, December 14th, MC Committee meeting
- 2018, February 23rd, EC Work Meeting: Coeus well location and trajectory
- 2018, March 9th, EC Work Meeting: Coeus well trajectory and design
- 2018, April 3rd, EC Work Meeting: Coeus updated well trajectory, FE and success criteria
- 2018, April 12th, EC Work Meeting: Coeus well for approval
- 2018, May 7th, EC Work Meeting: Coeus well AFE presentation
- 2018, November 14th, EC/MC Committee meeting
- 2019, February 6th, EC Work Meeting: Coeus post well updates
- 2019, November 26th, EC/MC Committee meeting, remaining prospectivity evaluation
- 2020, November 25th, EC/MC Committee meeting, recommendation to relinquish

2. Database Overview

2.1 Common Seismic Database

In the license application phase, the PL832/B area was initially evaluated on Multi-Client 3D seismic (MC3D-EW2003, -GH2001R, -RHD99) in combination with Ormen Lange area 3D seismic (SH0501 and NH9602) and supporting 2D data outside the 3D coverage. After award, the license acquired additional 3D seismic over the license (SH16001, ~1200 km^2 full fold coverage – see map in Figure 2).

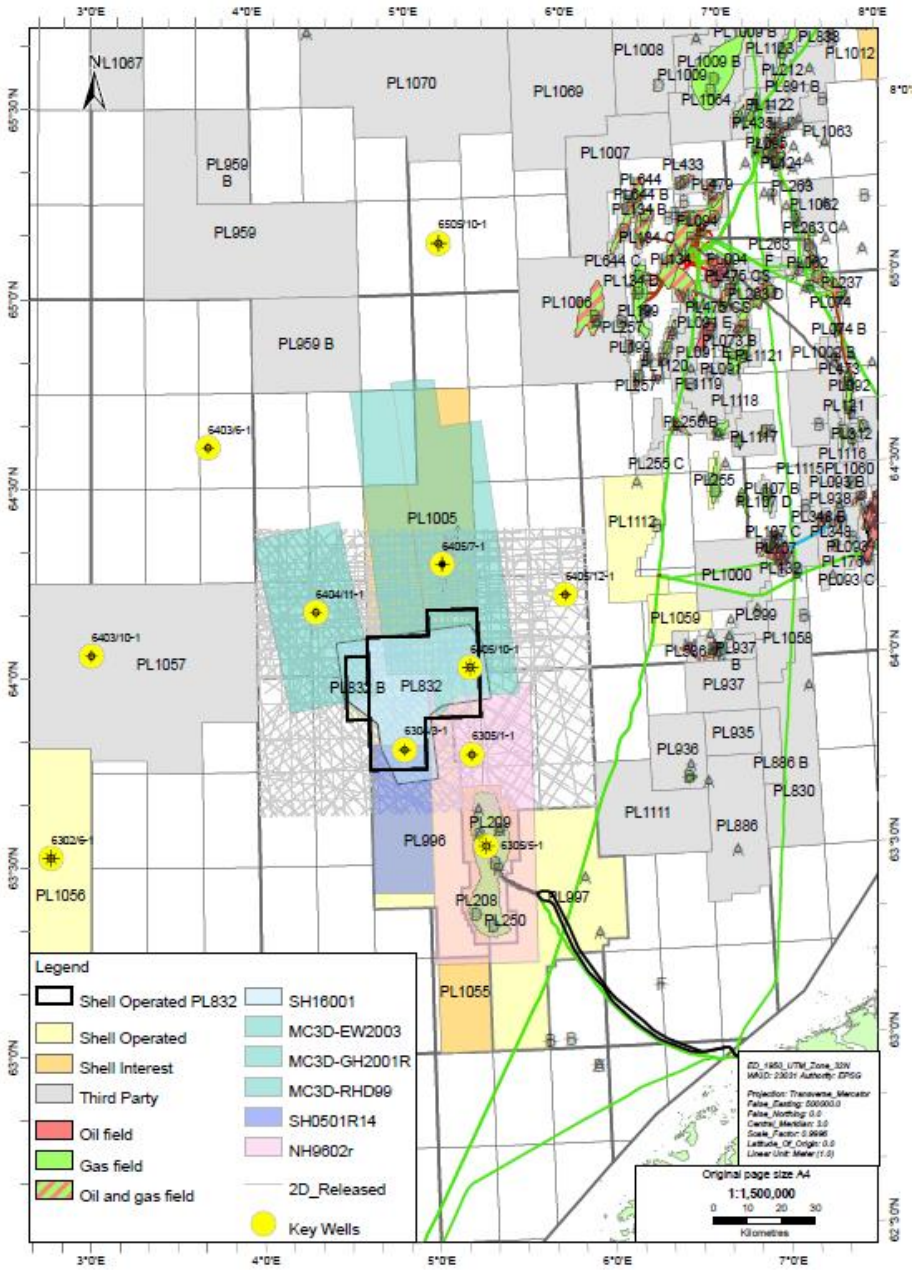

Figure 2 – Common Well and Seismic Database PL832/B

Table 1 – Common Seismic Database

Survey name	2D/3D	Operator	NPDID
MC3D-RHD99	3D	PGS-NOPEC	3987
MC3D-GH2001	3D	WesternGeco	4107
MC3D-EW2003	3D	PGS-NOPEC	4209
SH0501 (partly)	3D	A/S Norske Shell	4310
NH9602 (partly)	3D	Norsk Hydro Production AS	3784
SH16001	3D	A/S Norske Shell	8347
Public 2D surveys	2D	Various	

2.2 Common Well Database

A summary of the license well common database is shown in Table 2 and outlined in Figure 2.

Table 2 – Common Well Database

Well name	Common name	Year	Result	TD (mMD)	Age/Fm. at TD	NPDID
6302/6-1	Tulipan	2005	Gas	4234 m	Springar Fm.	5086
6305/1-1	Ormen Lange North	1998	Shows	4546 m	Lysing Fm.	3555
6305/5-1	Ormen Lange	1997	Gas	3053 m	Nise Fm.	3144
6403/6-1	Edvarda	2006	Dry	4120 m	Lysing Fm.	5296
6403/10-1	Solsikke	2002	Shows	3397 m	Kvitnos Fm.	4602
6404/11-1	Havsule	2002	Dry	3650 m	Nise Fm.	4465
6405/7-1	Ellida	2003	Oil	4300 m	Lysing Fm.	4749
6405/10-1	Midnattsol	2007	Gas	3182 m	Nise Fm.	5565
6505/10-1	Helland-Hansen	1998	Dry	5026 m	Lange Fm.	3259
6405/12-1	Lindarormen	2015	Dry	3330 m	Springar Fm.	7551
6304/3-1	Coeus	2018	Dry	3642 m	Nise Fm.	8497

3. Results of Geological and Geophysical Studies

3.1 General Subsurface Studies

Table 3 provides an overview of the general studies carried out to evaluate the license prospectivity. The studies were executed in four phases:

1. Seismic acquisition and processing (SH16001)
2. Prospect maturation, opportunity ranking and subsequent decision to drill the Coeus prospect
3. Drilling of Coeus prospect (6304/3-1) and evaluation of the well results
4. Evaluation of remaining prospectivity, including Midnattsol discovery re-evaluation

Prospectivity in the license is generally seismic amplitude anomaly driven, hence significant emphasis has been on quantitative interpretation (QI), rock physics and AVO inversion. Key risk elements were reservoir and trap.

Table 3 – Geological and geophysical studies overview

Study	*Intent*	*Result*
SH16001 seismic acquisition	Acquisition of high-quality broadband 3D seismic data to cover the prospectivity in the licenses area	SH16001 seismic acquired and processed, enabling prospect maturation including QI and AVO inversion to support the decision to drill the Coeus well through sharper amplitude extractions, improved fault imaging, and improved evaluation of potential reservoir fairway systems
Seismic Interpretation and Subsurface Evaluation	Subsurface evaluation to provide input to regional depositional studies for the Danian (Egga Mbr) turbiditic Ormen Lange- and Campanian (Nise Fm) fairway systems	Seismic interpretation and attribute extraction combined with relevant links to depositional analogues. The initial interpretation phase based on the new 3D data resulted in a high-graded opportunity and subsequent drill decision for the Coeus prospect. The well results (dry, lack of reservoir) led to the conclusion that reservoir was not developed as predicted.
QI: Regional AVO Inversion	Regional screening of SH16001 survey for lithology and fluid indicators	Screening of SH16001 resulted in supporting the Coeus lead as the most attractive drilling candidate.
QI: Coeus AVO inversion	To polarize presence of reservoir with gas charge for the Coeus prospect	AVO analysis indicates that water saturated sands and shales would result in an AVO Class I anomaly, whereas gas filled Egga sands would show AVO Class III anomalies. Success and failure scenarios were modelled using two independent methods to support the AVO observations (Absolute Inversion and Relative AVO). Based on the above, the Coeus prospect POS was subsequently upgraded from 32 to 40%. QI cannot distinguish low saturation gas from full saturation gas (irreducible uncertainty).
Additional Prospectivity close out	Full license evaluation of remaining prospectivity	Regional re-evaluation, seismic interpretation and gross depositional environment updates with emphasis on the Nise play. Evaluating isopach and attribute maps did not support development of significant reservoir fairway systems. In combination with overall presence of polygonal fault systems, no updated support for better developed Nise reservoir presence is expected. A lean thin-bedded Nise sst as seen in Midnattsol and Ellida discoveries was also seen in the upper Nise Fm as penetrated in the Coeus well. Further improved reservoir development is not expected. With the overall lack of Nise Fm reservoir, the seismic amplitudes are concluded to most likely represent low saturation gas in a silty Nise Fm interval. Stepping contacts can be seen at each individual polygonal fault segment (Figure 8), and therefore interpreted to represent the migration pathways towards the Midnattsol discovery. A detailed development and concept engineering study was initiated for Midnattsol to evaluate present day view on commerciality.

Petrophysics revision and Thomas-Stieber evaluation	Revisiting petrophysics for resource calculations	Petrophysical re-evaluations confirmed the low gas saturation uncertainties as observed in the Midnattsol well. Deployment of Thomas-Stieber workflow to investigate reservoir presence and HC-saturations in reservoir lean rocks supported the original petrophysical evaluations.
Midnattsol reservoir engineering, development scenarios and economics	Revisiting Nise permeability, GIIP density, recovery factors and development concepts with economics assessment for tie back to Ormen Lange infrastructure	The field evaluation study assumed a conventional drainage pattern. Midnattsol is a polygonally faulted, heavily segmented low permeability gas discovery. The evaluations demonstrate low GIIP densities in the realm of < 0.2 BCM/km^2, as opposed to required commercial rates of 2-3 BCM/km^2. Drainage pattern limitations are expected due to fault segmentation and vertical connectivity limitations (Kv) (implying high well count). Heterolithic and laminated stratigraphy and overall trap configuration is not considered to be suitable for mechanical stimulation. Economics suggest that Midnattsol is commercially unattractive. This is related to the long tie-back distance (~50 km), low volumes range and the necessity of a large number of development wells. combined with the requirement for mechanical stimulation.

4. Prospect Update Report

4.1 Portfolio Summary

Initial screening of PL832/B area in the APA15 Application identified opportunities of Upper Cretaceous Campanian Nise Fm with Dionysus as the anchor prospect (Nise Fm proven gas bearing in the 6405/10-1 Midnattsol discovery, 2007). In addition, a Lower Palaeocene Danian Egga Mbr. opportunity was identified (Coeus Lead). In addition, three smaller opportunities were presented in the APA15 Application: Phoebe, Therese North and Therese South within the PL832/B area (see Figure 3) (Therese North is outside the awarded area). The entire portfolio is located on the north-western slope of the Ormen Lange Dome, downflank from the Midnattsol discovery. The individual opportunities are generally driven by seismic amplitude anomalies. Key trapping mechanism is stratigraphic, supported by an overall presence of polygonal faults.

Table 4 – Prospect and leads volumes and risk from APA2015 application (volumes not estimated for Therese South)

Discovery/ Prospect/ Lead name [1]	D/ P/ L [2]	Case (Oil/ Gas/ Oil&Gas) [3]	Unrisked recoverable resources [4]						Probability of discovery [5] (0.00 - 1.00)	Resources in acreage applied for [%] [6] (0.0 - 100.0)	Reservoir		Nearest relevant infrastructure [8]	
			Oil [10^6Sm^3] (>0.00)			Gas [10^9Sm^3] (>0.00)					Litho-/ Chrono-stratigraphic level [7]	Reservoir depth [m MSL] (>0)	Name	Km (>0)
			Low (P90)	Base (Mean)	High (P10)	Low (P90)	Base (Mean)	High (P10)						
Dionysus	P	Gas	0.07	2.16	6.13	1.06	32.20	95.99	0.14	79.0	Nise Fm / Upper Cretaceous	3225	Ormen Lange	68
Phoebe	L	Gas	0.00	0.03	0.09	0.03	0.56	1.42	0.05	100.0	Tare Fm / Paleocene	2730	Ormen Lange	66
Coeus	L	Gas	0.60	1.42	2.40	8.91	21.15	35.62	0.11	99.0	Egga Mb / Paleocene	3245	Ormen Lange	35
Midnattsol Springar	L	Gas				9.19	10.90	21.20	0.16	100.0	Springar Fm / Maastrichtian	2770	Ormen Lange	50

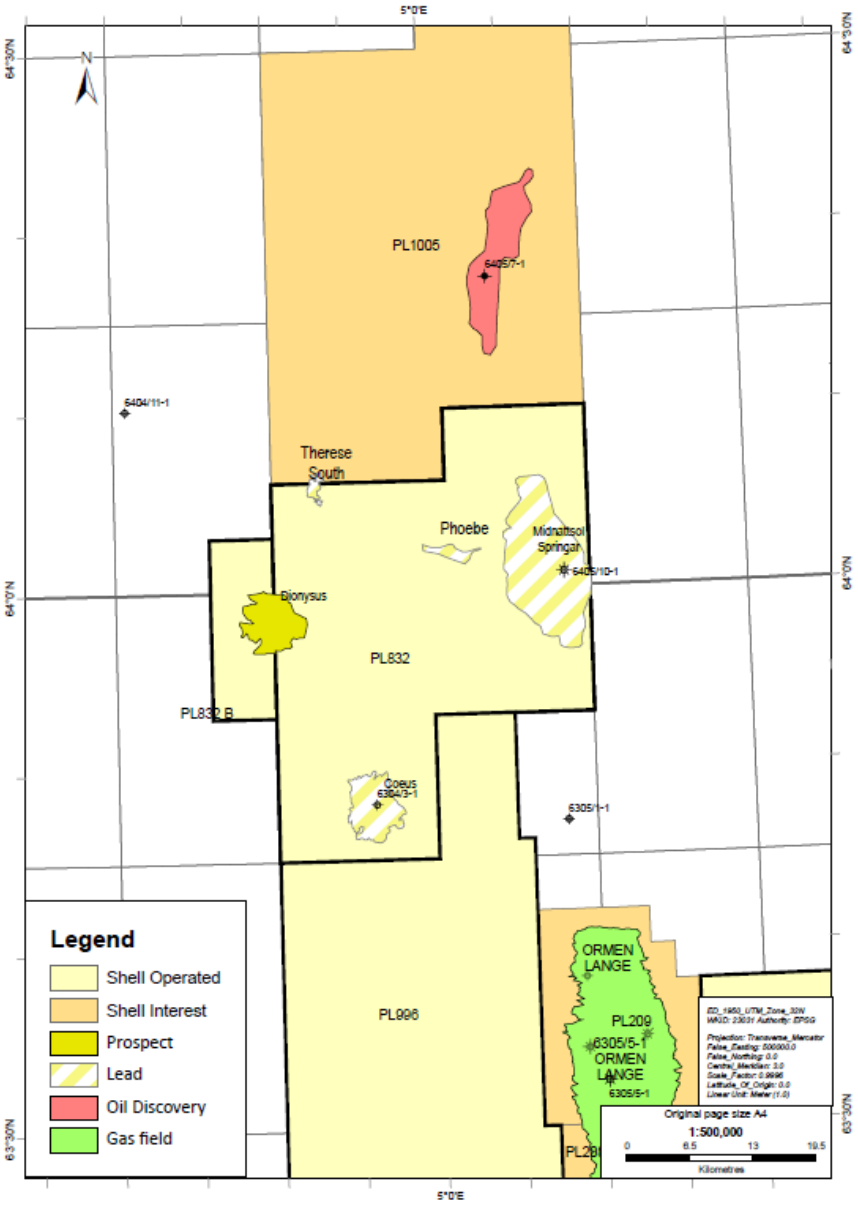

Figure 3 – PL832/B Inventory from the APA2015 Application

Screening of SH16001 resulted in high-grading the Coeus lead as the most attractive drilling candidate, which was further evaluated and reclassified as a prospect. Coeus is seismically defined with amplitude and AVO Class III inversion support and was interpreted to be in a more distal part of the Ormen Lange Egga Mbr turbidite system. Despite geophysical and geological model support for reservoir presence, the key risk on reservoir presence remained as the distal Egga turbiditic reservoir system had not been proven in this area.

Evaluation of remaining potential was focussing on the Nise play, with direct tie to the 2007 Midnattsol gas discovery. The reservoir model and gross depositional environment (GDE) model were updated based on the new seismic data. The new models did not change the risk on reservoir presence. A re-evaluation of the Midnattsol Nise discovery was completed, which included a development- and economic re-evaluation (see studies list in Table 3).

In conclusion, the Nise play is downgraded in the PL832/B area due to the low chance of reservoir presence away from the Midnattsol discovery and the uneconomic number of wells necessary to produce the low GIIP-density and low-permeability reservoir. Midnattsol Nise therefore remains a sub-commercial discovery.

Table 5 - Summary of PL832/B prospect inventory

Name	Play	Status	Prospect summary and outcome of evaluation
Coeus	Paleocene	Prospect (dry, lack of reservoir)	Coeus prospect is a combination structural/stratigraphic trap to the NW of the Ormen Lange Field. Several wells in the area have been drilled outboard of Ormen Lange withouth proving Egga reservoir potential. Coeus is defined by an AVO Class III amplitude on the SH16001 3D seismic volume, supporting reservoir with gas. Closure is subtle in time, although enhanced slightly in the PreSDM depth volume. The closure is partly defined by sand-shale pinch-out of stacked sand bodies updip towards the east, and the interaction between closure risk and trap/seal risk remains complex. Pre-drill volume estimate was 3-35 BCM UR (P90-P10) with a gPOS of 32% without QI uplift and 40% with QI uplift applied. The primary reservoir objective for the Coeus prospect was the Danian Egga Sandstone Mbr, which is the main reservoir with gas in the Ormen Lange field. The secondary objective was to evaluate potential Nise Fm reservoirs. A 14 m thick Egga Member Equivalent was penetrated with top at 3315 m. The unit was dominated by shales and limited sand stringers. The trace to minor amounts of silt to very fine/fine sandstones that were encountered were interpreted to be water wet confirmed by LWD. The Nise Formation was encountered at 3511 m MD and consisted of claystone with only traces of sand/siltstone and dolomitic limestone. No cores, PVTs or DSTs were obtained. The well was permanently abandoned on 7th August as a dry well.
Midnattsol	Campanian	Discovery	Midnattsol (6405/10-1) is a well defined 4-way dip closure. Gas was encountered in the Nise Fm (Campanian) but of generally poor quality. The reservoir is considered to be part of a distal deep-marine turbiditic system with limited reservor improvement expected away from Midnattsol well control. A full re-evalauation of the Midnattsol resource potential was conducted, confirming the post well resource assessments by the Operator, concluding a low volume potential in poor Nise Fm reservoir. PL832/B evaluated present day development scenarios with tie-back to Ormen Lange infrastructure, concluding a non-attractive sub-commercial opportunity without identifiable upside potential.

Table 6 – PL832/B final volumes (BCM UR) and risk for remaining potential in the license

Discovery Name	P90	P50	P10	Pmean	gPOS
Midnattsol (Nise Fm)	1.5	3.7	7.9	4.3	100%

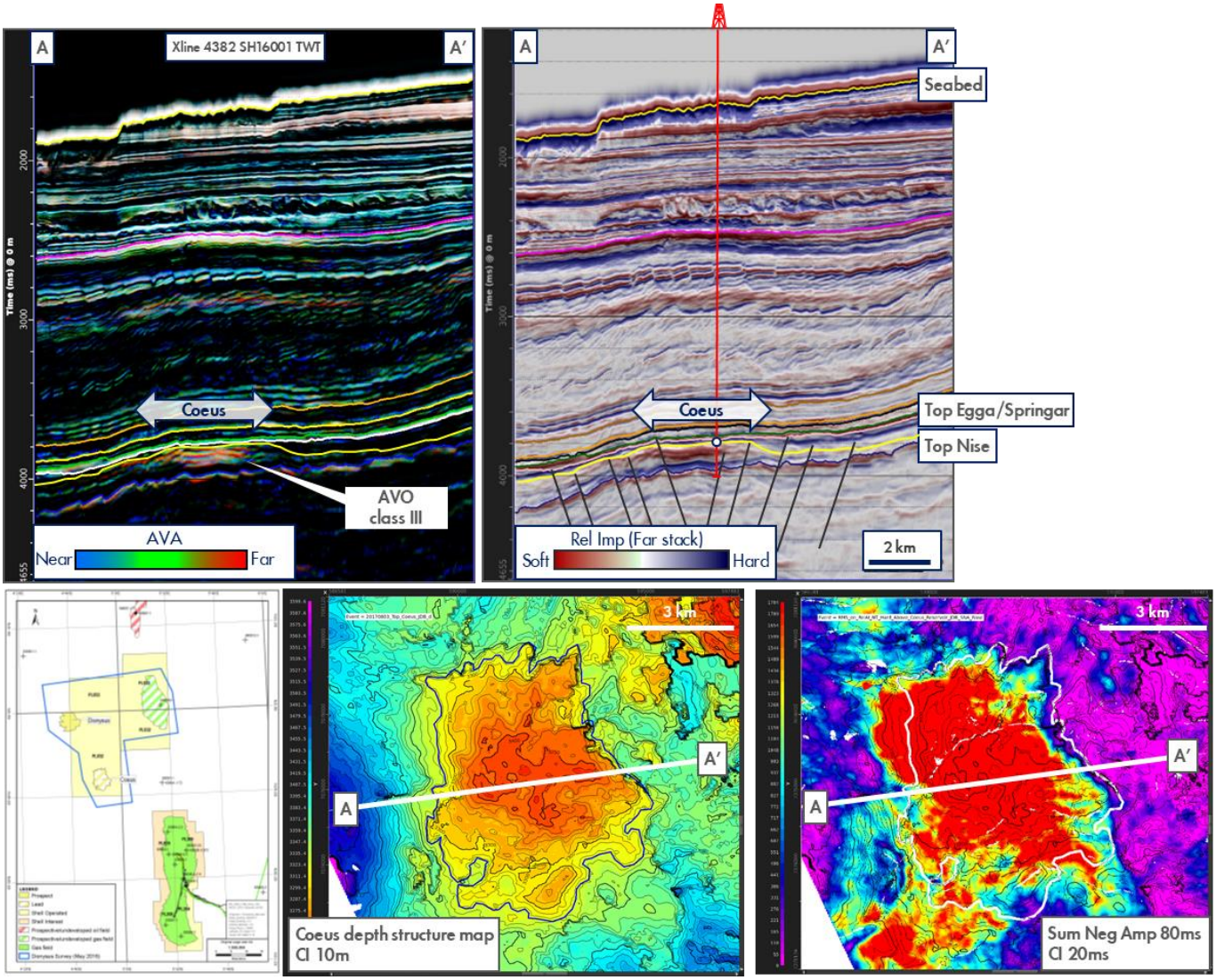

Figure 4 – Coeus Prospect AVO and seismic line, depth structure map, and amplitude attribute map

4.1.1 Charge

Access to charge is generally not considered a risk in this area as the license is situated along the migration pathway towards the Midnattsol discovery. In addition, gas is present in the Ormen Lange field to the south, and oil is present in the Ellida discovery to the north. Base case for the licensed area is gas charge.

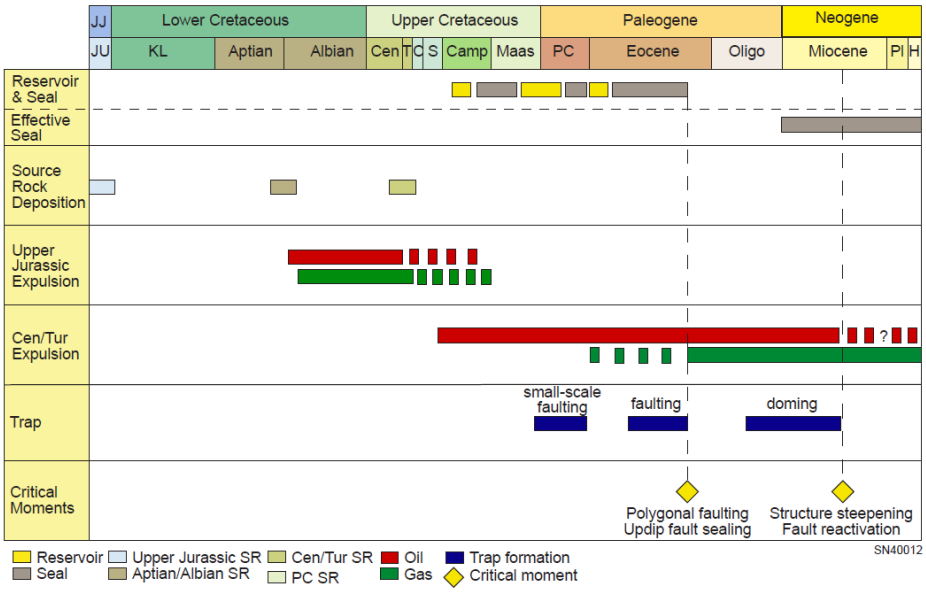

Figure 5 – PL832/B Petroleum System Chart

4.1.2 Structure

The Coeus structure is defined by an AVO-supported distal pinch-out of the Lower Paleocene Egga Mbr sandstone. Interpretation of the top upper boundary of sand (Figure 6) implies that there is a possibility for a structural trap for Coeus, as the top of sand enveloping horizon (green in Figure 6) is interpreted to drape across all reservoir units, and thus defining a structural trap in an area of a generally dipping slope setting.

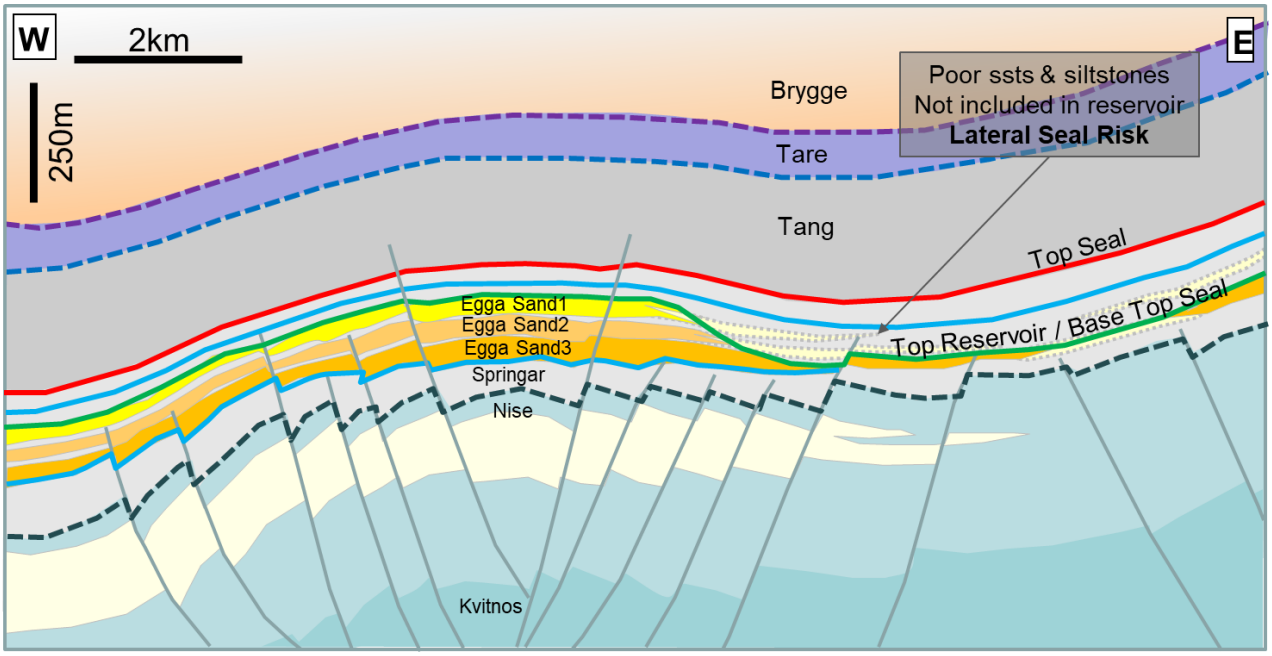

Figure 6 – Coeus Egga geological model (pre-drill)

4.1.3 Reservoir and Seal

Presence of distal Ormen Lange Egga Mbr reservoir and Våle seal have been evaluated based on a combination of output from AVO inversion and analysis of turbidite depositional fairway geometries from regional interpretations. In Figure 7, the top reservoir interpretation (picked on far stack) dips significantly more than Egga interpretations. On the AVO gradient volume, the pick is more conform with the Egga interpretations. In addition, an AVO Class III response (Coeus reservoir) and a Class I (Coeus top seal) response are observed. Modelling results suggest that a non-reservoir or a brine sand will be consistent with a Class I response.

Gross depositional environment (GDE) maps were re-evaluated by interpreting the distal continuation of the deep marine Ormen Lange turbidite units. Comparing seismic geometries to global analogues a viable distal Ormen Lange reservoir model was considered. Based on these analyses, POS for reservoir presence was assessed to be 0.7, and 0.75 for seal. The Coeus well did not encounter Egga/Springar reservoirs, only minor silt developments. Reservoir and fluid predictions from seismic inversion indicated that the Coeus response was consistent with hydrocarbon filled Ormen Lange sandstone equivalent reservoir. Rock Physics modelling of failure and success scenarios provided support to Coeus, as the seismic response was consistent with the success scenarios. QI provided an uplift of +8% to the prior gPOS of 32% resulting in a revised gPOS of 40%. Deterministic AVO inversion and rock physics analysis led to a conclusion that the Class III AVO anomaly could be related to hydrocarbons but with lower N/G than observed in the Ormen Lange field. Failure scenarios were evaluated to be 1) shale with gas and 2) gas charged silts with micro-porosity.

The outcome of the Coeus well revealed a false-positive AVO Class III anomaly (siltstone with microporosity and gas), consistent with one of the pre-drill failure scenarios:

- Success: Low NTG (<60%), HC saturated sandstone reservoir
- Failure: Shale (non-reservoir) with trapped gas (Ormen Lange Paleocene tight gas)
- Failure: Siltstone with microporosity and gas (Gro-equivalent)
- Failure: Shale with no gas (non-reservoir)

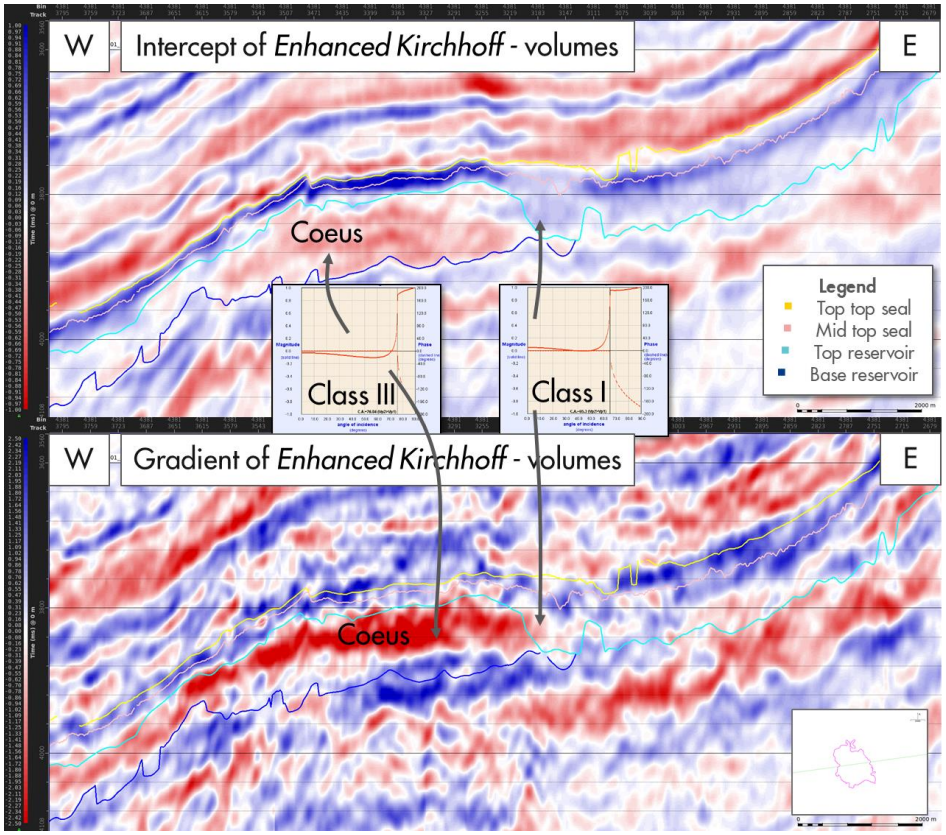

Figure 7 – Coeus Egga reservoir with AVO support

Nise Fm reservoir development in PL832/B area is uncertain and generally considered poor due to the results from the Coeus, Midnattsol, Ellida and Ormen Lange wells. Regional evaluations indicate that Nise Fm at Midnattsol and Ellida discoveries consists most likely of reworked (e.g. by contouritic flows) low density turbidites. High detrital clay content results in lower expected permeabilities. Polygonal faults vertically dissect the entire Cretaceous stratigraphic sequence and setting up minor traps along charge migration pathways towards Midnattsol. This theory is supported by a series of small seismic flat events stepping-up along the flanks of structures (see Figure 8), interpreted to be evidence of an overall migration pathway.

Re-evaluation of the Midnattsol discovery, revised depth conversion and petrophysical evaluation was completed to support revised resource estimations. This study confirmed the low post-well volume assessment by the Midnattsol operator. The heavy segmentation of the structure due to polygonal faulting, in combination with poorly developed Nise reservoir, have significant negative impact on both vertical and lateral connectivity (Kv/Kh). This implies that a high well count is needed to drain the in-place volumes. Detailed reservoir engineering and economic assessments concluded that the discovery is sub-commercial and non-attractive.

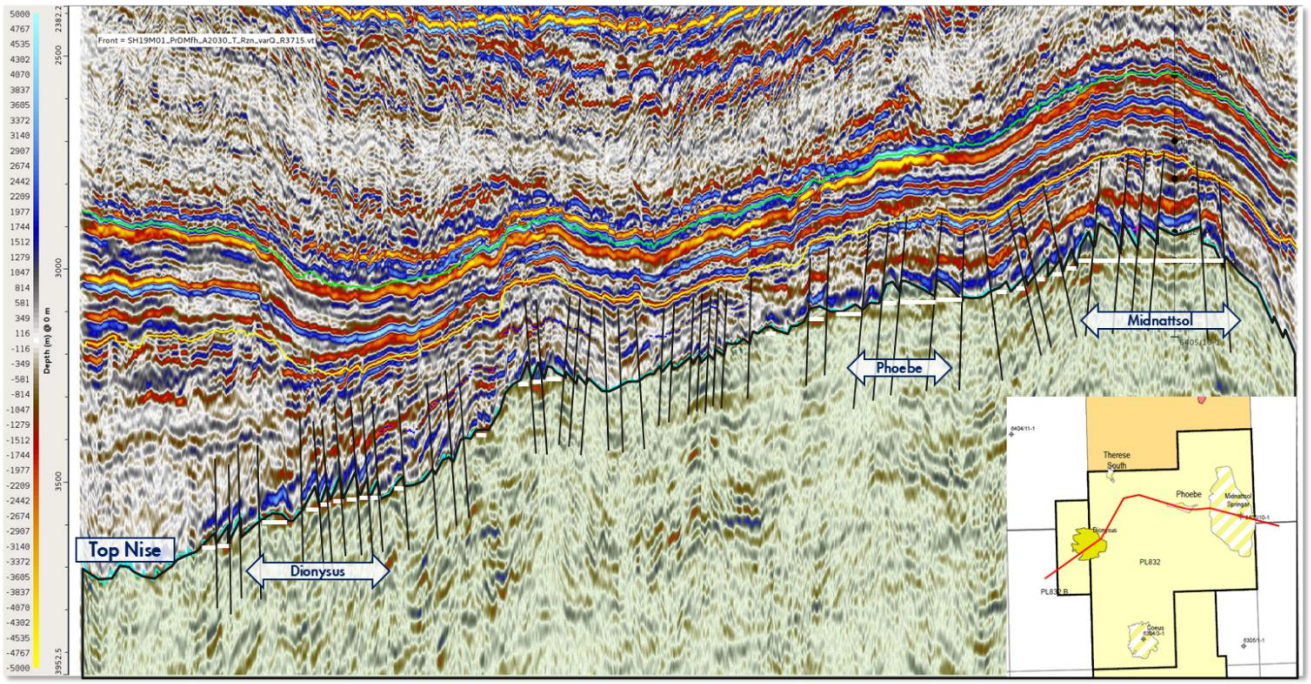

Figure 8 – Seismic traverse describing the stepping contacts (white flat events annotated) along Nise carrier beds towards the Midnattsol gas discovery

Midnattsol Springar

A re-evaluation of the Midnattsol Springar opportunity was completed as part of the license evaluation. The lead was identified based on increased mud gas readings from Springar while drilling the Midnattsol well. Based on re-evaluation of pressure- and mud data, the anomalous Springar mud gas readings were evaluated to be gas coming out of solution when reaching underbalanced drilling due to pre-drill underestimation of Nise Fm pore pressure. Petrophysical data from the Midnattsol well do not support presence of saturated hydrocarbons in Springar Fm and the opportunity has not been further pursued.

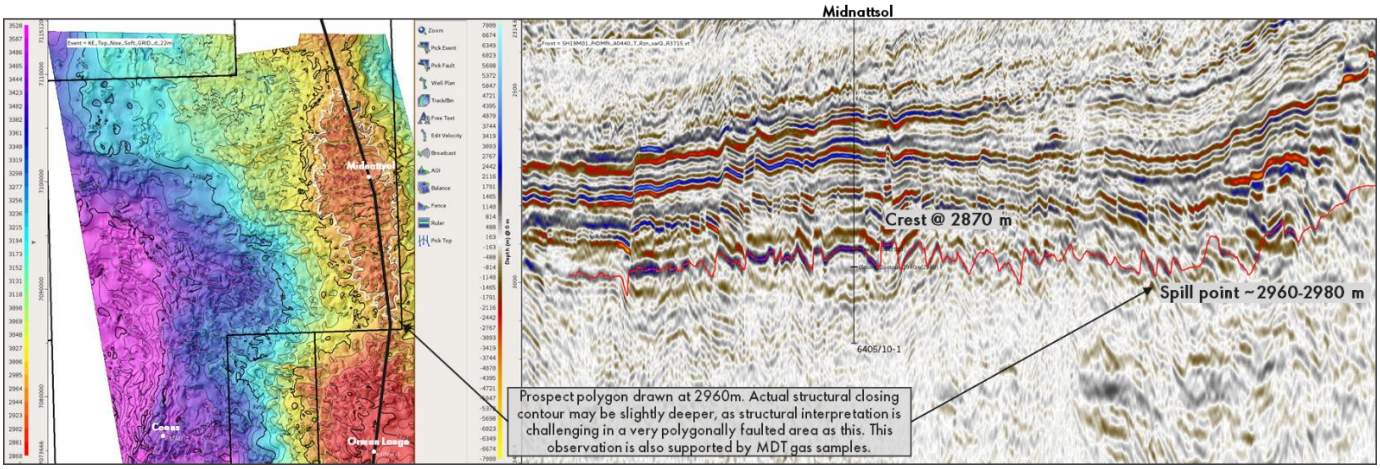

Figure 9 – Midnattsol discovery Nise top structure depth map and seismic depth line

5. Technical Assessment

The technical assessment of Coeus focussed on discrete cases compatible to Ormen Lange late-life recovery (LLR). Development cases were made to show technical feasibility and commercial attractiveness both with and without Ormen Lange LLR. Pre-drill technical assessments showed Coeus as an attractive opportunity and development concepts that catered for all Ormen Lange outcomes were defined and determined as technically feasible.

Technical re-assessment of Midnattsol Nise discovery demonstrated that it remains sub-commercial. In-place gas volumes per km^2 ("GIIP-density") is very low (< 0.2 BCM/km^2), which is much lower than the required 2-3 BCM/km^2 which is needed for a commercially viable scenario. The polygonally faulted, heavily segmented and low permeable Nise Fm reservoir unit implies that a large number of wells is needed to drain the structure, and mechanical stimulation would be required. Vertical and horizontal connectivity (Kv and Kh) is effectively limiting the suitability for mechanical stimulations, as well as limiting the natural drive supported by the aquifer. Economics show that Midnattsol is not commercial. Building on these results, no further technical assessment has been completed for the remaining portfolio.

6. Conclusion

The evaluation of the license is completed with the following conclusion:

Substantiation for surrender of the PL832 and PL832 B licenses:

- The negative result of the Coeus well (dry, lack of reservoir). Reservoir risk remains high as the well did not encounter Egga Fm reservoir as predicted pre-drill.
- The remaining Nise portfolio in the license is downgraded, as the evaluations have not been able to reduce the risk on Nise reservoir presence and effectiveness downdip of the Midnattsol well location.
- Gas is generally present in Nise Fm in the area but interpreted to be related to overall migration carrier beds towards Midnattsol.
- Midnattsol economic- and development evaluations show that Midnattsol is sub-commercial.

All work commitments in the licence have been fulfilled, and an additional drill-worthy prospect has not been identified post completion of the Coeus well. Consequently, the partnership unanimously recommends the relinquishment of PL832 and PL832 B.