PL1041
Relinquishment Report

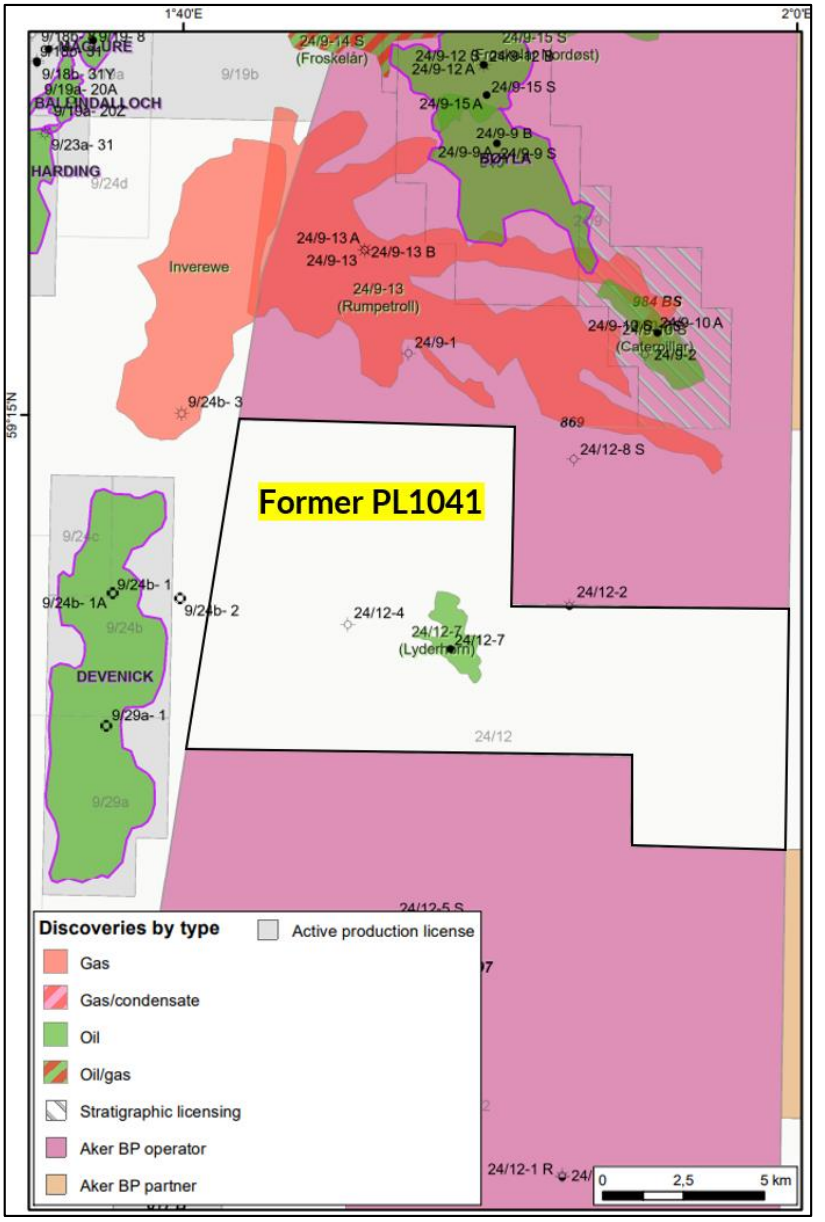

Table of Contents

FINAL VERSION

1 License history 2
2 Database 4
2.1 Seismic data 4
2.2 Well Data 5
3 Geological and geophysical studies 6
4 Prospect update 8
5 Technical evaluation 15
6 Conclusion 16
7 References 17

List of Figures

1.1 Location map..... 2
2.1 Common Seismic Database in PL1041..... 4
4.1 Prospects & Leads overview in PL1041..... 8
4.2 Seismic profile - amplitude responds..... 9
4.3 Top Hermod Formation structure and amplitude maps. 10
4.4 Kobai prospect. 11
4.5 Lyderhorn East Discovery - Table 4. 13
4.6 Lyderhorn West Prospect Table 4. 13
4.7 Kobai Prospect Table 4. 14
5.1 Top Hermod depth and amplitude maps. 15

List of Tables

1.1 MC, EC Work meeting activities in PL1041 3
2.1 Well database. 5
4.1 Risking Lyderhorn West - Hermod Fm 14
4.2 Risking Kobai Prospect 14

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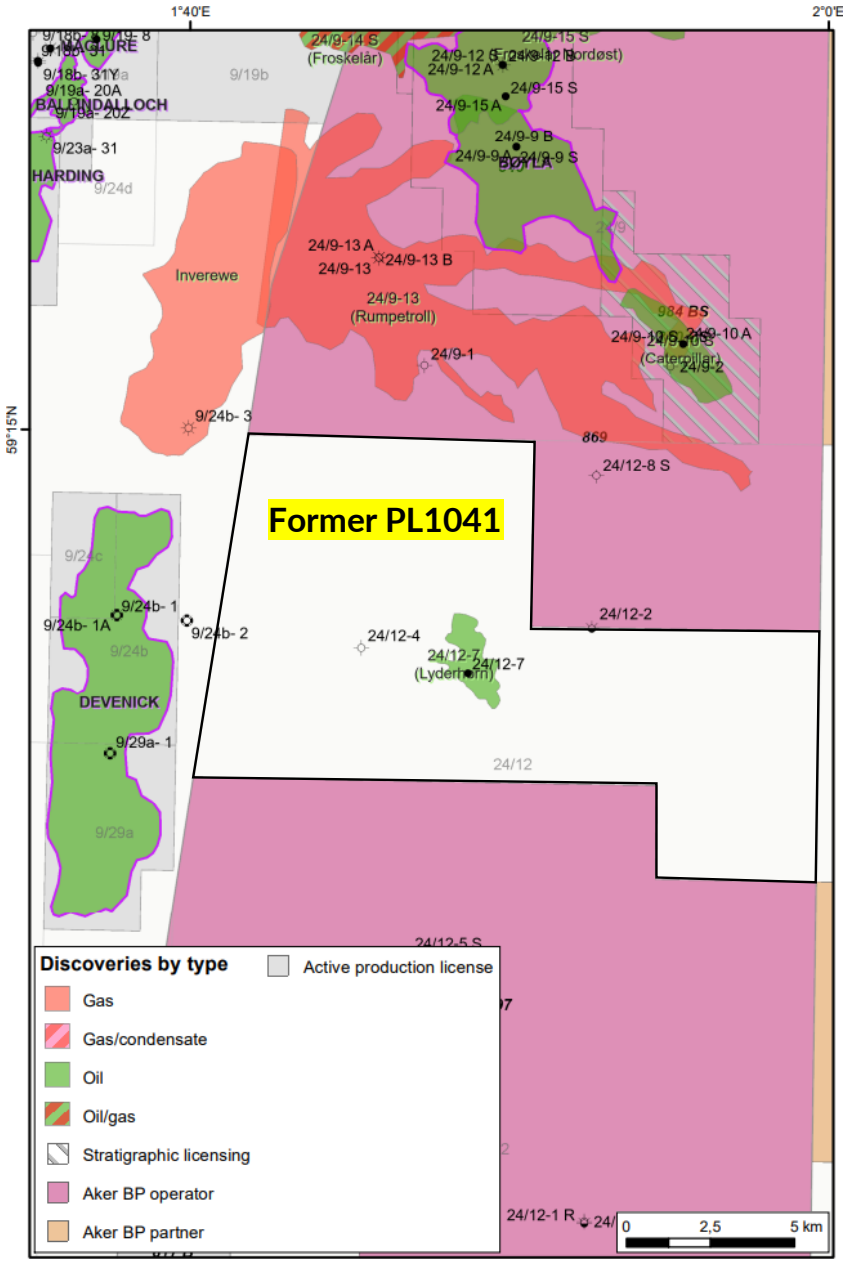

1 License history

Award, licensees and operator

PL1041 was awarded 14th February 2020, as part of the APA2019 licensing round. The licence covers parts of block 24/12 and is located approximately 10 km south of the Bøyla Field, within the Vana Sub-Basin (Fig. 1.1). The original licence group consisted of Aker BP (Operator, 40%), Neptune Energy Norge AS (30%), and Lundin Norway AS (30%). By the time of relinquishment (13.02.2025), the licence group comprised Aker BP (Operator, 80%) and Concedo (20%).

Work program

1. Drill one firm wildcat well within 2 years (BoK)
2. Conduct conceptual studies within 2 years (BoV)
3. Prepare development plan within 1 year (PDO)

The work program was completed by drilling the Lyderhorn East exploration well, 24/12-7, in 2021. Although the Lyderhorn East well resulted in a discovery, it only proved sub-commercial volumes with a P90-Mean-P10 range of 3.4 - 5.0 - 6.8 million barrels of oil equivalent (mmboe) in total recoverable volumes. The remaining potential within the licence consisted of prospects with limited volume potential.

However, a mapped prospect in the neighboring licence, PL869, operated by Aker BP, showed promising volume potential, with parts of the prospect extending into PL1041. Consequently, a one-year extension of deadlines (BoK) was applied for in 2022 to await the licence decision (drill or drop) in PL869. This was followed by two additional applications in 2023 and 2024, as a positive drill decision was made for the Rumpetroll South prospect during Q1 (internally) and Q2 (within the licence) in 2023.

The Rumpetroll South well (24/12-8 S) was drilled during Christmas 2024, but unfortunately, it encountered only non-producible hydrocarbons in a thin reservoir zone.

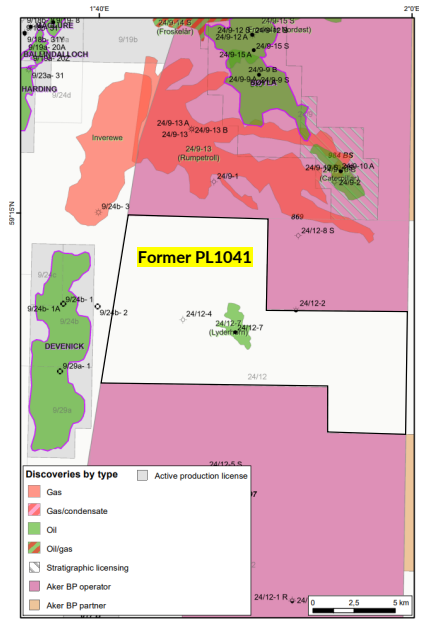

Fig. 1.1 Location map. *Overview of former PL1041.*

Table 1.1 MC, EC Work meeting activities in PL1041

Date	Activity	Comment
15.05.2020	EC/MC-meeting	Start up of the licence
26.06.2020	EC work meeting	Status technical work and site survey
23.10.2020	EC work meeting	Site survey, volume & risk, well planning
04.12.2020	EC/MC-meeting	Updated Volume & Risk, Well planning with objectives and well design
23.03.2021	EC work meeting	Well planning - Concept Select Phase
13.04.2021	EC work meeting	Well planning - Offset wells, PPFG, Shallow hazards & Concept Selection
08.09.2021	EC work meeting	DWOP (Drilling Well On Paper)
19.10.2021	EC work meeting	Results triggering/not triggering: Technical sidetrack for Coring or Geological sidetrack
01.11.2021	EC work meeting	Lyderhorn well results (preliminary) and recommendations.
29.11.2021	EC/MC-meeting	Year-end meeting. Lyderhorn East well results and Way Forward.
20.10.2022	EC work meeting	Post Well studies and remaining prospectivity
30.11.2022	EC/MC-meeting	Year-end meeting. Recommendation to apply for extension of deadlines (await Rumpetroll South well results)
05.12.2023	EC/MC-meeting	Year-end meeting. Recommendation to apply for extension of deadlines (await Rumpetroll South well results)
04.12.2024	EC/MC-meeting	Year-end meeting. Drop licence if Rumpetroll South well is dry. Keep licence if discovery.

Reasons for Licence Lapse

The licence group has decided to relinquish PL1041 due to the sub-commercial volumes discovered in the Lyderhorn East well (24/12-7) and the limited volume potential of the remaining prospects. Additionally, while a commercial discovery in well 24/12-8 S (Rumpetroll South) could have been a significant driver for the entire area, it only encountered non-producible hydrocarbons within a thin intra-Balder sand. Although the Rumpetroll South prospect extends into PL1041, it is considered adequately tested and validated by the 24/12-8 S well in PL869.

2 Database

2.1 Seismic data

Outline of common seismic database is shown in Fig. 2.1.

Key dataset for licence work has been: **PGS16M01-PGS15917VIK** (blue area in Fig. 2.1) with NPDID: 7854.

- Modern high quality PSDM seismic.
- Remaining parts of common database uses public available seismic surveys: WGS 24-12 (NPDID:3575), WGS-24-12_SV92R00 (NPDID: 3576).

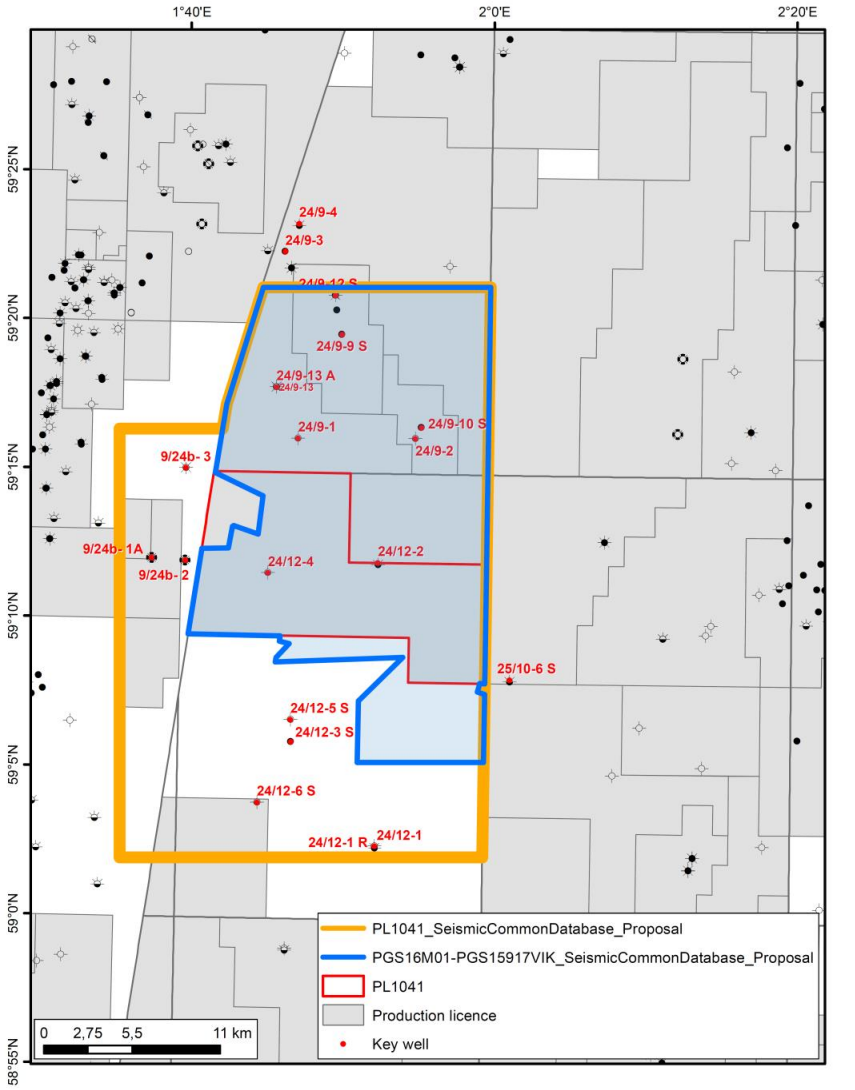

Fig. 2.1 Common Seismic Database in PL1041. *Key dataset for licence outlined in blue (PGS16M01-PGS15917VIK). For the remaining coverage outside PL1041 (orange polygon) public 3D surveys were used, WGS 24-12 and WGS-24-12_SV92R00.*

2.2 Well Data

A total of 20 wells have been approved as the common well database for the licence. These wells were selected to best evaluate the full prospectivity of the licence. The exploration wells included in the geological and geophysical evaluation are listed in Table 2.1.

Table 2.1 Well database.

Well	NPDID	Location	Operator	Year	Content	TD (mMD)	TD stratigraphy
24/9-1	344	Vana Sub-Basin	Conoco Norway Inc.	1976	Dry	4907	Heather Fm (Upper Jurassic)
24/9-2	345	Vana Sub-Basin	Conoco Norway Inc.	1977	Dry	2743	Tor Fm (Upper Cretaceous)
24/9-9 S Bøyla	6222	Vana Sub-Basin	Marathon Petroleum Norge AS	2009	Oil	2402	Heimdal Fm (Paleocene)
24/9-9 A	6239	Vana Sub-Basin	Marathon Petroleum Norge AS	2009	Oil	2981	Sele Fm (Paleocene)
24/9-9 B	6254	Vana Sub-Basin	Marathon Petroleum Norge AS	2009	Oil	3005	Sele Fm (Paleocene)
24/9-10 S Catepillar	6531	Vana Sub-Basin	Marathon Petroleum Norge AS	2011	Oil	2339	Lista Fm (Paleocene)
24/9-10 A	6560	Vana Sub-Basin	Marathon Petroleum Norge AS	2011	Oil	2900	Lista Fm (Paleocene)
24/9-12 S Frosk	8331	Vana Sub-Basin	Aker BP ASA	2018	Oil	2336	Heimdal Fm (Paleocene)
24/9-12 A	8332	Vana Sub-Basin	Aker BP ASA	2018	Oil / Gas	3000	Sele Fm (Paleocene)
24/9-13 Rumpetroll	8613	Vana Sub-Basin	Aker BP ASA	2019	Gas	2305	Heimdal Fm (Paleocene)
24/9-13 A Rumpetroll Appraisal	8845	Vana Sub-Basin	Aker BP ASA	2019	Gas	3466	Heimdal Fm (Paleocene)
24/12-1	347	Vana Sub-Basin	Den norske stats oljeselskap a.s	1978	Dry	3966	Lower Cretaceous - Sola Fm
24/12-2	348	Vana Sub-Basin	Den norske stats oljeselskap a.s	1982	Shows	5100	Heather Fm (Upper Jurassic)
24/12-3 S	2823	Vana Sub-Basin	Den norske stats oljeselskap a.s	1996	Oil	3058	Våle (Paleocene)
24/12-4	4383	Vana Sub-Basin	Statoil ASA	2001	Dry	2265	Heimdal Fm (Paleocene)
24/12-5 S	5638	Vana Sub-Basin	Noil Energy ASA	2007	Dry	2325	Heimdal Fm (Paleocene)
24/12-6 S	6328	Vana Sub-Basin	Den norske stats oljeselskap a.s	2010	Dry	5207	Middle Jurassic - Sleipner Fm
24/12-7 S Lyderhorn East	9429	Vana Sub-Basin	Aker BP ASA	2021	Oil	2305	Heimdal Fm (Paleocene)
24/12-8 S Rumpetroll South	10076	Vana Sub-basin	Aker BP ASA	2025	Dry	2416	Heimdal Fm (Paleocene)
25/10-6 S	2728	Gudrun Terrace	Den norske stats oljeselskap a.s	1995	Shows	4706	Middle Jurassic - Sleipner Fm
9/24b-1A Devenick		Vana Sub-basin - UK	Taqa Bratani Limited	1983	Gas/ Condensate	5005	Permian
9/24b-2 Devenick		Vana Sub-basin - UK	BP	1986	Gas/ Condensate	5423	Upper Jurassic - Brae Fm
9/24b-3 Kew / Inverewe		Vana Sub-basin - UK	BP	1988	Gas	5503	Jurassic

3 Geological and geophysical studies

Block 24/12 was applied for with a firm well commitment. As part of this commitment, Aker BP conducted several comprehensive studies to mitigate risks, as outlined in the Application for Production Licence in Block 24/12 (APA 2019). Extensive geophysical work was carried out on the entire dataset, including de-noising, spectral balancing, and variable time adjustments for each angle stack to optimise AVO analysis. Additionally, coloured inversion (CI) for each stack and EEI cubes (Intercept vs. Gradient rotations) were produced, resulting in lithology and fluid cubes. For further details, please refer to the APA2019 Application for Block 24/12.

Several post-well studies were performed on the Lyderhorn well (24/12-7 S), such as *Clay Mineralogy*, *Geochemistry*, *Sedimentology*, QEMSCAN and Lyderhorn Shear Sonic Reprocessing.

Clay Mineralogy

Aim was to identify the presence of reactive clays within the Horda Formation and the Rogaland group and comparing them with the log response to understand the clay mineralogy versus Pore Pressure and wellbore stability.

Results:

- Very good correlation between the slowdown in compressional sonic travel times and the amount of smectite clay in all the tested formations
- This justifies the reduction in pore pressure in these tight formations
- This also leads to a more geological pore pressure profile in the Rogaland Group where a lot of fluctuations are present if the sonic curves are used without knowledge of the clay mineralogy

Geochemistry

- Total extracts of cuttings are strongly contaminated with OBM.
- The OBM is lean in the biomarker range and the biomarkers are reliable indicators for the hydrocarbon accumulations.
- High abundances for BNH and TNH are either directly related to the upper-Jurassic facies (syn- vs. post-rift deposition), or indirectly due to maturation.

Sedimentology

Objective: Comparison with Bøyla/Caterpillar

- Better understanding of depositional environment and prediction of good sands

QEMSCAN

Objective: Understand reservoir properties, provenance and diagenesis.

- *Provenance of sandstone:*
  - QEMSCAN data support a sediment dispersal system from the East Shetland platform (in alignment with depositional model).
  - These sands are not significantly different from Bøyla/Caterpillar – indicate a similar provenance terrain.
- *Reservoir quality:*
  - Not possible to address with cuttings samples, but similar provenance and mineralogy suggest Bøyla/Caterpillar are suitable analogues.
- *Diagenesis:*
  - Kaolinite in Bøyla/Caterpillar samples indicate meteoric leaching of turbidite channel/lobe.

Shear sonic reprocessing study summary

Objective: Lyderhorn East & Lyderhorn West Reprocessing

- Observations from Lyderhorn area:
  - Different tools give different Vs logs
  - Different companies give different Vs logs

Change in the understanding compared to the original application for award

Aside from the Lyderhorn East structure containing fewer recoverable volumes than initially estimated, there were no significant changes in our understanding of charge and migration, reservoir presence and quality, or trap geometry. The actual depths to formation tops were closely aligned with the pre-drill prognoses.

4 Prospect update

Four prospects and four leads (Fig. 4.1) have been identified within the Eocene-Paleocene succession.

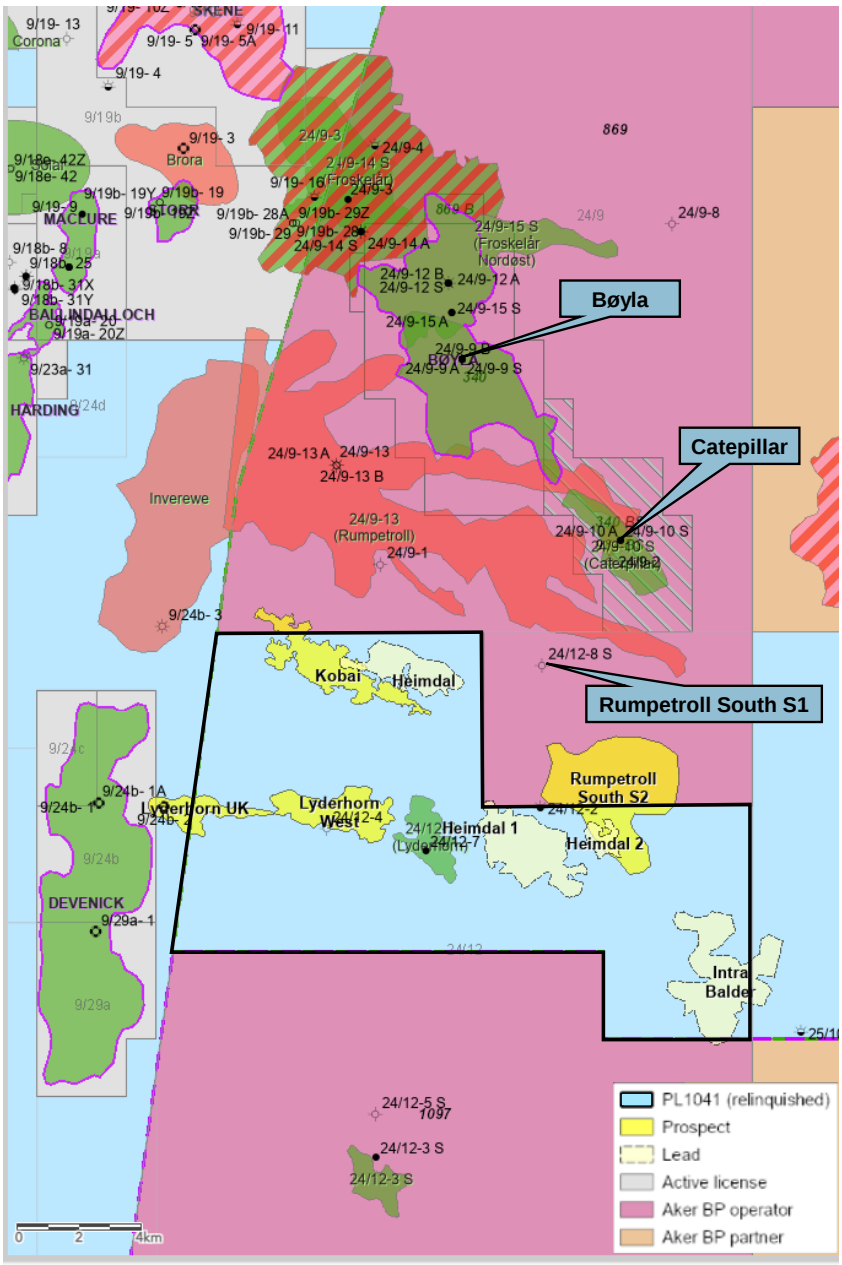

Fig. 4.1 Prospects & Leads overview in PL1041. *A total of four prospects and four leads have been identified.*

Lyderhorn East pre-drill evaluation and volumes estimates

PL1041 was applied for with a firm drilling commitment where Lyderhorn East was the main prospect, defined within a 4-way dip closure at top Hermod Formation level. The play model (npc-1), consisting of channelized submarine fan systems is well establish and proven by several fields and discoveries in the area (e.g. Bøyla & Caterpillar, Fig. 4.1 Fig. 4.2). The Lyderhorn East prospect is amplitude driven with a bright negative (soft) amplitude anomaly seen on FAR/UFAR

seismic data (Fig. 4.2). The brightening of soft amplitudes with increasing offset angle is often related to presence of hydrocarbons or high quality reservoir, as seen in the Bøyla and Caterpillar discoveries.(Fig. 4.2). Pre-drill volume estimates of recoverable volumes (P90-Mean-P10) for Lyderhorn East was 5.5 - 9.5 - 14 mmboe with an estimated oil column around 50m and with reservoir thicknesses between 25-90m.

Lyderhorn East after drilling

Well 24/12-7, drilled in 2021, confirmed sub-commercial recoverable volumes with a P90-Mean-P10 range of 3.4 - 5.0 - 6.8 million barrels of oil equivalent (mmboe), which is approximately half of the estimated pre-drill recoverable volumes (5.5 - 9.5 - 14 mmboe). The well identified a 38m oil column with 20m of net sand. The uppermost 18 meters of the net sand were located in a good reservoir zone (22 meters gross) with high oil saturation in the upper part, whereas only 2 meters of net sand were observed within the lower 16 meters gross. The lower sections of the Hermod Formation are more heterolithic and exhibit low oil saturation.

Lyderhorn West

The Lyderhorn West Prospect is an extension of the Lyderhorn East structure, sharing similar trap, reservoir, and charge models, but with distinct spill points (Fig. 4.3). The spill point between the Lyderhorn East discovery and the Lyderhorn West prospect is deeper than the proven water-filled Hermod Formation sandstone in well 24/12-4, as well as the western spill point towards the UK of the Lyderhorn West Prospect.

Although the far stack amplitude anomaly in the Lyderhorn East discovery is very similar to that observed in the Caterpillar Discovery (Fig. 4.2), it only covers parts of the structural closure and not correlating with the observed OWC observed in 24/12-7 (Fig. 4.3). This limited extent of the anomaly is interpreted to be related to changing geology and low oil saturation or to non-existent hydrocarbon filling down flank on the structure. Given the strong correlation between amplitude anomaly and hydrocarbon fill in Lyderhorn East (24/12-7), compared to the more moderate and patchy amplitudes observed within the Lyderhorn West Prospect, uncertainty is added regarding hydrocarbon filling and trap geometry for the Lyderhorn West prospect. Estimated recoverable volumes (P90-Mean-P10) for the Lyderhorn West prospect is 2.9 - 6 - 9.8 mmboe (Fig. 4.6). Consequently, due to a combination of high exploration risk and limited volume potential, Lyderhorn West is not considered a viable drilling candidate.

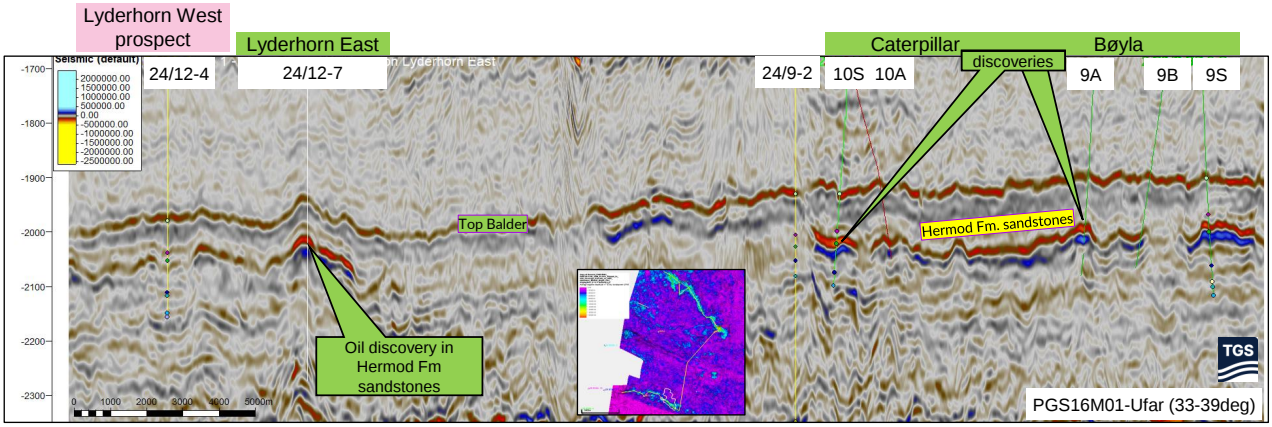

Fig. 4.2 Seismic profile - amplitude responds. *There is a strong correlation between seismic amplitude anomaly and hydrocarbon fill. Here is a seismic line from the Bøyla Field through the Caterpillar discovery and further to the Lyderhorn East discovery and into the Lyderhorn West prospect.*

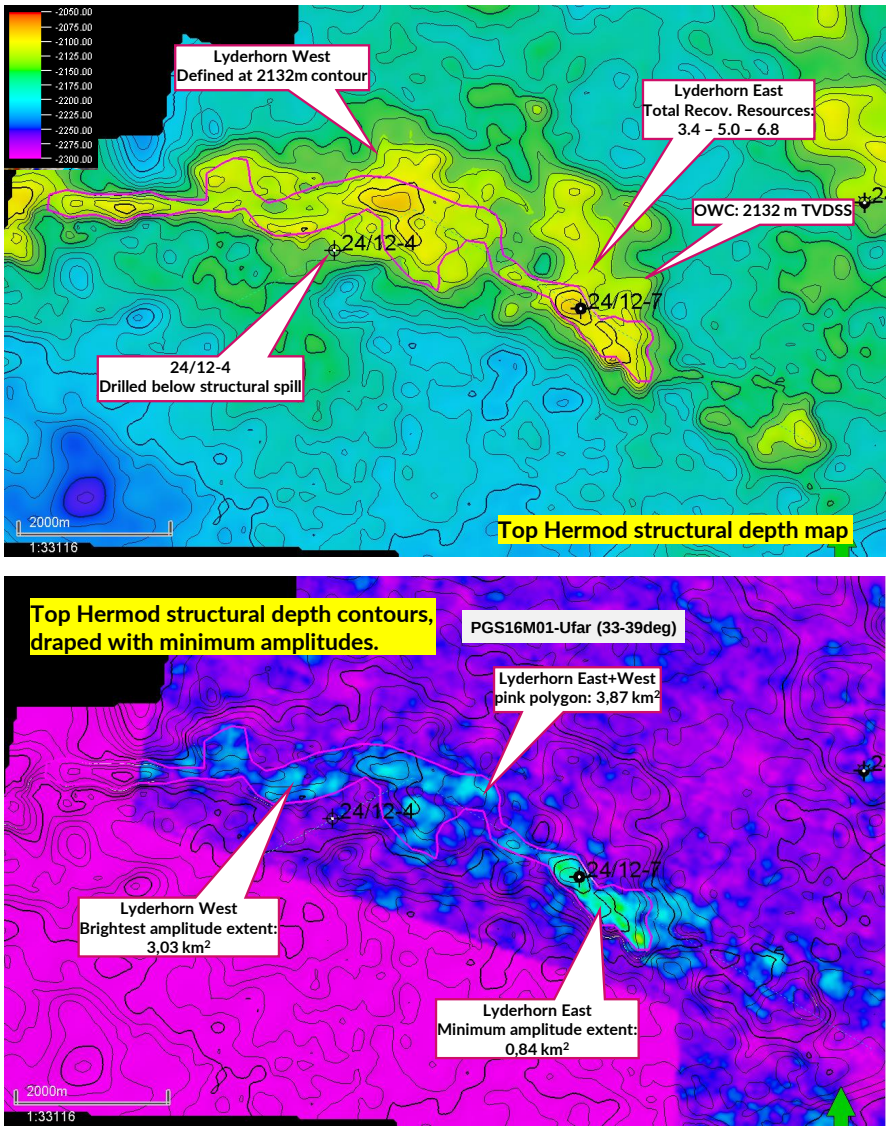

Fig. 4.3 Top Hermod Formation structure and amplitude maps.

Kobai Prospect

Two injectite prospects, Kobai and Rumpetroll South, have been defined within PL1041. The majority of the Kobai prospect is located in PL1041, whereas the Rumpetroll South prospect is primarily situated in the neighboring licence PL869, with an extension into PL1041 (S2) as seen in Fig. 4.1.

The Kobai Prospect is mapped as a stratigraphic trap formed by an intra-Lista Formation injectite complex (Fig. 4.4). The reservoir sands are interpreted to be sourced from the underlying thick Heimdal Formation and injected mainly into the overlying Lista Formation shales. The Kobai Prospect is divided into upper and lower reservoir zones, which partially overlap. A vertical change in amplitude level is observed at a fairly consistent depth in parts of the Kobai Prospect, forming the basis for the most likely hydrocarbon-water contact (HCWC) and used in the volume assessment (Fig. 4.7).

The Kobai Prospect extends into PL869 (operated by Aker BP), however, 92% of the resources are located within PL1041. Estimated recoverable volumes (P90-Mean-P10) for the Kobai

prospect are 4.6 - 9.3 - 15 million barrels of oil equivalent (mmboe). Consequently, due to a combination of high exploration risk and limited volume potential, the Kobai prospect is not considered a viable drilling candidate.

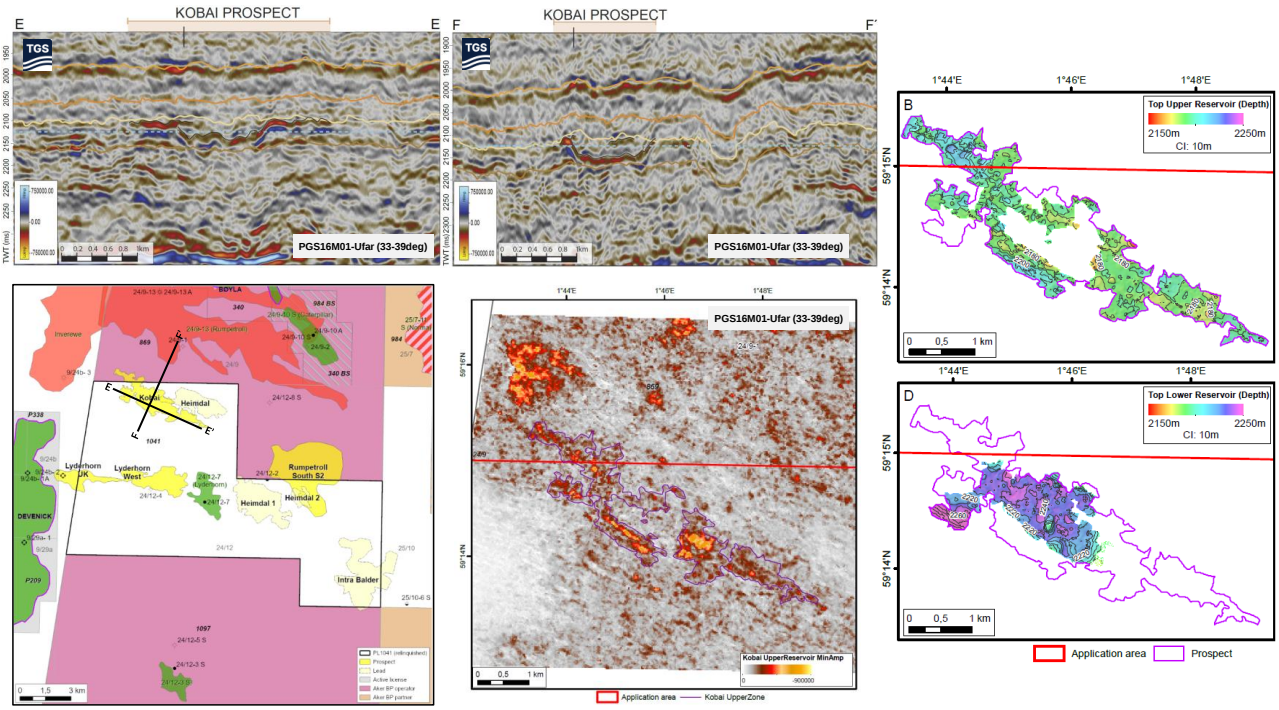

Fig. 4.4 Kobai prospect. *Intra Lista or Sele fms Injectites.*
Patchy amplitudes, apparent brightening above a certain level observed in parts of structure. Amplitudes not conformable to structure.

Rumpetroll South (pre-drill)

The Rumpetroll South Prospect consists of two segments, S1 and S2, with S2 extending into PL1041 (Fig. 4.1). The prospect is located approximately 10 km south of the Bøyla Field and the Rumpetroll discovery (24/9-13 S), and just 5 km northeast of the 23/12-7 Lyderhorn East discovery and 5 km southwest of the 24/9-10 S Caterpillar discovery.

The Rumpetroll South Prospect is characterized by a series of dykes cross-cutting the overlying strata, where sands are remobilized from the Heimdal Formation into and through the Balder Formation. This concept was proven by the Rumpetroll wells drilled in June/July 2019. For the Rumpetroll Prospect (drilled in June/July 2019), a bright soft gas cloud was observed and proven above the top Balder Formation. However, a similar gas signature on seismic is not present in the area of the Rumpetroll South Prospect, leading to the interpretation that the dykes either sill out or terminate close to the top Balder Formation.

Wells 24/12-2 and 24/12-2 T2 reported shows in the Heimdal Formation, indicating a spill from the Heimdal Formation into the overlying injectites. Since the Rumpetroll South Prospect consists of two segments, S1 and S2, separate volumes are presented for each segment. Estimated recoverable volumes (P90-Mean-P10) for Rumpetroll South S1 are 10 - 25 - 45 million barrels of oil equivalent (mmboe), and for Rumpetroll South S2, 5 - 12 - 22 mmboe, with close to half of the estimated S2 volumes in PL1041.

In the event of a commercial discovery in well 24/12-8 S, Aker BP identified potential cost synergies with a combined field development between Froskelår, Caterpillar, and Rumpetroll South S1 & S2, utilising a shared drill center and pipeline.

Rumpetroll South (post-drill)

The Rumpetroll South prospect was redefined following the award, shifting its focus from vertically oriented dyke networks to laterally distributed bright amplitudes. These amplitudes were believed to represent deep marine deposits (turbidites), sill-out injectites, or a combination of both. The prospect was divided into two segments: a northern segment (S1) and a southern segment (S2).

In December 2024, exploration well 24/12-8 S (Fig. 4.1) was drilled in the S1 segment to test the laterally distributed bright amplitudes, which were thought to indicate hydrocarbon-filled intra-Balder sandstone reservoirs. The well encountered a small quantity of non-producible gas at the top of the reservoir and was classified as dry. Consequently, the S2 segment, extending into PL1041, was considered adequately tested and validated by the results from the Rumpetroll South S1 well (24/12-8 S).

Four leads

Four leads have been identified within PL1041. Three leads are defined within the Heimdal Formation, while the fourth lead is defined within the Balder Formation (Fig. 4.1).

Heimdal Leads:

All three leads are minor four-way closures, ranging in size from 0.9 to 6 km^2. However, the interpretation of top Heimdal is affected by imprints from shallow channels in the area, introducing some uncertainty to the structure map and the identified four-way dip closures. Additionally, all wells in the area have encountered water within the Heimdal Formation reservoirs, except for well 24/12-2, which recorded oil shows. Given the strong correlation between amplitude anomalies and hydrocarbon presence in the area (as evidenced by the 24/12-7 Lyderhorn discovery), and the absence of bright amplitudes within these four-way closures, the Heimdal Formation is considered adequately tested and validated by the wells drilled in the area. Some minor four-way closures exhibit brighter amplitude anomalies but are too small to be considered viable drilling candidates.

Intra Balder lead:

The Intra Balder Lead, interpreted as an injectite sill complex, is an amplitude-driven lead characterized by a soft brightening on FAR stack. Approximately 84% of the lead's outline, covering 7.5 km^2, lies within PL1041, while the remaining 16% extends outside the licence area. The amplitude anomaly for the Intra Balder Lead is predominantly visible on the ultra far stack (39-45º), although the amplitudes appear more scattered compared to those observed in the nearby Frosk and Froskelår discoveries. Despite efforts, the licence group has not been able to mature and upgrade the Intra Balder Lead to a drilling candidate.

Changes in resource volumes and probability estimates

The Rumpetroll Prospect (S1 & S2 segments) has been downgraded due to the dry outcome of the Rumpetroll South S1 well (24/12-8 S). Segment S2 is therefore considered adequately tested and validated.

Revised prospect data

The HC phase expected and proven in the Lyderhorn East well (24/12-7) was oil with associated gas. Updated post-drill resource estimates for Lyderhorn East discovery is listed below (Fig. 4.5).

Table 4: Discovery and Prospect data (Enclose map)

Block	24/12	Prospect name	Lyderhorn East	Discovery/Prosp/Lead	Discovery	Prosp ID (or New!)	NOD will insert value	NPD approved (Y/N)	
Play name	NOD will insert value	New Play (Y/N)		Outside play (Y/N)					
Oil, Gas or O&G case:	Oil	Reported by company	Aker BP ASA	Reference document	Relinquishment Report PL1041			Assessment year	2022
This is case no.:		Structural element	Vana-Sub-Basin	Type of trap	Structural	Water depth [m MSL] (>0)	118	Seismic database (2D/3D)	
Resources IN PLACE and RECOVERABLE		**Main phase**				**Associated phase**			
Volumes, this case		Low (P90)	Base, Mode	Base, Mean	High (P10)	Low (P90)	Base, Mode	Base, Mean	High (P10)
In place resources	Oil [10^6 Sm^3] (>0.00)	2,06	2,43	2,44	2,84				
	Gas [10^9 Sm^3] (>0.00)					0,17	0,21	0,21	0,26
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,50	0,73	0,74	0,99				
	Gas [10^9 Sm^3] (>0.00)					0,04	0,06	0,06	0,09
Reservoir Chrono (from)	Thanetian	Reservoir litho (from)	Hermod Fm	Source Rock, chrono primary	Kimm-Volgian	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Thanetian
Reservoir Chrono (to)	Thanetian	Reservoir litho (to)	Hermod Fm	Source Rock, chrono secondary	Oxf-Kimm	Source Rock, litho secondary	Heather Fm	Seal, Litho	Sele Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,43	Oil case (0.00-1.00)	0,43	Gas case (0.00-1.00)	0,00	Oil & Gas case (0.00-1.00)	0,00		
Reservoir (P1) (0.00-1.00)	1,00	Trap (P2) (0.00-1.00)	0,72	Charge (P3) (0.00-1.00)	0,60	Retention (P4) (0.00-1.00)	1,00		
Parametres:	Low (P90)	Base	High (P10)	*Comments: Small oil discovery in Hermod Formation. Amplitude driven. Parts of Hermod reservoir (lower part) heterolithic and with lower oil saturation.*					
Depth to top of prospect [m MSL] (> 0)		2094		*Volumes below MEFS.*					
Area of closure [km^2] (> 0.0)		3,0							
Reservoir thickness [m] (> 0)		72							
HC column in prospect [m] (> 0)		38							
Gross rock vol. [10^9 m^3] (> 0.000)	0,247	0,267	0,288						
Net / Gross [fraction] (0.00-1.00)	0,80	0,83	0,86						
Porosity [fraction] (0.00-1.00)	0,27	0,29	0,30						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0,32	0,40	0,48						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,77	0,80	0,83						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	72	87	103						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,20	0,30	0,40						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,20	0,30	0,40						
Recov. factor, gas main phase [fraction] (0.00-1.00)									
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)				For NPD use:					
Temperature, top res [°C] (>0)	67			Innrapp. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)	206			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation	1.	2.	3.					Kart nr	NPD will insert value

Fig. 4.5 Lyderhorn East Discovery - Table 4. *Resource estimates for Lyderhorn East discovery (24/12-7) including input parameters.*

Resource estimates for the Lyderhorn West and Kobai prospects are listed in the tables below (Fig. 4.6 & Fig. 4.7).

Table 4: Discovery and Prospect data (Enclose map)

Block	24/12	Prospect name	Lyderhorn West	Discovery/Prosp/Lead	Prospect	Prosp ID (or New!)	NOD will insert value	NPD approved (Y/N)	
Play name	NOD will insert value	New Play (Y/N)		Outside play (Y/N)					
Oil, Gas or O&G case:	Oil	Reported by company	Aker BP ASA	Reference document	Relinquishment Report PL1041			Assessment year	2025
This is case no.:		Structural element	Vana-Sub-Basin	Type of trap	Structural	Water depth [m MSL] (>0)	118	Seismic database (2D/3D)	3D
Resources IN PLACE and RECOVERABLE		**Main phase**				**Associated phase**			
Volumes, this case		Low (P90)	Base, Mode	Base, Mean	High (P10)	Low (P90)	Base, Mode	Base, Mean	High (P10)
In place resources	Oil [10^6 Sm^3] (>0.00)	1,40	2,01	2,29	3,33				
	Gas [10^9 Sm^3] (>0.00)					0,11	0,16	0,20	0,30
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,42	0,62	0,88	1,44				
	Gas [10^9 Sm^3] (>0.00)					0,04	0,05	0,08	0,13
Reservoir Chrono (from)	Thanetian	Reservoir litho (from)	Hermod Fm	Source Rock, chrono primary	Kimm-Volgian	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Thanetian
Reservoir Chrono (to)	Thanetian	Reservoir litho (to)	Hermod Fm	Source Rock, chrono secondary	Oxf-Kimm	Source Rock, litho secondary	Heather Fm	Seal, Litho	Sele Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,43	Oil case (0.00-1.00)	0,43	Gas case (0.00-1.00)	0,00	Oil & Gas case (0.00-1.00)	0,00		
Reservoir (P1) (0.00-1.00)	1,00	Trap (P2) (0.00-1.00)	0,72	Charge (P3) (0.00-1.00)	0,60	Retention (P4) (0.00-1.00)	1,00		
Parametres:	Low (P90)	Base	High (P10)						
Depth to top of prospect [m MSL] (> 0)		2090		*Comments:*					
Area of closure [km^2] (> 0.0)	1,8	2,4	3,1	*Mean values have here been used as the base case for the input parameters.*					
Reservoir thickness [m] (> 0)	55	68	81						
HC column in prospect [m] (> 0)	0	0	0	*In the petrophysical evaluation of the reservoir parameters for the reference wells, the Thomas Stieber (1975) method was utilised for most of the wells. This*					
Gross rock vol. [10^9 m^3] (> 0.000)	0,016	0,024	0,033	*method utilises cut-offs for net res fraction and porosity. (Net res fraction is the fraction of the desired facies that is of reservoir quality; net reservoir rock/ net*					
Net / Gross [fraction] (0.00-1.00)	0,42	0,54	0,66	*sand).*					
Porosity [fraction] (0.00-1.00)	0,27	0,28	0,29						
Permeability [mD] (> 0.0)				*Gross rock volume is the HC-bearing gross volum, that is the GRV calculated down to the HCW contact*					
Water Saturation [fraction] (0.00-1.00)	0,17	0,22	0,27						
Bg [Rm3/Sm3] (< 1.0000)	0,0000	0,0000	0,0000						
1/Bo [Sm3/Rm3] (< 1.00)	0,77	0,80	0,83						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	72	87	103						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,27	0,37	0,48						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,27	0,37	0,48						
Recov. factor, gas main phase [fraction] (0.00-1.00)				*Retention (P4) after accumulation, is part of the trap risk*					
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)				For NPD use:					
Temperature, top res [°C] (>0)				Innrapp. av geolog-init:	NOD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)				Dato:	NOD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation	1.	2.	3.					Kart nr	NPD will insert value

Fig. 4.6 Lyderhorn West Prospect Table 4. *Resource estimates for Lyderhorn West prospect, including input parameters.*

Table 4: Discovery and Prospect data (Enclose map)

Block	24/12	Prospect name	Kobai	Discovery/Prosp/Lead	Prospect	Prosp ID (or New!)	NOD will insert value	NPD approved (Y/N)	
Play name	NOD will insert value	New Play (Y/N)		Outside play (Y/N)					
Oil, Gas or O&G case:	Oil	Reported by company	Aker BP ASA	Reference document	Relinquishment Report PL1041			Assessment year	2025
This is case no.:		Structural element	Vana-Sub-Basin	Type of trap	Structural	Water depth [m MSL] (>0)	118	Seismic database (2D/3D)	
Resources IN PLACE and RECOVERABLE		**Main phase**				**Associated phase**			
Volumes, this case		Low (P90)	Base, Mode	Base, Mean	High (P10)	Low (P90)	Base, Mode	Base, Mean	High (P10)
In place resources	Oil [10^6 Sm^3] (>0.00)	1,35	2,13	2,64	4,18				
	Gas [10^9 Sm^3] (>0.00)					0,13	0,21	0,26	0,42
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,65	1,06	1,32	2,11				
	Gas [10^9 Sm^3] (>0.00)					0,08	0,12	0,16	0,26
Reservoir Chrono (from)	Selandian	Reservoir litho (from)	Heimdal Fm	Source Rock, chrono primary	Kimm-Volgian	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Thanetian-Ypresian
Reservoir Chrono (to)	Thanetian	Reservoir litho (to)	Lista Fm	Source Rock, chrono secondary	Oxf-Kimm	Source Rock, litho secondary	Heather Fm	Seal, Litho	Sele Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,23	Oil case (0.00-1.00)	0,23	Gas case (0.00-1.00)	0,00	Oil & Gas case (0.00-1.00)	0,00		
Reservoir (P1) (0.00-1.00)	0,72	Trap (P2) (0.00-1.00)	0,40	Charge (P3) (0.00-1.00)	0,80	Retention (P4) (0.00-1.00)	1,00		

Parametres:	Low (P90)	Base	High (P10)
Depth to top of prospect [m MSL] (> 0)		2150	
Area of closure [km^2] (> 0.0)	3,0	3,3	3,5
Reservoir thickness [m] (> 0)	25	25	25
HC column in prospect [m] (> 0)	0	0	0
Gross rock vol. [10^9 m^3] (> 0.000)	0,040	0,054	0,067
Net / Gross [fraction] (0.00-1.00)	0,19	0,34	0,50
Porosity [fraction] (0.00-1.00)	0,24	0,28	0,31
Permeability [mD] (> 0.0)			
Water Saturation [fraction] (0.00-1.00)	0,27	0,35	0,43
Bg [Rm3/Sm3] (< 1.0000)	0,0000	0,0000	0,0000
1/Bo [Sm3/Rm3] (< 1.00)	0,80	0,80	0,81
GOR, free gas [Sm^3/Sm^3] (> 0)			
GOR, oil [Sm^3/Sm^3] (> 0)	90	100	110
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,42	0,50	0,58
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,55	0,62	0,70
Recov. factor, gas main phase [fraction] (0.00-1.00)			
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)			

Comments:
Mean values have here been used as the base case for the input parameters.

In the petrophysical evaluation of the reservoir parameters for the reference wells, the Thomas Stieber (1975) method was utilised for most of the wells. This method utilises cut-offs for net res fraction and porosity. (Net res fraction is the fraction of the desired facies that is of reservoir quality; net reservoir rock/ net sand).

Gross rock volume is the HC-bearing gross volum, that is the GRV calculated down to the HCW contact

Retention (P4) after accumulation, is part of the trap risk

Temperature, top res [°C] (>0)				For NPD use:			
Pressure, top res [bar] (>0)				Innrapp. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value
Cut off criteria for N/G calculation	1	2.	3.	Dato:	NPD will insert value	Registrert Dato:	NPD will insert value

Kart oppdatert	NPD will insert value		
Kart dato	NPD will insert value		
Kart nr	NPD will insert value		

Fig. 4.7 Kobai Prospect Table 4. *Resource estimates for the Kobai prospect, including input parameters.*

An overview of the risking for the Lyderhorn West and Kobai prospects are summarized in the tables below:

Table 4.1 Risking Lyderhorn West - Hermod Fm

Risk element Lyderhorn West. COS: 0.43	Evaluation PL1041	Comment
Reservoir (presence and quality)	1.0	Reservoir presence and quality proven in nearby wells.
Seal (presence and trap geometry)	0.72	4-way closure. Risk of thief sands.
Source (presence, migration and timing)	0.6	Source proven in nearby discovery (24/12-7 - Lyderhorn East). Some risk added to migration and timing.

Table 4.2 Risking Kobai Prospect

Risk element Kobai Prospect. COS: 0.23	Evaluation PL1041	Comment
Reservoir (presence and quality)	0.72	Injectites. Patchy amplitudes. Risk on too thin reservoir for attractive development. Minimum net thickness in assessment is similar to the Rumpetroll Discovery.
Seal presence and trap geometry	0.4	Seal risk (0.5). Numerous competent shales above target, proven to be able to hold thick HC columns. Risk on presence of small scale injectites (thief sands), causing trap to leak into the shallower strata. HCs at shallower levels (above Kobai assigned HCWC) north of target. Trap risk (0.8) is related to uncertainty in mapping of injectite complex, and risk of sub-seismic features important for trap definition.
Source (presence, migration and timing)	0.8	Small risk on charging entire prospect. Shadow zones may occur depending on the connectivity of sub-seismic injectites.

5 Technical evaluation

In 2022, a revised post-well technical evaluation was conducted for the Lyderhorn East discovery, which also encompassed the Lyderhorn West prospect. This evaluation considered the possibility that the 24/12-7 Lyderhorn discovery could extend further westward (Fig. 5.1).

The recoverable resource potential in a maximum case scenario is estimated at 10 - 17 - 24 million barrels of oil equivalent (mmboe) (P90/mean/P10), including proven recoverable resources of 3 - 5 - 7 mmboe in the 24/12-7 well (Lyderhorn East). Although the minimum economical field size (~10 mmboe) is represented by the P90 volumes, the Lyderhorn West prospect is associated with high exploration risk due to a very patchy amplitude response and, consequently, a questionable lateral trap seal (i.e., potential spill further westwards into the UK). This risk is further compounded by the dry Hermod sand in well 24/12-4, which tested the overbank or marginal deposits of the Hermod channel complex, located just west of the Lyderhorn East well (24/12-7).

Given the strong correlation between amplitude anomaly and hydrocarbon fill (Fig. 4.2) in Lyderhorn East (24/12-7), the total resources are likely somewhat smaller. Therefore, only areas with a clear far offset anomaly should be included in the base case (Fig. 4.3). This imposes higher risk on the Lyderhorn West prospect due to its patchy amplitudes. In practice, this reduces the recoverable volume potential and increases exploration risk.

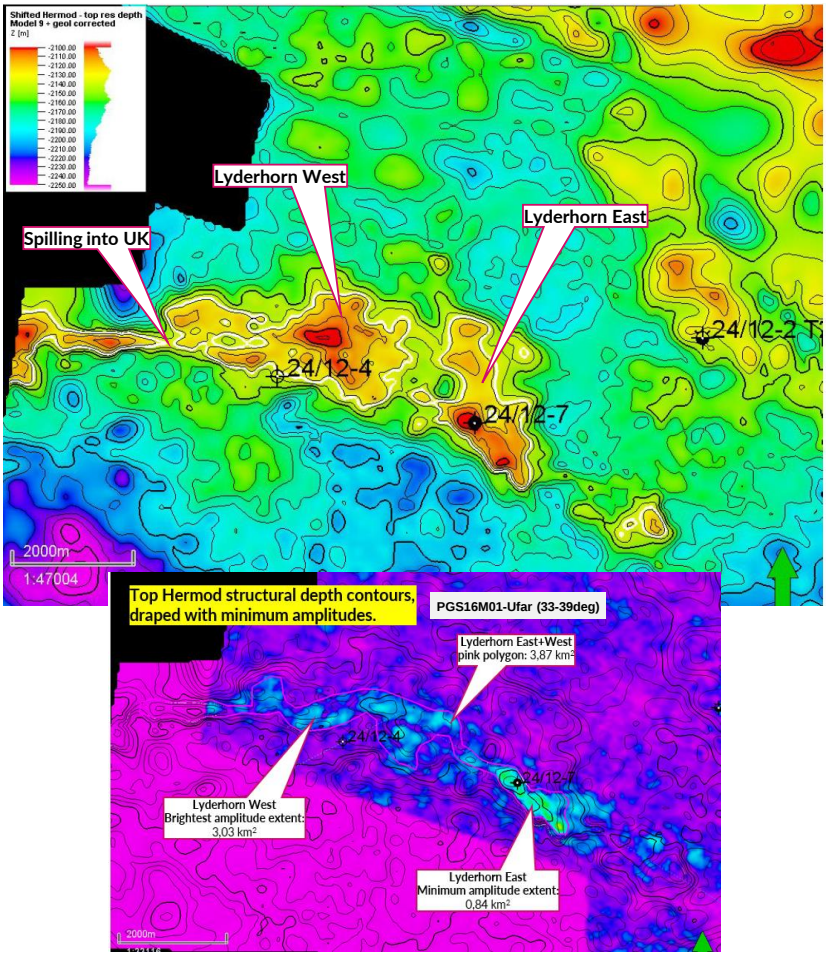

Fig. 5.1 Top Hermod depth and amplitude maps. *Hydrocarbons entering Lyderhorn West spill further into UK, limiting the volume potential.*

6 Conclusion

The primary prospect, Lyderhorn East, was drilled in 2021 and yielded sub-commercial volumes. The potential extension westwards into the Lyderhorn West prospect is associated with significant risk and limited volume potential.

Given that the remaining prospectivity is deemed unattractive with no viable drilling candidates, and the Lyderhorn discovery is not commercially viable either as a standalone development or as a tie-back to Bøyla, the licence group has decided to relinquish PL1041 due to limited volume potential and high exploration risk.

7 References

APA 2019 Production licence application block 24/12, North Sea - Lyderhorn prospect, Aker BP (2019)

Final Well report, section A (Geology), well 24/12-7, Aker BP (2022)

Discovery Evaluation Report for Lyderhorn East (24/12-7), Aker BP (2022)

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