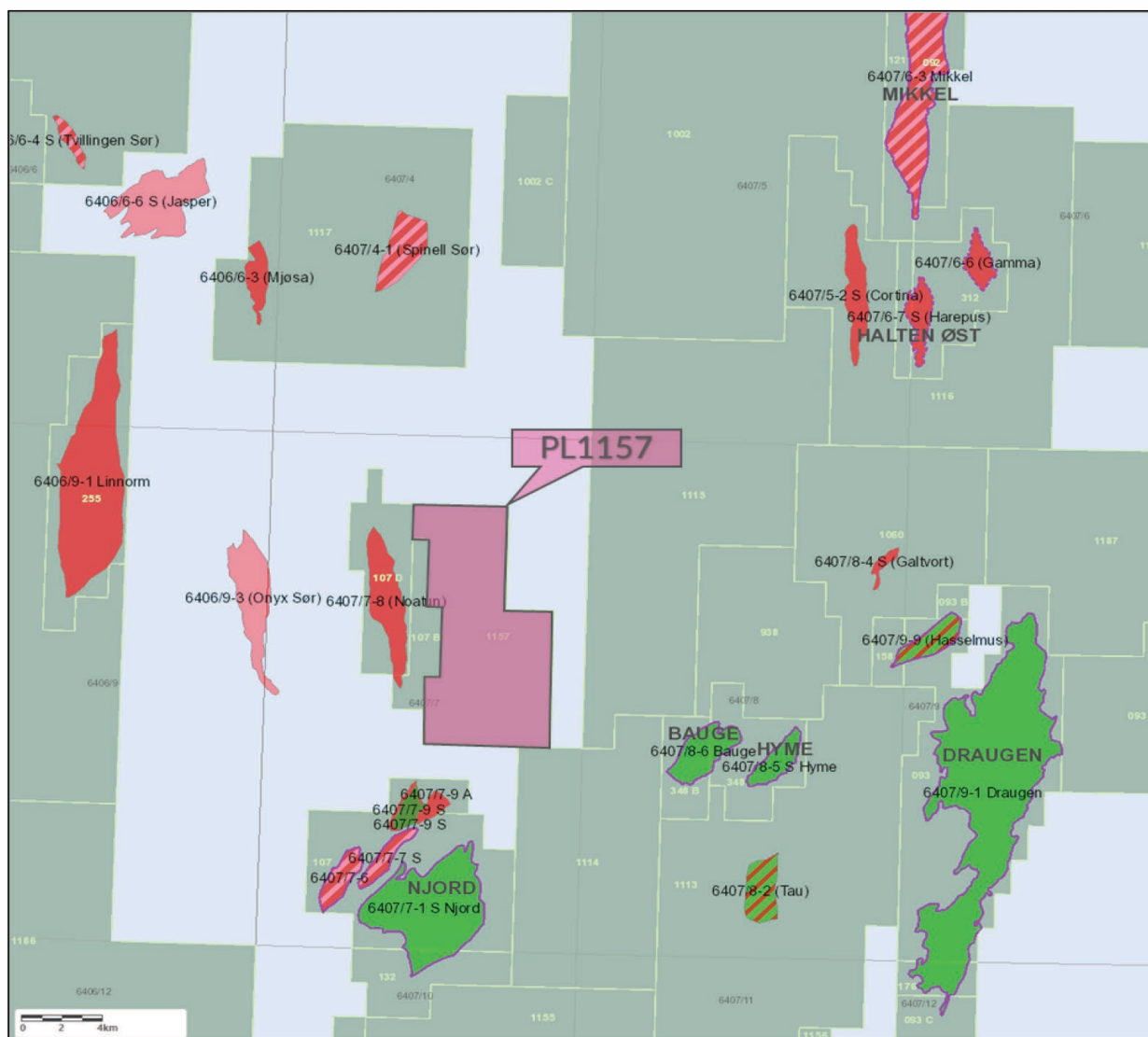


PL 1157

RELINQUISHMENT REPORT

May 2023



Partners:

1 License history

PL1157 was awarded in APA2021 on the 11.03.2022 to Lundin Energy Norway AS as operator with 60% equity and Equinor Energy AS with 40% share. Lundin Energy Norway AS was later merged with Aker BP ASA.

Work commitments

- Reprocess 3D seismic, G&G studies
- Decide on Drill or Drop within 1 year (11.03.2023)
- Decide on Concretisation (BOK) or Drop within 3 years (11.03.2025)
- Decide on Continuation (BOV) or Drop within 5 years (11.03.2027)
- Submit PDO or Drop within 6 years (11.03.2028)

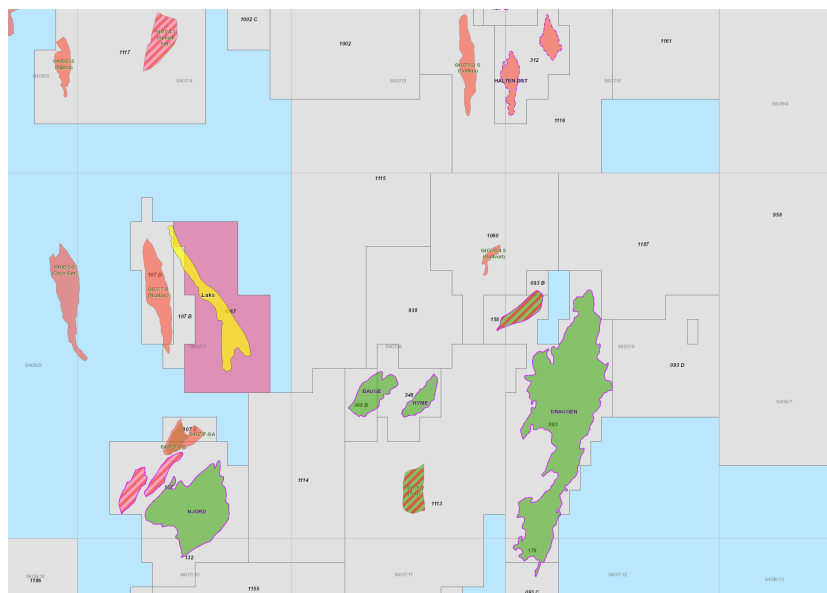
The licence work programme of 3D seismic reprocessing and G&G studies have been fulfilled.

Licence meetings

- Management / Exploration Committee Meeting No 1 (13.03.2022)
- Exploration Committee Work Meeting (26.09.2022)
- Management / Exploration Committee Meeting No 2 (17.02.2023)

Applications and decisions

No licence extension was applied for. The partnership decided to relinquish the licence at the drill or drop decision. The licence focused on the evaluation of the Laks prospect (Fig. 1.1) which is an amplitude/AVO supported stratigraphic trap within the Upper Cretaceous Lange Fm. The prospect was re-evaluated on reprocessed seismic data and the updated resource distribution showed a reduced potential as compared to the original APA2021 evaluation.



2 Database overviews

2.1 Seismic data

The common seismic database in the licence consists of a sub-cube of the 3D seismic PGS18M05. PGS18M05 is a merge of a series of PGS 3D Geostreamer datasets covering the Trøndelag Platform, the Halten/Dønna terraces and the Nordland Ridge. The modern broadband seismic data has enabled assessment of both regional and prospect level interpretation. Offset cubes (and derivatives) were incorporated as part of the prospect mapping and definition. Top and base reservoir of the Laks prospect were effectively interpreted using the far and ultra far offset stack cubes.

Fig. 2.1 shows the outline of the common seismic database, consisting of 244 km² of PGS18M05.

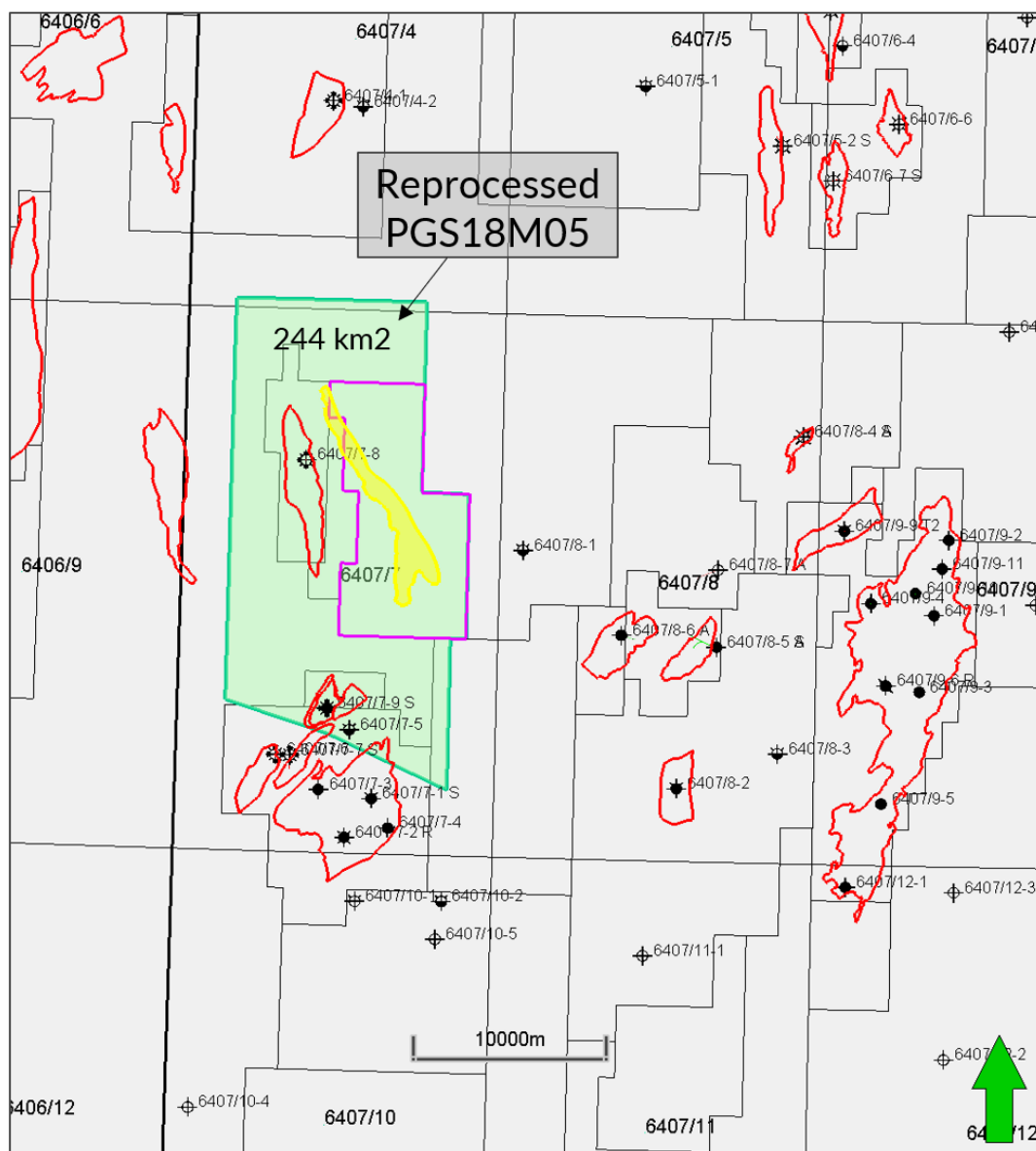


Fig. 2.1 Common seismic database (244 km²).

Table 2.1 Input surveys to PGS18M05

Survey	NPDID
NH9701	3859
ST9905	4019
HVG2013	7900
PGS14002	7993
PGS14005	8054
PGS15005	8183

2.2 Well Data

The common well database comprises publicly available data from released wells listed in Table 2.2. The list includes well name, NPDID number, completion year, content TD, age at TD and formation at TD. The PL1157 key wells are highlighted (bold). The Laks prospect is located in a "hot spot" for a deep marine depositional fairway setting. Focus has been on confirming the stratigraphic framework relating to Lange equivalent (Turonian) deep marine sandstones and to firm up the depositional model and reservoir distribution.

Table 2.2 PL1157 common well database.

Wellbore name	NPID	Operator	Year	Content	HC level (Formation)	TD (TVD)	TD in (age)	TD in
6407/7-5	1699	Hydro	1991	Shows	N/A	3716	Early Jurassic	Åre Fm
6407/7-8	5844	StatoilHydro	2008	Gas/Cond	Fangst Gp & Båt Gp	5105	Early Jurassic	Åre Fm
6407/7-8 A	5953	StatoilHydro	2008	Gas/Cond	Fangst Gp & Båt Gp	5068	Early Jurassic	Åre Fm
6407/7-9 S	8029	Statoil	2016	Oil/Gas/Cond	Tilje Fm, Ile Fm & Lange Fm	4132	Early Jurassic	Åre Fm
6407/8-1	1859	BP	1992	Shows	Lange Fm	4645	Middle Jurassic	Melke Fm
6407/1-6 S	7086	Wintershall	2013	Gas/Cond	Lange Fm	4075	Early Jurassic	Ror Fm
6407/1-7	8355	Wintershall	2014	Gas/Cond	Lange Fm	3376	Early Cretaceous	Lange Fm
6407/1-7 A	8411	Wintershall	2014	Gas/Cond	Lange Fm	3342	Early Cretaceous	Lange Fm
6407/7-6	7412	Hydro	2000	Gas/Cond	Tilje Fm	3971	Early Jurassic	Åre Fm
6407/7-7 S	5550	Hydro	2007	Gas/Cond	Ile Fm & Tilje Fm	3678	Early Jurassic	Åre Fm
6407/8-6	7265	Statoil	2013	Oil	Ile Fm & Tilje Fm	3420	Late Triassic	Grey Beds
6407/8-6 A	7266	Statoil	2013	Oil	Ile Fm & Tilje Fm	3288	Late Triassic	Åre Fm
6506/11-10	8317	OMV	2018	Gas/Cond	Lange Fm & Garn Gp	4536	Early Jurassic	Ror Fm

3 Geological and geophysical studies

A set of studies have been carried out to evaluate the reservoir and trap risk associated with the Laks prospect.

Seismic reprocessing

A seismic reprocessing workflow was applied to PGS18M05 as part of the common database:

- 1st pass gather flattening
- Gather denoise (parabolic radon demultiple and noise attenuation)
- Offset plane denoise
- 3d inversion based bandwidth optimisation,
- 2nd pass high resolution gather flattening
- Angle stacks

The aim was to improve seismic tracking of the reservoir unit and to enhance AVO interpretation/seismic data analysis. The reprocessed seismic improved the definition of top- and base of the Laks reservoir unit and AVO class modelling.

The new data gave additional support to Laks as a seismic sweetspot prospect with good AVO support (Class 3 AVO).

Geological studies

- Facies analysis based on core studies
- Provenance studies used to identify possible sand source areas applied to depositional model interpretations
- Reservoir properties from core measurements (CCA)

The evaluation of the intra Lange Fm Turonian reservoir distribution showed that sands may have been transported from the north in a deep marine setting or alternatively, from a more local derivation in the east/south-east with deposition as gravity flows into the Laks area.

Independently, and in both models, the sands were probably re-worked by ocean currents. The study concluded that there is a high likelihood of reservoir presence, but the reservoir properties (particularly permeability) is a challenge due to fine-grained sands.

Basin modelling

An updated semi-regional model was based on updated mapping and geochemical analysis with samples from cuttings and cores of selected/relevant wells. The study concluded that the prospect may have been filled with gas/condensate via leakage from the Noatun Jurassic structure or by vertical oil charge from the Spekk Fm. The likelihood of oil versus gas in the prospect was assessed to be 70% versus 30%.

4 Prospect update report

Assessment - Application for award (APA 2021)

The map in Fig. 4.1 shows the area applied for and the Laks prospect in the application of award. The Laks prospect was (and still is) a well-defined seismic amplitude anomaly which was interpreted as a high net-to-gross deep marine channel-belt system within Upper Cretaceous Intra Lange Formation, filled with hydrocarbons. A stratigraphic pinch out in combination with faulting could retain hydrocarbons in the trap. Seismic Data Analysis (SDA) was carried out to investigate the seismic response across the prospect. The analysis showed good sand indications with a strong fluid factor anomaly. Retention was considered to be the main risk at the time of award. This was mainly due to potential lateral leakage up-dip into the Njord area. Table 4.1 contains the volume and risk summary of the Laks prospect from the application for award.

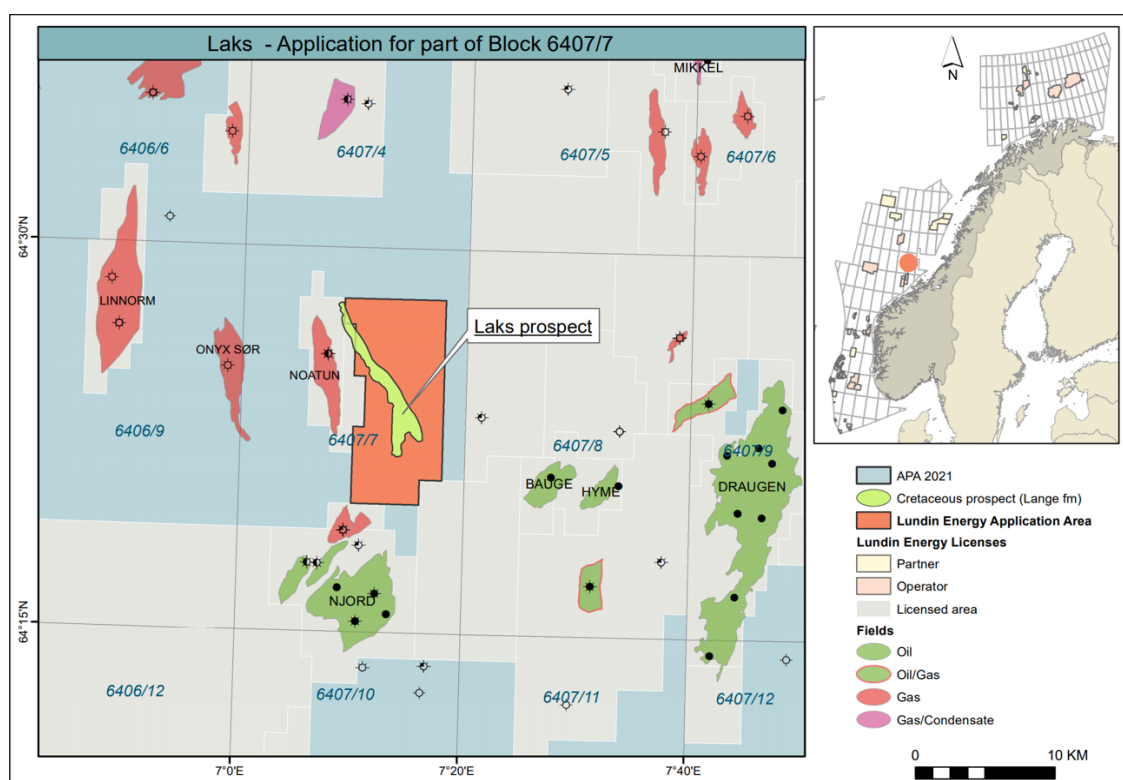


Fig. 4.1 Laks prospect from APA 2021. Overview map with area applied for and the Laks prospect at time of application for award.

Table 4.1 Laks resource potential from APA 2021

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 ⁶ Sm ³] (>0,00)			Gas [10 ⁶ Sm 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)						
6407/7 Laks	P	Gas	1,59	3,67	6,21	2,21	4,87	8,07	0,16	90,0	Lange/Turonian	3325	Njord	13
		Oil	2,18	5,34	9,07	0,46	1,17	1,92	0,10	90,0	Lange/Turonian	3325	Njord	13

Assessment - in PL1157 licence period

The work during the licence period confirmed Laks as a stratigraphic trap with a possible up-dip sand pinch-out towards south-southwest into the Njord area. Fault seal with sand/shale juxtaposition and/or sealing fault planes can be an additional trapping mechanism.

Fig. 4.2 displays top reservoir map in grey with black contours. The prospect polygon (yellow colour) on the map covers an area with a strong seismic anomaly with a class III AVO response (Laks sweetspot) that was firmed up during the licence work. Regionally, intra Lange Turonian sandstones with high net/gross are known to show soft amplitude anomalies and AVO response in the area. Hydrocarbon fill may also contribute to the class III AVO anomaly. The background map (red to pink colour) is the top Cenomanian/base Turonian depth surface which is a bit deeper than the Laks Reservoir (early Turonian in age). This is the closest regionally mappable surface and illustrates the general topography at the prospect level.

The trap was considered to be robust in the east-west direction and the amplitude shut-off can be explained by lateral sand-to-shale pinch-out away from the sand rich fairway. The up-dip trapping towards Njord is less pronounced and still a key risk. A concrete seismic pinch-out could not be identified, but the amplitude dimming is clearly visible on seismic and can be explained by transition from sands with trapped hydrocarbons to discontinuous and faulted low net/gross heterolithic units.

Fig. 4.3 is a geoseismic profile and illustrates the shape and position of Laks relative to neighbouring wells, which dominantly contain thinner heterolithic sands/silts at the prospect level.

The licence work led to a more focused volume calculation model (done in GeoX) restricted to the Laks sweetspot.

The geological studies and integration with seismic analyses lead to two possible depositional models: 1) Northerly sand source and 2) Local sand input from south/southeast. The N/G and porosity ranges were increased from the APA application. The Pg was also increased from 26% to 43%. The charge model was also updated, leading to a 70/30 split for an oil case versus a gas case (40/60 in APA).

The updated volume calculation resulted in considerable smaller hydrocarbon resources than in the APA application. The new mean recoverable resource estimate for the oil case is $2.6 \cdot 10^6 \text{ Sm}^3$ versus $5.3 \cdot 10^6 \text{ Sm}^3$ in the 2021 APA application, whereas the new gas case is $3.2 \cdot 10^9 \text{ Sm}^3$ versus $4.9 \cdot 10^9 \text{ Sm}^3$ in the APA 2021 application.

Table 4.2 and Table 4.2 are summaries of Laks prospect data (oil and gas case) at the time of licence surrender.

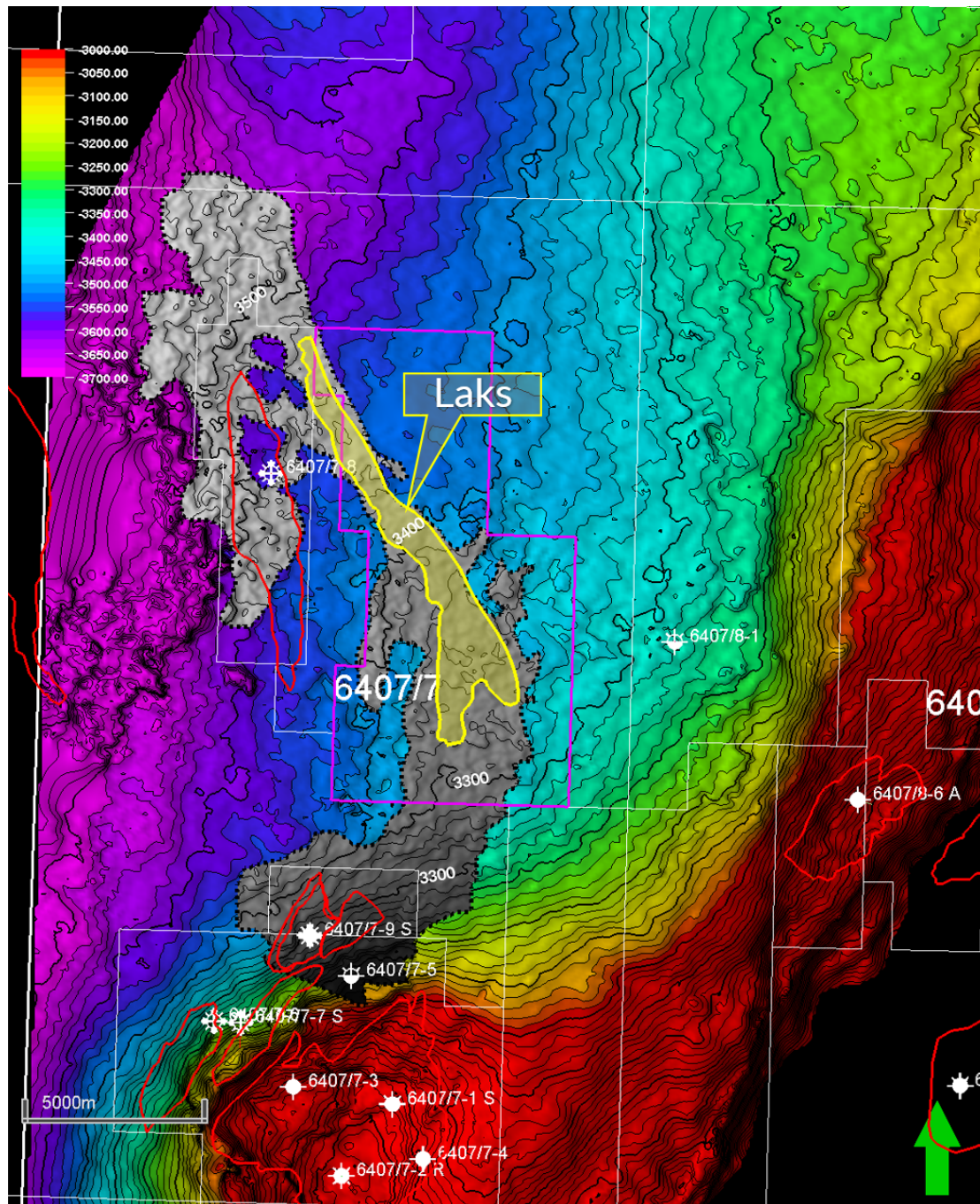


Fig. 4.2 Top Laks (early Turonian) reservoir depth map. Top Laks reservoir map is shown in grey. The Laks prospect polygon also represents the area with observed seismic anomaly and AVO response. The background map (red to pink colour) is the top Cenomanian/base Turonian depth surface located a bit deeper than the Laks reservoir level.

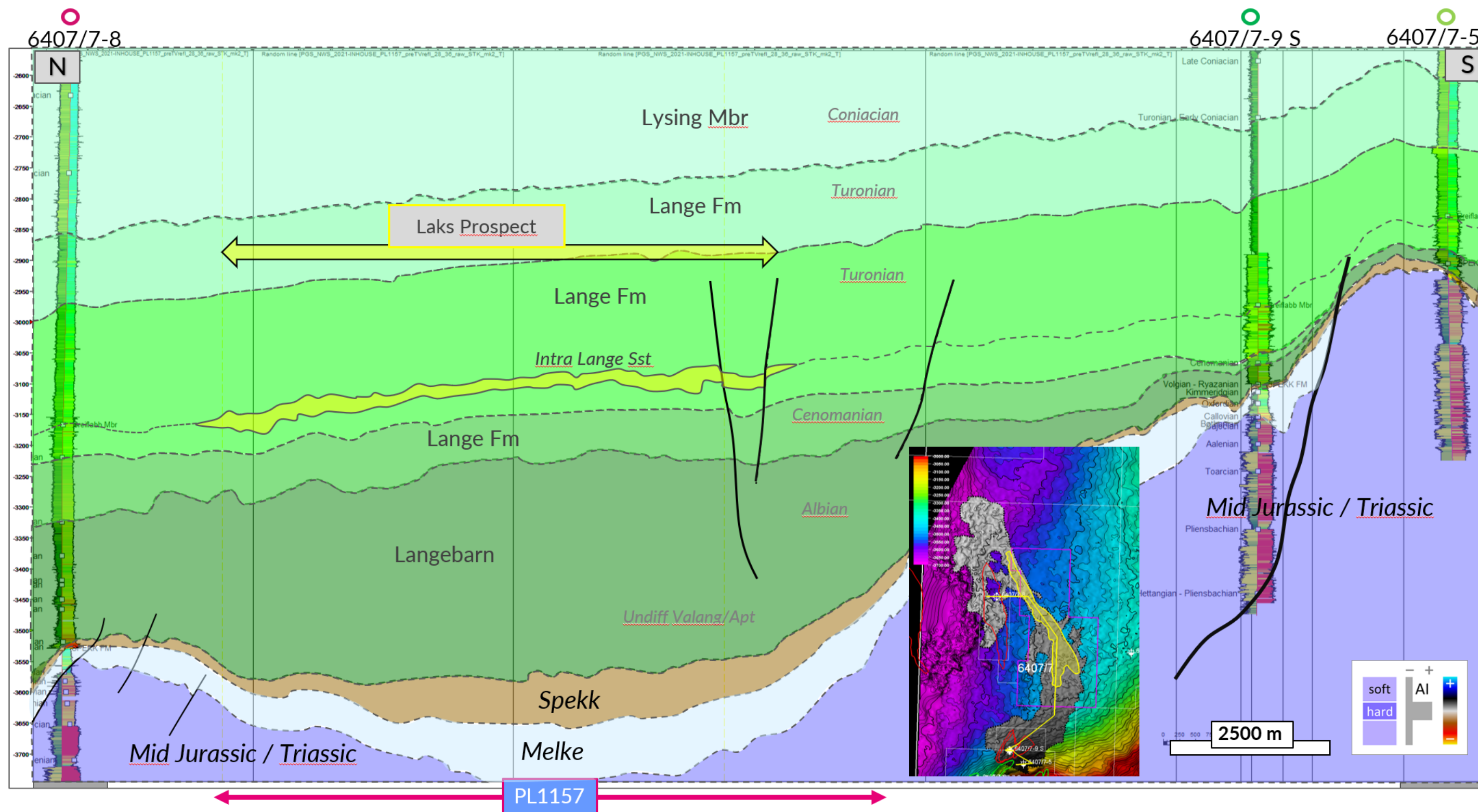


Fig. 4.3 Geoseismic section through the Laks prospect. The line is crossing from the Njord area in the south across the Laks sweetspot and into the Noatun well (6407/8-1) in the north

Table 4.2 Laks prospect data - Oil case *The likelihood of an Oil Case is 70%*

Block	6407/7	Prospect name	Laks	Discovery/Prosp/Lead	Prospect	Prosp ID (or New!)	NPD will insert value	NPD approved (Y/N)	
Play name	NPD will insert value	New Play (Y/N)		Outside play (Y/N)					
Oil, Gas or O&G case:	Oil	Reported by company	Aker BP	Reference document	PL1157 Relinquishment Report			Assessment year	2023
This is case no.:		Structural element	Gimsan Basin	Type of trap	Stratigraphic	Water depth [m MSL] (>0)	290	Seismic database (2D/3D)	3D
Resources IN PLACE and RECOVERABLE Volumes, this case		Main phase			Associated phase				
		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)	3.02	5.80	6.25	10.10				
	Gas [10 ⁹ Sm ³] (>0.00)					1.13	2.18	2.35	3.78
Recoverable resources	Oil [10 ⁶ Sm ³] (>0.00)	1.07	2.33	2.59	4.46				
	Gas [10 ⁹ Sm ³] (>0.00)					0.40	0.87	0.97	1.67
Reservoir Chrono (from)	Early Turonian	Reservoir litho (from)	Lange/Breiflabb	Source Rock, chrono primary	Late Jurassic	Source Rock, litho primary	Spekk Fm	Seal, Chrono	Early Turonian
Reservoir Chrono (to)		Reservoir litho (to)		Source Rock, chrono secondary		Source Rock, litho secondary		Seal, Litho	Lange Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.43	Oil case (0.00-1.00)	0.70	Gas case (0.00-1.00)	0.30	Oil & Gas case (0.00-1.00)			
Reservoir (P1) (0.00-1.00)	0.80	Trap (P2) (0.00-1.00)	0.60	Charge (P3) (0.00-1.00)	0.90	Retention (P4) (0.00-1.00)	1.00		
Parametres:	Low (P90)	Base	High (P10)	Comments:					
Depth to top of prospect [m MSL] (> 0)		3325							
Area of closure [km ²] (> 0.0)	9.0	10.5	12.0						
Reservoir thickness [m] (> 0)		35							
HC column in prospect [m] (> 0)	140	172	190						
Gross rock vol. [10 ⁹ m ³] (> 0.000)	0.285	0.300	0.315						
Net / Gross [fraction] (0.00-1.00)	0.35	0.50	0.65						
Porosity [fraction] (0.00-1.00)	0.14	0.17	0.20						
Permeability [mD] (> 0.0)	30.0	65.0	100.0						
Water Saturation [fraction] (0.00-1.00)	0.45	0.40	0.35						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0.51	0.44	0.39						
GOR, free gas [Sm ³ /Sm ³] (> 0)									
GOR, oil [Sm ³ /Sm ³] (> 0)	300	381	454						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0.35	0.40	0.45						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0.35	0.40	0.45						
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)	125			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)	473			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

Table 4.3 Laks prospect data - Gas case *The likelihood of a Gas Case is 30%*

Block	6407/7	Prospect name	Laks	Discovery/Prosp/Lead	Prospect	Prosp ID (or New!)	NPD will insert value	NPD approved (Y/N)	
Play name	NPD will insert value	New Play (Y/N)		Outside play (Y/N)					
Oil, Gas or O&G case:	Gas	Reported by company	Aker BP	Reference document	PL1157 Relinquishment Report			Assessment year	2023
This is case no.:		Structural element	Gimsan Basin	Type of trap	Stratigraphic	Water depth [m MSL] (>0)	290	Seismic database (2D/3D)	
Resources IN PLACE and RECOVERABLE Volumes, this case		Main phase				Associated phase			
		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)					0.78	1.23	1.75	2.94
	Gas [10 ⁹ Sm ³] (>0.00)	2.47	3.71	4.83	7.61				
Recoverable resources	Oil [10 ⁶ Sm ³] (>0.00)					0.39	0.67	0.98	1.74
	Gas [10 ⁹ Sm ³] (>0.00)	1.47	2.92	3.18	5.27				
Reservoir Chrono (from)	Early Turonian	Reservoir litho (from)	Lange/Breiflabb	Source Rock, chrono primary	Late Jurassic	Source Rock, litho primary	Spekk Fm	Seal, Chrono	Early Turonian
Reservoir Chrono (to)	0	Reservoir litho (to)	0	Source Rock, chrono secondary	0	Source Rock, litho secondary	0	Seal, Litho	Lange Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.43	Oil case (0.00-1.00)	0.70	Gas case (0.00-1.00)	0.30	Oil & Gas case (0.00-1.00)	0.00		
Reservoir (P1) (0.00-1.00)	0.80	Trap (P2) (0.00-1.00)	0.60	Charge (P3) (0.00-1.00)	0.90	Retention (P4) (0.00-1.00)	1.00		
Parameters:	Low (P90)	Base	High (P10)	Comments					
Depth to top of prospect [m MSL] (> 0)		3325							
Area of closure [km ²] (> 0.0)	9.0	10.5	12.0						
Reservoir thickness [m] (> 0)		35							
HC column in prospect [m] (> 0)	140	172	190						
Gross rock vol. [10 ⁹ m ³] (> 0.000)	0.284	0.300	0.316						
Net / Gross [fraction] (0.00-1.00)	0.35	0.50	0.65						
Porosity [fraction] (0.00-1.00)	0.14	0.17	0.20						
Permeability [mD] (> 0.0)	30.0	65.0	100.0						
Water Saturation [fraction] (0.00-1.00)	0.31	0.27	0.23						
Bg [Rm3/Sm3] (< 1.0000)	0.0036	0.0035	0.0034						
1/Bo [Sm3/Rm3] (< 1.00)									
GOR, free gas [Sm ³ /Sm ³] (> 0)	2092	2778	4133						
GOR, oil [Sm ³ /Sm ³] (> 0)									
Recov. factor, oil main phase [fraction] (0.00-1.00)									
Recov. factor, gas ass. phase [fraction] (0.00-1.00)									
Recov. factor, gas main phase [fraction] (0.00-1.00)	0.57	0.64	0.70						
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0.47	0.54	0.60						
				For NPD use:					
Temperature, top res [°C] (>0)				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)				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

5 Technical evaluation

The Laks prospect is located at ~290 m water depth in the Norwegian Sea some 13 km north of the Njord Field. The development solution for the prospect in the 2021 APA application was a subsea tie-back to the Njord platform manifold structure. Following the PL1157 assessment, the Laks prospect resource potential has been reduced and is not sufficient for a robust field development in the licence.

6 Conclusion

The Laks prospect has been downgraded since the updated resource distribution shows a reduced potential as compared to the original APA2021 evaluation.

The licence partnership has unanimously decided that there is no basis for a positive drill decision in PL1157, and the licence has been relinquished.