

Relinquishment report

PL 1027



In cooperation with Lundin Energy Norway



wintershall dea



1 License history

Award and work program

Lundin Energy Norway AS (Lundin) applied for and was awarded parts of blocks 7220/3, 7221/1,2,4,5, shown in Fig. 1.1, following APA 2018. PL1027 was awarded March 1st 2019 to Lundin as operator (40%), and INPEX Norge AS (20%), DEA Norge AS (now Wintershall Dea Norge AS) (20%), and DNO Norge AS (20%) as partners. It was awarded with an initial period of 8 years, which included a work commitment to acquire and reprocess seismic 3D data, Drill or Drop (DoD) decision to be made within three years by 01.03.2022, decision on concretization (BoK) by 01.03.2024, decision on continuation (BoV) 01.03.2026 and PDO submission by 01.03.2027. The DoD deadline has been fulfilled by the 7221/4-1 Polmak well (dry), drilled jointly by PL1027 and PL609, and completed December 1st 2020.

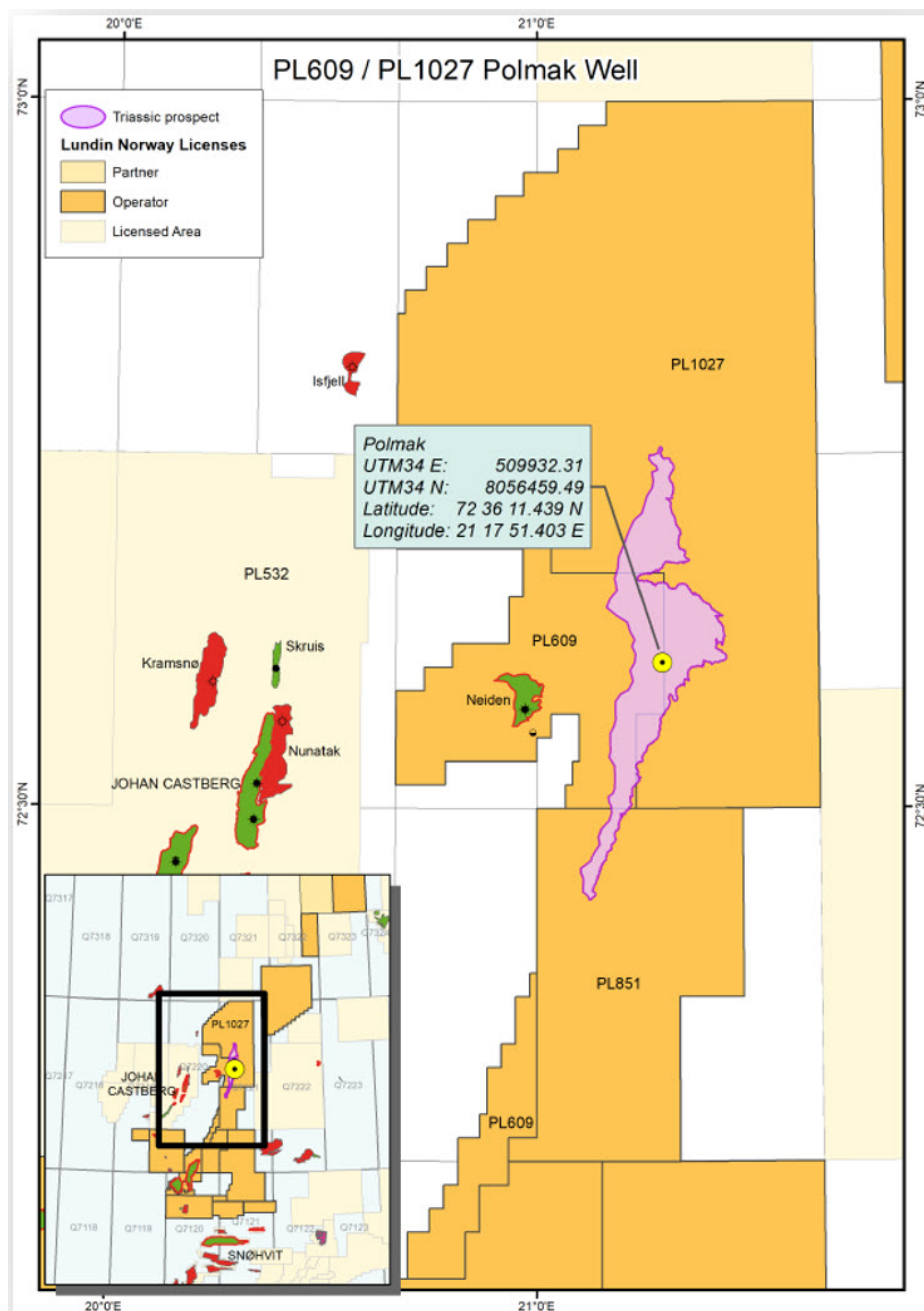


Fig. 1.1 PL1027 license outline and Polmak prospect outline

An overview of the meetings held in PL1027 is provided in Table 1.1.

Table 1.1 Overview of committee meetings held in PL1027

Meeting type	Date held
ECMC No.1	09.04.2019
EC work meeting	27.09.2019
ECMC No2	12.11.2019
ECMC work meeting	17.01.2020
ECMC No3	26.11.2020
EC work meeting	17.06.2021
ECMC No4	23.11.2021
ECMC No5	11.01.2022

The JV partners wish to relinquish this license before the BoK deadline, due to the disappointing results of the dry 7221/4-1 Polmak well, and the limited volume potential of the three main remaining prospects in the license (Fig. 1.2).

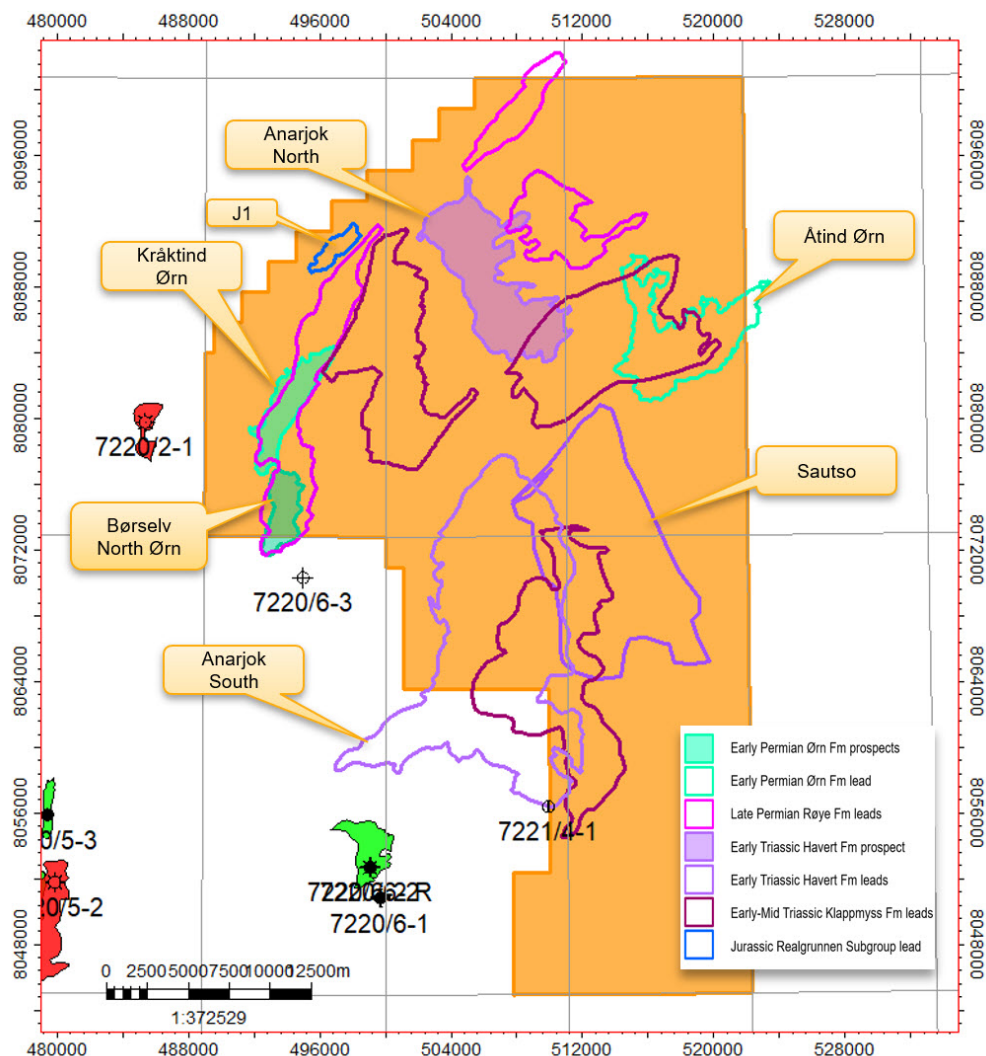


Fig. 1.2 PL1027 license and map of remaining prospectivity

The three main remaining prospects, Kråktind Ørn, Børselv North Ørn, and Anarjok North, are displayed with in-fill colors. Additional leads are shown with outlines.

2 Database overview

2.1 Seismic data

Fig. 2.1 shows the seismic database for PL1027. The license has used the LN19M05 seismic 3D dataset, which is a pre-stack merge of SG9810RE and DN14001 (Table 2.1).

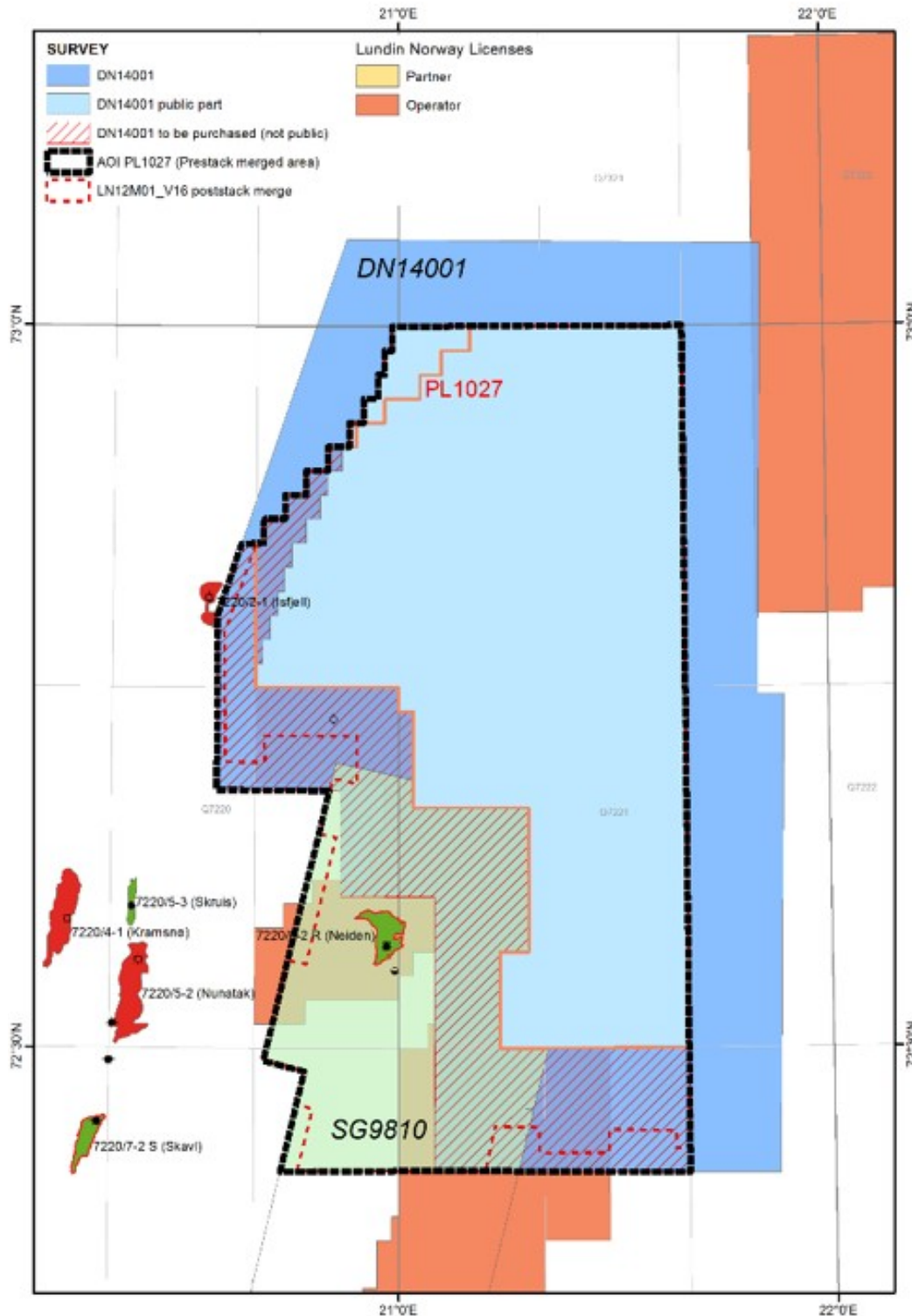


Fig. 2.1 Seismic database for PL1027

Table 2.1 Seismic database

Seismic survey	NPDID	Area (km ²) used in database	Market available	Acquisition year
DN14001	8043	1763	No	2014
SG9810RE	3942	608	No	1998

The dataset covers the entire license area. The purchase and reprocessing of this data fulfills the corresponding part of the license work program.

2.2 Well data

Key wells relevant to and mentioned in this status report include Polmak 7221/4-1 (NPDID 9009) (Fig. 1.1), Neiden 7220/6-2 R (NPDID 8026), Børselv 7220/6-3 (NPDID 8203), Isfjell 7220/2-1 (NPDID 7558) and Aurelia 7222/1-1 (NPDID 7987).

3 Geological and geophysical studies and results

Studies

The following studies were carried out in PL1027, relevant to the evaluation of prospectivity in the license:

- Seismic interpretation and mapping of key horizons
- Velocity modeling for implementation in depth conversion
- Post-stack seismic reprocessing of DN14001
- Frequency spectral decomposition for seismic attribute analyses
- Rock physics study and AVO response modeling for Triassic
- 7221/4-1 Polmak core study
- 7221/4-1 Polmak geochemistry study
- 7220/2-1 Isfjell geochemistry study
- 7221/4-1 Kobbe Formation provenance study
- 7222/1-1 Aurelia Triassic provenance study
- 7221/4-1 Polmak biostratigraphy study

Results

As a result of the pre-well studies, a drill decision was made to test the main prospect from the APA 2018 application, the Polmak prospect. The 7221/4-1 Polmak well was drilled jointly between PL1027 and PL609. It was spud 10.10.2020 and completed 01.12.2020 with TD in Late Permian strata.

The main objective of the well was to prove hydrocarbons in Triassic aged sandstones within the Kobbe formation of the Polmak prospect. The well encountered indications of hydrocarbons in a 9 meter interval in poor quality reservoir in the targeted formation and the well was classified as dry.

Post-well studies included sedimentology, biostratigraphy and provenance studies focused on understanding the results in a larger tectono-stratigraphic setting. The post-well studies resulted in a shift of focus to primary prospectivity within the Ørn Formation play, and the Havert Formation play in the northern part of the license (Fig. 1.2).

4 Prospect update report

The 7221/4-1 Polmak well was dry (shows) and with poorer reservoir than predicted. Fig. 1.1 shows the outline of the original Polmak prospect; Fig. 4.1 gives a summary of the pre-well resources estimated for the Polmak prospect, and additional leads. The Polmak prospect, as well as the remaining leads in the Kobbe play in the license, are considered to have been adequately tested by this well.

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)						
Polmak	P	Oil&Gas	2.75	69.69	164.00	1.72	10.57	22.80	0.20	80.0	Kobbe Fm./ Mid Triassic	1270	Johan Castberg	30
Anarjok North	L	Oil&Gas	0.54	21.90	55.48	0.17	2.75	6.61	0.14	100.0	Havert Fm./ Early Triassic	1360	Johan Castberg	47
Anarjok South	L	Oil&Gas	0.65	19.70	46.03	0.28	2.64	6.02	0.14	80.0	Havert Fm./ Early Triassic	1170	Johan Castberg	25
Karasjok M	L	Oil&Gas	0.33	44.15	105.55	0.12	49.54	118.52	0.14	100.0	Klappmyss Fm./ Mid Triassic	1140	Johan Castberg	45
Karasjok North	L	Oil&Gas	1.69	35.89	83.61	2.83	9.19	17.47	0.14	100.0	Klappmyss Fm./ Mid Triassic	840	Johan Castberg	43
Karasjok South	L	Oil&Gas	3.64	36.83	84.87	1.07	5.47	11.80	0.14	95.0	Klappmyss Fm./ Mid Triassic	1340	Johan Castberg	35

Fig. 4.1 APA 2018 resource potential for Polmak and additional leads

Of the remaining Triassic prospectivity in PL1027, Havert Formation prospects and leads, and Klappmyss leads, remain in the prospect inventory (Fig. 1.2). It has been evaluated that the Polmak well did not test Klappmyss or Havert formations in an optimal location, and that prospectivity in these plays cannot be excluded elsewhere in the license. The biostratigraphic and tectono-stratigraphic understanding, combined with seismic interpretation, may indicate remaining potential. However because of the dry well, and through studies of near-by analogues, remaining Triassic prospects and leads are re-evaluated post-well with lower probabilities of discovery and decreased volume potential (compared to pre-well). Reservoir presence and trap retention are the main risk factors.

As a result, the Kråktind Ørn prospect (Fig. 4.2), with Paleozoic-age Ørn Formation reservoir, is considered to be the main prospect in the updated post-well license evaluation, due to greater predicted volumes and probability of discovery (Table 4.1). The Ørn play is proven by the near-by Neiden discovery well 7220/6-2 R; good oil shows were encountered in the Ørn Formation in near-by 7220/6-3 Børselv.

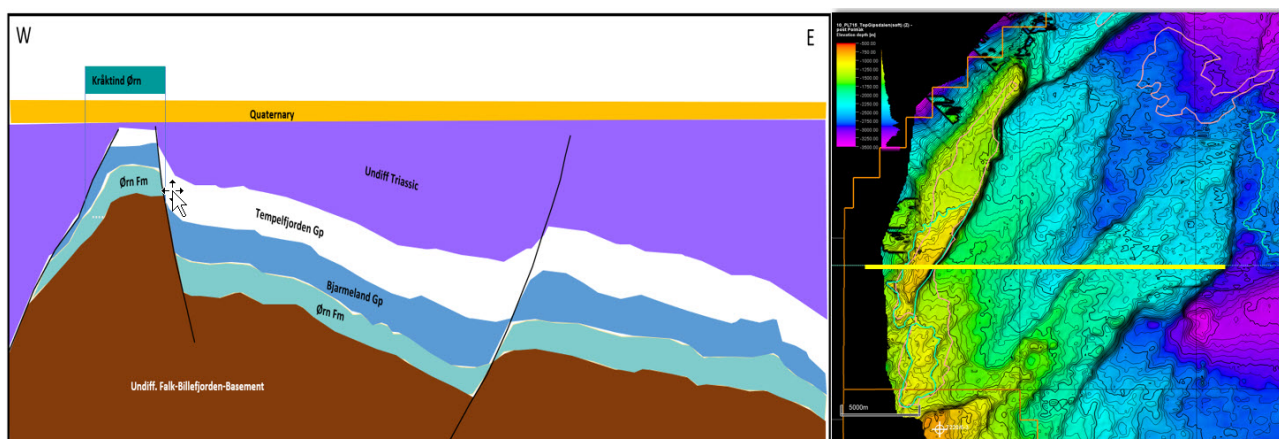


Fig. 4.2 Geosection through Kråktind Ørn prospect
West-East geosection through the Kråktind Ørn prospect. Location of the line is shown in the Top Ørn Fm depth map (right).

Table 4.1 In-place and recoverable oil volumes, and chance of discovery, for remaining prospectivity in PL1027

Prospect	P/L	Case	STOOIP MSM ³			Recoverable resources liquid MSM ³			CoS (oil) (%)	Depth Apex (mMSL)	Reservoir
			P90	P50	P10	P90	P50	P10			
Kråktind Ørn	P	oil&gas	1.9	17.6	47.6	0.8	8.0	24.3	30	910	Ørn Formation
Børselv North Ørn	P	oil&gas	1.3	9.1	21.0	0.6	4.1	10.8	30	1090	Ørn Formation
Anarjok North	P	oil&gas	1.1	9.8	29.8	0.5	4.5	15.5	10	1275	Havert Formation Hyse Mb
Anarjok South	L	oil&gas	3.7	13.9	35.3	1.5	6.5	18.6	9	1100	Havert Formation Hyse Mb
Sautso	L	oil&gas	2.3	13.0	39.0	1.0	5.9	20.3	9	1430	Havert Formation Hyse Mb
J1 Jurassic	L	oil	3.8	15.5	30.5	1.2	6.3	13.2	19	790	Realgrunnen Subgroup
Åtind Ørn	L	oil	2.4	50.8	135.6	1.1	23.2	66.4	6	2540	Ørn Formation
Kråktind-Børselv Røye	L									530	Røye Formation
Gryllefjord Røye	L									1320	Røye Formation
Ifjord Røye	L									1645	Røye Formation
Karasjok North	L										Klappmyss Fm Sild Mb
Karasjok South	L										Klappmyss Fm Sild Mb
Rio de la Plata	L										Kobbe Fm Øyepål Mb

5 Technical evaluation

A post-well evaluation of remaining prospectivity was carried out. Outlines of the remaining prospects and leads are shown in Fig. 1.2. Due to the distance to existing infrastructure that can be considered for tie-back options (120 km to Wisting, 150 km to Goliat), prospects must have stand-alone volume potential to be considered as drilling candidates, and none of the remaining prospects have. Most of the prospectivity has low discovery probability in addition (Table 4.1), due to trap and reservoir concepts not proven by the Polmak well.

Based on the negative Polmak well results and the G&G evaluation of post-well remaining prospectivity, (Table 4.1), no potential drilling candidates have been identified.

6 Conclusion

There still remains resource potential in the PL1027 area, as evident from the numerous prospects and leads defined within several different play models. However, most of the structures are steep traps, and predicted to be underfilled given observations of hydrocarbon column heights in near-by analogue discoveries. This results in limited volume potential.

None of the remaining prospects have stand-alone volume potential in the most-likely cases. A cluster of discoveries would need to be made in PL1027 in order to have a development scenario; this scenario is evaluated as low-probability, given the combined volume and risk for the prospect inventory. For these reasons, the decision has been made to relinquish PL1027.