

PL 625 Relinquishment Report

November 2016

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1. Summary and conclusion

The evaluation of PL 625 resulted in a prospect portfolio consisting of the Kopervik prospect and the adjacent Åkra lead. Well 25/10-12 S tested the Kopervik prospect with Upper Jurassic Draupne Formation sandstones being the primary objective. The well was dry. Main risks for the prospect were migration and base seal. Based on subsequent analysis of well data and interpretation of seismic data the volume potential of Kopervik up-dip well 25/10-12 S is considered very high risk and too small to justify another exploration well. Consequently, the decision to relinquish the license was made by the partnership in October 2016.

2. Introduction

PL 625 comprises 30.2 km² of block 25/10. The license is located on the western flank of the Utsira High, 175 km west of Haugesund and approximately 20 km northwest of the Johan Sverdrup discovery (Fig. 1).

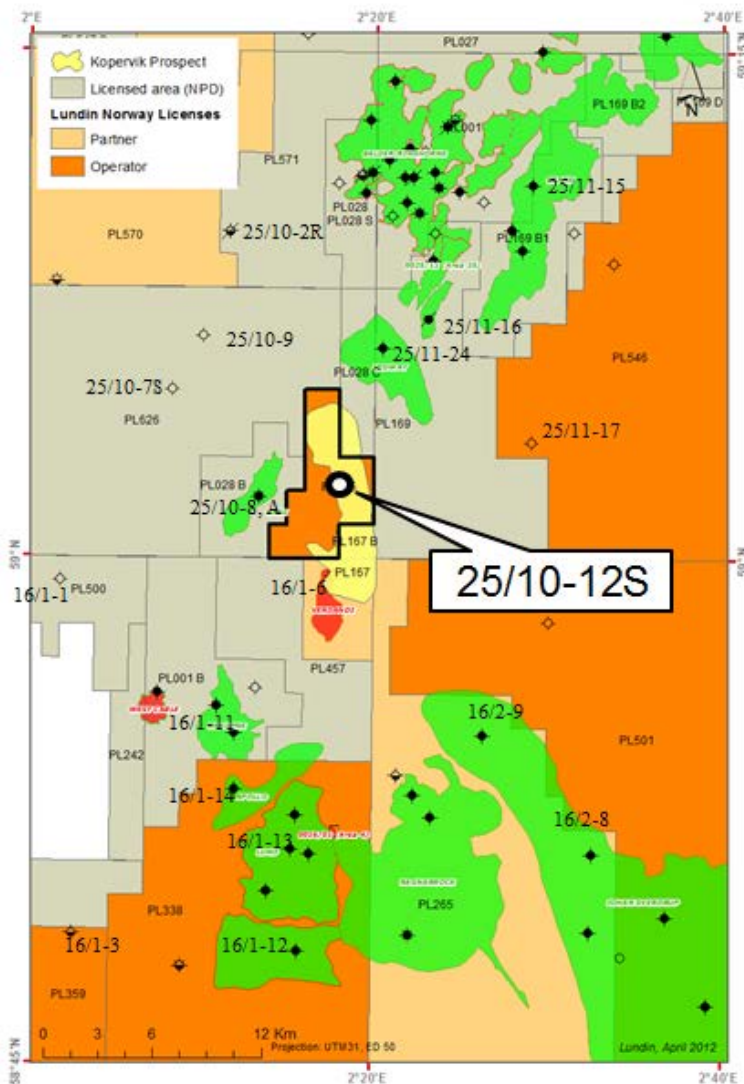


Figure 1: PL 625 location and well 25/10-12S.

3. License award

PL 625 was awarded as part of TFO 2011 on 3rd February 2012, with a five years initial license period to Lundin (40% and operator), Bayerngas (20%), Maersk (20%) and Petoro (20%). The work programme was to drill one exploration well within 2 years from award. The initial period was extended with one year and the 25/10-12 S well was drilled within the new deadline 01.03.2015. Current Decision to concretize milestone is 01.03.2017.

The 2011 APA application identified a prospect comprising Jurassic reservoir target (Fig. 2) and a small 4-way dip closure in Paleocene and Volgian; the Åkra lead.

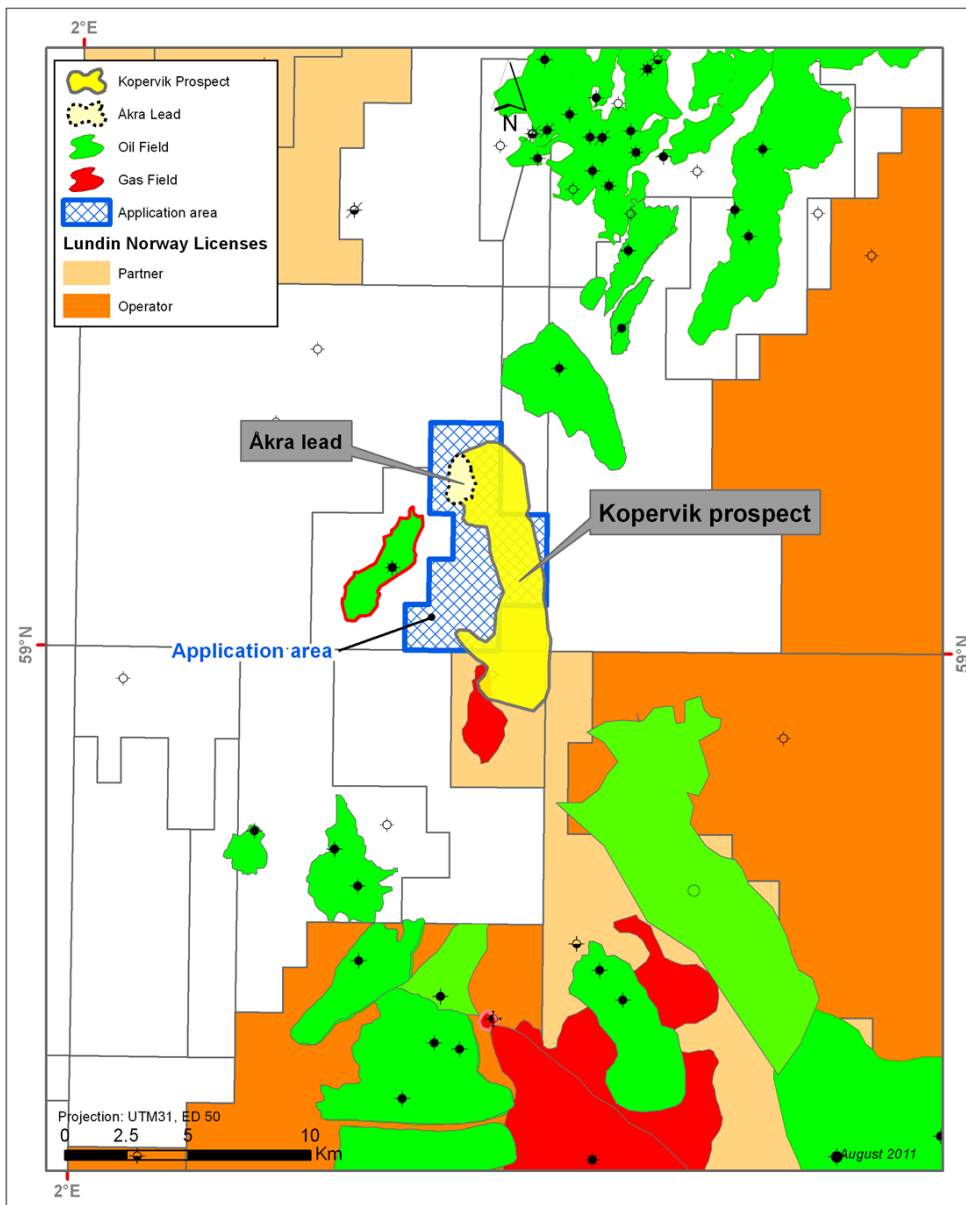


Figure 2: Prospectivity portfolio at TFO 2011.

4. Completed work program and special studies

The original work commitment was to drill an exploration well within license PL 625. This obligation was fulfilled by exploration well 25/10-12 S and sidetrack 25/10-12 ST2 in 2014.

Geophysical studies utilized the 3D survey LN12M02. Reinterpretation of the Kopervik prospect and this data set was used to select the well location. LN12M02 is the main 3D seismic survey in the common database for PL 625 and several data cubes (including in-house reprocessing by Lundin) have been used in the interpretation. Figure 3 shows the coverage of the survey in the PL625 area.

Post well evaluations include biostratigraphy, sedimentological description and interpretations, geochemical analysis and reprocessing parts of LN14M02.

Depth conversion has been done using calibrated stacking velocities from LN0902 (Geostreamer) and PGS survey NS-SV-MDFG-2-2. Offset wells 16/1-2, 16/1-6 A, 16/2-2, 16/2-9 S, 25/10-8, 25/10-24 and 25/11-24 have been used to adjust depth surfaces at well locations. Average stacking velocities have been used for top Shetland Group. Base Cretaceous, Base Upper Jurassic, Top Statfjord and Top Zechstein have been depth converted using a layer-cake model. Filtered seismic velocities have been generated for each seismic interval.

Postdrill analysis of well 25/10-12 ST2 shows that the reflectors interpreted to be the Volgian Unconformity and Near-top Statfjord were both picked too deep.

As part of the post-well prospectivity analyses, Lundin traded and evaluated well 25/11-28, located east of PL 625 that was drilled and completed in October 2015.

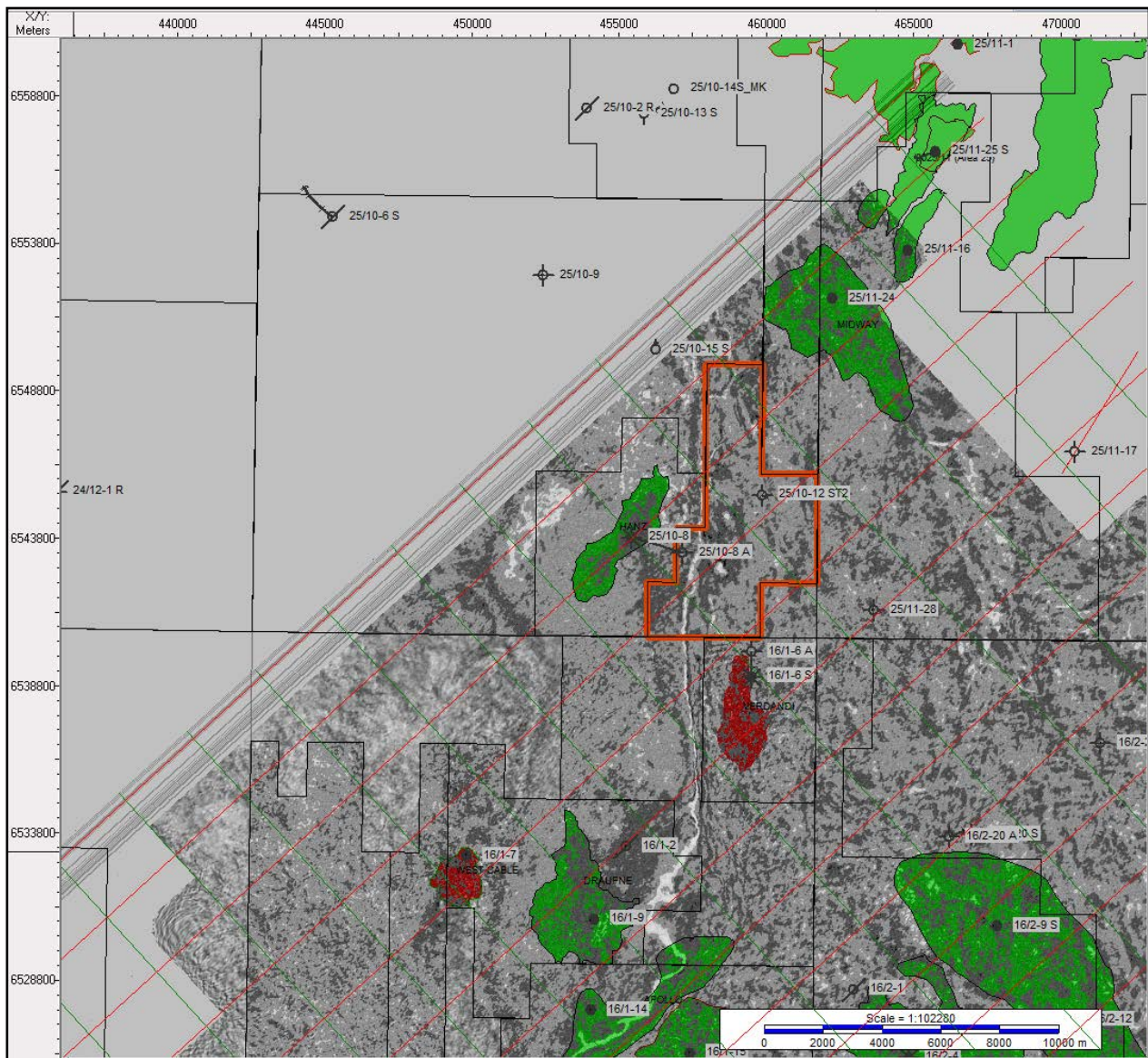


Figure 3: A time-slice through LN12M02 shows the seismic coverage of this survey in the PL625 area.

5. Pre-drill prospectivity evaluation

The Kopervik prospect is situated on the Haugaland High (Utsira High south), east of the Gudrun Terrace. The prospect is located up-dip from the Hanz discovery (25/11-8) and down-dip from the Volgian Midway discovery (well 25/11-24).

The Kopervik prospect was prognosed as a stratigraphically defined Upper Jurassic (Volgian) Draupne Formation sand pinch-out trap onlapping unconformably onto older sediments including the Staffjord Formation and basement. Upper Jurassic Volgian sandstones are a proven prolific play in the area (e.g. Apollo, Hanz, Johan Sverdrup). The presence of Middle Jurassic Hugin and Sleipner Formations within the Kopervik closure was also considered possible, pinching out eastward.

The prospect trap covered a closure of approximately 26 km², with the apex at approximately 2000 m MSL. The top seal was expected to be formed by Draupne Fm and Lower Cretaceous shales with the largest risk associated with the base seal potential of the Statfjord Formation. Base case pre-drill volumes in place was estimated to be 145 mmbbl (with 78% on block) and thickness of reservoir units were estimated to range from 0 to 100 m. A base Cretaceous depth map showing the well location is shown in Figure 4, and seismic-cross sections are shown in Figure 5 and Figure 6. Figure 7 illustrates the seismic tie to well.

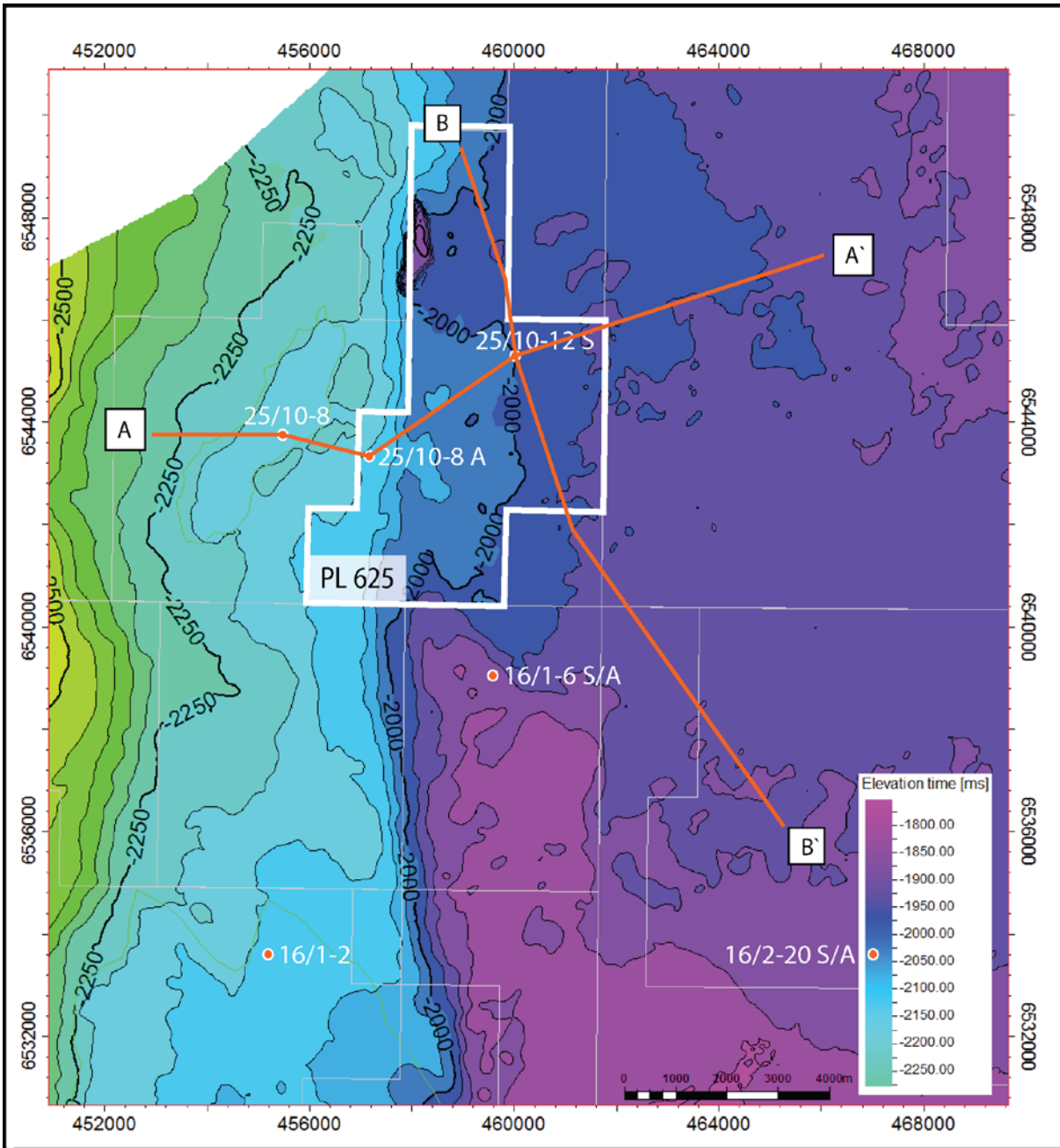


Figure 4: Well 25/10-12 S and ST2, base Cretaceous time map.

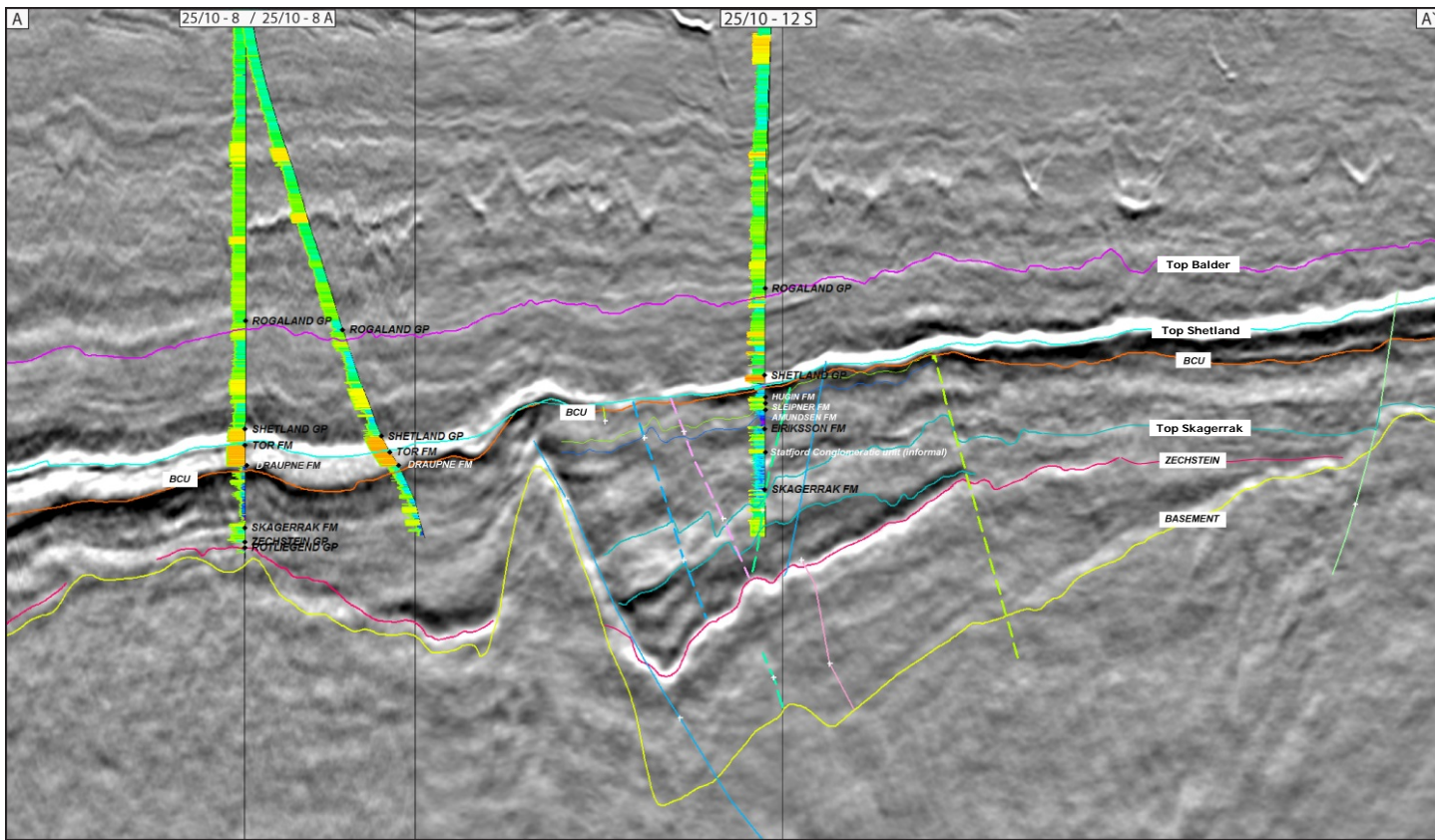


Figure 5: Seismic section A-A' through 25/10-8, 25/10-8 A and 25/10-12 ST2.

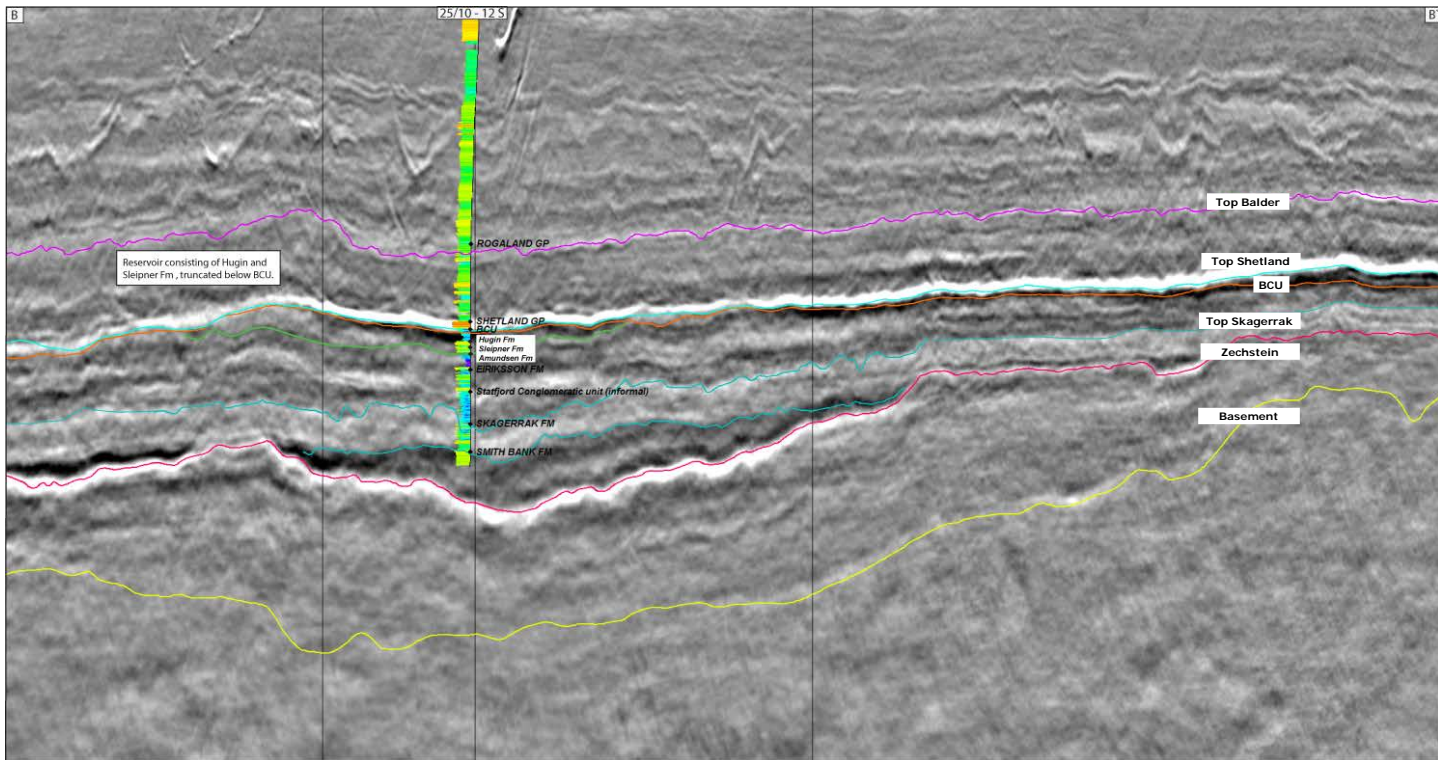


Figure 6: Seismic section B-B' through 25/10-12 ST2.

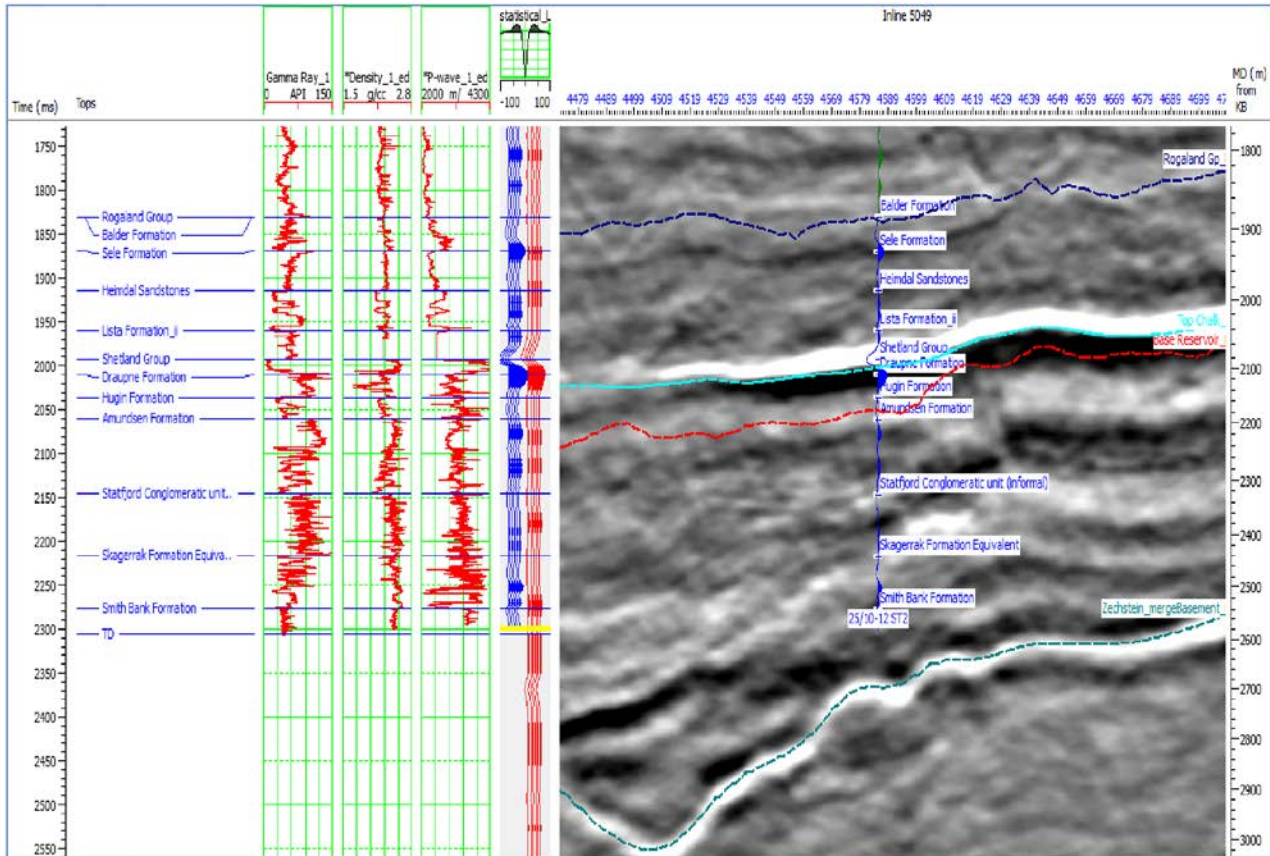


Figure 7: Seismic tie to well 25/10-12 S.

The Åkra lead comprised a well-defined 1.7 km² four-way closure in Paleocene and Volgian in the northern part of the license. Due to limited volume potential Åkra was classified as a lead, despite high probability of discovery in Paleocene.

6. Well results

25/10-12 S and 25/10-12 ST2

Well 25/10-12 S was planned as an S-shaped exploration well at the following location:

X: 460041.42 m E	Y: 6545258.10 m N	UTM Zone 31N
Lat: 59°2'36.7"N	Long: 2°18'13.1"E	ED-50
Line intersection: (LN12M02)	Crossline 4597	Inline 2519

The well was spudded on the 27.10.2014 and reached a TD of 1800.0 m RKB in the Horda Fm. The well was plugged and abandoned on the 18.01.2015.

Well 25/10-12 S was drilled to a total depth of 1800 m MD RKB in the Horda Formation. While running the 13 3/8" casing, the casing got differentially stuck with the shoe at 1520 m MD RKB. The well was plugged back to the 20" casing shoe and sidetracked as 25/10-12 ST2. The latter was drilled to a total depth of 2597 m MD RKB, 2570.2 m TVD RKB in the Smith Bank Formation. Four conventional cores were cut in the sidetrack. Wireline logging was attempted at TD of the 8 1/2" hole, however,

due to problems below the 9 5/8" casing shoe, no logging was possible. Pressure points were acquired using TesTrak LWD tool.

Well 25/10-12 ST2 encountered poorly developed Upper Jurassic Draupne sandstones underlying a thin Lower Cretaceous sequence. Middle Jurassic Hugin and Sleipner sandstones and conglomerates were also present, overlapping unconformably on to the Lower Jurassic Amundsen Formation shales. However, no hydrocarbon column was present.

The LWD pressure measurements showed a complex depletion history with five different pressure regimes implying several sealing intervals. The pressure points in the Triassic were hydrostatic. Some weak oil-shows were described, but no stain or cut were observed. No well testing was performed as the well was dry. The well was plugged and abandoned as a dry well.

The pre and post drilling correlation for the final wellbore, 25/10-12 ST2, is shown in Figure 8. Average reservoir properties for the reservoir sections are shown in Table 1.

Results versus prognosis

The formation tops associated with the main interpreted seismic reflectors were within given uncertainty ranges. The Hordaland Group contained more sandy intervals (Oligocene sandstones) than anticipated based on offset well. The detailed subdivision of the pre Cretaceous interval had not been prognosed which partly was due to the lack of tie to wells for this interval.

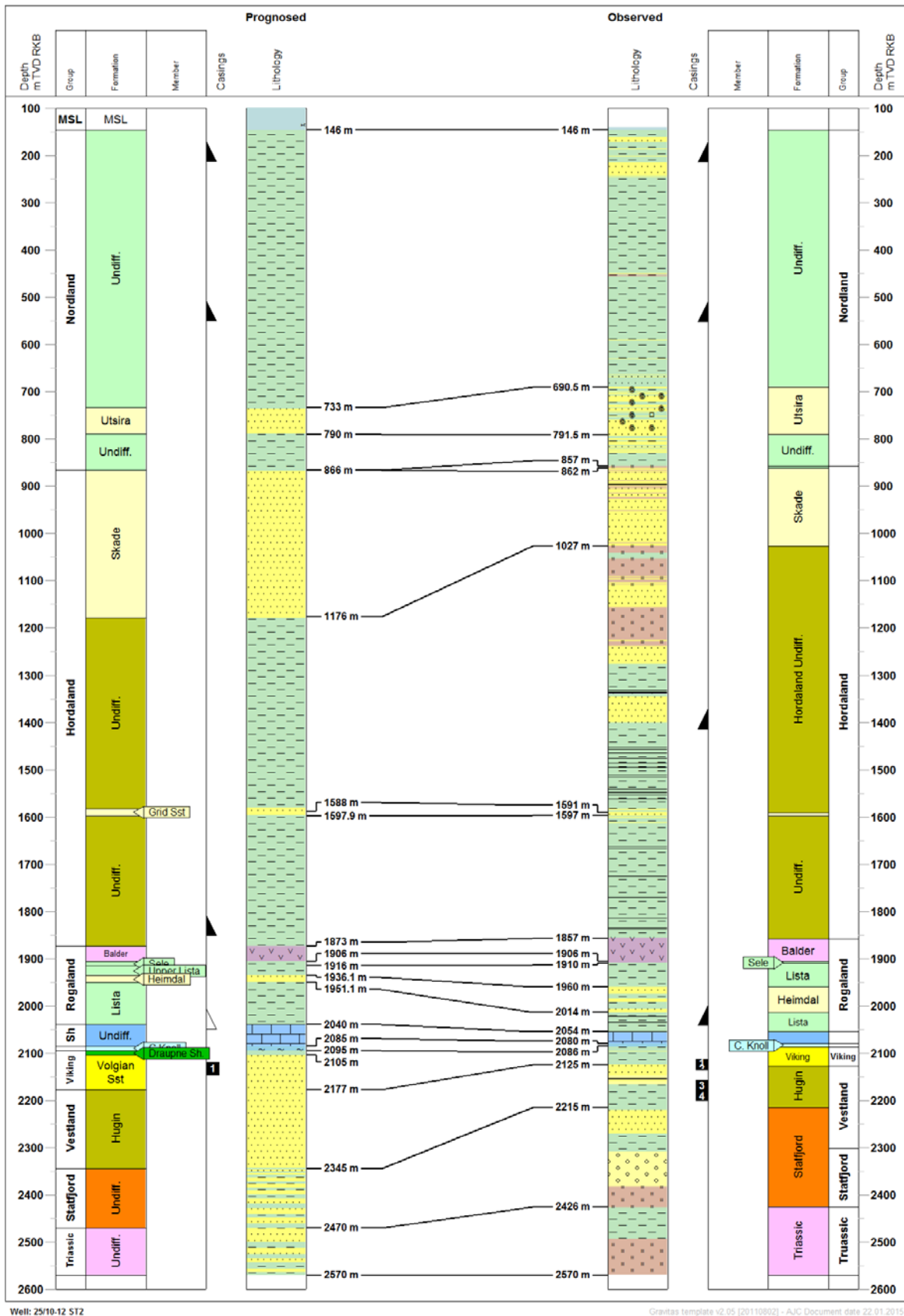


Figure 8: Well 25/10-12 ST2, pre and post drilling correlation. Depths in TVD.

Table 1: Well 25/10-12 ST2, average reservoir properties.

Zone Name	Interval	Gross	Reservoir Summary			
			Net	N/G	PHIE	SW*
	m MD RKB	m	m		frac	frac
Draupne	2114.0-2125.0	11	2.2	0.2	0.192	1
Hugin	2125.0-2153.0	28	1.45	0.05	0.145	1
Hugin	2153.0-2174.0	21	18.3	0.87	0.243	1
Sleipner	2174.0-2193.5	19.5	18.2	0.93	0.209	1
Dunlin	2193.5-2241.0	47.5	0	0	-	-
Staffjord	2241.0-2439.0	198	51.4	0.26	0.215	1
Triassic	2439.0-2580.0	141	16.1	0.11	0.179	1

The following cut-off criteria have been used for all formations:

Net reservoir:

Volume of clay: ≤ 0.5

Porosity: ≥ 0.1

No pay has been calculated due to lack of hydrocarbons in the well.

The petrophysical interpretation plot is presented in Figure 9.

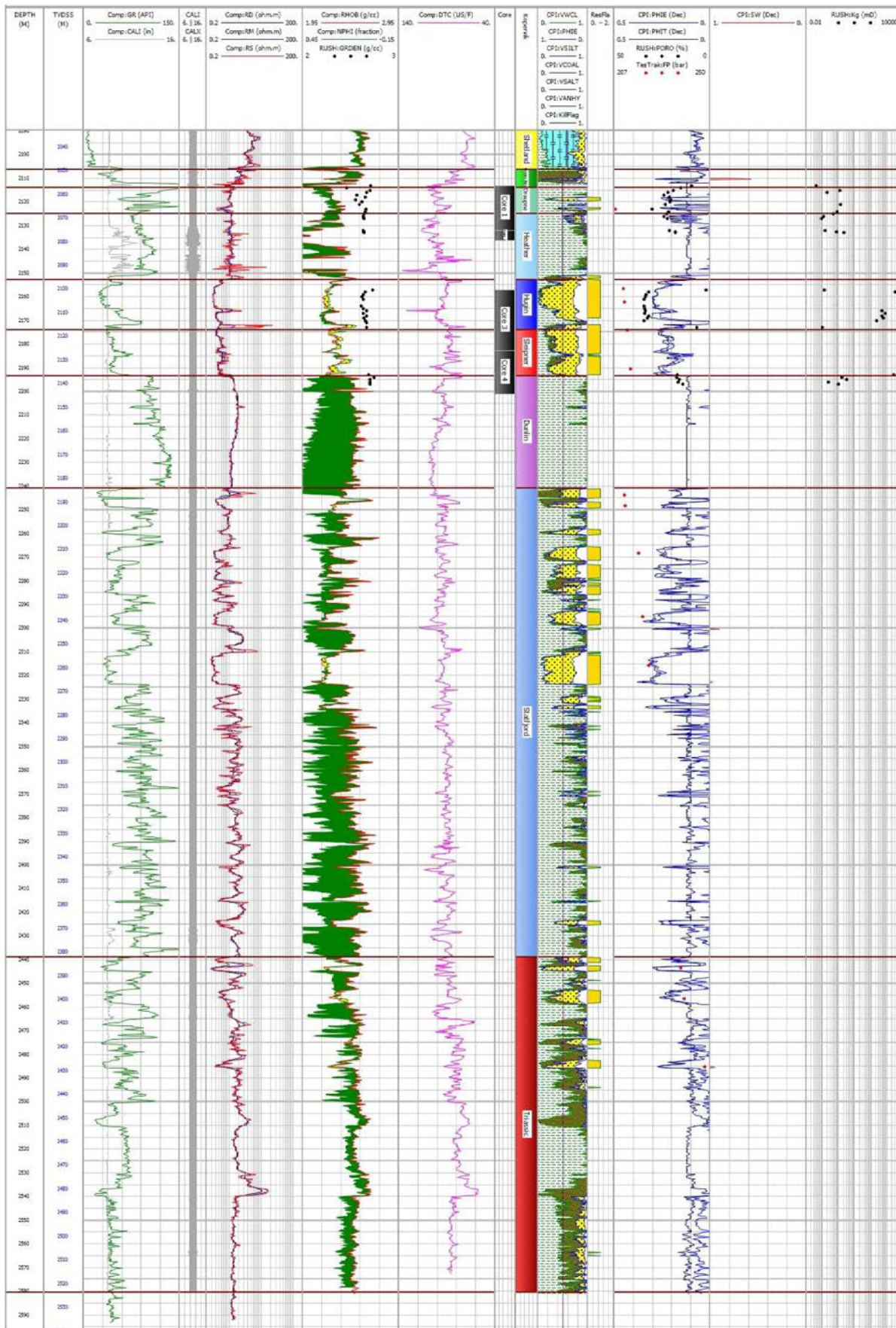


Figure 9: Well 25/10-12 ST2, petrophysical interpretation.

7. Remaining prospectivity evaluation

The remaining prospectivity in PL 625 is interpreted to be low. The well drilled within the license area (Kopervik, 25/10-12 S and 25/10-12 ST2) was dry. Subsequent analysis of well data and interpretation of seismic data does not indicate further prospectivity within the license.

Lundin has traded and evaluated well 25/11-28, located east of PL 625 that was drilled and completed in October 2015. The well data evaluation does not have a positive impact on how Lundin regards the prospectivity in PL625. Furthermore, the recently completed well 25/10-15S (Rovarkula) in PL626 does not upgrade the area.

There are consequently no discoveries in the PL 625 licence to make a decision to concretize (BOK) or future prospects to drill within the licence acreage. The remaining prospectivity is considered unattractive and a decision to relinquish the license has been made by the partnership.