PL 859 Licence status report

Summary

PL859 is situated on the easternmost part of the Bjarmeland Platform and the Haapet Dome in the Southeastern Barents Sea, a frontier area 400 km north of the coast of Norway and 20 km west of the Russian border. The main prospects were Korpfjell, Elvenes, and Korpfjell North. Korpfjell and Elvenes are large 4-way dip closures, while Korpfjell North comprises small 3-way dip closures situated at the crest of several horsts and rotated fault blocks. Due to the large size and prospectivity at multiple levels in the Jurassic and Triassic section, the hydrocarbon potential of this area during the 23rd concession round was considered substantial.

Two exploration wells have been drilled. Well 7435/12-1 (Korpfjell) was drilled in 2017 to target the Latest Triassic - Early Jurassic Realgrunnen Subgroup. The well made a non-commercial gas discovery (recoverable 4.8 GSm^3) in good quality sandstones of the Nordmela Formation. Secondary targets in the Middle – Late Triassic Snadd and Kobbe formations were proven to have poor reservoir quality with only traces of gas. Well 7335/3-1 (Korpfjell Deep) was drilled in 2019 m downflank of a potential gas accumulation in the Realgrunnen Subgroup to target potential reservoir intervals in the deeper Middle and Lower Triassic section. Moderate to good reservoir properties were proven in the Realgrunnen Subgroup, and intervals of tight sandstones were encountered in the Triassic Snadd, Kobbe, Klappmyss and Havert formations. Traces of gas were detected mainly in sandstones of the Snadd and the Lower Havert formations. The well is classified as dry. There were no signs of oil shows in either of the wells.

The thermogenic origin of the gas found in the Realgrunnen Subgroup and the lack of oil shows indicate a gas-generating petroleum system in this area. The most likey source is marine shales of the Late Permian Ørret Formation. The Late Jurassic Hekkingen Formation is considered immature with regard to oil generation. [redacted] The potentially oil-prone source rock of Late Permian age, the Ørret Formation, was not reached by the either of the wells.

The remaining exploration potential in PL859 is primarily related to a cluster of small untested closures within the Realgrunnen Subgroup in Korpfjell, Korpfjell North and Elvenes. These structures most likely contain non-commercial gas volumes. Based on the well results the oil potential in PL859 is downgraded. As no further drilling candidates have been identified the partnership has agreed to relinquish the licence.

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1 Licence history

Licence: PL859 - blocks 7435/9, 7435/10, 7435/11, 7435/12, 7436/10, 7335/1, 7335/2, 7335/3, 7436/1, 7434/7, 7434/8 and 7434/9

Awarded: June 10th 2016

Licence period: Expires June 10th 2022
Initial period: 6 years

Licence group:

Equinor Energy AS	30% (Operator)
DNO Norge AS	20%
Lundin Norway AS	15%
Conoco Phillips Skandinavia AS	15%
Petoro AS	20%

Licence area: 3409,424 km^2

Work program: Within 3 years drill two firm exploration wells, one to be drilled 200 m into the Kobbe Formation or to a minimum depth of 1100 m, the other to be drilled into salt or to a minimum depth of 4000 m. Within 5 years drill one conditional well within the blocks 7434/7, 7434/8 or 7434/9. Dispensation from drilling of the conditional well to be submitted within 4 years, if there is no basis for drilling this well. The dispensation was approved 01.04.20.

Meetings held:

17.06.2016	MC start-up meeting
19.07.2016	EC meeting
08.11.2016	ECMC meeting
15.12.2016	EC work meeting
06.03.2017	EC meeting
05.04.2017	EC meeting
31.05.2017	ECMC meeting
24.08.2017	EC meeting
11.10.2017	EC meeting
07.11.2017	ECMC meeting
10.01.2018	EC work meeting
22.02.2018	EC meeting and core workshop
20.03.2018	EC meeting
12.06.2018	ECMC meeting
06.11.2018	ECMC meeting
20.06.2019	ECMC meeting
05.11.2019	ECMC meeting

Work performed:

2016:	Licence start-up
	Well planning 7435/12-1 (Korpfjell)
	Acquisition of site survey ST16317
2017:	Well planning 7435/12-1 (Korpfjell)
	Drilling of Well 7435/12-1 (Korpfjell)
	Postwell evaluation
	Korpfjell discovery evaluation report (gas)
	Initiation of well planning 7335/3-1 (Korpfjell Deep)
	Acquisition of site survey ST17314
2018:	Well planning 7335/3-1 (Korpfjell Deep)
	Evalution of remaining prospectivity based on the results of Well 7435/12-1 (Korpfjell)
2019;	Well planning 7335/3-1 (Korpfjell Deep)
	Drilling of Well 7335/3-1 (Korpfjell Deep)
	Postwell evalution and evaluation of remaining prospectivity based on the well results
2020:	Decision made to surrender the licence

Reason for surrender:

The exploration potential of PL859 has been evaluated on good quality, 3D seismic data (ST14005) and a reprocessed PSDM seismic cube (ST14005Z15), and has been tested by two wells on the Korpfjell structure. A gas discovery was made in the Realgrunnen Subgroup (rec. 4.8 GSm^3) in good reservoir as prognosed. The secondary targets, sandstones of Triassic age, were dry with reservoir quality much poorer than expected. No signs of oil shows were detected in either of the wells. The remaining untested hydrocarbon potential in PL859 consists of small gas prospects which are considered non-commercial. The potential for a large oil-volume prospect is very unlikely (<1%). No further drillable prospects are identified in the licence.

2 Database overviews

An overview of the common seismic database is shown in Figure 1, Table 1 and Table 2. PL859 is covered by the 3D broadband seismic survey ST14005 (~5600 km^2) and CWI processed data (3000 km^2) including SWIM, KPSDM and CBM. The seismic quality is generally good; it has been broadband processed (2 ms) which gives high resolution in the shallow section. The CBM data gave improved structural imaging at deeper levels. The licence is also covered by 3D-CSEM data (BSSE1401 and BSSE1402). However, these data are not a part of the common database.

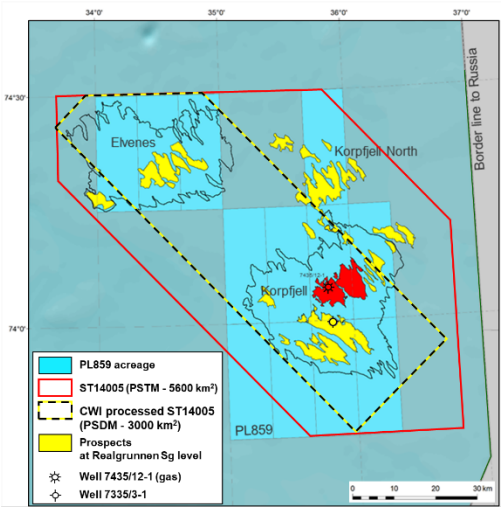

Figure 1: Common seismic database, PL859.

Table 1: PL859 common seismic database.

Seismic survey	Survey type	Operator	Year acquired	Year reprocessed	Area (km^2)	Quality
ST14005	3D	Groupshoot/PGS	2014	2015	5600	Good

Table 2: Overview of the ST14005 seismic volumes.

ST14005 Seismic volumes				
Survey Name	**Migration**	**Volumes**	**Area (km^2)**	**Comments**
ST14005T15	PSTM	Fullstack, 4 angle stacks	5600	
CWI processed ST14005 (complete waveform inversion)				
ST14005Z15S	PSDM - SWIM	Fullstack, 4 angle stacks	3000	Improved imaging of the shallow section
ST14005Z15	PSDM - Kirchhoff	Fullstack, 4 angle stacks	3000	Improved resolution of possible thin sheet-like sand at top Realgrunnen Sg
ST14005Z15 Beam	PSDM - CBM	Fullstack	3000	Better structural imaging at deeper levels

The common well database for PL859 includes all the released and relevant wells in the Barents Sea. An overview of the most relevant wells in the common database is shown in Table 3. The wells drilled within the licence have been emphasized in the evaluation of the remaining prospectivity.

Table 3: The common well database for PL859 includes all the released and relevant wells in the Barents Sea and the wells drilled within the licence. The table is listing the most relevant wells in the common database applied for evaluation of the prospectivity in PL859.

Well name	Operator	Year	TD MD (m)	TD Fm	Discoveries/Shows
7435/12-1 Korpfjell	Equinor	2017	1540	Kobbe Fm	Gas discovery in Nordmela Fm.
7335/3-1 Korpfjell Deep	Equinor	2019	4300	Havert Fm	Traces of gas in Snadd and Havert fms.
7225/3-1 Nordvarg	Total	2011	4150	Isbjørn Fm	Gas discovery in Stø, Snadd, Kobbe and Havert fms.
7225/3-2 Nordvarg 2	Total	2013	2210	Klappmyss Fm	Gas discovery in Snadd and Kobbe fms.
7226/2-1 Ververis	StatoilHydro	2008	2992	Havert Fm	Low saturation gas in Realgrunnen Subgroup. Gas discovery in Kobbe Fm.
7224/6-1 Arenaria	StatoilHydro	2008	2338	Kobbe Fm	Low saturation gas in Realgrunnen Subgroup. Gas discovery in Kobbe Fm.
7222/6-1S Obesum 1	StatoilHydro	2008	2895	Havert Fm	Gas and oil discovery in Snadd Fm (Ladinian). Residual oil in Kobbe F.
7223/5-1 Obesum 2	StatoilHydro	2009	2549	Klappmyss Fm	Gas discovery in Snadd and Kobbe fms.
7324/9-1 Mercury	Statoil	2014	1100	Snadd Fm	Gas discovery in Stø Fm.
7324/7-1S Wisting Alt	OMV	2013	2479	Kobbe Fm	Gas discovery in Snadd Fm (lower).
7324/8-1 Wisting Ctrl	OMV	2013	930	Snadd Fm	Oil discovery in Stø, Nordmela and Fruholmen fms.
7228/9-1	Norsk Hydro	1990	4576	Ørn Fm	Oil and gas shows in Jurassic and Triassic.
7229/11-1	Shell	1993	4630	Ørn Fm	No hydrocarbons.
7131/4-1	Statoil	2005	1295	Kobbe Fm	Shows in Fruholmen Fm.
7228/2-1	Mobil	1989	4300	Havert Fm	Oil shows in Realgrunnen Subgroup and Snadd Fm.

3 Results of geological and geophysical studies

Wells 7435/12-1 (Korpfjell) and 7335/3-1 (Korpfjell Deep) tested segments A and B of the Korpfjell prospect respectively. A list of post-well studies is shown in Table 4.

Table 4: Post-well studies in PL859.

Study	Documentation	
	Meetings	Report
Biostratigraphy	EC 22.02.18, ECMC 05.11.19	Statoil (2018a), Equinor (2020)
Petrophysics	EC 22.02.18	Statoil (2018a), Statoil (2018d), Equinor (2019b)
Geochemistry	EC 11.10.17, EC 22.02.18, ECMC 07.11.17, ECMC 12.06.18, ECMC 05.11.19, NPD 31.01.20	Statoil (2018a; 2018c), APT (2017; 2018; 2020), FIT (2018; 2020), Equinor (in.prep.)
Sedimentology	EC 22.02.18, ECMC 05.11.19	Statoil (2018a)
Image log interpretation		Schlumberger (2018)
Petrology	EC 22.02.18, ECMC 05.11.19	Statoil (2018a), Statoil (2018e), Equinor (2019d)
Depth conversion	ECMC 20.06.19,	Statoil (2018a)
AVO & seismic well-tie	EC 11.10.17, ECMC 06.11.18 (Elvenes), ECMC 20.06.19	Statoil (2018a), Equinor (2019a)

Results: AVO and seismic welltie

The seismic tie of Well 7435/12-1 to the KPSDM processed volume of survey ST14005 is in general good and consistent with prewell interpretations (Statoil, 2018a). However, the sonic tool were lost in the deepest section which resulted in difficulties obtaining a good correlation between well-log synthetics and the seismic at this level. Seismic modelling on fluid-substituted logs at Realgrunnen Subgroup level demonstrates a clear separation between the fluid phases in the synthetic traces. A stronger anomaly is expected from gas than from oil. The seismic tie of Well 7335/3-1 to survey ST14005 using full-fold seismic to acoustic impedance, is also good (Equinor, 2019a).

The seismic DHIs observed in the Realgrunnen Subgroup are validated by Well 7435/12-1. A strong AVO anomaly with good structural conformance was tested by the well which proved a gas-water contact and an underlying 3-4 m thick transition from low saturation gas to water. The closure is filled almost to spill. [redacted]

Results: Biostratigraphy

[redacted]

Results: Depth conversion

The predrill velocity model consisted of six horizons: Seabed, Top Hekkingen Formation, Top Snadd Formation, Top Kobbe Formation, Top Klappmyss Formation and Top Permian. As result of drilling Well 7435/12-1 the interval velocity in Snadd-Kobbe and Kobbe-Klappmyss has been increased by approximately

7%, while the interval velocity between Klappmyss-Top Permian is kept unchanged at 4000 m/s. In general the formation tops down to Top Havert Formation were encountered almost as prognosed and within the uncertainty range, but the tops in the deeper parts of the well came in deeper than prognosed. This indicates that the actual velocity in Lower Triassic was higher than predicted.

Results: Geochemistry

Source rock screening:

The Late Jurassic Hekkingen Formation was not sampled in either of the Korpfjell wells. High TOC was detected in coal and coaly shales of the Late Triassic Snadd Formation. These layers may have the potential to generate gas/condensate and (?)light oil even though a deltaic to terrestrial depositional environment is indicated by sedimentological data. However, the limited thickness and uncertain lateral distribution of the source rock layers does not suggest economic significance. No source rock intervals were identified in the Middle or Lower Triassic succession. A potentially oil-prone source rock of Late Permian age, the Ørret Formation, was not reached by the either of the Korpfjell wells.

Migrated hydrocarbons:

Dry gas was proven in the Realgrunnen Subgroup in Well 7435/12-1. Isotope analysis indicates a thermogenic origin, with generation most likely from marine shales of the Late Permian Ørret Formation. Dry gas in the Late Triassic Snadd sandstones (mud-gas in 7335/3-1) may have been generated in-situ from local coal layers. No definite indications for migrated oil-range hydrocarbons were observed in either of the wells. Very weak fluid inclusions are most likely related to eroded and re-deposited oil-bearing sandstones.

Results: Sedimentology

The 45 m cored section of Well 7435/12-1 correlates with the Nordmela and Stø formations (Statoil, 2018a). The Nordmela Formation reflects deposition in a fluvial- and subsequently tidally-influenced channel complex, culminating with abandonment and unconfined deposition in a tidal embayment. The overlying Stø Formation reflects deposition in an open marine shoreface environment, and is separated from the underlying Nordmela Formation by a Pliensbachian – Toarcian unconformity.

Results: Image log interpretation

Structural and sedimentological interpretation of FMI logs from Well 7435/12-1 verify the regional sedimentological understanding of this area. The uppermost 20 m of the Snadd Formation consists of marine shales, whereas the Fruholmen Formation is characterised by shallow marine shales in lower part passing upwards into more sandy deposits with stacked channels. The Tubåen Formation is characterised by stacked channels showing cross-bedding and occasional pebbly layers. Towards the top channels are more frequently abandoned and filled in by clay deposits. The base of the Nordmela Formation is interpreted to represent tidal flat deposits with bioturbation and foreshore beach sandstones. Above this sand the depositional environment is characterized by stacked channels showing cross-bedding and occasional channel lags. The Stø Formation is only 6.5 m thick and is represented by fine-grained sandstone where bedding has been affected by bioturbation. The Fuglen Formation is characterized by marine shales in which the bedding is almost completely disturbed by bioturbation. Minor faults show a wide spread in strike trends but have a mainly ENE-SWS orientation which is associated with natural fractures and deformed beds in the vicinity. The resistive fractures in the Nordmela Formation have a general strike trend of NE-SW and NW-SE.

Results: Petrology

The postwell petrology study of Well 7435/12-1 is based on core and SWC samples from the Realgrunnen Subgroup and the Snadd and Kobbe formations (Statoil, 2018a; 2018e). For Well 7335/3-1 only SWC samples from the Havert Formation have been studied (Equinor, 2019c). The sandstones of the Nordmela

and Tubåen formations are predominantly fine- to medium-grained quartz arenites and sublitharenites. These good quality reservoir units have average porosity and permeability of 24% and 1000 mD respectively in selected samples. The Stø Formation is thin and tight, the lack of porosity being due to calcite cementation. Sandstones of the Fruholmen Formation have variable grain size and sorting (fine and argillaceous to medium/coarse and clean) and are predominantly represented by subarkoses with occasional sublitharenites. Sandstones of the Late Triassic Snadd Formation are fine- to medium-grained, well sorted sublitharenites with average porosity and permeability of 19% and 50 mD respectively in selected samples. Sandstones in the Middle Triassic Kobbe Formation are argillaceous, fine-grained subarkoses/sublitharenites with dominantly microporosity (average porosity 15-18% and average permeability 0,03-1 mD in selected samples). Sandstones of the Early Triassic Havert Formation are very fine to fine-grained subarkoses and arkosic arenites with high clay content and no effective reservoir properties; sidewall cores show average porosity <7% (maximum 12%) and average permeability <0,005 mD (maximum 0.13 mD). The lack of reservoir quality is attributed to the significant amount of pore-filling detrital clay in combination with mechanical compaction and diagenesis. The feldspar-rich sandstones with metasedimentary rock fragments/cherts in the Triassic – Lower Jurassic section suggest an Uralian provenance. The degree of quartz cementation confirms the predrill estimate of 2 km of Cenozoic uplift and erosion.

Results: Petrophysics

[redacted]

Results: pressure

Using the MDT toolstring in Well 7435/12-1 (Korpfjell, 2017) a gas gradient of 0.05 g/cc was observed in the Nordmela Formation (gas discovery), and further a water gradient of 1.05 g/cc was observed in the Fruholmen and Snadd formations (Statoil, 2018b). Although several attempts were made, no pressure points were obtained in the Kobbe Formation due to the tight lithology. In Well 7335/3-1 no pressure measurements were taken (Equinor, 2019a), although a normal hydrostatic pore pressure gradient is interpreted from seabed down to the lower parts of Havert Formation. A minor pressure increase could be interpreted from sonic data from ca 3350m up to 1.08-1.10 sg EMW, which is also supported by a slight gas increase.

4 Prospect update report

Source and migration

The location of the licence on the easternmost part of the Bjarmeland Platform and the Haapet Dome, was considered favourable for trapping any hydrocarbons migrating from a huge fetch area in the South Barents Basin (Figure 2a). Pre-drill basin modelling indicated that the Late Jurassic Hekkingen/Bashenov source rock was immature or marginally mature in the deepest part of the basin with regard to oil generation. Any hydrocarbons in the licence area were therefore expected to be sourced by the Triassic or Early Jurassic source rocks which have likely charged the gas discoveries on the Russian Barents Shelf (e.g. Shtokmanovskoye Field). The presence of dry thermogenic gas in the Realgrunnen Subgroup in Well 7435/12-1 proves a gas-generating petroleum system. However, based on the isotopic composition of the gas the source rock is most likely marine shales of the Late Permian Ørret Formation. [redacted]

Early – Middle Jurassic reservoirs

Well 7435/12-1 (Figure 3a) encountered good reservoir properties in tidally-influenced fluvial channels of the Realgrunnen Subgroup [redacted] and medium to good properties in the Tubåen and Fruholmen formations. The Stø Formation was thin and tight. The gas saturation was [redacted] which was well below the threshold for the detection of a resistivity anomaly. Well 7435/12-1 proved gas filling of a small closure with DHI support within Korpfjell at Realgrunnen Subgroup level, but the gas volume is considered non-commercial (recoverable 4.8 GSm^3; Figure 3b; Table 5). A medium to good reservoir was encountered in Realgrunnen Subgroup in Well 7335/3-1 without any hydrocarbons as predicted (Figure 3a), because the well location was downflank of a potential gas accumulation.

Triassic reservoirs

The sandstones in the Late Triassic Snadd Formation were the most interesting of the deeper prospects in Korpfjell due to a favourable depositional setting with regard to reservoir presence, limited depth at maximum burial, and the size of the closure at spill (>1100 km^2). The seismic indicated channel sandstones with potentially good reservoir quality. Well 7435/12-1 proved surprisingly poorer reservoir quality than expected [redacted] in water-wet sandstones deposited in the prognosed environment. The Middle Triassic Kobbe Formation was dry and confirmed the pre-well sedimentological model. Sandy intervals were encountered, but both wells demonstrated a lack of effective reservoir. However, the channel system was not tested (Figure 5). [redacted]

Remaining prospectivity

The remaining exploration potential in the licence is primarily related to clusters of small closures in the Realgrunnen Subgroup within the Korpfjell, Elvenes and Korpfjell North structures. Korpfjell and Elvenes are large 4-way dip closures with areas of >800 km^2 and >600 km^2 respectively, while Korpfjell North comprises smaller 3-way dip closures at the crest of horsts/rotated fault blocks (Figure 4a). The Korpfjell exploration

wells tested the largest two closures at Realgrunnen Subgroup level (Figure 3; Figure 4c), Segment A (7435/12-1) and Segment B (7335/3-1). Numerous smaller closures on Korpfjell remain untested. Most have AVO anomalies which indicate the presence of small gas accumulations, and some are supported by flatspots. The Korpfjell North and Elvenes prospects (Figure 4b,d,e) also remain untested, as these are considered as 'look-alikes' to Korpfjell. Based on the well results and overall understanding of the licence area, all the remaining untested closures at Realgrunnen Subgroup level are evaluated as pure gas prospects. A prospect update summary is shown in Table 5.

Realgrunnen Subgroup

Korpfjell
Well 7435/12-1 tested the Realgrunnen Subgroup in segment A, which displayed strong DHIs in terms of an obvious flatspot and an amplitude/AVO anomaly with depth conformant shut-off along the spill contour (Statoil, 2018a; Figure 3b). A small non-commercial discovery of 4.8 GSm^3 recoverable gas was made in the Nordmela Formation (Table 5). Segment A is almost splitted in two segments, where the northeastern untested part is considered as almost proven with a probability of 0.95. The second well, 7335/3-1 (Korpfjell Deep, 2019), was drilled within segment B, but downflank of potential gas accumulations which appear in the seismic data as amplitude/AVO anomalies with depth conformant shut-off well above the main spill contour (Figure 3b). Segment B consists of a main closure and 3-4 smaller ones with a total recoverable gas volume of 2.1 GSm^3 (Table 5). The probability of success is evaluated to be 0,60 (Pg=Pgas) with risk related to trap seal.

The remaining untested Korpfjell Realgrunnen prospects comprises a total number of 63 identified small closures (Figure 4c) with a total mean recoverable gas volume of [redacted] GSm^3 (P90: [redacted] and P10: [redacted] GSm^3; Table 5). [redacted] The total gas volume potential is reflected by summarizing the volumes for all closures. The probability of success is evaluated to be in the range of [redacted] (Pg=Pgas) due to the variable degree of DHI support [redacted]

Korpfjell North
Five small closures are identified at Realgrunnen Subgroup level in Korpfjell North (Figure 4b). The largest is situated within the licence, but the others are partly outside. The total mean recoverable gas volume is [redacted] GSm^3. The individual volumes and risk are summarized in Table 5. A DHI uplift is applied to all prospects.

Elvenes
A total mean recoverable gas volume of [redacted] GSm^3 is identified in 27 separate small closures within the Realgrunnen Subgroup (Figure 4d,e, Table 5). The closures are all located within blocks 7434/7, -8 and -9 except for three closures which are partly outside the licence. [redacted] . Based on the conditional well commitment on Elvenes and the possibility for hydrocarbon charge from a separate fetch area towards the Nordkapp Basin, [redacted]

Kobbe Formation
Some remaining prospectivity is associated with the untested fluvial channel system within the Kobbe Formation (Figure 5). Whilst offset and AVO reflectivity is weak at the well locations where only sparse

sandstones encountered, the system is up to 5 km wide and can be mapped for approximately 100 km across survey ST14005. However, due to observations of poor reservoir quality in reference wells that have targeted well-imaged fluvial channel systems e.g 7225/3-2 Norvarg, the Kobbe prospects in Korpfjell and Elvenes carry a high reservoir risk.

Elvenes

The Kobbe fluvial channel prospect on Elvenes is defined within the channel system and the structural closure at the spill contour of 1218 m shown in Figure 5. Better reservoir quality than proven in the wells is expected and therefore applied for the resource assessment (mean parameters are gross thickness: 28 m; NTG: 0.50; Ø: 14%, Sg: 0.65). The mean recoverable gas volume is calculated to 2.5 GSm^3 (P90: 0.2 and P10: 7 GSm^3; Table 5). In the case of a working stratigraphic trap allowing deeper gas filling, the volume potential could be in the range of P90: 7 and P10: 19 GSm^3 (Table 5). However, there are some uncertainties with the channel system which continues outside the 3D data towards northwest. The probability of success is low (Pgas <5%; Table 5) due to the high risk related to reservoir presence. Deeper filling is dependent on stratigraphic trap seal which increases the risk. The oil case gives considerable volumes (Table 5), but these are considered unlikely (Pg <1%).

Korpfjell

The Kobbe fluvial channel prospect in Korpfjell is defined within the spill contour at 1312 m and the channel system running through the deepest part of the structure (Figure 5). Using the same reservoir parameters as for Elvenes, the mean recoverable gas volume is calculated to 1.6 GSm^3 (P90: 0.4 and P10: 3.5 GSm^3; Table 5). The gas potential increases if the stratigrahic trapping mechanism is working. Similar to Elvenes the probability of success is low (Pgas <5%; Table 5). The oil case gives considerable volumes (Table 5), but also these are considered unlikely (Poil<1%).

Table 5: Estimated resources within PL859 with probabilities and number of closures.

[redacted]

[redacted]

Figure 2a: Base Cretaceous depth map showing the fetch area for Korpfjell along the western flank of the South Barents Basin. The fetch area is defined on the top Realgrunnen Subgroup depth map.

[redacted]

Figure 2b: Geoseismic section from west to east (A-A') illustrates the location of Korpfjell on the transition from the Bjarmeland Platform towards South Barents Basin. Source rocks and potential migration pathways are indicated. For line index, see Figure 2.

[redacted]

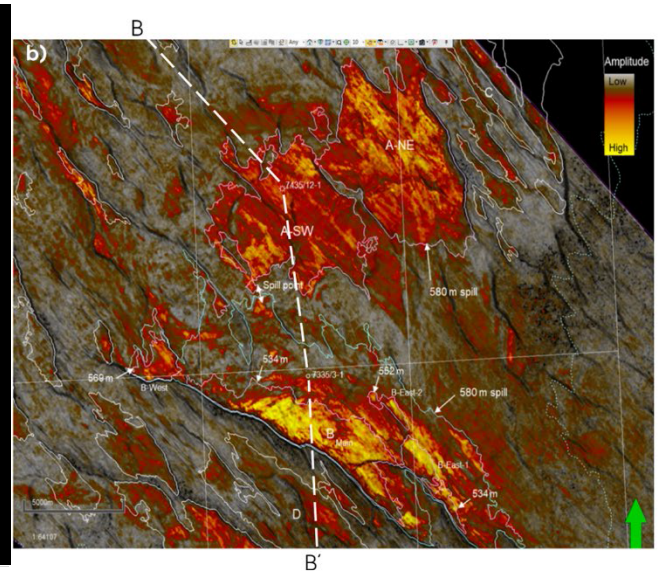

Figure 3: (a) Arbitrary seismic section B-B' across the Korpfjell structure through the wells drilled within segment A and B. The small red circles indicate the tested targets. (b) RMS amplitude map (+5/-15 ms) with variance co-blend at top Realgrunnen Subgroup: note the depth conformance of the amplitude shut-off along the spill contour (white outline) in segment A (SW-NE, gas discovery), and the location of Well 7335/3-1 downflank of the strong amplitudes in segment B but within the spill contour (light blue outline).

5 Technical evaluation

The remaining prospects in PL859 have a limited gas volume potential distributed between many separate closures. The commercial threshold for gas in this part of the Barents Sea is estimated to be [redacted]

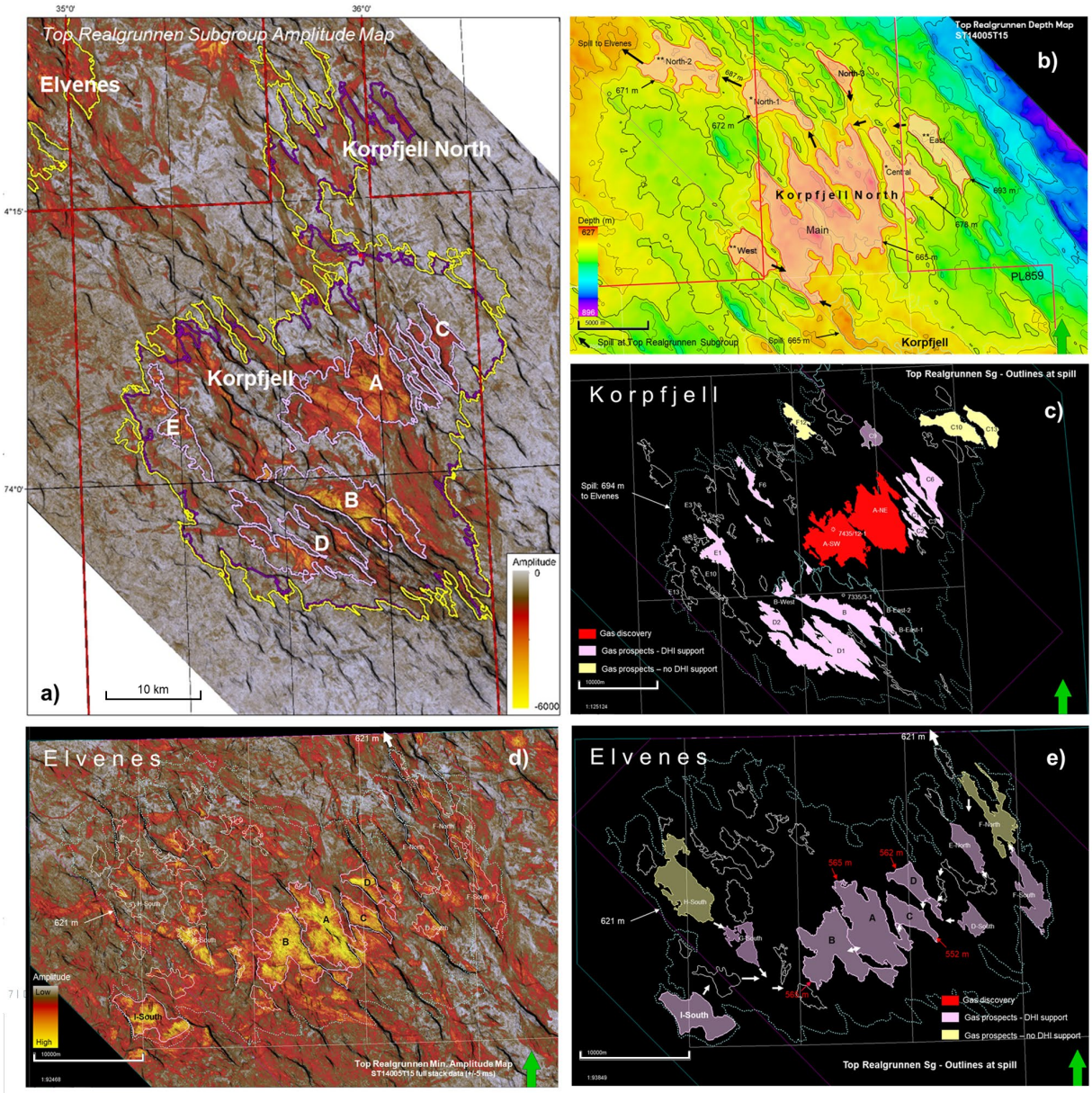

Figure 4: (a) Top Realgrunnen Subgroup RMS amplitude map (+/-10 ms) showing the amplitude image of the Korpfjell and Korpfjell North structures. (b) Zoom-in of Korpfjell North showing the top Realgrunnen Subgroup depth map with outlines of the closures. (c) Outlines of the closures on Korpfjell showing the gas discovery (red, segment A) and the wells. The remaining untested closures are indicated. (d) Zoom-in of Elvenes showing the top Realgrunnen Subgroup RMS amplitude map (+/-10 ms), and (e) outlines of the closures identified on Elvenes.

6 Conclusion

PL859 covers 12 blocks on the Haapet Dome and eastern Bjarmeland Platform, close to the Russian border. The two large structures Korpfjell and Elvenes were evaluated during the 23rd Round to be prospective at multiple stratigraphic levels in the Lower - Middle Jurassic and Triassic. The Korpfjell structure has been tested by two wells, 7435/12-1 (Korpfjell) and 7335/3-1 (Korpfjell Deep). A gas discovery was made in the Realgrunnen Subgroup (rec. 4.8 GSm^3) in good reservoir as prognosed. The secondary targets, sandstones

of Triassic age, were dry with reservoir quality poorer than expected. No signs of oil shows were detected in either of the wells. The licence commitment to drill two firm wells has been fulfilled, and dispensation from drilling the conditional well on Elvenes has been approved. The remaining untested hydrocarbon potential in PL859 consists of many small gas prospects which are considered to be non-commercial. The potential for a large oil-volume prospect is very unlikely (<1%). No drilling candidates are identified within PL859, and the partnership has therefore agreed to relinquish the licence.

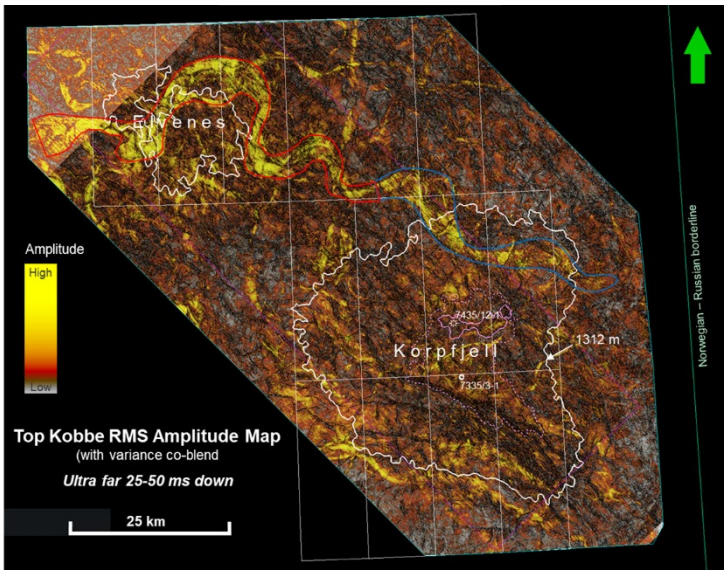

Figure 5: Top Kobbe RMS amplitude map (ultra far 25-50 ms down) showing brightening of the fluvial channelized system on Elvenes (red outline) and a weaker one Korpfjell (blue outline). The white outlines indicate the structural closures. Deeper hydrocarbon fill is dependent on a working stratigraphic trap.

7 References