PL 860 Relinquishment Report

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1 History of the Production License

Production License 860 (Fig. 1.1) was awarded on the 10th of February 2017, as part of the APA 2016 license round, to the following partnership:

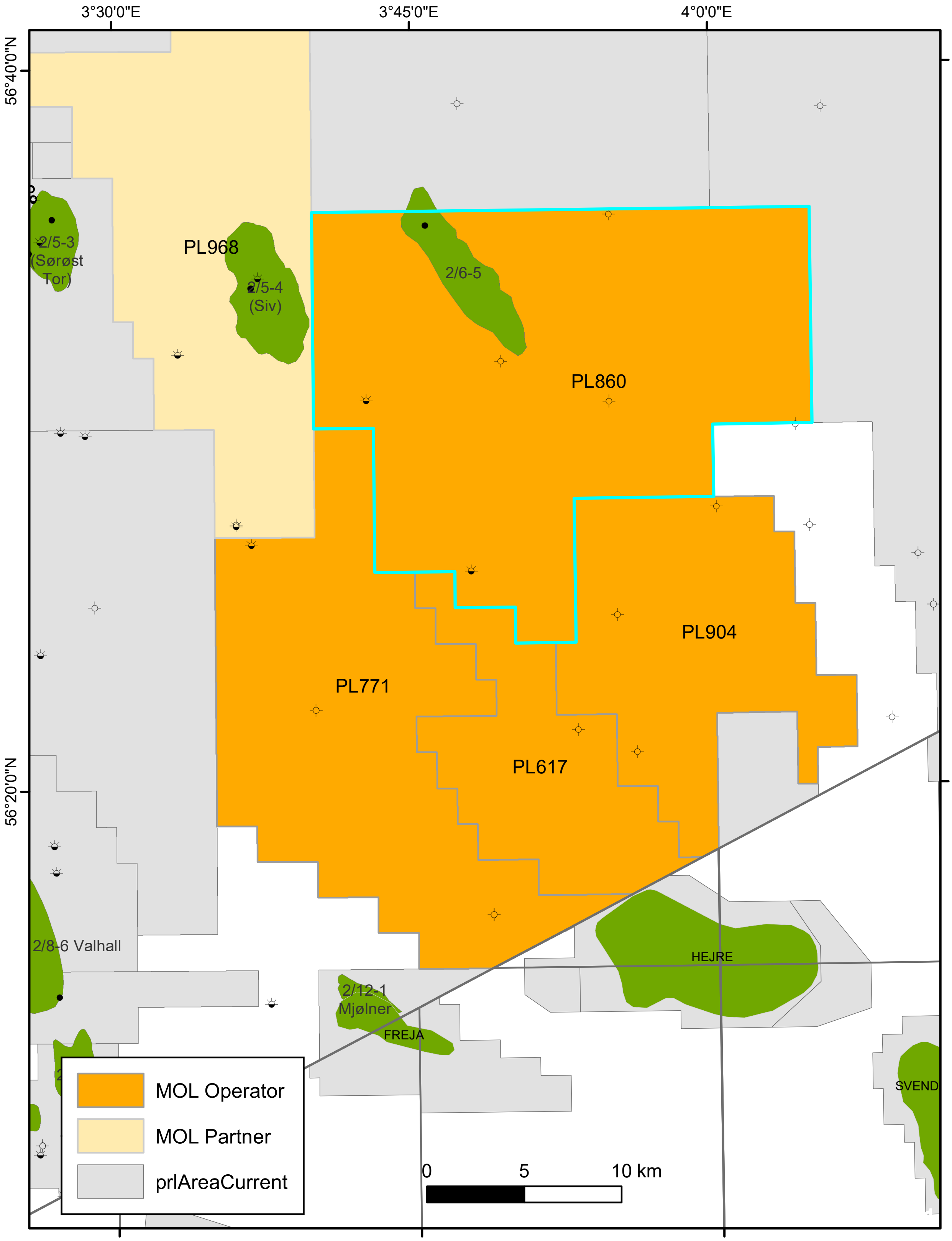

Fig. 1.1 PL860 location map

- MOL Norge As (40% and operator)
- Statoil Petroleum As (20%)
- Fortis Petroleum (20%)
- Petoro AS (20%)

Lundin Norway entered PL860 as a partner by acquiring half of Fortis Petroleum's shares, (10%) in October 2017, and the second half (10%) iin February 2018. Lundin Norway also took over Statoil Petroleums shares (20%) in April 2018.

The current partnership is:

- MOL Norge As (40% and operator)
- Lundin Energy Norway AS (40%)
- Petoro AS (20%)

The operator on behalf of the partnership informed the authorities November 2017 that a unanimous Steering Committee had decided to drill an exploration well in PL860.

During the 5-year exploration period 10 EC/MC committee meetings and 3 Work Meetings have been arranged by the operator to share and discuss prospectivity evaluations with the license partners. An overview of held meeting is given in Table 1.1.

Table 1.1 PL860 meetings

Meeting type	Date
EC/MC Meeting	2017-03-01
EC/MC Meeting	2017-09-19
EC/MC Meeting	2017-10-18
EC/MC Meeting	2017-11-04
EC/MC Meeting	2018-03-22
EC/MC Meeting	2018-09-12
EC/MC Meeting	2018-11-21
EC/MC Meeting	2019-02-19
EC/MC Meeting	2019-11-22
Work Meeting	2020-06-18
Work Meeting	2020-11-23
EC/MC Meeting	2021-04-29
Work Meeting	2021-06-23

PL860 drilled the exploration well, 2/6-6S on the eastern side of Mandal High from 13 November 2018 to 18 January 2019. The well targeted the Oppdal (Paleocene) and the Driva (Permian) Prospects.

The well encountered 34m gross water bearing sand with traces of shows in the Våle Formation (Borr Member) with good reservoir properties and 180m of siltstone with no reservoir potential and no signs of hydrocarbons in the Driva prospect.

Since the PL860 Upper Jurassic prospects (Tangen and Kongsvoll) share the same concept model as the PL617 Eidsvoll prospect, the PL860 partnership applied for licence extensions (DOC) to have time to implement results from the PL617 Eidsvoll well. Positive Eidsvoll Well results would de-risk the Upper Jurassic prospectivity in PL860. The Eidsvoll well (2/9-6S) was drilled 1Q 2021.

The remaining prospectivity in PL860 also comprises the Paleocene Oppdal West Prospect located downdip to the west of, and separated from, the Oppdal prospect that was tested dry by the 2/6-6S well drilled in 2018-2019.

Based on the negative results of well 2/6-9S in PL617 and on the balance of the discussion above the partnership hereby hand in the PL 860 status report.

2 Database Overview

2.1 Seismic Database

The APA2016 seismic interpretation area applied for and surrounding area was mainly based on PGS Geostreamer surveys MC3D-CGR2013RM and MC3D-CGR2015. In addition the released DNO-0601R08 and public surveys on Danish side have been used for regional mapping. All the surveys are shown in Fig. 2.1 and listed in Table 2.1. The interpretation of the surveys, DNO-0601R08 and Maja_2002_03 has contributed to the establishment of a depositional fairway for the Paleocene Borr Member sandstone.

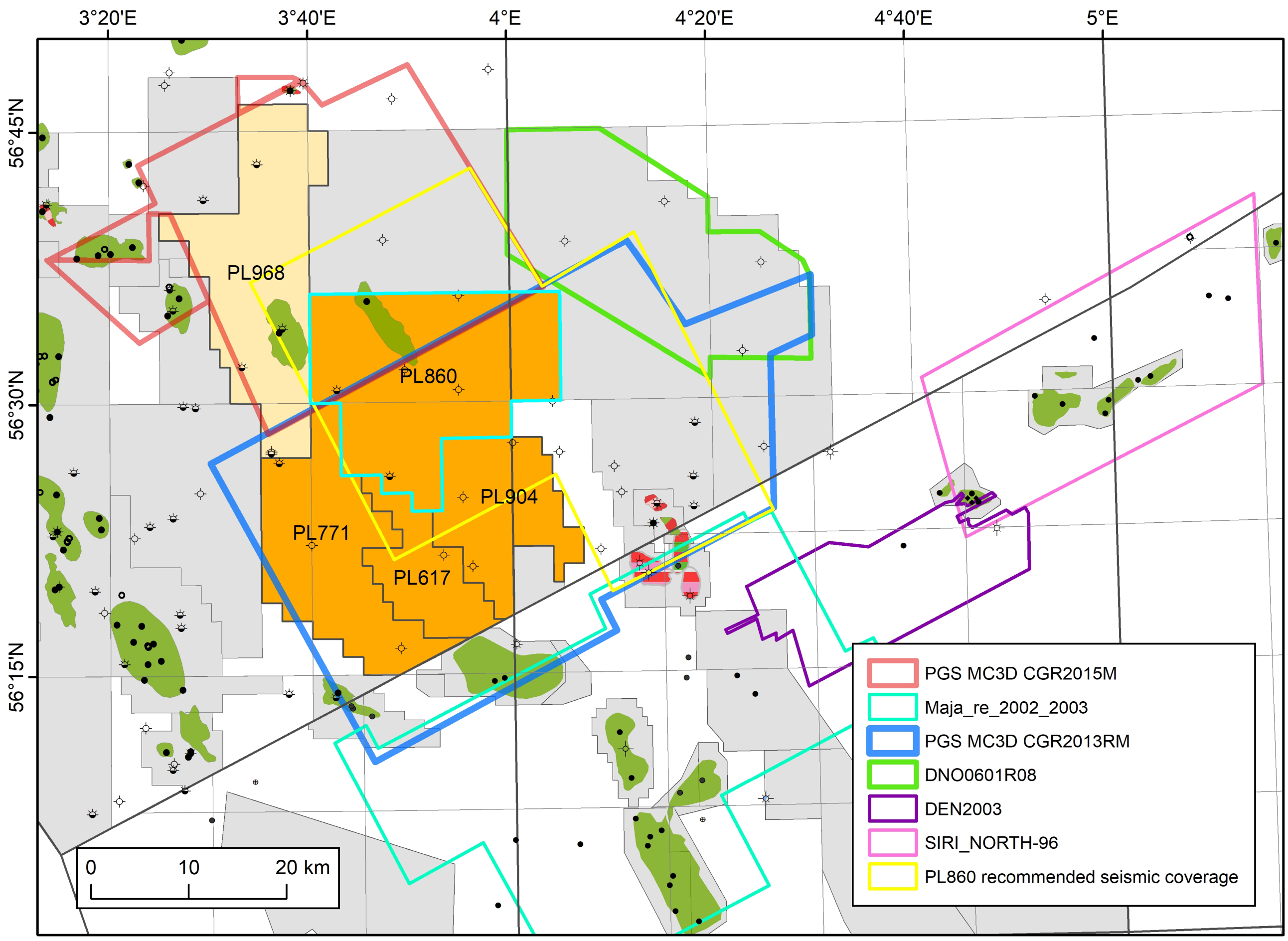

Fig. 2.1 PL860 Seismic database

Table 2.1 PL860-list of seismic surveys

Seismic survey	Vintage	Survey type	Based on	NPDID	Available to the market
PGS MC3D CGR 2013RM	2013	Broadband	PGS MC3DCGR 2010 (7190) and 2011 (DK)		no
PGS MC3D CGR 2015	2015	Broadband	PGS MC3D CGRN13	7904	no
MOL18100	2018	site survey		8567	no
DNO0601R08	2008	conventional	DNO-0601	4342	yes
Maja_re_2002_2003	2002/2003	conventional		DK GEUS	no
DEN2003	2003	conventional		DK Geus	no
SIRI-NORTH-96	1996	conventional		DK GEUS	no

2.2 Well Database

All released wells in the area have been used in the evaluation of the license. Table 2.2 lists the main wells used in the evaluation of the prospectivity in PL860. An extensive analysis program has been performed on these wells to understand the geological depositional environment, source rock potential, maturity and pressure regime in the area.

Table 2.2 PL860 well database

Wellbore	NPDID	Field/Discovery	Content	Age / Fm at TD	Fm with HC
2/4-17	1792	2/4-17 Tjavle	Gas/condensate	EarlyPermian/Rotliegend Gp	Late Jurassic Ula Fm
2/4-22	7535	2/4-22S Romeo	oil	EarlyPermian/Rotliegend Gp	Late Jurassic Ula Fm, Middle Jurassic Bryne Fm and Permian Rotliegend Gp
2/5-6	261		shows	Triassic/Skagerak Fm	
2/5-9	1834		shows	Late Jurassic/Haugesund Fm	
2/6-2	224		shows	Late Permian/Zechstein Gp	
2/6-3	64		Dry	Pre Devonian/Basement	
2/6-6S	8560		Dry	Early Permian/Rotliegend Gp	
2/9-2	283		Dry	EarlyPermian/Rotliegend Gp	
2/9-3	1443		shows	EarlyPermian/Rotliegend Gp	
2/9-4	5801		Dry	EarlyPermian/Rotliegend Gp	
2/9-5S	7502		Dry	Pre Devonian/Basement	
2/9-6S	9191		shows	Late Jurassic/Farsund Fm	
2/11-7	902		shows	Late Jurassic/Haugesund Fm	
2/12-1	1014	2/1-12 Mjølner	oil	EarlyPermian/Rotliegend Gp	Late Jurassic, Ula Fm
2/12-2S	1416	2/1-12 Mjølner	shows	Triassic/Smith Bank Fm	
3/7-1	292		Dry	Pre Devonian/Basement	
3/7-2	220		Dry	EarlyPermian/Rotliegend Gp	
3/7-3	293		Dry	Late Permian/Zechstein Gp	
3/7-4	1467	Trym	Gas/condensate	Late Permian/Zechstein Gp	Middle Jurassic Sandnes and Bryne Fms
3/7-5	1759		shows	Late Permian/Zechstein Gp	
3/7-6	2891		shows	Late Jurassic/Haugesund Fm	
3/7-7	5932		shows	Late Jurassic/Haugesund Fm	
3/7-8S	7058	Trym South	Oil/Gas	Late Permian/Zechstein Gp	Middle Jurassic Sandnes and Bryne Fms
3/7-9S	7137		Dry	Triassic/Smith Bank Fm	
3/7-10S	7749		Dry	Triassic/Smith Bank Fm	
3/7-11S	8705		Dry	EarlyPermian/Rotliegend Gp	
3/8-1	6476		Dry	EarlyPermian/Rotliegend Gp	
Gert 2	DK well		shows	Carboniferous	
Gert 3	DK well		Dry	Pre Devonian/Basement	
Hejre 1	DK well	Herje	Oil	EarlyPermian/Rotliegend Gp	Late Jurassic, Heno Fm and Basal sst
Hejre 2	DK well	Herje	Oil	EarlyPermian/Rotliegend Gp	Late Jurassic, Heno Fm and Basal sst
Karl 1	DK well		Dry	EarlyPermian/Rotliegend Gp	
Jeppe 1	DK well		Dry	EarlyPermian/Rotliegend Gp	
Mona 1	DK well		shows	Late Jurassic/farsund Fm	
Cecilie 1	DK well		Oil	Late Cretaceous/Ekofisk Fm	Paleocene/Sele Fm
Cleo 1	DK well		Dry	Late Triassic/Skagerak Fm	
Connie 1	DK well		Dry	Late Cretaceous/Ekofisk Fm	
Elna 1	DK well		Dry	EarlyPermian/Rotliegend Gp	
Karl 1	DK well		Dry	EarlyPermian/Rotliegend Gp	
Siri 1	DK well	Siri	Oil	Late Cretaceous/Ekofisk Fm	Paleocene/Lista Fm

The key wells for the evaluation of the Rotliegend Driva Prospect are the 3/5-1, 2/4-17 and 2/4-22S wells. For the Paleocene Oppdal prospects the 3/7-3, 3/7-4, 3/7-8S, 3/7-9S and the Danish wells Siri-1 and Cecilie-1 are key wells.

3 Results from Geological and Geophysical Studies

The geological and geophysical studies performed in PL860, and their main results, are summarized in Table 3.1.

Table 3.1 Studies

Studies Performed	Vendor	Aim of the study	Results
Regional mapping and depth conversion	Inhouse	Regional understanding	Regional time and depth maps on major horizons, velocity cube, also input for basin modelling
Detailed prospect mapping, depth conversion and prospect evaluation	Inhouse	Define and evaluate prospectivity, several stratigraphic levels, Paleocene, Upper Jurassic and Rotliegend	Drilling of well 2/6-6S with two targets, Paleocene Borr sandstone and the Late Permian Rotliegend Group[NJK(N1]
Spectral decomposition analysis and Frequency blend maps	Inhouse	Depositional transportation and depositional direction of sediments for three stratigraphical levels, Paleocene, Upper Jurassic and Rotliegend	Basis for the GDE maps on each stratigraphical level
Upper Jurassic and Permian stratigraphic study	Inhouse	Correlation of wells to improve well tie to seismic and provide input to the geological model	Wide range of wells were updated with new well tops. This works improved the understanding of the Upper Jurassic and Permian reservoirs and source rock distribution in the area
Paleocene Sequence Stratigraphy study	Merlin	Review the Paleocene stratigraphy and establish a consistent stratigraphy	Wide range of wells were updated with new well tops. This works improved the understanding of the Paleocene reservoir
Rotliegend petrographic and XRD study	Inhouse	Describe petrographic characteristics and facies types of the Rotliegend Group	Input to the depositional environment GDE map for the Rotliegend depositional environment, GDE map
Diagenesis study of Rotliegend sandstones	Inhouse	Reservoir quality evaluation and diagenetic processes (e.g. quartz cementation and grain coatings) of aeolian desert sandstones in nearby wells. Modelling of quartz cementation and other diagenetic processes in PetroMod for prediction of reservoir properties. Also integrating information from onshore analogues	Implemented in reservoir quality in the Driva Rotliegend prospect
Provenance area study of Paleocene	GEUS	Contribute to the evaluation of sediment source areas and transportation of the gravity flow sediments in the Våle Formation	Input to the depositional environment GDE map for the Paleocene Våle Formation and Borr Member
Sink to source study	Inhouse	Understanding the depositional environment and the sediment source areas based on all data available	GDE maps on each stratigraphical level. The Paleocene (Borr sand) depositional model was confirmed with PL860 well 2/6-6S. The Upper Jurassic depositional model was confirmed with PL617 well 2/9-6S
Rock Physics and Facies Pre-inversion Paleocene Oppdal Prospect	Inhouse	Estimate elastic properties separation lithology and the water and hydrocarbon-bearing scenarios. Prestack Pro software using elastic rock property facies definition as input	Acoustic impedance and Vp/Vs and EEI observed separation between water and oil-bearing scenarios. and Pcube+ specific sand probability map
Rock Physics Permian Driva Prospect	Inhouse	Estimate elastic properties separation lithology and the water and hydrocarbon-bearing scenarios	Acoustic impedance and Vp/Vs and EEI observed separation between water and oil-bearing scenarios

Rock Physics Upper Jurassic	Inhouse	Evaluate reservoir potential on Upper Jurassic prospectivity based on results from PL617 2/9-6S well	Max amplitude map along hard kick, no direct indication of having better sand in PL860 Upper Jurassic prospectivity
Geochemistry and Petroleum system analysis	Inhouse with geochemical analyses by APT - Applied Petroleum Technology AS	Source rock evaluation, oil-oil and oil-source correlations, migration pathways, pressure analysis, PVT calculations and fluid parameters	Results were built into geological and petroleum systems models
Hydrocarbon and Seal Evaluation Study - Mud gas analysis	GeoProvider AS	Identification of access to charge, missed pay, hydrocarbon composition, productive zones and sealing units, based on mudlogging data	Distribution of fluids and carrier bed sand seals were integrated into geological and petroleum systems models. Result map and logs of the study were uploaded into Petrel and ArcGIS
Fluid inclusion study of 2/6-6 S well	Schlumberger FIT	A stratigraphic reconstruction of bulk volatile geochemistry from fluid inclusions in 2/6-6 S well	Overall low abundance of petroleum inclusions
Dry well analysis	Inhouse	Find reasons for failure in nearby wells	Charge and fault seal main reason for failure
Apex study	Apex Spectral technology, Inc	Measurement of fluid mobility	An ADF fluid mobility cube was computed over the AOI
Fault Seal Analysis	inhouse	Evaluate lateral sealing potential for Tangen, Kongsvoll and Oppdal West prospects	Increased risk of lateral seal failure for all prospects

Studies

Depositional environment studies

Extensive regional petroleum system analyses have been carried out to identify additional prospectivity in the southern North Sea. The methodology includes full integration of the basin's oil generation potential (follow the oil principle), new biostratigraphic evaluations incorporated into our sequence stratigraphic system, detailed geological evaluation (core analysis for depositional environment and facies distribution, GDE[1] map, structural modelling) and with high quality broadband seismic data. These studies have created the platform to develop exploration concepts around the Mandal High. PL860 (part of 2/6,9 and 3//) is located in the North Sea on the eastern flank of the Mandal High.

Sequence stratigraphy - Review of Paleocene stratigraphy

The Paleocene stratigraphy was reviewed to establish a consistent stratigraphy using biostratigraphic data (existing and recent biostratigraphic data set generated by APT[2] for MOL Norge AS) to provide a stratigraphic framework for seismic interpretation, reservoir interpretation, petrophysics for the block 2/4, 2/5, 2/6, 2/9, 3/9, 3/7 and 9/11 area (11 wells), including well 2/6-6S and to support a regional sand provenance study (see below). All existing stratigraphy from released wells was reinterpreted and applied a consistent stratigraphic scheme across the well data set. The results indicate that three sandstone units are present: the Fiskebank Sandstone (2/5-8, 9/11-1) within the Sele Formation, the Siri Sandstone (3/6-1, 2/6-3, 2/4-2, 9/11-1) within the Lista Formation and the Borr Sandstone (3/6-1, 3/7-8S, 2/6-6S, 2/4-2, 2/5-8, 2/5-12) within the Våle Formation.

Provenance of Paleogene gravity flow sandstones in the Søgne Basin and west of Mandal High

Previous investigations from the Siri Canyon, a possible parallel submarine gravity flow depositional system, have shown that glauconitic sandstones could be assigned to different members based on geochemical variations. A provenance study has therefore been performed to see if possible sediment source areas and transport directions of gravity flow sandstones could be identified. By focusing on the glauconite geochemistry and heavy mineral composition, the gravity flow sandstones from the northern Siri Canyon, Vidar Canyon and west and east of Mandal High can be grouped into three gravity flow units (Fig. 3.1). The first and lowermost gravity flow unit is encountered in the proximal parts of the Vidar Canyon (3/4-2) and the proximal and distal parts of the northern Siri Canyon (4/4-1, 3/6-1, 3/7-3 and 3/7-8). The second gravity flow unit is present in the area east of Mandal High and is encountered in the 2/6-6 S, 3/7-2, 3/7-3, 3/7-9 S and 3/8-1 wells. The third gravity flow unit is encountered in the wells east and west of the Mandal High (2/4-2, 2/5-8, 2/6-3, 2/6-6, 2/9-3, 2/9-5 S and 3/7-3, 3/7-9 S and 3/8-1).

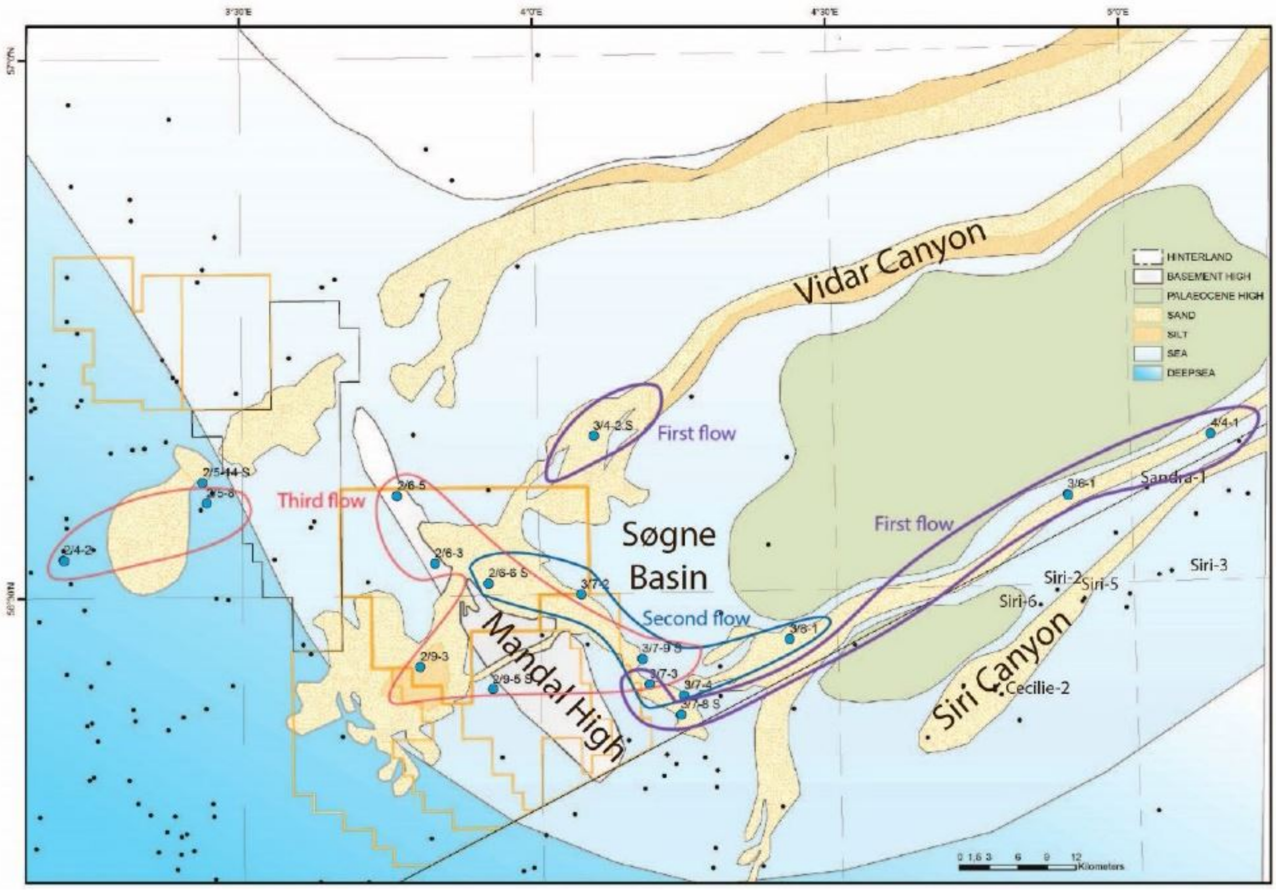

Fig. 3.1 Gravity flow systems in Våle Formation sands Map showing wells that group together based on chemical composition of glauconitic clasts and heavy minerals. First gravity flow is marked by purple circles, the second by blue circle and the last gravity flow by red circles.

The updated Paleocene Borr sandstone depositional map (GDE) shown in Fig. 3.2 is based on the integration of updated sesimic interpretation and all these studies.

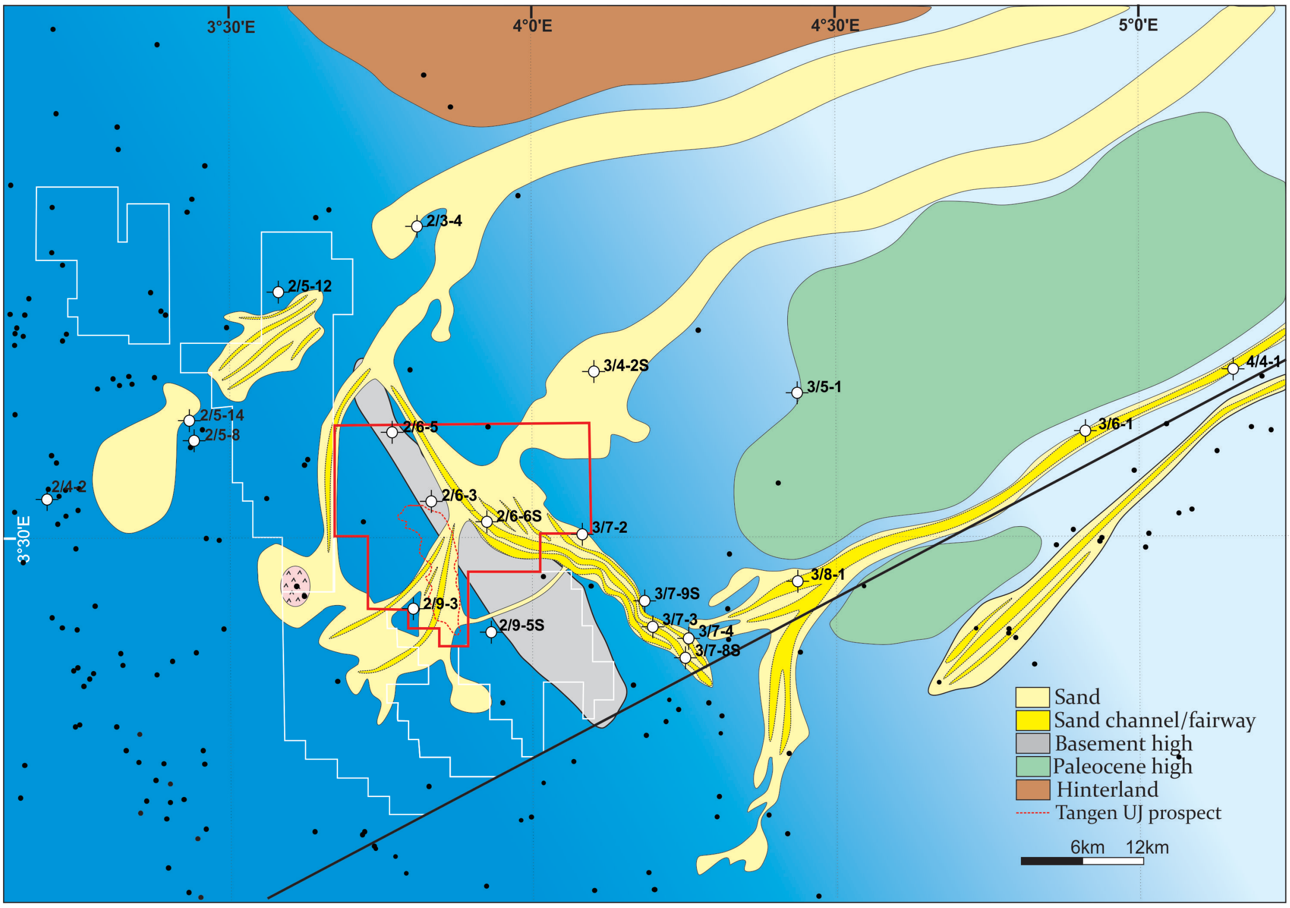

Fig. 3.2 Paleocene GDE map GDE map Intra Våle Formation Borr sandstone. This depositional model was confirmed by the Oppdal well (2/6-6S) which found gravity flow and suspension fall-out sediments from a deep-marine setting. Two Borr sandstone units, separated by the Våle Formation marlstone, were identified. The uppermost is associated with a topographically confined/ponded turbidite fairway. The lowermost is regarded an intercalation of sub-aqueous dunes and massive deposits, suggesting deposition close to the channel-lobe transition. The sand fairway evolution, from channelized to ponded, is discussed in terms of a 'fill and-spill' depositional model.

Petrographic and XRD analyses on cuttings samples - Rotliegend study

74 Thin sections, picked from 119 cuttings samples from 15 different wells, were analysed to describe petrographic characteristics and determine facies types of the Rotliegend Group in the Mandal High area. The lithologies were found to represent a mix of aeolian, sabkha and different types of the lacustrine facies, but most frequently the latter. Occasionally, this was interrupted by terrestrial input combined with products from basaltic volcanism in an arid climate. Marginal sabkha (high evaporitisation represented by anhydrite) and basinal suboxic (deeper water, oxygen free, lower energy, restricted) sedimentation, due to layering of saline waters, could occur in this arid lacustrine environment due to temporal or spatial differentiation. A distant and wider aeolian environment is represented by a subordinated amount of well-rounded quartz grains resedimented in the lacustrine environment. The most heterogeneous, polymict, poorly-sorted facies can probably be classified as a wadi sediment.

The Rotliegend Group depositional map (GDE) shown in Fig. 3.3 is based on results from these studies.

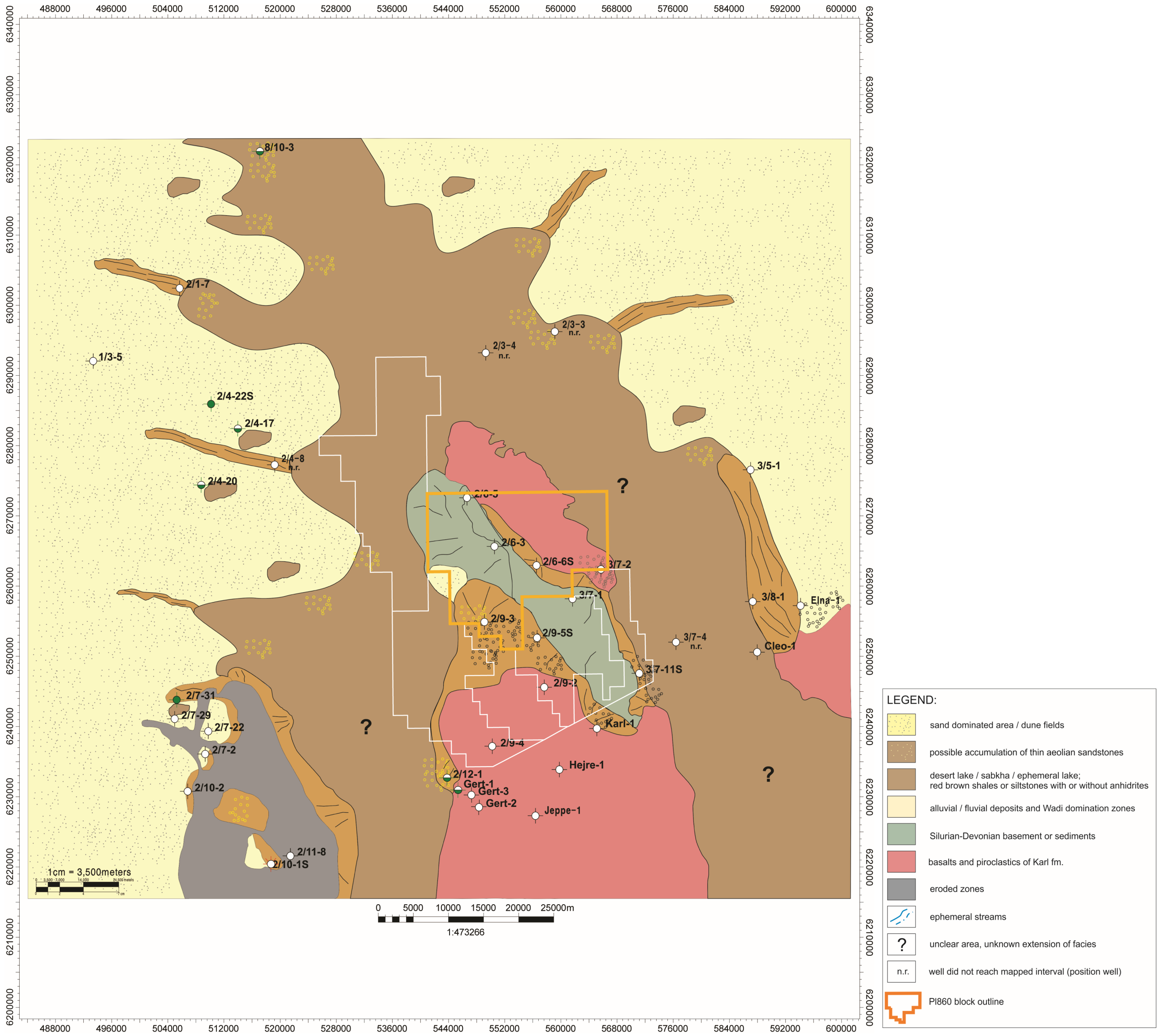

Fig. 3.3 Rotliegend GDE map The Western and Eastern part of the studied area is mainly dominated by dune facies with local fluvial/wadi deposits. The vicinity of the Mandal High is mainly dominated by lacustrine/volcanoclastic sediments and wadi-fluvial systems. This illustrates how facies vary across short distances in a desert environment. The exact extension of the lacustrine facies is uncertain due to a limited amount of wells penetrating the Rotliegend.

Geochemistry

Well 2/6-6 S recorded few meters of the marine Kupferschiefer shales of Late Permian age, having an excellent source rock potential although its quality appears towards the lower end of the Kupferschiefer [1]. This interval is probably in the early oil generation window.

In the 2/6-6 S well, the Borr Member sandstone contains minor deviations from the OBM composition which may point to migrated oil. Aromatics are clearly enriched in the 2935.0 m sample, a factor which is reflected in significantly different methylated naphthalene and phenanthrene distributions from the OBM. This suggests a maturity towards the end of peak oil generation. Most correlation parameters suggest the sample contains biomarker distributions similar to that expected for a Mandal-sourced oil, although there are some exceptions (e.g. low 30d/29Ts and enrichment of 2α-methylhopanes). The abundance of dinoflagellate related triaromatic steroids suggests a Jurassic or younger origin.

Geochemical correlations indicate that the 2/6-5 oil discovery in the Tor Formation relates to the Upper Jurassic source rocks and the oil discoveries west to northwest of the Mandal High. However, the signature of the 2/6-5 fractured basement oil is unique.

Fluid inclusion study of the 2/6-6 S well

The bulk volatile geochemistry from fluid inclusions of cuttings samples has been analysed from the 2/6-6 S well[2]. Highest methane signals are recorded in the Paleogene with weak methane-depleted C7+ anomalies over a fairly broad interval. Anomalous acetic acid and benzene are found in the Hordaland Group and Våle Formation, respectively. Anomalies are too sparse to interpret with confidence but the benzene anomaly may be sensing nearby wet gas. The deeper parts of 2/6-6 S, the Hod to Karl formations exhibit mostly intermittent dry gas responses with wet gas to oil-like spectra in the Skagerrak Formation, a zone of methane-depleted wet gas to gas condensate responses in the Kupferschiefer and Auk formations, and similar methane-depleted wet gas responses in the Karl Formation. Highest methane and C7+ alkanes responses are recorded from intervals in the Permian and Triassic, but the source of these is unclear. Acetic acid with or without benzene is elevated in the Skagerrak Formation, indicating a possible nearby oil or condensate charge. Furthermore, rare yellow-fluorescent, upper-low gravity petroleum inclusions were found in Skagerrak and Auk sandstones. Rare to several occurrences of yellow and white-fluorescent, moderate gravity petroleum inclusions were found in the Zechstein Group and Auk Formation. Low to moderate inclusion abundance suggests potential for multiple episodes of petroleum migration through the stratigraphic deeper sequences, perhaps locally sourced from the Permian Kupferschiefer.

Fault Seal Analysis

Synthetic wells have been created using well data mainly from Well 2/9-6 and also from Well 2/6-9 for Oppdal West, Tangen and Kongsvoll prospects. A shale gauge ratio based fault seal analysis has been carried out for these pseudo well sections. In the case of Oppdal West, there is very little chance of having a proper sediment–sediment sealing, which is a key element of the Oppdal West prospect. In Tangen, efficient sealing can only be assumed for shorter sections within the non-prospective Balder and Farsund formations in the case of <150m fault offset. Basement against sediment sealing looks to be insufficient for Kongsvoll; sediment against sediment sealing is assumed to be acceptable only for the non-objective Balder Formation in the case of small (<50-150m) fault offsets.

No Fault Seal Analysis was carried out for the area of interest before the APA application. The reservoir sealing risk was assessed after Eidsvoll (2/9-6) well results were available. The assessment resulted in an increased risk of lateral seal failure for both Tangen, Kongsvoll and Oppdal West.

4 Prospect Update

Seven prospects in three stratigaphic levels were identified during the APA 2016 application work. The Paleocene (intra Våle Formation Borr Member) Oppdal Prospect was the main target. The Permian (Rotliegend Group) Driva Prospect was the secondary target. Additionally, five Upper Jurassic prospects were identified. Fig. 4.1 shows the APA 2016 application prospect map. As seen in Fig. 1.1 the northern part of the application area was not awarded and the Ymmilstind and Støre prospects were therefore not awarded as part of PL860. The seismic geo-section with the play model is given in Fig. 4.2. The resource potential from the APA 2016 application is given in Table 4.1.

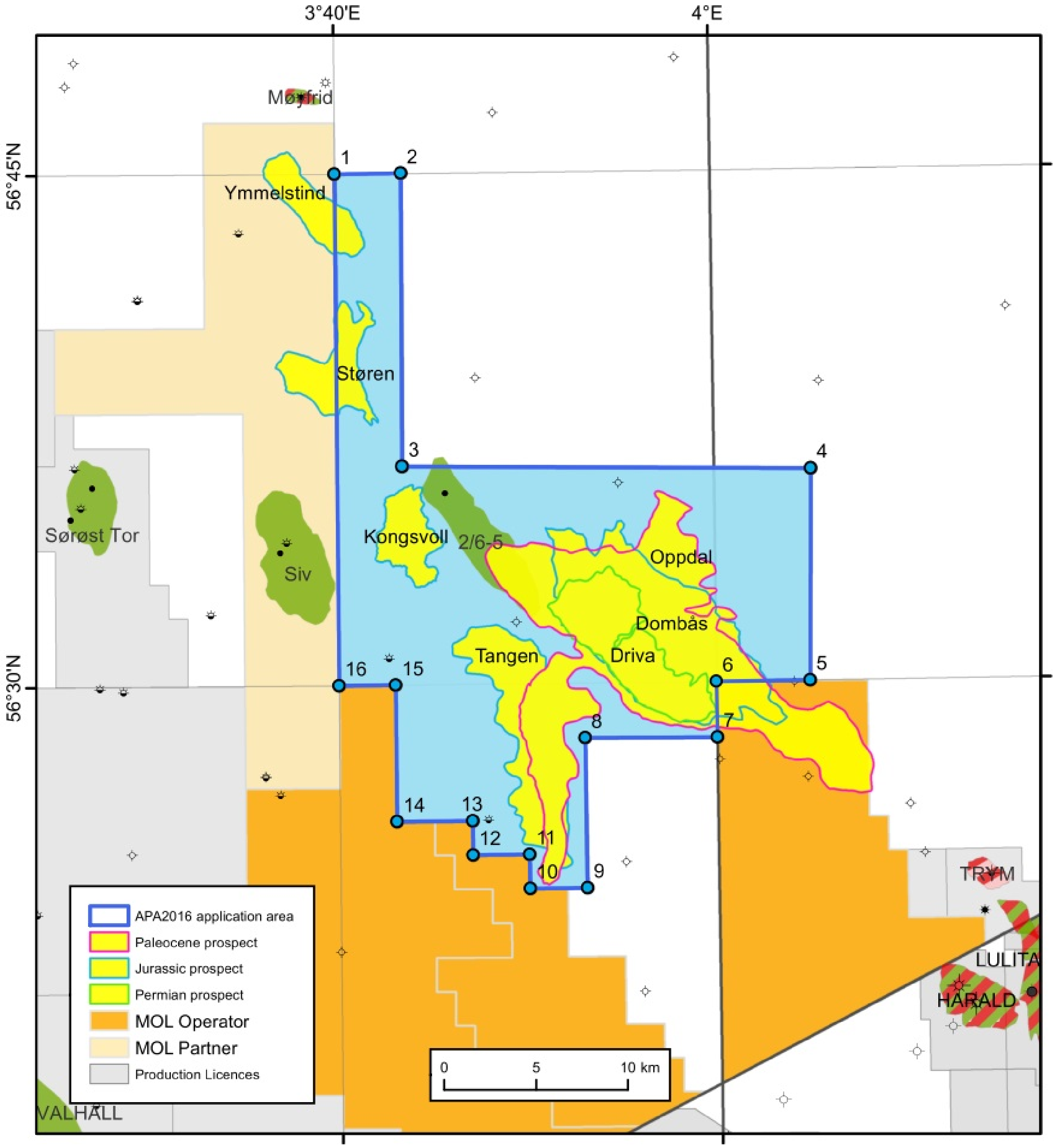

Fig. 4.1 Prospect overview map APA 2016

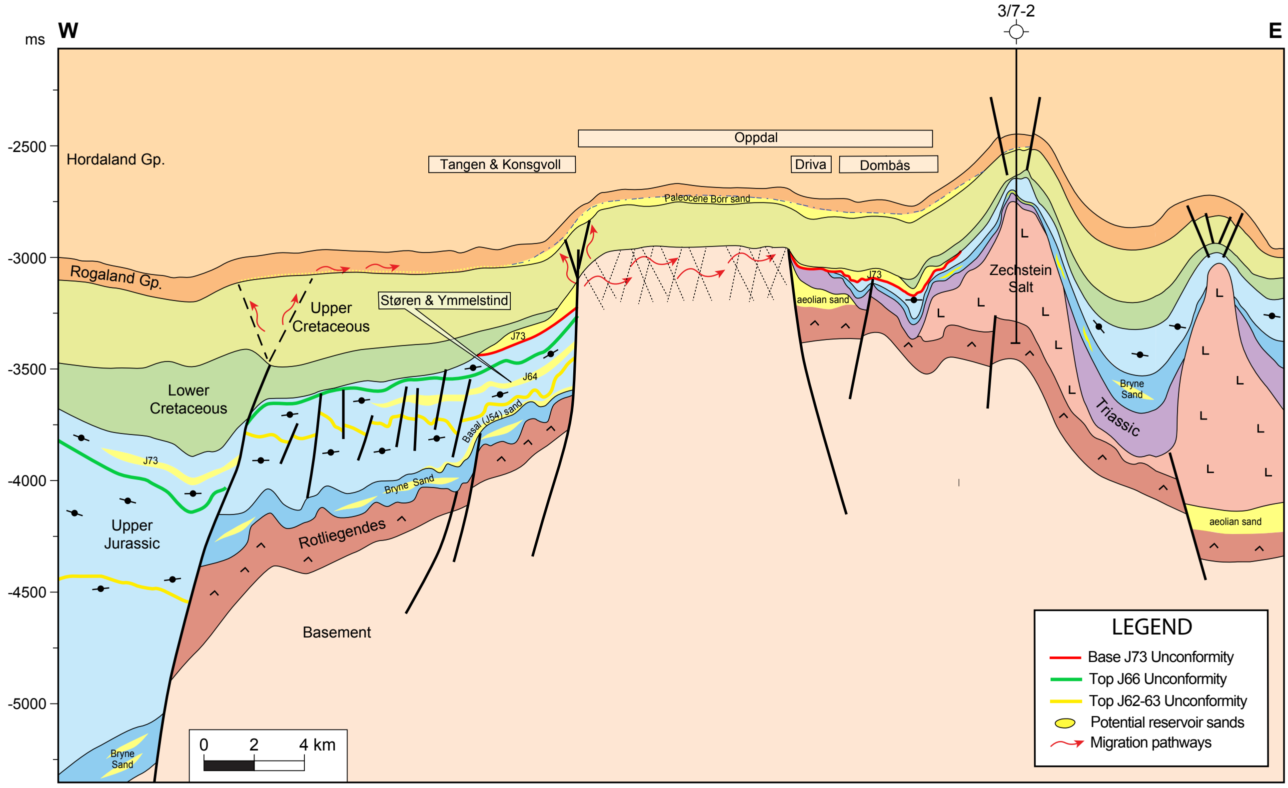

Fig. 4.2 PL860 - Mandal High Play model

Table 4.1 APA 2016 resource potential

Table 2: Resource Potential														
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 [$10^9 Sm^3$] (>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)						
Oppdal		Oil	55.50	110.80	175.80	6.60	18.10	31.90	0.30	78.0	Borr Mbr/ Paleocene	2640	Ekofisk	46
Driva		Oil	44.70	110.20	188.40	11.90	29.10	49.50	0.17	100.0	Rotliegendes Gp/ Permian	3300	Ekofisk	46
Dombås		Oil	2.20	11.90	28.40	0.30	1.60	4.00	0.17	89.0	Mandal Fm/ Upper Jurassic	3200	Ekofisk	46
Tangen		Oil	11.50	25.10	43.10	1.70	3.50	5.30	0.26	100.0	Mandal Fm/ Upper Jurassic	3291	Ekofisk	35
Kongsvoll		Oil	2.90	6.20	10.70	0.30	0.90	1.60	0.22	100.0	Mandal Fm/ Upper Jurassic	3500	Ekofisk	30
Støren		Oil	4.00	12.90	26.50	0.60	2.30	4.80	0.23	57.0	Farsund Fm/ Upper Jurassic	3600	Ekofisk	30
Ymmelstind		Oil	10.90	20.90	33.00	2.20	4.30	6.80	0.28	22.0	Farsund Fm/ Upper Jurassic	3760	Ekofisk	30

A drill decision on the Oppdal/Driva prospect was made less than a year after the award.

Oppdal Prospect (APA 2016)

The Oppdal Prospect is developed as a combined stratigraphic and structural trap defined as an increased Paleocene thickness along the northeastern flank of the Mandal High. The reservoir sequence has been tied to the 3/7-3 and 3/7-4 wells. The Borr Member (T20) sandstone is interpreted on a hard event just above the Ekofisk Formation. The Borr Member (T20) reservoir sandstone laps on to the Ekofisk Formation in both north-northwest and eastern direction as well as southward towards the Mandal High. In southeastern direction the trap is delineated by a northeast-southwest trending fault dipping to the southeast which is preventing communication with the T20 sands in the 3/7-3, 3/7-4, 3/7-8S and 3/7-9S wells due to a large throw. The Borr sandstones are generally believed to have been deposited as submarine turbidites sourced from the hinterland in northeast, the metamorphic Norwegian Shield, and deposited along the eastern side of the Mandal High, in a restricted northwest to southeast trending sandstone fairway. Relatively thick T20 Borr sandstone with good reservoir properties has been penetrated in several wells to the southeast. The Oppdal Prospect seal is provided by Tertiary shales within the Rogaland Group. Along the pinch out, the interval onlaps the Ekofisk Formation chalk sequence. The Oppdal Prospect was believed to be charged with hydrocarbons from the Upper Jurassic Mandal and Farsund formations that are mature and have generated large quantities of oil in the Feda Graben to the west of the Mandal High. The prospect is located above the spill point of the 2/6-5 Well discovery and migration through an ineffective seal in the Ekofisk Formation into porous T20 sandstone would be possible. Fig. 4.3 gives an overview of the Oppdal Prospect. Hydrocarbons might also migrate vertically from a mature source through faults into porous Borr sandstone on the west side of the Mandal High (Fig. 4.2) that can act as a conduits for hydrocarbon migration updip filling the Oppdal Prospect.

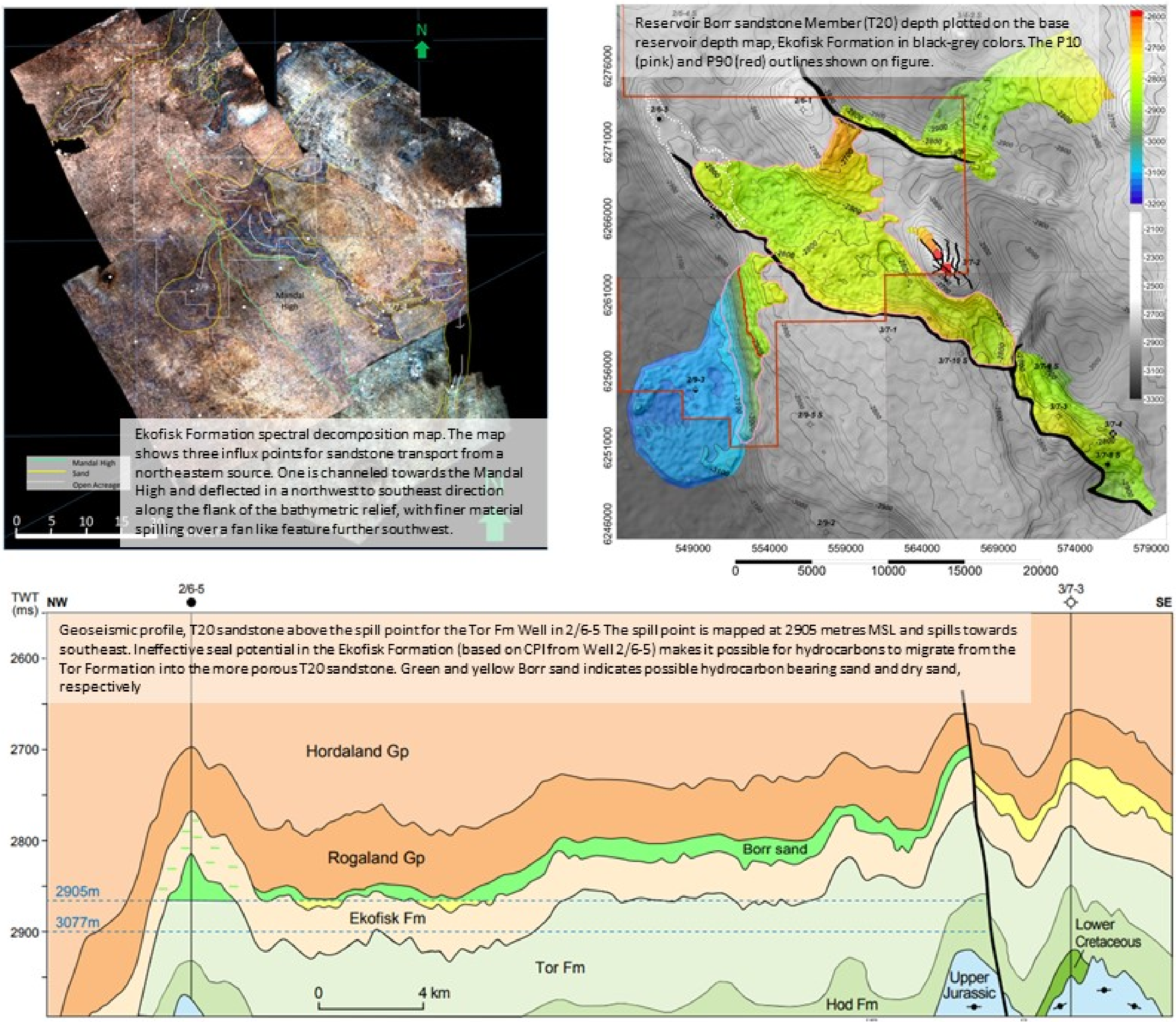

Fig. 4.3 Overview Oppdal Prospect

Driva Prospect (APA 2016)

The Permian Driva Prospect, is developed as a combined stratigraphic and structural trap against the east side of the Mandal High at Top Rotliegend level (Fig. 4.4). A sedimentary wedge consisting of aeolian desert sandstone overlying a volcanic unit is mapped out. The 3/7-2 Well is located closest to the Driva Prospect and penetrated 164 metres with shale and volcanic sediments in Rotliegend. The mapped sedimentary package between top and base Rotliegend Group in well 3/7-2 and towards the prospect seems to have a homogeneous seismic response and equal thickness. A clear unconformity is mapped on the top of this section at the Driva Prospect. This unconformity is interpreted as base of the aeolian wedge/base reservoir. These aeolian sandstones, together with ephemeral non-reservoir wadi deposits, make up the Auk Formation. The Auk Formation in wells 3/5-1, 1/3-5 and 2/4-17 contains moderate to good porosity dune sands.The hydrocarbon migration is active today and is pressure driven from west to east through basement fractures into the Driva Prospect. The top seal for the Driva Prospect is provided by Triassic shales and/or the presence of a thin veneer of Zechstein evaporites. The lateral seal towards the west is provided by the fault plane separating the Driva Prospect from the basement rocks of the Mandal high, but that is not a complete seal along the entire fault surface. As described above, hydrocarbons migrate into the Driva Prospect from the west through basement fractures that intersect the fault surface and bridge the fault seal (Fig. 4.2).

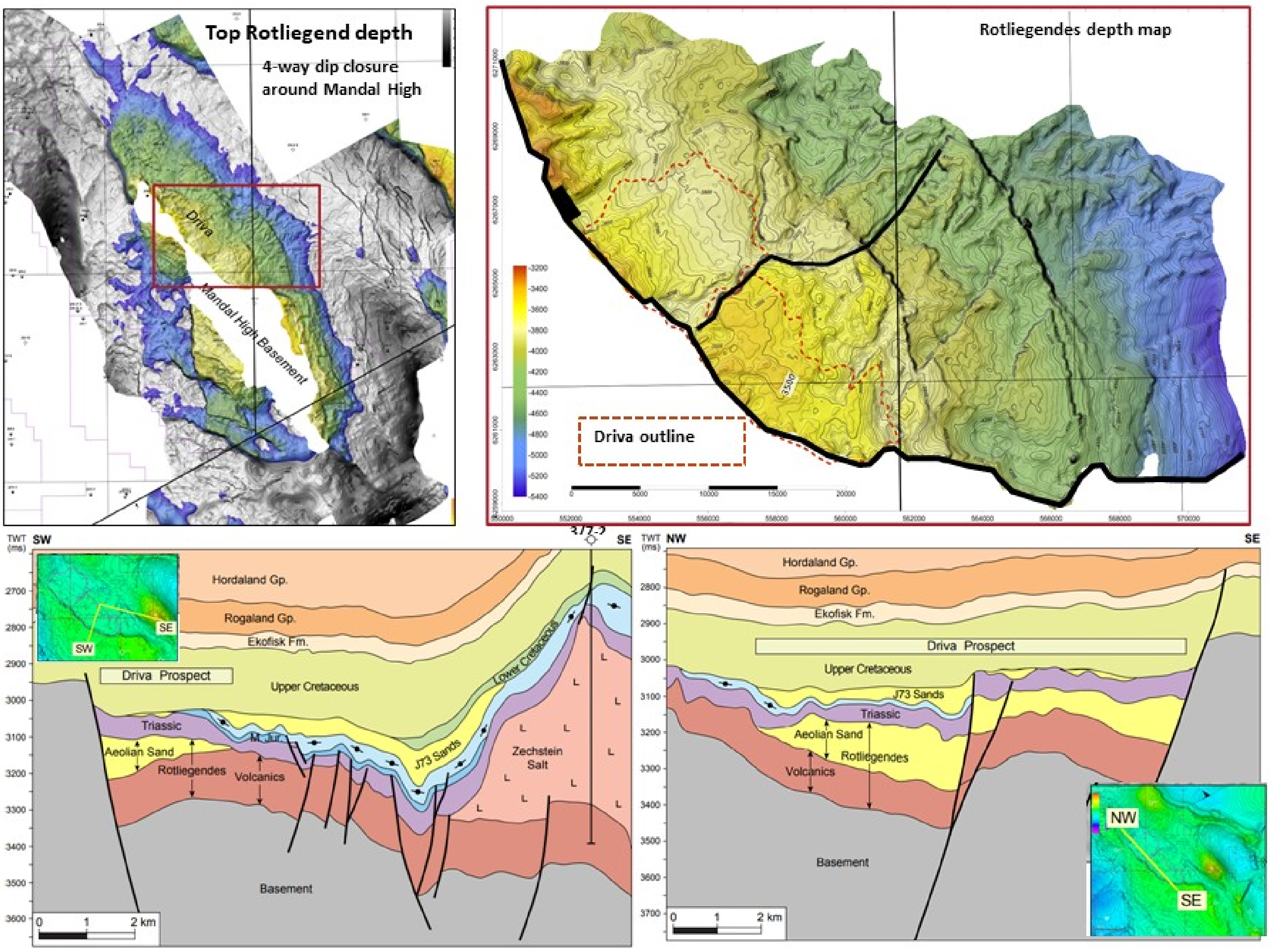

Fig. 4.4 Overview Driva Prospect

Dombås Prospect (APA 2016)

The Dombås Prospect trapping mechanism is combined of both structural and stratigraphic elements. It is fault sealed against the basement high and by pinchout or truncation by the BCU elsewhere. The BCU is considered the reservoir top. The Dombås Prospect reservoir sediments are located in down-cut trenches, in parts with limited distribution. The interpreted reservoir sandstone in the Dombås Prospect is a shallow marine sandstone (base J73-BCU) unit analogue to the Upper Jurassic sandstone in Well 3/7-3. Seal is provided by Lower to Upper Cretaceous shales and/or tight chalk. The Dombås Prospect might have been charged with hydrocarbons generated in shales of the Upper Jurassic Mandal and Farsund formations. Large hydrocarbon volumes have been generated in the Feda Graben west of the Mandal High and it was believed that hydrocarbons could have migrated through the fractured basement in the Mandal High and into the prospect.

Oppdal/Driva Well 2/6-6S

The 2/6-6S exploration well was drilled with the jackup Rowan Viking from November 2018 to January 2019. The well location was about 45 km east of the Valhall and Ekofisk fields and 20 km north of the Norwegian-Danish border. The 2/6-6 S (Oppdal/Driva) exploration well was drilled to test the oil potential in the Paleocene Oppdal submarine turbidite reservoir (Borr Sandstone Member, Intra Våle Formation) and in the Permian Driva aeolian reservoir (Auk Formation in the Rotliegend Group). Fig. 4.5 shows a seismic line along the well path across the Oppdal and Driva prospects.

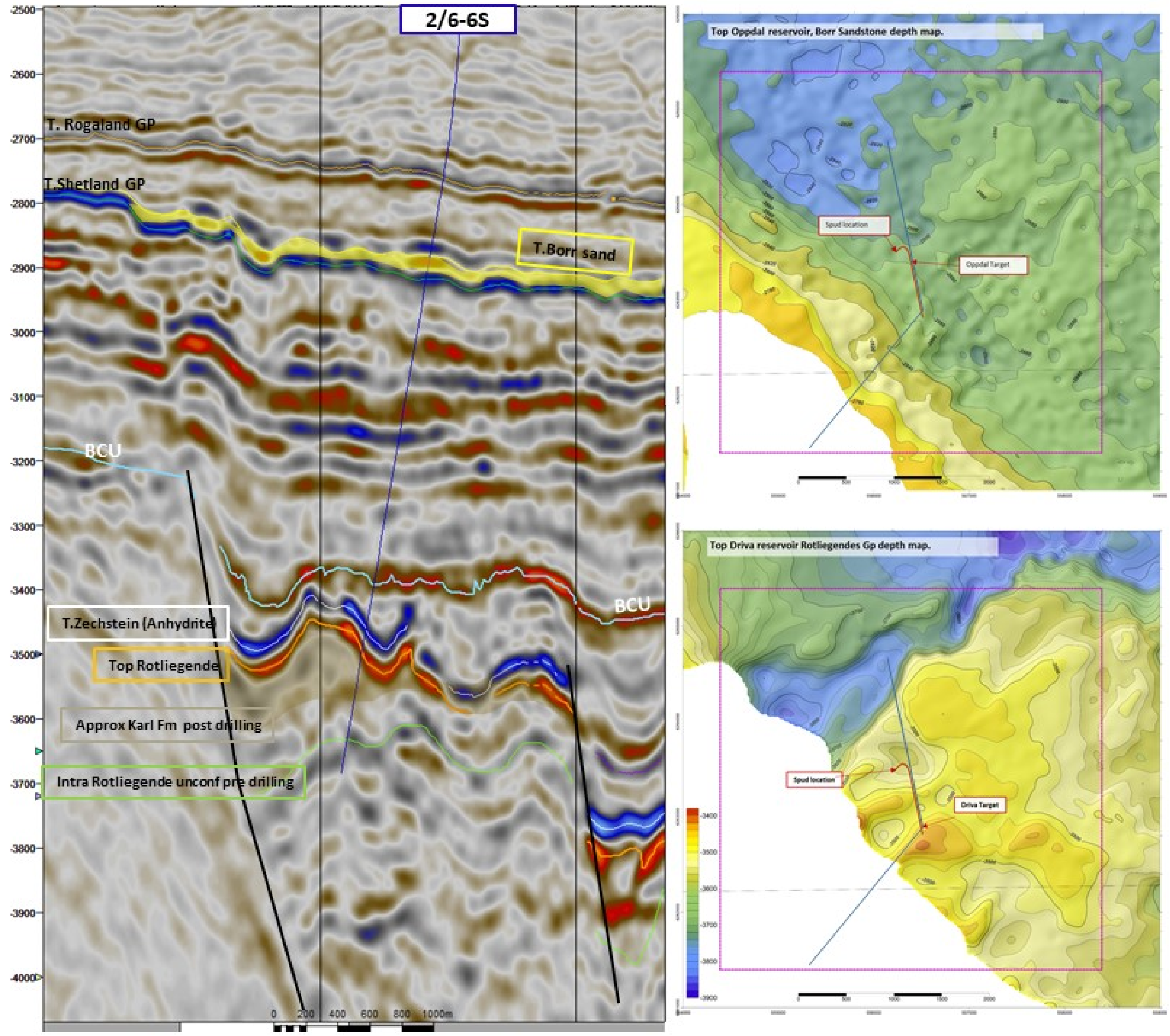

Fig. 4.5 Sesimic line across the Oppdal/Driva 2/6-6S well The well encountered a glauconitic rich sandstone about 34 meters thick in the Intra Våle Formation with good reservoir quality. One core (30m) was cut in the Borr sandstone. Post well analysis of the core concludes that the core comprises sediments by a range of gravity flows and suspension fall out processe, in a deep - marine setting with good reservoir quality (3 Results from Geological and Geophysical Studies). In Driva the Rotligend wedge consisted of approximately 100 meters of mostly siltstone. Top Karl came in higher than expected. The well was dry in both targets.
Although the 2/6-6S well did not penetrate the Dombås Prospect in an optimal position the interpreted reservoir section was absent. The Dombås is not part of the current prospectivity in PL860.

After drilling of the Oppdal/Driva well 2/6-6S the focus has been maturing the Paleocence Oppdal West and the Upper Jurassic Tangen and Kongsvoll prospects. Fig. 4.6 shows the updated prospectivity in PL860.

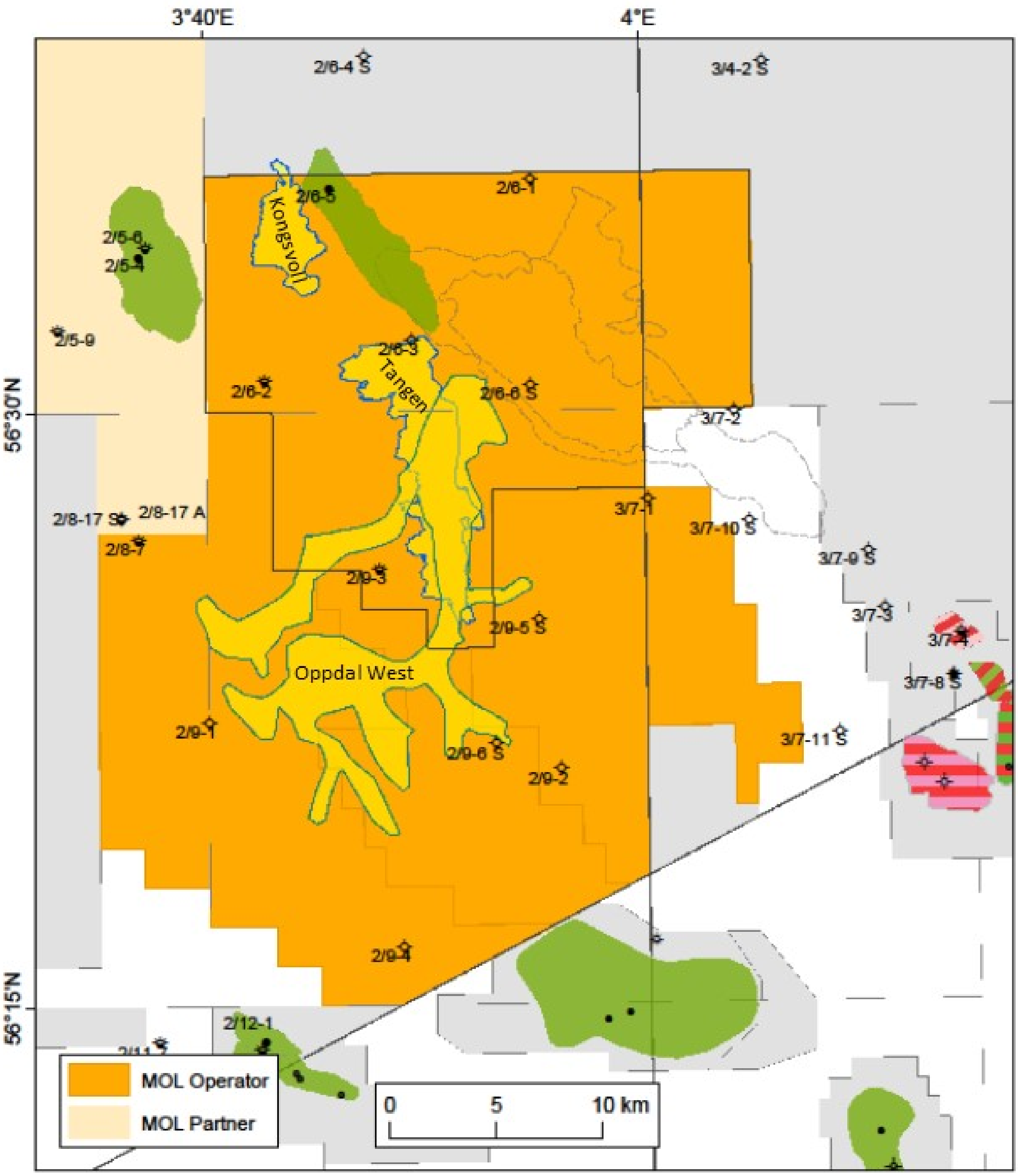

Fig. 4.6 Updated Prospectivity, PL860

Oppdal West Prospect

Sealing faults can potentially act as hydrocarbon barriers between the eastern part of Oppdal, penetrated by well 2/6-6S and the western part of the Oppdal defined as the Oppdal West Prospect. The Oppdal West Prospect is developed as a combined stratigraphic and structural trap located on the western side of Mandal High. Top reservoir is interpreted on hard kick, which laps onto the underlaying Ekofisk Formation (base reservoir). Uncertainty is related to interpretation of top reservoir (Borr sandstone) on the western side of the Mandal High. Top seal is provided by Tertiary shales within the Rogaland

Group. The main risk is related to the lateral fault seal against the eastern part of the Oppdal Prospect. The depositional model is confirmed by the Oppdal well 2/6-6S. The Borr sandstone comprises of sediments by a range of gravity flows and suspension fall out processe, in a deep - marine setting with good reservoir quality. As described in (3 Results from Geological and Geophysical Studies) evolution of the sand fairway from channelized to ponded is discussed in terms of a 'fill and-spill' depositional model, meaning potential for Borr reservoir basin-ward on the western side of Mandal High. This is also supported by depositional patterns identified on frequency blend maps. Well 2/9-3 is located on a small high and it is believed that the Borr sand penetrated in 2/6-6S well have bypassed this high. The Oppdal West Prospect is located stratigraphically in a position where sufficient hydrocarbon charge is likely. Hydrocarbon charge can occur by vertical migration from the deep source kitchen and in to the shallower porous Paleocene deposits acting as conduits into the Oppdal West Prospect, or by migration up onto the Piggvar Terrace, along channel features seen on the attribute and frequency blend maps around BCU level, through the Upper Jurassic Tangen Prospect, and upwards into the Oppdal West Prospect via faults bounding Tangen to the east (Fig. 4.2). Fig. 4.7 gives an overview of the Oppdal west Prospect.

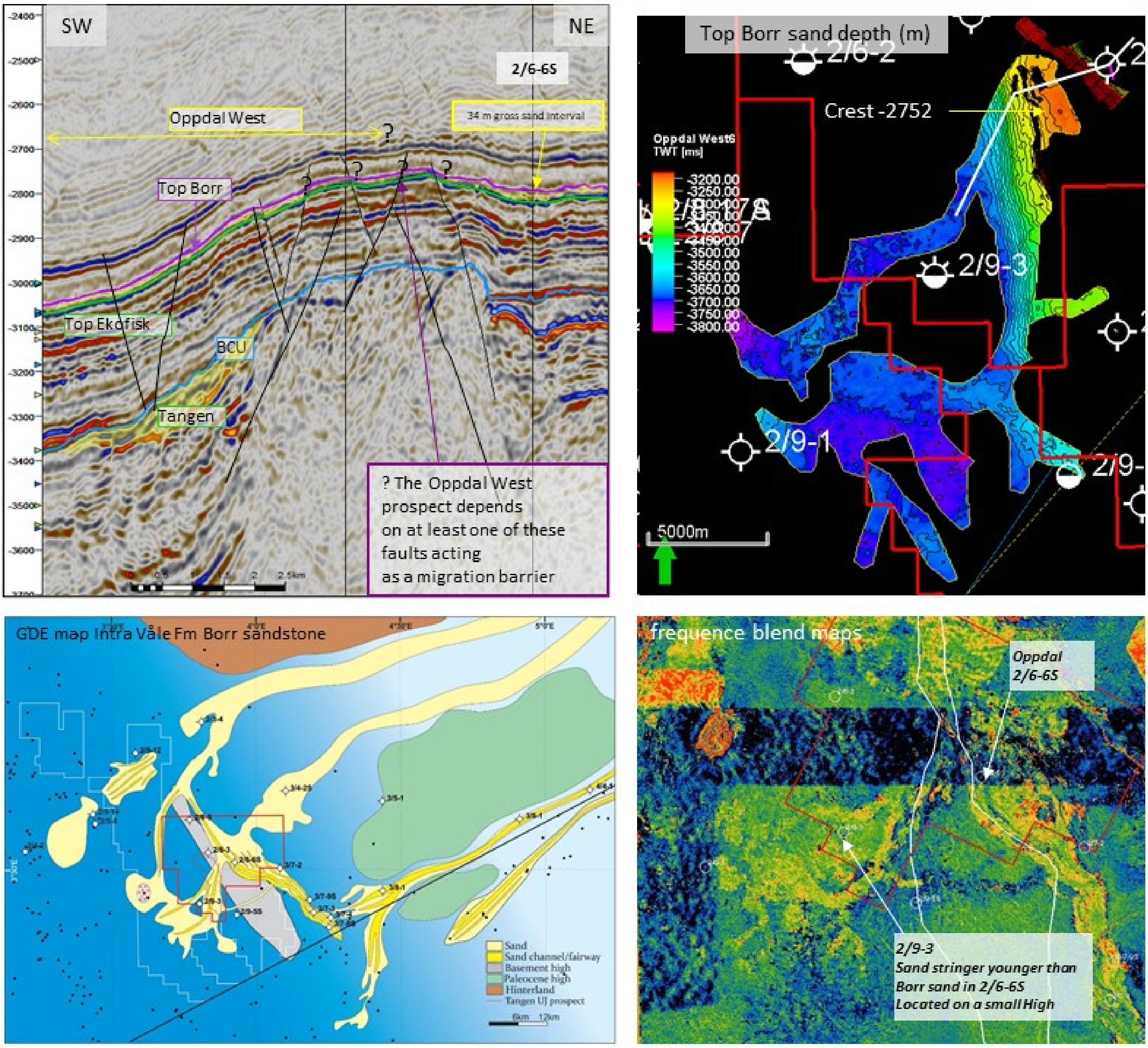

Fig. 4.7 Overview Oppdal West Prospect

Tangen Prospect

The Tangen Prospect is developed as a combined stratigraphic and structural trap located on the western side of Mandal High and considered an analogue to the Eidsvoll Prospect drilled in PL617 (2/9-6S). Top reservoir is interpreted on a hard kick (below BCU) and base reservoir is interpreted on a soft kick. The seismic interpretation of base reservoir is uncertain. The top seal is secured by Mandal Formation and Lower Cretaceous shales. Tangen is juxtaposed against the Mandal Basement High and the lateral fault seal is the main risk (3 Results from Geological and Geophysical Studies). The prospect is located close to the sediment source and the reservoir is therefore most likely immature. The inversion study performed in the licence indicates limited porosity in Tangen. Reservoir uncertainty is also related to reservoir quality since the sediment source area, the northern part of the Mandal High, is belived to consist of phylittic basement, thus giving poorer reservoir quality compared to reservoir sand of a more southern Mandal High origin. The Tangen Prospect is located stratigraphically and geographically in a position where sufficient (surplus) hydrocarbon charge is likely. Fig. 4.8 gives an overview of the Tangen Prospect.

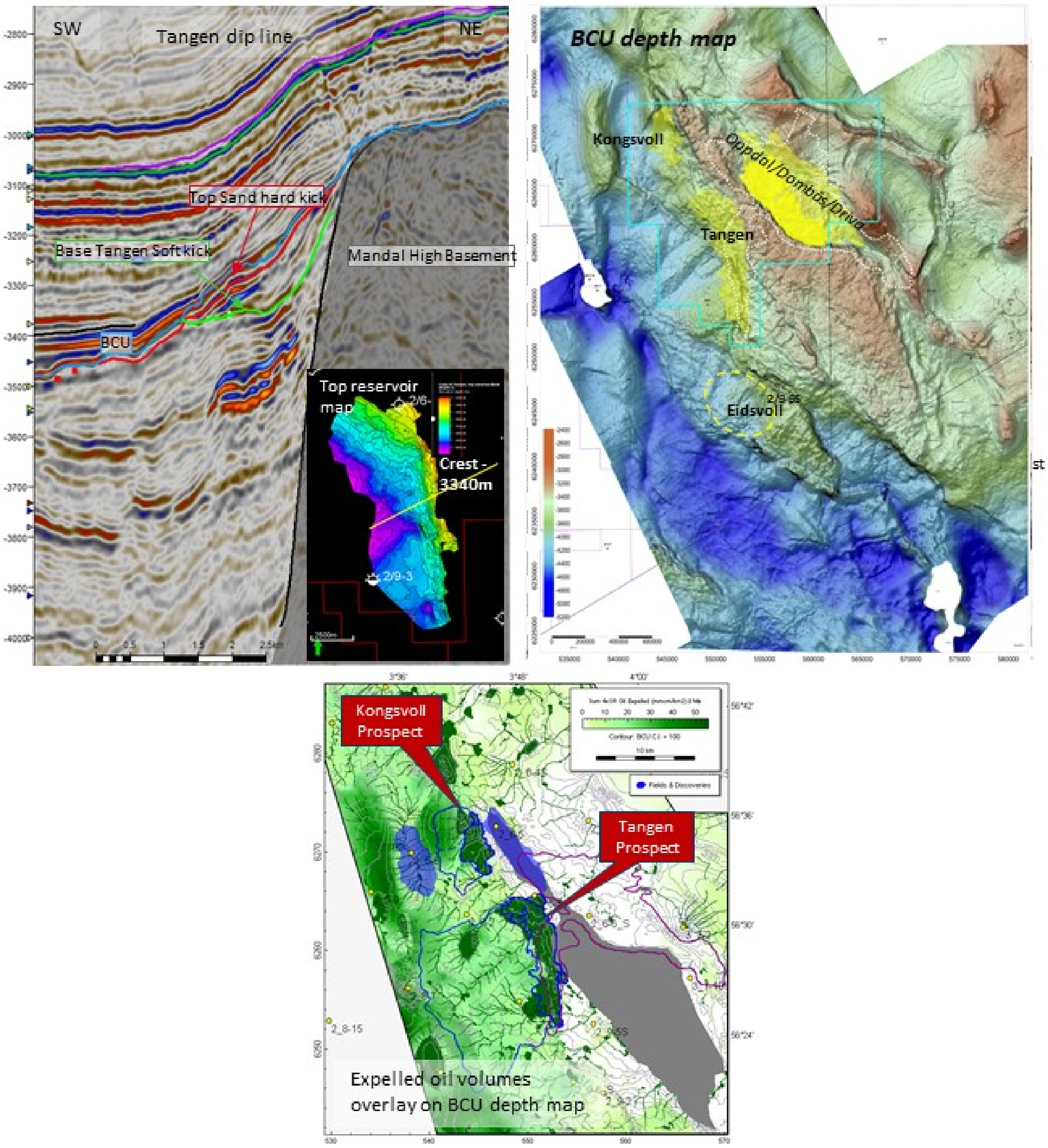

Fig. 4.8 Overview Tangen Prospect

Kongsvoll Prospect

The Kongsvoll Prospect is developed as a combined stratigraphic and structural trap located on the northwestern side of Mandal High. The Kongsvoll Prospect is an analogue to the Eidsvoll Prospect penetrated by well 2/9-6S, drilled in PL617. Top reservoir is interpreted on a hard kick (below BCU) and base reservoir is interpreted on a soft kick. The Kongsvoll Prospect is juxtaposed against the Mandal Basement High and the lateral fault seal is the main risk (3 Results from Geological and Geophysical Studies) . The reservoir is located close to the sediment source and is therefore most likely immature. The inversion study performed in the licence indicates limited porosity in Kongsvoll. Reservoir uncertainty is also related to reservoir quality since the sediment source area, the northern part of the Mandal High, is belived to consist of phylittic basement, thus giving poorer reservoir quality compared to reservoir sand of a more southern Mandal High origin. The Kongsvoll Prospect is located stratigraphically and geographically in a position where sufficient (surplus) hydrocarbon charge is likely. Fig. 4.9 gives an overview of the Kongsvoll Prospect.

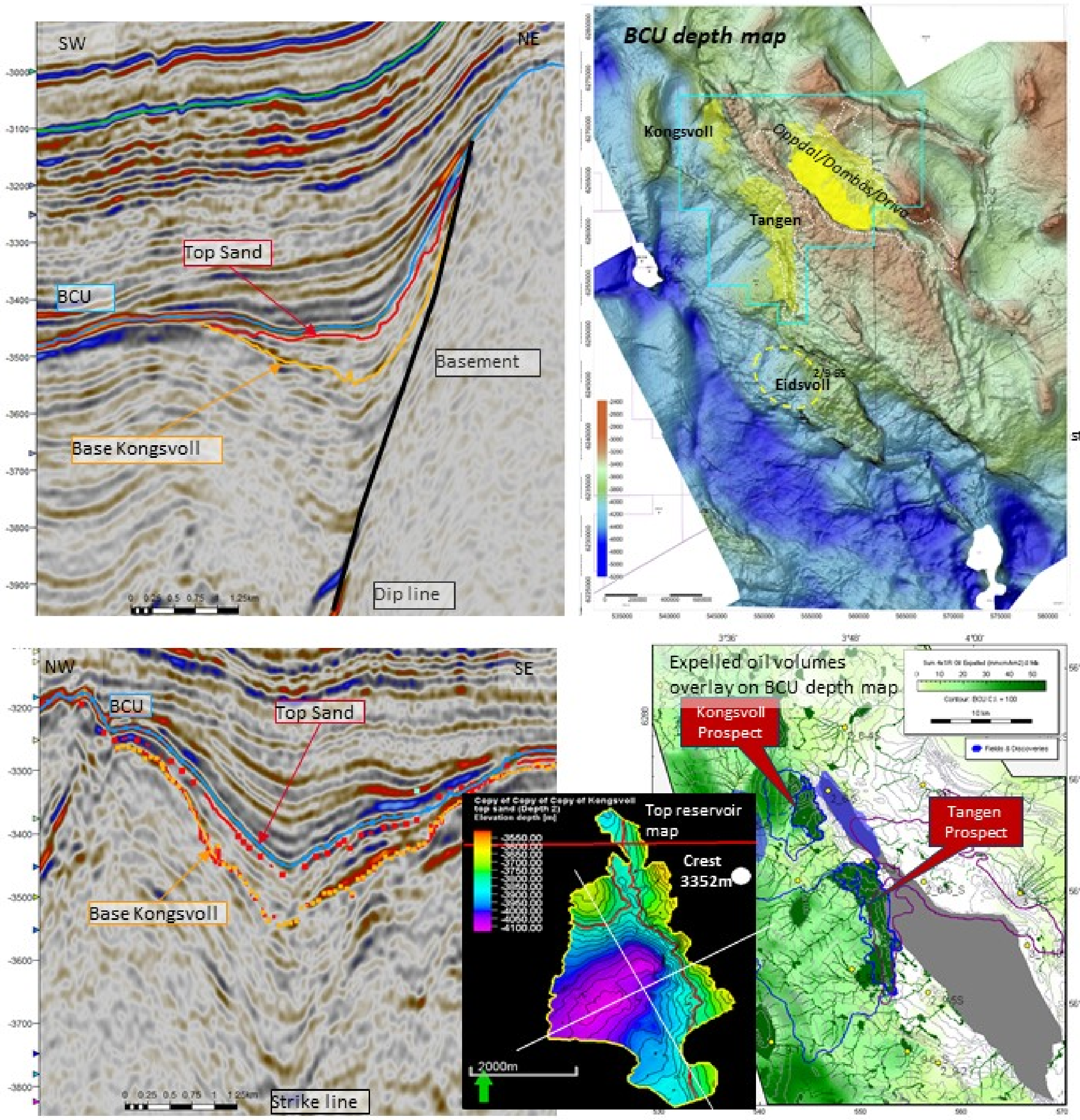

Fig. 4.9 Overview Kongsvoll Prospect

Prospect data, including resource potential, for Oppdal West, Tangen and Kongsvoll are shown in Table 4.2, Table 4.3 and Table 4.4 .

Table 4.2 Oppdal West - Prospect Data

Block	2/6 and 9	Prospect name	Oppdal West	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	MOL Norge	Reference document	EC handout 23 June 2021			Assessment year	2021
This is case no.:	1 of 1	Structural element	Mandal High area	Type of trap	combined	Water depth [m MSL] (>0)	65	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)	10,27	12,78	43,13	96,30				
	Gas [10^9 Sm^3] (>0.00)								
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	3,07	4,44	14,77	33,99	0,32	0,34	1,79	4,28
	Gas [10^9 Sm^3] (>0.00)								
Reservoir Chrono (from)	Paleocene	Reservoir litho (from)	Borr mbr	Source Rock, chrono primary	Upper Jurassic	Source Rock, litho primary	Mandal Fm	Seal, Chrono	Paleocene
Reservoir Chrono (to)	Paleocene	Reservoir litho (to)	Borr mbr	Source Rock, chrono secondary	Upper Jurassic	Source Rock, litho secondary	Farsund Fm	Seal, Litho	Lista Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)		Oil case (0.00-1.00)	1,00	Gas case (0.00-1.00)		Oil & Gas case (0.00-1.00)			
Reservoir (P1) (0.00-1.00)	0,86	Trap (P2) (0.00-1.00)	0,79	Charge (P3) (0.00-1.00)	0,56	Retention (P4) (0.00-1.00)	0,64		
Parametres:	Low (P90)	Base	High (P10)	*Rose Multi-methose risk analysis is used in resource calculations.Input high and low. N/G cut off criteria: 0.15 porosity and 0.45 vsh.*					
Depth to top of prospect [m MSL] (> 0)	2752		2752	*The permeability range reflects core plugs and log measurements from the 2/6-6 S well.*					
Area of closure [km^2] (> 0.0)	8,8		65,0						
Reservoir thickness [m] (> 0)	21		21						
HC column in prospect [m] (> 0)	148		414						
Gross rock vol. [10^9 m^3] (> 0.000)	0,188		1,341						
Net / Gross [fraction] (0.00-1.00)	0,40		0,80						
Porosity [fraction] (0.00-1.00)	0,20		0,30						
Permeability [mD] (> 0.0)	5,0	35,0	50,0						
Water Saturation [fraction] (0.00-1.00)	0,20		0,60						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,64		0,89						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	60		225						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,20		0,50						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)									
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)	90			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)	445			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 Tangen - Prospect Data

Block	2/6 and 9	Prospect name	Tangen	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	MOL Norge	Reference document	EC handout 23 June 2021			Assessment year	2021
This is case no.:	1 of 1	Structural element	Mandal High area	Type of trap	combined	Water depth [m MSL] (>0)	70	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)	6,16	9,49	22,63	48,57				
	Gas [10^9 Sm^3] (>0.00)								
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	1,97	2,38	7,77	16,69	0,23	0,26	0,86	1,82
	Gas [10^9 Sm^3] (>0.00)								
Reservoir Chrono (from)	Upper Jurassic	Reservoir litho (from)	Mandal Fm	Source Rock, chrono primary	Upper Jurassic	Source Rock, litho primary	Mandal Fm	Seal, Chrono	U Jura/L Cret
Reservoir Chrono (to)	Upper Jurassic	Reservoir litho (to)	Farsund Fm	Source Rock, chrono secondary	Upper Jurassic	Source Rock, litho secondary	Farsund Fm	Seal, Litho	Mandal/Åsgard Fms
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)		Oil case (0.00-1.00)	1,00	Gas case (0.00-1.00)		Oil & Gas case (0.00-1.00)			
Reservoir (P1) (0.00-1.00)	0,74	Trap (P2) (0.00-1.00)	0,77	Charge (P3) (0.00-1.00)	0,76	Retention (P4) (0.00-1.00)	0,50		
Parametres:	Low (P90)	Base	High (P10)	*Rose Multi-methose risk analysis is used in resource calculations.Input high and low. N/G cut off criteria: 0.10 porosity and 0.45 vsh*					
Depth to top of prospect [m MSL] (> 0)	3340		3340						
Area of closure [km^2] (> 0.0)	5,7		22,5						
Reservoir thickness [m] (> 0)	28		49						
HC column in prospect [m] (> 0)	210		685						
Gross rock vol. [10^9 m^3] (> 0.000)	0,160		1,140						
Net / Gross [fraction] (0.00-1.00)	0,36		0,50						
Porosity [fraction] (0.00-1.00)	0,14		0,21						
Permeability [mD] (> 0.0)	1,0		20,0						
Water Saturation [fraction] (0.00-1.00)	0,20		0,40						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,71		0,88						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	65		175						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,20		0,50						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)									
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 [^oC] (>0)	107			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)	530			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 4.4 Kongsvoll - Prospect Data

Block	2/6	Prospect name	Kongsvoll	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	MOL Norge	Reference document	EC handout 23 June 2021			Assessment year	2021
This is case no.:		Structural element	Mandal High area	Type of trap	combined	Water depth [m MSL] (>0)	70	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)	3,11	4,31	9,63	19,22				
	Gas [10^9 Sm^3] (>0.00)								
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,91	1,23	3,30	6,95	0,07	0,10	0,32	0,74
	Gas [10^9 Sm^3] (>0.00)								
Reservoir Chrono (from)	Upper Jurassic	Reservoir litho (from)	Mandal Fm	Source Rock, chrono primary	Upper Jurassic	Source Rock, litho primary	Mandal Fm	Seal, Chrono	U Jura/L Cret
Reservoir Chrono (to)	Upper Jurassic	Reservoir litho (to)	Farsund Fm	Source Rock, chrono secondary	Upper Jurassic	Source Rock, litho secondary	Farsund Fm	Seal, Litho	Mandal/Åsgard Fms
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)		Oil case (0.00-1.00)	1,00	Gas case (0.00-1.00)		Oil & Gas case (0.00-1.00)			
Reservoir (P1) (0.00-1.00)	0,68	Trap (P2) (0.00-1.00)	0,80	Charge (P3) (0.00-1.00)	0,68	Retention (P4) (0.00-1.00)	0,50		
Parametres:	Low (P90)	Base	High (P10)	*Rose Multi-methose risk analysis is used in resource calculations.Input high and low. N/G cut off criteria: 0.10 porosity and 0.45 vsh*					
Depth to top of prospect [m MSL] (> 0)	3557		3557						
Area of closure [km^2] (> 0.0)	3,1		11,0						
Reservoir thickness [m] (> 0)	32		49						
HC column in prospect [m] (> 0)	263		570						
Gross rock vol. [10^9 m^3] (> 0.000)	0,104		0,539						
Net / Gross [fraction] (0.00-1.00)	0,36		0,50						
Porosity [fraction] (0.00-1.00)	0,14		0,21						
Permeability [mD] (> 0.0)	1,0		20,0						
Water Saturation [fraction] (0.00-1.00)	0,20		0,60						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,68		0,92						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	40		200						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,20		0,50						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)									
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)	114			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)	550			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 remaining prospectivity in PL860 comprises a portfolio of different play type Upper Jurassic and Paleocene prospects with moderate resource potential with high – to moderate risks.

Based on the the results of the Oppdal 2/6-6S and Eidsvoll well 2/9-6S in PL617, the current view is that the combined Oppdal West and Tangen prospects could potetnially be considered an opportunity to be matured to a drill decision. The risk associated with the updip lateral fault seal and understanding of hydrocarbon migration needs to be evaluated further, before a drill decisionwould be possible. The Gomez well 2/5-15 (TD end of September 2021) penetrated 23 m oil bearing sandstone in the Våle Formation with poor to moderate reservoir properties. Implementing the results from this well might help de-risk the Oppdal West Prospect with regards to reservoir presence/quality and effective charge.

6 Conclusion

The work obligations stipulated in the production licence article 4 have been completed, by performing relevant geological and geophysical studies, which resulted in drilling of exploration well 2/6-6S in 2018-2019. The current partnership is MOL Norge as the operator (40%) and Lundin Energy Norway (40%) and Petoro (20%) as partners.

Since the PL860 Upper Jurassic prospects (Tangen and Kongsvoll) share the same concept model as the PL617 Eidsvoll prospect, the PL860 partnership applied for licence extensions (DOC) to have time to implement results from the PL617 Eidsvoll well. Positive results on Eidsvoll would have de-risked the Upper Jurassic prospectivity in PL860. The Eidsvoll well (2/9-6S) was drilled 1Q 2021 with disappointing results. However, the remaining Upper Jurassic Tangen and Kongsvoll prospects are still valid since the Eidsvoll well confiirmed reservoir sand.

The remaining prospectivity in PL860 also comprises the Paleocene Oppdal West prospect located downdip to the west and separated from the Oppdal prospect that was tested dry by the 2/6-6S well drilled in 2018-2019.

Based on the negative results of well 2/9-6S in PL617 and on the balance of the above discussion the partnership in PL 860 have concluded to surrender of PL860.

Endnotes

1 GDE - Gross depositional environment

2 APT - Applied Petroleum Technology

References

1 Cornford, C. 1998. Source rocks and hydrocarbons of the North Sea. In Glennie K.W. (ed.) Petroleum Geology of the North Sea, 376–462. Blackwell Science, Oxford.

2 Sclumberger FIT 2019. A stratigraphic reconstruction of bulk volatile chemistry from fluid inclusions in 2/6-6 S. FIS# FI90520a.