PL 771 Relinquishment Report

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1 History of the Production License

Production License 771 (Fig. 1.1) was awarded on the 6th of February 2015, as part of the APA 2014 license round, to the following partnership:

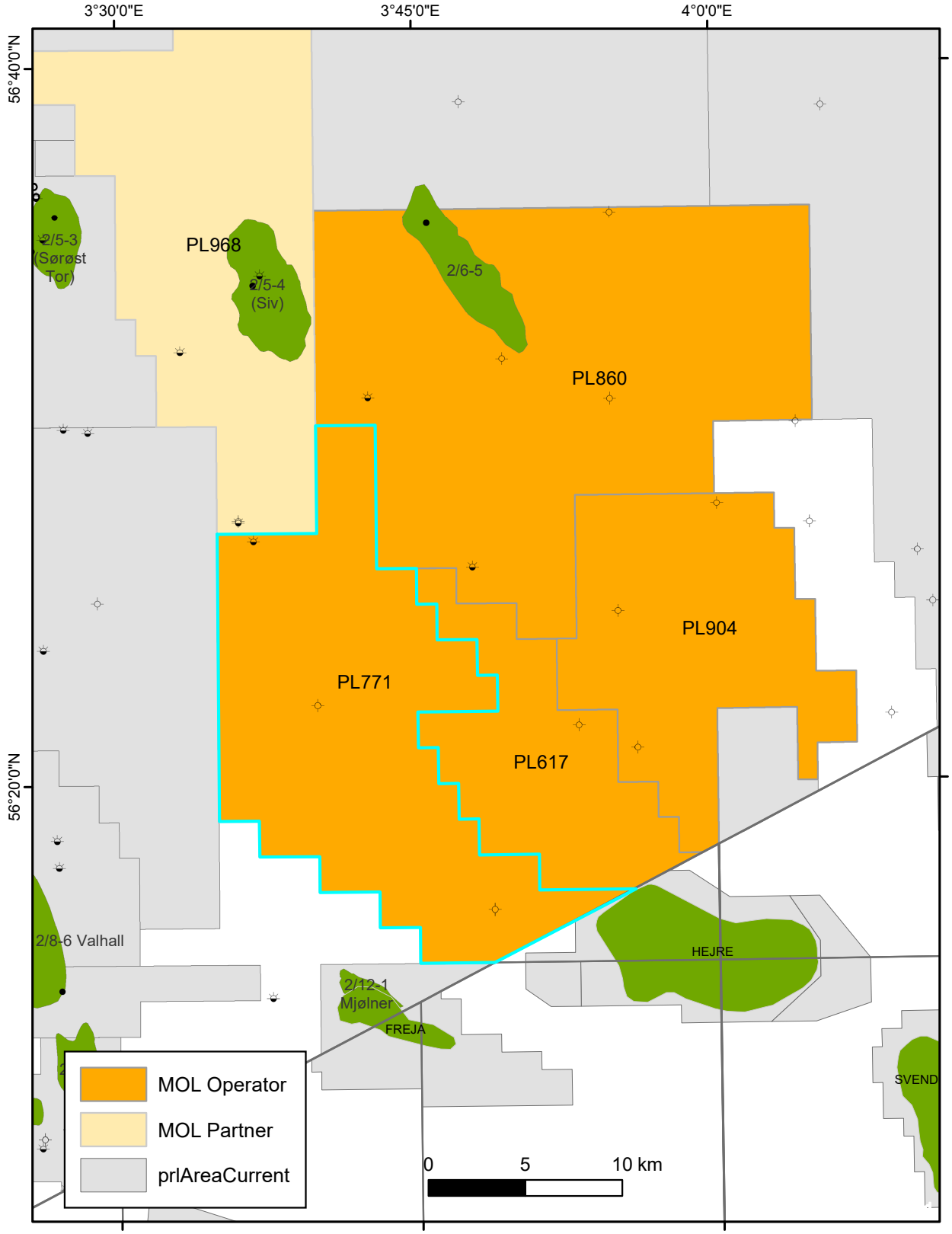

Fig. 1.1 PL771 location map

- Ithaca Petroleum AS (40% and operator)
- Fortis petroleum Norway AS (30%)
- E.ON E&P Norge AS (30%)

The license was awarded with a firm work commitment to reprocess 3D seismic and conduct geological and geophysical studies leading to a drill or drop decision after 2 years (06.02.2017).

Mol Norge took over the operatorship in September 2015 following its business acquisition of Ithaca Petroleum.

The PL771 partnership has applied for 4 license extensions on DoD. Table 1.1 gives an overview of the changes in the partnership and the reasoning behind each license extension application.

Table 1.1 PL771 list of licence extension applications

License extension application	Duration months	Updated date decision point	Partnership	Equity Share	Reason for application
DoD	12	6-Feb-2018	• MOL Norge • Fortis Petroleum • Dea E&P	40% 30% 30%	Change of operatorship. Finalize the 3D seismic reprocessing
DoD	12	6-Feb-2019	• MOL Norge • OMV Norge	70% 30%	Joint strategy for the Mandal High area and common timing for the DoD for the surrounding licenses. Update prospectivity based on reprocessed seismic data and preform special studies. Both Fortis and Dea withdraw from the license and MOL Norge farmed down 30% equity share to OMV. OMV entered both PL771 and the neighboring PL617 and needed additional time to evaluate the work performed and also took an active role in maturing the most attractive prospect in PL771 and in PL617 towards a drill decision.
DoD	24	6-Feb-2021	• MOL Norge • OMV Norge • Wintershall Dea Norge	40% 30% 30%	Based on the joint technical work, the licensees in both PL771 and PL617 decided to drill the first exploration well on the western side of the Mandal High on the Eidsvoll prospect in PL617. The partnership therefore applied for a 2-year DoD extension to be able to de-risk the PL771 prospectivity based on results from the Eidsvoll Well, originally planned to be spudded in Q3 2020. Wintershall farmed into PL771.
DoD	12	6-Feb-2022	• MOL Norge • OMV Norge • Wintershall Dea Norge	40% 30% 30%	The Eidsvoll well in PL617 was originally planned for spud early 3 Q 2020, but due to the situation at that time with the Corona epidemic and the decline in oil price the drilling of the 2/9-6S well was postponed to 1Q 2021. The DOD deadline was there extend one more year to give time to review the PL771 prospectivity based on results from the Eidsvoll well.

During the 7-year exploration period 12 EC/MC committee meetings and 10 Work Meetings were arranged by the operator to share and discuss prospectivity evaluations with the license partners. An overview of held meetings is given in Table 1.2

Table 1.2 PL771 list of seismic surveys

Meeting type	Date	Meeting type	Date
EC/MC Meeting	2015-03-10	EC/MC Meeting	2018-09-13
Work Meeting	2015-06-25	Work Meeting	2018-10-11
Work Meeting	2015-09-03	Work Meeting	2018-11-22
EC/MC Meeting	2015-11-19	EC/MC Meeting	2018-12-07
Work Meeting	2016-04-07	Work Meeting	2019-04-11
Work Meeting	2016-06-06	EC/MC Meeting	2019-10-17
EC/MC Meeting	2016-11-03	EC/MC Meeting	2020-06-16
Work Meeting	2017-06-27	EC/MC Meeting	2020-11-30
EC/MC Meeting	2017-11-29	EC/MC Meeting	2021-02-11
EC/MC Meeting	2018-03-08	Work Meeting	2021-04-27
Work Meeting	2018-06-27	EC/MC Meeting	2021-06-22

The remaining prospectivity in PL771 comprises a portfolio of different play types and Upper Jurassic and Cretaceous prospects with relatively large individual and total resource potential with high to moderate risks.

In accordance with the PL771 JOA and the current legislation, the PL771 licence will, if extended beyond the current licence period, pay area fee from 7th February 2022.

Based on the negative results of well 2/6-9S (PL617) and on the balance of the above discussion the partnership has unaminously agreed to relinquish PL771 and hereby hands in the PL771 status report.

2 Database Overview

2.1 Seismic Database

The APA2014 seismic interpretation of block 2/8&9 and surrounding area was mainly based on PGS Geostreamer survey MC3D-CGR2013RM. The regional Terracube from Fugro, and available released 3D data have been used in semiregional evaluations. The quality of the MC3D-CGR2013RM survey is generally good to very good, however the western part of the survey needed to be enhanced due to multiples below BCU. The PL771 firm work commitment was fulfilled by reprocessing the western part of MC3D-CGR2013RM. This formed the basis for the PL771 prospect mapping (Fig. 2.1 and Table 2.1).

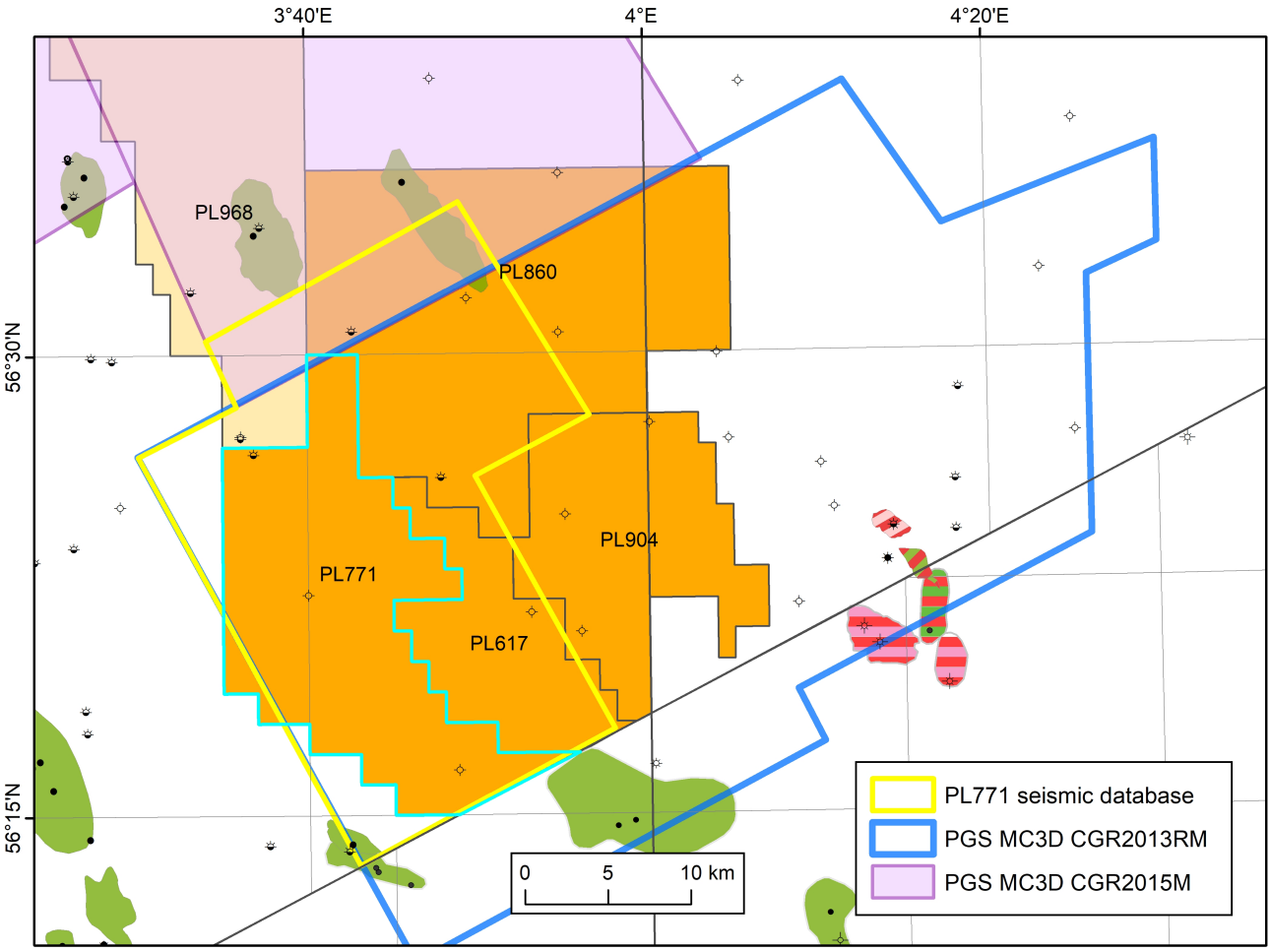

Fig. 2.1 PL771 seismic database

Table 2.1 PL771 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 (NPDID 7190) and 2011 (DK)		no
INA reprocessed	2015	Broadband	PGS MC3D CGR 2013RM	7190	no
PGS MC3D CGR 2015	2015	Broadband	PGS MC3D CGRN13	7904	no

2.2 Well Database

All released wells in the area have been utilized in the evaluation of the license. Table 2.2 lists the main wells used in the PL771 prospectivity evaluation. The wells have been through an extensive analysis program in order to understand the geological depositional environment, source rock potential, maturity and pressure regime in the area.

Table 2.2 PL771 list of well database

Wellbore	NPDID	Field/Discovery	Content	Age / Fm at TD	Fm with HC
2/4-21	6933	2/4-21 (King Lear)	Gas/condensate	Late Jurassic/Farsund Fm	Late Jurassic, Farsund Fm
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	
Gert 2	DK well		shows	Carboniferous	
Gert 3	DK well		Dry	Pre Devonian/Basement	
Hejre 1	DK well		Oil	EarlyPermian/Rotliegend Gp	Late Jurassic, Heno Fm and Basal sst
Hejre 2	DK well		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	

3 Results from Geological and Geophysical Studies

The geological and geophysical studies performed in PL771, 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
Petroleum system analysis	Inhouse	Source rock evaluation, quality and potential. Geochemistry for oil-oil and oil-source correlations. Petroleum systems modelling including source maturity, migration pathways and fluid parameters	Results were built into geological model for de-risking prospectivity
Detailed Prospect mapping, depth conversion and prospect evaluation	Inhouse	Define and evaluate prospectivity	During 2013 change of focus on the prospectivity from the basal Upper Jurassic (J54) sand to upper part of Upper Jurassic (J73-J76) where submarine fans had been deposited in a lobe complex system
Spectral decomposition analysis and Frequency blend maps	Inhouse	Depositional transportation and direction	Spectral decomposition evaluations indicate direction and transportation of erosional product from Mandal High, westward to the Piggvar, Kveite terraces and Feda Graben
Structural reconstruction	Badleys	The main objective was to produce a quantitative geological model from Permo-Triasisic to present-day across the Mandal High	The analysis indicated significant erosion over the entire length of the Mandal High. A total of 900-1200 metres of erosion during the Late Jurassic rift event, which will generate substantial amounts of sediments to be deposited in the emerging basins around the Mandal High
Seismic reprocessing	INA	Eliminate the presence of multiples in the seismic	Reprocessed data provided better imaging
Sink to source study biostratigraphy, core description, paleo-water depth mapping	Inhouse	Understanding the depositional environment and the sediment source areas	Series of GDE maps (Upper Jurassic) and Wheeler diagrams were constructed. Depositional model confirmed by PL617 well 2/9-6S
Paleo-water depth modelling	Inhouse	Generating paleo-water depth maps in PetroMod, by decompaction and back-stripping	Results used as input for the GeoGravity 3D simulations of deposition of the Upper Jurassic
Upper Jurassic 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 Upper Jurassic well tops. This works improved the understanding of the Upper Jurassic reservoir and source rock distribution in the area
Provenance area study	GEUS	Source to sink sand, typing and absolute age dating	The source of the Upper Jurassic gravity flow sediments was inline with the conceptual depositional model
Analogues study upper Jurassic gravity flow	Inhouse	Evaluate the Brae/Cladhan system	De-risking Mandal High sedimentation along a faulted basin margin
Geo Gravity Mass Flow	GeoGravity	Use MassFlow3D to simulate mass flow and thereby de-risk reservoir presence in conceptual model, focus on reservoir presence and quality	Support deposition of reservoir quality sand
Rock Physics	Inhouse	De-risk sand presence of gravity flow sands	Encouraging results to map gravity flow sands with EEI.

Prestack inversion	Inhouse	De-risk sand presence of gravity flow sands	Support deposition of reservoir quality sand in Eidsvoll prospect which was confirmed by drilling the Eidsvoll well 2/9-6S
Gas Chimney	Inhouse, dGB	Identification and validation of gas chimneys	Valid chimneys occur on flanks of the Upper Jurassic Eidsvoll prospect
Petroleum system analysis	Inhouse	Source rock evaluation, migration pathways and charge, PVT, fluid parameters	Results were built into geological model
Pressure evaluation	Inhouse	Overview of the pressure regime in Jurassic	Jurassic overpressure map – input to hydrocarbon migration understanding
Hydrocarbon and Seal Evaluation Study - Mud gas analysis study	GeoProvider AS	Identification of access to charge, missed pay, hydrocarbon composition, productive zones and sealing units	Results used for calibration of the hydrocarbon migration modelling together with geochemistry. Distribution of carrier bed sand seals were integrated to geological model. Result map and logs were uploaded into Petrel and ArcGIS
Tuxen reservoir study	GEUS	Evaluate reservoir potential in Tuxen Formation	Limited reservoir potential in AOI
Fault seal analysis	Inhouse	Evaluate fault seal potential for Upper Jurassic Dovre prospect	Sealing seems to be sufficient
Dry well analysis	Inhouse	Find reasons for failure in nearby wells	Charge and fault seal main reason for failure
Apex study (2015)	Apex Spectral technology, Inc	Measurement of fluid mobility	An ADF fluid mobility cube was computed
IP (2015)	ORG geophysical	Identify hydrocarbons by measuring resistivity and induced polarization (IP)	Low indication of hydrocarbons observed on the 5 lines over the AOI

PL771 and PL617 are located adjacent to each other with the same partnership. The Upper Jurassic play concept is common for both licences and joint studies and work have been beneficial for both licences.

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, a detailed geological evaluation (core analysis for depositional environment and facies distribution, GDE map, structural modelling) and high quality broadband seismic data. These studies have created the basis for developing exploration concepts around the Mandal High. PL771 (part of blocks 2/9 and 8) is located in the North Sea on the western flank of the Mandal High.

Fig. 3.1 shows the BCU depth map with the PL771 prospects/leads and hydrocarbon migration focus. The best reservoir potential in PL771 is considered to sit in the sand deposits in the J73 to BCU in the Feda Graben.

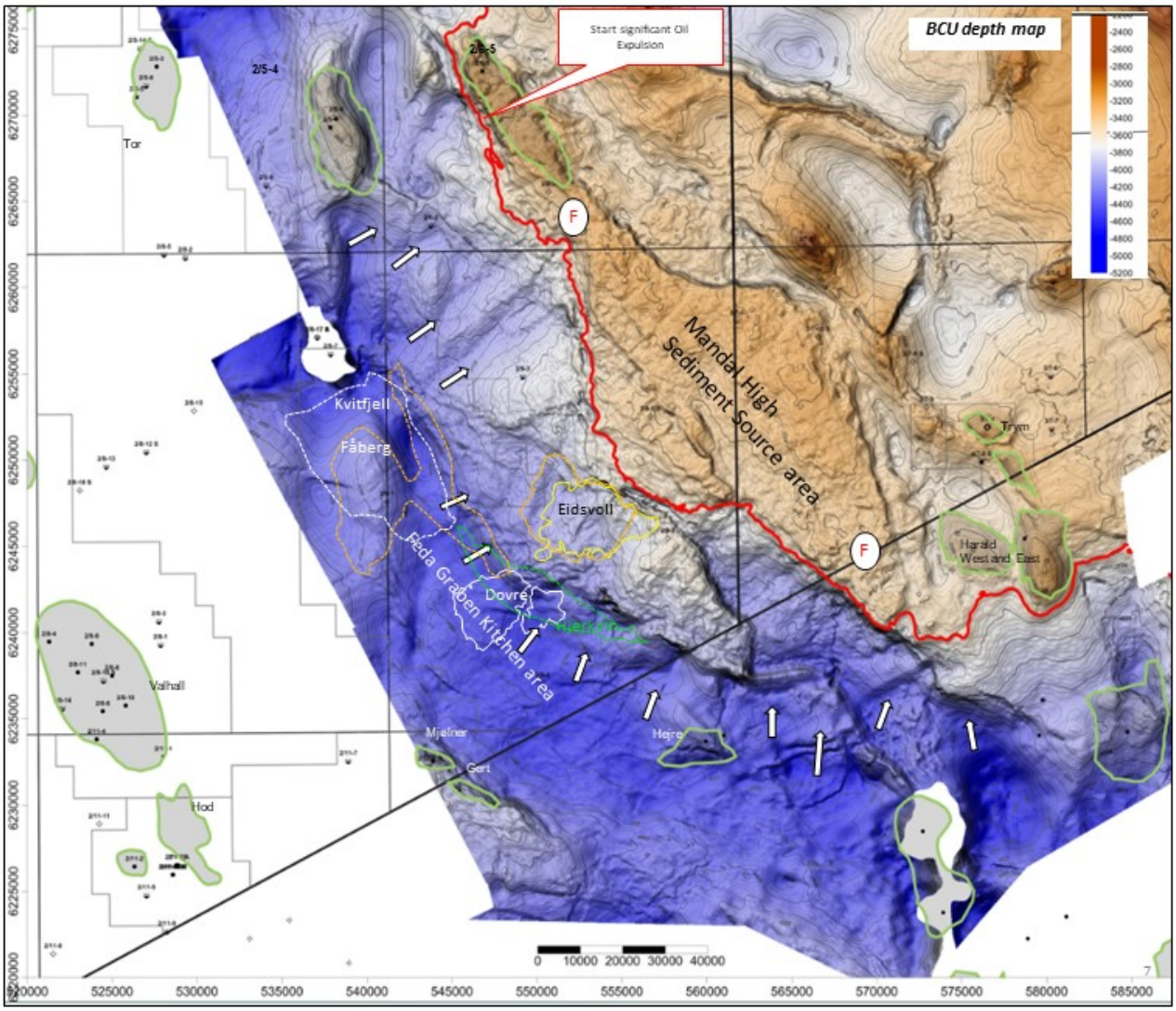

Fig. 3.1 BCU Depth map with Migration focus

The play concept and GDE map are shown in Fig. 3.2. Offset wells, for example the 2/9-4 and Hejre wells west of Mandal High show thin lenses of sand deposited in a thick shale section. These lenses are interpreted as distal turbidites originating from the Mandal High area, suggesting thicker turbidite deposits in depocentres closer to sediment source. The Eidsvoll well was drilled 1Q 2021 and encountered a total of 253 m gross sands in the upper part of the Eidsvoll prospect.

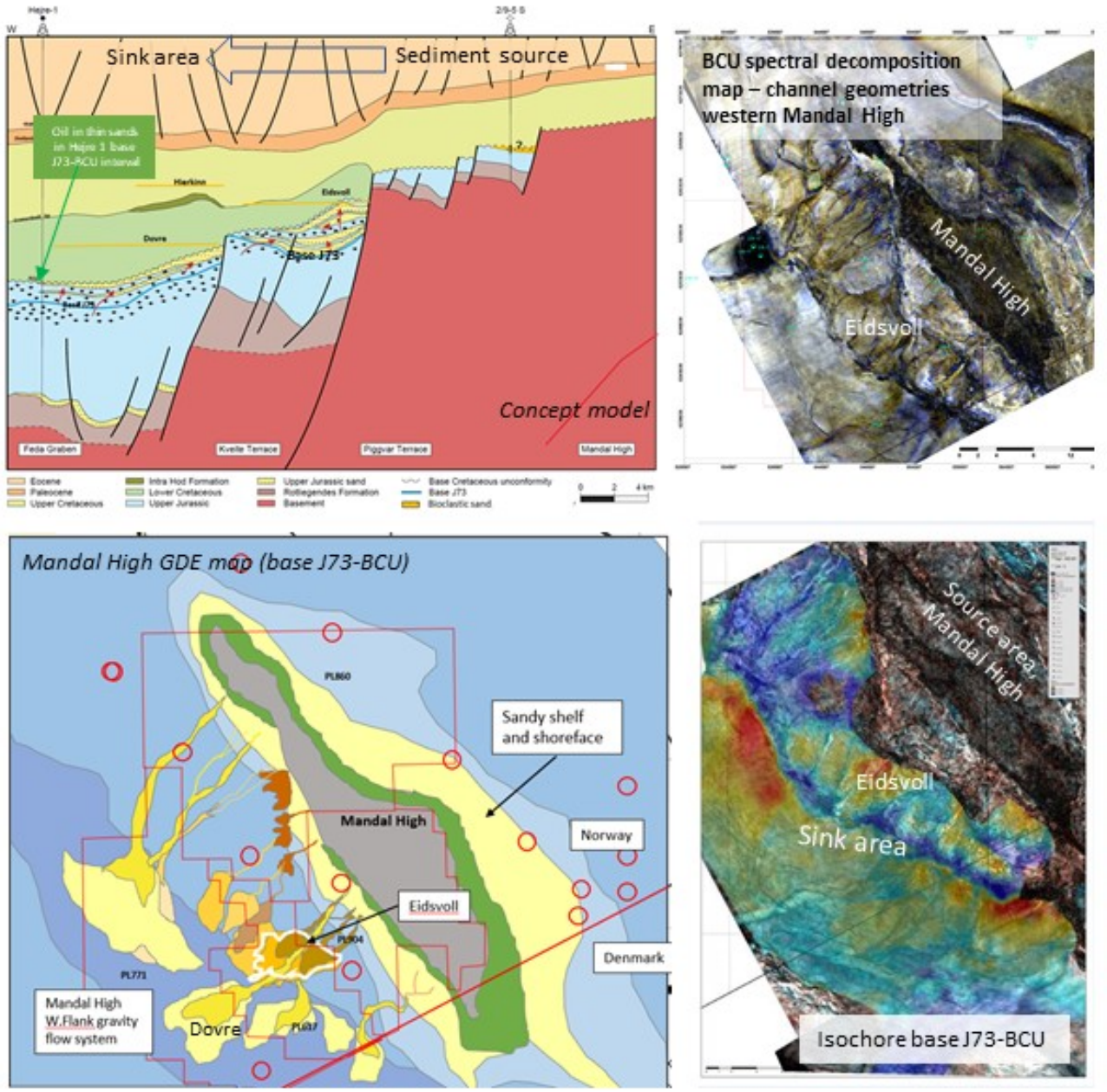

Fig. 3.2 Depositional environment studies

Tuxen study

Two studies were performed in 2019 and 2020 to improve the understanding of the Upper Cretaceous Tuxen Formation in PL771: Tuxen Formation reservoir quality study and Mineralogical characterization of the Tuxen Formation. Both studies were performed by the Geological Survey of Denmark and Greenland (GEUS).

Tuxen reservoir quality study packages

- A1. Evaluation of reservoir potential: Objectives were to present an evaluation of the reservoir potential of the Tuxen Formation in selected well sections in the Norwegian and northern Danish sectors. This entailed stratigraphic evaluation of the Lower Cretaceous section to verify the boundaries of the reservoir interval, and evaluation of the reservoir potential based on the CPI log interpretation and considerations derived from studies of the Valdemar Field and adjacent areas in the Danish Central Graben.

- A2. Production of CPI logs for the study interval (Tuxen Formation): Objectives were to provide information about the petrophysical properties of the study interval under focus (Tuxen Formation, etc.).
- Evaluation of seismic inversion parameters: Objectives were to assess the rock physics and seismic properties of the Tuxen Formation reservoir to get an initial understanding of the relationship between seismic and reservoir parameters based on well log data.
- B. Stratigraphic overview of the Chalk Group in key wells: Objectives were to present the stratigraphic subdivision of the Chalk Group in key wells, based on log-lithostratigraphic analysis and biostratigraphic review, with identification of main seismic ties.

Mineralogical characterization of the Tuxen Formation: The aim of this study was characterization of the mineralogical composition of chalk, marly chalk and marlstone, including measurements of the porosity and permeability of samples mainly from wells where core or SWC materials were available.

GeoGravity MassFLOW3D study

Sediment gravity flows into the Dovre and Kvitfjell areas were modelled with GeoGravity's MassFLOW3D software. The tool is based on 3D flow simulations, and predicts realistic transport, erosion and deposition of turbidity currents and deposition architecture of turbidites predicting major reservoir parameters. The study was performed to confirm the conceptual model and de-risk reservoir presence and quality. The modelling is an iterative process. MassFlow3D simulation input parameters were tweaked to produce a depositional architecture and deposit distribution best matching the seismic, seismic interpretation, data in offset wells and the conceptual model. These parameters include average slope (palaeo-water depth), source locations, source volumes, grain size proportions and turbidite density. The study concluded that presence of thick sand sequences in the areas and intervals of interest was likely.

Petroleum systems analysis

The petroleum systems modelling has been performed in-house, applying Zetaware Trinity T3 and Schlumberger PetroMod 3D software, and included evaluation of the source rock potential of the area. The marine oil-prone shales of Upper Jurassic Farsund and Mandal formations are represented by isopachs from interpreted seismic horizons and predominantly the main source rocks based on geochemical correlations of the adjacent discoveries in p:IGI software. As part of the modelling workflow, it contributed to the GeoGravity MassFLOW3D study with palaeo-water depth maps calibrated against water depths derived from microfossil fauna by APT - Applied Petroleum Technology AS. The petroleum systems modelling shows that the prospetivity is likely to be sourced from these Upper Jurassic source rocks, through relatively short migration distance even at present day.

Geophysical studies

1. Reprocessing of MC3D-CGR2013RM seismic data

In order to improve the quality of the multiclient seismic data reprocessing was carried out with special focus on the Jurassic interval. The reprocessing was executed by INA processing team in 2017. The processing resulted more optimized seismic (full/angle stack + seismic gathers) that was utilized as input for seismic interpretation and predictive seismic analysis. The current definition of the Dovre Prospect, a redefinition of the APA 2014 Ringebu Prospect, is based on this seismic.

In addition to the full cycle reprocessing inhouse gather conditioning was applied on the post-migration gathers to get rid of noise and multiple energy at the reservoir interval (Fig. 3.3).

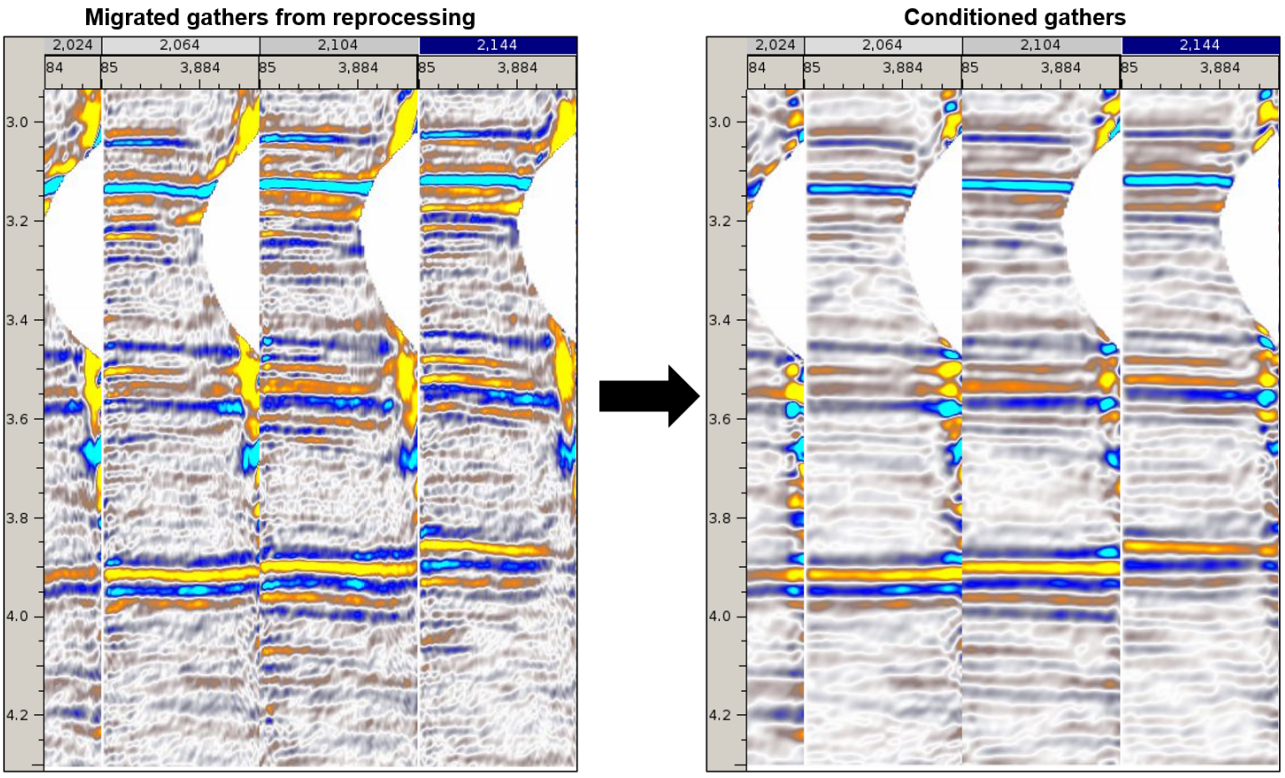

Fig. 3.3 Conditioning of Migrated gathers from INA processing

2. Pre-Stack seismic inversion

Utilizing the upgraded seismic data and well data based rock physics models seismic inversion was applied to de-risk sand presence for the Jurassic prospects. Given the data and reservoir related uncertainties Trace-matching inversion was performed that were able to provide quantitative predictions (elastic properties and porosity) for the prospects. Amongst the Jurassic prospects Dovre stand out on the inversion outputs potentially representing moderate porosity lobe system fed by channels from the Mandal High area (Fig. 3.4). However, after the 2/9-6S results in the adjacent PL617 license, Dovre prospect is considered very risky.

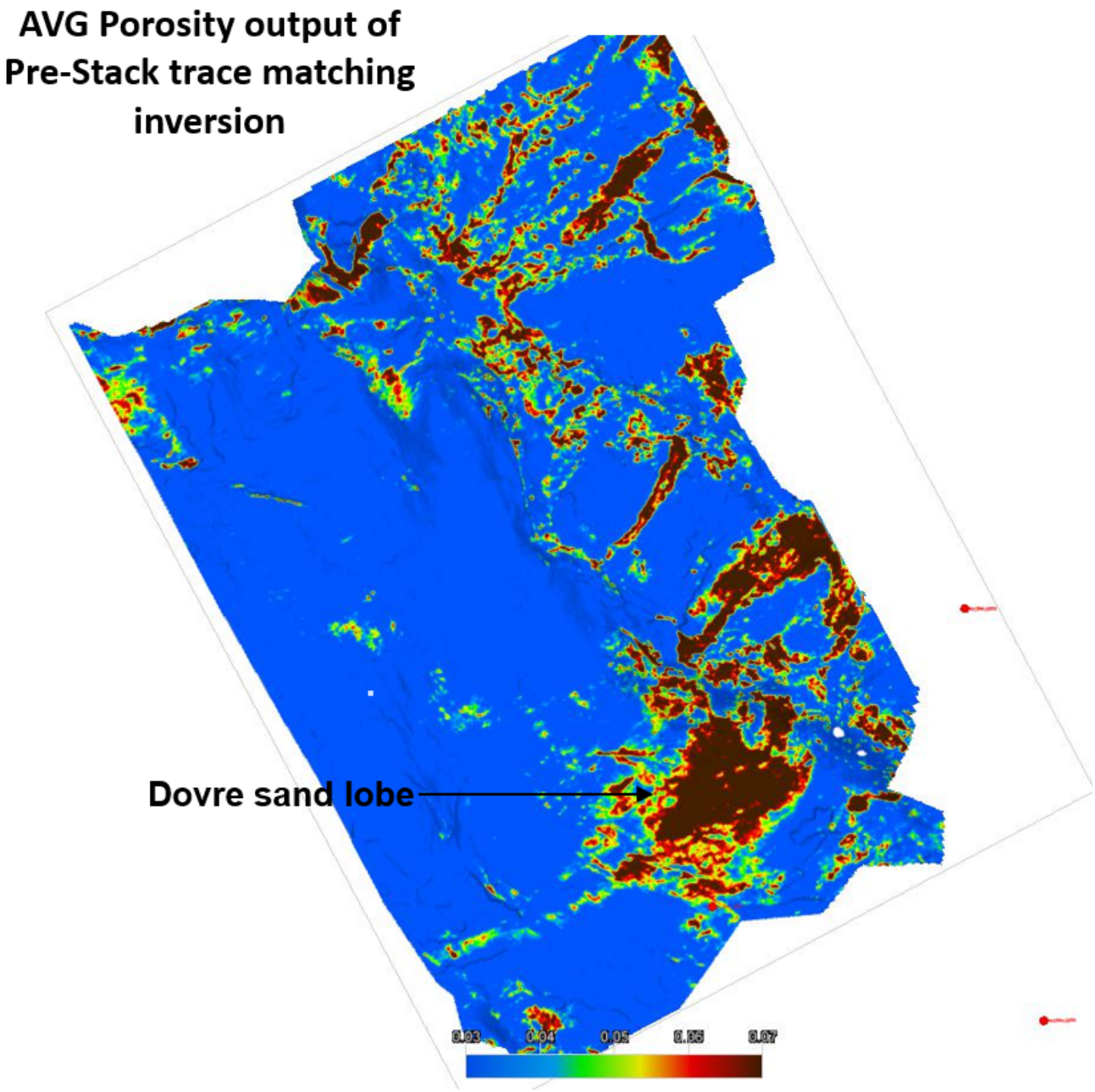

Fig. 3.4 Porosity output of trace matching inversion

4 Prospect Update

Two prospects, the Upper Jurassic Ringebu and the Lower Cretaceous Fåberg were identified during the APA2014 application work. In addition, two leads were identified, the Upper Jurassic Kvitfjell and the Lower Cretaceous Fåvang leads.

Fig. 4.1 shows the APA2014 application prospect and lead map. Fig. 4.2 shows a paleogeographic map of the latest Jurassic and early Cretaceous (J73-76 and K10- K20), illustrating the distribution of the major reservoirs and leads within blocks 2/8 and 2/9 in the APA 2014 application.

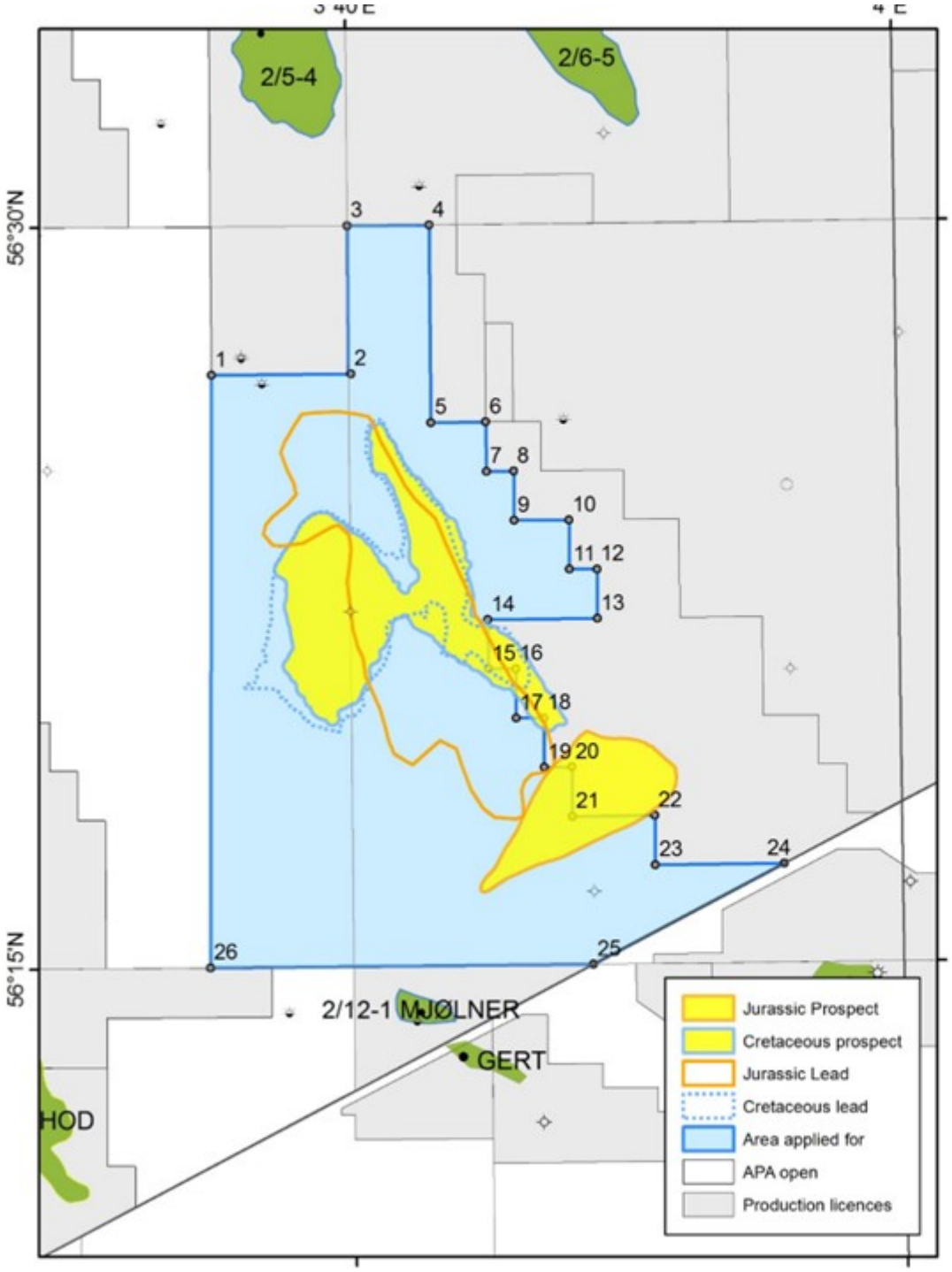

Fig. 4.1 Prospect overview APA 2014

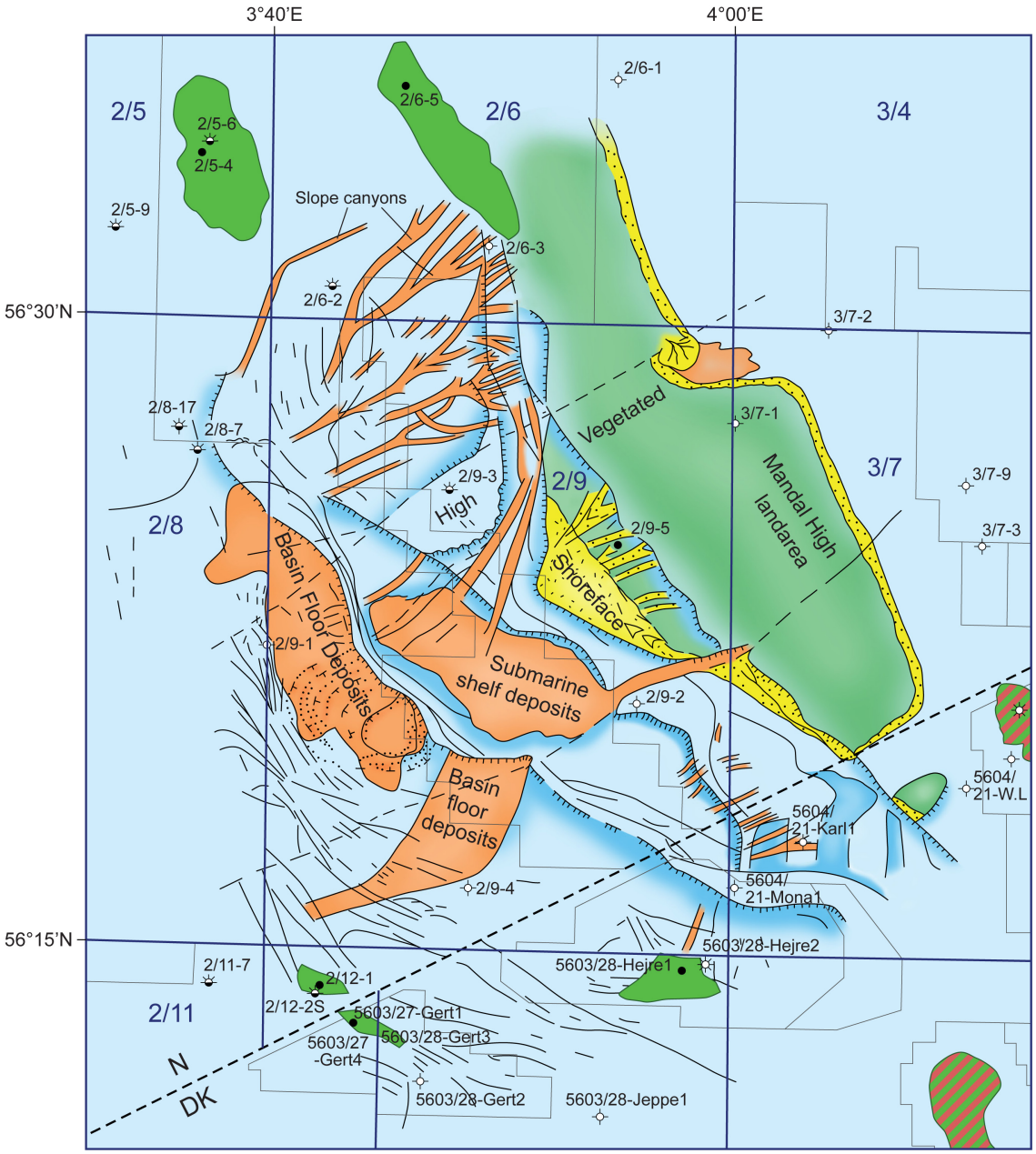

Fig. 4.2 Paleogeographic map of the latest Jurassic and early Cretaceous

The APA 2014 application resource potential is given in Table 4.1.

Table 4.1 Resource potential from APA 2014

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 [10^6Sm^3] (>0.00)			Gas [10^9Sm^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)						
Fåberg	P	Oil	10.49	36.25	67.81	1.18	4.28	8.16	0.22	90.5	Åsgard Fm/Lower Cretaceous	3810	Valhall	20
Ringebu	P	Oil	9.60	15.90	23.00	0.90	1.70	2.60	0.16	52.7	Intra Mandal Fm/Upper Jurassic	4340	Valhall	20
Kvitfjell	L	Oil		83.00							Intra Mandal Fm/Upper Jurassic	4220	Valhall	20
Fåvang	L	Oil		21.00							Tuxen Fm/Lower Cretaceous	3720	Valhall	20

Ringebu Prospect

The Upper Jurassic Ringebu Prospect is a combined structural and stratigraphic trap delineated by a northwest-southeast trending fault and defined by an amplitude anomaly (Fig. 4.3). The reservoir is interpreted to be a submarine turbidite fan/channel complex deposited downslope of a major fault defining the western edge of the Kveite Terrace (Fig. 4.2). The Ringebu Prospect is situated within the rich oil-gas mature source rocks. The Ringebu Prospect has been redefined to the current Dovre Prospect.

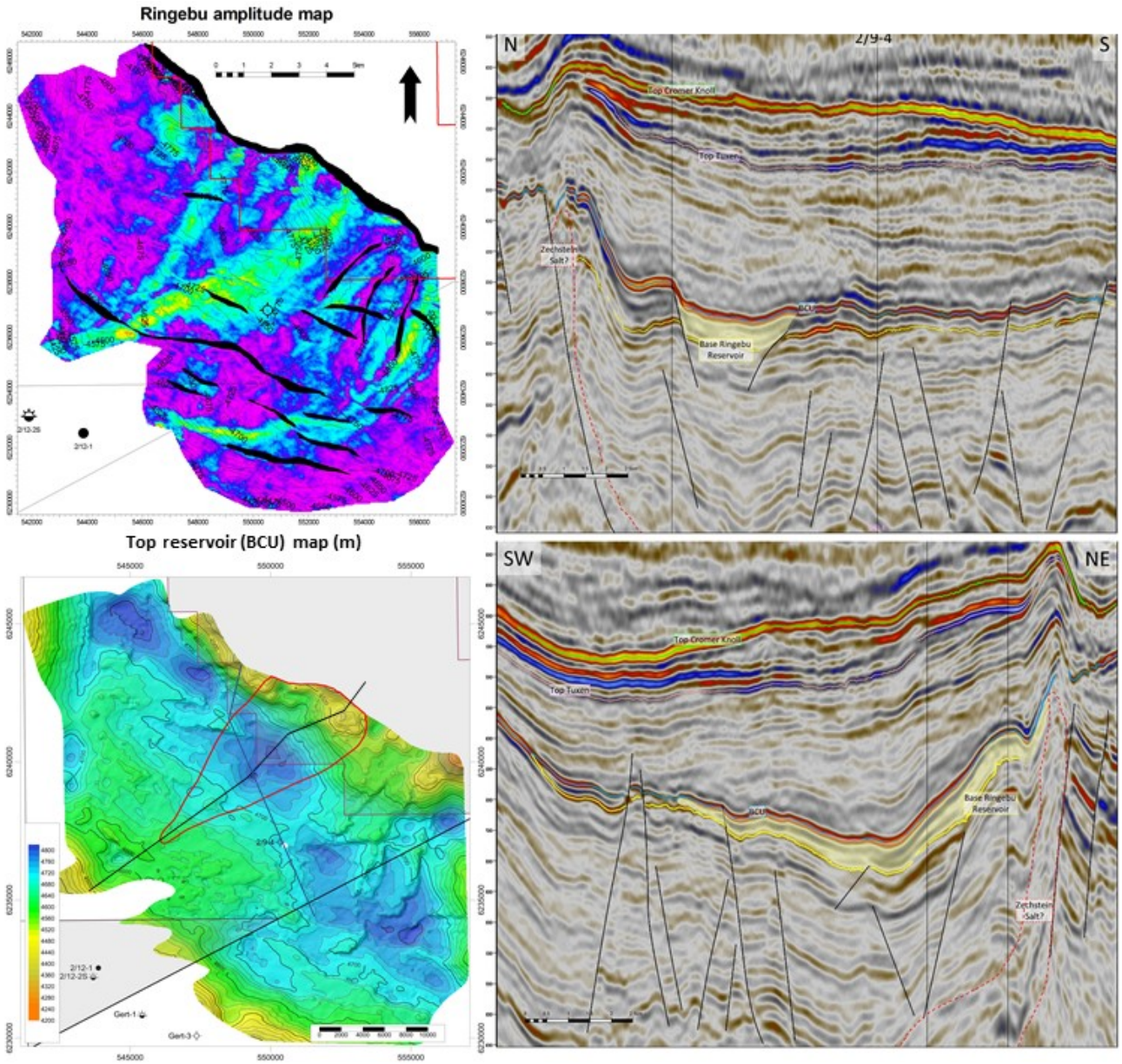

Fig. 4.3 Overview Ringebu Prospect from APA 2014

Fåberg Prospect

The Fåberg Prospect with reservoir in the Early Cretaceous is a salt induced robust 4-way closure (Fig. 4.4). One well has been drilled on the structure, 2/9-1 in 1972, with target in Late Cretaceous Chalk Group. The well had reached TD in Hod Formation and therefore not tested the Fåberg structure. The channel like features interpreted on seismic directly above BCU might indicate that sediment transport

from the Mandal High continued from Upper Jurassic time into Lower Cretaceous. Erosional material from the Mandal High to the east were transported across the Piggvar and Kveite Terraces and deposited in the deep basin as a submarine fan reservoir downthrown from the Kveite Terrace. The reservoir in the Fåberg Prospect is an Early Cretaceous, clastic reservoir within the Åsgard Formation. Almost no wells in the area have penetrated reservoir in the Åsgard Formation except well 2/11-7 where 6 m good quality reservoir sand was penetrated. Upper Jurassic source rocks are present in the Feda Graben.

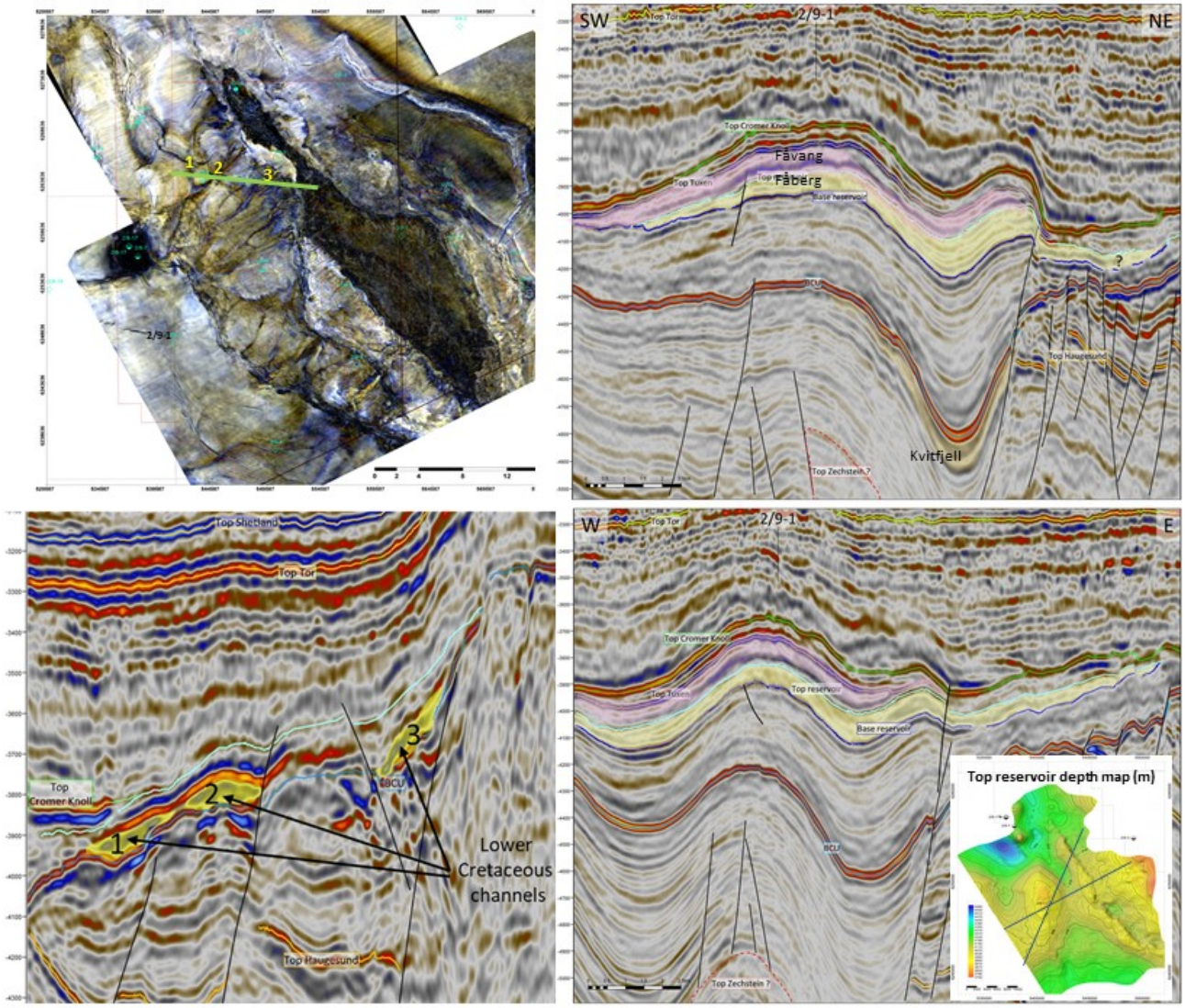

Fig. 4.4 Overview Fåberg Prospect APA 2014

Kvitfjell lead

The Kvitfjell Lead is a combined structural and stratigraphic trap. Upper Jurassic sediments have been transported south-westwards from the Mandal High downslope across the Piggvar and Kveite Terraces and dumped into the basin west of the major northwest-southeast trending fault. The paleogeographic map in Fig. 4.2 shows the concept for sediment transportation into the Kvitfjell Lead. It might be possible for a multi target exploration well (Fig. 4.4).

Fåvang lead

The Fåvang Lead is a possible Lower Cretaceous Tuxen reservoir sitting on the same salt induced 4 way dip closure as the Fåberg Prospect (Fig. 4.4). The main risk is reservoir quality and productivity.

Prospect updates

Since reprocessing (2.1 Seismic Database) the exploration focus in PL771has been on the Upper Jurassic prospectivity. Based on joint technical work, the licensees in PL771 and PL617 decided to drill the first exploration well on the western side of Mandal High on the Eidsvoll Prospect (PL617). Results from the Eidsvoll well would help to de-risk the Dovre Prospect and Kvitfjell Lead. The depositional model on the western side of Mandal High was confirmed by the Eidsvoll well. The well encountered a 253 m thick gross sandstone in the Upper Eidsvoll. The sandy lobe succession represents a proximal submarine fan consisting of coarse grains including conglomerates up to cobble size, debris flow and turbidite flow deposits. Minor shows were observed in the uppermost part of the Eidsvoll reservoir. The Dovre Prospect and Kvitfjell Lead are described below implementing results from the Eidsvoll well.

The definition of the Fåberg Prospect has not changed since APA2014 (Fig. 4.4). Reservoir presence is still the main risk. The Eidsvoll well, as mentioned above, encountered huge amount of sand in Upper Jurassic. The channel like features interpreted on seismic directly above BCU might indicate that sediment transport from the Mandal High continued from Upper Jurassic into Lower Cretaceous and therefore might de-risk the reservoir presence.

The Kvitfjell lead; described below; was redefined after the seismic reprocessing.

A Tuxen reservoir study performed by GEUS led to downgrading of the Fåvang Lead. This lead is no longer considered part of the prospectivity in PL771 (3 Results from Geological and Geophysical Studies). The reservoir-depth relationship for the Tuxen reservoir zones indicates that porosities less than 15% are to be expected at depth greater than 2500-3000m. The Crest of the Fåvang Lead is approximately 3700m.

The Hjerkinn Upper Cretaceous (Intra Hod Fm) Lead is added to the PL771 prospectivity and described below.

An updated PL771 prospectivity map is shown in Fig. 4.5.

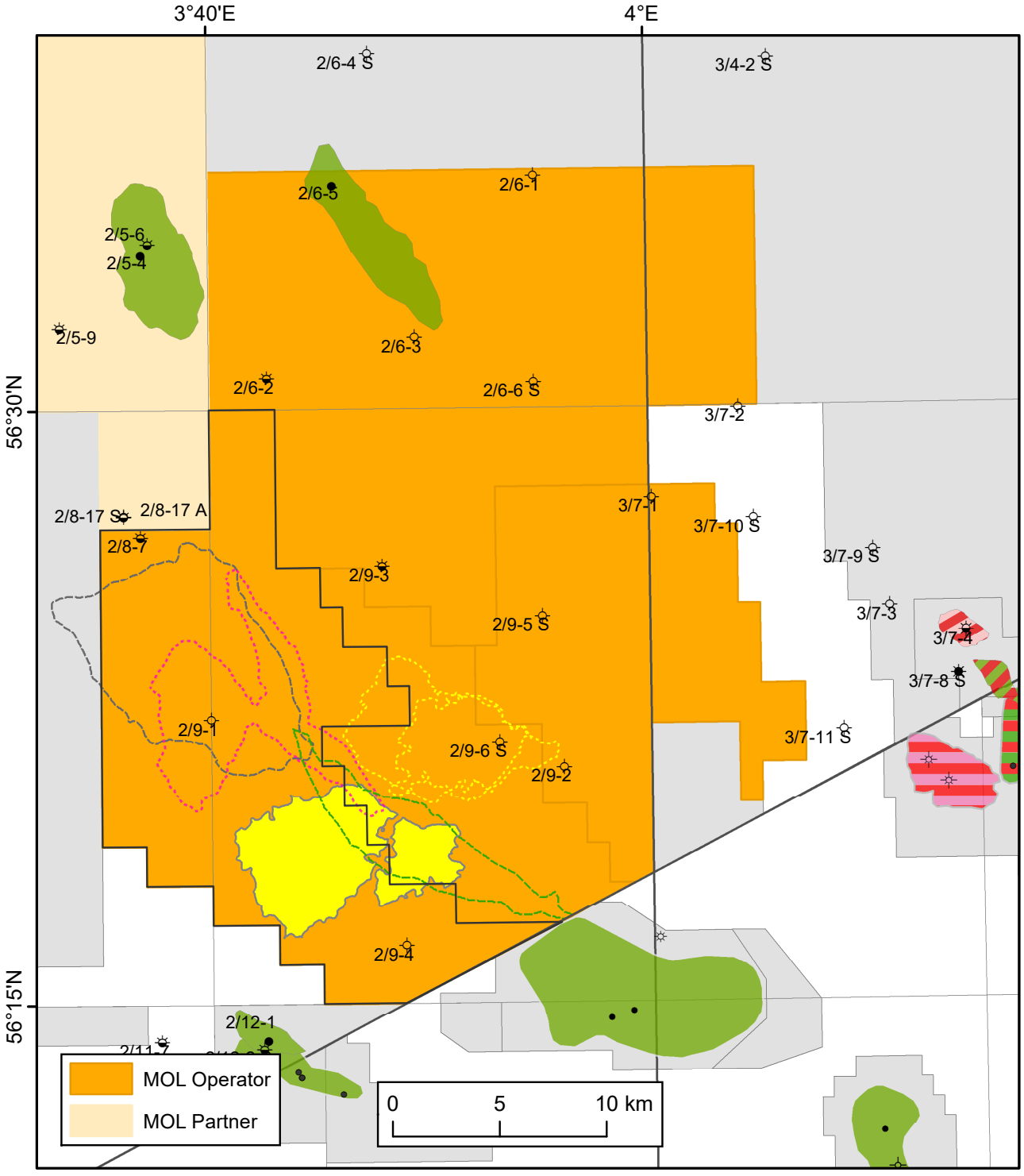

Fig. 4.5 PL771 updated prospectivity map

Dovre Prospect

The Dovre Prospect is a combined structural and stratigraphic trap located in the Feda Graben, downdip from the Kveite Terrace where the Eidsvoll Prospect is located. It consists of two juxtaposed lobe-like sediment bodies, Dovre 1 and Dovre 2. Top reservoir is interpreted on a hard kick which correlates to the top sand hard kick in the Eidsvoll well where a massive sand was penetrated. Base reservoir is

interpreted on a soft kick which correlates to the Eidsvoll base massive sand soft kick (Fig. 4.6). Top seal of the Dovre Prospect is secured by the Mandal and Lower Cretaceous shales. Fault seal against an Upper Jurassic sediment package is the main uncertainty.

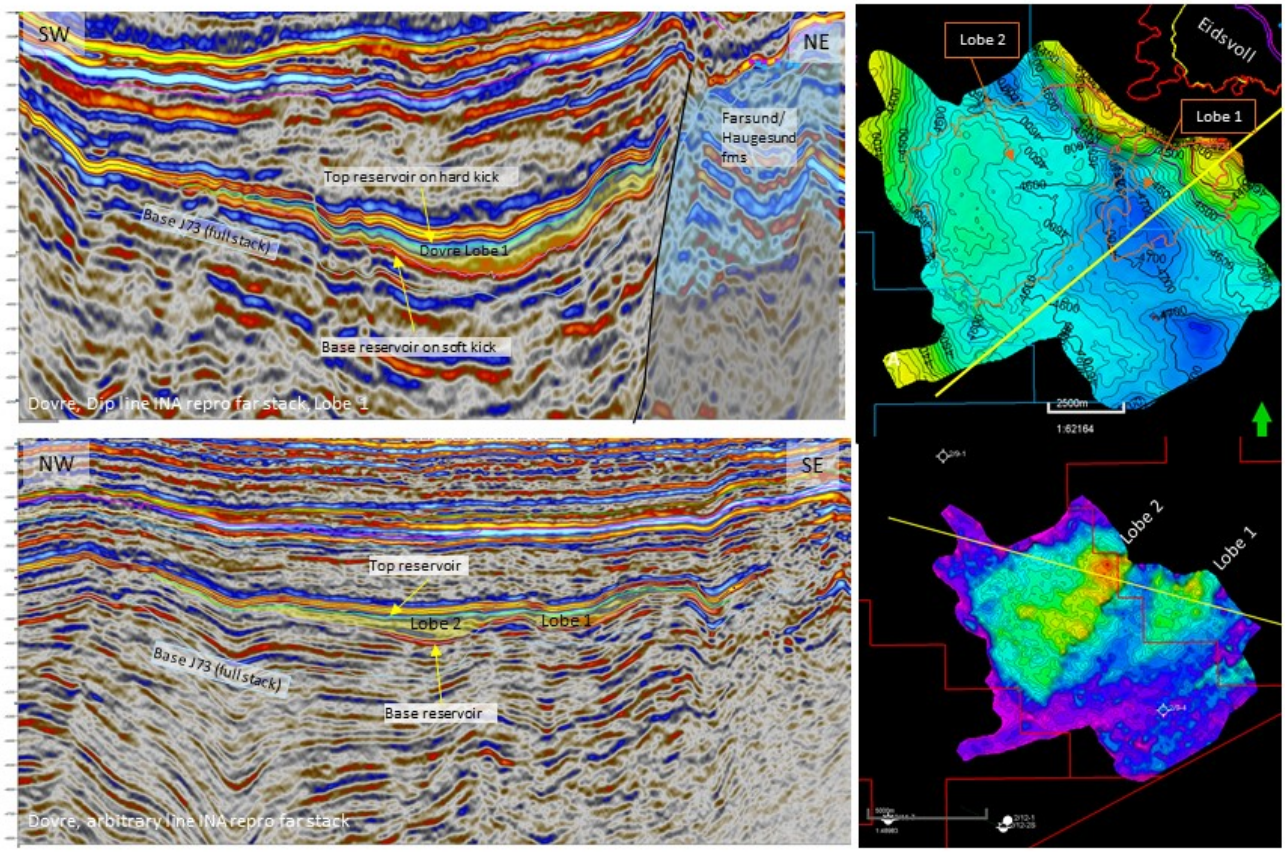

Fig. 4.6 Overview Dovre Prospect

The depositional model was confirmed by the Eidsvoll well, which lends support to the presence of other mapped submarine fans. The sandy lobe succession encountered in the Eidsvoll well represents a proximal submarine fan consisting of coarse grains including conglomerates up to cobble size, debris flow and turbidite flow deposits. Gravity flows may change character down-current and debris flows observed in Eidsvoll may develop into better sorted turbidite flows basin wards where the Dovre Prospect is located. The inversion study (3 Results from Geological and Geophysical Studies) indicates good porosity in Dovre 1 but limited porosity in Dovre Lobe 2 (Fig. 3.4). The Dovre Prospect is located stratigraphically and geographically in a position where sufficient (surplus) hydrocarbon charge is likely.

Kvitfjell Lead

The Kvitfjell Lead is a complex structure consisting of a combined structural and stratigraphic trap (Kvitfjell East) and a robust 4 way dip closure (Kvitfjell West) located in the Feda Graben downdip from the Kveite and Piggvar terraces. Top reservoir is interpreted on a hard kick which correlates to the top sand hard kick in the Eidsvoll well, where a massive sand was penetrated. Base reservoir is interpreted on a soft kick which correlates to the Eidsvoll base massive sand soft kick, although this is challenging due to the poor seismic imaging (Fig. 4.7). Top seal of the Kvitfjell Lead is secured by the Mandal and Lower Cretaceous shales. Fault seal against the Upper Jurassic sediment package is one of the main uncertainties.

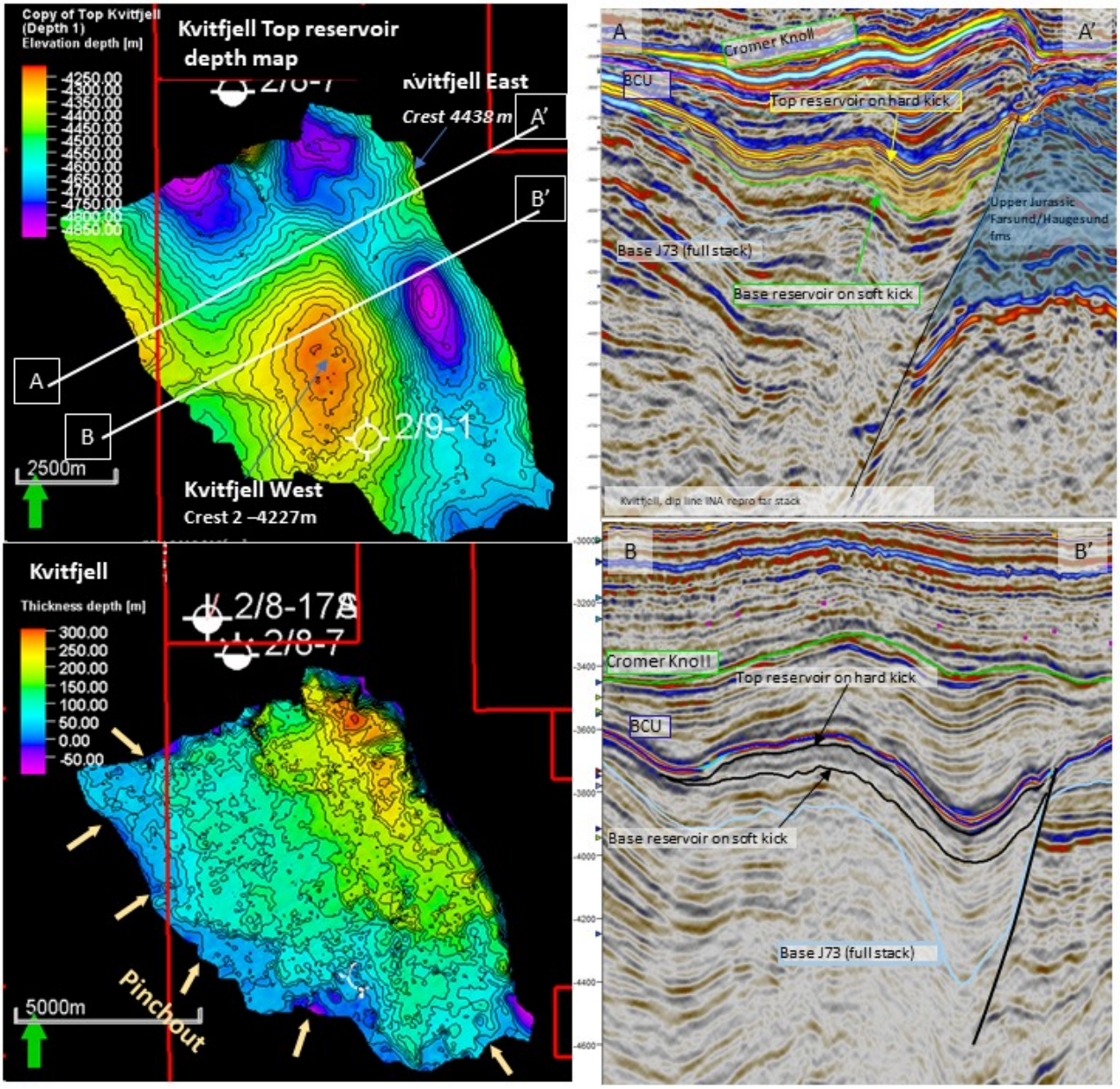

Fig. 4.7 Overview Kvitfjell Lead

The depositional model was confirmed by the Eidsvoll well, which lends support to the presence of other mapped submarine fans. The sandy lobe succession encountered in Eidsvoll well represents a proximal submarine fan consisting of coarse grains including conglomerates up to cobble size, debris flow and turbidite flow deposits. Gravity flows may change character down-current and debris flows observed in Eidsvoll may develop into better sorted turbidite flows basin wards where the Kvitfjell Lead is located. The inversion study (Fig. 3.4) indicates limited porosity in Kvitfjell. Reservoir uncertainty is related to reservoir quality since the northern part of Mandal High (the sediment source area) is believed to consist of phyllitic basement.

The Kvitfjell Lead is located stratigraphically and geographically in a position where sufficient (surplus) hydrocarbon charge is likely.

Hjerkinn lead

The Hjerkinn Lead is a stratigraphic trap defined as a pinch-out of a defined intra Chalk sequence within the Hod Formation. Hjerkinn is located on an inverted ridge (Fig. 4.8). Top seal is secured by intra Cretaceous tight chalk, lateral seal is secured by tight chalk or lower Cretaceous shales. The Hjerkinn Lead is located stratigraphically above the Dovre Prospect. The reservoir is intra Hod Formation. The main uncertainty for this reservoir is related to reservoir quality and productivity. The Hjerkinn Lead is located stratigraphically and geographically in a position where sufficient (surplus) hydrocarbon charge is likely.

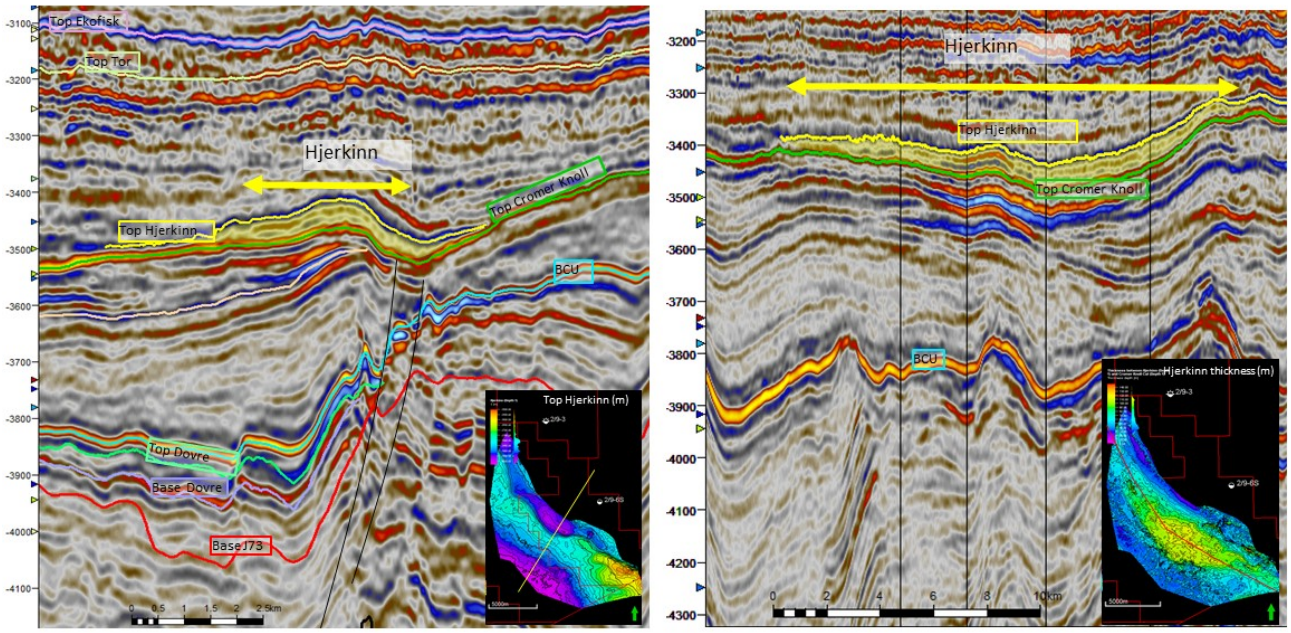

Fig. 4.8 Overview Hjerkinn Lead

Table 4.2 and Table 4.3 shows the prospect data for Dovre 1 and Dovre 2, including resource potential.

The estimated resource potential for Fåberg (APA2014), Hjerkinn and Kvitfjell is listed in Table 4.4.

Table 4.2 Dovre 1 Prospect Data

Block	2/9 and 8	Prospect name	Dovre 1	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 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)	3,17	5,36	16,03	37,80				
	Gas [10^9 Sm^3] (>0.00)								
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,95	1,13	5,93	13,22	0,16	0,22	1,06	2,62
	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)	0,84	Trap (P2) (0.00-1.00)	0,81	Charge (P3) (0.00-1.00)	0,86	Retention (P4) (0.00-1.00)	0,66		

Parametres:	Low (P90)	Base	High (P10)
Depth to top of prospect [m MSL] (> 0)	4240	4240	4240
Area of closure [km^2] (> 0.0)	1,3		10,2
Reservoir thickness [m] (> 0)	52		72
HC column in prospect [m] (> 0)	160		495
Gross rock vol. [10^9 m^3] (> 0.000)	0,121		0,718
Net / Gross [fraction] (0.00-1.00)	0,40		0,75
Porosity [fraction] (0.00-1.00)	0,18		0,22
Permeability [mD] (> 0.0)	75,0	140,0	200,0
Water Saturation [fraction] (0.00-1.00)	0,25		0,40
Bg [Rm3/Sm3] (< 1.0000)			
1/Bo [Sm3/Rm3] (< 1.00)	0,54		0,78
GOR, free gas [Sm^3/Sm^3] (> 0)			
GOR, oil [Sm^3/Sm^3] (> 0)	100		350
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)			

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.
The permeability range is refleting the best reservoir facies of the Miller Field (regarded as analogue).

Temperature, top res [°C] (>0)	137			For NPD use:			
Pressure, top res [bar] (>0)	740			Innrapp. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value
Cut off criteria for N/G calculation	1.	2.	3.	Dato:	NPD will insert value	Registrert Dato:	NPD will insert value

Kart oppdatert	NPD will insert value		
Kart dato	NPD will insert value		
Kart nr	NPD will insert value		

Table 4.3 Dovre 2 Prospect Data

Block	2/9 and 8	Prospect name	Dovre 2	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 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)	2,34	3,31	39,52	120,13				
	Gas [10^9 Sm^3] (>0.00)								
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,67	1,12	13,47	40,34	0,13	0,22	2,58	7,71
	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)	0,69	Trap (P2) (0.00-1.00)	0,81	Charge (P3) (0.00-1.00)	0,86	Retention (P4) (0.00-1.00)	0,68		

Parametres:	Low (P90)	Base	High (P10)
Depth to top of prospect [m MSL] (> 0)	4300	4300	4300
Area of closure [km^2] (> 0.0)	1,4		32,8
Reservoir thickness [m] (> 0)	53		98
HC column in prospect [m] (> 0)	100		415
Gross rock vol. [10^9 m^3] (> 0.000)	0,117		3,194
Net / Gross [fraction] (0.00-1.00)	0,20		0,75
Porosity [fraction] (0.00-1.00)	0,18		0,22
Permeability [mD] (> 0.0)	75,0	140,0	200,0
Water Saturation [fraction] (0.00-1.00)	0,25		0,40
Bg [Rm3/Sm3] (< 1.0000)			
1/Bo [Sm3/Rm3] (< 1.00)	0,54		0,78
GOR, free gas [Sm^3/Sm^3] (> 0)			
GOR, oil [Sm^3/Sm^3] (> 0)	100		350
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)			
Temperature, top res [°C] (>0)	139		
Pressure, top res [bar] (>0)	745		
Cut off criteria for N/G calculation	1.	2.	3.

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.
The permeability range is reflecting the best reservoir facies of the Miller Field (regarded as analogue).

For NPD use:					
Innrapp. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
				Kart nr	NPD will insert value

Table 4.4 Resource potential Fåberg,Hjerkinn and Kvitfjell

Name	Prospect/Lead	Reservoir	Crest	P90	Mean	P10
		Litho	m	MMBOE	MMBOE	MMBOE
Fåberg	Prospect	Åsgard Fm	3800	60	219	463
Hjerkinn	Lead	Intra Hod Fm	3555	11	36	73
Kvitfjell East	Lead	Mandal Fm	4438	2	13	31
Kvitfjell West	Lead	Mandal Fm	4227	24	127	300

5 Technical Evaluation

The remaining prospectivity in PL771 comprises a portfolio of different play types, with Upper Jurassic and Cretaceous prospects with relatively large individual and total resource potential with high – to moderate risks. The current view is that the Dovre Prospect could be considered an opportunity to potentially be matured to a drill decision based on the the results of the Eidsvoll well 2/9-6 S in PL617. The risk associated with the updip lateral fault seal and understanding of hydrocarbon migration needs to be evaluated further, before a possible drill decision. The Hjerkinn Lead is located stratigraphically above the Dovre Prospect and it is possible to penetrate both targets with one well. For the remaining Upper Cretaceous Fåberg and Upper Jurassic Kvitfjell leads the main risks are the presence of reservoir for Fåberg and trap definition and seal for Kvitfjell. Fåberg and Kvitfjell could also possibly be targeted with the same well.

6 Conclusion

The work obligations stipulated in the production licence article 4 have been completed, by reprocessing of 3D seismic data covering the PL771 and the deep Feda Graben area and by performing relevant geological and geophysical studies. The current partnership is MOL Norge as the operator (40%) and OMV Norge (30%) and Wintershall Dea (30%) as partners

The remaining prospectivity in PL771 comprises a portfolio of different play types, with Upper Jurassic and Cretaceous prospects with relatively large individual and total resource potential with high – to moderate risks. Several of the prospects are overlying each other and potential exploration wells could test multiple targets. The Dovre Prospect could be considered an opportunity to be potentially matured to a drill decision.

In accordance with the PL771 JOA and the current legislation, the PL771 licence will, if extended beyond the current licence period, pay area fee from 7th February 2022.

Based on the negative results of well 2/6-9S in PL617 and on the balance of the above discussion the partnership in PL 771 have unanimously concluded to surrender of PL771.