Norwegian Continental Shelf

Lapse Status Report

(Relinquishment Report)

PL 1096

May 2024

Partners:

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1 History of the production license

PL1096 (area: 183 km^2) was awarded on the 19th of February 2021 (APA 2020). It is in the Central North Sea, on the eastern flank of the Northern Utsira High, east of the Grane and Svalin fields (Figure 1.1). Water depth is around 124 m.

At time of award, the JV was composed as such: Vår Energi ASA 30% (Op) with partners Sval Energi AS 20%, Petoro AS 20%, Neptune Energy Norge AS 20% and Concedo AS 10%.

The License was awarded with a technical commitment of seismic acquisition/purchasing, EM acquisition/purchasing, seismic reprocessing and G&G studies, with Drill or Drop within 2 years (deadline 19.02.2023). The commitment has been fulfilled by purchasing of the PGS MC 3D broadband dataset, purchasing of the MC EM acquisition NS 2101 survey, and reprocessing of 500 km^2 of 3D seismic data (VE 23M01).

In April 2023 the MPE granted a one-year extension to the Drill or Drop milestone (new deadline 19.02.2024) to allow the operator to complete the reprocessing of ca. 378 km^2 of PGS16M01 and fully assess the block potential.

During APA 2020 Vår Energi ASA and Neptune Energy Norge AS (now “Vår Energi Norge AS”, since 31.01.2024) applied together chasing a potential injectites prospect (EL Toro) in the Eocene Frigg Formation. Sval and Concedo applied independently for the same area chasing respectively prospectivity in the Lower Jurassic Statfjord Gp. (Snota Prospect) and a play concept of a potential pinch out of the Paleocene Heimdal Formation, which is the main reservoir in the Grane Field, towards northwest.

The technical assessment of the area has downgraded El Toro as lead, highlighting high geological risk for reservoir presence, efficiency, and for migration. The identified Snota Lower Jurassic Statfjord Gp. structural closure straddles mainly outside the PL 1096 and furthermore has been tested by several wells without any hydrocarbon indication. No residual prospectivity has been identified in the Paleocene Heimdal Formation. The PL 1096 JV supports the Operator’s evaluation for the prospectivity in the lisence.

Based on the technical assessment mentioned above (Technical Assurance Review held on 15.12.2023), the Operator recommended relinquishing PL 1096.

EC/MC meetings held:

13/04/2021 MC/EC
26/11/2021 MC/EC
28/01/2022 EC
23/06/2022 MC/EC
17/11/2022 MC/EC
11/05/2023 EC
15/06/2023 MC/EC
27/11/2023 MC/EC
19/12/2023 WM

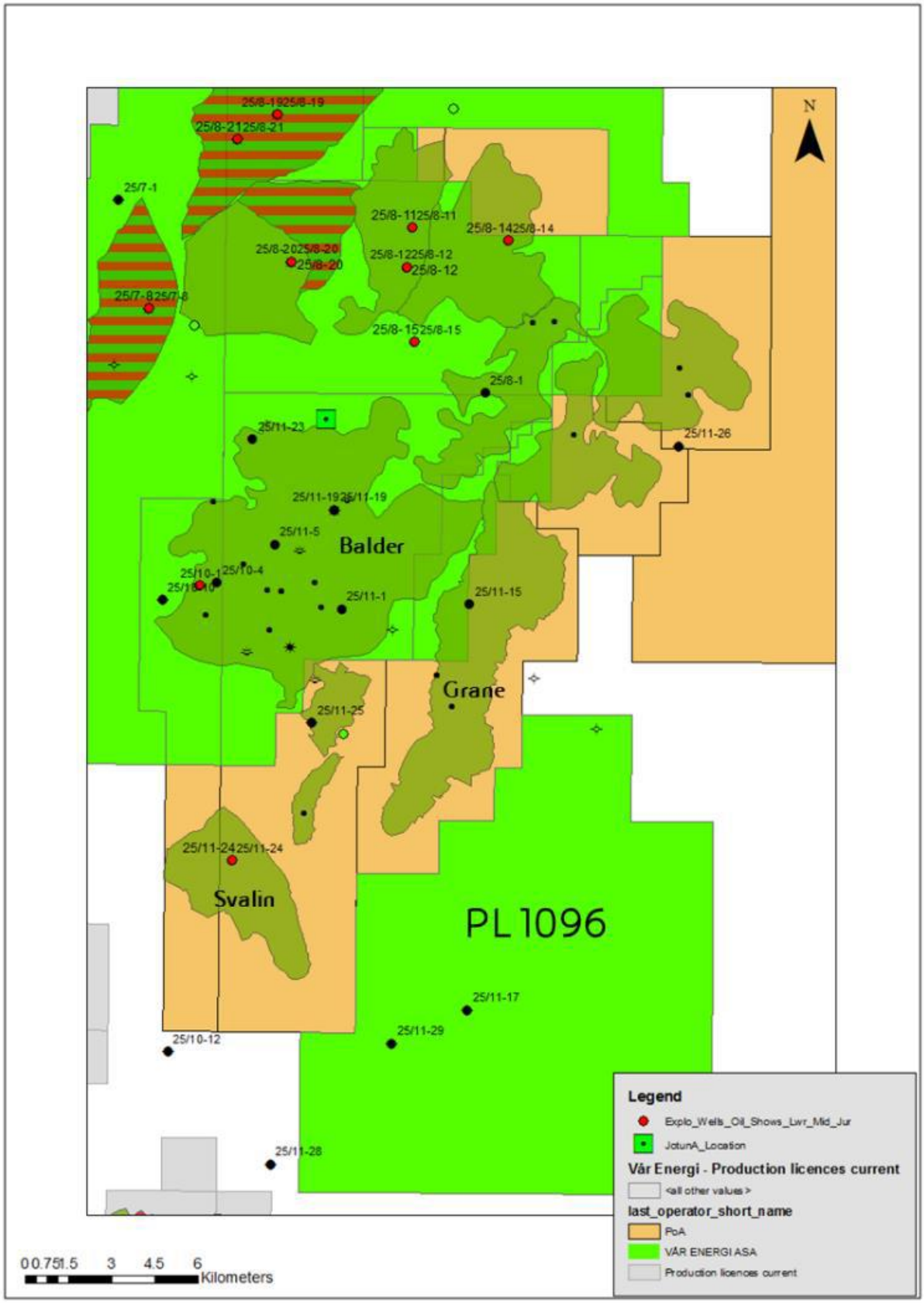

Figure 1.1 Location Map PL1096

2 Database overview

The JV successfully completed the EM data purchasing, buying the EM multi-client dataset North Sea 2101 acquired in 2021 and processed in 2021/2022 and purchased the multiclient 3D broadband dataset PGS16M01 (PSTM and PSDM) covering the whole PL1096. In 2022/2023, PGS16M01 was reprocessed by DUG with focus on velocity modelling (VE23M01). Hence, initial commitment of the license was fulfilled.

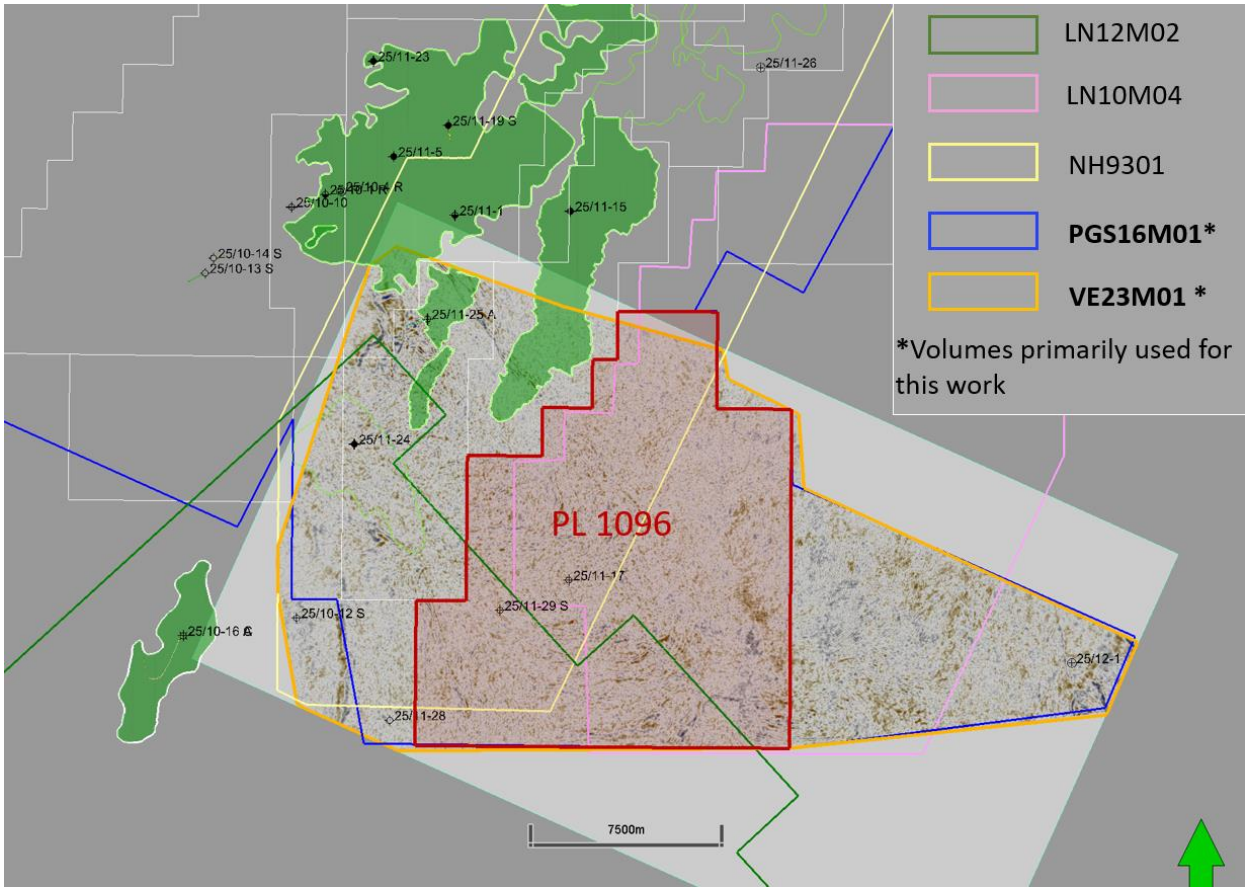

Figure 2.1 3D Seismic Database PL1096

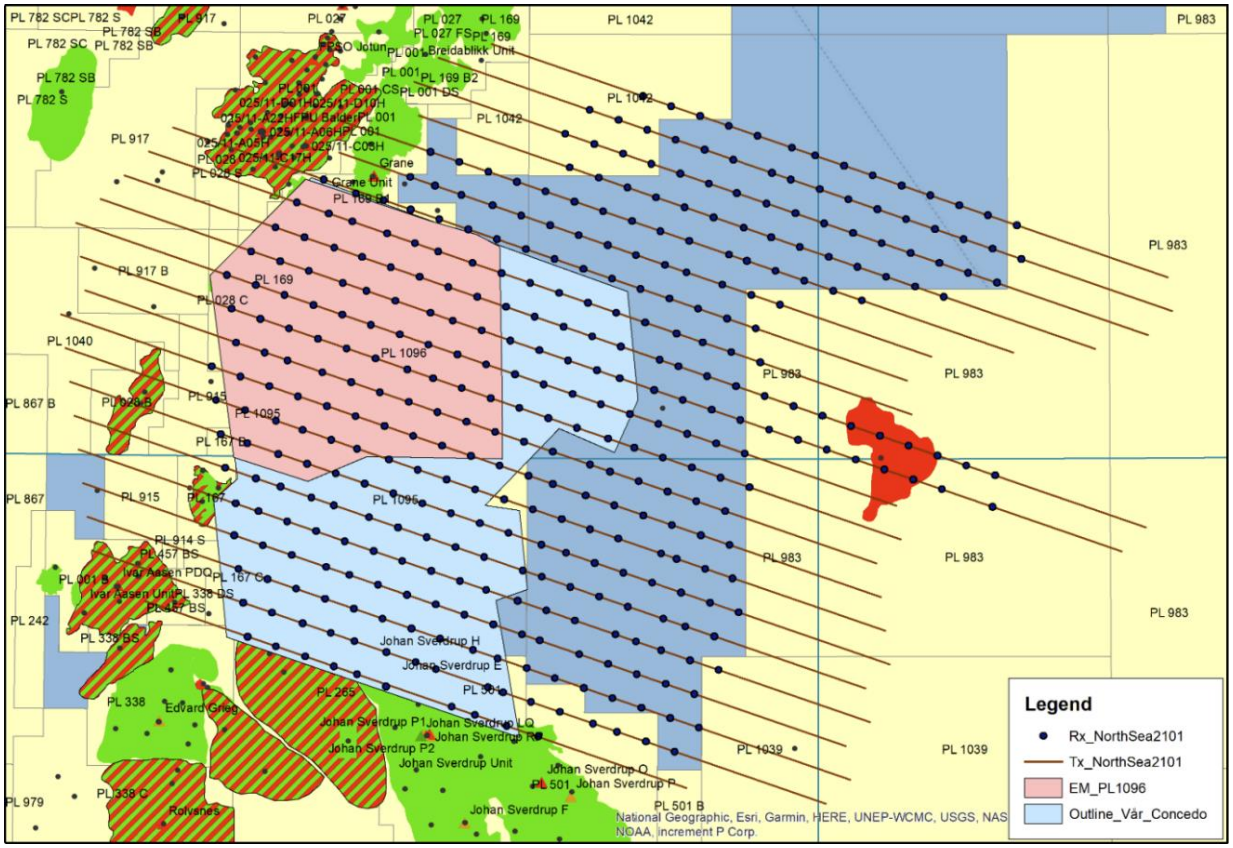

Figure 2.2 EM survey overview

Survey	Type	Processing	Year
VE23M01	3D	PSDM	2023
PGS16M01-PGS15917	3D	PSDM	2016
LN10M04	3D	PSDM	2011
LN12M02	3D	PSDM	2013
NH9301	3D	PSDM	1993

Table 1 3D Seismic Database

Well name	Result	Operator	Year	TD (m TVD RKB)/Fm.	Access *	Relevance
16/1-8	Oil	Lundin Norway AS	2007	2200/Late Triassic	Traded	S
16/1-29 S	Oil / gas	Statoil Petroleum AS	2018	Basement	Raw data	S, CPI
16/1-30 S	Oil	Equinor Energy AS	2019	2140/Basement	Traded	S, CPI
16/2-2	Dry	Statoil ASA (old)	2001	1855/Rødby Fm.	Traded	S, V
16/2-20 S	Dry	Lundin Norway AS	2013	2098/Basement	Raw data	BM
25/8-1	Oil	Esso E & P Norway AS	1970	2606/Rotliegend Gp.	Fully released	S, CPI, V
25/8-12 S	Oil	Esso E & P Norway AS	1999	2085/Smith Bank Fm	Fully released	S, CPI
25/8-12 A	Oil	Esso E & P Norway AS	1999	2083/Smith Bank Fm	Fully released	S, CPI
25/8-14 S (ST2)	Oil	Esso E & P Norway AS	2003	2145/Statfjord Gp.	Raw data	S, CPI
25/10-12 S	Dry	Lundin Norway AS	2015	2570/Smith Bank Fm.	Traded	BM, V
25/11-1	Oil	Esso E & P Norway AS	1967	2459/Basement	Fully released	S, CPI, V
25/11-5	Oil	Esso E & P Norway AS	1974	2164/Triassic	Fully released	S, CPI, V
25/11-15	Oil	Norsk Hydro Produksjon AS	1991	2035/Statfjord Gp.	Fully released	S, BM, CPI, V
25/11-16	Oil	Norsk Hydro Produksjon AS	1992	1945/Hod Fm.	Fully released	S, V
25/11-17	Dry	Norsk Hydro Produksjon AS	1993	2255/Basement	Fully released	S, BM, CPI, V
25/11-20	Dry	Norsk Hydro Produksjon AS	1995	1828/Late Cretaceous	Fully released	S, V
25/11-24	Oil	Norsk Hydro Petroleum AS	2007	2117/Statfjord Gp.	Traded	S, BM, CPI, V
25/11-25 A	Dry	StatoilHydro Petroleum AS	2008	2058/Statfjord Gp.	Raw data	S, BM, V
25/11-25 S	Oil	StatoilHydro Petroleum AS	2008	1830/Lista Fm.	Raw data	S, BM, V
25/11-26	Dry	Statoil Petroleum AS	2013	2235/Statfjord Gp.	Raw data	S, CPI, V
25/11-27	Oil	Statoil Petroleum AS	2013	1890/Tor Fm.	Raw data	S, V
25/11-28	Dry	Statoil Petroleum AS	2015	2588/Basement	Raw data	S, CPI, V
25/11-29 S	Dry	Aker BP ASA	2019	2313/Basement	Traded	S, BM, CPI
25/12-1	Dry	A/S Norske Shell	1973	2865/Triassic or Devonian?	Fully released	S, BM, CPI, V

S means sedimentology, **P** regional pressure regimes, **BM** basin modelling, **V** overburden velocity and **CPI** petrophysics

Table 2 PL1096 Well Database

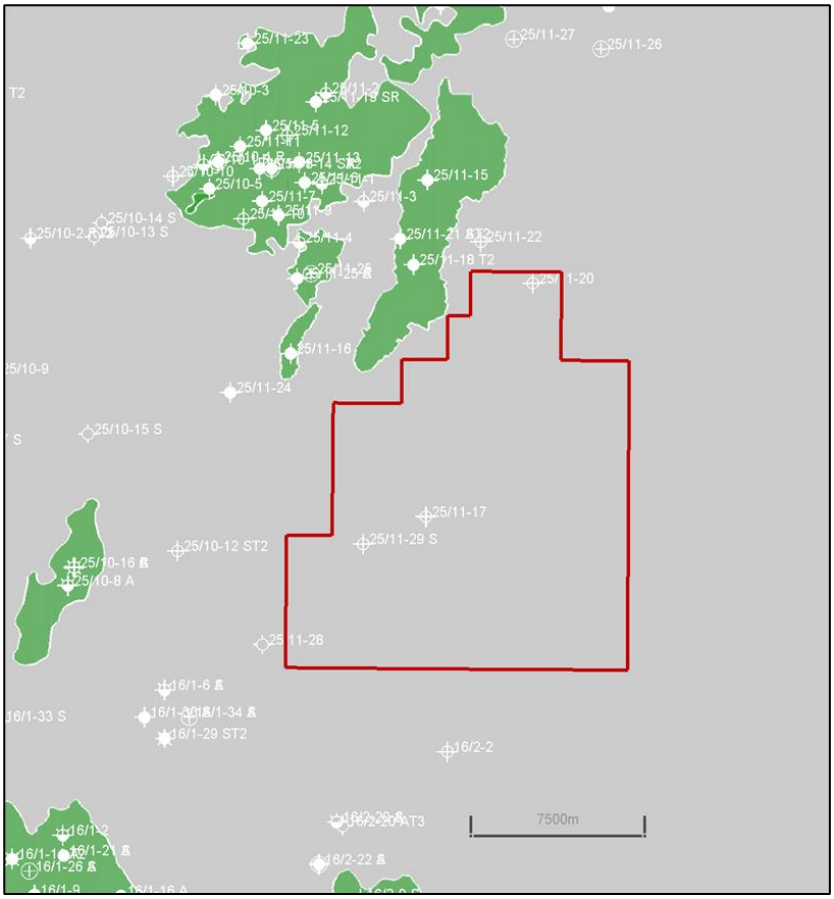

Figure 2.3 Key wells for PL1096 evaluation

3 Geological and Geophysical Studies

The purchased PGS MC 3D broadband dataset was reprocessed (VE23M01) by DUG (2022-2023) and in-house conditioned (2023) for better mapping and de-risking the prospects.

4 Prospect Update

Several plays initially were recognized for the APA 2020 application that led to the creation of PL1096, covering a time span from the Mesozoic to the Eocene.
The main play model for PL1096 is Balder Formation sandstones injected into Upper Eocene shales and the Statfjord Group (Figure 4.1).

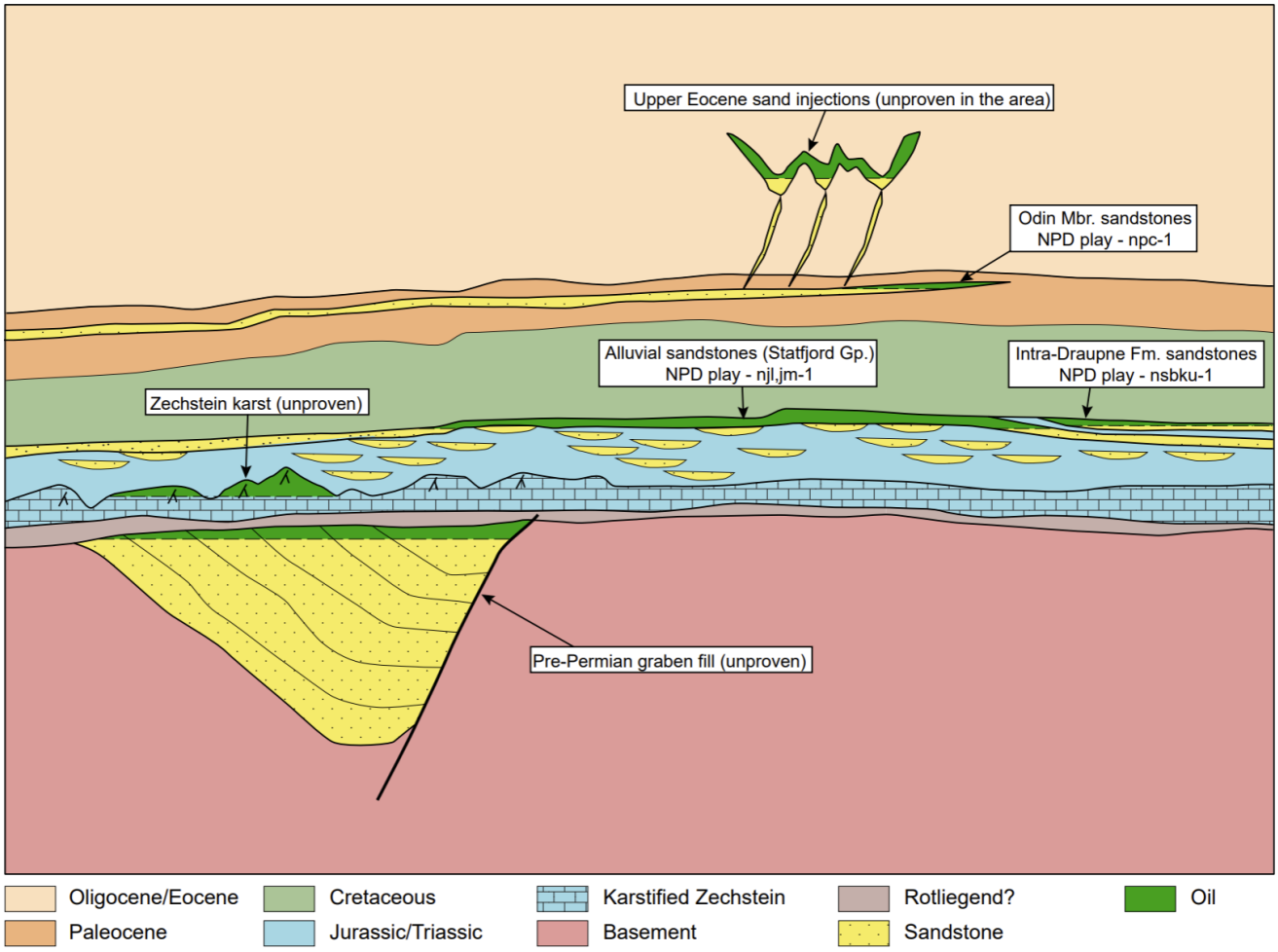

Figure 4.1 Schematic illustration of play models

El Toro Prospect:

The El Toro Prospect is located in the vicinity of Balder-Ringhorne Field, situated at the Utsira High with the South Viking Graben to the west (Figure 4.2). The South Viking Graben is an NNE-SSW trending, 40-50 km wide, asymmetric Jurassic rift basin bounded by basement rocks of the East Shetland Platform to the west and the Utsira High to the east. Locally these highs are structurally separated from the basin by fault terraces.
The El Toro prospects is surrounded by discoveries in several stratigraphic levels proving a working petroleum system, with hydrocarbons primarily sourced from the organic rich shales of the Upper Jurassic Draupne and

Heather formations (Figure 4.2). The prospects/targets are considered as oil prospects with some possible biodegradation due to the shallow depth of the targets (1220 m ssl).
The El Toro Prospect reservoir is an injectite complex with dykes and sills above the Eocene Balder Fm. Paleogene Play which is proven with excellent reservoir properties and hydrocarbon discoveries within the surrounded Licenses.

The Verdandi discovery a few kilometers southwest of PL1096 found oil and gas into the Grid Fm. sandstones (Figure 4.5). Assuming the possibility of having a good connectivity between the different bodies, an envelope surface at the top of the Grid Fm. was interpreted to identify the potential for having fill and spill migration route towards PL1096. The Grid Fm. depth map shows the high at the Verdandi location with a most likely hypothetical fill and spill route towards the north-east (tested by the 25/11-28 dry well) and the following high area is in the vicinity of the dry well 25/11-29S. The absence of shows in these two wells located in a favorable position for the potential migration, increases the risk of charge for the Grid interval (tested in a lower stratigraphic position by the 25/11-17 well) in the PL1096 area and consequently the charge of the shallower El Toro Injectites.

The 25/12-1 well drilled seismically similar features as the El Toro prospect (Figure 4.4). The interval is described as glauconitic rich, consolidated, and partially cemented with Dolomite.

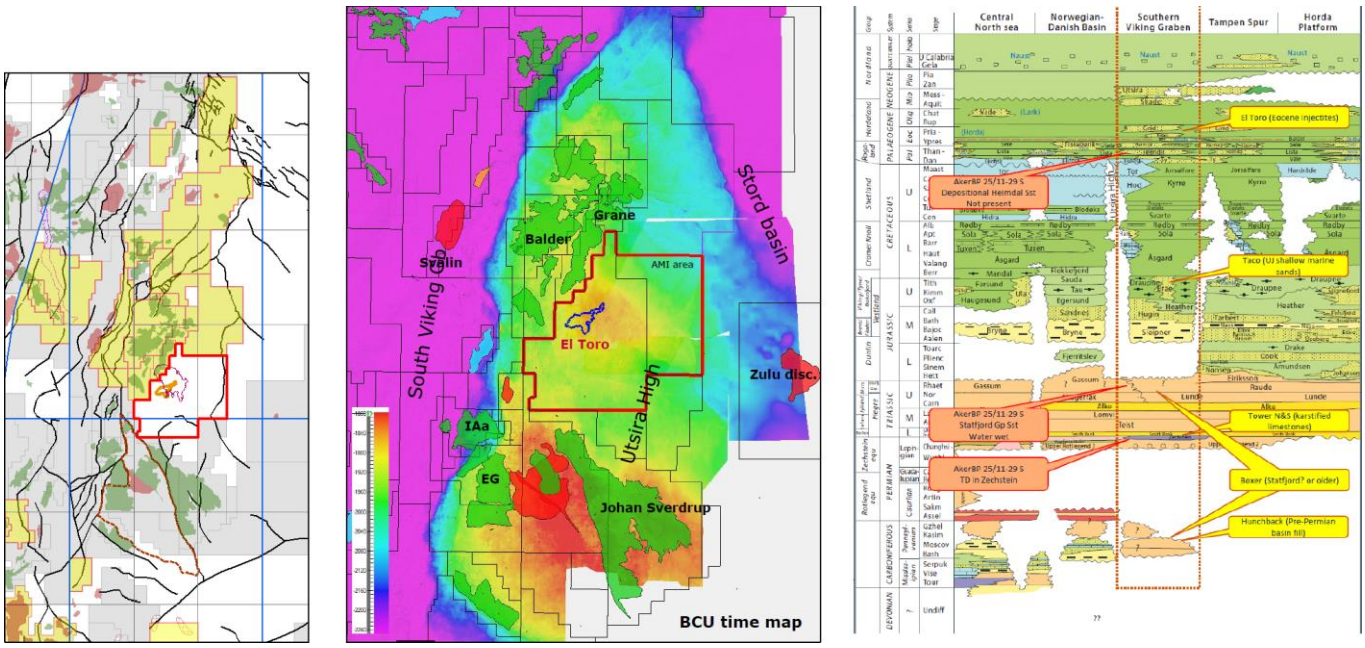

Figure 4.2 North Sea – Utsira High Structural Elements (APA 2020).

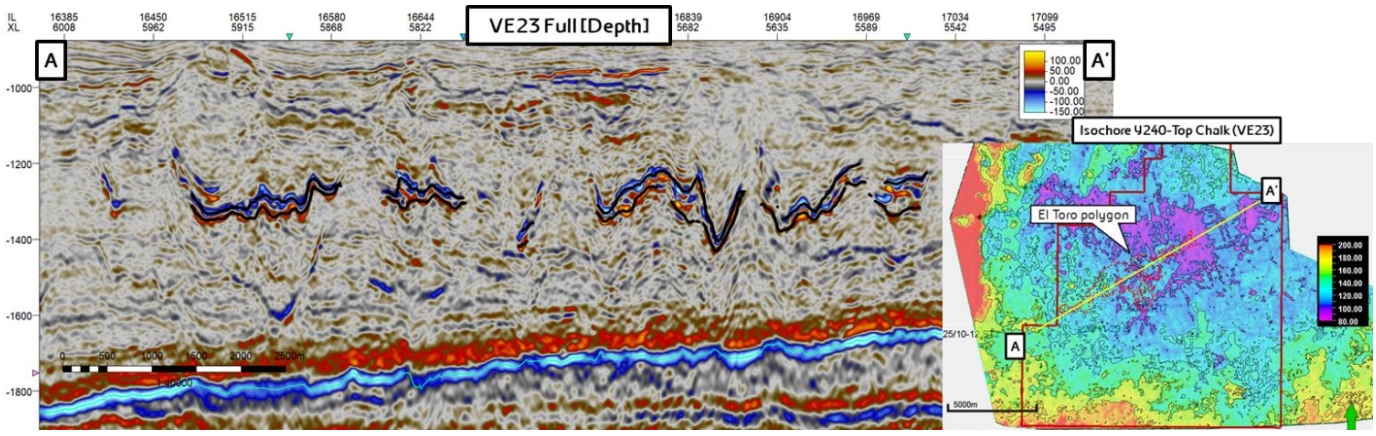

Figure 4.3 Seismic line through El Toro prospect on newly re-processed VE23M01 dataset.

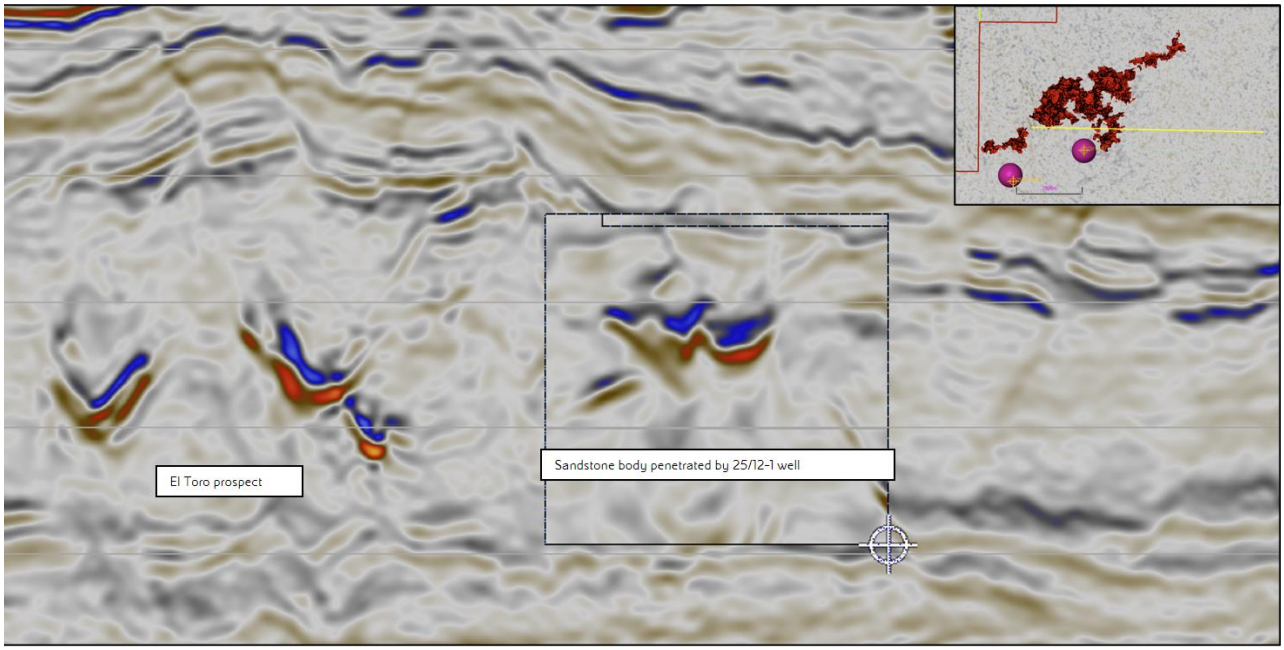

Figure 4.4 Seismic line comparing the seismic character and amplitude response of the El Toro prospect and the sandstone penetrated by well 25/12-1.

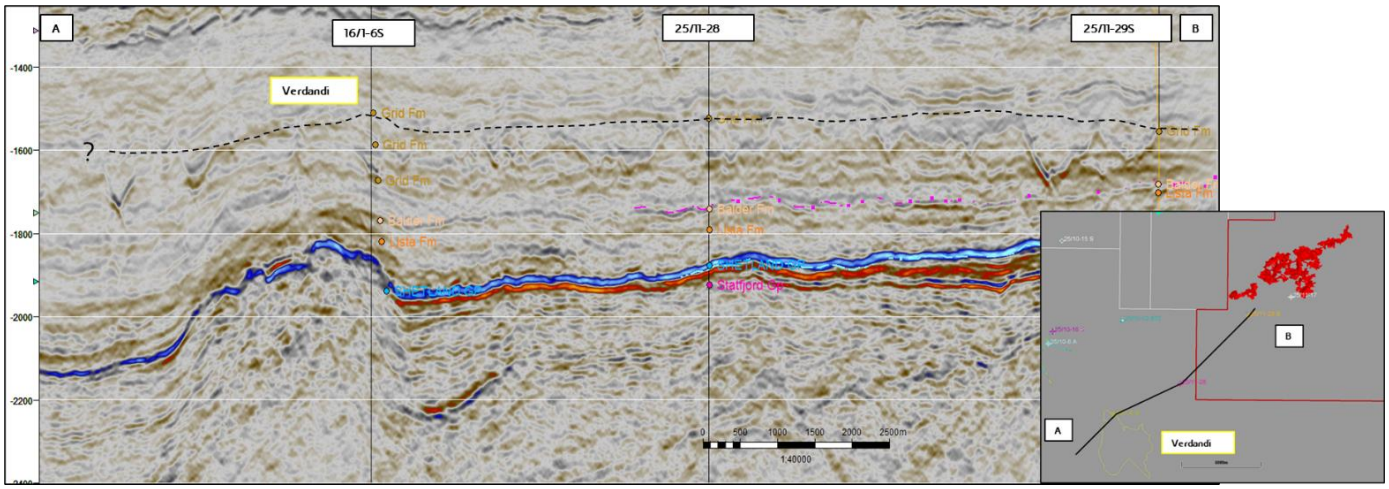

Figure 4.5 El Toro Migration – Verdandi discovery

Snota Prospect:

The Snota prospect is located on the northern Utsira High just southeast of the Grane Heimdal formation oil field. The closest wells penetrating the Statfjord Group is 25/11-15, the Grane field discovery well, and well 25/11-17 targeting both Paleocene and Jurassic prospectivity. Both wells proved dry at Jurassic level with no reported shows. The Snota prospect is located up-dip of these two wells. The Snota Prospect is fluvial sandstones from the Lower Jurassic Statfjord Gp. with a structural closure in time in the PL1096 license. Depth conversion removes the closure of the Statfjord Group out of the PL1096 license. The closure has been tested by several wells without any hydrocarbon indication.

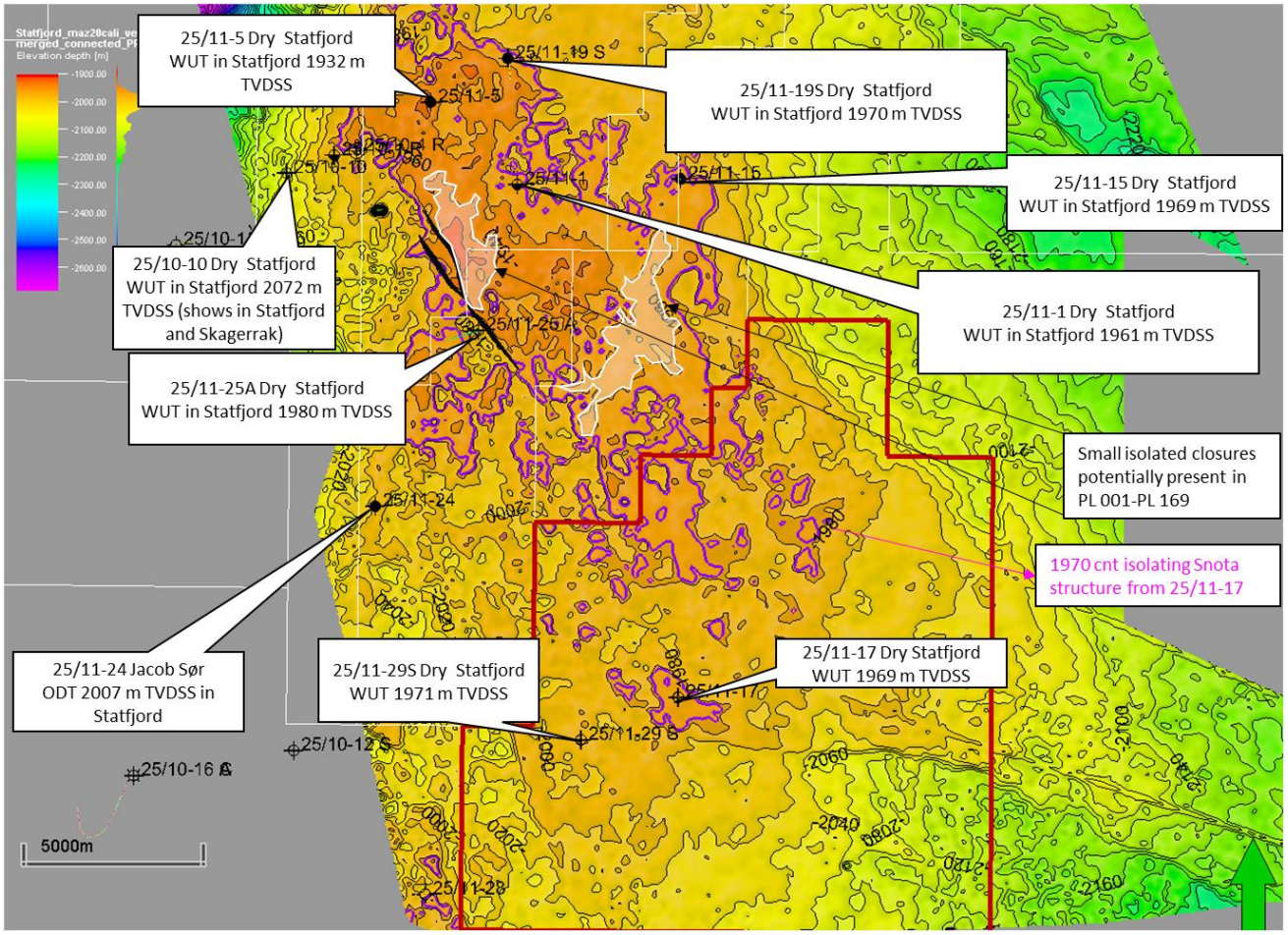

Figure 4.6 Snota mega-structure in depth, tested by several wells without hydrocarbon accumulations.

Sypress and Barlind Leads:

Sypress and Barlind Leads are located on the northern Utsira High just southeast of the Grane Heimdal formation oil field and a potential pinch-out of the Paleocene Heimdal system (Figure 4.8). The three wells in PL1096 (25/11-20, 25/11-17, and 25/11-29S) did not encounter any Heimdal sandstones (Figure 4.7). Regional assessment considering the known Heimdal play suggest that the sandstone does not reach as far east as PL1096. Sandstone indicators such as AVO and thickening of the Balder Fm. isochore are absent (Figure 4.8).

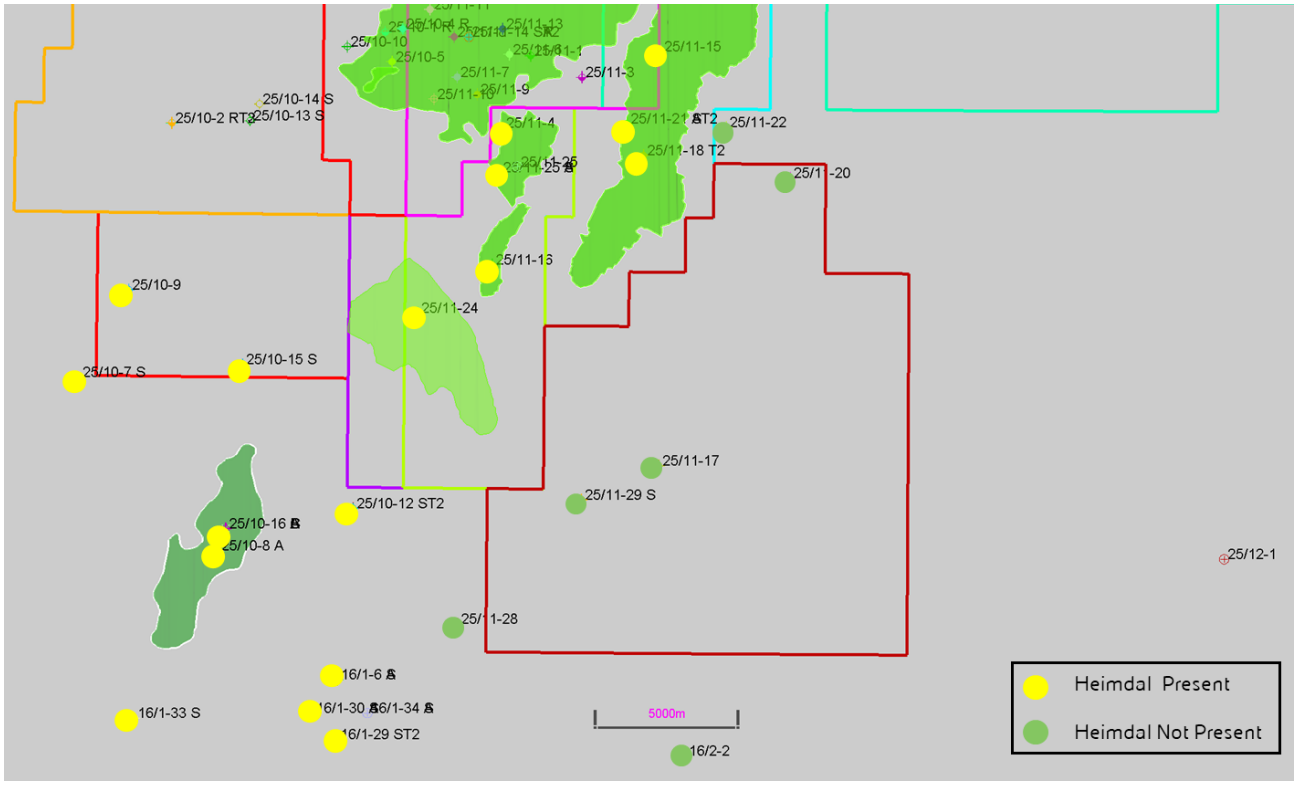

Figure 4.7 Heimdal sandstone distribution in PL1096

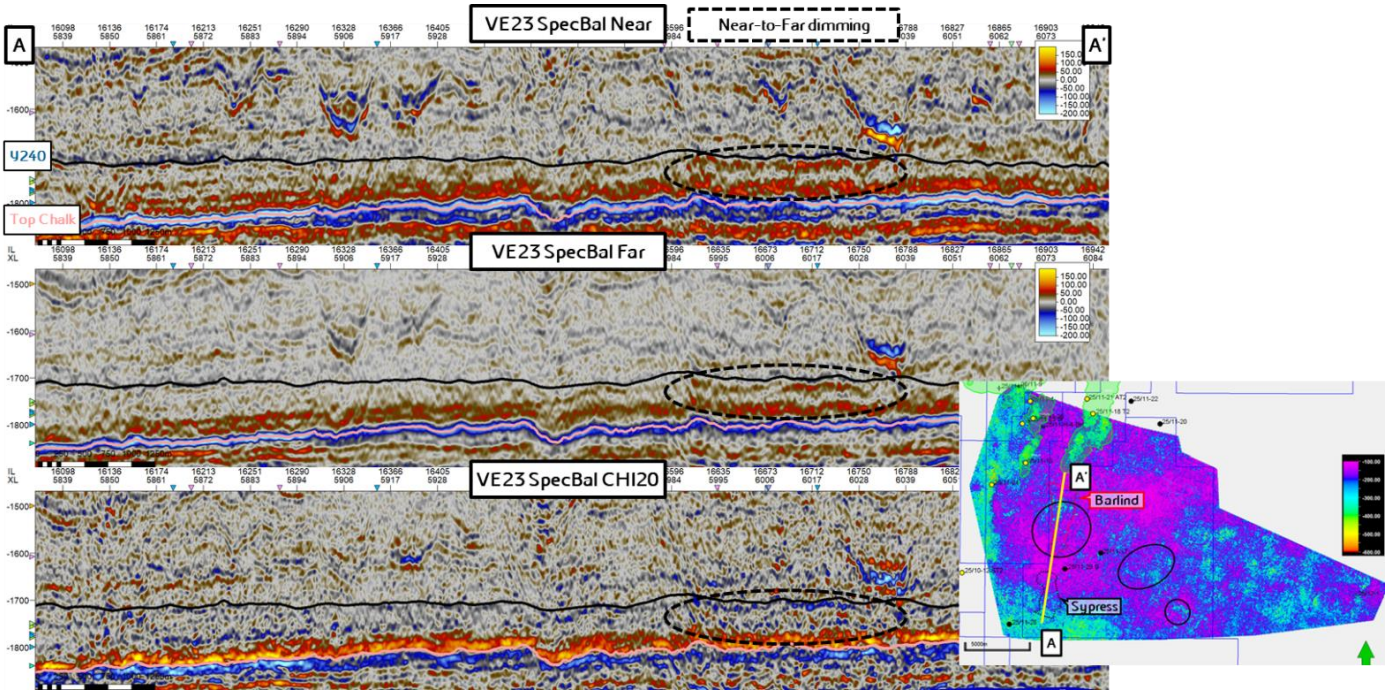

Figure 4.8 Line through Sypress and Barlind on partial stacks (Near and Far) and EEI cube CHI=20°

5 Technical Evaluations

El Toro:

The El Toro prospect has been downgraded to a lead due to the high geological risk for reservoir presence, efficiency, and for migration/charge. Several similar features have been mapped in the block with a seismic hard response, similar to the cemented sandstones drilled by well 25/12-1, with no reservoir properties. These features are well known in the area (defined as V-Brights) and confirmed to have the same seismic response on the reprocessed VE23M01.

Snota:

The Snota prospect is sensitive to the velocity model, hence the re-processing VE23 emphasized on deriving a data driven high-resolution (20 Hz) velocity field from several tomography updates, diving wave FWI (1200m) and Multi-Parameter reflection FWI (Basement) in an iterative process (Figure 5.1).

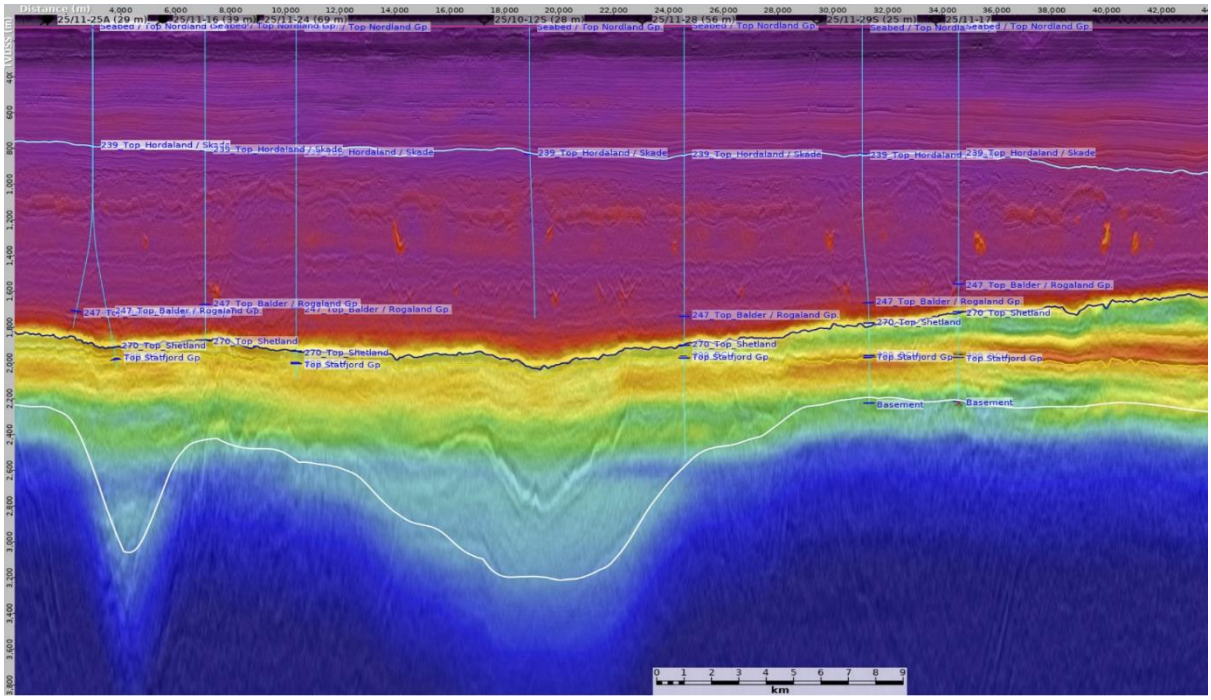

Figure 5.1 VE23 updated velocity field

The Snota prospect structural closure straddles mainly outside the PL1096 and has been tested by several wells without any hydrocarbon indication.

Heimdal leads:

No residual prospectivity has been identified in the Paleocene Heimdal Formation from AVO studies (no sign of the “remobilization” concept nearby discoveries are based on). Regional studies suggest that the Heimdal Fm. sandstones do not reach as far east as PL1096.

Given the low materiality of the above-mentioned prospects and leads, Vår Energi has not triggered the evaluation of a potential development of any of those objects.

6 Conclusions

After their evaluation, the prospects and leads identified within PL1096 have been validated through technical assurance review. None of the objects had shown a sufficient materiality, hence related volumes and risk (Tables 3-6) were not validated through technical assurance review.

Proposed Evaluation											
Hydrocarbons Initially in Place											
Prospect	Target	Segment	GAS (Gft3)				OIL (Mbbls)				
			P90	P50	P10	Pmean	P90	P50	P10	Mean	
El Toro	Paleogene injectites	0					22,41	101,8	170,71	**98,72**	
Snota	Statfjord Gp.	0					0,16	2,54	13,33	**4,8**	

Table 3 Volumetrics for Snota and El Toro

PROPOSED PROBABILITY OF SUCCESS																							
PROSPECT	TARGET	SEGMENT	PLAY CHANCES				LOCAL CHANCES					OVERALL CHANCES						OVERALL CHANCES (INCLUDING DHI CONDITIONING IF APPLICABLE)					
			RESERV PLAY	SEAL PLAY	SOURCE PLAY	**PLAY**	RESERV LOCAL	SEAL LOCAL	TRAP	CHARGE		RESRV	SEAL	SOURCE	TRAP	CHARGE	**POS**	RESRV	SEAL	SOURCE	TRAP	CHARGE	**POS**
El Toro	Paleogene injectites	0	100 %	100 %	100 %	100 %	40 %	85 %	80 %	35 %	*10 %*	40 %	85 %	100 %	80 %	35 %	**10 %**	39 %	85 %	100 %	80 %	34 %	**9 %**
Snota	Statfjord Gp.	0	100 %	100 %	40 %	40 %	85 %	85 %	80 %	60 %	*35 %*	85 %	85 %	40 %	80 %	60 %	**14 %**	82 %	83 %	31 %	80 %	50 %	**8 %**

Table 4 Risk for Snota and El Toro

Due to the low materiality and high risk of the prospectivity within the license, Vår Energi, with support from partners, decided to relinquish PL1096.

Block	25/11	Prospect name	Snota	Discovery/Prosp/Lead	Lead	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:		Reported by company	Vår Energi ASA	Reference document	PL1096 relinquishment report			Assessment year	2023
This is case no.:	1 of 1	Structural element	Utsira high	Type of trap	Structural	Water depth [m MSL] (>0)	124	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)	0,03	0,40	0,76	2,12				
	Gas [10^9 Sm^3] (>0.00)					0,00	0,00	0,00	0,00
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,01	0,13	0,24	0,68				
	Gas [10^9 Sm^3] (>0.00)					0,00	0,00	0,00	0,00
Reservoir Chrono (from)	Lower Triassic	Reservoir litho (from)	Statfjord Gp.	Source Rock, chrono primary	Late Jurassic	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Upper Cretaceous
Reservoir Chrono (to)	Lower Triassic	Reservoir litho (to)	Statfjord Gp.	Source Rock, chrono secondary	Late Jurassic	Source Rock, litho secondary	Heather Fm	Seal, Litho	Shetland Gp.
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,08	Oil case (0.00-1.00)	1,00	Gas case (0.00-1.00)	0,00	Oil & Gas case (0.00-1.00)	0,00		
Reservoir (P1) (0.00-1.00)	0,82	Trap (P2) (0.00-1.00)	0,80	Charge (P3) (0.00-1.00)	0,50	Retention (P4) (0.00-1.00)	0,83		

Parametres:	Low (P90)	Base	High (P10)	*Comments*
Depth to top of prospect [m MSL] (> 0)		1955		
Area of closure [km^2] (> 0.0)	0,2	1,7	5,7	
Reservoir thickness [m] (> 0)	70	90	110	
HC column in prospect [m] (> 0)	5		20	
Gross rock vol. [10^9 m^3] (> 0.000)	0,000	0,006	0,025	
Net / Gross [fraction] (0.00-1.00)	0,23	0,58	0,70	
Porosity [fraction] (0.00-1.00)	0,21	0,25	0,30	
Permeability [mD] (> 0.0)				
Water Saturation [fraction] (0.00-1.00)	0,20		0,40	
Bg [Rm3/Sm3] (< 1.0000)				
1/Bo [Sm3/Rm3] (< 1.00)	0,81	0,85	0,88	
GOR, free gas [Sm^3/Sm^3] (> 0)				
GOR, oil [Sm^3/Sm^3] (> 0)	41		78	
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,30	0,32	0,35	
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,30	0,32	0,35	
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)	78			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)	190			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 5 Snota prospect data sheet

Block	25/11	Prospect name	El Toro	Discovery/Prosp/Lead	Lead	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:		Reported by company	Vår Energi ASA	Reference document	PL1096 relinquishment report			Assessment year	2023
This is case no.:	1 of 1	Structural element	Utsira high	Type of trap	stratigraphic	Water depth [m MSL] (>0)	124	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)	3,56	16,18	15,69	27,14				
	Gas [10^9 Sm^3] (>0.00)								
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	1,14	5,18	5,02	8,68				
	Gas [10^9 Sm^3] (>0.00)								
Reservoir Chrono (from)	Upper Eocene	Reservoir litho (from)	Grid Fm	Source Rock, chrono primary	Late Jurassic	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Eocene
Reservoir Chrono (to)	Upper Eocene	Reservoir litho (to)	Grid Fm	Source Rock, chrono secondary	Late Jurassic	Source Rock, litho secondary	Heather Fm	Seal, Litho	Horda Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,09	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)	0,39	Trap (P2) (0.00-1.00)	0,80	Charge (P3) (0.00-1.00)	0,34	Retention (P4) (0.00-1.00)	0,85		
Parametres:	Low (P90)	Base	High (P10)	*Comments*					
Depth to top of prospect [m MSL] (> 0)		1176							
Area of closure [km^2] (> 0.0)	1,9	5,8	7,0						
Reservoir thickness [m] (> 0)									
HC column in prospect [m] (> 0)	88		238						
Gross rock vol. [10^9 m^3] (> 0.000)	0,031	0,146	0,202						
Net / Gross [fraction] (0.00-1.00)	0,60		0,80						
Porosity [fraction] (0.00-1.00)	0,20		0,35						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0,10		0,40						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,77		0,91						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	26		53						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,30	0,32	0,35						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,30	0,32	0,35						
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)	65			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)	162			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 6 El Toro prospect data sheet