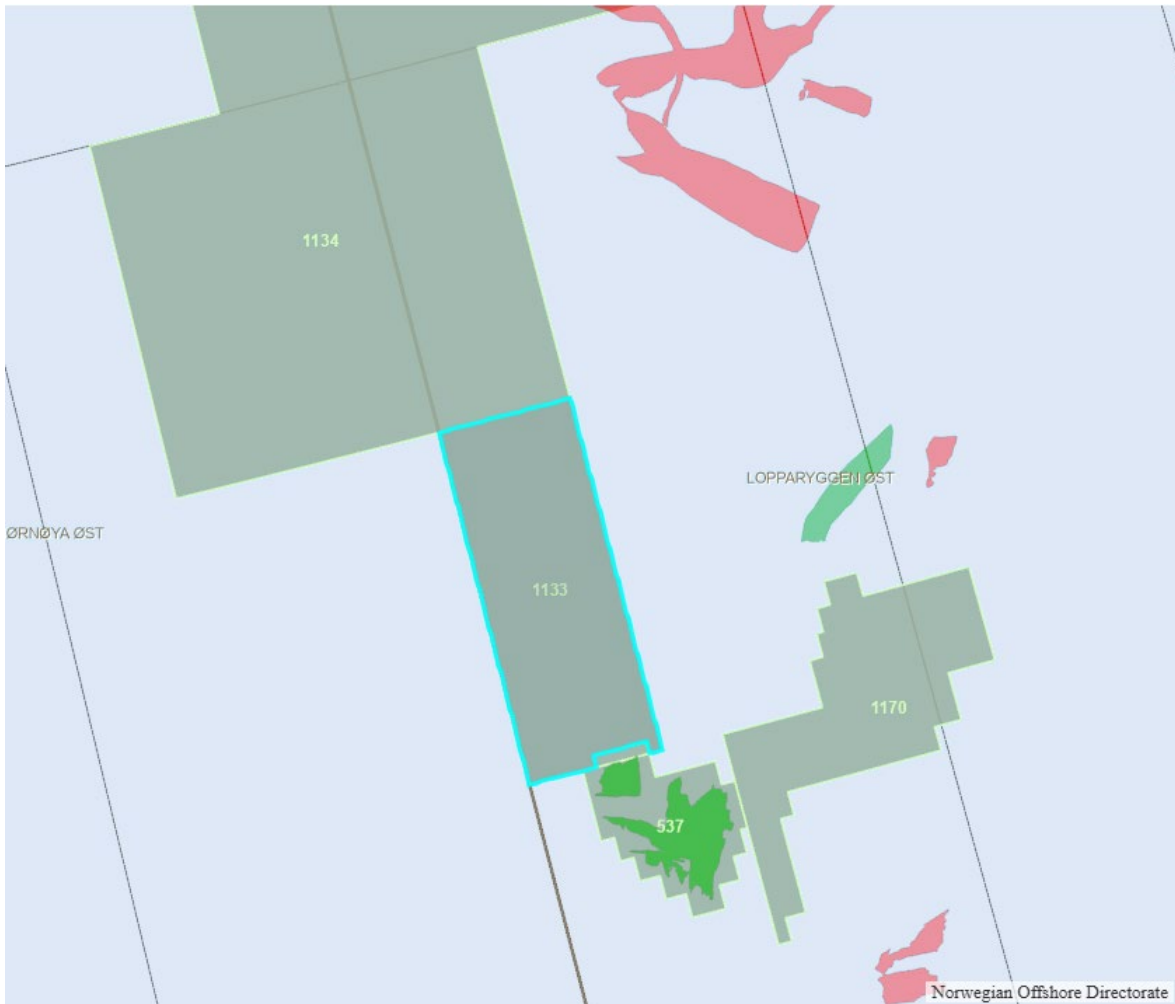


# PL1133 Status Report Relinquishment



# 1 License history

PL1133 was awarded September 17th, 2021 as part of 25<sup>th</sup> application round. The licence group consists of

- Aker BP ASA (O) 35%
- Equinor Energy AS 35%
- Petoro AS 20%
- Inpex Idemitsu Norge AS 10%

The goal of the exploration licence was to find additional resources for a potential Wisting development. The licence composition is the same as for PL1170 (east of Wisting), and for that reason, there have been many joint meetings and collaborations related to the work program.

## Work commitments

- Study of geology and geophysics
- Acquire new seismic
- EM feasibility study
- Drill & Drop within 3 years

The work program has been completed, and a unanimous relinquishment decision was made in Q3 2024. When it comes to the EM work program, not only feasibility studies were conducted, but also separate inversions on existing EM surveys.

## Held meetings in the licence

An overview of licence meetings is given in Table 1.1

Table 1.1 License Meetings

Date	Activity	Description
<b>2021</b>		
October 14	<b>ECMC#1</b>	Start up meeting
<b>2022</b>		
March 18	EC/ Work Meeting	3D aq. planning
June 22	<b>ECMC#2</b>	3D Acquisition set up
August 23	EC/ Work Meeting	CSEM interpretation
September 27	EC/ Work Meeting	Processing Start Up DUG
November28	<b>ECMC#3</b>	Joint meeting PL1170
<b>2023</b>		
December 6	<b>ECMC#4</b>	Joint meeting PL1170
<b>2024</b>		
November 27	<b>ECMC#5</b>	

## Reason for surrender

Remaining prospects have too little resource potential and too high risk to justify a drilling decision.

## 2 Database

Fig. 2.1 gives an overview of the seismic 3D surveys, key wells and CSEM surveys, used in the evaluation of PL1133.

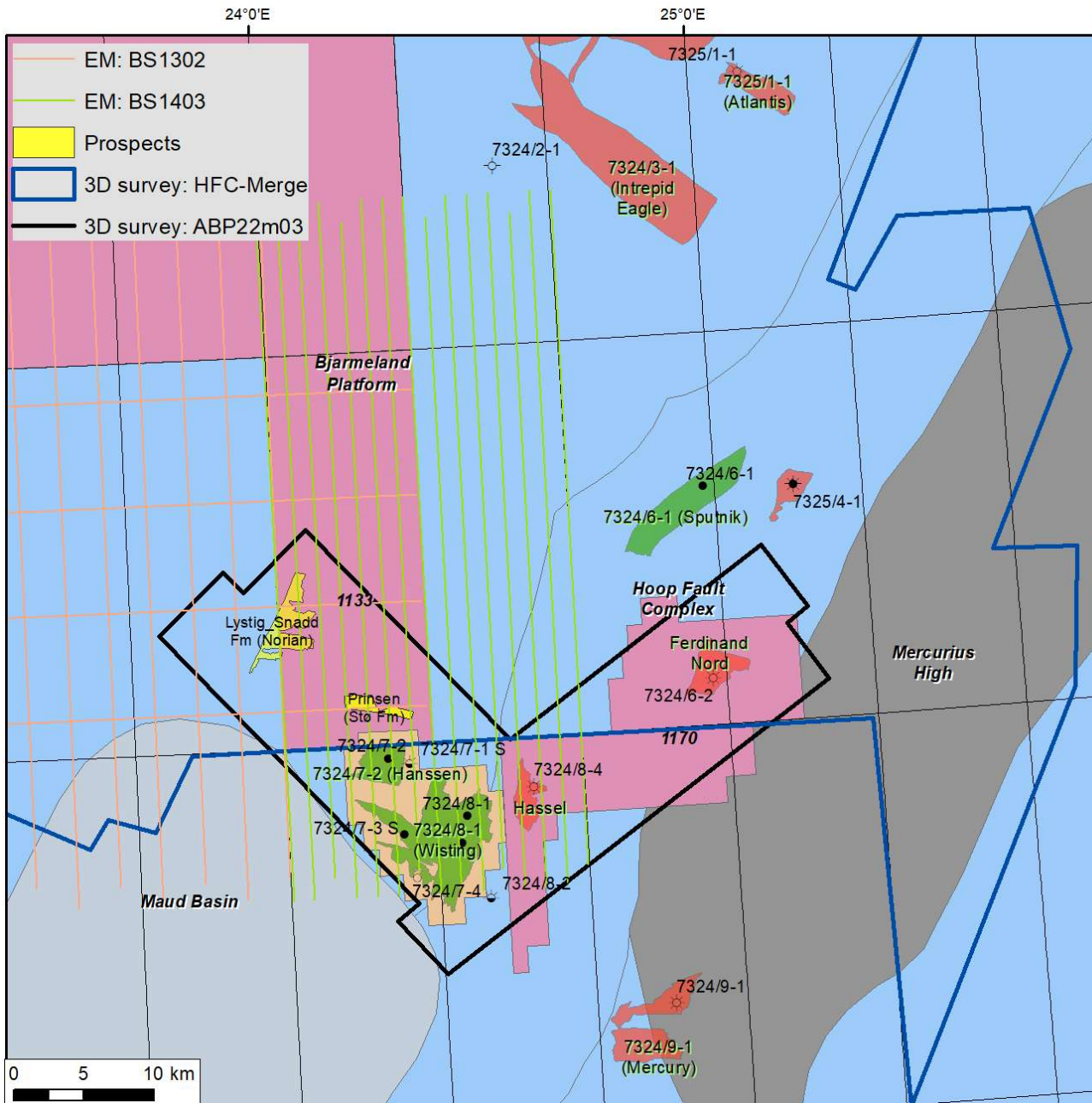


Fig. 2.1 Overview Map Showing licence area, key wells, 3D seismic outline and EM surveys

### 2.1 Seismic data

The main dataset used in the evaluation is the newly acquired 3D "HalfSeis", ABP22m03 (Table 2.1 and Fig. 2.1). AKB22m03 consists of the two surveys LU22001 and LU22002 and covers the

southern part of PL1133. The surveys were acquired by PGS during summer 2022 and processed by DUG. Final data was delivered in November 2023. 3D survey HFC11, covers the northern part of the licence acreage.

Table 2.1 Seismic Database

Name	Type	Year	Offset Data	Area	NPD ID
LU22001	3D	2022	Yes	Bjarmeland Platform	10424
LU22002	3D	2022	Yes	Bjarmeland Platform/ Hoop Fault Complex	10427
HFC11	3D	2011	Yes	Bjarmeland Platform m.m	7424

## 2.2 Well data

The exploration wells included in the geological and geophysical evaluation are displayed in Table 2.2 and shown in Fig. 2.1.

The well database has been used for stratigraphic framework, seismic to well tie, prospect and risk assessment.

Table 2.2 Well Database (in chronological order)

Well	Operator	Year	Content	TD [m MD RKB]	TD Stratigraphy Age/ Formation	NPDID
7324/8-1 (Wisting Main)	OMV	2013	OIL (Stø)	930	Triassic Snadd Fm.	7221
7324/7-1S (Wisting Alternative)	OMV	2013	Dry/Shows	2535	Triassic Kobbe Fm.	7222
7324/2-1 (Apollo)	Statoil	2014	DRY	1090	Triassic Snadd Fm.	7481
7324/7-2 (Hanssen)	OMV	2014	OIL (Stø)	1730	Triassic Snadd Fm.	7450
7325/1-1 (Atlantis)	Statoil	2014	GAS (Snadd)	2865	Triassic Havert Fm.	7501
7324/9-1 (Mercury)	Statoil	2014	GAS (Stø)	1100	Triassic Snadd Fm.	7527
7324/8-2 (Bjaaland)	OMV	2015	Dry/shows	3812	Triassic Snadd Fm.	7681
7324/7-3S (Wisting Appraisal)	OMV	2016	OIL (Stø)	2354	Jurassic Stø Fm.	7875
7325/4-1 (Gemini Nord)	Statoil	2017	GAS (Stø) OIL (Snadd)	1210	Triassic Snadd Fm.	8211
7324/8-3 (Wisting II)	OMV	2017	OIL (Stø)	840	Triassic Fruholmen Fm.	8239
7324/3-1 (Intrepid Eagle)	Equinor	2018	GAS (Snadd/Stø)	1709	Triassic Snadd Fm.	8568
7324/6-1 (Sputnik)	Equinor	2019	OIL (Snadd Fm)	1600	Triassic Snadd Fm.	8741
7324/6-2 (Ferdinand Nord)	Aker BP	2024	Gas (Stø)	1280	Triassic Snadd Fm.	10097
7324/8-4 (Hassel)	Aker BP	2024	Gas (Stø)	815	Triassic Snadd Fm.	10096

## 2.3 CSEM data

Aker BP has used CSEM in its exploration strategy for the Barents Sea for over 10 years. In the Hoop/Bjarmeland area, this technology has a unique position for evaluating Jurassic prospectivity as it has not failed so far. All Jurassic prospects drilled in the area are associated with elevated seismic amplitudes; however, only those with EM anomalies have led to discoveries. Direct Hydrocarbon Indicators (DHI) in the seismic is of that reason crucial but not sufficient. The seismic DHI can be set up by low saturation hydrocarbons, but EM anomalies prove hydrocarbon-filled structures with high saturation. The licence group has acquired EM surveys in the area covered by PL1133 (Table 2.3 and Fig. 2.1) and Aker BP has conducted its own inversion in addition to using EMGS's evaluation.

Table 2.3 CSEM Database (Electro Magnetic Surveys)

Name	Type	Company	Year	Area	NPDID
BS1302 (part of EMGS1301)	3D Multi Client	EMGS	2013	Bjarmeland Platform	7772
BS1403 (part of EMGS1404)	3D Multi Client	EMGS	2014	Bjarmeland Platform	7978

### 3 Geological and geophysical studies

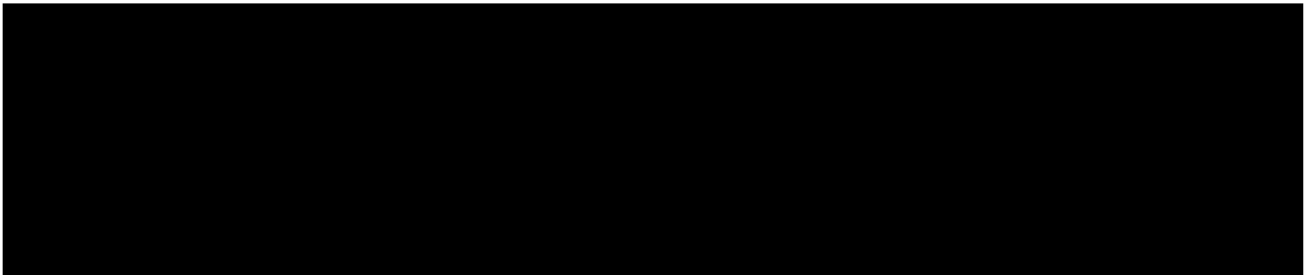
The following studies have been carried out

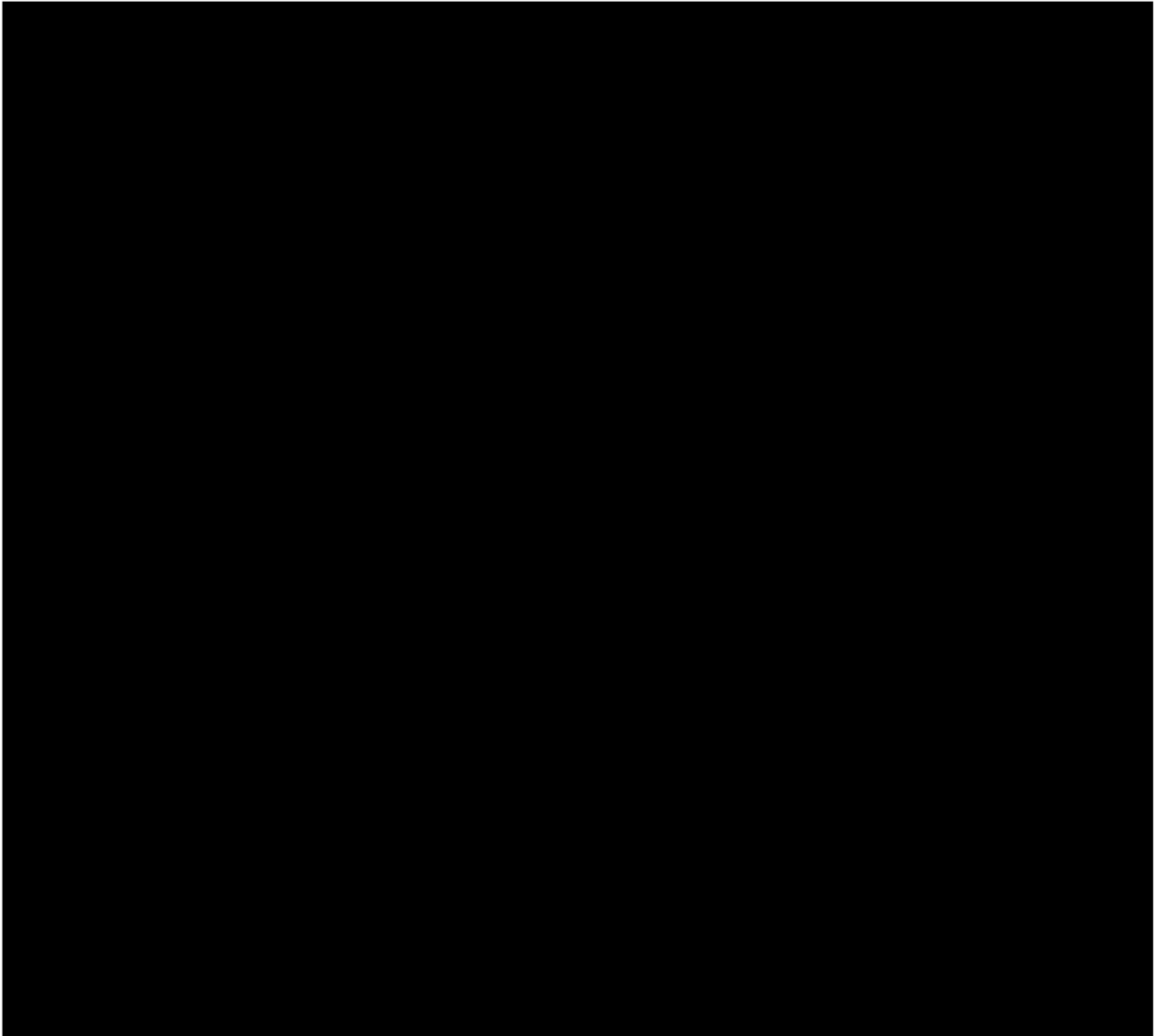
1. Acquisition and processing of LU22001 (part of ABP22m03)
2. CSEM interpretation of BS1302 and BS1403.
3. AVO study (both external (Dig Science) and internal work

#### **3D seismic survey ABP22m03 (HalfSeis)**

"HalfSeis" is a further development and simplification of the "source-over-cable" acquisition geometry called "TopSeis." They are both designed to address the seismic imaging challenges of the relatively shallow targets within the high-velocity setting of the Barents Sea platform. With HalfSeis, a wide, multi-source spread is towed above the front ends of the streamers. The main objective of this layout is to improve the illumination and spatial sampling of the reflections from the shallow targets.

The HalfSeis acquisition geometry provides very dense cross-line and in-line sampling, which improves the resolution of the shallow Stø reservoir. Furthermore, this geometry also records the near and zero offsets, enabling proper AVO analysis of the Stø Formation.





### **AVO study**

#### **Dig Deep Methodology (DIG Technology)**

Dig Technology performed AVO feasibility modeling, AVO classification and density inversion for the Princen Prospect. With the Dig Deep workflow, both diagenetic and depositional processes are taken into account in the rock physics modeling. The model assume that the Stø Formation reservoir sands have been buried to depth and temperatures where chemical compaction and quartz cementation have just started. Then, during Cenozoic, the reservoir sandstones have been uplifted almost 2km. The presence of cement has a very strong effect on rock stiffness and fluid sensitivities, and therefore on the AVO signatures, that can vary locally and regionally with varying burial history. In addition, AVO signatures can also be affected by local facies trends. The observed AVO class in Princen Prospect is class 3, which can be explained both by oil and gas.

#### **PCube Methodology (Aker BP)**

To investigate AVA (Amplitude vs Angle) behaviour of the area of interest, a Bayesian-based inversion called PCube, was performed. In PCube, probabilities for different lithology-fluid classes from seismic data and geological knowledge are calculated.

The method combines stochastic rock physics relations between the elastic parameters and the different lithology-fluid classes, with the results from a fast Bayesian seismic simultaneous inversion from seismic data to elastic parameters integrating knowledge generated by different subsurface disciplines. Thus, it enables the maximum synergy.

The process involves the following major steps:

- Define a lithology-fluid class dictionary & Simultaneous inversion of Angle stacks
- Compute the probability for each of the lithology-fluid classes in the dictionary at every point in the subsurface

The conclusion from the internal study is that it is possible to distinguish the HC footprint from brine; however, it is difficult to distinguish between oil and gas fluids. It is also difficult to distinguish low saturation from high saturation gas accumulations

## 4 Prospect update

Only one prospect (Prinsen) formed the basis for the 25r application that led to the award of PL1133 (Fig. 4.1). The Prinsen Prospect is located directly north of 7324/7-2 (Hanssen) and belongs to the Jurassic play-model, the same model that defines almost all the discoveries in the Wisting area. One of the leads mapped in the application, Lystig Snadd Prospect, is now redefined as a prospect, since the trap is well-defined and has associated seismic amplitude anomalies.

### Prinsen Prospect

Prinsen Prospect is bounded to the south by an east-west fault and to the east by a north-south fault, the same fault that delineate the Hanssen Structure (Fig. 4.2 and Fig. 4.3). Prinsen Prospect is segmented by a smaller north-south trending fault that most likely is "open" but could seal if the filling of the eastern segment is limited. The trap has coinciding amplitude anomalies that are semi-conform to depth. The segment to the east has better conformity than the western segment and two possible amplitude shut-offs are observed, possible representing gas above oil. The reservoir consists of Stø Formation, deposited in a fluviodeltaic to shallow marine setting comprising tidally influenced channels, tidal flat and shoreface deposits. These reservoir units are encountered in all nearby wells and show very good reservoir properties. The main source of the hydrocarbons is expected to be the Steinkobbe Formation, a source rock that has been confirmed by all nearby discoveries.

The likelihood of finding hydrocarbon in the Prinsen Prospect is very low. This is due to the

hydrocarbon accumulation was observed (Fig. 3.1). Since the Prinsen Prospect is well-defined by seismic amplitudes, it reminds of the 7324/8-2 (Bjaaland) structure that was drilled in 2015.

had depth conformed seismic amplitude anomalies. An explanation for this is that the structures were once filled and then leaked leaving low saturation gas/oil in the structures, enough to create an amplitude image equivalent to the former fill level. This is also observed in the Apollo Structure. The Prinsen Prospect assessment is shown in Table 4.2

### Lystig Norian Prospect

One of the leads mapped in the application, Lystig Norian Prospect, is redefined as a prospect, since the trap is well-defined and has associated seismic amplitude anomalies (Fig. 4.4). The trap consist of a three-way, fault bounded structural trap. The reservoir consist of Snadd Formation, deposited in a fluviodeltaic to shallow marin setting. The Steinkobbe Formation is seen as the main source rock.

The risk of finding hydrocarbons in the Snadd level is very high, since none of the wells in the area have found hydrocarbons in this level. The reason for the increased amplitude strength across the structure is most likely low saturated gas as a result of a leaked structure. The Lystig Norian Prospect assessment is shown in Table 4.3

### Volumetric

An overview of the prospect resources are given in Table 4.1.

Table 4.1 PL1133 Prospect resources

Prospect	Phase	In Place (mmbbls)	Recoverable (mmbbls)	GCOS
		P90- P50- Mean-P10		
Prinsen	Oil (gas cap)	21 - 26 - 27 - 33	8,8 - 11,9 - 12,1- 16,8	9,00 %
Lystig Norian	Oil	31 - 45- 46 - 62	10 - 15 - 16 - 23	7,00 %

### Former Leads

All the other leads in the application are still considered as leads. One of them, Fjæreelv West, is covered by the recent acquired 3D data (HalfSeis). The Fjæreelva West Lead (Triassic) was based on a very diffuse amplitude anomaly and is no longer considered a lead as the new data does not confirm any trap configuration nor enhanced seismic amplitudes. The other leads in the application, Fjæreelva East and Strandåelva South & North (Fig. 4.1), are not covered by the new seismic, and are still considered as leads. Lystig Stø was also a former lead (Fig. 4.1), but after the new evaluation it is considered completely uninteresting due to its size.

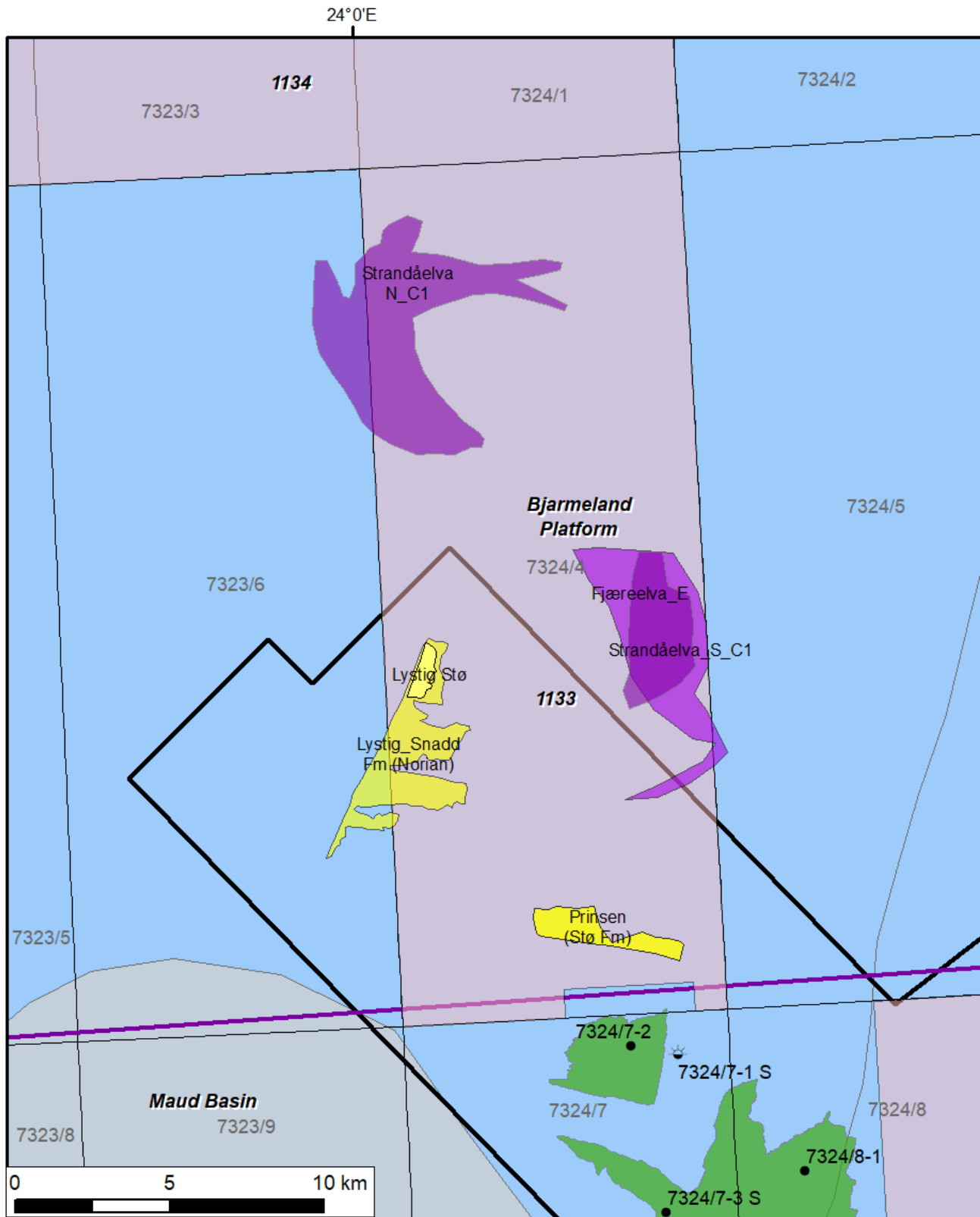


Fig. 4.1 PL1133 Prospect portfolio Prospects in yellow and leads in purple

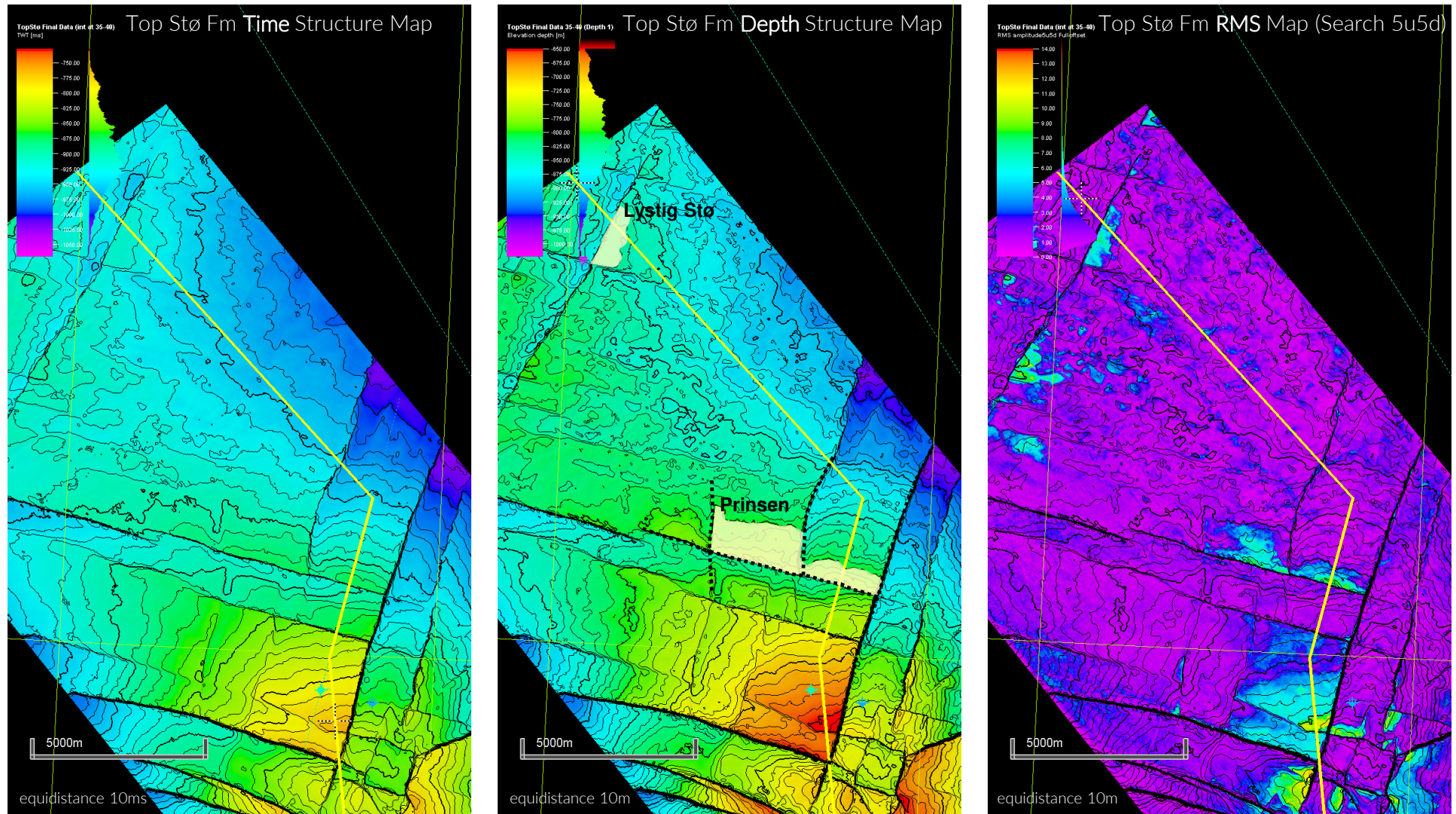


Fig. 4.2 Top Stø time, depth & RMS maps *Faults that define the boundary of the prospect are shown as dotted lines*

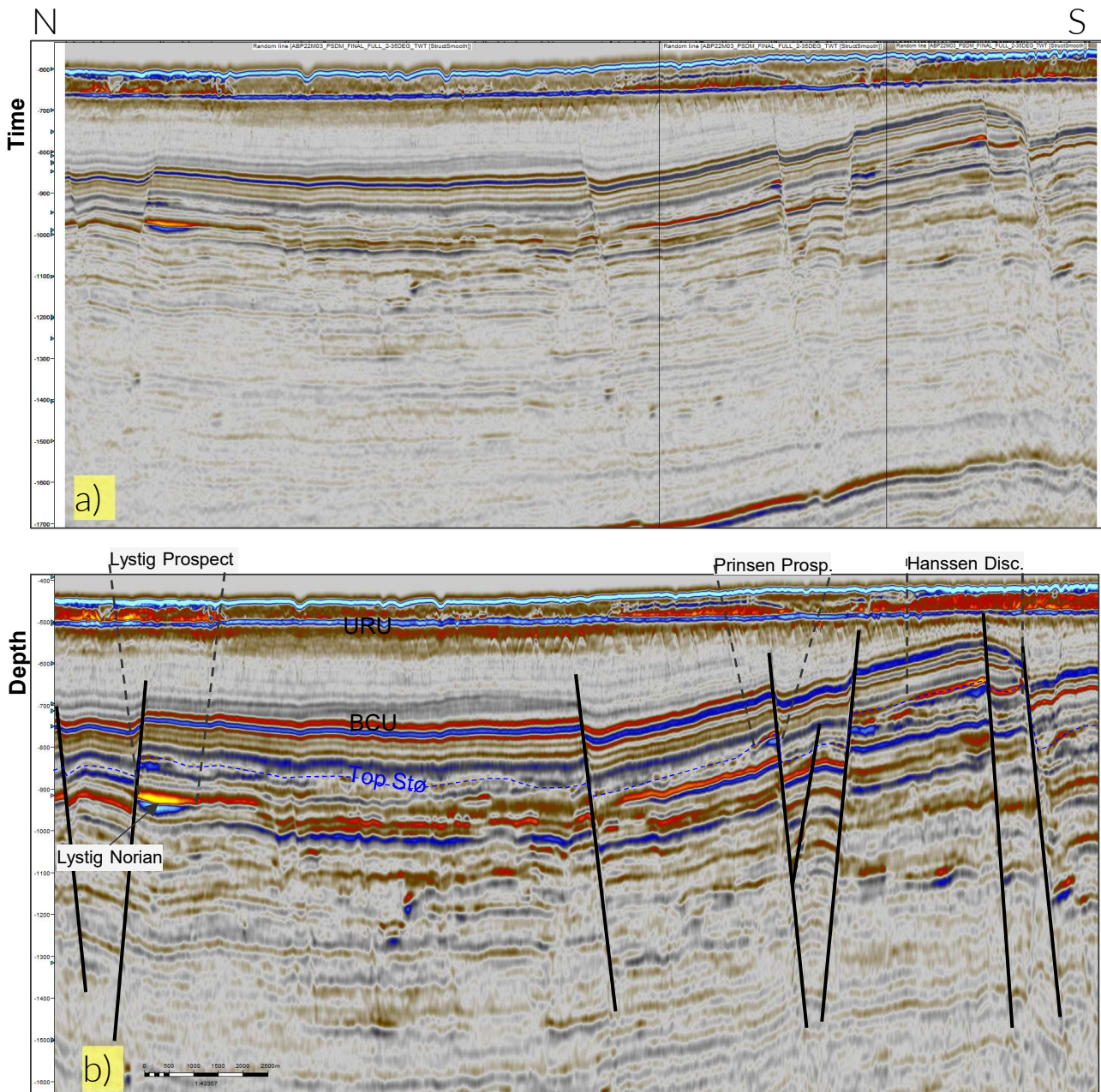


Fig. 4.3 Seismic arbitrary line across prospects  
 a) in time  
 b) in depth  
 Location of seismic line shown in Fig. 4.2

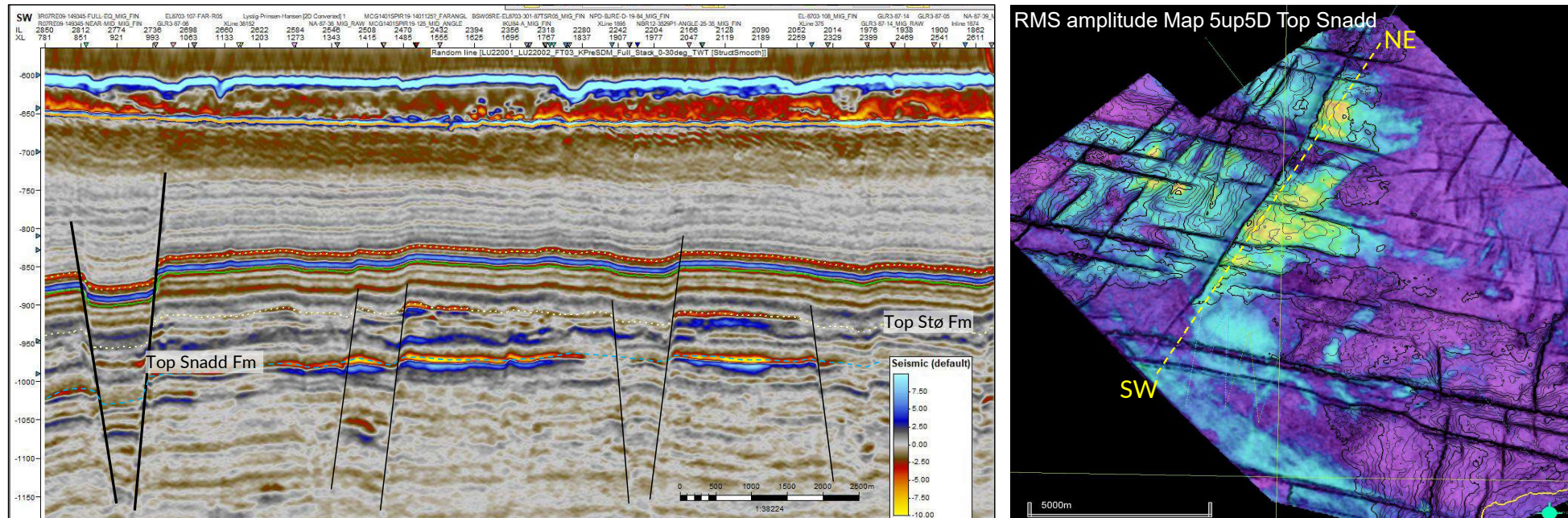


Fig. 4.4 Lystig Norian Prospect Left: Seismic line showing the brightening of Top Snadd Level representing the Lystig Norian Prospect level. Right: RMS map of Top Snadd Fm (+/- 5ms)

Table 4.2 Prinsen Prospect (Sodir Table 5)

Block	7324/4	Prospect name	Prinsen	Discovery/Prospect/Lead	Prospect	Prospect 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&Gas	Reported by company	Aker BP	Reference document				Assessment year	2025
This is case no.:		Structural element	Bjarmeland	Type of trap	1.1.1 Up-thrown tra	Water depth [m MSL] (>0)	440	Seismic database (2D/3D)	3D
<b>Resources IN PLACE and RECOVERABLE</b>		<b>Main phase</b>				<b>Associated phase</b>			
<b>Volumes, this case</b>		Low (P90)	Base, Mode	Base, Mean	High (P10)	Low (P90)	Base, Mode	Base, Mean	High (P10)
In place resources	Oil [10 <sup>9</sup> Sm <sup>3</sup> ] (>0.00)	3,37	4,20	4,28	5,25	0,00	0,00	0,00	0,00
	Gas [10 <sup>9</sup> Sm <sup>3</sup> ] (>0.00)	0,02	0,02	0,03	0,04	0,17	0,20	0,22	0,27
Recoverable resources	Oil [10 <sup>9</sup> Sm <sup>3</sup> ] (>0.00)	1,40	1,84	1,93	2,52	0,00	0,00	0,00	0,00
	Gas [10 <sup>9</sup> Sm <sup>3</sup> ] (>0.00)	0,01	0,01	0,01	0,02	0,07	0,10	0,10	0,13
Reservoir Chrono (from)		Reservoir litho (from)		Source Rock, chrono primary		Source Rock, litho primary		Seal, Chrono	
Reservoir Chrono (to)		Reservoir litho (to)		Source Rock, chrono secondary		Source Rock, litho secondary		Seal, Litho	
<b>Probability (fraction)</b>									
Technical (oil + gas + oil & gas case ) (0.00-1.00)	0,09	Oil case (0.00-1.00)	0,00	Gas case (0.00-1.00)	0,00	Oil & Gas case (0.00-1.00)	0,09		
Reservoir (P1) (0.00-1.00)	1,00	Trap (P2) (0.00-1.00)	0,10	Charge (P3) (0.00-1.00)	0,90	Retention (P4) (0.00-1.00)	1,00		
<b>Parameters:</b>									
	Low (P90)	Base	High (P10)	<b>Comments:</b>					
Depth to top of prospect [m MSL] (> 0)			765	Mean values have here been used as the base case for the input parameters. In the petrophysical evaluation of the reservoir parameters for the reference wells, the Thomas Stieber (1975) method was utilised for most of the wells. This method utilises cut-offs for net res fraction and porosity. (Net res fraction is the fraction of the desired facies that is of reservoir quality; net reservoir rock/ net sand). Gross rock volume is the HC-bearing gross volum, that is the GRV calculated down to the HCW contact Retention (P4) after accumulation, is part of the trap risk. For NPD use:					
Area of closure [km <sup>2</sup> ] (> 0.0)	2,5	2,9	3,2						
Reservoir thickness [m] (> 0)	15,0	17,6	20,1						
HC column in prospect [m] (> 0)			28						
Gross rock vol. [10 <sup>9</sup> m <sup>3</sup> ] (> 0.000)	0,025	0,029	0,033						
Net / Gross [fraction] (0.00-1.00)	0,85	0,89	0,93						
Porosity [fraction] (0.00-1.00)	0,19	0,22	0,25						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0,07	0,10	0,13						
Bg [Rm3/Sm3] (< 1.0000)	0,0095	0,0100	0,0105						
1/Bo [Sm3/Rm3] (< 1.00)	0,86	0,88	0,90						
GOR, free gas [Sm <sup>3</sup> /Sm <sup>3</sup> ] (> 0)	39804	50010	67259						
GOR, oil [Sm <sup>3</sup> /Sm <sup>3</sup> ] (> 0)	45	51	58						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,37	0,45	0,53						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,37	0,45	0,53						
Recov. factor, gas main phase [fraction] (0.00-1.00)	0,45	0,50	0,55						
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0,45	0,50	0,55						
Temperature, top res [°C] (>0)				Innrappr. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)				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 Lystig Norian Prospect (Sodir Table 5)

Block	7324/4	Prospect name	Lystig Snadd	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		Reference document						Assessment year	2024		
This is case no.:		Structural element	Bjarmeland	Type of trap	1.1 Fault-dependent	Water depth [m MSL] (>0)	400	Seismic database (2D/3D)	3D				
<b>Resources IN PLACE and RECOVERABLE</b>		<b>Main phase</b>			<b>Associated phase</b>								
<b>Volumes, this case</b>		Low (P90)	Base, Mode	Base, Mean	High (P10)	Low (P90)	Base, Mode	Base, Mean	High (P10)				
In place resources	Oil [10 <sup>6</sup> Sm <sup>3</sup> ] (>0.00)	5,01	6,84	7,29	9,80								
	Gas [10 <sup>9</sup> Sm <sup>3</sup> ] (>0.00)					0,25	0,36	0,37	0,51				
Recoverable resources	Oil [10 <sup>6</sup> Sm <sup>3</sup> ] (>0.00)	1,57	2,13	2,57	3,71								
	Gas [10 <sup>9</sup> Sm <sup>3</sup> ] (>0.00)					0,08	0,11	0,13	0,19				
Reservoir Chrono (from)	Carnian	Reservoir litho (from)	Snadd fm	Source Rock, chrono primary	Anisian	Source Rock, litho primary	Steinkobbe fm	Seal, Chrono	Rhaetian				
Reservoir Chrono (to)	Norian	Reservoir litho (to)	Snadd fm	Source Rock, chrono secondary		Source Rock, litho secondary		Seal, Litho	Akkar mbr				
<b>Probability [fraction]</b>													
Technical (oil + gas + oil & gas case ) (0.00-1.00)	0,07	Oil case (0.00-1.00)	0,07	Gas case (0.00-1.00)	0,00	Oil & Gas case (0.00-1.00)	0,00						
Reservoir (P1) (0.00-1.00)	0,50	Trap (P2) (0.00-1.00)	0,45	Charge (P3) (0.00-1.00)	0,30	Retention (P4) (0.00-1.00)	1,00						
<b>Parametres:</b>		Low (P90)	Base	High (P10)	<b>Comments:</b>								
Depth to top of prospect [m MSL] (> 0)			900		<i>Mean values have here been used as the base case for the input parameters.</i>								
Area of closure [km <sup>2</sup> ] (> 0.0)	7,7		9,2										
Reservoir thickness [m] (> 0)	12,4		15,0		<i>In the petrophysical evaluation of the reservoir parameters for the reference wells, the Thomas Stieber (1975) method was utilised for most of the wells. This method utilises cut-offs for net res fraction and porosity. (Net res fraction is the fraction of the desired facies that is of reservoir quality; net reservoir rock/ net sand).</i>								
HC column in prospect [m] (> 0)			25										
Gross rock vol. [10 <sup>9</sup> m <sup>3</sup> ] (> 0.000)	0,053		0,074		<i>Gross rock volume is the HC-bearing gross volum, that is the GRV calculated down to the HCW contact</i>								
Net / Gross [fraction] (0.00-1.00)	0,75		0,80										
Porosity [fraction] (0.00-1.00)	0,18		0,20										
Permeability [mD] (> 0.0)													
Water Saturation [fraction] (0.00-1.00)	0,25		0,30										
Bg [Rm3/Sm3] (< 1.0000)													
1/Bo [Sm3/Rm3] (< 1.00)	0,86		0,88										
GOR, free gas [Sm <sup>3</sup> /Sm <sup>3</sup> ] (> 0)													
GOR, oil [Sm <sup>3</sup> /Sm <sup>3</sup> ] (> 0)	45		51										
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,27		0,35		<i>Retention (P4) after accumulation, is part of the trap risk.</i>								
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,27		0,35										
Recov. factor, gas main phase [fraction] (0.00-1.00)													
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)													
<b>For NPD use:</b>													
Temperature, top res [°C] (>0)				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)				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 only development solution that is relevant for prospects in PL1133 is a tie-in to a possible, future Wisting development. Technical-economic evaluation, from the neighbouring licence 1170, indicates that the Prinsen and Lystig prospects (PL1133) are far too small to meet the minimum economical field size. There are therefore no development solutions as of today.

## 6 Conclusion

Two prospects identified in the licence

1. Prinsen Prospect - Stø Formation
  1. Small Volumes (far below Minimum Economical Field Size)
  2. High Risk (<10%) for finding oil  
[REDACTED]
2. Lystig Norian Prospect - Snadd Formation
  1. Moderate Volumes (below MEFS for Hassel)
  2. Very High Risk
  3. No convincing Direct Hydrocarbon Indications (DHI)

**Both prospects have too high risks and too low resource potential to support a drill decision.**