



## **PL 803 – License status report**

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## 1 License history

**Licence:** PL803 - blocks 7119/10 & 11. PL803 is located between the Hammerfest and the Tromsø basins in the Ringvassøy - Loppa Fault Complex.

**Awarded:** February 6<sup>th</sup>, 2015

**License period:** Drill or drop: 06.02.2019

<b><u>License group:</u></b>	16.05.2018	Equinor Energy AS	100% (Operator)
	01.06.2017 – 16.05.2018	Statoil Petroleum AS	100% (Operator)
	18.05.2016 – 01.06.2017	DEA Norge AS	50% (Operator)
		Statoil Petroleum AS	50%
	13.01.2016 – 18.05.2016	Dea E&P Norge AS	50% (Operator)
		Statoil Petroleum AS	50%
	06.02.2015 – 13.01.2016	E.ON E&P Norge AS	50% (Operator)
		Statoil Petroleum AS	50%

**License area:** 671,76 km<sup>2</sup>

**Work programme:** Acquiring 3D seismic and decision to drill or drop within February 6<sup>th</sup> 2019

**Meetings held:**

13.02.2015	EC/MC startup meeting
25.11.2015	EC/MC meeting
17.06.2016	EC/MC work meeting
02.11.2016	EC/MC meeting
06.11.2018	EC/MC meeting

**Work performed:**

2015:	License start-up, reprocessing of 2D seismic (MCG1301 2D survey)
2017:	Seismic acquisition and geological/geophysical evaluation of the prospectivity.
2018:	Decision made to surrender the licence.

**Reason for surrender:**

The early Tertiary Broadpeak prospect has been re-evaluated on the new Ringvassøy 3D seismic survey. The evaluation of the 3D seismic has not been able to derisk Broadpeak, which is the main prospect in PL803 (Figure 1.1). Secondary targets at several stratigraphic levels have also been evaluated. However, these traps have either substantial geological risks combined with low volume potential.

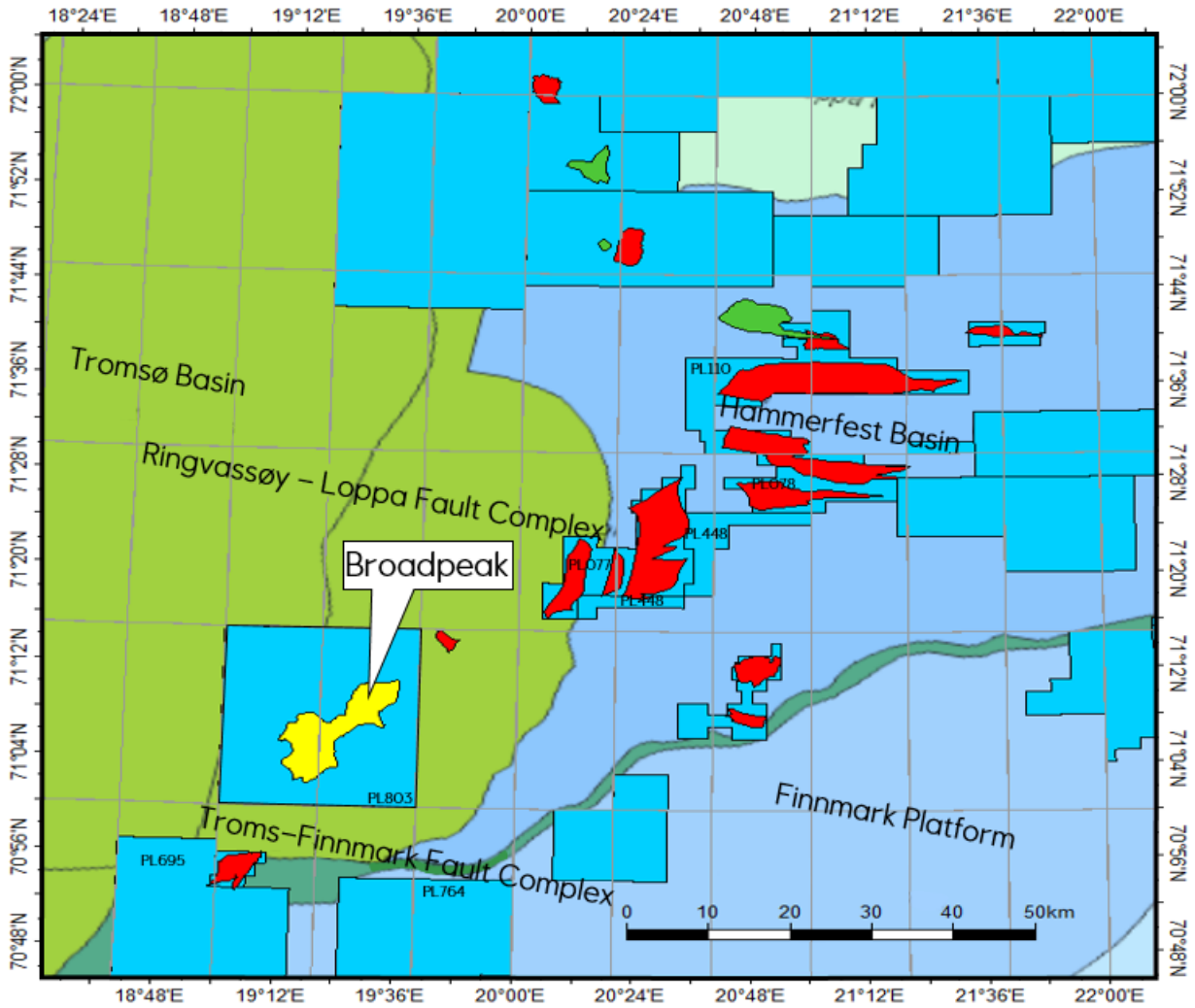


Figure 1.1 SW Barents Sea structural elements map showing the location of the Broadpeak license (PL803) and the surrounding discoveries in the Hammerfest Basin.

## 2 Database overviews

### 2.1 Seismic data

An overview of the common seismic database is shown in Fig. 2.1 and Table 2.1. Getting access to and evaluate the reprocessed 2D survey MCG1301 and the 3D survey DOL15001 were part of the initial license commitment.

**Table 2.1 PL803 common seismic database**

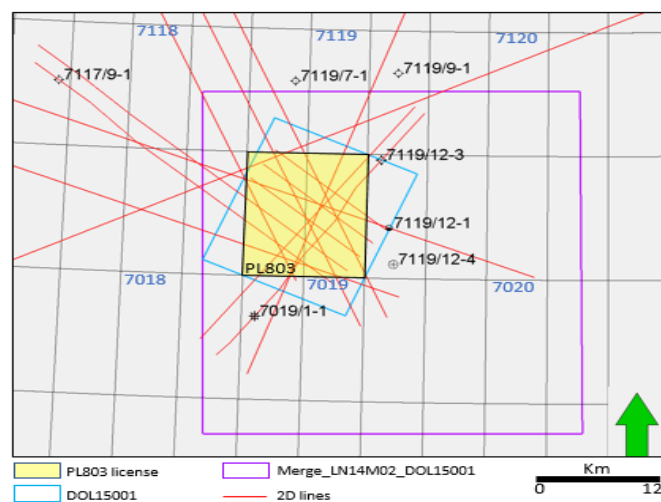
Seismic survey	Survey type	Line	Year	Quality	NPDID
DOL15001	3D	Full survey	2015	Variable (key license survey)	8173
MCG1301	2D	MCG1301-216	2013	Very good	7796
	2D	MCG1301-218			
	2D	MCG1301-220			
	2D	MCG1301-222			
	2D	MCG1301-224			
	2D	MCG1301-371			
	2D	MCG1301-373			
NBR08	2D	Line: NBR08-132313	2008	Good	4573
NBR10	2D	Line: NBR10-224090	2010	Good	7219
	2D	Line: NBR10-222770			
	2D	Line: NBR10-321732			
	2D	Line: NBR10-320350			
NBR11	2D	Line: NBR11-437646	2011	Good	7408

### 2.2 Well data

An overview of the common well database is shown in Fig.2.1 and Table 2.2

**Table 2.2 PL803 common well database**

Well	Year	Drilling operator	Present	Status	Age at TD	Formation at TD	NPDID
7117/9-1	1982	Norsk Hydro Produksjon AS	PL063	P&A	Early Cretaceous	Kolmule Fm	49
7119/7-1	1983	Norsk Hydro Produksjon AS	PL076	P&A	Permian	Undefined GP	21
7119/9-1	1984	Elf Aquitaine Norge A/S	PL096	P&A	Late Triassic	Fruholmen Fm	132
7119/12-3	1983	Den norske stats oljeselskap a.s	PL060	P&A	Early Jurassic	Nordmela Fm	17
7119/12-1	1980	Den norske stats oljeselskap a.s	PL060	P&A	Early Jurassic	Stø Fm	121
7119/12-4	2011	Statoil Petroleum AS	PL488	P&A	Late Triassic	Fruholmen Fm	6468
7019/1-1	2000	Norsk Agip AS	PL201	P&A	Early Jurassic	Tubåen Fm	4145



**Figure 2.1 PL803 seismic and well database**

### 3 Results of geological and geophysical studies

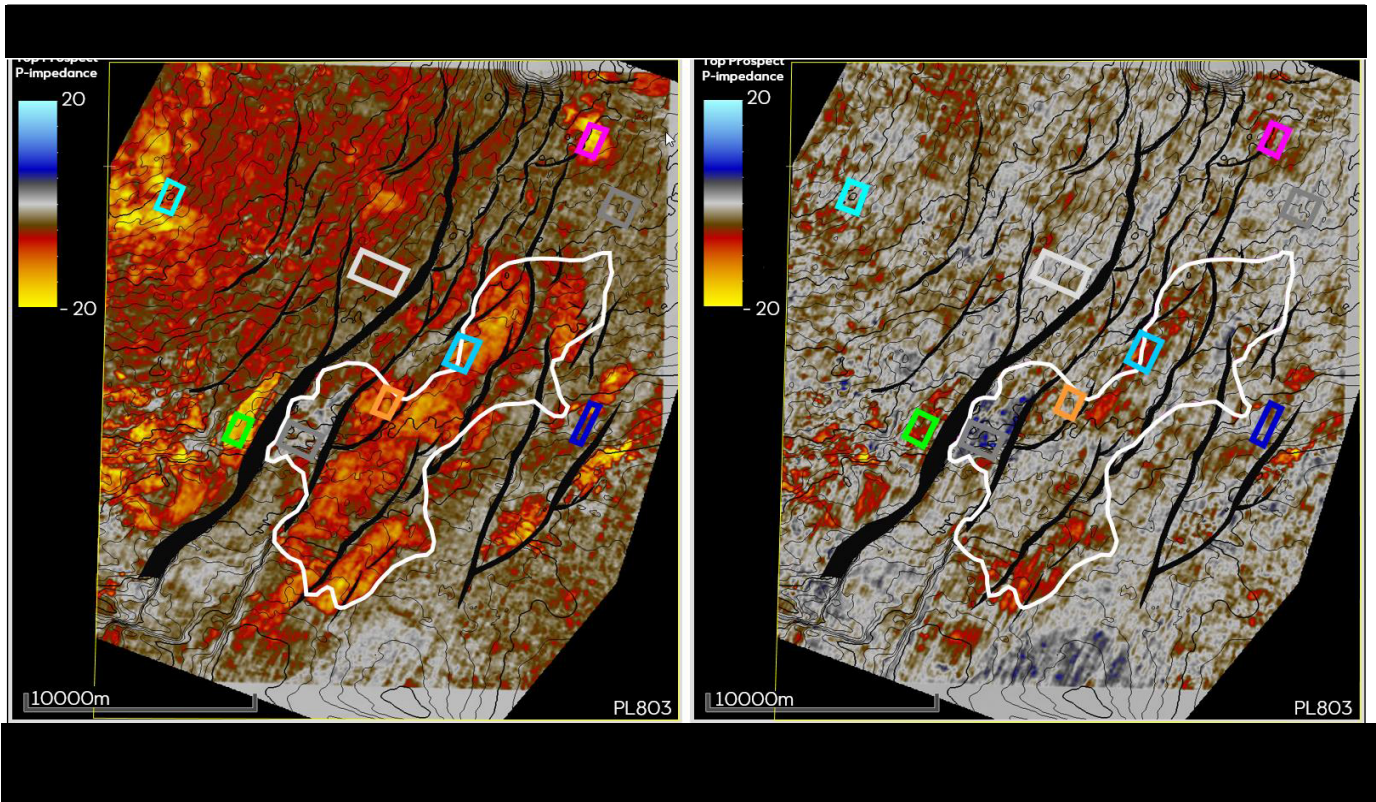
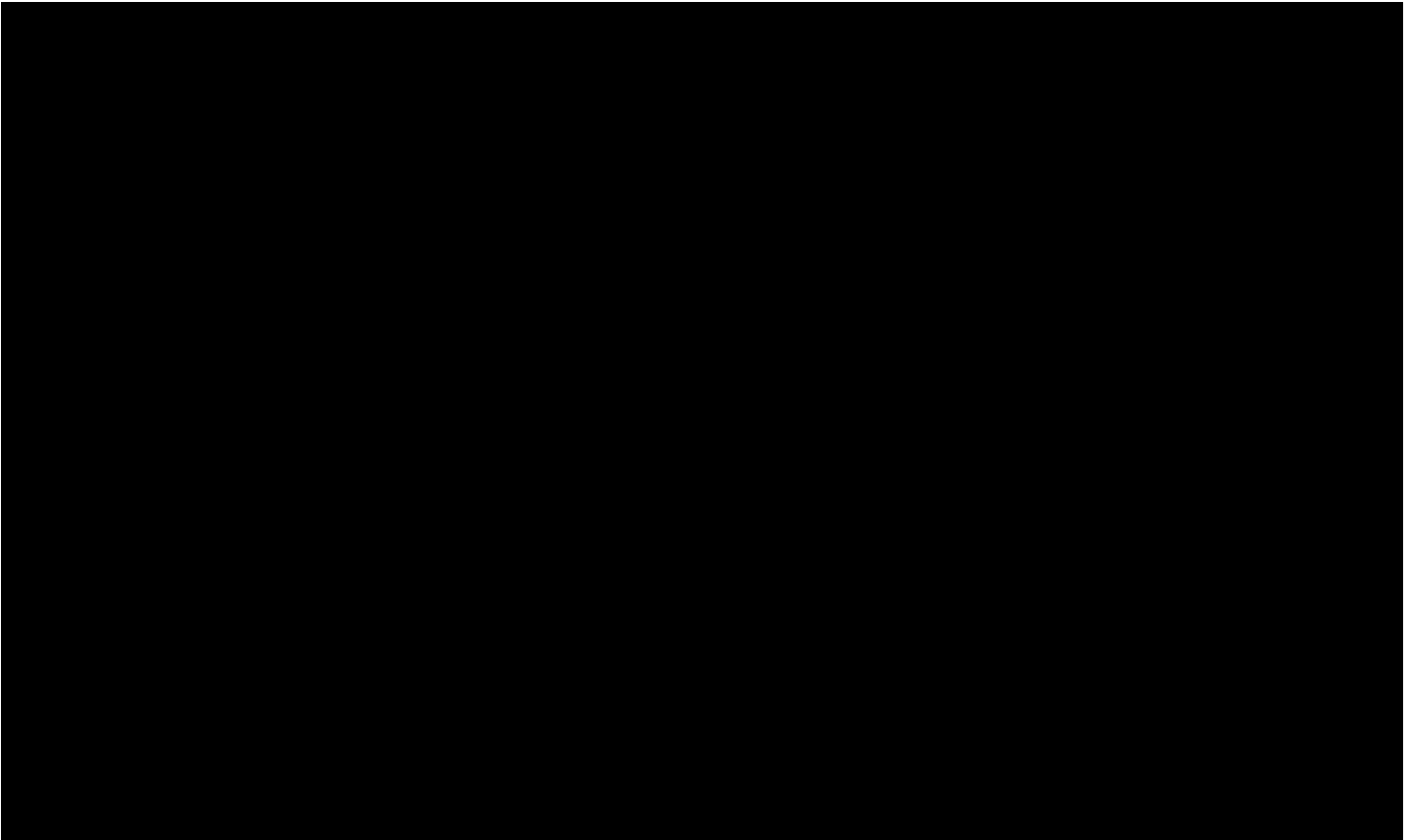
The main reason for applying for this acreage was to evaluate the potential of a Tertiary oil lead named Broadpeak. It was originally defined by a soft amplitude anomaly on 2D seismic data. Due to poor data quality in the initial phase, the license focused on reprocessing of the multi-client 2D seismic survey MCG1301 and subsequently used it for an in-house AVO analysis. An AVO class IV anomaly was observed in the Tertiary level on four lines crossing the Broadpeak prospect, suggesting a potential gas-filled sand with unknown saturation. After reprocessing of the 2D data, a regional study was performed by DEA Norge AS (the Operator at that time) to understand the regional setting, source rock distribution and the license prospectivity. DEA's study could not prove the potential for finding oil in PL803. In addition, due to the lack of 3D seismic data, the depositional model could not be confirmed.

DEA Norge AS, as previous operator of PL 803, decided then to withdraw from the license the 1<sup>st</sup> of June 2017 and Equinor took over the whole license equity. Equinor decided to buy and reprocess the 3D seismic (Ringvassøy 3D\_DOL15001) covering 671 km<sup>2</sup> of the licensed area to derisk the Broadpeak prospect model.

A detailed analysis of the DOL15001 Ringvassøy 3D survey has shown that weaknesses in the final processing have introduced noise to the data such as overcompensation of filtering, horizontal ringing and low frequency vertical noise. In order to mitigate these, the data was structurally smoothed using a gaussian weighted filter. No clear DHI's could be identified on RMS amplitude extractions (no depth-conformant shut-off within the amplitude anomaly on which the prospect is defined). Furthermore, the new data gives no evidence neither of a submarine fan nor the channelized part. The amplitudes seem to be controlled by the main faults within the prospect (Fig.3.1). However, these amplitudes were not considered conclusively.

#### AVO

An AVO analysis has also been carried out. The Broadpeak prospect corresponds to Class III/IV anomalies, with a clear offset to the shale trend (Fig. 3.1), indicative of hydrocarbon presence. However, depth-conformant shut-off could not be identified (Fig. 3.2), low saturation is therefore the most likely outcome. According to the Barents Sea rock physical model, calibrated to neighbouring wells and taking net erosion into account, [REDACTED] The interval right below the top prospect interpretation is however soft in S-impedance and does not show any clear geomorphology (Fig. 3.2), which lowers the probability for the presence of clean sandstones. However, about 80 ms below the top prospect interpretation, a fan-shaped amplitude anomaly has been identified east of the prospect and does also display a soft/variable S-impedance (Fig. 3.1) leaving some uncertainty on the sandstone probability conclusion. A siltstone/silty clay scenario with some patchy gas saturation within the prospect is probably the scenario that would fit best with the AVO observations.

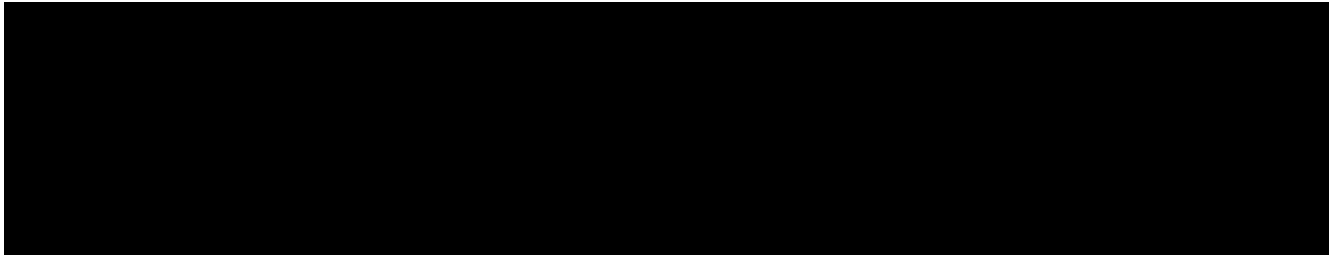




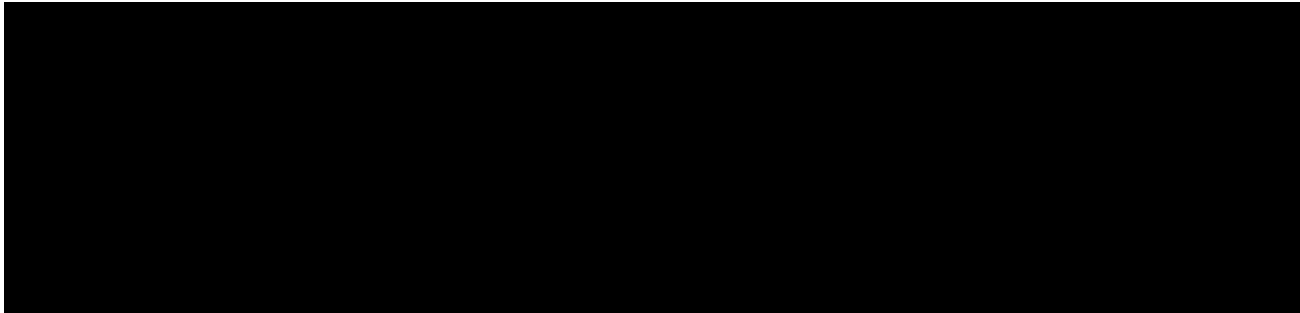
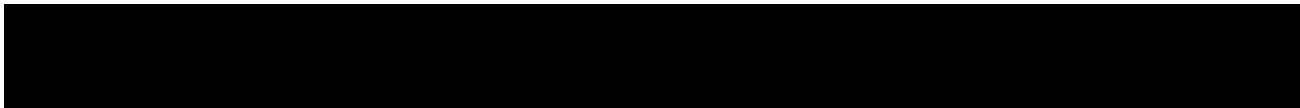
## 4 Prospect update report

The concept of the Broadpeak prospect is defined as a submarine fan of Selandian age (Torsk Formation) sourced from a Cenomanian/Turonian source rock. In APA2014 the prospect outline was defined by an AVO anomaly observed on four 2D-lines crossing Broadpeak. The prospect is assessed as a combined stratigraphic and partly structural trap dependent of sealing faults, where the critical trap risk is related to the up-dip stratigraphic pinch-out. The trap comprises a set of three parallel-oriented NNE-SSW faults and a bounding fault oriented NNE-SSW located to the west. The key geological risks are linked to the trap seal and reservoir presence.

The Broadpeak prospect model is based on a gravity-flow sand deposited on top of the Base Tertiary Unconformity in the Ringvassøy - Loppa Fault Complex. Possible entry points could occur for eroded sands from the Finnmark Platform/Norway mainland. The top seal are thick Tertiary shales (thicknesses >400 m), which have been penetrated in all the surrounding wells. Only one well (7216/11-1 S) has penetrated sands of the Early Tertiary in the area of interest with a thickness of 10-15 m. This well is located in Sørvestnaget Basin and about 80 km NW of the PL803 license.



In the revised assessment a well data analysis has been performed including the surrounding wells in order to verify the reservoir quality at Selandian level. Wells such as 7119/12-3, 7119/9-1, 7119/12-4 and 7119/12-1 show poor indications of sandstones. The lithology consists of primarily claystones, siltstones, dolomite stringers and traces of volcanic tuffs. Some intervals of sand stringers have been observed in well 7119/12-3. However, these sandstones are of Ypresian age (younger sediments) and relatively thin ranging from 10m to 20m thick. ■■■





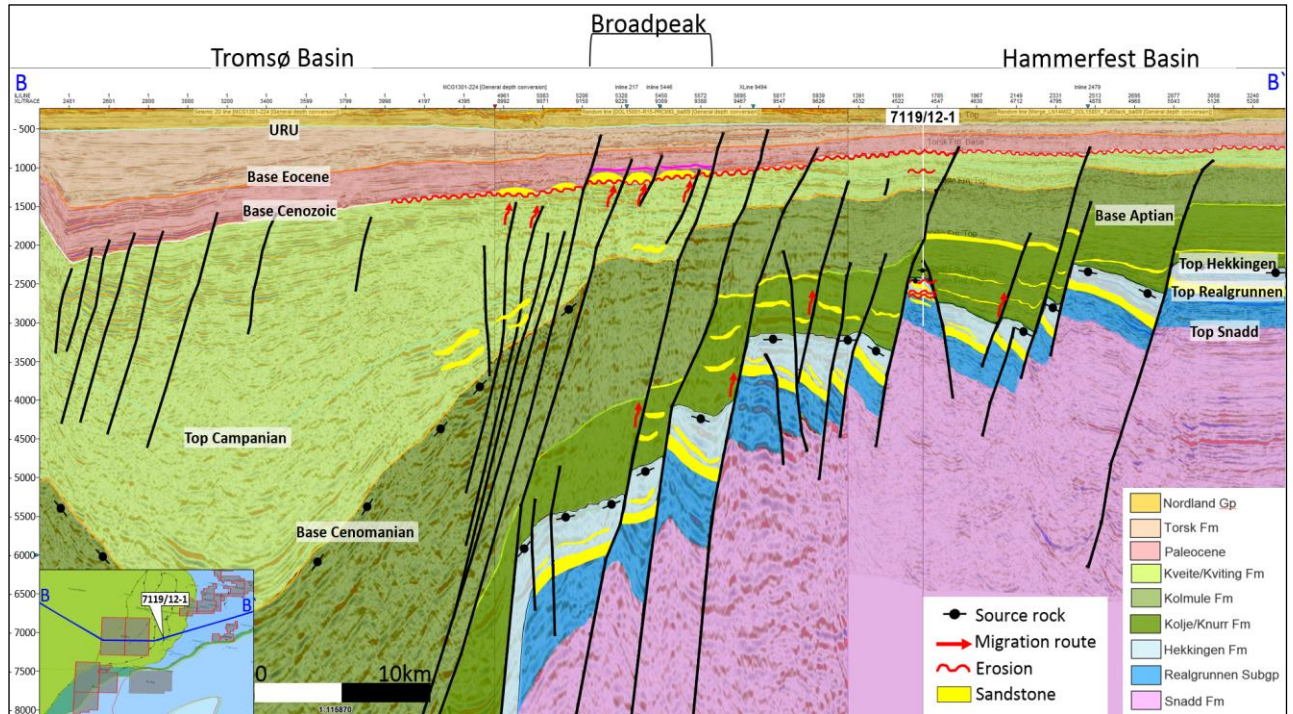
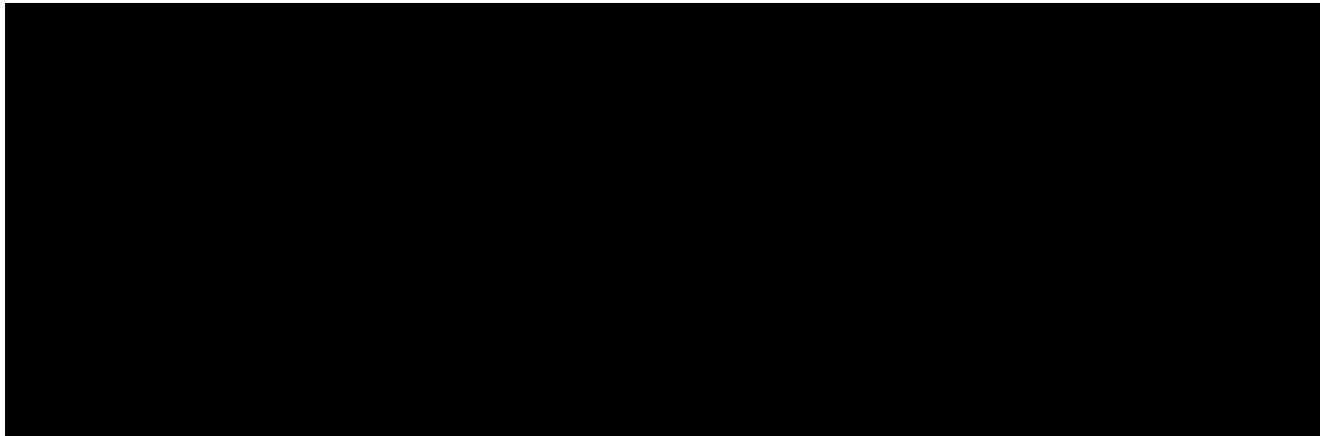


Figure 4.1. Regional section from the Tromsø Basin to the Hammerfest Basin. The main target is the Early Tertiary Torsk Formation.



In order to look for opportunities at the deeper levels, a screening has been carried out on the Ringvassøy seismic survey. Rotated faults blocks are observed in the Upper Cretaceous. However, the potential is considered too small to be economical.

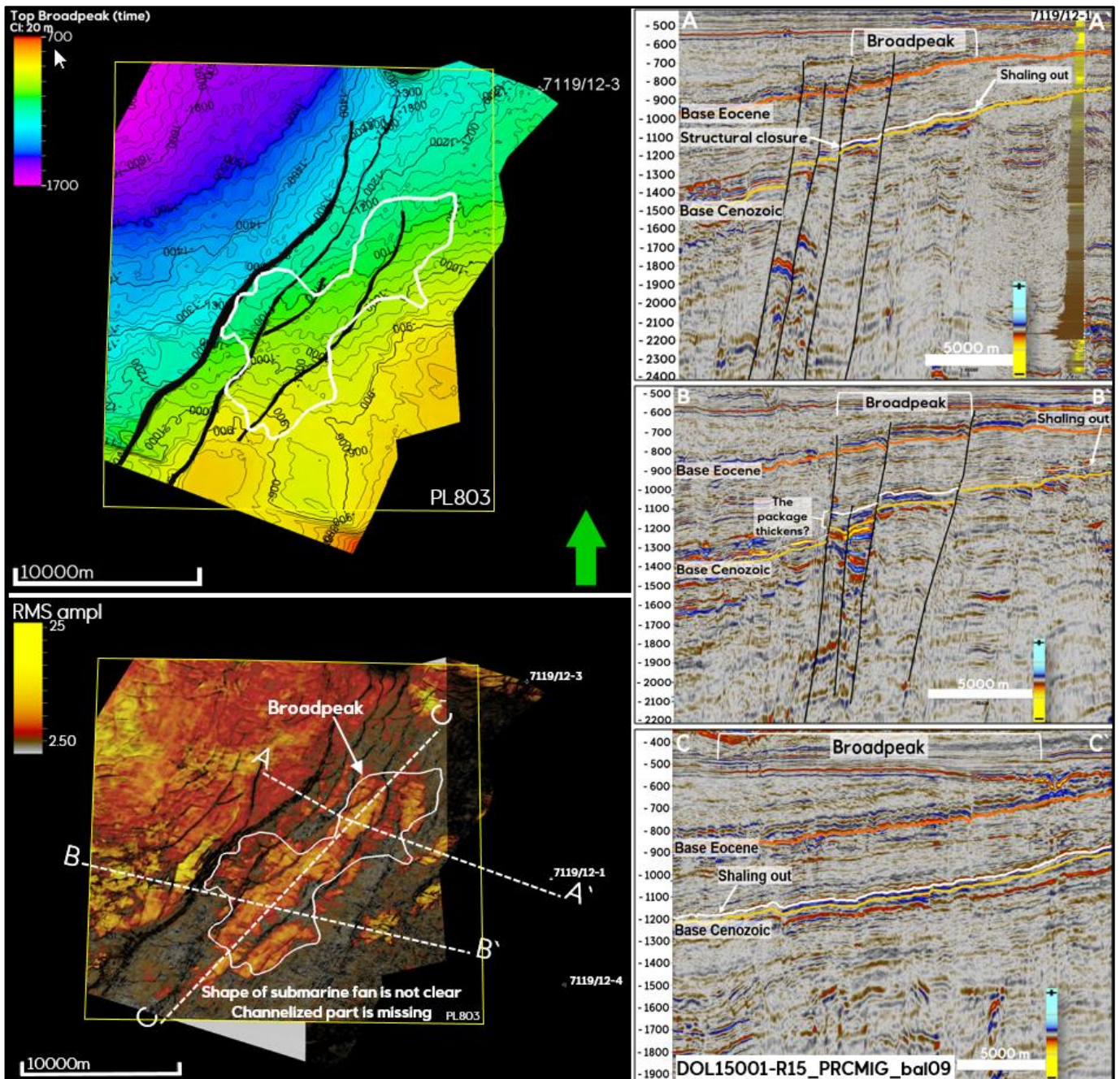
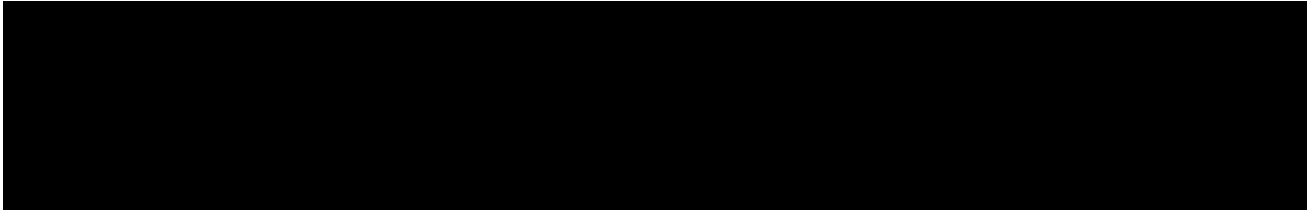


Figure 4.2. Upper left panel: Structural map (time) at the top of Broadpeak. Lower left panel: RMS amplitude co-blended with Variance map over Top Broadpeak. Data extracted +20ms above/-25ms below of Top Broadpeak. The locations of the seismic sections are shown on the map. Seismic sections to the right: Illustrating trap geometry.



## 5 Technical evaluation

The acquisition of the 3D seismic did not help to derisk the reservoir presence or the hydrocarbon phase to a level that could result in a drill decision in 2019.



## 6 Conclusion

Broadpeak has been re-evaluated on the new Ringvassøy survey 3D seismic data and the project was unable to derisk and verify the proposed prospect model. No clear DHI's or depth-conformant shut-off could be identified on the new data. The geophysical and geological evaluation do not demonstrate evidence of a submarine fan or the feeder channel.



Secondary prospectivity in the Upper Cretaceous is too small to be economical and has low probability for success.

In summary, no drillable prospects have been identified in the license.

## 7 References

Equinor 2018. PL848 – Licence status report. 12 pp.