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Oljedirektoratet  
Postboks 600  
4003 Stavanger

## **Licence Relinquishment Report PL 684**

Reference is made to the letter sent to MPE dated 02.04.2016, regarding the expiry of the production licence 684.

### **1 INTRODUCTION**

Production licence 684 was awarded on February 8<sup>th</sup> 2013 as part of the 2012 APA round. Statoil AS was the operator (39.55%) and shared the licence with Petoro (30%), Centrica (19%), Shell (6.45%) and Total (5%). Work obligations were seismic acquisition and the study of geology and geophysics which have been fulfilled.

PL 684 expired on February the 8<sup>th</sup> 2016, by which time a drill or drop decision had to be taken.

### **2 BACKGROUND AND LICENCE HISTORY**

PL 684 covered parts of block 34/8 (9.966 km<sup>2</sup>) and 34/11 (56.627 km<sup>2</sup>), a total area of 66.593 km<sup>2</sup> (Figure 1). The licence was located on the Tampen Spur, east of the Gullfaks Field and Nøkken discovery and north of the Valemon and Kvitebjørn fields.

In 2012 the Kvitebjørn and Valemon fields decided to acquire broadband seismic data over the larger Kvitebjørn, Valemon and Nøkken areas. Statoil together with the partners in the Kvitebjørn license decided to apply for the PL684 area to secure the area in case new prospectivity was identified in the new broadband seismic data. Subsequently PL684 was created with the same ownership as the Kvitebjørn field. This license lies in the structural low between the Nøkken and Kvitebjørn fields and has a relatively small area. The broadband data has now been fully interpreted and no significant prospectivity has been identified in the PL684 area.

### **3 DATABASE**

ST13001 (Broadband, 7km streamer), PSTM processed, is the preferred seismic survey. The old seismic survey, ST11M12, a merge of ST9607 (3,6km streamer) and ST9801 (4,2 km streamer) covers only the southern parts of PL684 and is not used in the seismic interpretation.

### **4 TECHNICAL WORK AND MEETINGS**

The new broadband seismic survey, ST13001, has been used in the evaluation of prospectivity within this licence. All relevant levels have been scanned and/or interpreted. In addition a LFP study has been conducted to screen for any AVO anomalies.

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Additional technical work carried out included:

- LFP/AVO study with focus on the Cretaceous. This work concludes that amplitude variations within the leads are likely the result of lithology changes, rather than fluid effects.
- Prospect evaluation
  - Volume calculation
  - Risk evaluation

The following Management and Exploration committee meetings have been held in the license:

- EC/MC meeting – 25.01.2016
- EC/MC meeting – 09.11.2015
- EC/MC meeting – 27.11.2014
- MC meeting – 27.03.2014
- EC/MC combined PL684/PL193 – 02.05.2013

In addition the following work meeting has been arranged in the license:

- EC work meeting – 16.02.2015

## 5 PROSPECT EVALUATION

Four leads have been identified that lie within PL684, one Brent Group lead and three Lower Cretaceous leads.

Only the Munster Lead lies wholly within PL684 (Figure 2). The Munster Lead is a tilted structural trap at Brent level, but it is very deeply buried (4700-4900m MSL) and is thus expected to have very poor reservoir quality. This lead is also much smaller and deeper than the neighbouring Nøkken discovery. The risked volumes will not justify a deep HPHT exploration well. This lead is too far away from the neighbouring Nøkken discovery to be drilled with other potential production targets.

Within the Lower Cretaceous Cromer Knoll Gp the Mime Nord (Figure 3), Mime Sør and Boursin Sør (Figure 4) leads are stratigraphic traps with a high-risk of trap-leakage, reservoir precence and expected poor reservoir quality. The shallowest and most valuable parts of these prospects are located outside PL684, and within PL193, and can be further evaluated for drilling in the PL193 license in the future if required.

No exploration potential has been identified in overburden above the Cretaceous.

## 6 RESOURCES

A summary of estimated resources and risks for the mapped leads in PL684 are shown in Table 1 and Table 2. The expected recoverable reserves for Munster are 1 MSm3 oe rec. The main risk is the probability for having a working reservoir (total Pg=0.2). Gas is the most likely phase.

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All of these Cromer Knoll leads are high risk and have small volumes and would not justify an exploration well. It should be noted that the prospectivity within the Cromer Knoll Gp is only poorly understood in the Tampen area as it is highly underexplored and should thus be regarded as speculative. Gas is the most likely phase.

**Table 1 PL684 lead volumes**

Lead									PL684		
UNDISCOVERED	Prospect segments	In-place res. (MSm <sup>3</sup> ) main phase 100%, Total Structure			Recoverable res. (MSm <sup>3</sup> oe) 100%, Total Structure			Pg %	Within license %	Mean volume in licence (mboe)	
		P90	Mean	P10	P90	Mean	P10			Risked	Unrisked
Munster	Brent Group	0.6	3.4	7.0	0.2	1.0	2.1	18	100	1.11	6.16
Intra Mime Nord	Mime Formation	3.3	8.1	14.0	0.8	2.1	3.8	10	20	0.27	2.69
Mime Sør	Mime Formation	1.9	5.8	10.9	0.5	1.5	3.0	10	10	0.10	0.97
Boursin Sør	Mime Formation	2.3	5.7	10.2	0.6	1.7	3.2	12	60	0.77	6.42

**Table 2 PL684 lead risks**

Prospect segments	P-Play			P-Prospect/Segment							Discovery	
	Reserv.	Source	Seal	Reservoir		Source			Trap		Pg	Pg (DFI)
				pre-sence	produc-ability	pre-sence	migra-tion	hc-phase	geo-metry	seal		
Munster	1	1	1	0.70	0.40	1.00	1.00	1.00	0.80	0.80	0.18	0.18
Intra Mime Nord	1	1	1	0.25	0.80	1.00	0.90	1.00	0.90	0.60	0.10	0.10
Intra Mime Sør	1	1	1	0.25	0.80	1.00	0.90	1.00	0.90	0.60	0.10	0.10
Boursin Sør	1	1	1	0.30	0.80	1.00	0.80	1.00	1.00	0.60	0.12	0.12

## 7 TECHNICAL / ECONOMICAL EVALUATION

The evaluation done within PL684 is a part of a regional mapping project of the exploration potential around the Valemon and Kvitebjørn fields. Both the Valemon and Kvitebjørn fields have available processing and export capacity. Thus it is time critical to find nearby tie-in exploration potential.

No valuation of the leads identified has been undertaken as all volumes are well under the economic threshold to justify a HPHT exploration well. The minimum economic volumes required to justify a standalone HPHT exploration well are approximately ~2.5 MSm<sup>3</sup> o.e. rec. in the Valemon Kvitebjørn area. In order for a prospect to be considered marginally attractive for drilling a much larger volume than the mapped volumes would be required.

## 8 SUMMARY AND CONCLUSIONS

The PL684 licence has four remaining leads. None of these leads are sufficiently economically attractive to warrant drilling an exploration well to extend the licence period. The PL684 Management Committee has therefore decided to let the licence expire (ie relinquish).

Kind regards  
Statoil ASA

Jim Daniels

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PL684 Management Committee Chairman

## 9 FIGURES

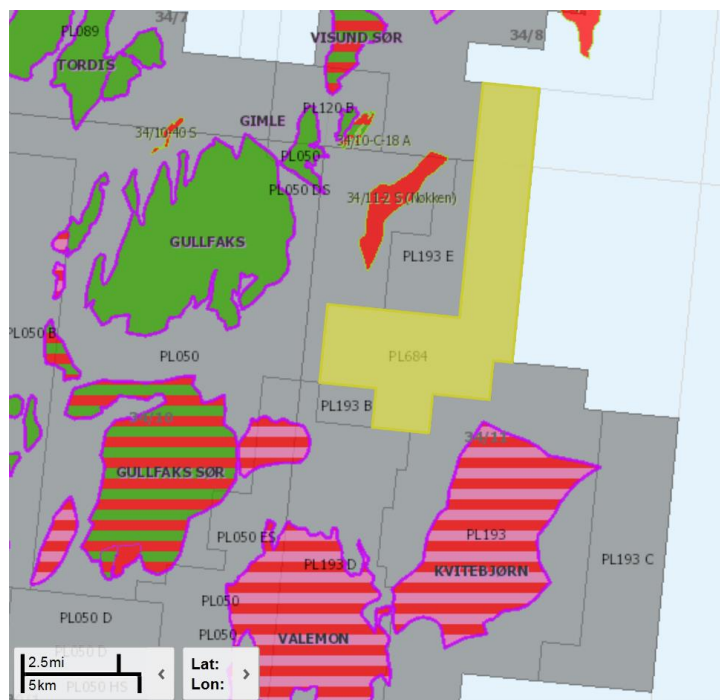


Figure 1 PL684 Licence map



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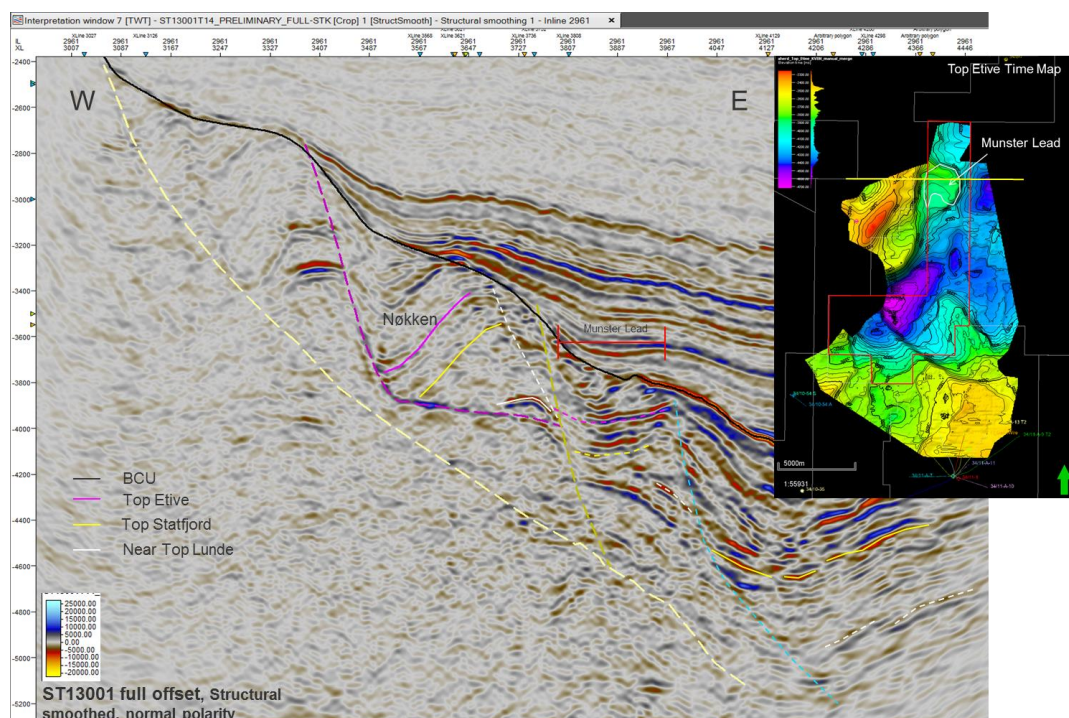


Figure 2: West-east seismic sections illustrating the Munster lead.

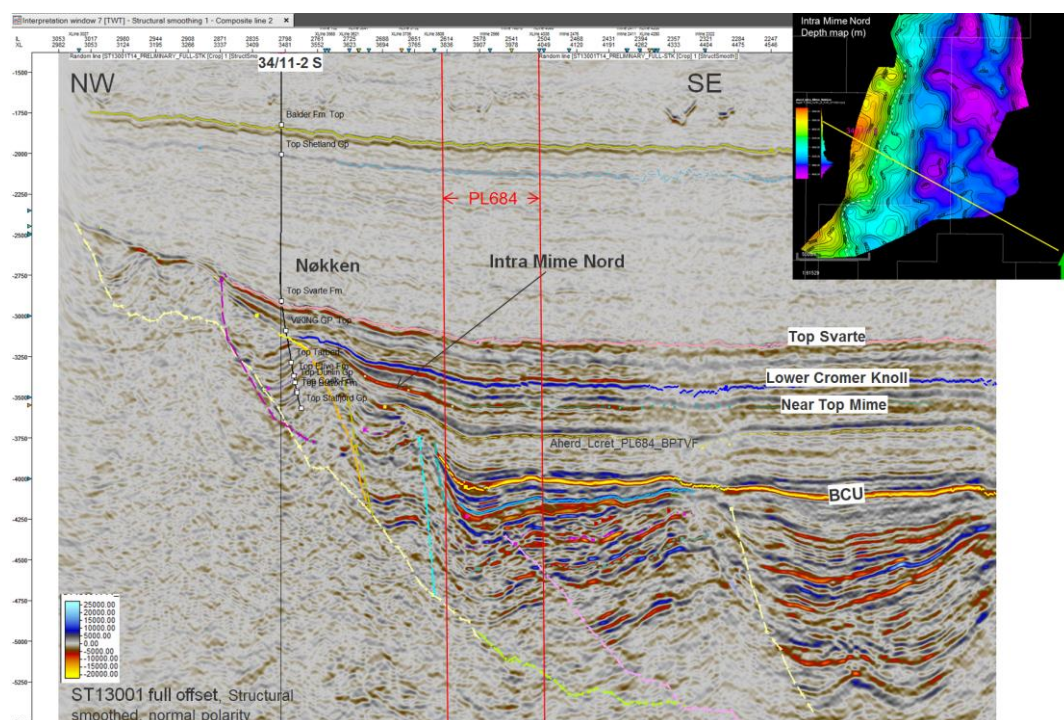


Figure 3: Northwest-southeast seismic sections illustrating the Intra Mime Nord lead.

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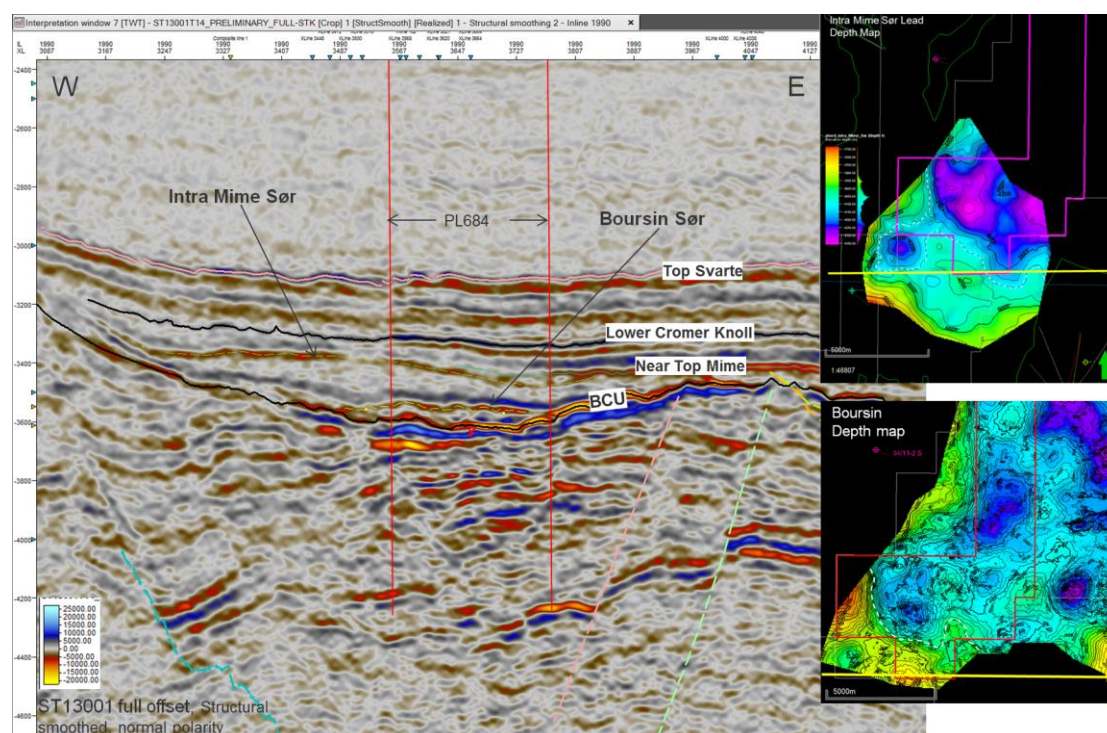


Figure 4: West-east seismic sections illustrating the Intra Mime Sør and Boursin Sør leads.