PL038E Relinquishment Report

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List of figures

List of tables

1 Key License History

Production License 038E was awarded to Talisman Energy Norge AS (65%) as operator, with partners Det Norske Oljeselskap ASA (5%) and Petoro AS (30%). The license was awarded on February 7th, 2014 as part of the APA 2013 license round. On October 6th, 2015 Talisman's interest was transferred to Repsol.
The license was awarded with a work commitment such that the partnership would:

- Conduct geophysical and geological studies by 7th February 2016.
- Make a drill or drop decision by 7th February 2016.
- Make a decision on concretization by 7th February 2018.

The geophysical and geological studies are complete and show no drillable targets within the license. Work commitments and obligations for this license have been fulfilled.

The following meetings have been held within the license since the award:

2014
2 ECMC meetings: 4.9.2014 and 23.10.2014

2015
2 ECMC meetings: 17.6.2015 and 25.11.2015

The license is relinquished since no commercial attractive prospects are identified within the license after the negative results of 15/12-24S.The calculated volumes for the Oter prospect in the license is higher than the MEFS considered, but due to the increased risk on migration after the dry well results in the neighboring license PL 672, the economic threshold is not met.

2 Database

The common seismic database for the license consists of two different 3D data sets: MC3D-LIN 2012 and MC3D-Varg-2002 (reprocessed in 2013 as TE13M002). Time slices at -2640ms shows the data coverage of the two surveys (Figure 2.1).

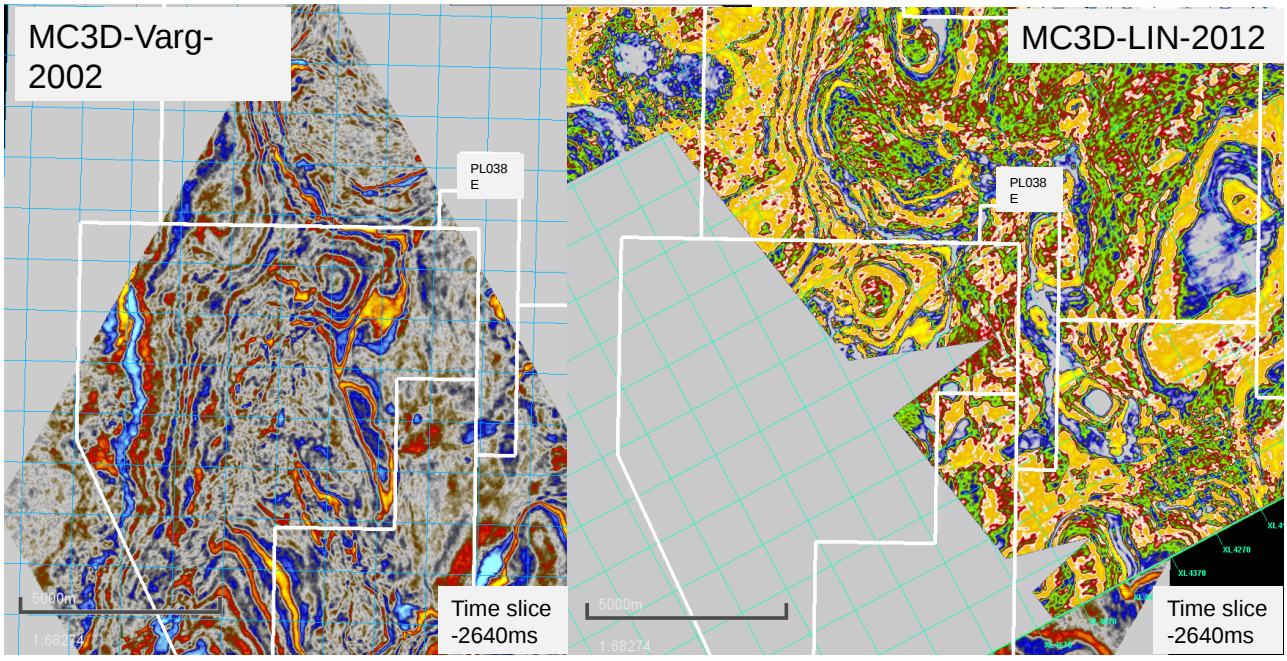

Figure 2.1 Time slice showing seismic data coverage PL038E

The MC3D-LIN2012 data set is broadband 3D seismic data with an increased seismic resolution compared to MC3D-Varg-2002 data. However, MC3D-Varg-2002 is important for tying the Oter interpretation to Varg wells. The MC3D-LIN2012 was purchased in 2013 and used in the APA 2013 evaluation. However a more detailed seismic interpretation and sequence stratigraphic study of all wells including production wells provided an increased understanding of reservoir distribution and quality across the license post license application. The evaluation of PL038E prospectivity has in addition been tied to the ongoing work evaluating remaining potential within the Varg field. In addition to all exploration wells in the area, Varg Wells 15/12-A7C, 15/12-A7B, 15/12-A10A, 15/-A8 and 15/12-A1A on the eastern side of the field, were part of the common database for the license.
Well 15/12-24S drilled in spring 2015 provided new and updated stratigraphic and hydrocarbon system information. The analysis of results from this well has increased the risk of the Oter prospect.

3 Review of Geological Framework

The interpretation of broadband 3D seismic data together with a detailed sequence stratigraphic study have increased the understanding of Jurassic reservoir distribution in the license, and this together with a full integration of ongoing Varg field reservoir evaluation has changed the interpretation of both pre-rift (Sleipner and Hugin formations.) and syn-rift (Ula and Sandnes formations.) reservoir distribution in the license. This work has led to a change in the assessment of Oter volume potential and risk from APA application.
A sequence stratigraphic well correlation from Varg across PL038E to 16/10-4 in the southeast is shown in Figure 3.1Figure 3.1. Oter prospect is located with 15/12-5 to the west and 16/10-2 to the east. The results from these wells indicates that Oter should have a potential for both Hugin, Ula and Sandnes formations draping Triassic Skagerrak, analog to what is observed in 16/10-2. This interpretation has led to a more positive interpretation of reservoir thickness and quality across the license, in addition to lower risk on reservoir presence and quality.

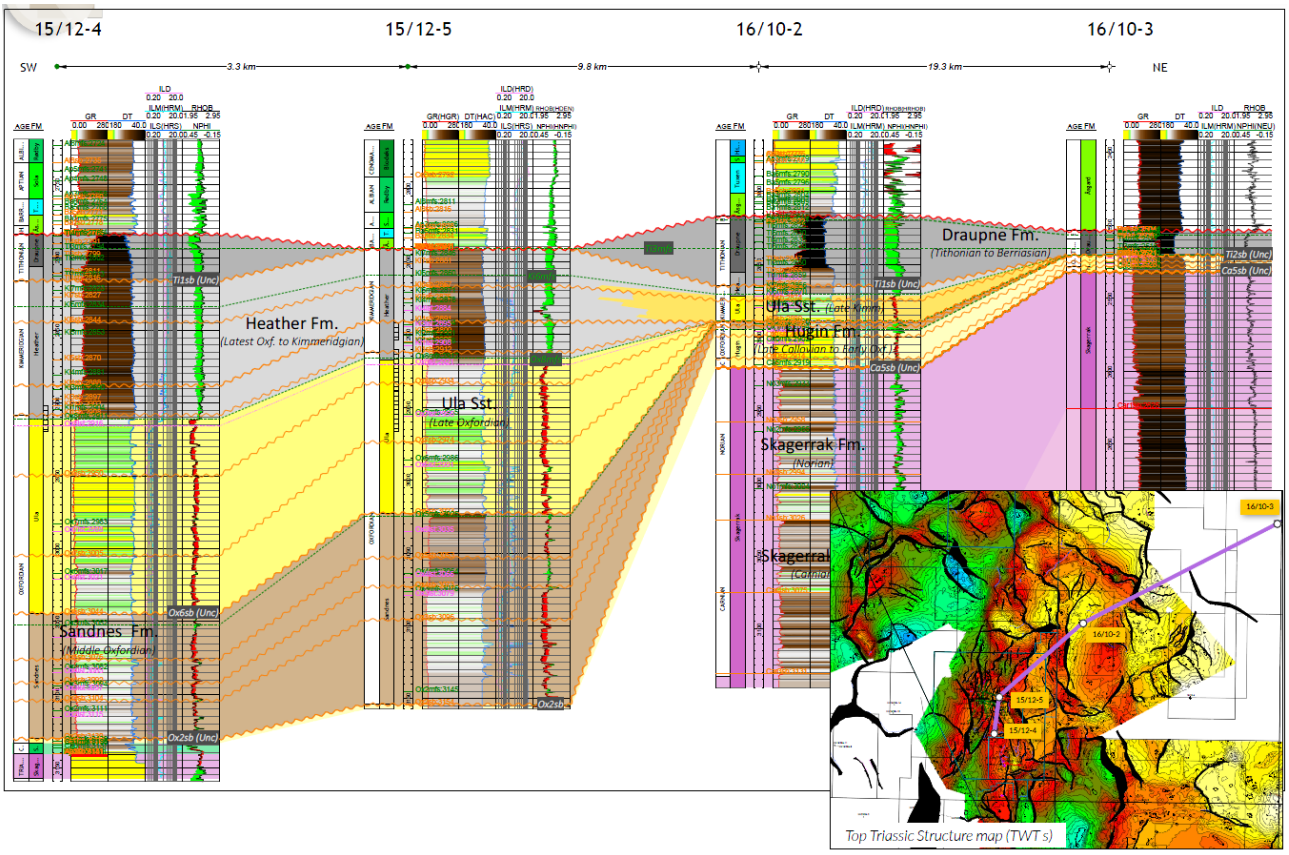

Figure 3.1 Well cross section Varg (15/12-4,5) to 16/10-2,3

The interpretation of 15/12-24S significantly increases the risk of the Oter prospect (30% within the license). The results from the well indicate that hydrocarbons migrated through the reservoir, but was never trapped in the prospect. Oter is dependent on a migration pathway from the mature basin to the west of Varg and Snømus. The shallowest spill into Oter is through the saddle between Snømus and Oter. The saddle between Varg and Oter is mapped to be deeperFigure 3.2 Figure 3.2. The lack of a proven Snømus trap that could fill and then spill into Oter would therefore mean a higher risk for migration into Oter post 15/12-24S.

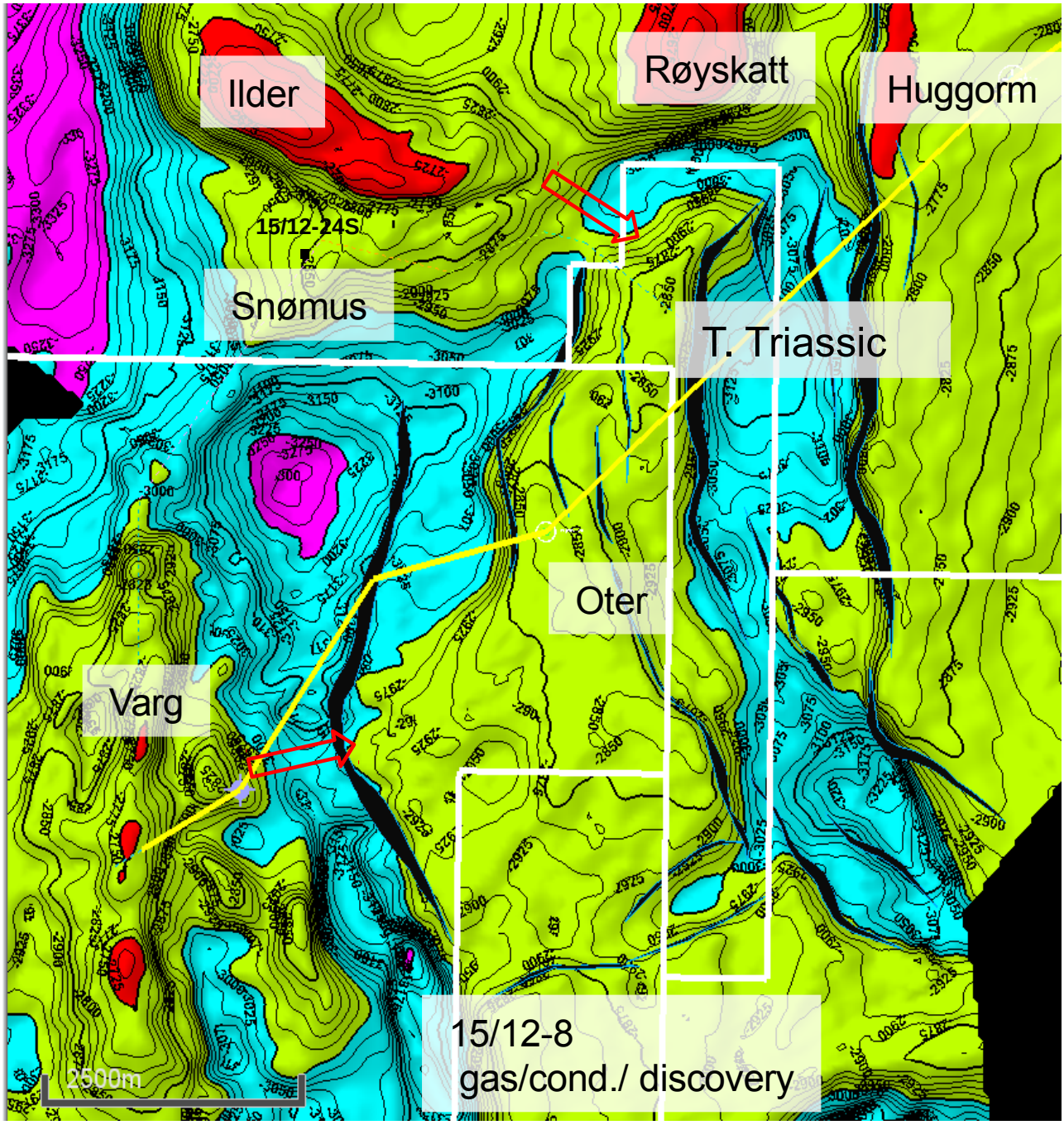

Figure 3.2 Top Ula depth map with possible spill routes from Varg and Snømus

4 Prospect Update

The area applied for in APA 2013 with the identified prospect is shown in Figure 4.1.

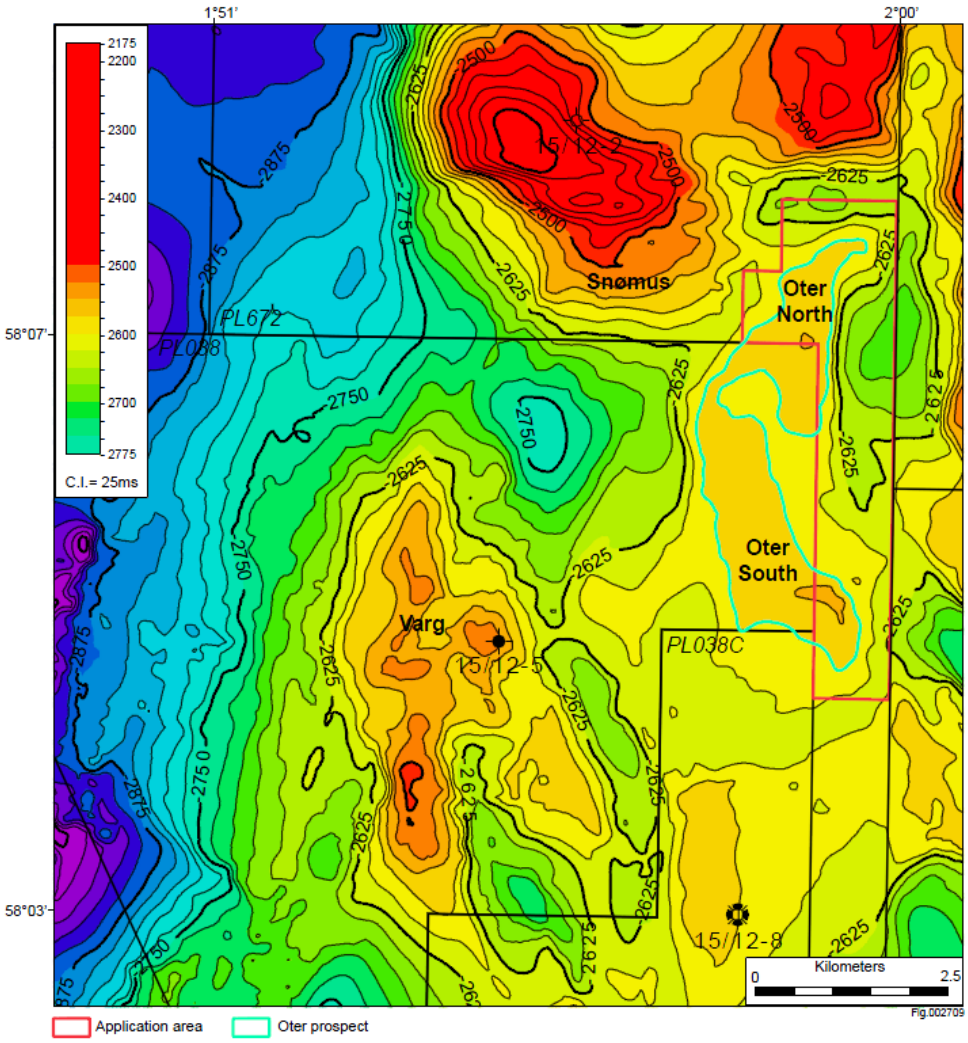

Figure 4.1 APA 2013 area applied for

Volumes and risk of the Oter prospect in the area applied for, PL038E, from the APA application is shown in Table 4.1.

Table 4.1 APA 2013 Oter Resource Potential NPD Table 2

Table 2: Resource Potential

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 [106Sm3] (>0.00)			Gas [109Sm3] (>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)						
Oter North	P	Oil	0.24	0.79	1.62				0.29	100.0	Ula/Sandnes Fm	2810	Varg	7

Updated volumes and risks for the Oter prospect are shown in Table 4.2.

Table 4.2 Updated Volumes and Risk

Table 2: Resource Potential

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 [10⁶Sm³] (>0.00)			Gas [10⁹Sm³] (>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)						
Oter PL038E	P	Oil	0.6	2.7	5.7				0.19	100	Ula/Sandnes Fm	2810	Varg	7
Oter PL038/038E/038C	P	Oil	2	8.9	18.9				0.19	100	Ula/Sandnes Fm	2810	Varg	7

A seismic line between Varg 15/12-5 across Oter to 16/10-2 is shown in Figure 4.2. The interpretation of Top Triassic/Base Jurassic reservoir is challenging from both Varg (15/12-5) and 16/10-2. Top Triassic is mapped as an unconformity with truncation underneath and onlap to the top. This reflector is mapped in areas very close to the sea bottom multiple of the strong BCU reflector, and this makes the interpretation challenging in areas with only small differences in dip between BCU and Top Triassic.

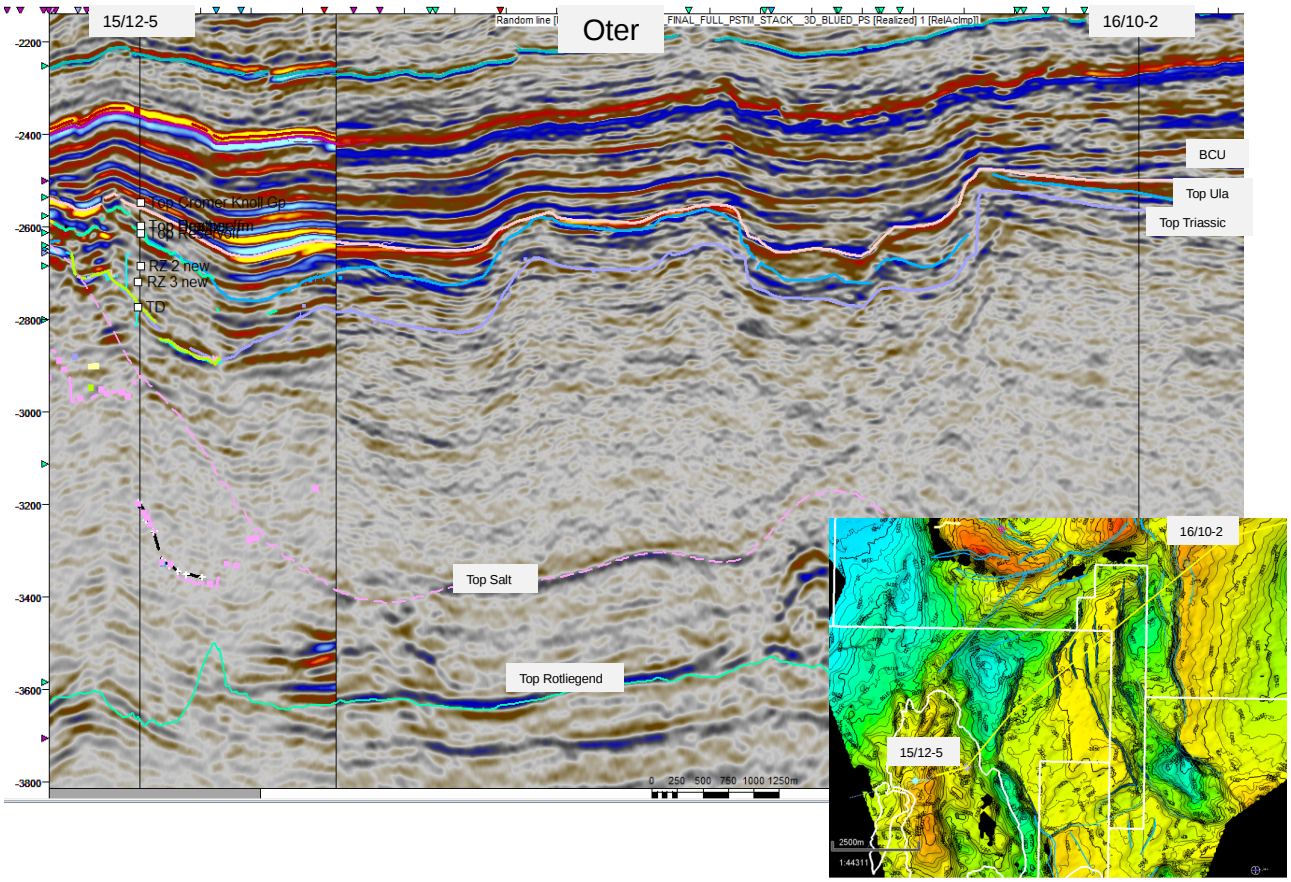

Figure 4.2 Seismic cross section 15/12-5 Oter 16/10-2

The detailed sequence stratigraphy study together with detailed updated seismic mapping have reduced the risk of Ula formation presence and quality across Oter (Figure 3.1. Figure 4.2). The sequence is also mapped to be thicker, which has led to increased volume potential for Oter prospect. A map showing in yellow the areal extend of Oter mean volume is shown in Figure 4.3. The risk of migration into the Oter prospect has increased with the dry 15/12-24S well and this is the main reason for change in probability for hydrocarbon discovery

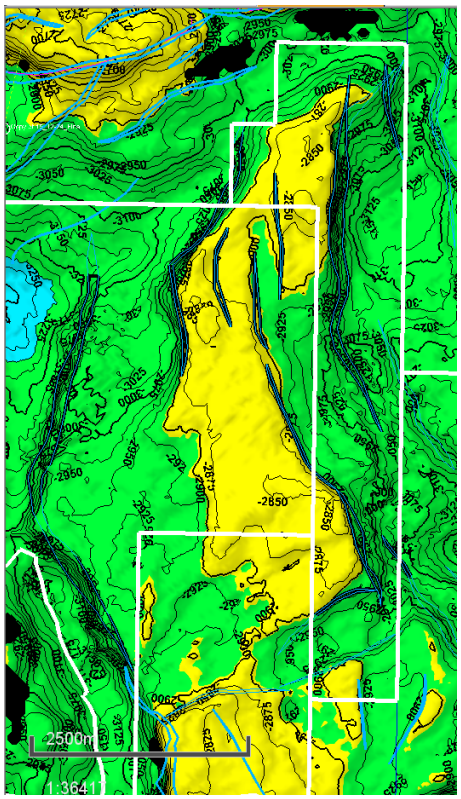

Figure 4.3 Oter mean volume

from 0.29 to 0.19. The risking of the different elements is shown in Figure 4.4.

EXPLORATION PROSPECT Chance Success	PROSPECT
SOURCE COMPONENTS	Confidence of P99 Resources: 4,73 MMBO
Quantity/Volume (include Monetizable Product)	100,0%
Quality/Richness	100,0%
Maturation	90,0%
MINIMUM FACTOR	90,0%
TIMING/ MIGRATION/ PRESERVATION COMPONENTS	Confidence of P99 Resources: 4,73 MMBO
Timing of Closure / Trap	90,0%
Timing of Expulsion	90,0%
Effective Migration Pathway	30,0%
Preservation	
MINIMUM FACTOR	30,0%
RESERVOIR COMPONENTS	Confidence of P90 NetPay: 10,75 Metres
Presence	90,0%
Quality	90,0%
Reservoir Performance	80,0%
MINIMUM FACTOR	80,0%
TRAP COMPONENTS	Confidence of P90 Area: 3,85 SqKm
Map Reliability & Control	90,0%
Presence	100,0%
Data Quality	90,0%
MINIMUM FACTOR	90,0%
SEAL COMPONENTS	Confidence of P99 Resources: 4,73 MMBO
Top Seal Effectiveness	100,0%
Lateral Seal Effectiveness	100,0%
Base Seal Effectiveness	
0	
MINIMUM FACTOR	100,0%
EXPLORATION PROSPECT Chance of Success (calculated)	19,4%
EXPLORATION PROSPECT Chance of Success OVERRIDE	
FINAL Chance of Success (Shared, Local, Total Pg)	19,4%

Figure 4.4 Risk elements for Oter Prospect

5 Technical Evaluations

Minimum economic volumes for the PL038E Oter prospect were calculated for a tie back solution to the Gina Krogh Field based on the CAPEX and OPEX for the field development of a P Mean Case. The calculation is shown in Figure 5.1 and shows that a volume of around 20 mmboe gross recoverable reserves is needed for an economic development in the license. Gina Krogh is located 68 km from the PL038E license. The development solution would be oil export to Gina Krogh, and gas export to the Sigyn Field and further to Sleipner. Sigyn is a subsea development located 20 km from PL038E. Figure 5.2 For the P Mean Case of 53 mmboe in reserves, a total of 7 wells were considered, 4 producers and 3 injectors, drilled using jackup rig. Water injection and gas lift are assumed. The calculated volumes for the Oter prospect in the license is higher than the MEFS considered, but due to the increased risk on migration after the dry well results in the neighboring license PL 672, the economic threshold is not met.

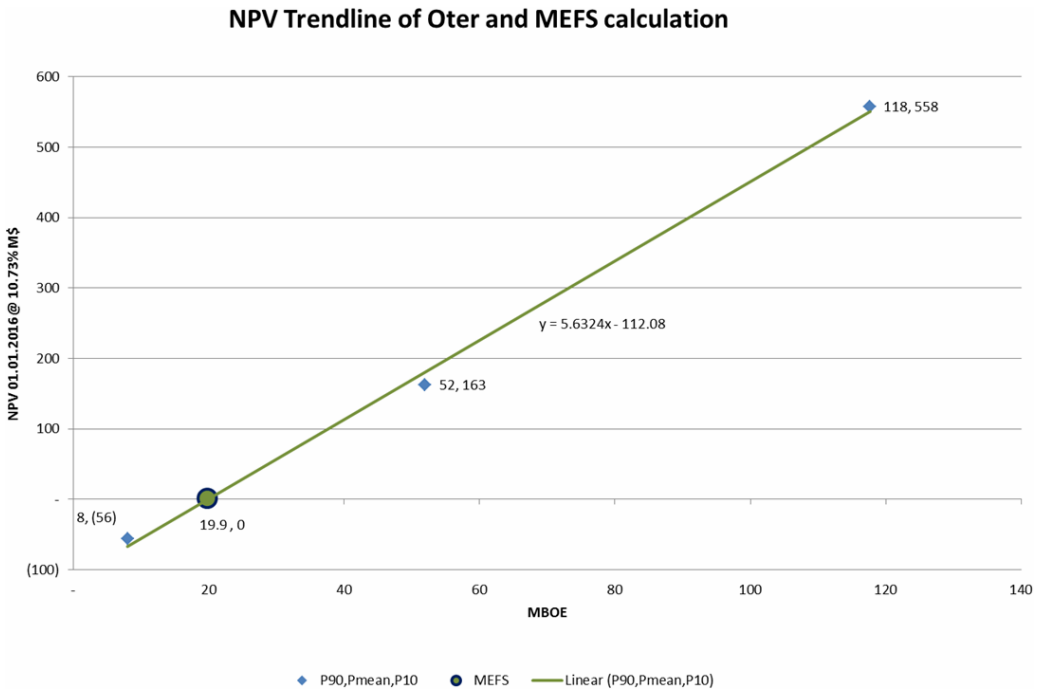

Figure 5.1 MEFS calculation Oter

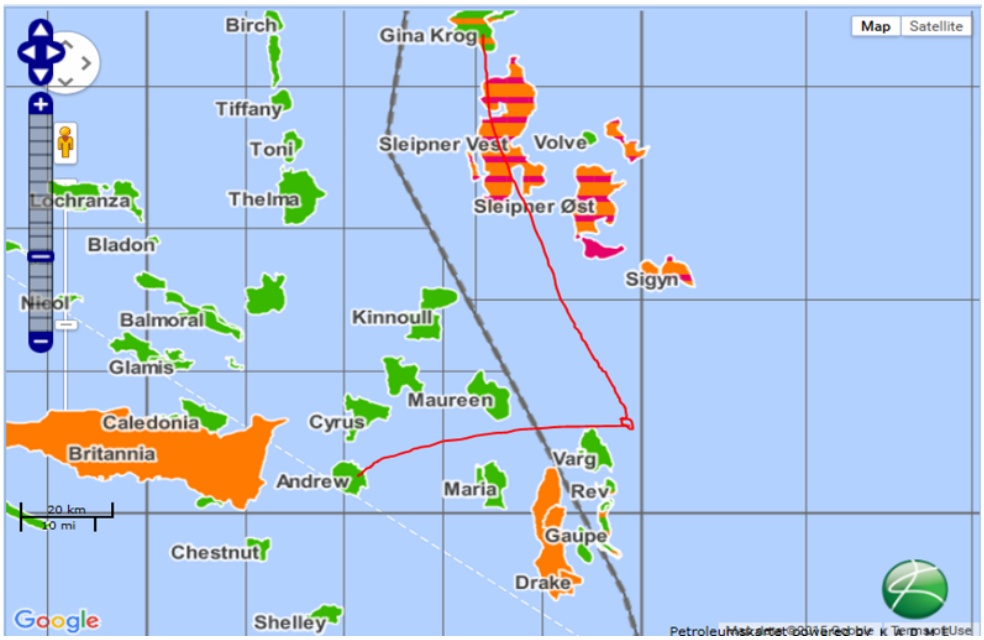

Figure 5.2 Map of Oter development Scenario

6 Conclusions

Several dry wells in the neighborhood (15/12-2, 16/10-2 and 15/12-24S) shows that Oter is located in an area with a challenging discovery rate. Potential volumes have increased since the APA application, however the risk has also gone up because of the dry 15/12-24S well. The main risk is the migration route from the main basin to the west. Mapping of the reservoir distribution and potential carrier beds in the area is very challenging. The decision is to relinquish the license with all work commitments being met. Dry wells surrounding PL038E are shown in Figure 6.1 and shows the challenge in identifying viable exploration targets in this area. In addition, the largest volume potential (70%) for Oter is in PL038.

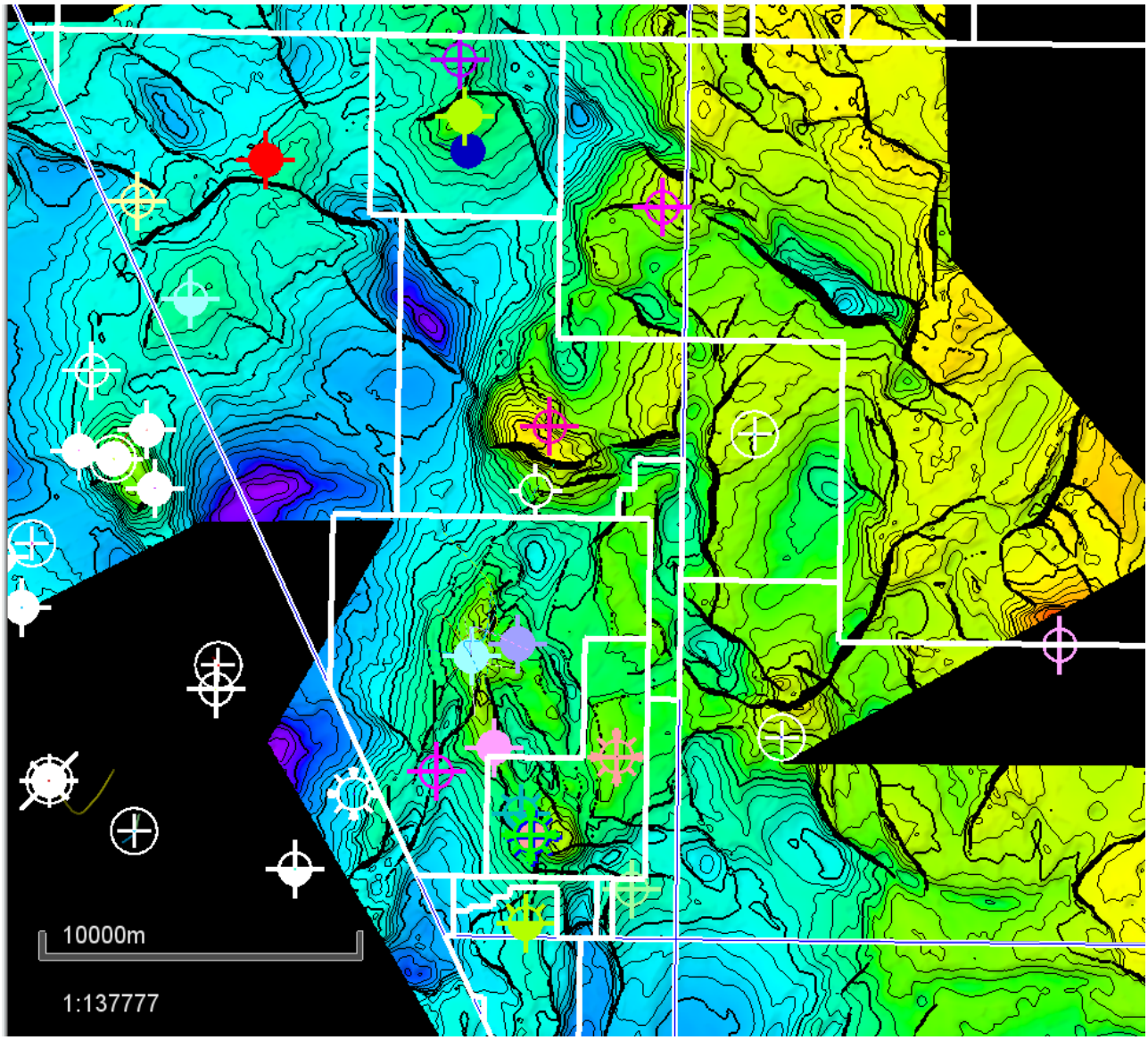

Figure 6.1 Base Creataceous Varg area