PL669

Relinquishment Report

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Ver. no. 01

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1. Key License History

License PL699 is located on the Sørvestlandet High, just east of the Cod Terrace, and within block 7/12 (Figure 1, Figure 2). Prospectivity in the license is identified primarily in the Upper Jurassic Ula Formation, with upside seen in the underlying Triassic Skaggerak Formation.

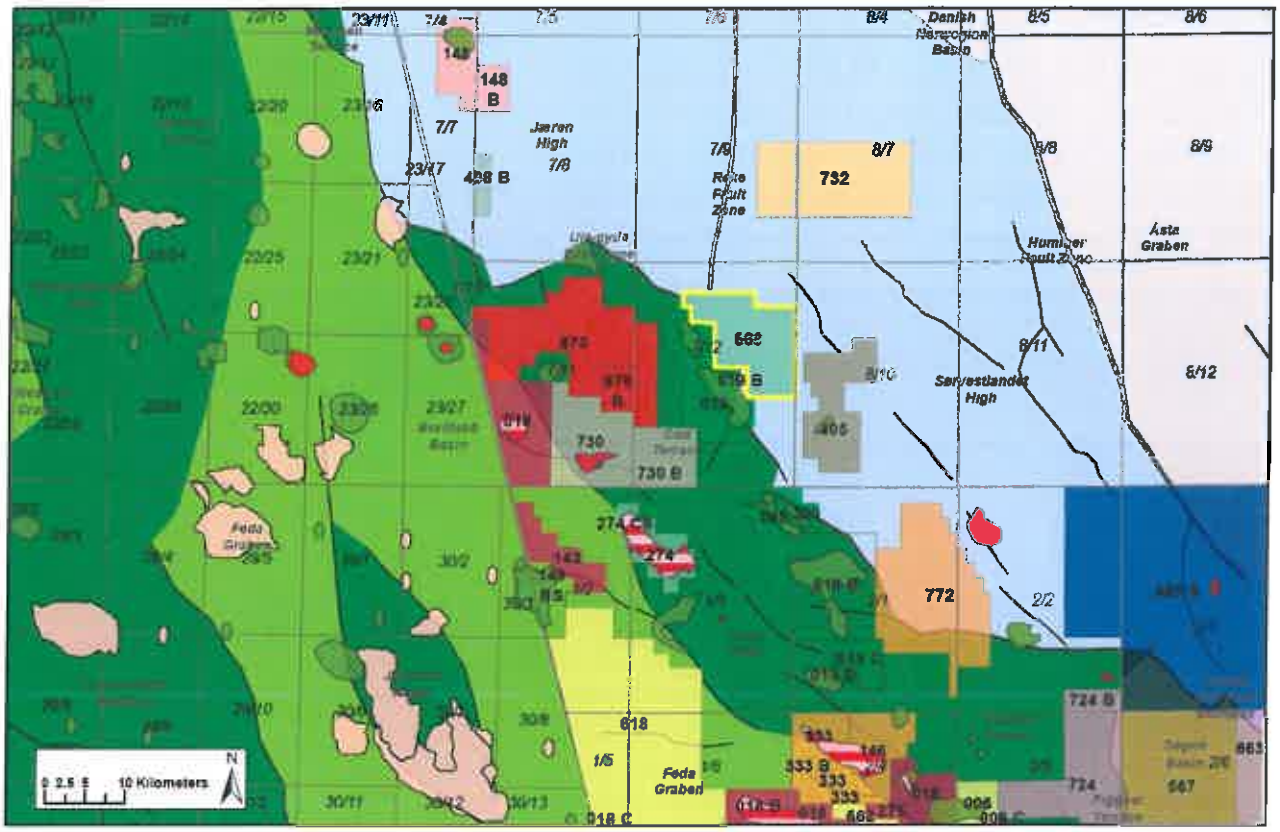

Figure 1. Location map

PL669 was awarded on the 8th of February 2013 as a result of an APA 2012 Round application. DONG E&P Norge was appointed Operator (40% share), with Centrica Resources (Norge) (30%) and Explora Petroleum (30%) as Partners.

Work commitments in the license were the following:

- Purchase, reprocess, and merge existing 3D seismic within the 8th of February 2015
- Conduct relevant geological and geophysical studies based on the new data within the 8th of February 2015
- Formulate drill or drop decision within 2 years from award
- Concretize (BoK) or drop within 4 years from award
- Continue (BoV) or drop within 6 years from award

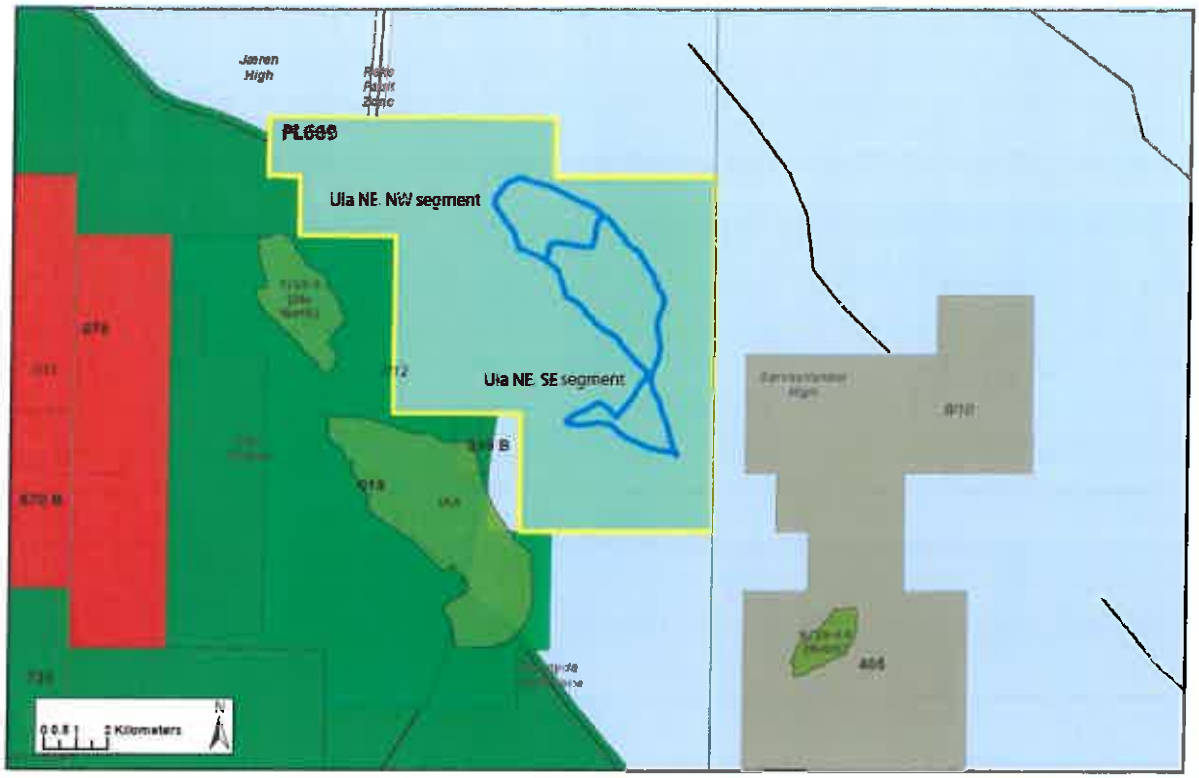

Figure 2. PL669 prospect inventory

An application for deferment of the DoD decision was submitted to the Ministry of Petroleum and Energy on the 5th of November, 2014 as a result of the extended time needed for processing the seismic data. The permission for extending the initial period within the license by one year was granted by the Ministry on the 3rd of February, 2015.

The technical assessment of license prospectivity shows that the volumetric potential and geological risk are at levels that prevent the partnership from committing to exploration drilling. The Ula NE prospect identified in the license (Figure 2) has been analysed to a level of irreducible risk and further data analysis is unlikely to materially affect either the risk or volumetric profile of the prospect. Consequently, on the 6th of January 2016 the Operator, DONG E&P Norge and the partners, Centrica Resources (Norge) and Explora Petroleum, applied to relinquish PL669 in full.

License meetings

Meetings	Date
MCM & ECM No1	11.mar.13
MCM & ECM No2	28.nov.13
ECM No3	2.apr.14
MCM No 3 & ECM No4	10.nov.14
ECM No5	23.feb.15
ECM No6	23.jun.15
ECM No7	15.oct.15
MCM No4 & ECM No8	7.dec.15

Table 1. License Meetings 2013-2015

2. Database

All public wells and 3D seismic data in the area have been used in the evaluation of license prospectivity (Table 2). In addition, and as part of the license work program, DONG E&P Norge undertook the merge and reprocessing of three neighbouring surveys (BPA9901, CE1202 & MC3D-JHU99) into the DG14M01 survey that resulted in a 1) homogenous dataset across the prospect and the kitchen; 2) amplitude preservation; and, 3) improved resolution.

Well data	3D seismic
7/12-2 R	BPA9901
7/12-3	CE1202
7/12-4	MC3D-JHU99
7/12-5	DG14M01
7/12-6	
7/12-7R	
7/12-8	
7/12-9	
7/12-10	
7/12-11	
7/12-13S	
8/10-1	
8/10-4S	

Table 2. Common database

Special studies included newly acquired geochemistry data from 120 shallow cores (Figure 3). These included sampling over the prospect area and around nearby wells for calibration purposes. Additionally, structural 2D reconstruction was performed on three transects (Figure 3).

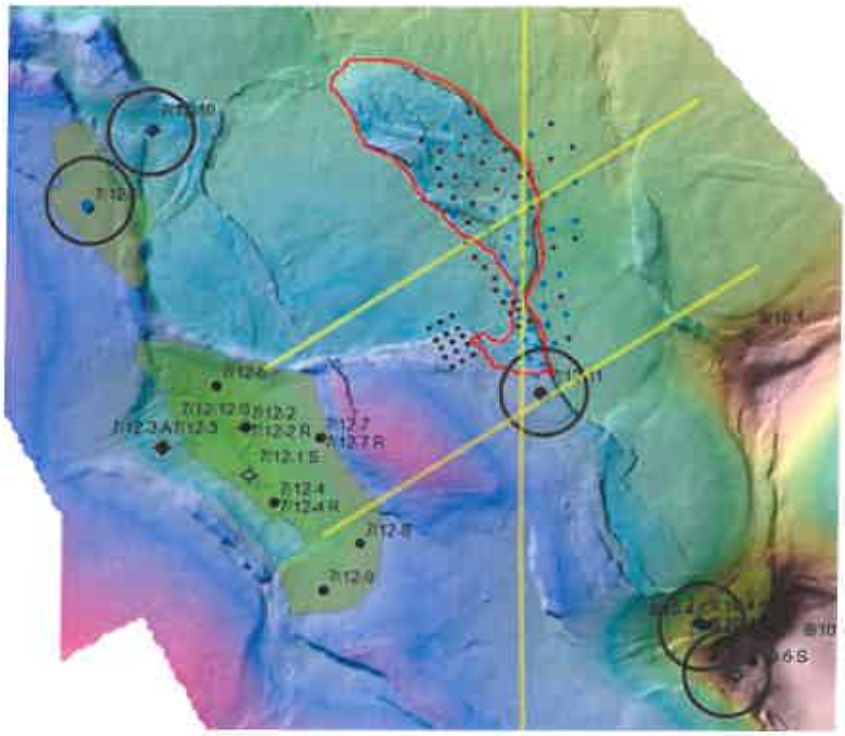

Figure 3. Location of shallow sampling cores (blue and black dots) and transects used for 2D structural restoration (yellow lines). Circled wells have been used for calibration. BCU time map for background.

3. Review of geological framework

The Ula Formation is widespread in the Central Norwegian North Sea and is the primary reservoir for the Ula, Gyda, Tambar and other fields (Figure 4). A general lithostratigraphic column (by NPD) is shown in Figure 5. Ula shoreface sands were deposited during an Upper Jurassic transgression onto previously exposed terrain. These sands were later draped by open-marine deposits of the Farsund and Mandal Formations. The accommodation space for this reservoir was created between Triassic pods by salt withdrawal from the underlying Zechstein Formation. The Ula Formation is typically a very good reservoir, as in the fields mentioned, with thicknesses of several tens of meters or more. Outside the intrapod setting, however, the reservoir can be both thin and/or tight due to local diagenetic processes, as in the 7/12-10 and 7/12-11 wells. While the Ula NE prospect is located in the vicinity of 7/12-11, the reservoir interval was deposited in a graben created by Late Jurassic/Early Cretaceous extension and halokinesis and is likely to share a reservoir affinity with the better quality analogues in the area. There is, however, a risk that the reservoir is significantly thinner than in, for example, the Ula field. The inability of seismic to image the base of the reservoir makes this uncertainty irresolvable.

The main purpose for merging and reprocessing the existing 3D seismic data was to resolve the reservoir interval within the prospect and to get better imaging of faults within the migration route. Also, it allowed for a consistent AVO inversion in the area.

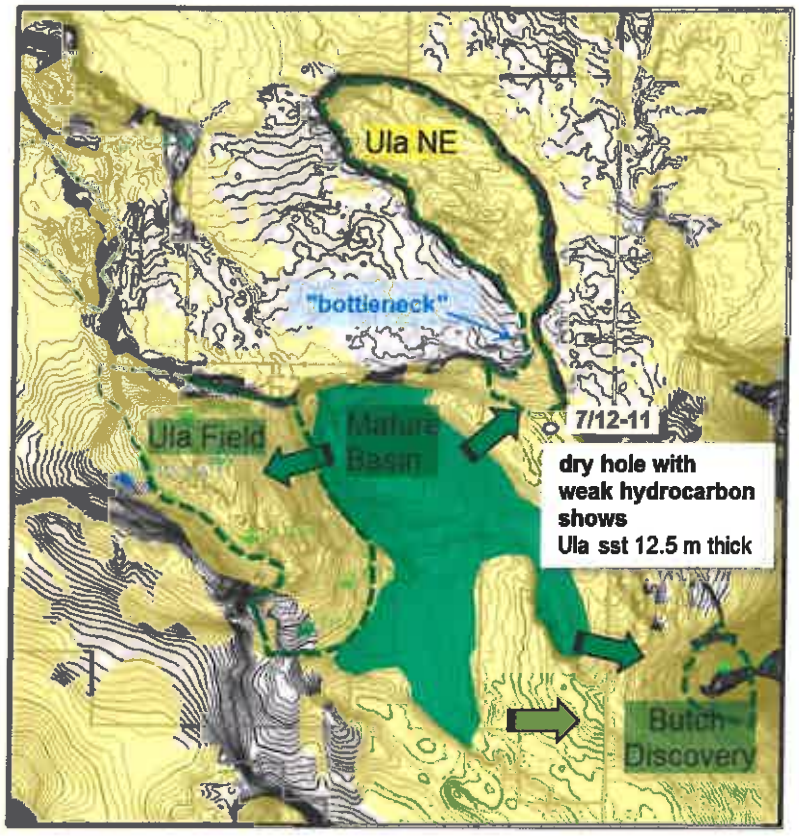

Figure 4. Regional presence of Ula sands, based on acoustic impedance. Sand presence map based on AI (yellow).

The reprocessing has increased the definition of faults. The reservoir interval has not been resolved in most of the prospect area and the base of the Ula interval cannot be interpreted. The Top Reservoir horizon was

interpreted with difficulty and varying degrees of confidence. Also, the elastic inversions performed did not give unequivocal results in terms of either confirming or disproving presence of reservoir within the prospect.

The charge for the prospect is envisaged from the mature Farsund and Mandal source rocks deposited in the basin westwards and to the south of the Ula NE prospect and eastwards of the Ula field. The kitchen is proven by the Butch discovery, which was included as a calibration point for newly performed basin model. The migration route towards the prospect is not straight-forward as it has a narrow 'bottleneck' migration access point. Furthermore, there is a possibility that the Ula sands, which act as a carrier bed, are absent within that bottleneck, as they could pinch out up-dip from the 7/12-11 well, due to the regional tilt of the depositional surface. This possibility was indicated by the structural reconstruction study.

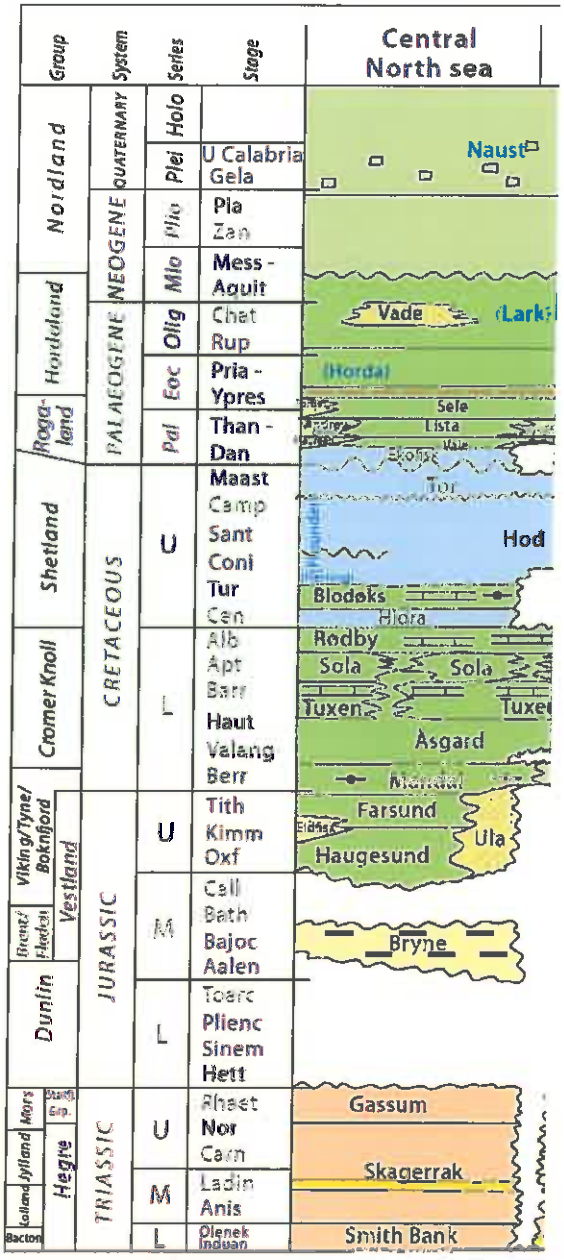

Figure 5. Lithostratigraphic column of the Norwegian North Sea (NPD)

4. Prospect update

The Ula NE prospect is defined by a graben within the Sørvestlandet High, bounded by NW-SE trending faults. It is underlined by a Zechstein salt diapir and therefore resembles a classical intra-pod setting.

Reservoir presence and quality

The top of the Ula sands within the Ula field wells can be seismically correlated. However, that seismic event fades out when going updip from the source kitchen towards the prospect, where the Ula sands thin below seismic resolution (down to 12m in the 7/12-11 well). The seismic appearance of the Ula sands in the Ula field is characterized as a highly reflective package (Figure 6). Within the prospect, a similar, analogous package could only be identified in the north-western area. The elastic inversion study performed on the newly processed dataset (Figure 7) did not provide a robust result with respect to the presence of good quality reservoir within the prospect. The acoustic impeadance values within the prospect are lower than the surrounding pods, but higher than in the northern part of the Ula field, where porosities in Ula sands are very good (in general around 20%). They are more similar to the southern part of the field, where porosities are in the range of 15 - 20%.

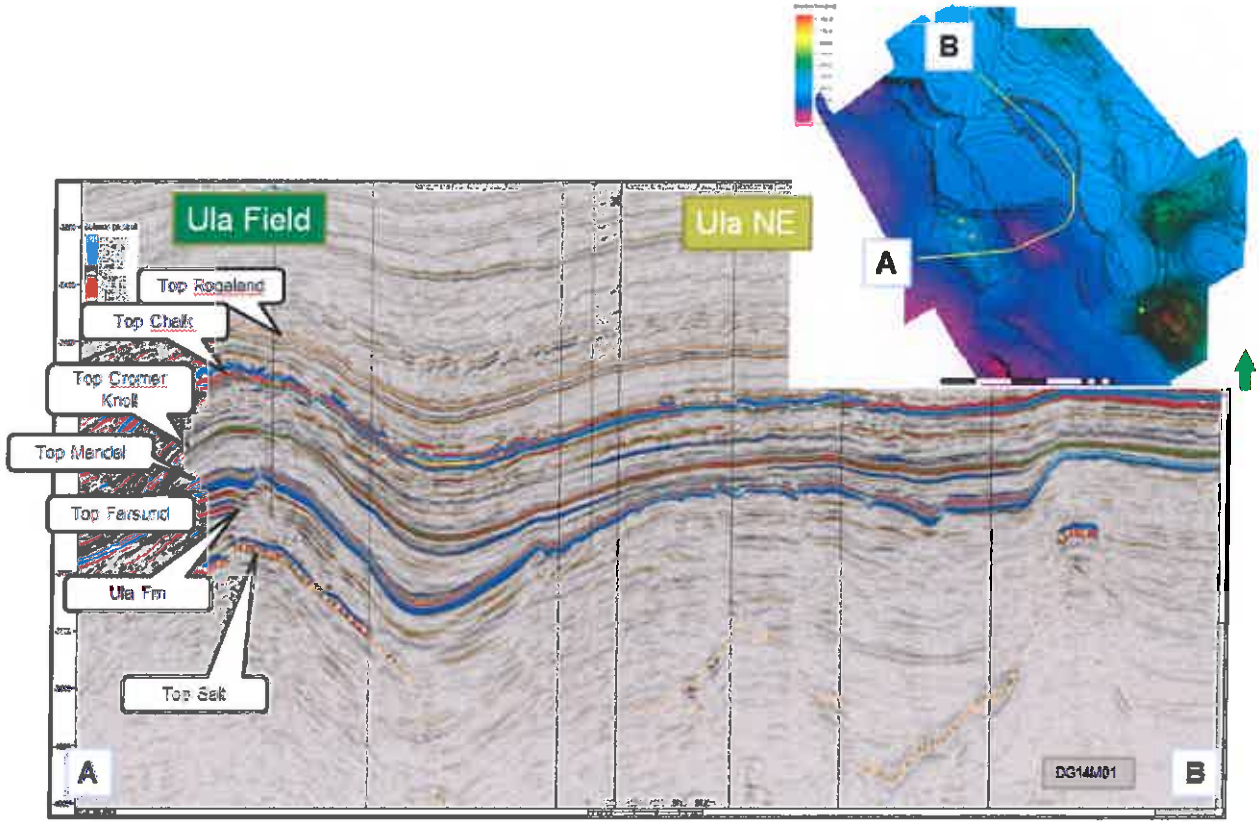

Figure 6. Arbitrary seiscmic section through the Ula Field and the Ula NE prospect

The Vp/Vs ratio values are uniform within the Ula field, with consistently low values. Unfortunately, the physical properties of the hydrocarbon-bearing aquifer in the field were strongly affected by a complex production history and therefore a comparison between the prospect and a proven hydrocarbon accumulation could not be made.

The base reservoir could not be resolved and therefore the volumetric estimates are based on a range of assumed reservoir thicknesses, guided by thickness of Ula sands found in the nearby wells and by the available accommodation space at the time of deposition. The structural reconstruction has revealed more accommodation space in the north-western part of the prospect and therefore the reservoir is expected to be thicker in that segment.

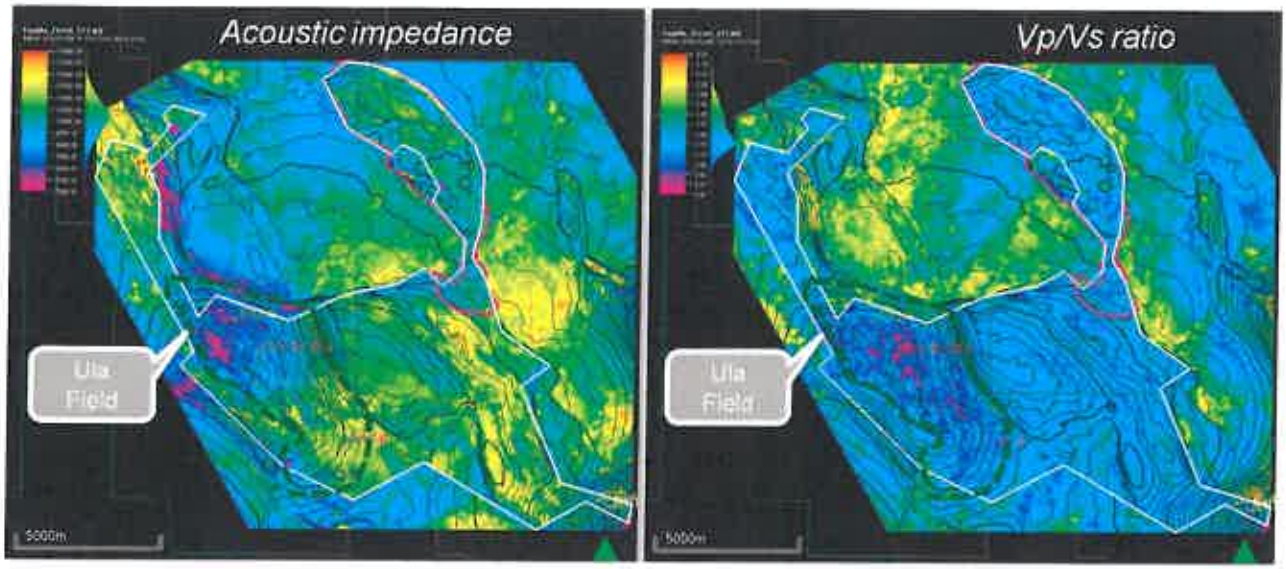

Figure 7. Acoustic impeadance and Vp/Vs maps.

Trap and Retention

The prospect has a complex trap whose detailed definition varies with size (i.e., P90, p50 or p10 cases - Figure 8).

- The P90 case is defined as a 4-way dip closure (Figure 8 and Figure 9). This trap defines the minimum success volume and the POS assigned applies to this area.
- The P50 and P10 cases rely on a fault seal of the graben-bounding faults.

In either case, the trap is robust and is not affected by superimposed velocity effects of the overburden.

For the P90 4-way dip closure, only top seal is required for trap integrity/retention and it consists of Farsund and Mandal shales, which have very good sealing properties.

Though reliance on fault seal increases the risk of retention in the prospect for P50 and higher cases, technical evaluations show that this risk is nonetheless low to moderate. A fault-seal study has been performed by investigating the possible sealing capacities of lithologies found in nearby wells. It indicated sufficient sealing capabilities of the faults within the graben. Additionally, similar faults are proven to create lateral seal in the neighbouring fields. The highest outcomes (ones with largest volumes) assume migration of hydrocarbons into the north-western segment, after filling the south-eastern segment. In such a case, there is a risk of remaining perched water, resulting in an under-filled prospect. This scenario is believed rather unlikely (30%). In case the oil-water contact reaches below 3550m, there would also be a stratigraphic trap component at the southern tip of the prospect (Figure 9), which is risked at 60%.

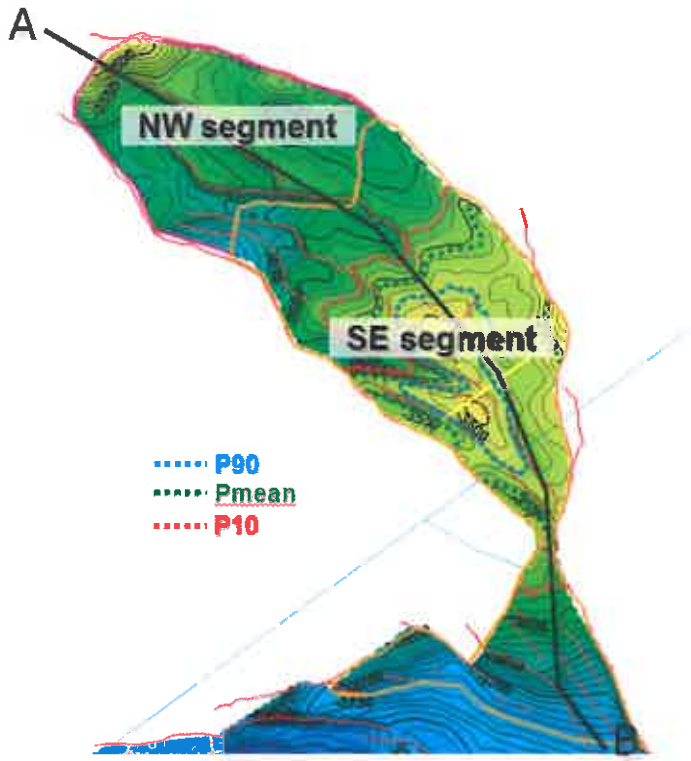

Figure 8. Top reservoir depth map (m) and outlines of P90, Pmean and P10 volume cases.

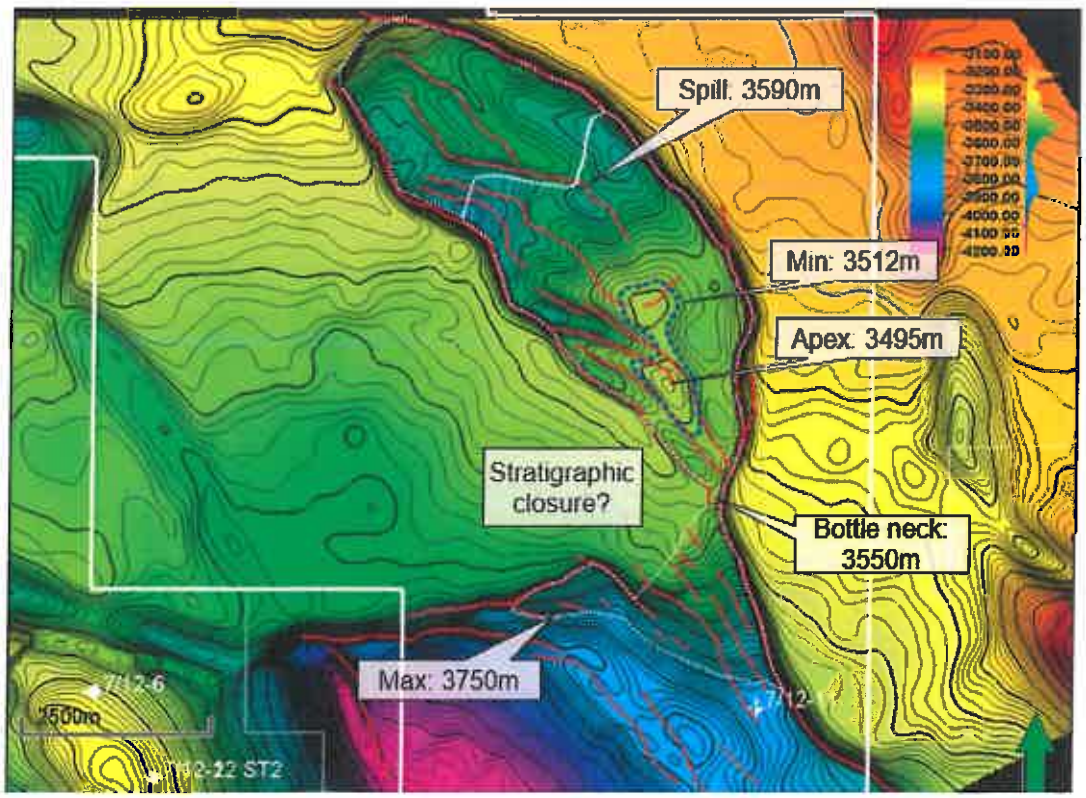

Figure 9. Top reservoir depth map (m) indicating the depth of structural spill point and the potential stratigraphic seal in the southern part of the prospect.

Charge

Hydrocarbon migration was recognized as a significant risk at the time of APA application in 2012. The evaluation of the new data has led to an even higher risking of that chance element.

The newly acquired geochemical data from shallow cores above the prospect and around the calibration wells was of good quality and passed all the QC tests, according to the contractors, AGI and APT.
APT has performed a 'classical' geochemistry analysis on the recovered samples. Unfortunately the quantities of recovered hydrocarbons were insufficient to draw any valuable conclusions from this study.
Essentially, the geochemical data do not offer a univocal assessment of the likelihood of a hydrocarbon accumulation within the Ula NE prospect (Figure 10). This ambiguity combined with the technical assessment of the tortuosity of the migration route (and the distinct possibility of Ula sand pinchout at the "bottleneck") indicates that charge must be considered a prominent risk for the prospect.

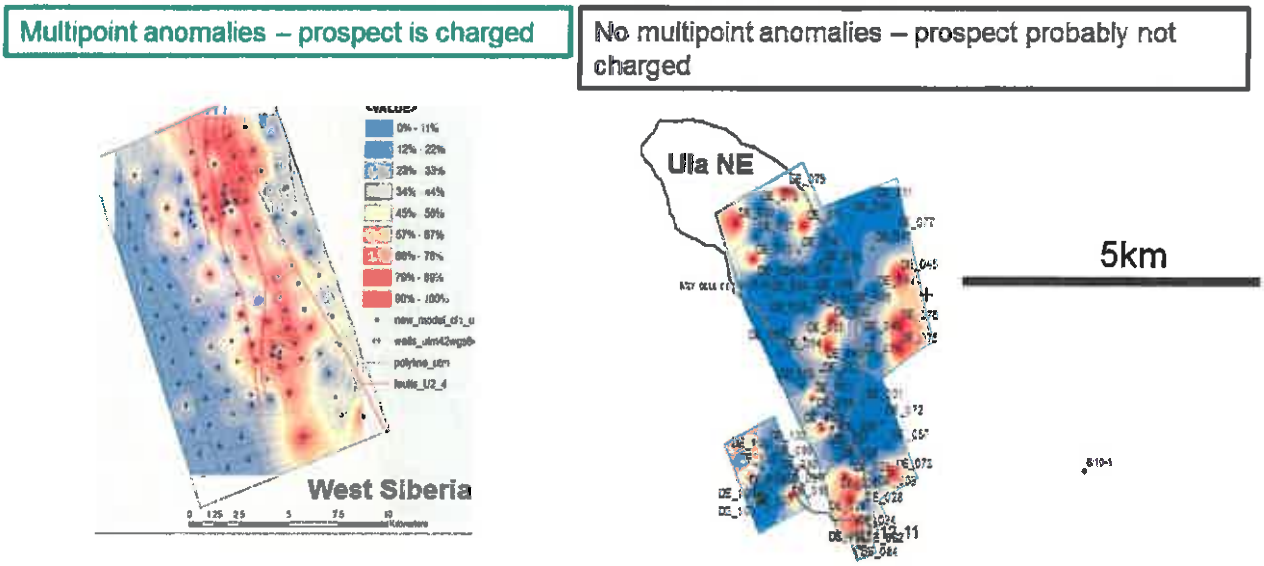

Figure 10. Comparison between AGI geochemical anomalies in a proven oil accummulation (West Siberia) and the outcome of AGI geochemical sampling abovet he Ula NE propsect.

In addition to a significant risk linked to presence of an effective carrier bed to the Ula NE prospect, the updated basin model (callibrated to Butch in-place volumes) suggests that a low amount of hydrocarbons would reach the trap.

The updated volume and risk numbers for the Ula NE prospect (SE segment) are provided in Table 3.

Block	7/12	Prospect name	Ula NE	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)	No	Outside play (Y/N)	No				
Oil, Gas or O&G case:	Oil	Reported by company	DONG E&P Norge	Reference document				Assessment year	2015
This is case no.	1 of 1	Structural element	Sørvestlandet High	Type of trap	Combined	Water depth [m MSL] (>0)	70	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)	1,43	4,13	5,72	11,30	0,17	0,49	0,69	1,39
	Gas [10^9 Sm^3] (>0.00)								
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,17	1,61	2,69	7,28	0,03	0,19	0,33	1,18
	Gas [10^9 Sm^3] (>0.00)								
Reservoir Chrono (from)	Oxfordian	Reservoir litho (from)	Ula Fm	Source Rock, chrono primary	Kimmeridgian	Source Rock, litho primary	Shale	Seal, Chrono	Kimmeridgian
Reservoir Chrono (to)	Oxfordian	Reservoir litho (to)	Ula Fm	Source Rock, chrono secondary		Source Rock, litho secondary		Seal, Litho	Shale
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,28	Oil case (0.00-1.00)	0,28	Gas case (0.00-1.00)	0,00	Oil & Gas case (0.00-1.00)	0,00		
Reservoir (P1) (0.00-1.00)	0,70	Trap (P2) (0.00-1.00)	0,90	Charge (P3) (0.00-1.00)	0,50	Retention (P4) (0.00-1.00)	0,90		
Parameters:	Low (P90)	Base	High (P10)	*Base case: Mean*					
Depth to top of prospect [m MSL] (> 0)	3495	3495	3495	*Recovery factor and recoverable resources are deterministic cases from RE forecast*					
Area of closure [km^2] (> 0.0)	2,9	4,8	6,4						
Reservoir thickness [m] (> 0)	12	32	58						
HC column in prospect [m] (> 0)	35	57	82						
Gross rock vol. [10^9 m^3] (> 0.000)	0,142	0,373	0,655						
Net / Gross [fraction] (0.00-1.00)	0,69	0,76	0,83						
Porosity [fraction] (0.00-1.00)	0,14	0,16	0,19						
Permeability [mD] (> 0.0)	9,0	19,0	66,0						
Water Saturation [fraction] (0.00-1.00)	0,27	0,38	0,48						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,6493	0,7042	0,7752						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	87	121	157						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,16	0,44	0,56						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,16	0,44	0,56						
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)	75			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)	215			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 3. Ula NE prospect data sheet (for main segment: SE segment)

5. Technical evaluation and development plan

In the APA 2012 application, a technical evaluation and development plan for the Ula NE prospect were presented. The development scenario has been updated with the new recoverable hydrocarbon volumes (Table 3). The Ula NE prospect is assumed to be developed as a subsea tie-back to the existing Ula field.

The development concept for the prospect is presented in Table 4.

	P90	P50	PMean	P10
Production wells	1	2	3	4
Water injection wells	1	1	2	3
Number of slots templates	1	1	1	2

Table 4. Development concept for the Ula NE prospect

6. Conclusions

Reprocessing and merging of the available 3D seismic data has led to more confident interpretation of faults and a data set that allows for seismic inversion across the prospect area and the analogous Ula field. The presence of high quality sands cannot be confirmed nor discarded from the inversion results. Though the quality of the seismic data has increased, the Top and Base reservoir horizons could not be confidently interpreted. The major risk, however, is the charge, which has increased after performing additional studies. It is the license opinion that the Ula NE prospect cannot be de-risked any further.

The assessment of the license prospectivity shows that volumetric potential and geological risk are at levels that prevent the partnership committing to exploration drilling in PL669. The license has therefore decided to relinquish PL669 in full, in accordance with the timeline set forth by the OED, i.e. by the 6th of January, 2016.