ROCKSOURCE

Licence Relinquishment Report, PL515

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11/21/2011

License relinquishment report summary……

1. Key license history

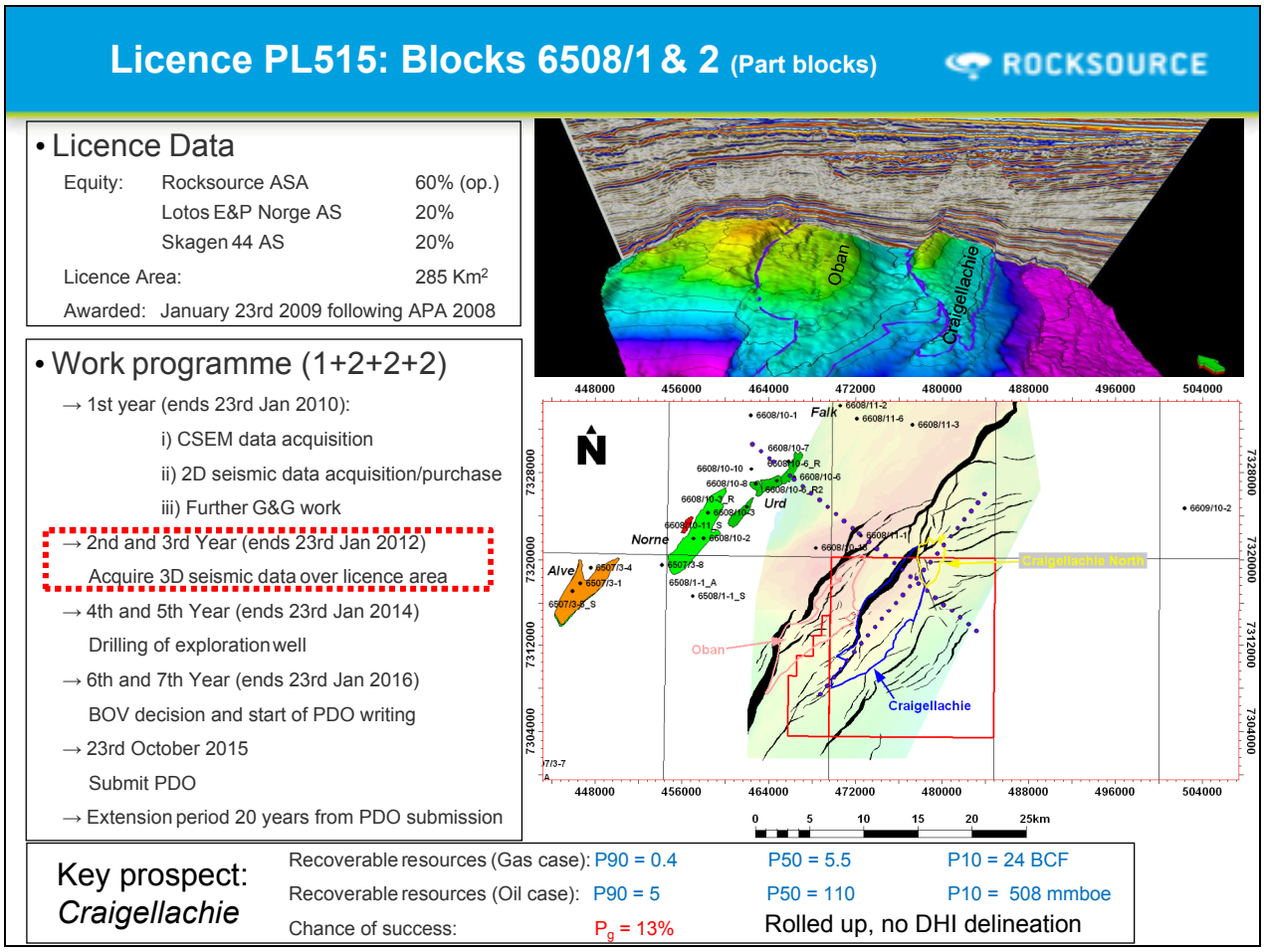


Figure 1: PL515 license overview

The PL515 licence was awarded on the 23rd January 2009 following the APA 2008 licencing round. Rocksource operate the licence (60%) with partners Lotos E&P Norge AS and Skagen44 (both 20% equity).

Rocksource and licence partners have concluded on the technical work in this licence and have decided to relinquish the licence prior to the commitment deadline for drilling the first exploration well. An overview of the technical work completed on the licence is provided later in this report.

The original deadline for this decision was to be the 23rd October 2011 (3 months prior to the licence decision deadline as stipulated in the JOA). Rocksource and partners applied for a 3 month extension of this deadline which was granted by the ministry and NPD for the 23rd Jan 2012. This allowed Rocksource to incorporate key findings from their operated well 6608/11-7S (PL559 licence immediately north of PL515) into the prospect review process in PL515.

The licence has met all of the original work commitments (Acquisition of CSEM data, further G&G work & acquisition of 3D seismic data). The licence deviated slightly from the pre-defined work

program and acquired 3D seismic data instead of 2D seismic on the licence after approval by the NPD and ministry following written application by Rocksource on behalf of the licence (25th Nov 2009).

Table 1: Summary of licence meetings for the PL515 licence since licence award and leading up to the relinquishment recommendation.

Meeting description	Meeting date	Meeting overview
EC/MC No.1 (2009)	17th Feb 2009	*Licence start-up meeting, Establishment of common database, Prospectivity review, Proposed 2010 WP & Budget.*
CSEM Work meeting	31st Mar 2009	*Review of Rocksource CSEM capabilities, Recommendation of CSEM acquisition and processing plans for summer 2009.*
EC/MC No.2 (2009)	13th Oct 2009	*3D seismic or drop recommendation, Prospectivity review, CSEM survey results (provisional), Revised 2009 budget, proposal to apply for alteration in WP (to not acquire 2D seismic).*
EC/MC No.3 (2009)	27th Nov 2009	*Exploration progress update, 3D seismic tender review, Acquisition forward planning, Dry well analysis, Risking and volumetric update for licence.*
EC/MC No.1 (2010)	17th Feb 2010	*Seismic acquisition planning and processing flow recommendation.*
EC/MC No.2 (2010)	21st Sep 2010	*Seismic interpretation update (regional), Petro & Rock Physics review, Seismic processing flow and Fasttrack flow recommendation, 2010 budget review, 2011 WP.*
EC/MC No.3 (2010)	13th Dec 2010	*3D seismic data review, Prospectivity update, Provisional AVO & Attribute analysis work, Budget review 2010, Budget and WP recommendation 2011.*
EC/MC No.1 (2011)	16th Nov 2011	*Full licence prospectivity review including structural evolution of PL515 area and Basin modelling study. Prospect presentation including risking and volumetrics.*
EC/MC No.2 (2011)	17th Nov 2011	*Seismic and CSEM DHI analysis. Licence recommendation to drop the licence following high risk, low volume interpretation of the 3 key PL515 prospects.*

2. Database

The licence database immediately following award was established (17th Feb 2009) to include all publically available seismic and well data. The image below highlights the original common database:

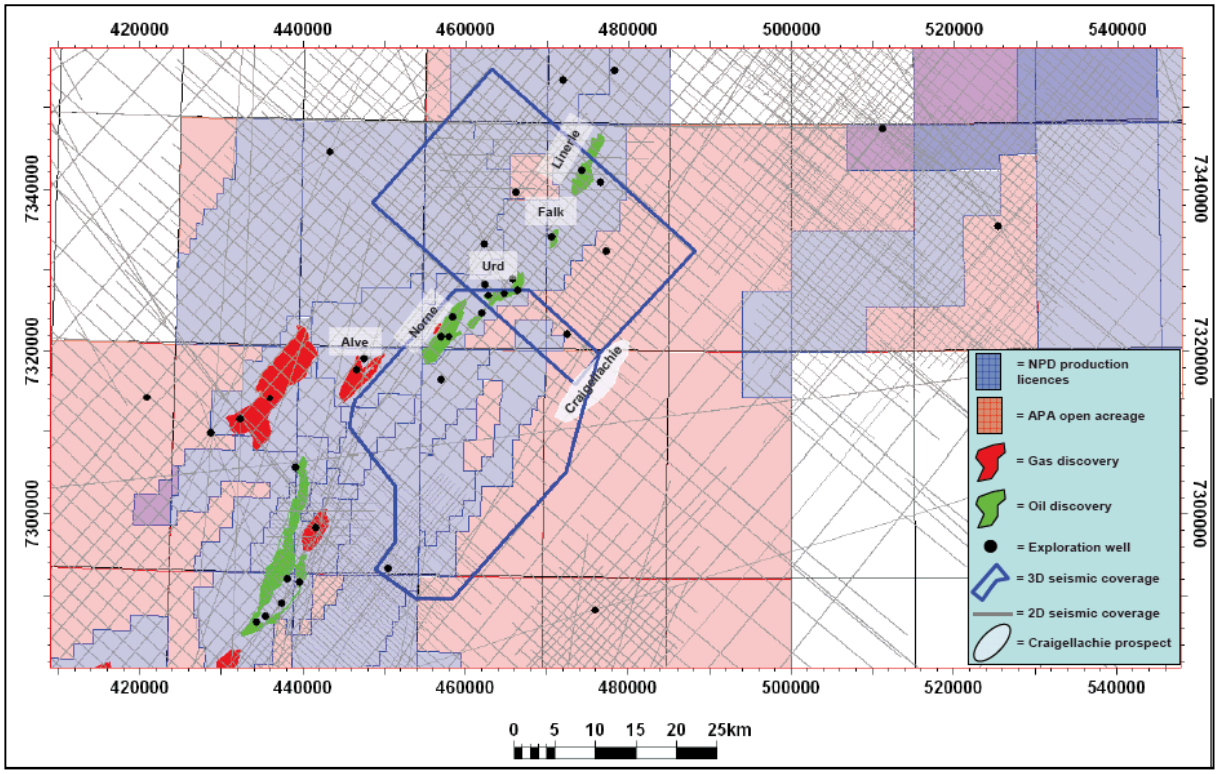


Figure 2: Common licence database on award of licence. All publically available well and seismic data. The main prospect "Craigellachie" is highlighted in white and sits largely within the awarded licence block 6508/2.

Post award the licence acquired new 3D seismic data - the RS1002 survey. As part of the 3D acquisition the licence chose to acquire 2 2D seismic tie lines, one to tie in the dry 6508/5-1 well to the south of the PL515 licence and the other aimed at better understanding possible migration pathways from the Helgeland Basin to the SE. The licence also acquired 2 proprietary 2D CSEM lines - CRAI 01 & CRAI 02. These are indicated on the map below (Figure 3) along with 2 new wells which were drilled in the nearby area during the PL515 licence period; 6608/10-13 (Statoil) & 6609/10-2 (Det Norske).

The 3D seismic data is 2010 vintage and was shot by the Western Geco Vespucci. The acquisition array was 10 x 6km providing sufficient imaging capacity for AVO and seismic DHI work at the prospectivve reservoir intervals (located approx 2km from seal level). The seismic processing was also carried out by Western Geco and was tailored to give high quality multiple attenuation (3D SRME and 2D SRME routines applied) as well as anisotropic velocity analysis and anisotropic Kirchoff time migration to ensure high resolution structural imaging. The dataset was of high quality allowing confident structural mapping and seismic multiple were largely suppressed in this complex geological setting.

CSEM data was acquired by EMGS in 2009 (BOA Thalassa vessel) and was processed by both EMGS and Rocksource on behalf of the licence. The data was of good quality allowing confident interpretation of results.

Two dry wells were drilled in this region during the licence period by Statoil (6608/10-13) and Det Norske (6609/10-2). These wells were key to understanding source and migration routes in this region. Sadly, neither well encountered HC's which added to the migration risk in the PL515 licence. 6609/10-2 in particular is drilled on a similar structural high to the main Craigellachie prospect identified in PL515 and is situated in a more proximal location to the Helgeland Basin source kitchen.

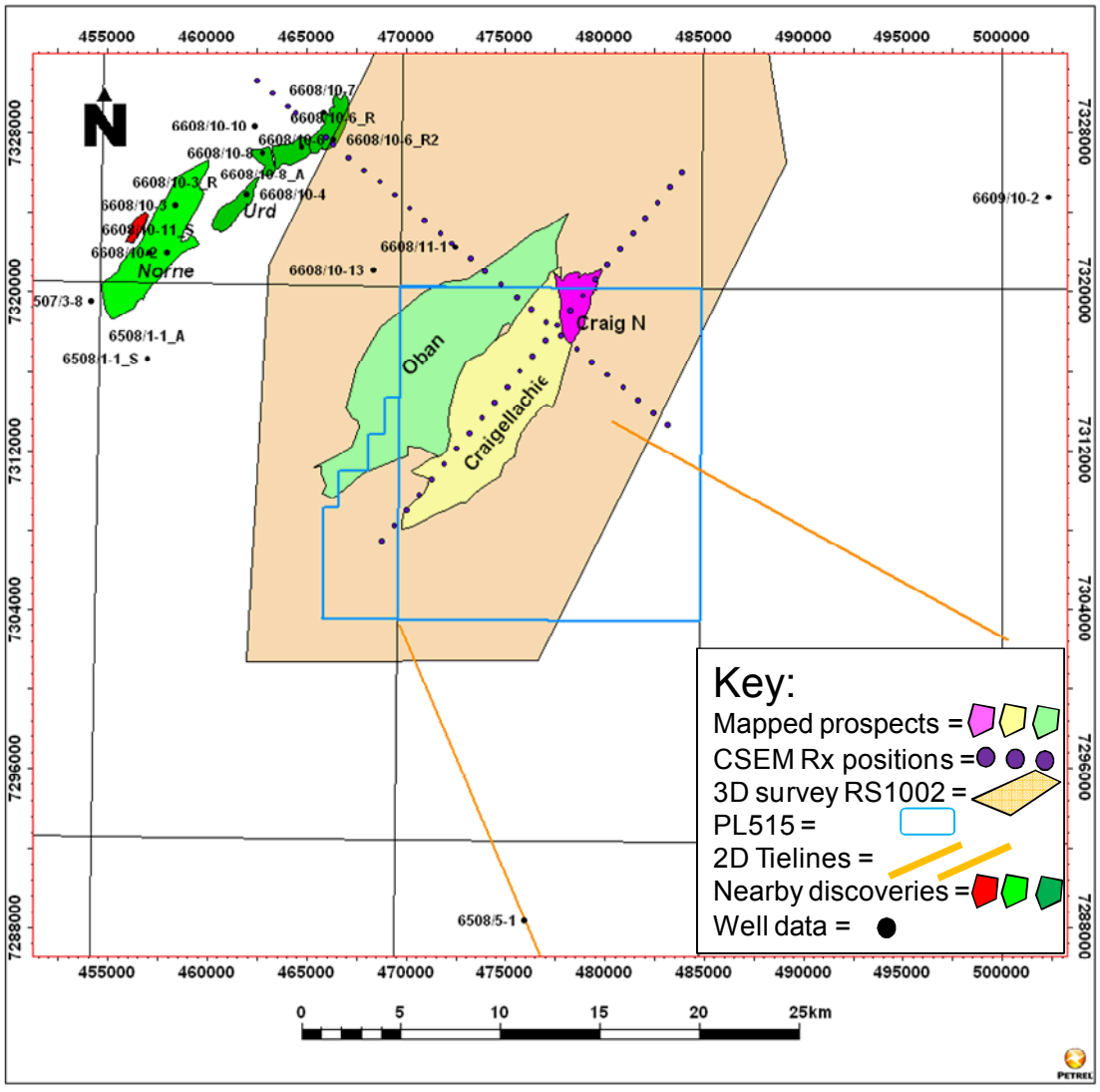


Figure 3: PL515 database map following completion of the work program to date Nov 2011. The key variation from award date is the new 3D seismic dataset with associated 2D seismic tie lines, new CSEM data & 2 new area wells 6608/10-13 & 6609/10-2 (now publically available). The 3 main prospects identified are marked on the map.

3. Review of geological framework

Three prospects have been identified within PL515 (Figure 4). The prospects, the PL515 acreage, and the area covered by RS1002 3D seismic, has been mapped extensively to get a good understanding of the structural and depositional history of the area, and ultimately to mature the understanding and risk the prospects.

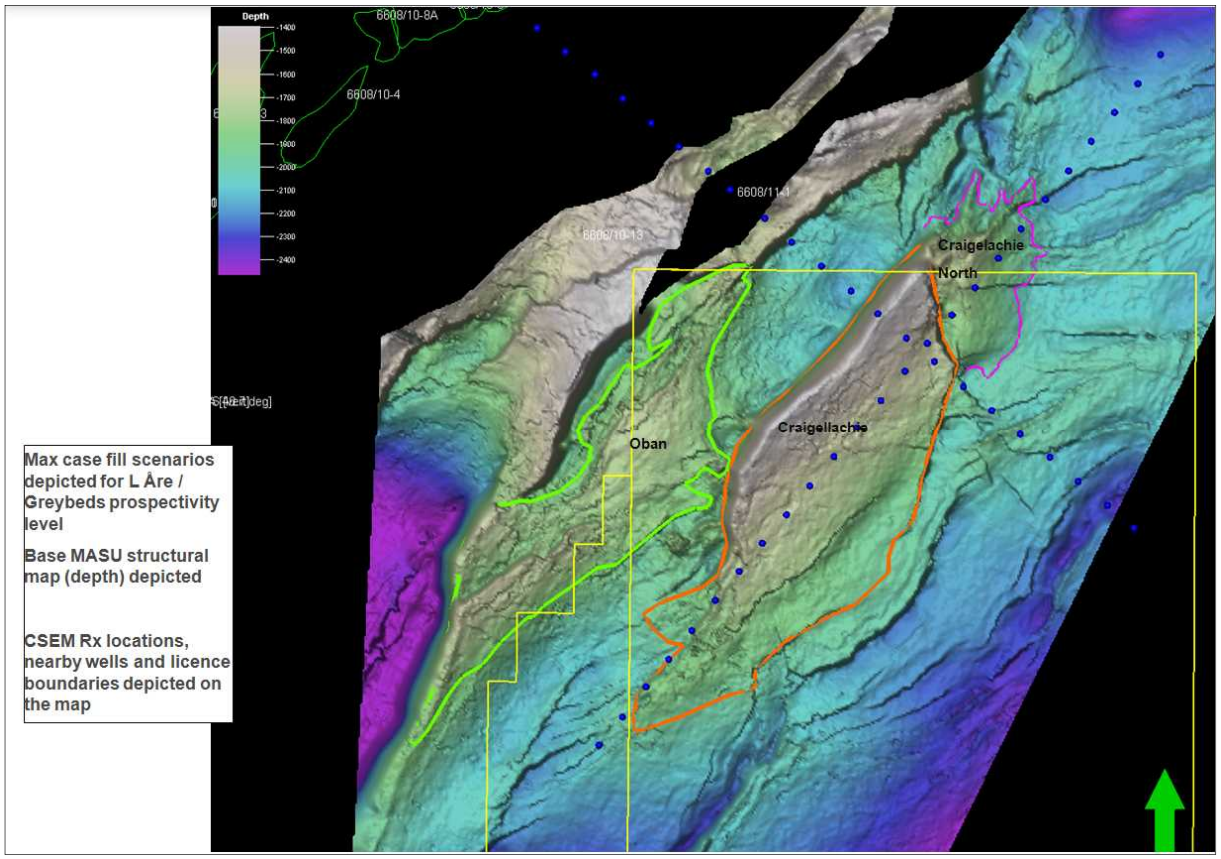


Figure 4: Map at Mid Åre (Early Jura) level with indicated maximum fill of prospects Oban, Craigellachie, and Craigellachie North. Blue dots indicate location of EM receivers.

Key horizons were interpreted within the Jurassic and Triassic successions related to the identified reservoir stratigraphy thought to be present within the 3 main prospects: Melke Fm., Tilje Fm., Upper Åre Fm., Lower Åre Fm. and Grey Beds/Red Beds. Additional horizons within the Tertiary (Naust Fm., Tang Fm., Tare Fm., and Kai Fm.) and Cretaceous (Shetland Gp.) have been interpreted to understand the overburden whilst deeper strata at Triassic level (Carnian reflector and deeper strong reflector= salt), as well as a strong Permian reflector (Permian evaporates) were also mapped. Faults have been traced and interpreted from Permian to Tertiary levels in order to understand the key tectonic active periods and possible effects on sediment deposition, source maturity, and migration and retention of hydrocarbons.

Several tectonic phases are recognized from seismic interpretation (Figure 5): (1) Permian to Early Triassic extensional faults. (2) Early Jurassic extension and reactivation of some of the phase 1 faults. The base of the Not Fm. is mapped as a clear erosional truncation suggesting Middle Jurassic uplift

followed by a marine phase with shale deposition. (4) BCU followed by Early to Late Cretaceous extension. (5) BTU followed by a Paleocene extensional phase and compression during Oligocene to Miocene. It is speculated that mobilization of Permian or Triassic salt may have been responsible for Cretaceous collapse structures identified north of Craigellachie and in the east part of the PL515 area.

The PL515 prospects are structurally well defined following 3D seismic interpretation whilst well correlation from nearby wells and seismic stratigraphic evaluation suggest a high probability of reservoir presence at Melke Fm., Tilje/Åre and Grey Beds levels, with good stratigraphic and structural seals expected. In order to understand the source and migration, and to understand if there are hydrocarbons present within the prospects, several (semi) regional (within RS1002-3D coverage) studies have been performed after the original license application:

1. Study of the tectonic history of the area based on seismic interpretation of RS1002-3D. A summary of the geological framework based on the current understanding of the license area is presented as a timing diagram in Figure 5.
2. Regional basin modeling over the Nordland Ridge and Helgeland Basin performed by MIGRIS AS in 2008/2009 and 2011, concluding that a Permian/Triassic aged source is required to fill the prospects. Gas HC phase is more likely than oil and the dry wells in the region can only be accurately calibrated when the PL515 prospectivity is modelled to be under-filled or not filled at all with HC's.
3. CSEM inversion and modeling, concluding that water filled target models best fit the real data in the PL515 region and that if hydrocarbons are present (but CSEM is unable to resolve them) only ~P90 volumes are expected to be present (under filled/non-commercial scenario).
4. Rock physics study, seismic inversion, and DHI analysis, concluding that it is either not possible to accurately delineate any hydrocarbon volumes within the PL515 license based on modelling (thus low DHI interpretation reliability) or that no DHI's exist within the mapped reservoir intervals (where modelling has shown these sands should give a DHI response in the presence of HC's).

The summary of the studies performed point in the direction of under filled scenarios with low chance of commercial outcome, or towards no-fill (water wet reservoir) scenarios.

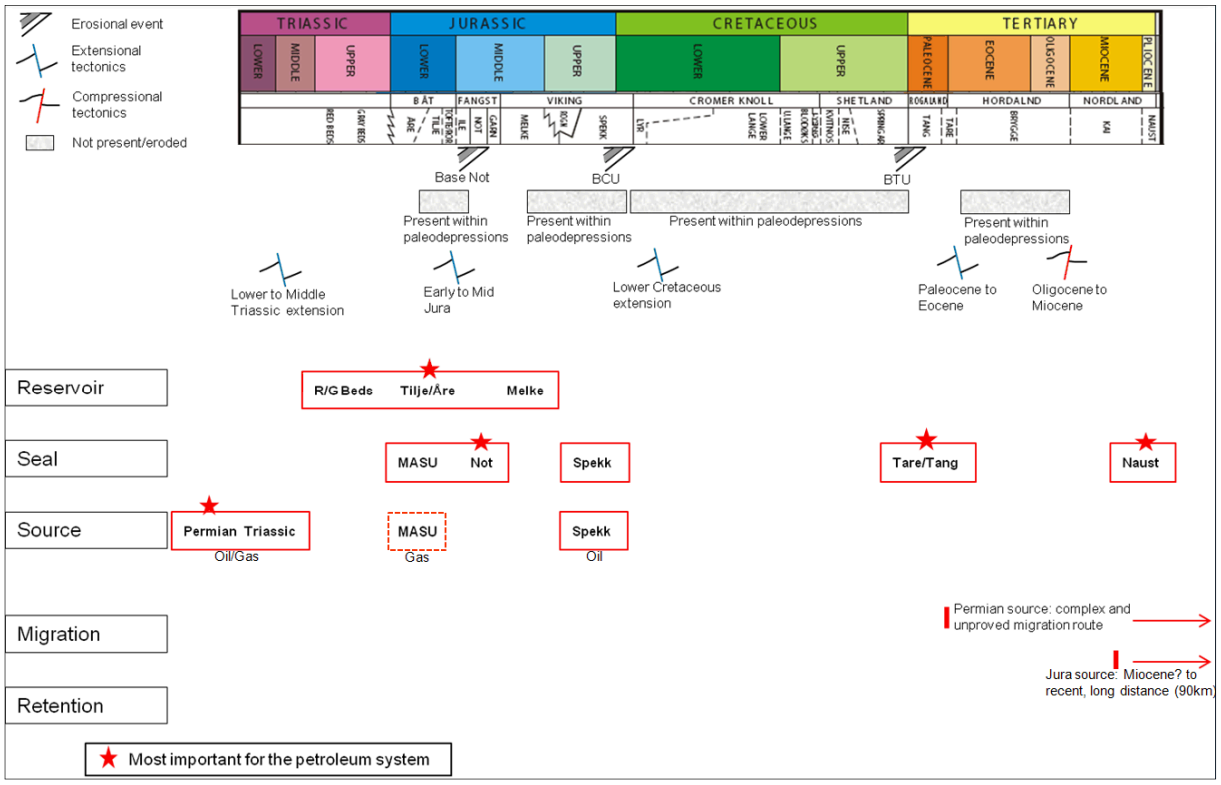


Figure 5: Timing diagram summarizing the key elements of reservoir presence, seal, source, migration, and structural tectonic history.

4. Prospect update

Original mapped prospectivity pre-award:

The prospectivity defined for APA2008 application related to the Craigellachie Horst block. This prospect was easily identifiable on the old 2D datasets although 3D seismic mapping has improved the structural picture. Subsequent to 3D seismic data acquisition and interpretation, the original Craigellachie prospect has been split into 2 prospects, Craigellachie & Craigellachie North. Craigellachie North is a down faulted segment which detached from the main Craigellachie structure due to fault reactivation sometime during the Early Jurassic period (detachment age determined by observation of Jurassic reservoir preservation in Craigellachie North which is not observed at the main Craigellachie structure).

The original Craigellachie structure is defined below, the screen shots are taken from the APA2008 application.

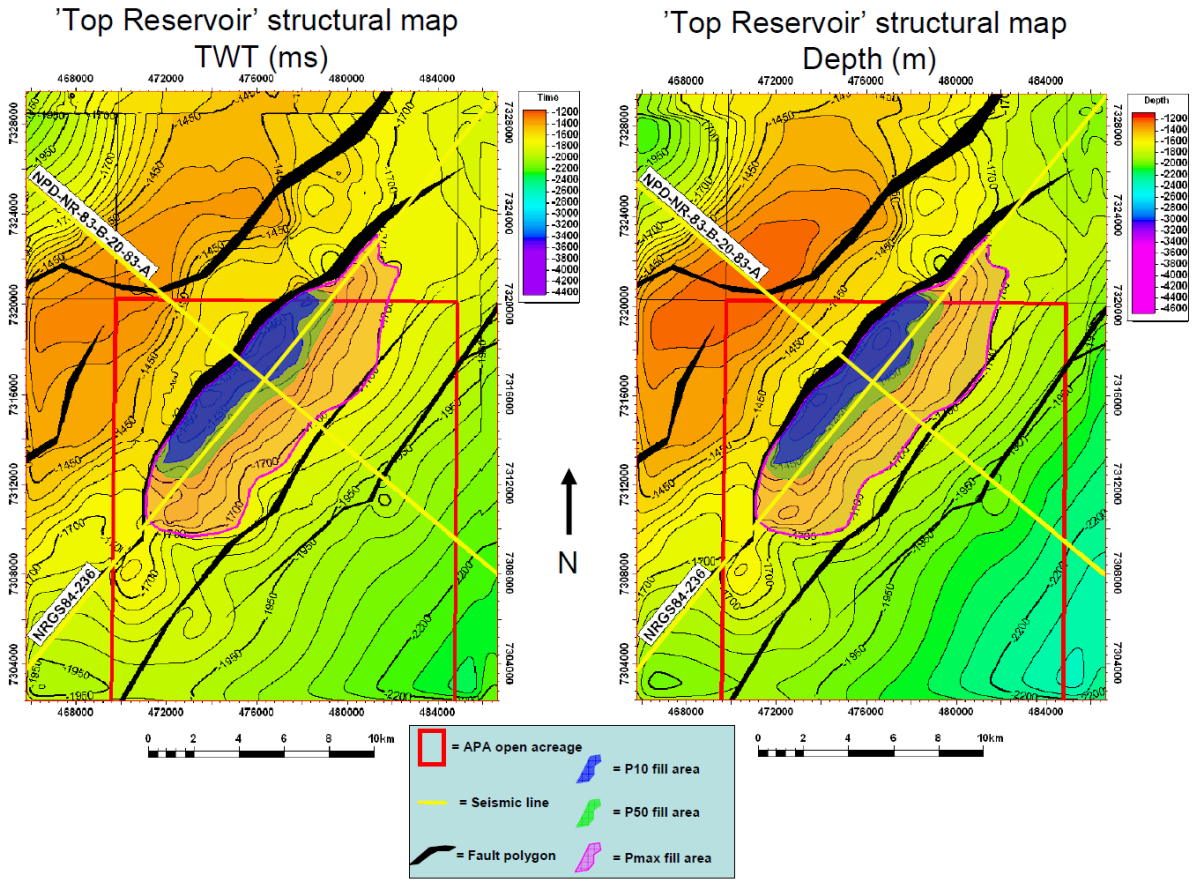


Figure 6: Top reservoir structural maps in time and depth for the Craigellachie prospect as defined for the APA2008 application. The top reservoir here is defined by the Middle Jurassic Fangst Group - a key variation from the current definition where it is believed that this unit is likely to be eroded on the crest of the structure following detailed seismic mapping. Note the Craigellachie structure was originally defined as one complete body which stretched into the licenced acreage in the north. Seismic dip and strike lines are annotated above on the maps and are shown below in more detail.

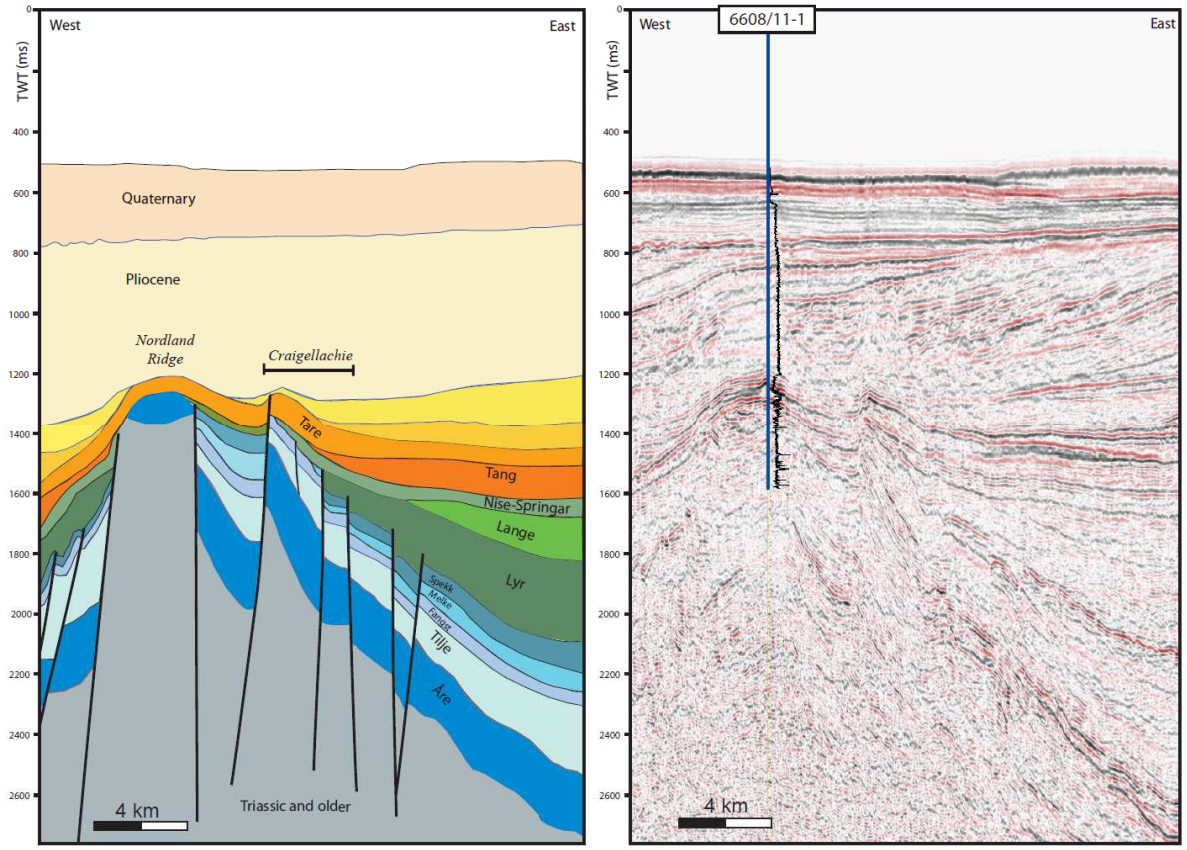


Figure 7: Seismic dip line over the Craigellachie prospect. Although structural definition has not varied drastically along this line, the stratigraphic definition has. Key changes relate to the erosional influence of the Middle Jurassic Not Fm. which erodes most of the Ile, Tilje & Upper Åre Formations at the crest of the structure. Above the Not Fm sits Melke Fm. which is defined as present at the prospect crest (although reservoir quality is questionable).

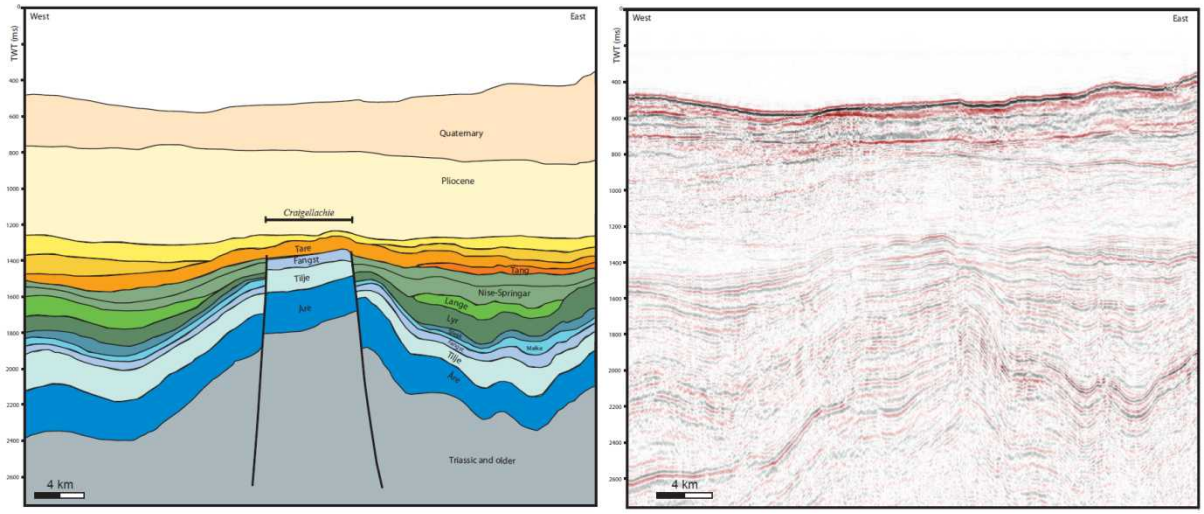


Figure 8: Seismic and geoseismic strike line over the Craigellachie Horst structure. As in figure 7 above, the structural definition of the horst block has not changed drastically however the stratigraphic picture has altered following 3D interpretation.

The defined prospect risk during licence application was 28% with hydrocarbon charge the key risk element (50% likelihood). The predicted HC phase was gas and the corresponding volumes range was between 6.3 x10^9 Sm^3 in the P90 case to 33.5 x10^9 Sm^3 in the P10 case. The volume summary tables for both oil and gas cases, as defined for the APA2008 application, are presented in Table 2

below. Only one reservoir interval was defined, a combined Middle/Lower Jurassic reservoir set with parameter ranges set to represent expected combined quality from both Fangst & Båt groups where good quality sands are observed regionally in offset wells.

Table 2: Risk and volume parameter summary tables for the Craigellachie prospect as submitted for the APA2008 application round. The left hand table represents the gas fill HC phase scenario whilst the right represents the oil fill scenario. Note - GOR parameter were erroneously input in this table in reverse order (low - high is incorrect).

APA2008

Table 3: Prospect data

Note! Map with coordinates must be submitted.

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	NPD approved?
6508/2	Craigellachie	Prospect	NPD will insert data	NPD will insert data
Play (name / new)		Struct. element	Company reported by / Ref. Doc. / Year	
NPD will insert data		Helgeland Basin	Rocksource / APA 2008 / 2008	

O/G. case	Resources INPLACE					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				1,27	4,05	8,05
Gas 10^9 Sm^3	11,2	30,9	58,7			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,59	1,94	3,83
Gas 10^9 Sm^3	6,3	17,4	33,5			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
28%			30/70

Which fractiles are used as Low & High?	Low: P90	High: P10

Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Early-Middle Jurassic	Båt Gp./Fangst Gp.

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Jurassic	Ravnefjeld Fm./Åre Fm.	Cretaceous/Palaeocene	Nise-Springar/Tare

Seismic database (2D/3D):	2D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
90%	50%	90%	70%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1355	
Area of closure (km^2)	14	27	57
Gross rock vol. (10^9 Sm^3)	0,648	2,115	9,203
HC column in prospect (m)	90	141	345
Reservoir thickness (m)	400	500	600
Net / Gross	0,25	0,375	0,5
Porosity (fraction)	0,2	0,265	0,35
Water Saturation	0,2	0,3	0,4
Bg. NB !(fraction)	0,0051	0,0059	0,0066
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,5	0,56	0,6
Recovery factor, ass. phase	0,4	0,48	0,56
GOR, free gas (Sm^3 /Sm^3)	3300	8200	17900
GOR, oil (Sm^3 /Sm^3)	-	-	-
Temperature, top res (deg C) :	45	Pressure, top res (bar) :	150

APA2008

Table 3: Prospect data

Note! Map with coordinates must be submitted.

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	NPD approved?
6508/2	Craigellachie	Prospect	NPD will insert data	NPD will insert data
Play (name / new)		Struct. element	Company reported by / Ref. Doc. / Year	
NPD will insert data		Helgeland Basin	Rocksource / APA 2008 / 2008	

O/G. case	Resources INPLACE					
OIL	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^9 Sm^3	48,4	128,6	239,8			
Gas 10^9 Sm^3				11,9	36,9	71,9
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3	18,7	52,6	98,9			
Gas 10^9 Sm^3				4,6	15,1	30,1

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
28%			30/70

Which fractiles are used as Low & High?	Low: P90	High: P10

Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Early-Middle Jurassic	Båt Gp./Fangst Gp.

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Jurassic	Ravnefjeld Fm./Åre Fm.	Cretaceous/Palaeocene	Nise-Springar/Tare

Seismic database (2D/3D):	2D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
90%	50%	90%	70%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1355	
Area of closure (km^2)	14	27	57
Gross rock vol. (10^9 Sm^3)	0,648	2,115	9,203
HC column in prospect (m)	90	141	345
Reservoir thickness (m)	400	500	600
Net / Gross	0,25	0,375	0,5
Porosity (fraction)	0,2	0,265	0,35
Water Saturation	0,2	0,3	0,4
Bg. NB !(fraction)	-	-	-
1/Bo. NB !(fraction)	0,59	0,74	0,83
Recovery factor, main phase	0,25	0,41	0,6
Recovery factor, ass. phase	0,25	0,41	0,6
GOR, free gas (Sm^3 /Sm^3)	-	-	-
GOR, oil (Sm^3 /Sm^3)	150	200	700
Temperature, top res (deg C) :	45	Pressure, top res (bar) :	150

Post award interpretation using 3D seismic data:

Three prospects are defined after 3D seismic interpretation; Craigellachie, Craigellachie North, and Oban, all of which represent combined fault and dip closures. The main risk for all prospects is the source and migration, whereas reservoir, seal and retention is generally regarded low risk. Each prospect has 3 segments, these segments have been defined for the volumetric modelling:

i) Intra-Melke sands.
ii) Combined Tilje / Upper Åre Fm.
iii) Combined Lower Åre, Triassic Greybed & Redbed formations.

Craigellachie:

Craigellachie is defined as a large scale horst structure with fault closure towards the west and north, and dip closure towards the east (Figure 9). Reservoir levels are interpreted at Melke, Upper Åre, and Lower Åre/ Grey Beds levels. The Melke Fm. and Upper Åre are eroded towards the crest of the structure at BCU and base Not Fm., respectively. The Melke and Upper Åre level is separated by the regional Not Fm. shale, whereas the Upper Åre and Lower Åre are separated by a coal and shale rich Middle Åre unit.

Prospect Level	Reservoir	Structure	Source & Migration	Seal	Overall Risk
Melke	Upper Melke Eroded at Crest. Overall quality of succession may be reduced due to erosion: 60%	Structure mapped on good quality 3D data and tied to nearby well: 100%	Key prospect risk. Local, unproven source required, as Spekk immature in Helgeland Basin. The prospect is in a good location for migration, up dip from the likely source kitchen. Spekk source early mature at best so Melke carrier is risked higher than Åre: 10%	Prospect bounding faults considered to be sealing and thick claystone succession overlies the trap in the Paleocene / Cretaceous section above. Some risk of theif sands and fault leakage: 70%	4%
Tilje /U Åre	Tied to well 6508/5-1 in South where Tilje & U Åre sands are present and of good quality. Both units are eroded towards the crest of the Craigellachie prospect: 80%	Structure mapped on good quality 3D data and tied to nearby well: 100%	Key prospect risk. Local, older source units required (Trias/Permian). The prospect is in a good location for migration, up dip from the likely source kitchen: 15%	Prospect bounding faults considered to be sealing. Top seal provided by Not Fm and Lower Melke shales. Both are proven effective seals in this region: 80%	10%
L Åre / Grey Beds	Tied to well 6508/5-1 in South where Tilje & U Åre sands are present and of good quality: 100%	Structure mapped on good quality 3D data and tied to nearby well: 100%	Key prospect risk. Local, older source units required (Trias/Permian). The prospect is in a good location for migration, up dip from the likely source kitchen: 15%	Prospect bounding faults considered to be sealing. Top seal provided by Base MASU coal. 70%	11%

Craigellachie North:

Craigellachie North represents a down-faulted part of the Craigellachie horst and show a fault closure towards Craigellachie and towards the north, and a dip closure towards the east (Figure 10). Craigellachie North show similar reservoir sections as for Craigellachie, however with less erosion at BCU and base Not Fm. and more preserved Melke Fm. and Upper Åre Fm. Tilje Fm. may be present at the deeper part of the structure where there are less erosion. The Melke and Upper Åre level is separated by the regional Not Fm. shale, whereas the Upper Åre and Lower Åre are separated by a coal and shale rich Middle Åre unit.

Prospect Level	Reservoir	Structure	Source & Migration	Seal	Overall Risk
Melke	Complete Melke succession expected to be present at prospect. Preferential location for deposition off flank of Craigellachie high: 70%	Structure mapped on good quality 3D data and tied to nearby well: 100%	Key risk. Similar issues as with Craigellachie. 10%	Requires fault seal against the Craigellachie high to be active (or for entire structure to be filled and spilling to Craig North). Upper Melke Clays and Cretaceous / Paleocene overburden provide top seal. 70%	5%
Tilje /U Åre	Tied to well 6508/5-1 in South where Tilje & U Åre sands are present and of good quality. 100%	Structure mapped on good quality 3D data and tied to nearby well: 100%	Key risk. Similar issues as with Craigellachie. 15%	Prospect bounding faults considered to be sealing. Top seal provided by Not Fm and Lower Melke shales. Both are proven effective seals in this region: 80%	12%
L Åre / Grey Beds	Tied to well 6508/5-1 in South where L.Åre & GreyBed sands are present and of good quality: 100%	Structure mapped on good quality 3D data and tied to nearby well: 100%	Key risk. Similar issues as with Craigellachie: 15%	Prospect bounding faults considered to be sealing. Top seal provided by Base MASU coal. 70%	11%

Oban:

Structural height within the graben between the Nordland Ridge and Craigellachie with a dip closure towards the east, and fault closures towards the north and the west (Figure). Similar reservoir sections as for Craigellachie, however with less erosion at BCU and base Not and a thicker Melke Fm. and a thick Upper Åre and Tilje Fm. The Melke and Upper Åre level is separated by the regional Not Fm. shale, whereas the Upper Åre and Lower Åre are separated by a coal and shale rich Middle Åre unit. Overlapping faults (Relay ramps) in the north increases the risk for fault seal and retention at maximum fill case scenarios.

Prospect Level	Reservoir	Structure	Source & Migration	Seal	Overall Risk
Melke	Upper Melke Eroded at Crest however location is preferential for deposition of sandy Melke situated between two large structural highs. 80%	Structure mapped on good quality 3D data and tied to nearby well: 100%	Key prospect risk. Up-dip but further from Helgeland source than Craigellache, complex faulting within prospect may reduce chance of migration into trap. Closer thought to any (unlikely) western migration route into prospects : 10%	Prospect bounding faults considered to be sealing and thick claystone succession overlies the trap in the Paleocene / Cretaceous section above. Some risk of theif sands and fault leakage: 60%	5%
Tilje /U Åre	Tied to well 6508/5-1 in South where Tilje & U Åre sands are present and of good quality. 100%	Structure mapped on good quality 3D data and tied to nearby well: 100%	Key prospect risk. Up-dip but further from Helgeland source than Craigellache, complex faulting within prospect may reduce chance of migration into trap. Closer thought to any (unlikely) western migration route into prospects : 15%	Large prospect bounding fault considered to be sealing (dry well on Nordland Ridge updip – lack of reservoir for leakage to occur). Top seal provided by Not Fm and Lower Melke shales. Both are proven effective seals in this region: 70%	11%
L Åre / Grey Beds	Tied to well 6508/5-1 in South. Åre & GreyBed sands are present and of good quality: 100%	Structure mapped on good quality 3D data and tied to nearby well: 100%	Key prospect risk. Up-dip but further from Helgeland source than Craigellache, complex faulting within prospect may reduce chance of migration into trap. Closer thought to any (unlikely) western migration route into prospects : 15%	Prospect bounding faults considered to be sealing. Top seal provided by Base MASU coal. 60%	9%

Enhanced understanding post award:

Enhanced knowledge, especially on the structural part resulting in additional prospects, has been gained from interpretation of new 3D seismic compared to the 2D lines used during the pre award study. Nevertheless, the key uncertainty has remained source and migration as there remains to prove a petroleum system in the Helgeland basin and the margin of this basin. Thus, the most significant study for the understanding and risking of PL515 area prospects has been the basin modeling and the source and migration studies. These studies have shown that the Jurassic source rocks are unlikely to source PL515 prospects, and that more likely any hydrocarbons will be sourced from Permian/Triassic levels. Lack of DHI of both CSEM studies and seismic studies has increased the confidence that the Jurassic and Upper Triassic reservoirs are not hydrocarbon filled, and this is further supported by dry wells (e.g. 6609/10-2) in similar structures closer to the preferred kitchen area. The overall effect on risk (comparing pre-award and present day) is that HC charge is significantly higher risk. Recent dry wells in the region and extensive basin modelling work support this assessment (unproven source, complex migration route, likely under-filled with gas phase HC's).

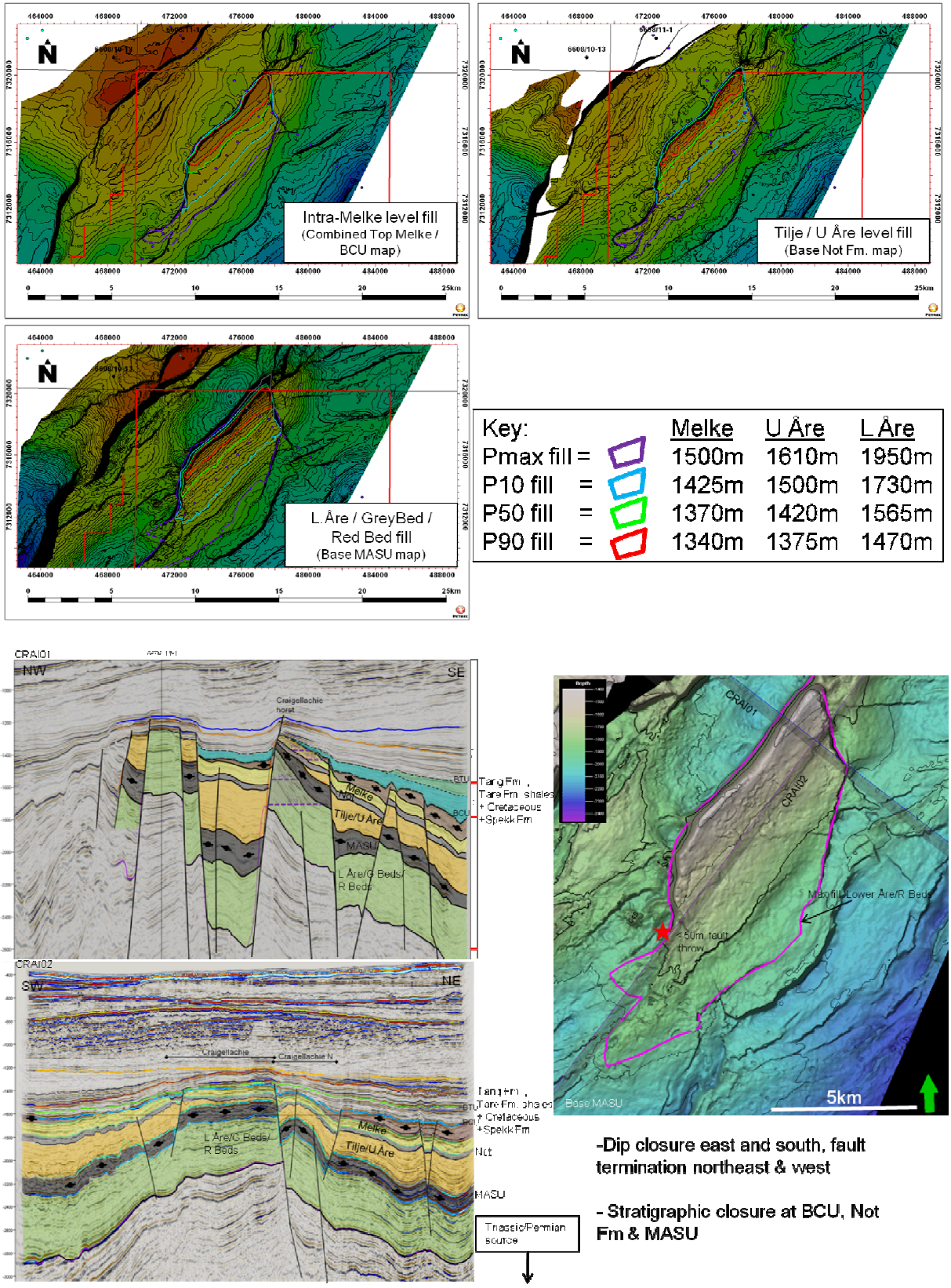
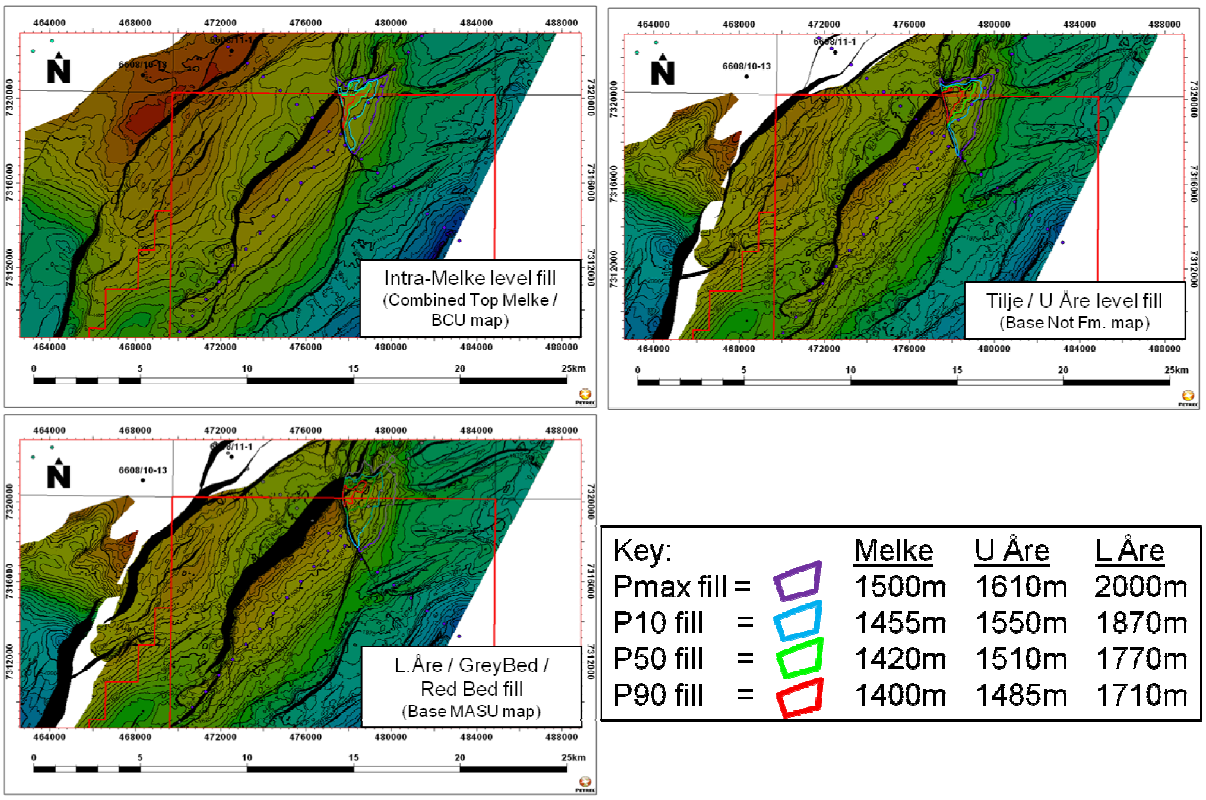


Figure 9 Craigellachie prospect description; Upper maps show the different fill levels, and lower figure geoseismic sections along CSEM line locations.



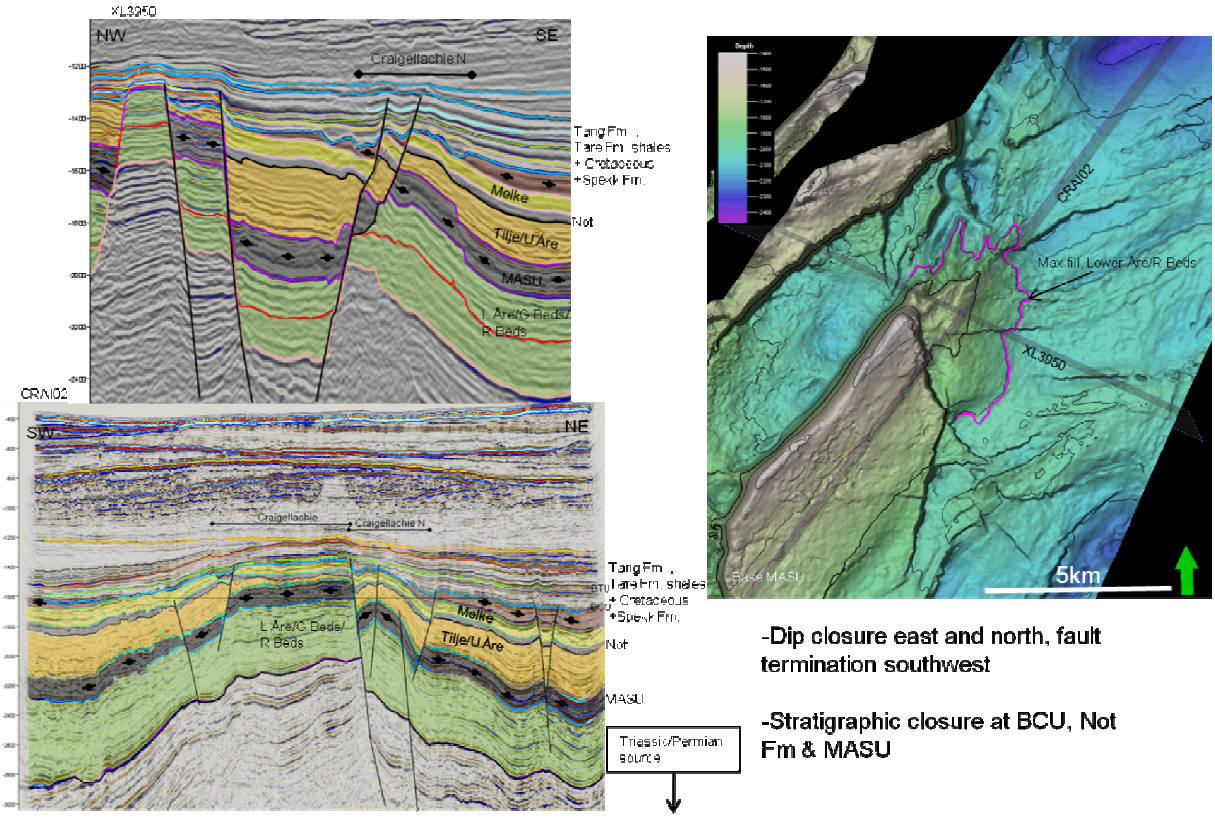


Figure 10 Craigellachie North prospect description; Upper maps show the different fill levels, and lower figure geoseismic sections (strike line is along a CSEM line).

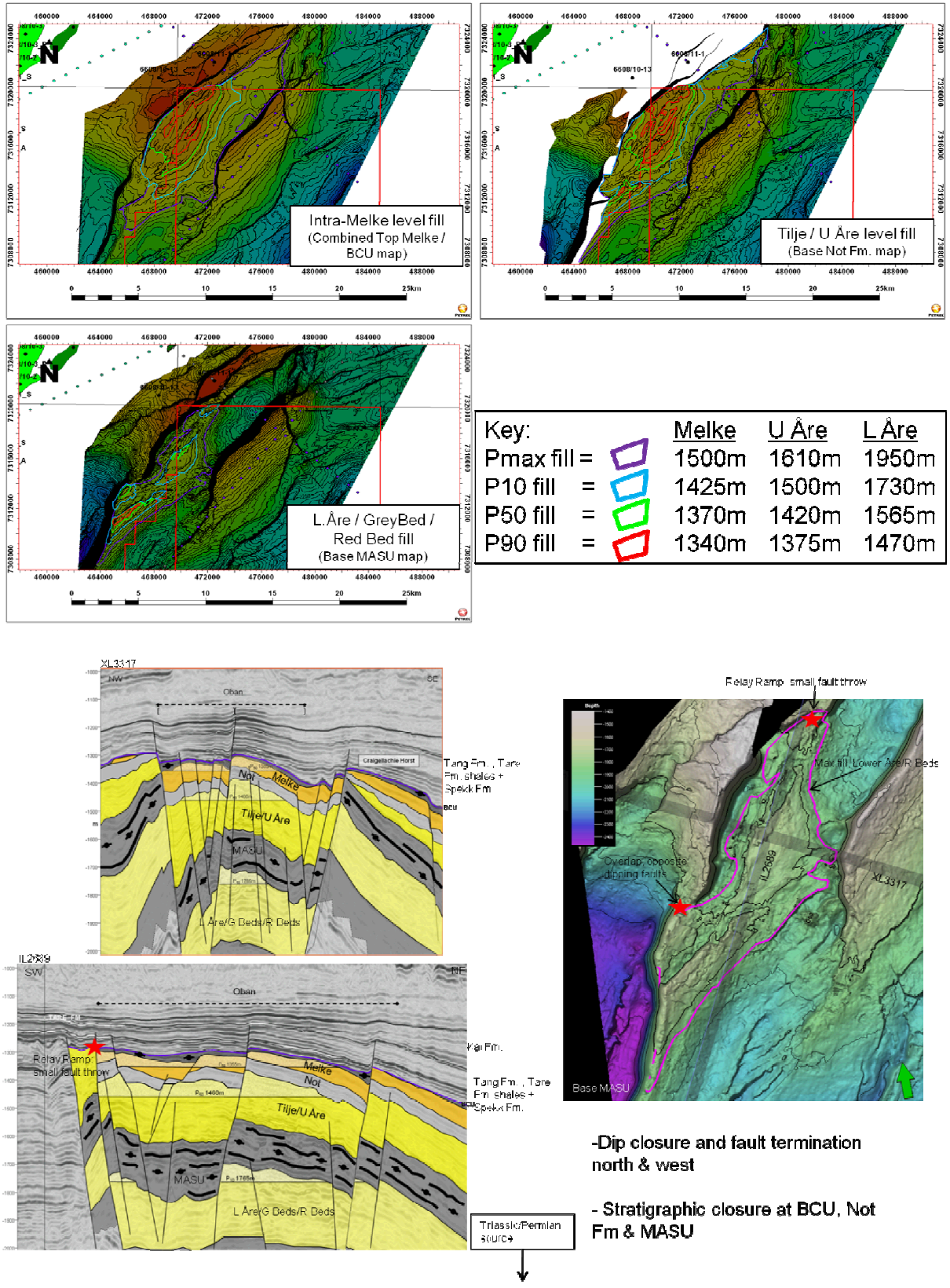


Figure 11 Oban prospect description; Upper maps show the different fill levels, and lower figure geoseismic sections.

The chance of success is downgraded post-award due to the major risk of source and migration failure. As a result, the 'rolled-up' Pg for the key Craigellachie prospect (inclusive of all reservoir levels), is 13%. Despite additional prospectivity being mapped in the licence (Oban and Craigellachie North), large portions of these traps lay outside of the PL515 acreage meaning Craigellachie was essential for commerciality in the partnership. All prospects are summarised below in NPD table format (tables 3-11) for the defined gas case volumetrics, one table exists for each reservoir segment (thus 9 tables in total).

Figures 12 to 14 below summarise the 'rolled-up' Craigellachie volumes and risk. This has been derived using the GeoX prospect evaluation tool and heavy source and migration dependency has been applied in the roll-up. Table 12 shows the pre-DHI oil and gas fill volumes along with the pre-DHI risk number.

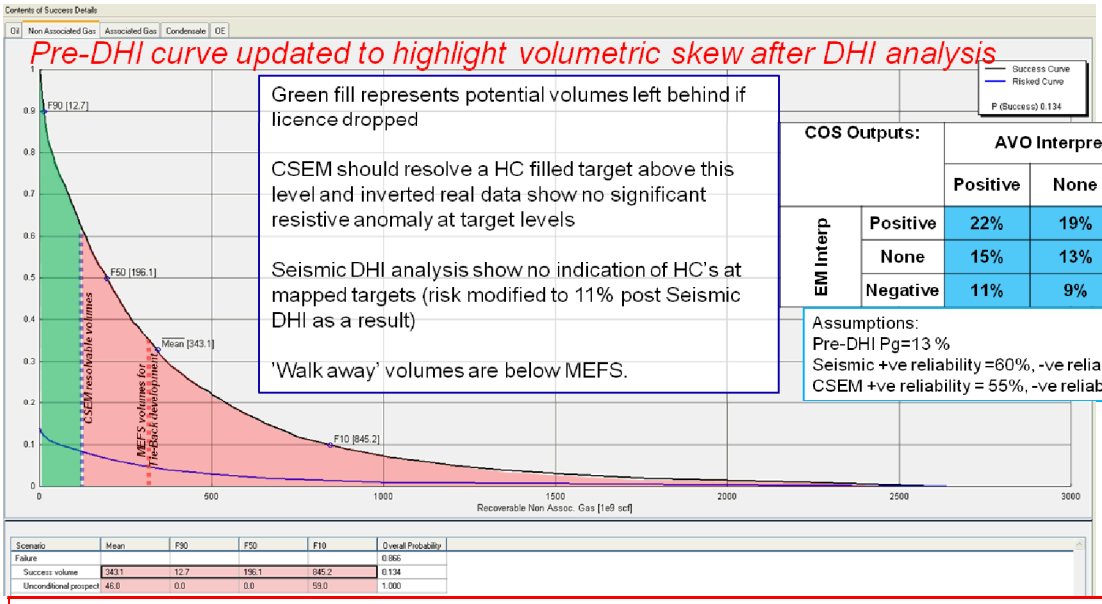
The DHI evaluation work concluded that for the CSEM data, the best fit between real and modelled data is a geological model with laterally variable resistivity (anisotropy) but no hydrocarbons, however pre-acquisition modelling suggested that HC fill of P50 size and greater was needed before a HC related CSEM response could be resolved. This means that the prospects may be under-filled (towards P90 levels) and as a result the post CSEM DHI risk is not altered towards either a positive or negative outcome (Figure 13). The Post CSEM volumes however should be tailored to account for the likely under-filling of the primary targets (Figure 14). Seismic modeling showed positive de-risking capacity at Upper Åre and Tilje levels, however no DHI's were observed in the AVO studies. The COS (Chance Of Success) is therefore slightly downgraded following the seismic DHI analysis from 13% to 11% (Figure 13). As a result of considering Pg, and DHI input from CSEM and seismic, the final COS is 11%.

Key prospect: *Craigellachie*	Recoverable resources (Gas case): P90 = 0.4	P50 = 5.5	P10 = 24 (1e9 Sm^3)	
	Recoverable resources (Oil case): P90 = 5	P50 = 110	P10 = 508 mmboe	
	Chance of success:	P_g = 13%	Rolled up, no DHI delineation	

Figure 12: Craigellachie prospect roll-up risk and volumes pre-DHI adjustment. Both oil and gas HC fill scenarios are modelled despite gas case being 80% likely (from Basin modelling study).

COS Outputs:		AVO Interpretation		
		Positive	None	Negative
EM Interpretation	Positive	22%	19%	16%
	None	15%	13%	11%
	Negative	11%	9%	8%

Figure 13: Craigellachie prospect risk matrix post DHI evaluation. No negative risking is applied despite the lack of CSEM DHI (due to possible unresolved P90 fill) however the seismic DHI evaluation gives a negative impact to the final COS.



COS Outputs:		AVO Interpretation		
		Positive	None	Negative
EM Interp	Positive	22%	19%	16%
	None	15%	13%	11%
	Negative	11%	9%	8%

Assumptions:
Pre-DHI Pg=13 %
Seismic +ve reliability =60%, -ve reliability =50 %
CSEM +ve reliability = 55%, -ve reliability = 65%

Scenario	Mean	F90	F50	F10	Overall Probability
Failure					0.866
Success volume	343.1	12.7	196.1	845.2	0.134
Unconditional prospect	46.0	0.0	0.0	59.0	1.000

CSEM cannot be used to mitigate risk in the PL515 licence.

Although no strong CSEM anomaly could be mapped at target levels, the pre-acquisition modelling showed that P90 fill scenarios could not be resolved using this tool (P50 / P10 fill should be easily resolved).

The result is that we may have P90 volumes remaining following the DHI analysis – in which case the rolled-up prospect volumes should be skewed towards the P90 fill as illustrated on the above figure.

Figure 14: Craigellachie roll-up distribution for the gas HC phase. The distribution should be cropped following DHI evaluation which indicates that if HC's are present then they are likely to be in line with P90 fill levels (and therefore non-commercial.

Table 3: Prospect Data PL515, Craigellachie, Melke reservoir level

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	**NPD approved?**
6508/2	Craigellachie	Prospect	NPD will insert data	NPD will insert data
Play (name / new)		Struct. element	Company reported by / Ref. Doc. / Year	
NPD will insert data		Helgeland Basin	Rocksource / Reliquishment Report/ 2011	

O/G. case	**Resources INPLACE**					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,08	0,191	0,556
Gas 10^9 Sm^3	0,59	1,24	3,07			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,0131	0,0375	0,116
Gas 10^9 Sm^3	0,114	0,285	0,743			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
	4%		20/80

	Which fractiles are used as Low & High?	Low: P90	High: P10
Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Middle Jurassic	Intra-Melke Fm.

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Early Triassic	Ravnefjeld Fm./ Wordie Creek Fm.	Cretaceous & Tertiary	Spingar Fm., Nise Fm., Lange Fm., Naust Fm., Tare Fm. & Tang Fm.

Seismic database (2D/3D):	3D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
60%	10%	100%	70%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1295	
Area of closure (km^2)	5,5	8,5	17
Gross rock vol. (10^9 Sm^3)	0,159	0,295	0,722
HC column in prospect (m)	45	75	130
Reservoir thickness (m)	34	38	45
Net / Gross	0,1	0,15	0,2
Porosity (fraction)	0,24	0,25	0,26
Water Saturation	0,4	0,3	0,2
Bg. NB !(fraction)	0,0066	0,0061	0,0057
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,05	0,25	0,45
Recovery factor, ass. phase	0,05	0,215	0,4
GOR, free gas (Sm^3 /Sm^3)	10309	6494	4255
GOR, oil (Sm^3 /Sm^3)	-	-	-
Temperature, top res (deg C) :	36	Pressure, top res (bar) :	120

Table 4: Prospect Data PL515, Craigellachie, Upper Åre reservoir level

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	**NPD approved?**	
6508/2	Craigellachie	Prospect	NPD will insert data	NPD will insert data	
Play (name / new)		Struct. element	Company reported by / Ref. Doc. / Year		
NPD will insert data		Helgeland Basin	Rocksource / Reliquishment Report/ 2011		

O/G. case	**Resources INPLACE**					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,0192	0,0882	0,429
Gas 10^9 Sm^3	0,141	0,572	2,73			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,0113	0,0527	0,256
Gas 10^9 Sm^3	0,092	0,386	1,84			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
10%		20/80	
Which fractiles are used as Low & High?		Low: P90	High: P10

Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Early Jurassic	Upper Åre Fm.

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Early Triassic	Ravnefjeld Fm./ Wordie Creek Fm.	Middle Jurassic	Not. Fm.

Seismic database (2D/3D):	3D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
80%	15%	100%	80%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1310	
Area of closure (km^2)	1,4	6,7	16,5
Gross rock vol. (10^9 Sm^3)	0,011	0,041	0,180
HC column in prospect (m)	65	110	190
Reservoir thickness (m)	10	10	30
Net / Gross	0,3	0,45	0,55
Porosity (fraction)	0,25	0,28	0,31
Water Saturation	0,4	0,3	0,2
Bg. NB !(fraction)	0,0064	0,0059	0,0055
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,65	0,675	0,7
Recovery factor, ass. phase	0,55	0,6	0,65
GOR, free gas (Sm^3 /Sm^3)	10309	6494	4255
GOR, oil (Sm^3 /Sm^3)	-	-	-
Temperature, top res (deg C) :	36	Pressure, top res (bar) :	125

Table 5: Prospect Data PL515, Craigellachie, Lower Åre/ Grey Beds reservoir level

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	**NPD approved?**	
6508/2	Craigellachie	Prospect	NPD will insert data	NPD will insert data	
Play (name / new)		Struct. element	Company reported by / Ref. Doc. / Year		
NPD will insert data		Helgeland Basin	Rocksource / Reliquishment Report/ 2011		

O/G. case	**Resources INPLACE**					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,379	1,96	7,37
Gas 10^9 Sm^3	2,82	12,8	46,8			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,183	0,943	3,56
Gas 10^9 Sm^3	1,65	7,67	27,6			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
	11%		20/80

	Which fractiles are used as Low & High?	Low: P90	High: P10
Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Late Triassic & Early Jurassic	Lower Åre Fm. & Grey Beds

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Early Triassic	Ravnefjeld Fm./ Wordie Creek Fm.	Early Cretaceous	Mid Åre Sealing Unit (MASU): shale & coal layers

Seismic database (2D/3D):	3D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
100%	15%	100%	70%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1340	
Area of closure (km^2)	5	9,5	22
Gross rock vol. (10^9 Sm^3)	0,183	0,735	2,507
HC column in prospect (m)	115	205	360
Reservoir thickness (m)	190	190	200
Net / Gross	0,4	0,5	0,55
Porosity (fraction)	0,26	0,29	0,33
Water Saturation	0,4	0,3	0,2
Bg. NB !(fraction)	0,0061	0,0056	0,0053
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,5	0,6	0,7
Recovery factor, ass. phase	0,4	0,5	0,7
GOR, free gas (Sm^3 /Sm^3)	10309	6494	4255
GOR, oil (Sm^3 /Sm^3)	-	-	-
Temperature, top res (deg C) :	37	Pressure, top res (bar) :	125

Table 6: Prospect Data PL515, Craigellachie North, Melke reservoir level

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	**NPD approved?**
6508/2	Craigellachie North	Prospect	NPD will insert data	NPD will insert data

Play (name / new)	Struct. element	Company reported by / Ref. Doc. / Year
NPD will insert data	Helgeland Basin	Rocksource / Reliquishment Report/ 2011

O/G. case	**Resources INPLACE**					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,00339	0,0195	0,101
Gas 10^9 Sm^3	0,0247	0,126	0,599			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,000602	0,00368	0,0214
Gas 10^9 Sm^3	0,00484	0,0284	0,141			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
	5%		20/80

Which fractiles are used as Low & High?	Low: P90	High: P10

Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Middle Jurassic	Melke Fm.

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Early Triassic	Ravnefjeld Fm./ Wordie Creek Fm.	Cretaceous & Tertiary	Spingar Fm., Nise Fm., Lange Fm., Naust Fm., Tare Fm. & Tang Fm.

Seismic database (2D/3D):	3D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
70%	10%	100%	70%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1375	
Area of closure (km^2)	0,32	0,85	2,5
Gross rock vol. (10^9 Sm^3)	0,0025	0,013	0,06
HC column in prospect (m)	25	45	80
Reservoir thickness (m)	53	55	55
Net / Gross	0,28	0,35	0,4
Porosity (fraction)	0,24	0,25	0,26
Water Saturation	0,4	0,3	0,2
Bg. NB !(fraction)	0,0067	0,0061	0,0057
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,05	0,25	0,45
Recovery factor, ass. phase	0,05	0,21	0,4
GOR, free gas (Sm^3 /Sm^3)	10309	6494	4255
GOR, oil (Sm^3 /Sm^3)	-	-	-
Temperature, top res (deg C) :	37	Pressure, top res (bar) :	120

Table 7: Prospect Data PL515, Craigellachie North, tilje/Upper Åre reservoir level

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	**NPD approved?**
6508/2	Craigellachie North	Prospect	NPD will insert data	NPD will insert data

Play (name / new)	Struct. element	Company reported by / Ref. Doc. / Year
NPD will insert data	Helgeland Basin	Rocksource / Reliquishment Report/ 2011

O/G. case	**Resources INPLACE**					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,0162	0,0677	0,243
Gas 10^9 Sm^3	0,123	0,442	1,48			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,00974	0,0401	0,144
Gas 10^9 Sm^3	0,0837	0,298	1,01			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
	12%		20/80

Which fractiles are used as Low & High?	Low: P90	High: P10

Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Early Jurassic	Tilje &Upper Åre Fm.

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Early Triassic	Ravnefjeld Fm./ Wordie Creek Fm.	Middle Jurassic	Not. Fm.

Seismic database (2D/3D):	3D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
100%	15%	100%	80%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1450	
Area of closure (km^2)	0,72	1,45	2,5
Gross rock vol. (10^9 Sm^3)	0,01	0,03	0,1
HC column in prospect (m)	35	60	100
Reservoir thickness (m)	90	100	105
Net / Gross	0,3	0,45	0,55
Porosity (fraction)	0,25	0,28	0,31
Water Saturation	0,4	0,3	0,2
Bg. NB !(fraction)	0,0065	0,0059	0,0056
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,65	0,68	0,7
Recovery factor, ass. phase	0,55	0,6	0,65
GOR, free gas (Sm^3 /Sm^3)	10309	6494	4255
GOR, oil (Sm^3 /Sm^3)	-	-	-

Temperature, top res (deg C) :	39	Pressure, top res (bar) :	130

Table 8: Prospect Data PL515, Craigellachie North, Lower Åre/ Grey Beds reservoir level

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	**NPD approved?**
6508/2	Craigellachie North	Prospect	NPD will insert data	NPD will insert data

Play (name / new)	Struct. element	Company reported by / Ref. Doc. / Year
NPD will insert data	Helgeland Basin	Rocksource / Reliquishment Report/ 2011

O/G. case	**Resources INPLACE**					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,0251	0,183	0,839
Gas 10^9 Sm^3	0,184	1,2	5,35			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,0121	0,0902	0,442
Gas 10^9 Sm^3	0,108	0,71	3,22			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
	11%		20/80

Which fractiles are used as Low & High?	Low: P90	High: P10

Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Late Triassic & Early Jurassic	Lower Åre Fm. & Grey Beds

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Early Triassic	Ravnefjeld Fm./ Wordie Creek Fm.	Early Cretaceous	Mid Åre Sealing Unit (MASU): shale & coal layers

Seismic database (2D/3D):	3D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
100%	15%	100%	70%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1635	
Area of closure (km^2)	0,55	1,60	4,0
Gross rock vol. (10^9 Sm^3)	0,010	0,066	0,286
HC column in prospect (m)	75	135	235
Reservoir thickness (m)	170	175	180
Net / Gross	0,4	0,5	0,55
Porosity (fraction)	0,26	0,29	0,33
Water Saturation	0,4	0,3	0,2
Bg. NB !(fraction)	0,006	0,0056	0,0053
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,5	0,6	0,7
Recovery factor, ass. phase	0,4	0,5	0,7
GOR, free gas (Sm^3 /Sm^3)	10309	6494	4255
GOR, oil (Sm^3 /Sm^3)	-	-	-

Temperature, top res (deg C) :	45	Pressure, top res (bar) :	150

Table 9: Prospect Data PL515, Oban, Melke reservoir level

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	**NPD approved?**
6508/2	Oban	Prospect	NPD will insert data	NPD will insert data
Play (name / new)		Struct. element	Company reported by / Ref. Doc. / Year	
NPD will insert data		Helgeland Basin	Rocksource / Reliquishment Report/ 2011	

O/G. case	**Resources INPLACE**					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,0991	0,526	2,00
Gas 10^9 Sm^3	0,74	3,51	11,3			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,0125	0,104	0,467
Gas 10^9 Sm^3	0,104	0,82	3,09			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
	5%		20/80

Which fractiles are used as Low & High?	Low: P90	High: P10

Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Middle Jurassic	Melke Fm.

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Early Triassic	Ravnefjeld Fm./ Wordie Creek Fm.	Cretaceous & Tertiary	Spingar Fm., Nise Fm., Lange Fm., Naust Fm., Tare Fm. & Tang Fm.

Seismic database (2D/3D):	3D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
80%	10%	100%	60%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1270	
Area of closure (km^2)	5,25	17,5	31
Gross rock vol. (10^9 Sm^3)	0,069	0,4232	1,349
HC column in prospect (m)	50	85	145
Reservoir thickness (m)	50	55	60
Net / Gross	0,2	0,3	0,35
Porosity (fraction)	0,24	0,25	0,26
Water Saturation	0,4	0,3	0,2
Bg. NB !(fraction)	0,0067	0,0061	0,0057
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,05	0,25	0,45
Recovery factor, ass. phase	0,05	0,21	0,4
GOR, free gas (Sm^3 /Sm^3)	10309	6494	4255
GOR, oil (Sm^3 /Sm^3)	-	-	-
Temperature, top res (deg C) :	33	Pressure, top res (bar) :	100

Table 10: Prospect Data PL515, Oban, Tilje/ Upper Åre reservoir level

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	**NPD approved?**
6508/2	Oban	Prospect	NPD will insert data	NPD will insert data
Play (name / new)		Struct. element	Company reported by / Ref. Doc. / Year	
NPD will insert data		Helgeland Basin	Rocksource / Reliquishment Report/ 2011	

O/G. case	**Resources INPLACE**					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,191	1,23	5,42
Gas 10^9 Sm^3	1,45	8,07	34,1			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,114	0,73	3,24
Gas 10^9 Sm^3	0,97	5,43	23,1			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
	11%		20/80

Which fractiles are used as Low & High?	Low: P90	High: P10

Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Early Jurassic	Tilje &Upper Åre Fm.

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Early Triassic	Ravnefjeld Fm./ Wordie Creek Fm.	Middle Jurassic	Not. Fm.

Seismic database (2D/3D):	3D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
100%	15%	100%	70%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1370	
Area of closure (km^2)	6	18	37
Gross rock vol. (10^9 Sm^3)	0,117	0,5873	2,26
HC column in prospect (m)	50	90	155
Reservoir thickness (m)	200	210	210
Net / Gross	0,3	0,45	0,55
Porosity (fraction)	0,25	0,28	0,31
Water Saturation	0,4	0,3	0,2
Bg. NB !(fraction)	0,0065	0,0059	0,0056
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,65	0,675	0,7
Recovery factor, ass. phase	0,55	0,6	0,65
GOR, free gas (Sm^3 /Sm^3)	10309	6494	4255
GOR, oil (Sm^3 /Sm^3)	-	-	-

Temperature, top res (deg C) :	36	Pressure, top res (bar) :	110

Table 11: Prospect Data PL515, Oban, Lower Åre/ Grey Beds reservoir level

Block	Prospect name	Disc/Prosp/Lead	Prosp ID (or New!)	**NPD approved?**
6508/2	Oban	Prospect	NPD will insert data	NPD will insert data
Play (name / new)		Struct. element	Company reported by / Ref. Doc. / Year	
NPD will insert data		Helgeland Basin	Rocksource / Reliquishment Report/ 2011	

O/G. case	**Resources INPLACE**					
GAS	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,0198	0,182	1,02
Gas 10^9 Sm^3	0,146	1,18	6,63			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0,00993	0,096	0,533
Gas 10^9 Sm^3	0.0863	0,705	3,91			

Prob. discovery: -Technical (oil+gas case)		-Prob for oil/gas case	
9%		20/80	

Which fractiles are used as Low & High?	Low: P90	High: P10

Type of trap	Waterdepth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)
Structural/Fault block	360m	Late Triassic & Early Jurassic	Lower Åre Fm. & Grey Beds

SourceRock, Chrono	SourceRock, Litho	Seal, Chrono	Seal, Litho
Permian/Early Triassic	Ravnefjeld Fm./ Wordie Creek Fm.	Early Cretaceous	Mid Åre Sealing Unit (MASU): shale & coal layers

Seismic database (2D/3D):	3D		
Prob –Reservoir (P1)	- Charge (P3)	- Trap (P2)	- Retention (P4)
100%	15%	100%	60%

Parametres:	Low	Base	High
Depth to top of prospect (m)		1615	
Area of closure (km^2)	0,7	2,5	11,5
Gross rock vol. (10^9 Sm^3)	0,00648	0,0637	0,343
HC column in prospect (m)	50	85	150
Reservoir thickness (m)	270	280	290
Net / Gross	0,4	0,52	0,55
Porosity (fraction)	0,26	0,28	0,33
Water Saturation	0,4	0,3	0,2
Bg. NB !(fraction)	0,006	0,0056	0,0053
1/Bo. NB !(fraction)	-	-	-
Recovery factor, main phase	0,5	0,6	0,7
Recovery factor, ass. phase	0,4	0,5	0,7
GOR, free gas (Sm^3 /Sm^3)	10309	6494	4255
GOR, oil (Sm^3 /Sm^3)	-	-	-
Temperature, top res (deg C) :	45	Pressure, top res (bar) :	150

5. Technical evaluations

The reservoir engineering and technical economic evaluations indicate that the main Craigellachie prospect would need to be larger than the calculated Pmean (9.71 GSm3) in the 'rolled-up' segment scenario (where all stratigraphic levels are tested) before it could be considered commercially viable. The project is therefore considered high risk by the licence due to the low chance of exploration success combined with a development project break-even point at a level greater than the defined P50 and mean case volumes.

The technical documentation supporting this work is outlined below. The MEFS were calculated based on tieback scenario to Norne where 1 exploration well, 1 appraisal well and 6 horizontal producers would be utilized in a subsea gas development scenario. The development modelled would be on-stream by 2020.

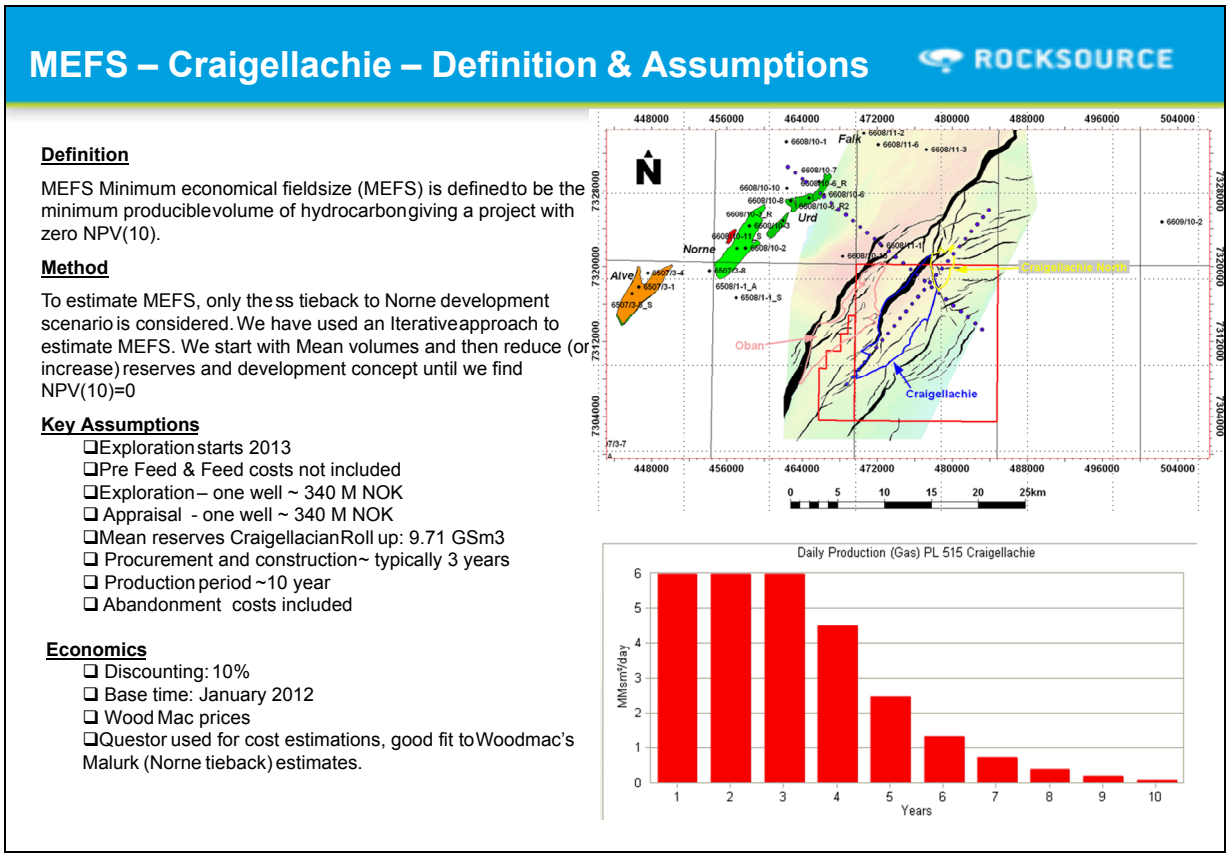
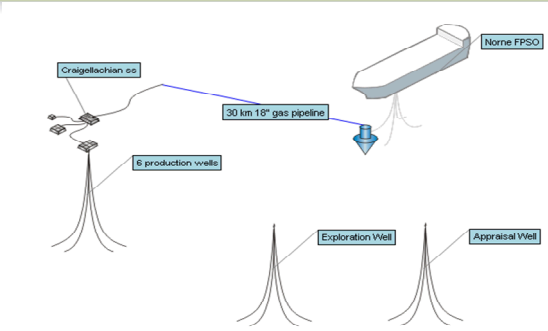


Figure 15: MEFS definition and assumptions for the Craigellachie prospect on PL515.

Craigellachian Roll up – 9.71 GSm3
SS tieback to Norne FPSO

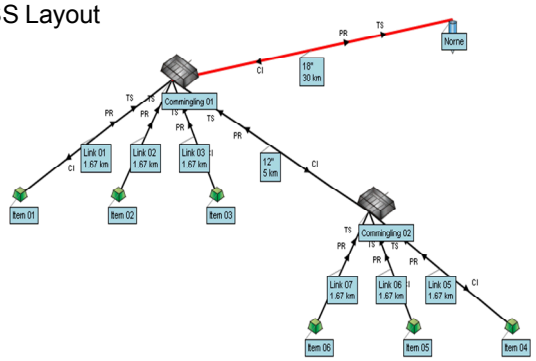
ROCKSOURCE



Project Summary:

- Sub sea gas development
- Mean reserves Craigellacian Roll up: 9.71 GSm3
- 1 Exploration well
- 1 Appraisal well
- 6 Horizontal producers
- 30 km gas pipeline to Norne FPSO
- Exploration Well Spud 2013
- 1st gas: Jan 2020

SS Layout



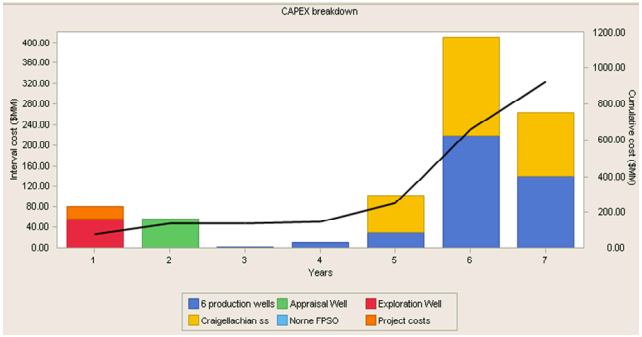
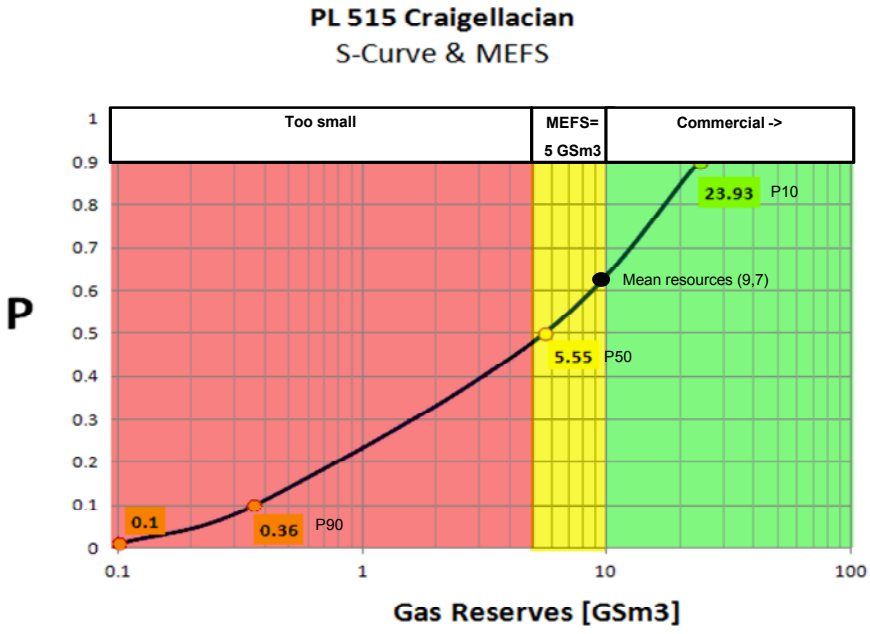


Figure 16: Craigellachie tieback solutions to Norne.

Craigellachian S-Curve & MEFS

ROCKSOURCE



Conclusion: NPV(10) = 0 @ P50 volumes -> Not good enough to be drilled

Figure 17: MEFS illustration in comparison to the calculated P90, P50, Pmean and P10 volumes.

6. Conclusions

The targets for the PL515 prospects have been the Upper Triassic to Jurassic reservoir sections, proven in several wells west and east of the Nordland Ridge. Several studies have been performed in the PL515 area in order to understand the geology and possible petroleum system. Source and migration has been identified as the key risk within the area and both seismic and EM have failed to indicate presence of hydrocarbons within the prospects. The prospect risk therefore remains high and the project economics are challenging. The license team has therefore decided to relinquish the license.

Several large scale structures are identified at the Permian anhydrite marker, and although not a focus for mapping using the current RS1002-3D seismic, the Permian source and possibly Triassic reservoirs are identified as being a key potential for future exploration. This petroleum potential cannot currently be examined by CSEM data due to the burial depth (CSEM general limit of approximately 2000m), and for similar reasoning de-risking using quantitative geophysics is also problematic. Qualitative geophysical observations are perturbed due to the rather low quality of seismic data below the Triassic salt layers. As a result of this and due to the limited understanding of the source rocks, the source maturity, and lack of well data at this depth in the area; this deep source and reservoir potential is regarded as too high risk to continue exploring at the current stage.

The general knowledge level within the area of license PL515 is high due to all the studies performed, and it is believed that there will be new interest in the area in the future when the regional knowledge about Permian and alternatively Triassic source rock potential is improved.

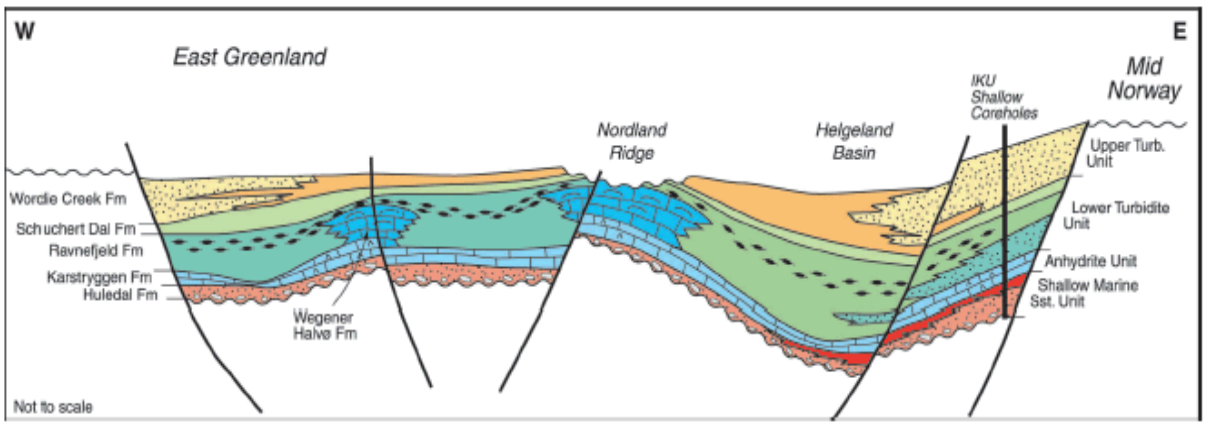


Figure 18: Schematic reconstruction of Late Permian-Early Triassic basin between Norway and Greenland with source rocks and possible reservoir rocks indicated. Nordland Ridge, where PL515 is located to the East, is indicated in the central part of the section (section from Bugge et al., 2002).