PL763 Relinquishment Report

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1 Key License History

PL763 was originally awarded as part of the APA 2013, on the 7th of February 2014. Repsol Exploration Norge AS now renamed Repsol Norge AS, was appointed operator of the license with a 40% share and the remaining ownership was distributed as follows: Atlantic Petroleum Norge AS 30%, Rocksource Exploration Norway AS now renamed Point Resources AS 30%. The partnership distribution remained unchanged from the award to the Drill or Drop decision. The initial Drill or Drop decision date was the 7th of February 2016.

Initial work obligations and work periods

Within 2 years or before 07/02/2016
- Buying existing 3D seismic (ST10004)
- Conduct relevant geological and geophysical studies
- Drill or Drop decision before 07/02/2016

Within 4 years or before 07/02/2018
- Take a "concretization decision" (BOK - Beslutning Om Konkretisering) based on feasibility studies

Within 5 years or before 07/02/2019
- Decide on commerciality and start preparation for a plan for development (BOV - Beslutning Om Videreføring)

Within 6 years or before 07/02/2020
- Decide to submit a plan for development and operation to MPE

Any applications and grants for extension of deadlines

Repsol Norge AS asked for 3-month extension with the support of partners in January 2016. The extension was granted by the government in April 2016. Although partners didn't support a drill decision the operator still considered that there were prospective volumes and a probable business case in the license and therefore requested the extension in order to find new partners and regroup the license.

Overview of meetings held

- License Kick off Meeting: 26th of February 2014
- EC/MC Meeting: 17th of November 2014
- Work Meeting: 15th of April 2015
- EC/MC Meeting: 13th of November 2015

Reason for Relinquishment

The work program on the license was completed by buying the existing 3D seismic (ST1004) and conducting relevant G&G studies in the past years. Several prospects and leads were mapped and completely evaluated and Karius prospect was identified as a good candidate to enter into the next phase in the license committing to an exploration well. A recommendation to drill the main prospect was given to partners. However, the proposal was not supported by Atlantic Petroleum Norge AS and Point Resources AS.

Repsol Norge AS decided to pursue the drill option and asked for 3 months extension to re-group the license with the approval from the existing partners.

Repsol Norge AS has put considerable effort trying to encounter new companies to drill the main prospect in the license. However, due to the tight timing and the current marked situation it was not possible to re-group the license and for that reason PL763 was relinquished.

Figure 1.1

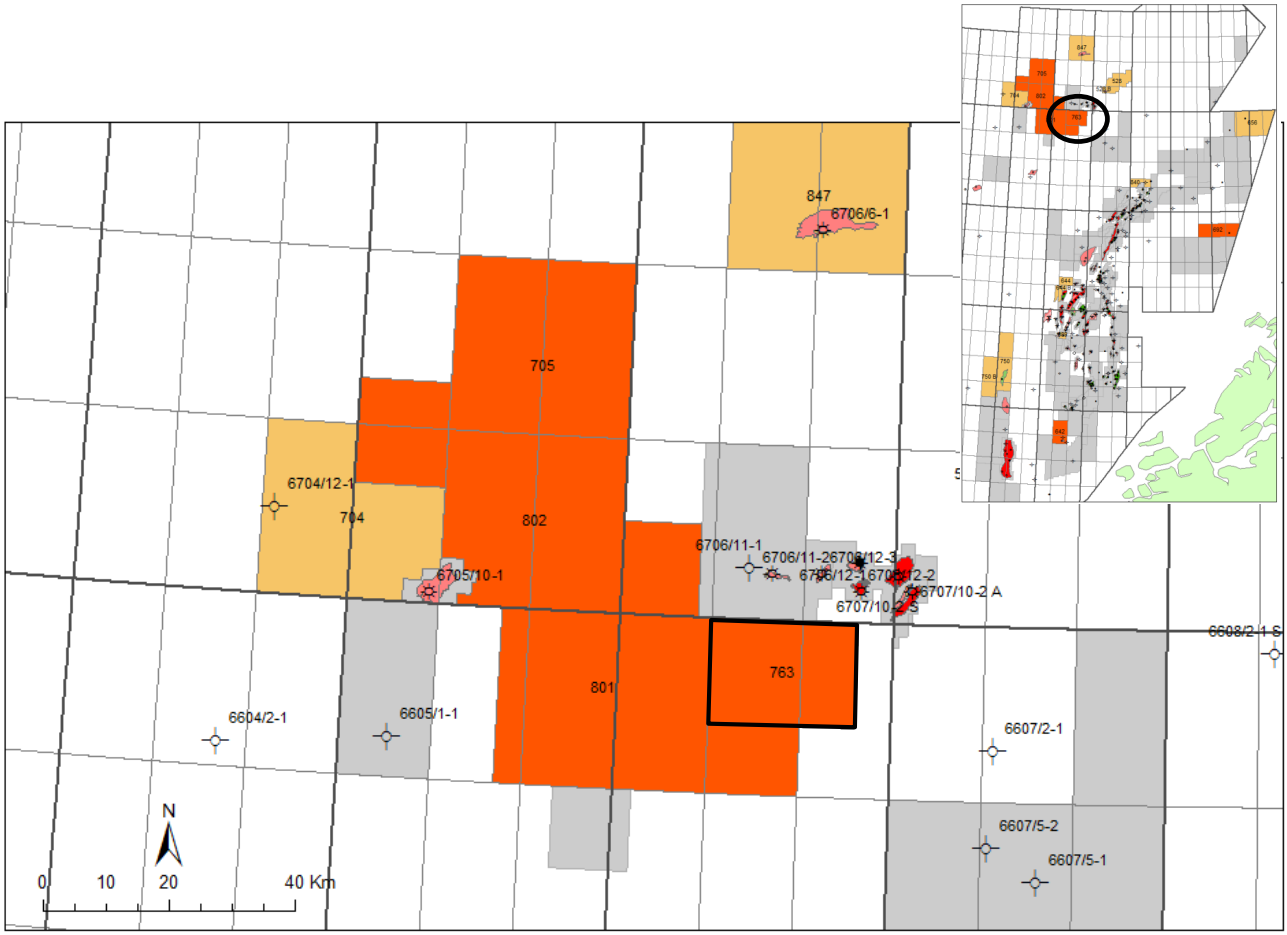

Figure 1.1 Base map showing location of PL763 license

2 Database

Well Database

The well database (Table 2.1) is a selection of publically available wells in the North Vøring Basin. The wells are key wells in adding value to the license in terms of tying seismic to wells, analysing reservoir properties, correlating reservoir conditions to area of interrest, inputs for fault-seal analysis and giving valuable input and calibration points to the semi-regional basin model that covers the license and it's vicinity. All wells in the common database were drilled and released before the license was awarded.

Table 2.1 Well Database for PL763

Well	Operator / Drilling year	TD depth (mMD) and age	Results	Well used for
6707/10-1	BP Norway, 1997	5039, Late Cretaceous	Gas discovery in Late Cretaceous Nise and Kvitnos Fm.	Seismic well-tie, reservoir correlation and condition, AVO work, petrophysical evaluation, basin modelling
6706/12-1	StatoilHydro, 2008	3950, Late Cretaceous	Gas discovery in Late Cretaceous Nise Fm.	Seismic well-tie, reservoir correltation and condition, petrophysical evaluation, basin modelling
6605/1-1	StatoilHydro, 2009	3947, Late Cretaceous	Dry with gas shows in Late Cretaceous Springar Fm.	AVO work
6705/10-1	StatoilHydro, 2009	3775, Early Cretaceous	Gas discovery in Late Cretaceous Springar Fm.	Reservoir correlation and condition, petrophysical evaluation, basin modelling
6706/11-1	Den Norske Stats Oljeselskap, 1998	4317, Late Cretaceous	Dry with gas shows in Late Cretaceous Nise Fm.	Seismic well-tie, reservoir correlation and condition, petrophysical evaluation, basin modelling
6707/10-2 S	StatoilHydro, 2008	3365, Late Cretaceous	Gas discovery in Late Cretaceous Nise and Kvitnos Fm.	Reservoir correlation and condition, petrophysical evaluation, basin modelling
6707/10-2 A	StatoilHydro, 2008	4850, Late Cretaceous	Gas discovery in Late Cretaceous Kvitnos Fm.	Reservoir correlation and condition, petrophysical evaluation, basin modelling
6607/2-1	Eni Norge, 2007	3526, Late Cretaceous	Dry with poor shows in Late Cretaceous Springar Fm.	Reservoir correlation and condition, basin modelling

Seismic Database

The seismic database consist of publically available 2D data, multiclient 2D data and publically available 3D datasets within and in the vicinity of PL763 in addition to the purchased angle stacks and reprocessed version of 3D survey ST10004 which was cut to an area within the license boundaries. Figure 2.1 and Table 2.2 illustrates and lists the seismic datasets used in the license.

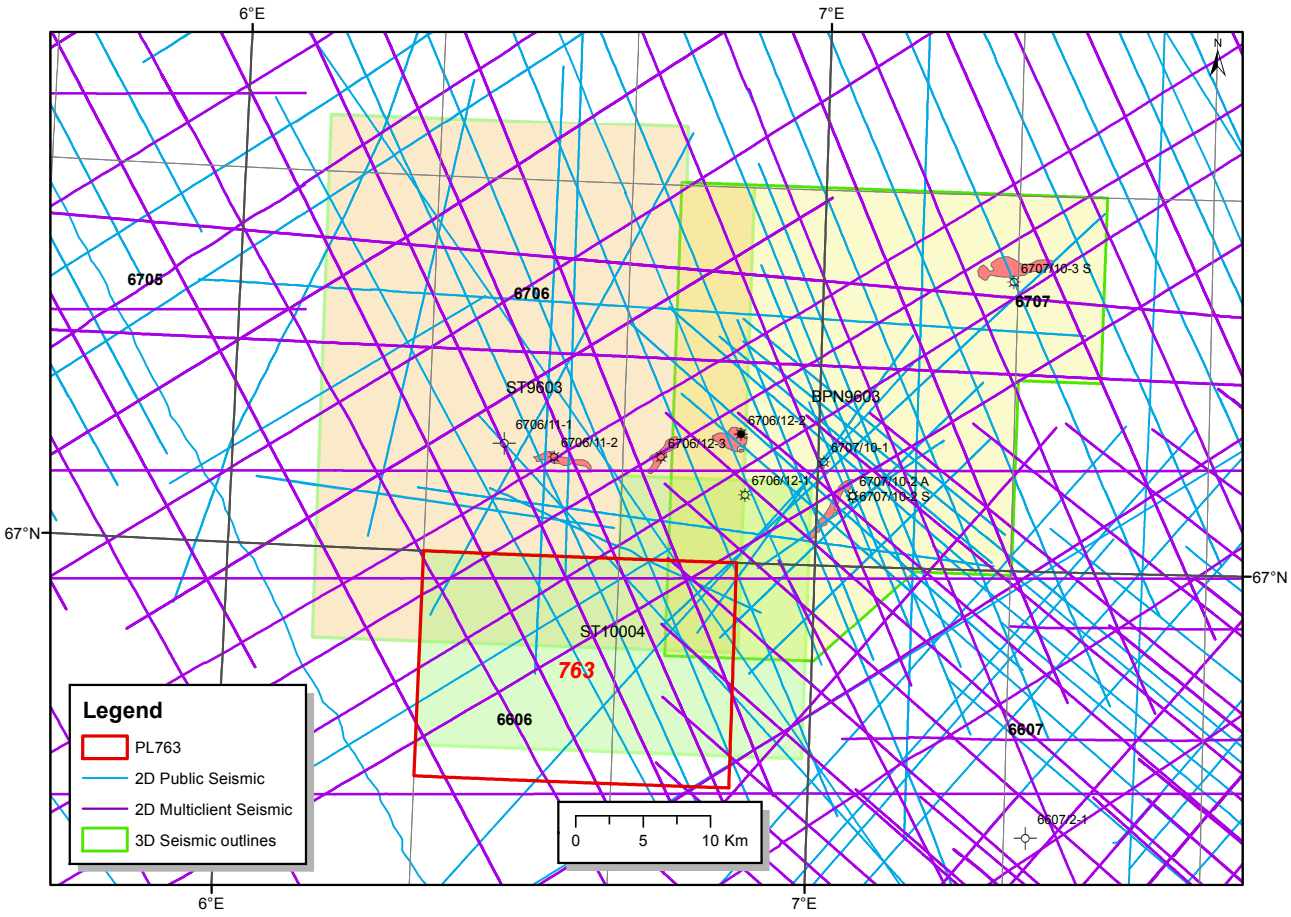

Figure 2.1 Seismic Database for PL763

Table 2.2 Seismic Database for PL763

Public 2D Seismic	Multiclient 2D Seismic	Public 3D Seismic	Purchased angle stacks and reprocessed 3D seismic
GVN-92, MN88-1, NPD-MB-88_R92	LO00RE	ST10004	ST10004
NPD-ML01-72_77, NPD-TB-85	MV01RE	BPN9601	
NPD-VOERB-89MER, NPD-VOERB-89WEST	MNR04RE06	ST9603	
NPD-VOERB-90, NPD-VOERB-86	MNR09		
OV2003, SG9404, SG9405, ST8704, VBT-94	SPECTRUM_07RE		
VDS95, VRB-85-86, VRB-87	NRDT98RE		

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3 Review of Geological Framework

Studies Performed

The studies performed to develop the prospectivity in the license are summarize in the Table 3.1

Table 3.1 Studies perform in PL763 to develop the prospectivity in the license

Study Name	Year	Author
Petrophysical interpretaion of the Cretaceous section in the offset wells	2014	REPSOL
Seismic interpretation of ST10004	2014-2015	REPSOL
Volumetric representation of the remobilized ooze bodyes present in the area	2014	GEOTERIC
AVO Analysis, to stablish wether amplitudes can provide useful info with regard to occurence of HC.	2015	REPSOL
Update of he semi-Regiona Basin Modelling	2015	REPSOL
3D Modelling of a SW-NW 2D CSEM line along Karius prospect.	2015	REPSOL
Fault Seal analysis, to reduce trap risk and estimate potential HC column that could be trapped in Karius.	2015	REPSOL
Exploration well planning	2015	REPSOL
Technical and Economic evaluation of a portential discovery case	2015	REPSOL

Results of block evaluation

The work carried out during the initial exploration phase in the license was mainly focused to better define the prospects and leads identified in the application and to try to de-risk them in order the get a drillable prospect. The operator put especial effort trying to delineate the remobilized ooze bodies as they create image problems in the deep section when present. Special effort was dedicated as well to the CSEM data as it was considered a powerful tool to de-risk the prospects in absence of a clear DHI's. The shallow geology makes the seismic amplitudes at reservoir level to show limited reliability. However, the CSEM is not expected to be affected by the shallow geology as much as the seismic. A 3D modelling of a 2D seismic line was carried out internally by the operator. The modelling showed evidence of high resistivity values at Nise level. Results are preliminary as just one 2D line was available for the study.

Due to the mentioned remobilized ooze bodies in the shallow geology AVO is non conclusive on the main prospect Karius. The amplitudes are affected by the shallow ooze. This does not mean that amplitudes cannot be used to de-risk the prospect. Figure 3.1 shows a RMS amplitude map extracted with a 60 ms window from top of the Nise Formation and deeper. This clearly shows seismic tuning between the top reservoir and the hydrocarbon contact close to the discovery outlines in the Aasta Hansteen area. Indications of seismic tuning are also seen in the Karius area and in several locations in the vicinity of the prospect. Due to the shadowing effects of the ooze bodies the amplitudes does not show a clear delineation for the Karius prospects, but an indication of hydrocarbons migrated into the area is given.

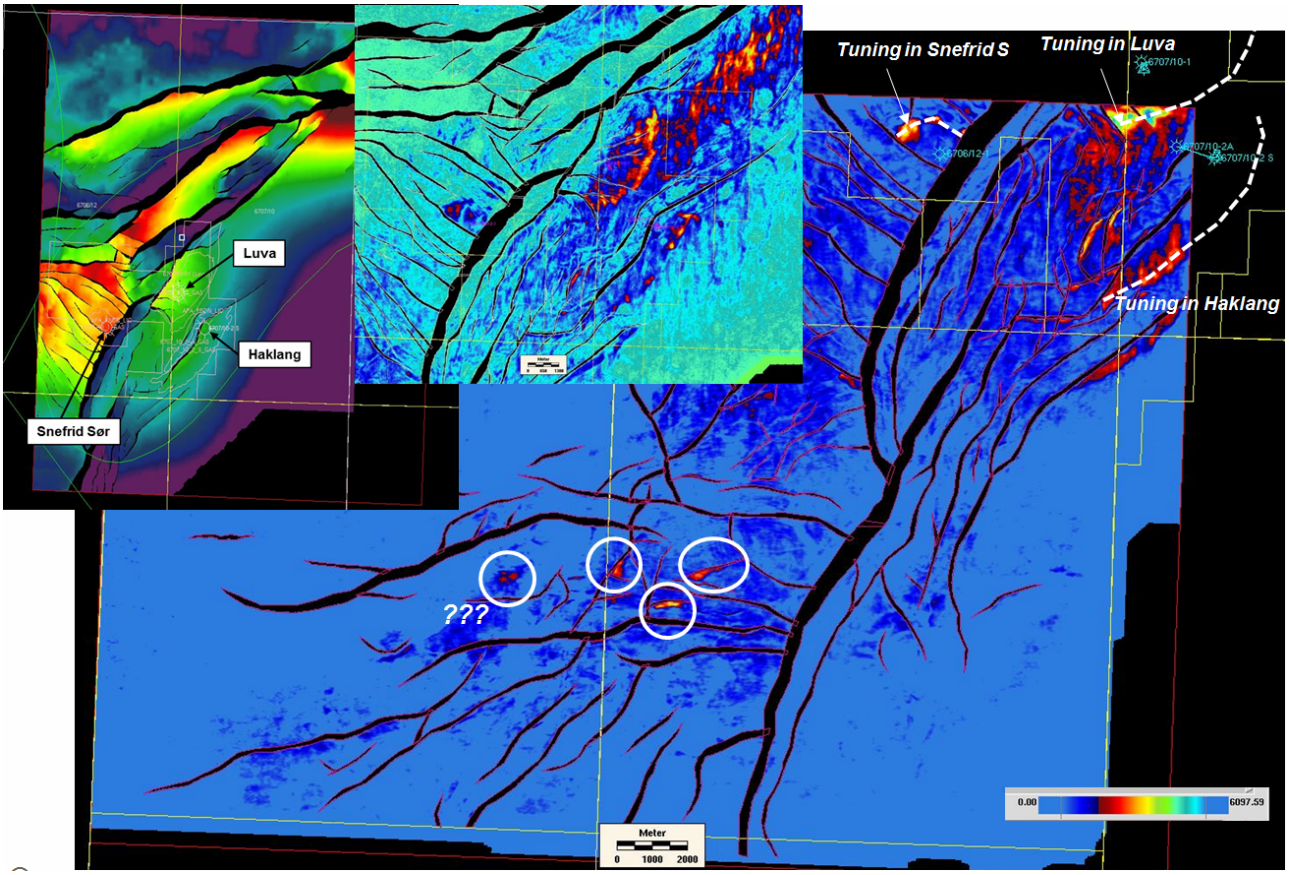

Figure 3.1 Top Nise RMS Amplitude Map. *RMS amplitude map extracted with a 60 ms window from top of the Nise Formation and deeper*

The technical evaluation performed in the license just confirmed the initial ideas from the moment of the application, leading to more constrained interpretation and allowing a more accurate evaluation of the main prospect.

4 Prospect Update

The PL763 license lies on the southern flange of Vema Dome with the main prospect Karius located approximately 20 km south west of the Aasta Hansteen discoveries. The work carried out during the license period focused on the evaluation of the exploration potential of the Late Cretaceous Springar, Nise, Kvitnos and Lysing Formations. Figure 4.1shows the identified prospects within the license, two in the Springar Formation and five in the Nise Formation. Table 4.1 Summarizes the main characteristics of each prospect.

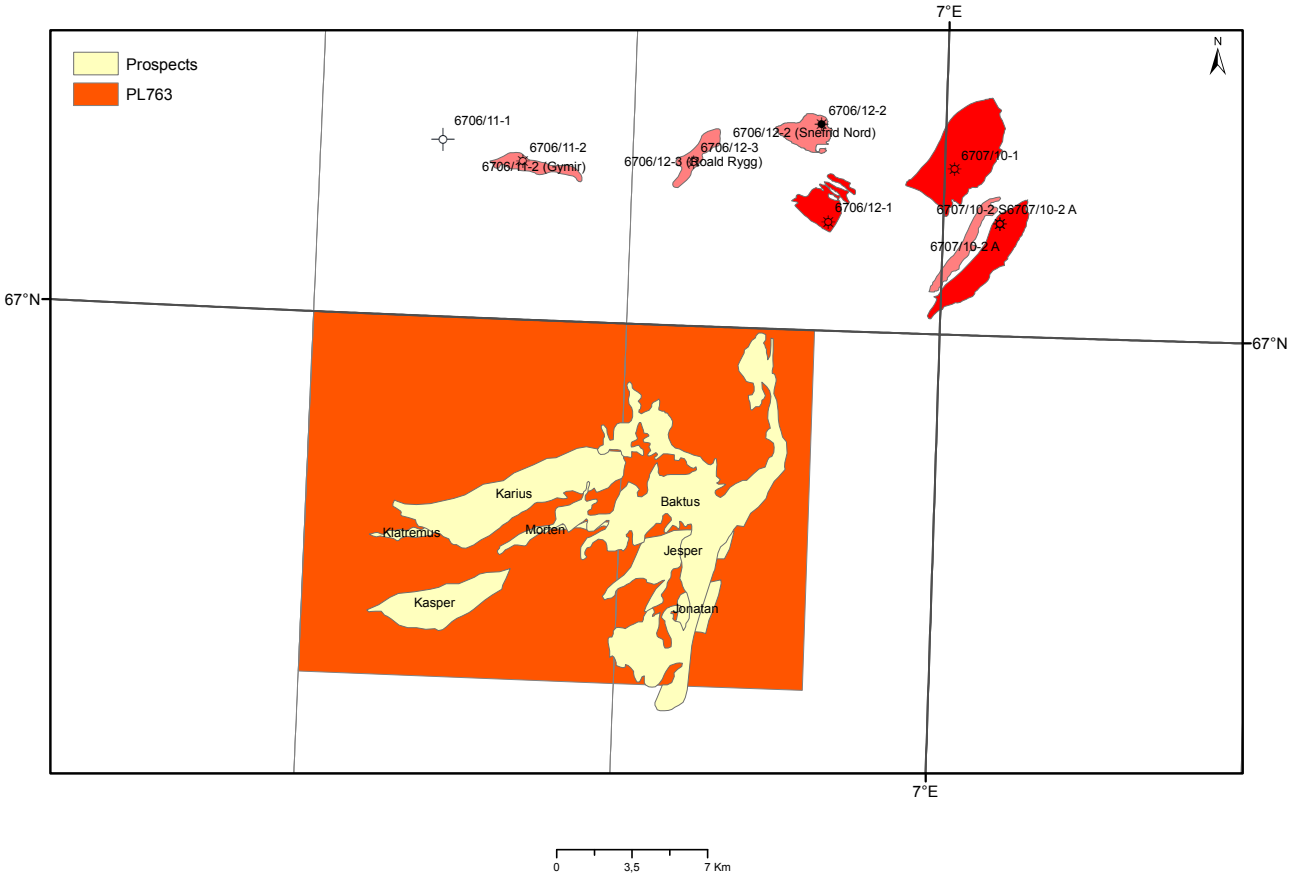

Figure 4.1 Identified prospects in PL763

Table 4.1 Summary of the prospects identified in PL763

Name	Prospect / Lead	Age of Reservoir	Reservoir Depth (m MSL)	Geological Chance of success (0.00-1.00)	Exp. Fluid	P90-Pmean-P10 Recoverable volumes (10^9Sm3) Gas/Cond
Karius	Prospect	Nise Fm / Santonian-Campanian	3100	0.25	G & Cond	3.7-11.2-22.10/0.11-0.37-0.78
Kasper	Prospect	Nise Fm / Santonian-Campanian	3825	0.23	G & Cond	4.56-7.62-11.52/0.06-0.13-0.22
Jesper	Prospect	Nise Fm / Santonian-Campanian	4000	0.23	G & Cond	4.87-8.98-14.41/0.06-0.15-0.27
Jonatan	Prospect	Nise Fm / Santonian-Campanian	4300	0.2	G & Cond	4.08-6.85-10.36/0.05-0.12-0.21
Morten	Prospect	Nise Fm / Santonian-Campanian	3700	0.23	G & Cond	1.02-1.59-2.29/0.01-0.03-0.05
Baktus	Prospect	Springar Fm / Maastrichtian	3100	0.17	G & Cond	4.08-16.17-35.57/0.07-0.26-0.53
Klatermus	Prospect	Springar Fm / Maastrichtian	2700	0.18	G & Cond	0.34-1.00-1.95/0.01-0.02-0.03

Karius Prospect

Karius is the main prospect in the license. The prospect is defined as a 3-way dip, fault dependent closure against a SW-NE trending normal fault. This fault juxtaposes Upper Cretaceous Springar mudstones against the Nise sandstones providing the lateral seal for the prospect. Top seal is provided by the upper Nise mudstones. The reservoir consists of Santonian-Campanian basin floor fans of the Nise Fm which has been proved to have very good reservoir quality by the discoveries in the Aasta Hansteen area to the North of PL763. The main risk was attributed to the lateral seal as presence of sandstones in the footwall of the main fault could work as thief sands draining the prospect. Medium risk was considered as well for the Effective migration pathway as no DHI was present at reservoir level. Figure 4.2 shows depth map for top Nise Formation as well as cross sections through the Karius prospect.

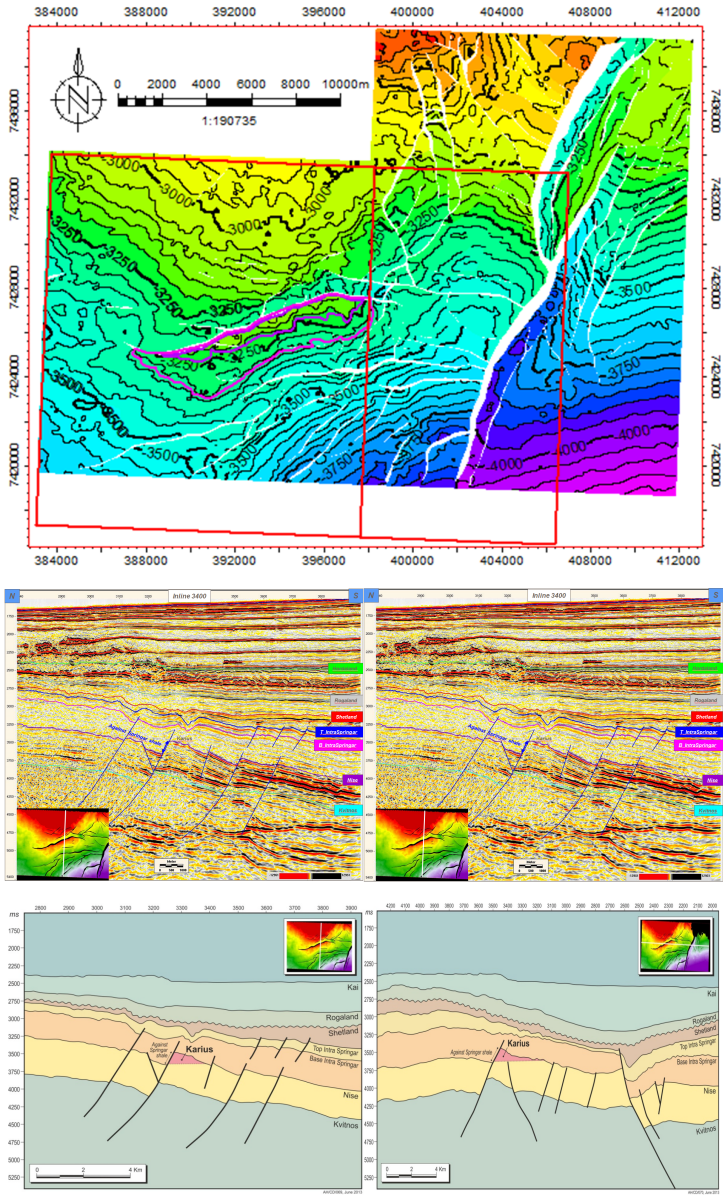

Figure 4.2 Top Nise depth map and seismic cross sections through the Karius prospect. CI = 50 m

Main effort in the license has been directed to de-risk the mentioned elements in order to be able to create a economically viable prospect. A Fault Seal Analysis was carried out. Sand-shale juxtaposition was identified as the most favorable sealing mechanism for the Karius prospect. However, the potential presence of a thin sand layer within the Lower Springar mudstones can't be ruled out and therefore the risk remained as in the previous evaluation.

Migration to Karius prospect was consider as well a Risk as there is no clear DHI in the prospect while all the discoveries to the North of PL763 seems to have clear flat spots. The absence of a clear DHI is not considered a negative factor for the operator as it can be explained by the absence of good seismic quality image below the ooze. Furthermore the revised basin modelling keeps pointing to a favorable location of the Karius prospect to receive the hydrocarbons generated in the Nagrid Syncline.

The final chance of geological success for Karius is 25,8%. Table 4.2 summarises the parameters used in the resource calculations and pobability estimates for the prospect.

Table 4.2 Summary of Karius prospect (NPD)

Block	6606/2&3	Prospect name	Karius	Discovery/Prosp/Lead		Prosp ID (or New!)	NPD will insert value	NPD approved (Y/N)	
Play name	NPD will insert value	New Play (Y/N)		Outside play (Y/N)					
Oil, Gas or O&G case:	Gas&Cond	Reported by company	Repsol Norge AS	Reference document	0			Assessment year	2015
This is case no.:		Structural element	Vema Dome	Type of trap	Structural	Water depth [m MSL] (>0)	1150	Seismic database (2D/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)								
	Gas [10^9 Sm^3] (>0.00)	5.60	9.00	164.00	32.50				
Recoverable resources	Oil [10^6 Sm^3] (>0.00)					0.11	0.13	0.37	0.78
	Gas [10^9 Sm^3] (>0.00)	3.70	6.10	11.20	22.10				
Reservoir Chrono (from)	Santonian	Reservoir litho (from)	Nise Fm.	Source Rock, chrono primary	Cenomanian-Turonian	Source Rock, litho primary	Lange Fm.	Seal, Chrono	Maastrichtian
Reservoir Chrono (to)	Campanian	Reservoir litho (to)	0	Source Rock, chrono secondary	Oxfordian-Ryazanian	Source Rock, litho secondary	Spekk Fm.	Seal, Litho	Springar Fm.
Probability [fraction]									
Technical (oil + gas + oil & gas case) (0.00-1.00)	0.26	Oil case (0.00-1.00)		Gas case (0.00-1.00)	1.00	Oil & Gas case (0.00-1.00)	0.00		
Reservoir (P1) (0.00-1.00)	0.90	Trap (P2) (0.00-1.00)	0.49	Charge (P3) (0.00-1.00)	0.90	Retention (P4) (0.00-1.00)	0.65		
Parametres:	Low (P90)	Base	High (P10)	*Comments*					
Depth to top of prospect [m MSL] (> 0)	3225	3275	3325						
Area of closure [km^2] (> 0.0)	6.20	11.60	18.20						
Reservoir thickness [m] (> 0)	18.00	40.00	70.00						
HC column in prospect [m] (> 0)	125.00	175.00	225.00						
Gross rock vol. [10^9 m^3] (> 0.000)	39.60	57.70	75.00						
Net / Gross [fraction] (0.00-1.00)	0.20	0.40	0.90						
Porosity [fraction] (0.00-1.00)	0.22	0.24	0.26						
Permeability [mD] (> 0)		500.00							
Water Saturation [fraction] (0.00-1.00)	0.40	0.30	0.20						
Bg [Rm3/Sm3] (< 1.0000)	0.0036	0.0035	0.0034						
1/Bo [Sm3/Rm3] (< 1.00)									
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)									
Recov. factor, oil main phase [fraction] (0.00-1.00)									
Recov. factor, gas ass. phase [fraction] (0.00-1.00)									
Recov. factor, gas main phase [fraction] (0.00-1.00)	0.6000	0.7000	0.8000						
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0.6000	0.7000	0.8000	For NPD use:					
Temperature, top res [°C] (>0)	70			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)	336			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

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5 Technical Evaluations

A full technical evaluation and economic analysis was carried out regarding a possible development in case of discovery for the Karius prospect. The resource estimate for the prospect was done using the probabilistic resource estimation software from Rose & Associates. The petrophysical interpretation performed in-house provided the input for reservoir parameters. The hydrocarbon properties were extrapolated from the discoveries in the Aasta Hansteen area which proved the presence of a working petroleum system in the area.

Depletion (with natural support from aquifer) was considered as the reservoir drive mechanism for the development scenario. Development Wells were designed as slanted wells with open hole completions.

Due to the proximity to existing facilities the development concept selected was a tie back to Aasta Hansteen SPAR platform.

6 Conclusions

Seven prospect were identified in PL763 within the Upper Cretaceous section. Based on the technical work the Karius prospect was considered the main prospect in the license and the best candidate to be drilled. Dry gas with small amounts of condensate are the expected fluids in Karius giving the mean recoverable resources 11.20 10^9 Sm^3 Gas and 0.37 10^9 Sm^3 Condensate. The geological chance of success is 25.8% for the Karius prospect.

The economic evaluation performed by the operator resulted in Karius having prospective volumes and a possible business case and therefore the decision to drill the prospect was proposed by Repsol Norge As to the rest of the partnership. Atlantic Petroleum Norge AS and Point Resources AS were not in the situation to support the drilling and therefore the result was a drop decision. However, Repsol Norge AS requested with the support of the partners a 3-month extension of the Drill or Drop in order to find new partners and re-group the license with the objective of taking a drill decision.

Repsol Norge AS put considerable effort trying to encounter new companies to drill the main prospect in the license. However, due to the tight timing and the current market situation it was not possible to re-group the license and for that reason PL763 had to be relinquished.