PL745S Relinquishment Report

Relinquishment of PL745S, parts of block 29/3, 30/1 and 30/2

Summary

Reference is made to the letter sent to MPE dated September 21st, 2018 (our reference: AU-EXP NUKE NS-00104) regarding the relinquishment of production license 745S (PL745S). This report outlines the key license history, database, prospects and evaluations of PL745S and fulfils the requirement by the NPD for a license status report.

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1 KEY LICENSE HISTORY

The PL745S is a stratigraphic license from Top Cretaceous and down. The license is located in the Rungne Sub-basin south of the Valemon area. Equinor equity is 30%. The area was evaluated in APA 2013 and license was awarded in Feb. 7th, 2014 with Shell (20%), Spirit (20%) and Petoro (30%) as partners. Work obligation was acquiring new seismic (NNS-MEGASURVEYPLUS PSDM). The original DoD was Feb. 7th, 2017. A two-years postponement (in two steps 0,5+1,5 year) has been applied for, motivated by the availability of the new CGG broadband seismic. This was authorized, and the DoD dead-line moved to February 7th, 2019.

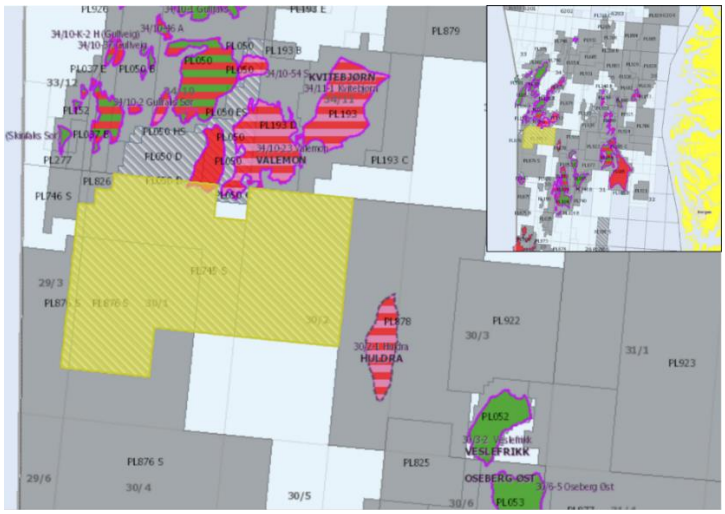

Figure 1.1 – Location map for PL745S in the North Sea

Work commitment

Work obligations were to:

- Acquire seismic
- Drill or Drop decision: 07.02.2019
- BoK: 07.02.2021
- BoV: 07.02.2023
- PDO: 07.02.2024

Application for extension of deadlines in the initial period, December 2nd, 2016. NPD approval February 9th, 2016. Application for extension of deadlines in the initial period, July 3rd, 2017. NPD approval August 24th, 2017.

Management and Exploration committee meetings

The following Management and Exploration committee meetings have been held:

- 2014, May 15th: EC/MC meeting
- 2014, Nov. 12th: EC/MC meeting
- 2015, Feb. 16th: EC meeting
- 2015, Des. 7th: EC/MC meeting
- 2016, Feb. 25th: EC meeting
- 2016, Oct. 26th: EC/MC meeting
- 2017, June 14th: EC/MC meeting
- 2017, Nov. 8th: EC/MC meeting
- 2018, June 6th: EC/MC meeting

Reasons for license relinquishment

The Jesper Øst and Jesper Vest are the main prospects identified in the license. Both belongs to the mid-Jurassic Brent Group. The Jesper area is structurally complex and HPHT conditions are expected. The reservoir is expected to be marginal with uncertain lateral communication. The chance of success is low due to the high reservoir risk. Total Pg is 0.27 for both prospects.

2 DATABASE

2.1 Seismic data

PL745S prospectivity was initially evaluated on the NNS_MS+ survey. In 2017-2018, the license was re-visited using the newly licensed CGG16001 NVG and CGG18001 NVG (Pre SDM EFT). The overall seismic quality is good, and the structural image of the target is improved in comparison with the original data.

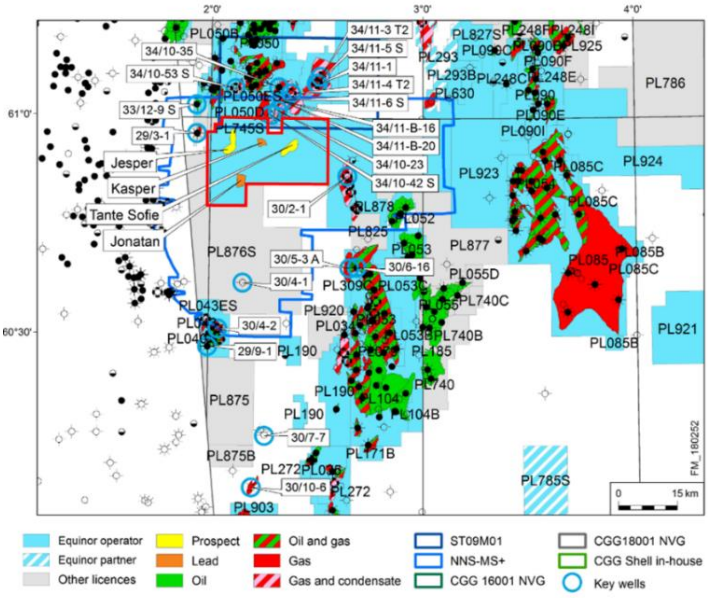

Figure 2.1 – Seismic database, PL745S in red outline. CGG 16001 NVG and CGG 18001 NVG is covering the whole map area.

Table 2.1: List of seismic surveys in the PL745S common database

Survey name	Survey type	Processing type	NPDID	NPDID
NNS_MS+	3D	Pre-STM/SDM	NX0802 NX0803 NX0901 NX0902	4586 4587 7005 7006
ST09M01	3D	Pre-STM/SDM	ST9607 ST9801	3832 3950
CGG 16001 NVG	3D	Pre-STM		8332
CGG 18001 NVG	3D	Pre-SDM		
CGG Shell in-house	3D	Pre-SDM		

2.2 Well data

The well database used in the evaluation of PL745S is given in Table 2.2.

Table 2.2 - Well database for PL745S

	Year	Drilling operator	Present License/Unit	Status	Age at TD	NPDID
29/3-1	1986	Total E&P Norge AS	PL119	Oil/Gas	Early Jurassic	904
29/9-1	1984	Statoil Petroleum As	PL040	Gas shows	Early Jurassic	31
30/2-1	1982	Statoil Petroleum As	PL878	Gas/condensate	Early Jurassic	72
30/4-1	1979	BP Norge AS	PL043	Dry	Middle Jurassic	377
30/4-2	1980	BP Norge AS	PL043	Gas/condenaste	Triassic	378
30/7-7	1979	Statoil Petroleum As	PL040	Gas shows	Early Jurassic	390
30/5-3 A	2009	Statoil Petroleum As	PL309	Gas	Upper Jurassic	6055
30/6-16	1984	Statoil Petroleum As	PL053	Oil/Gas	Middle Jurassic	333
30/10-6	1992	Elf Petroleum Norge AS	PL142	Gas	Middle Jurassic	1816
33/12-9 S	2011	Statoil Petroleum As	PL152	Oil	Middle Jurassic	6729
34/10-23	1985	Statoil Petroleum As	Valemon Unit	Gas/condensate	Early Jurassic	476
34/10-35	1992	Statoil Petroleum As	Valemon Unit	Gas/condensate	Early Jurassic	1874
34/10-42 S	1999	Statoil Petroleum As	Valemon Unit	Water	Early Jurassic	3816
34/10-53 S	2010	Statoil Petroleum As	PL050	Oil/condensate	Middle Jurassic	6212
34/10-54 S	2014	Statoil Petroleum As	Valemon Unit	Oil/gas/condensate	Early Jurassic	7253
34/10-54 A	2014	Statoil Petroleum As	Valemon Unit	Gas/condensate	Early Jurassic	7254
34/11-1	1994	Statoil Petroleum As	PL193	Gas/condensate	Early Jurassic	2377
34/11-3	1997	Statoil Petroleum As	PL193	Gas/condensate	Early Jurassic	2866
34/11-4	1999	Statoil Petroleum As	Valemon Unit	Gas/condensate	Early Jurassic	3314
34/11-5 S	2006	Statoil Petroleum As	Valemon Unit	Gas/condensate	Early Jurassic	5248
34/11-6 S (B-11)	2017	Statoil Petroleum As	Valemon Unit	Gas/condensate	Middle Jurassic	8059
34/11-B-16	2017	Statoil Petroleum As	Valemon Unit	Gas/condensate	Middle Jurassic	8256
34/11-B-20	2016	Statoil Petroleum As	Valemon Unit	Gas/condensate	Middle Jurassic	7011

3 REVIEW OF GEOLOGICAL AND GEOPHYSICAL STUDIES

The following work have been performed since the license was awarded:

- Remapping of key horizons (BCU, Intra Heather inconformity, Top Brent Gp, Top Dunlin Gp. and Top Statfjord) and key faults
- Semi-regional seismic interpretation including the PL 745 area
- Updated Depth Conversion
- Updated prospect evaluation and lead evaluation
- Deeply buried reservoir evaluation (evaluation of petrophysical properties in sands buried deeper than 4000 meter)
- Systematic screening of the license
- Shell in-house Pre PSDM-reprocessing of CGG NVG

The extended screening work included stratigraphic levels ranging from Top Cretaceous to Jurassic.

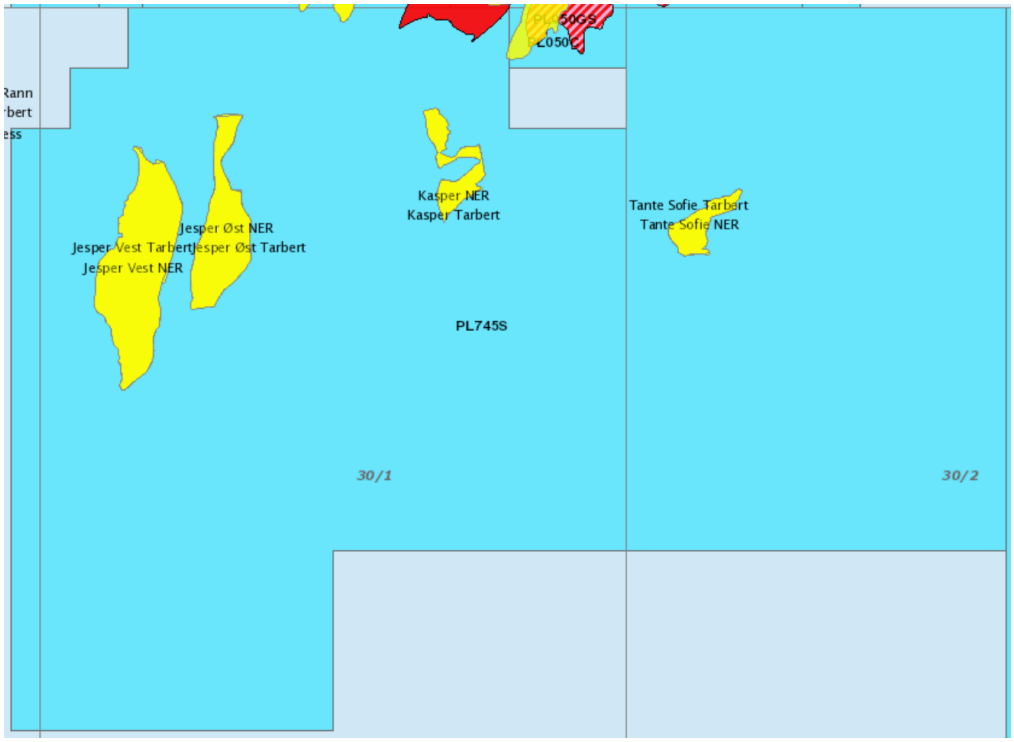

Figure 3.1 – Licence map with evaluated prospects

4 PROSPECT UPDATE

The APA application was based on the Brent Group prospects Kasper, Jesper, Jonatan and Tante Sofie. The PL745S prospect evaluations are based on the PGS proprietary seismic survey NNS-MEGASURVEYPLUS PSDM. The interpreted reservoir horizons are tied to exploration well 30/4-1 and to Valemon wells. The seismic interpretation has good confidence. The largest hc-potential is in the Jesper Øst and Vest prospects. The evaluation of Kasper, Jonatan and Tante Sofie shows no potential economical volumes. The Jesper Øst and Vest prospects are segmented 4-way structural closures. The two prospects have reservoir depths covering the interval from 4500 to 5000 m MSL which is 500-800m deeper buried than relevant analogue fields. The reservoir is expected to be marginal with uncertain lateral communication. The Jesper area is sharing the same source kitchen as the Valemon/Rav area but only Heather Formation is contributing to hc-migration into the prospects, and dry gas is expected. The main uncertainty for the prospects is related to reservoir diagenesis, this concerns both the reservoir risk and the reservoir parameters.

Screening of the Cretaceous stratigraphy shows no hydrocarbon potential. The Upper Jurassic syn-rift sequence contains small volume and high-risk stratigraphic traps in the Draupne and Heather formations. These cannot be explored in combination with a potential Jesper exploration well.

A seismic re-interpretation has been done on CGG 16001 NVG and CGG 18001 NVG PSDM EFT. This confirms the earlier evaluation that Jesper Øst and Vest are the largest structures with hc-potential in PL745S.

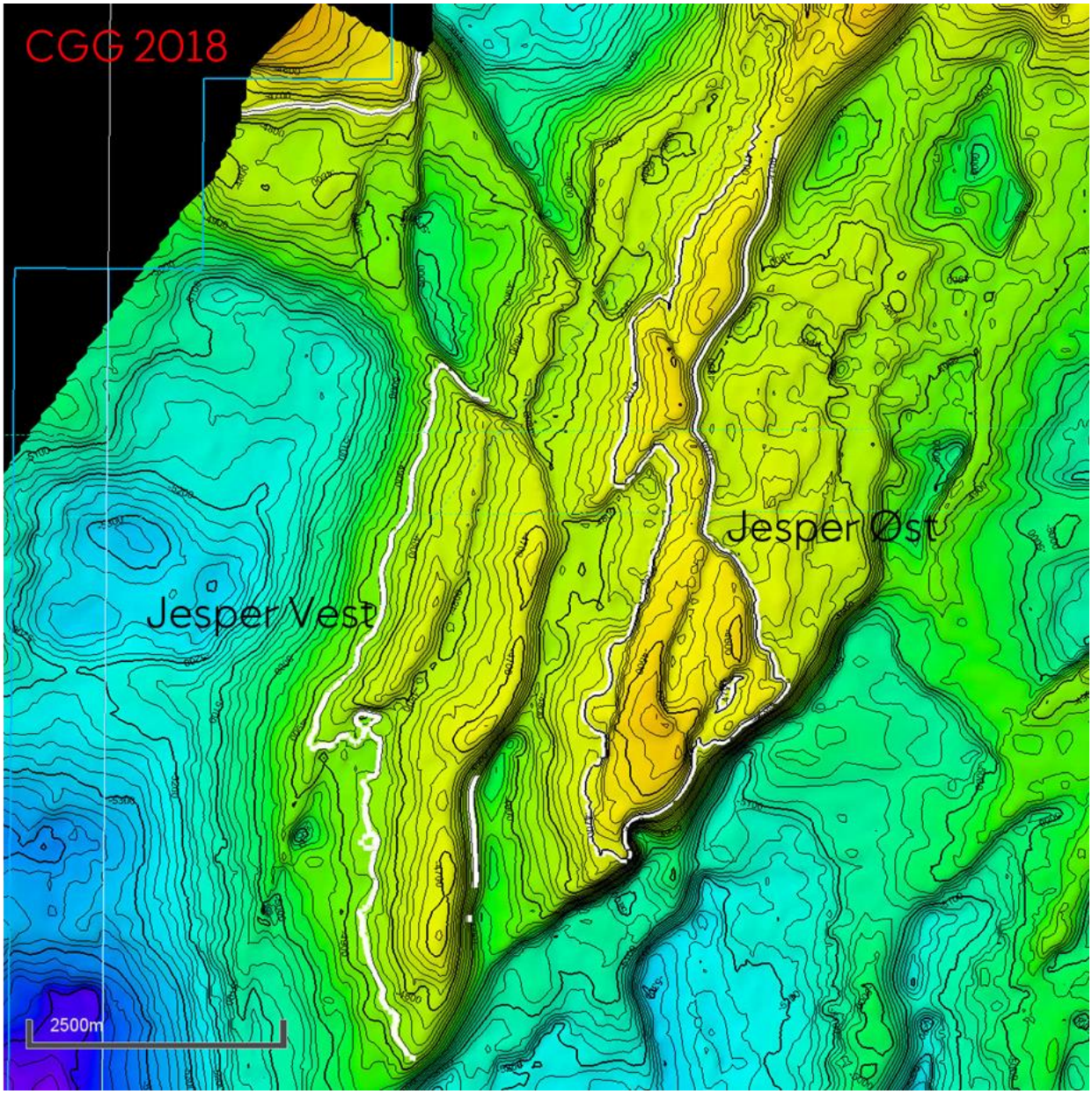

Figure 4.1 – Top Brent structural depth map (CI 20m) showing Jesper Øst and Jesper Vest mean GWC outlines in white. Interpreted on CGG 18001 NVG broadband survey.

Table 4.1 – PL745S Volume and risk summary

Prospect	Formation Group	Prospect Lead	Mean In-Place mill Sm3 o.e.	Rec mill Sm3 o.e.			Pg	Risked Rec. mill Sm3 o.e.
				P90	Mean	P10		
Jesper Vest	Brent	P	7.2	0.4	1.4	2.8	0.27	0.38
Jesper Øst	Brent	P	2.9	0.1	0.6	1.2	0.27	0.16
Tante Sofie	Brent	P	0.5	0.01	0.1	0.2	0.29	0.03
Kasper	Brent	P	0.7	0.02	0.1	0.3	0.28	0.03

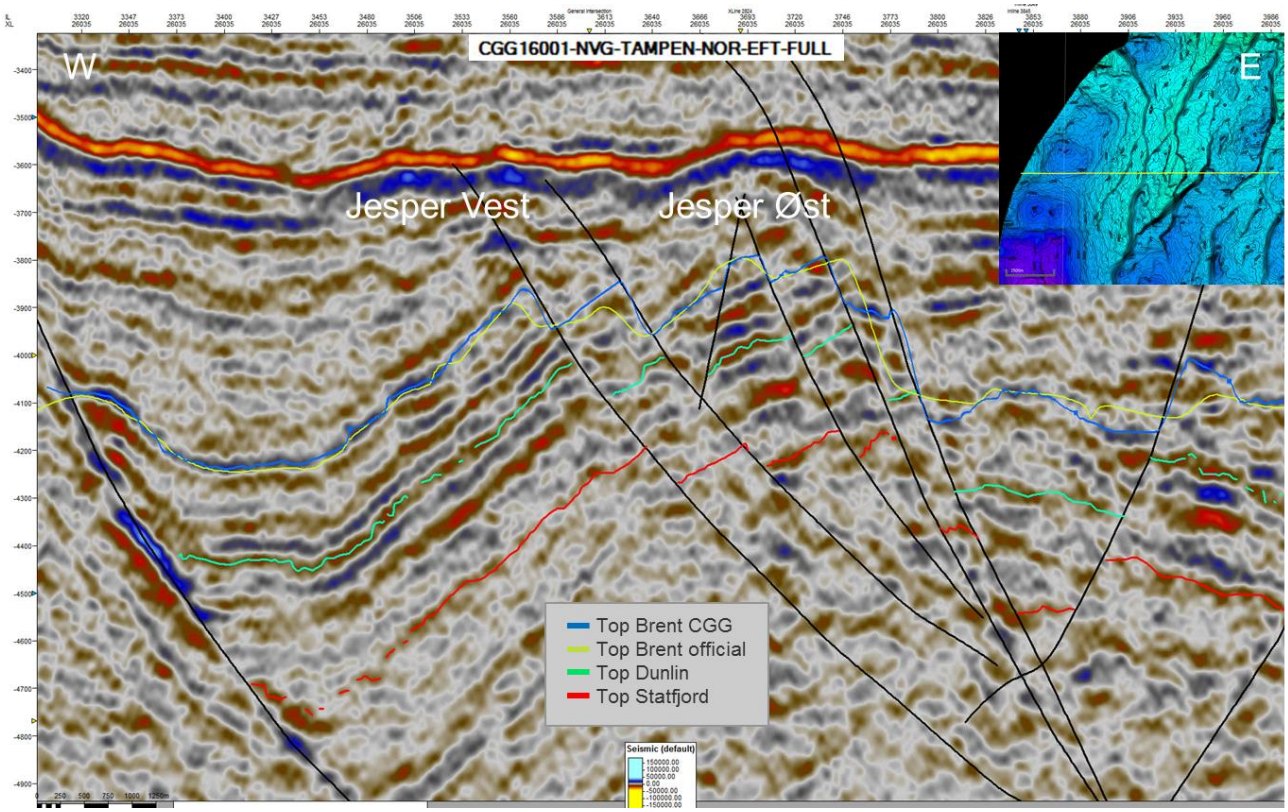

Figure 4.2 – W-E seismic cross section through central parts of the Jesper Prospects

5 TECHNICAL EVALUATIONS

The Jesper area is structurally complex and HPHT conditions are expected. Most relevant for reservoir development are Valemon wells. Based on the Valemon production experience the producibility in the Jesper area is expected to be low.

A Jesper valuation screening study was performed in 2016. Development solution was tie-in to Valemon from a single slot template with one producer to Jesper Vest. Economy was negative for an optimistic P10 case. A valuation sensitivity in 2017 with a combined Rav/Jesper development also gave negative economics.

A commercial development in the PL745S area is not likely.

6 CONCLUSIONS

The identified prospects and leads in PL745S show low probability of success. Equinor does not see enough value in the license to continue with a drill decision in 2019, the license in consequently dropped.