PL 876 S

License Status Report

Contents

1. PL876 S History

1.1 PL876 S Summary

PL876S is located in the NVG to the south-west of the Valemon Field. The license area covers parts of blocks 30/1, 30/5, 29/6, 30/4, 29/3 and the stratigraphic section above Top Cretaceous for parts of blocks 30/1, 29/3 (Ref. Fig.1). PL876S was awarded to A/S Norske Shell (Operator 50%), Wellesley Petroleum AS (30%) and Centrica Resources (Norge) AS (20%) on 10.02.2017 (APA16). On 22.12.2017 Centrica Resources (Norge) AS changed name to Spirit Energy Norge AS. The work obligation was to acquire 3D seismic within a 2-year first phase. Thus, placing the deadline for Decision to Drill on 10.02.2019. Upon completion of the first phase the licensees sought a 1-year extension of the initial phase on the Decision to Drill to 10.02.2020 and the Decision to Concretise (BoK) to 10.02.2022. The extension period was required to complete a work programme to de-risk and mature an additional Paleogene injectite lead identified in Q4 2018. The extension work programme included seismic re-processing tests, improvement of seismic data at the shallower target level, and associated technical studies. The extension was granted implying a new Drill or Drop deadline February 2020.

The Hermod play (Bjørn and Valdar prospects) were evaluated on reprocessed CGG NVG Tampen 3D seismic data and revealed a more subtle trap configuration compared to the initial evaluation. Key risks remained charge, reservoir and trap definition. Low Pg in combination with low volumes and lack of additional prospectivity in the remaining part of the license are the basis for the partner decision to relinquish PL876 S at the milestone in February 2020.

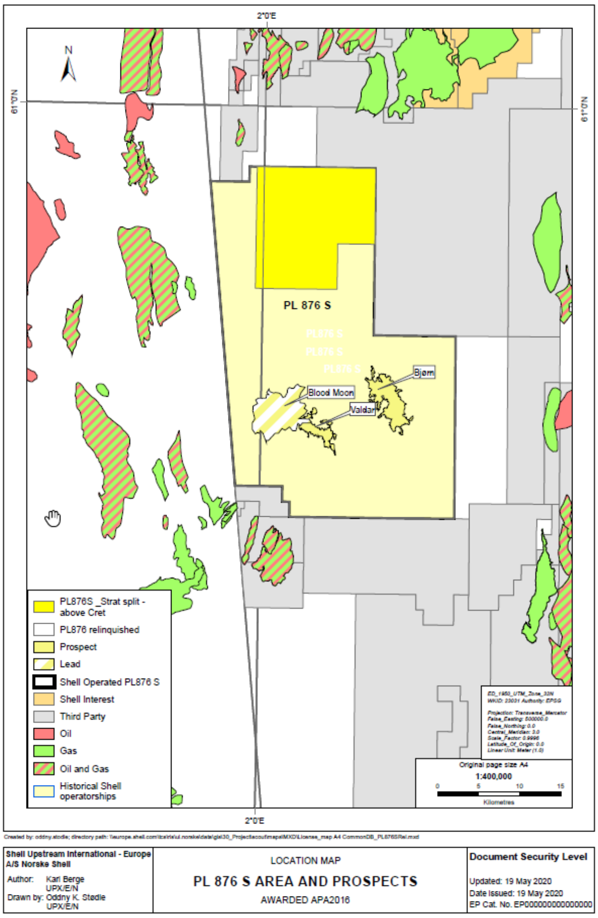

Fig. 1 Licence Location Map

1.2 Status of Work Commitment

The partnership acquired the CGG NVG Tampen 3D PSTM data over 1313 km^2 to fulfil the initial work commitment. In addition, the JV licenced field and navigation data of survey CGG16001 from which Shell Global Solutions

International completed PreSDM processing over a 1313 km^2 area (Survey: CGG17M01SHR18). Within the 1-year extension period, Shell Global Solutions International completed a phased processing project. Phase 1 was a 30 km^2 test of Least Squares Migration and High Definition Tomography over the Blood Moon lead (Survey: CGG17M01SHR19). Phase 2 processing of 200 km^2 was conditional on successful results from phase 1 and was not initiated upon agreement in the partnership. The input data was once again the CGG16001 field data previously licenced.

1.3 Licence Meetings

The following PL876 S Management and Exploration committee meetings have been held:

- 2017, April 26th: EC/MC Committee meeting
- 2017, August 10th: EC Work meeting
- 2017, October 19th: EC/MC Committee meeting
- 2018, January 16th: EC Work Meeting
- 2018, March 5th: EC Work Meeting
- 2018, July 6th: EC Work Meeting
- 2018, November 7th: EC Committee meeting
- 2018, November 30th: MC Committee meeting
- 2019, January 18th: EC Work Meeting
- 2019, January 24th: EC/MC Committee meeting
- 2019, April 30th: EC Work meeting
- 2019, June 20th: EC Work meeting
- 2019, November 8th: EC/MC meeting

1.4 Reason for Relinquishment

An overview of the remaining prospectivity in PL876 S is shown in Fig. 1. Valdar and Bjørn are the only prospects remaining from the license application group of Hermod prospects and leads; Ragnar, Bødvar, Arngrim, Heidrek, Bjørn, Valdar and Signy. Following completion of the PSDM processing and interval velocity model building, base case GRV for Valdar and Bjørn reduced and all other leads and prospect structures effectively disappeared. An extensive geological and geophysical evaluation of Valdar and Bjørn ultimately reduced the attractiveness of these prospects such that the operator did not propose a well on any of these opportunities.

Screening of the Eocene injectite play identified a new anchor lead, Blood Moon, upon which a 1-year extension work program was undertaken. Upon completion of this work, the operator recommended to relinquish the licence on the basis that no further technical work would significantly reduce the degree of uncertainty or enhance our view of Blood Moon. The evaluation and technical work favoured non-reservoir and de-risking of success case scenarios using AVO/amplitudes for direct hydrocarbon indication was considered uncertain. An opportunity summary table is shown in Table 1.

Table 1 - Summary table of PL876 S Prospects and leads

				Recoverable Hydrocarbon Volume					
Name	**Status**	**Play**	**Unit**	**Pmean**	**P90**	**P50**	**P10**	**POS**	**Phase**
Valdar	Prospect	Hermod	Million Sm^3 oe.	3.6	0.3	2.8	7.9	11%	Oil and ass. Gas
Bjørn	Prospect	Hermod	Million Sm^3 oe.	4.2	1.0	3.4	8.6	17%	Oil and Gas
Blood Moon	Lead	Eocene Injectites / Grid Fm.	Million Sm^3 oe.	10.9	3.9	9.8	19.0	10%	Oil and ass. Gas

2. Database Overview

2.1 Common Database Details

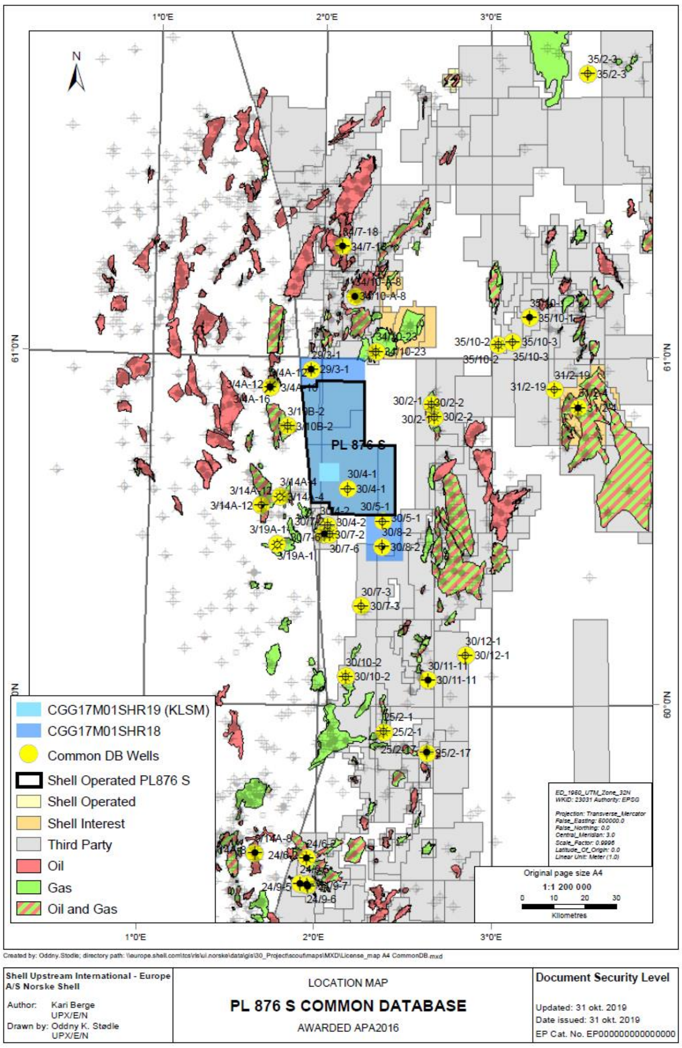

Figure 2 - Map of PL876 S seismic and wells common licence database. CGG16001 and CGG17M01 are licenced in across the same area as CGG17M01SHR18 as shown in the map.

Table 2 - Licence Well Database

WELL	COUNTRY	YEAR	NPDID
24/6-2	NOR	1998	3397
25/2-1	NOR	1973	353
25/2-17	NOR	2009	6215
29/3-1	NOR	1986	904
3/10B-2	UK	1991	N/A
3/14A-12	UK	1985	N/A
3/14A-4	UK	1977	N/A
3/19A-1	UK	1972	N/A
3/19A-1	UK	1972	N/A
3/4A-12	UK	1986	N/A
3/4A-16	UK	1988	N/A
30/10-2	NOR	1974	392
30/12-1	NOR	1994	2248
30/2-1	NOR	1982	72
30/2-2	NOR	1985	457
30/4-1	NOR	1978	377
30/4-2	NOR	1979	378
30/5-1	NOR	1972	379
30/7-2	NOR	1975	385
30/7-3	NOR	1976	386
30/8-2	NOR	1995	2723
31/2-19 S	NOR	1996	2798
31/2-4	NOR	1980	208
34/10-23	NOR	1985	476
34/10-A-8	NOR	1987	1053
34/7-18	NOR	1991	1819
35/10-1	NOR	1991	1822
35/10-2	NOR	1996	2783
35/10-3	NOR	1999	3719
35/2-3	NOR	2012	6921

2.2 Seismic Database

Seismic Name	Survey Type	Processing Type	Further information
CGG16001	3D	Pre-STM Fast Track	CGG Enhanced Fast Track dataset
CGG17M01	3D	Pre-STM Final	CGG Final Merged processing
CGG17M01SHR18	3D	Pre-SDM	Shell PL876 S licence processing. Full waveform inversion velocity modelling, Kirchhoff migration and Enhanced Kirchhoff.
CGG17M01SHR19	3D	Pre-SDM	Shell PL876 S licence processing test. High definition tomography velocity modelling and Kirchhoff Least Squares Migration.

3. Results of geological and geophysical studies

3.1 Update of Geological Framework

3.1.1 Seismic Interpretation

3D seismic interpretation was carried out to provide input to a semi regional basin model study and to update existing interpretation to the newly acquired and reprocessed seismic data. Key interpreted horizons are: Seabed, Top Balder, Base Balder, Top Jorsalfare, Top Kyrre, Base Cretaceous Unconformity and Top Brent.

3.1.2 Hermod Play

The initial seismic interpretation studies were focussed upon updating the understanding of the Hermod play. The licence application prospectivity was identified within this play. *Figure 3* shows the distribution of Hermod tributaries and fans across the licence. NW-SE channel features are clearly observed on the isochore map as thicker packages over the Base Balder to Top Jorsalfare interval. These thicker packages coincide with depositional features shown in the spectral decomposition extraction focussed over the Hermod interval.

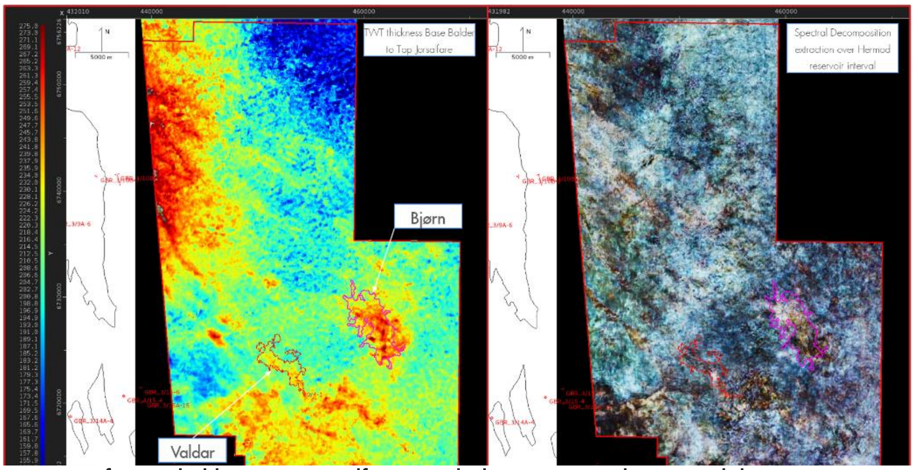

Figure 3 Left: Base balder to Top Jorsalfare TWT thickness map. Right: Spectral decomposition.

3.1.3 Injectite play

An injectite mapping study was carried out during the initial 2-year licence term. Two classes of injectites were identified; acoustically hard injectites bodies characterised by wings at the geobody edges and acoustically soft geobodies in the stratigraphic interval above. The former class was not considered for further de-risking on the basis that AVO de-risking would be extremely challenging for steeply dipping hard sands. Of the latter, the Blood Moon lead was identified for further technical study.

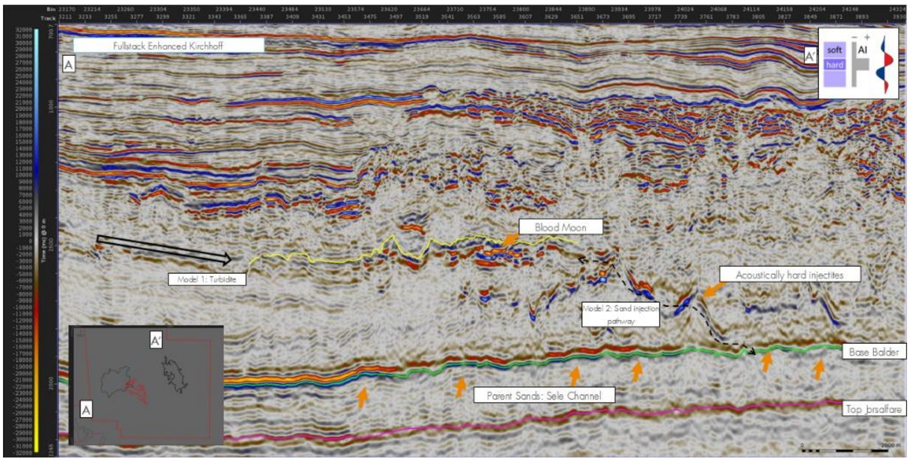

Figure 4 - Cross-section showing the context of the Blood Moon lead, the position of candidate injectite parent sands and arrows indicating the two depositional models. Model 1 – grid turbidite or Model 2 – injectite.

Play based analogues and seismic geometry interpretation resulted in two possible models being considered for the Blood Moon lead. A 100% injectite sandstone, where the reservoir sandstones have been transported from a parent sands deeper in the stratigraphy or a Grid Formation turbidite that has been partially remobilised in situ. Figure 4 shows an annotated overview of the two models.

3.2 Basin Modelling

A basin model study was completed in an area of interest (AOI) surrounding the PL876 S area. In the operators view, the Draupne Formation is mostly oil mature present day. This was disputed by the licence partners based on an alternative interpretation of the 30/4-1 Vitrinite data resulting in a gas mature interpretation. The Heather Fm is gas mature present day. Figure 5 displays an overview of present-day SR maturity in the study AOI. The charge migration modelling result for the Brent showed that the simulated accumulations are dominantly gas condensate within the PL876 S licence.

Oil migration is the key uncertainty for the Hermod prospectivity. The Hermod Fm reservoirs are circa 2.5 km shallower than the top of the Draupne formation with no major faults linking source and reservoir. Migration is assumed to occur through i) tortuous path to the basin flanks, up faults to shallower depth and subsequently lateral migration in porous units, or ii) through buoyancy/diffusion driven vertical migration.

Well analysis at 30/4-1, that penetrated the Brent structure underlying Valdar, indicates the presence of high over pressure and interpreted to be a blown trap. This is considered supporting evidence for model i).

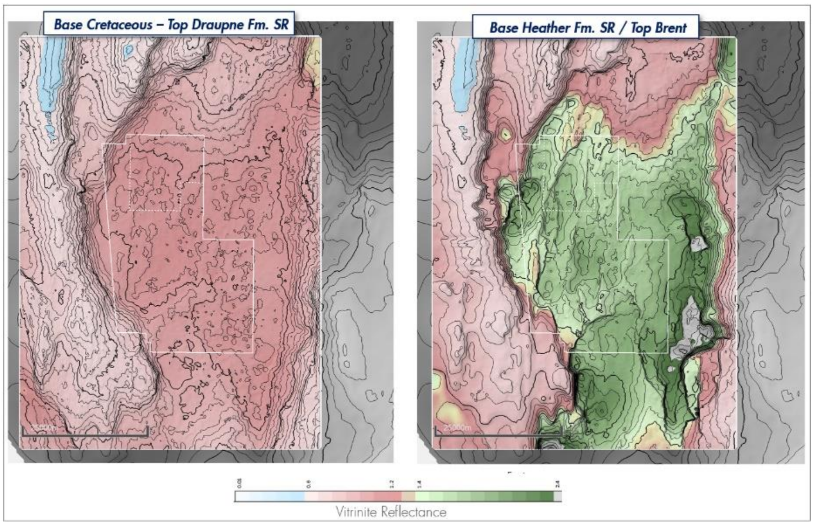

Figure 5 - Present day maturity of U. Jurassic Source Rock intervals. Red = Oil Mature, Green = Gas Mature, Blue = Immature and Grey = Overmatured.

Modelling buoyancy/diffusion vertical migration without conduits was not possible. As a pseudo model, a scenario test using explicit migration conduits faults was completed with the timing of the opening of those conduits adjusted. Four timing scenarios were tested; 20Ma, 15 Ma, 10Ma and 5Ma. The results indicate that Valdar and Bjørn are volatile oils in the earlier opening scenarios, 20 and 15 Ma, and predominantly gas condensates in the later opening scenarios (Figure 6). In the vertical migration model, the timing/rate of migration is therefore considered critical to the presence of HCs, and more specifically oil within the Hermod prospects.

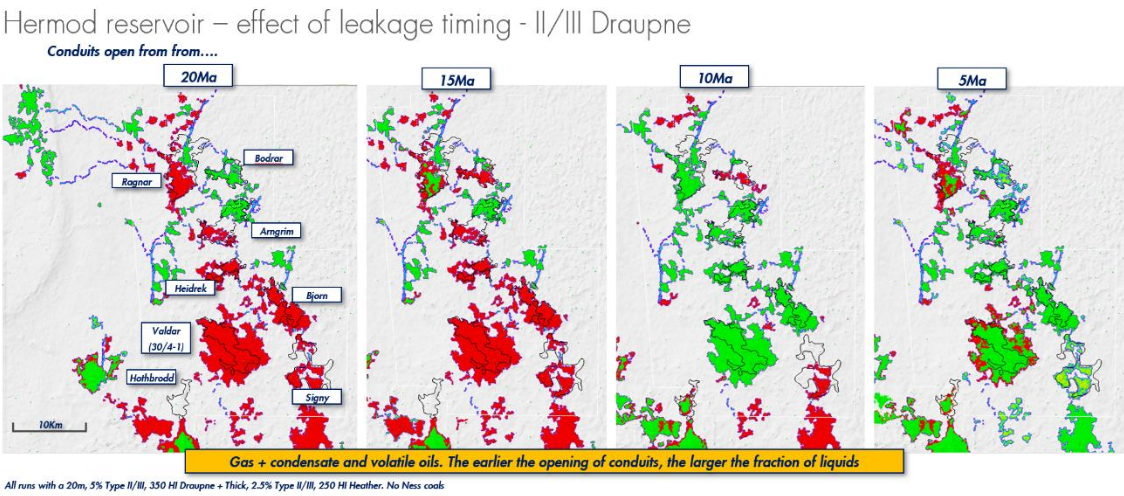

Figure 6 – Fault conduit opening time vs. charge file. N.B. Base Top Seal structure map used in this evaluation was derived prior to the completion of the PSDM velocity model.

3.3 Update of the Depth Conversion Model

Shell PL876 S licence processing was carried out using the CGG16001 field data. Full waveform inversion velocity modelling was completed which provided a high-resolution interval velocity model for seismic time to depth conversion. This new depth model was considered the base case depth conversion method and all licence applications leads and prospects were reassessed. Of those, only the Valdar and Bjørn prospects remained as base case structural closures. All other leads and prospects were removed and no longer considered in the licence work programme.

3.4 QI and Geophysics

3.4.1 Hermod Rock Physics and QI

A QI rock property study for 14 wells was completed. The output data and interpretations from the study were then utilised for scenario based modelling and seismic calibration. The conclusions were as follows:

1. Analogous Hermod sands with high saturation oil or gas would generate flat spot under the correct sand thickness criteria.
2. 30/8-2 Hermod sands would be Class IIP in Oil/HOil at 80% hydrocarbon saturation underneath a 30/4-1 Upper Sele shale seal and Class II underneath a 30/4-1 Balder shale seal. Brine sands are Class I (Figure 7) in both cases.
3. Filtering out high AI streaks amplifies the sand softness and produces a class II HOil (80% sat.) and class III oil (80% sat.) response.
4. The thin Sele interval sands underneath the Sele shale at 30/4-1 are modelled to be class I AVO in Oil/HOil (80% sat.) and brine fluid cases and class IIp in gas (90% sat.) case.

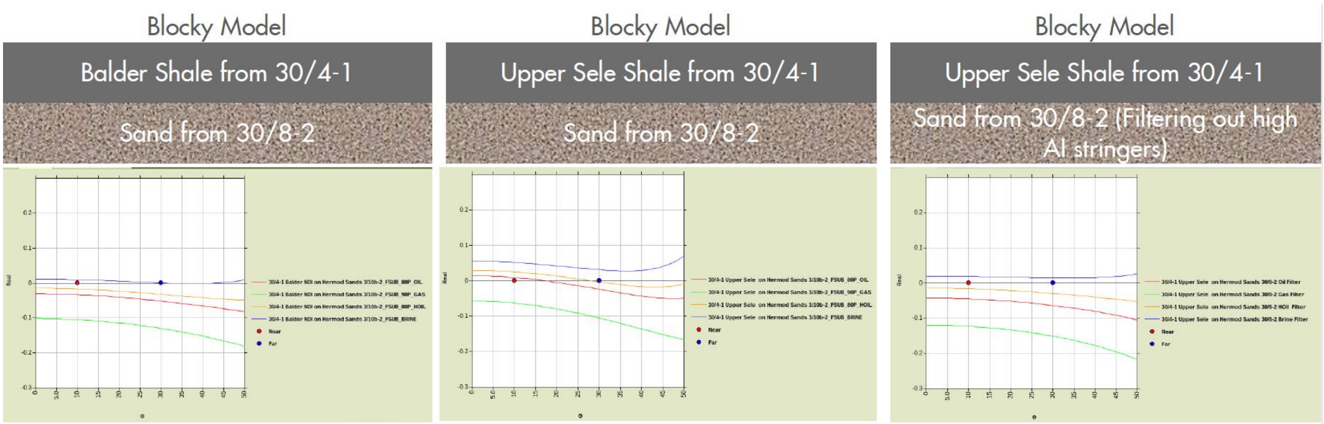

Figure 7 - AVO Blocky Models for conclusions 2 and 3

3.4.2 Eocene / Grid Rock property Study

A regional and analogue rock property study was carried out to characterise the expected and observed AVO character of injectite and grid sandstone penetrations. These studies were in general hindered by the lack of data collection in the interval of interest. Particularly shear wave and density data. Key observations as a result of this study;

1. Interval of interest sand properties are widely varying.
2. Water wet sands observed in 30/7-6R, 30/8-2, 30/4-2 and 30/4-1 are relative high velocity wrt. shale.
3. The exception is the shallowest logged shale in 30/8-2 with near equal velocity to the sands in that well.

3.4.3 Eocene / Grid Fluid Substitution and Synthetic Modelling

Well 30/8-2 was used as a reference key analogue well in the Injectite/Grid play study. Blocky models for various sand-shale pairings and shale-shale parings were considered. Using the higher velocity shale interval noted in 3.4.2, water bearing sands are soft and near zero reflectivity, high sat. oil bearing sands are soft with slight increasing or decreasing amplitude with offset and gas sands are clear class III AVO anomalies (Figure 8 (a)). Using the lower velocity shale interval in 30/8-2, water bearing sands are hard and class I AVO, High sat. oil bearing sands are near zero reflectivity to slightly hard on near offsets and soft on far offsets. Gas sands are Class III AVO anomalies.

Modelling the higher velocity shale over the slower velocity shale gives a soft response of class IV AVO character (Ref. Figure 8 (b)). The magnitude of the shale response is almost equivalent to the high sat. oil response in the higher velocity shale scenario (Figure 8 (a)). The only detectable difference between these two scenarios would be subtle AVO character at high angles. Synthetic modelling of 30/8-2 and comparison with the blocky fluid substitution models indicated that seismic bandwidth and layer thickness have significant impact on AVO in this setting. Consequently, the certainty in AVO based prediction/interpretations is reduced.

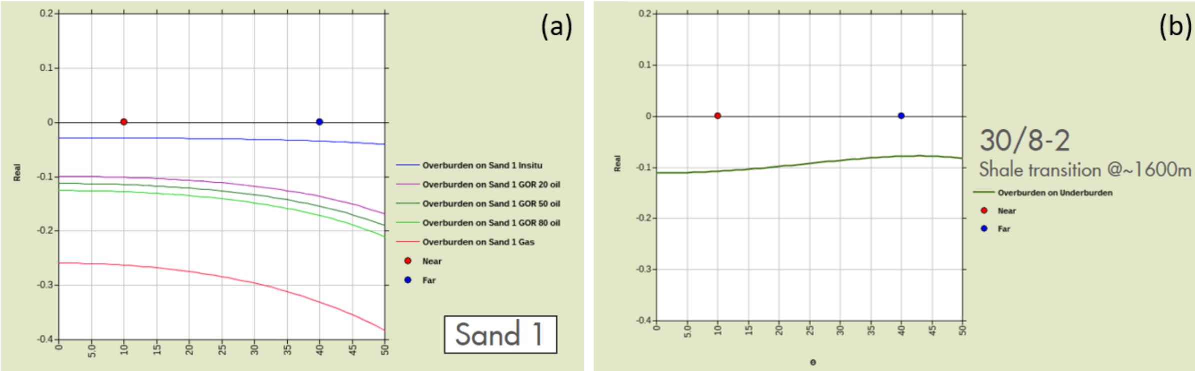

Figure 8 – (a) Higher velocity shale trend seal over fluid substituted sand at 1560 – 1580 m in 30/8-2. Oil substitutions are 32-degree API with 20,50 and 80 V/V gas oil ratio (b) Shale transition AVO model.

3.4.4 Seismic Reprocessing and Gather Conditioning

The overburden of Blood Moon is characterised by chaotic and dis-continuous seismic reflections causing seismic diffractions, velocity model building challenges and distorted seismic imaging. This translates to uncertainties in the time-depth conversion and AVO character of the lead. For these reasons, least squares Kirchhoff migration, high definition velocity modelling and further gather conditioning of the existing 2018 processing effort were completed in the 2019 extension period as an improvement effort. These techniques were anticipated to improve the imaging of the Blood Moon lead and add greater confidence in its AVO character to help discriminate between the identified alternative scenarios from the RP study; an oil sand or a shale (reference 3.4.3). The processing test did not significantly change the observed AVO and due to the increased noise further processing was not attempted. The gather conditioning resulted in cleaner gathers and slightly improved imaging of the AVO character.

4. Prospect Update Report

4.1 Valdar

4.1.2 Overview

A prospect overview of Valdar is shown in Figure 9. Valdar is defined by a structural closure in depth at Top Base Balder formation. The interpreted horizons displayed are Top Base Balder Formation (red) and Top Jorsalfare (yellow). The Valdar structural closure is highlighted in the depth structure map (top right) and the Valdar Hermod Formation channel is highlighted in the spectral decomposition extraction (bottom right).

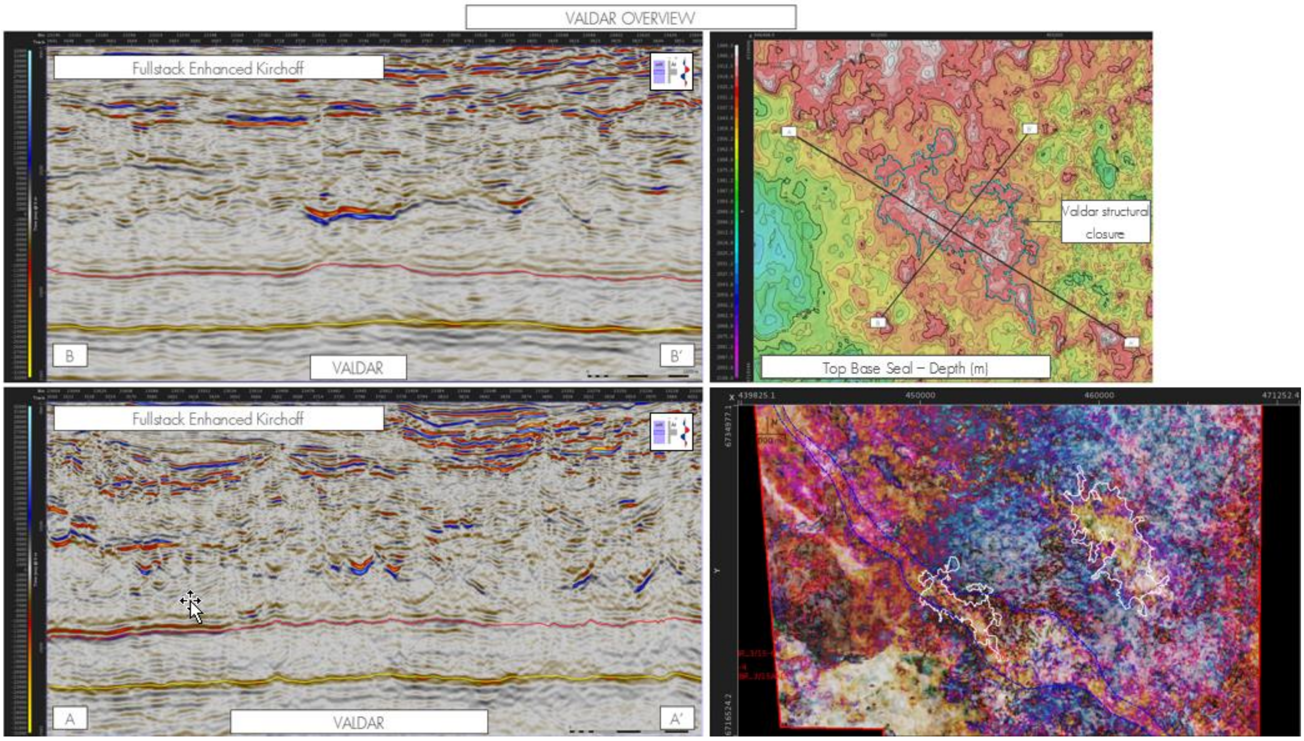

Figure 9 - Valdar Overview

4.1.3 GRV

The Base Balder seismic event was used as a proxy for Base Top Seal. Spectral decomposition images were utilised to define the areal reservoir distribution. The GRV range is; Pmin - 85% of base case area vs. depth function. The Pmode and P10 GRV (High GRV spill point) are highlighted in Figure 10.

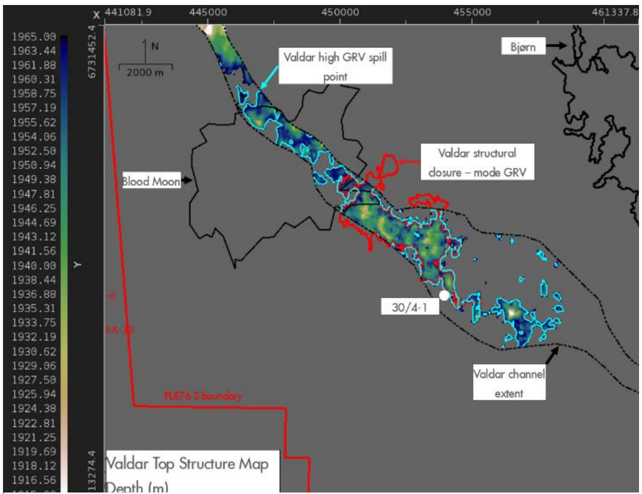

Figure 10 - Overview of Valdar GRV range

4.1.4 Hydrocarbon Contact

The variation in the contact depth has the greatest impact on volume. The Pmin column is the crest of the structure, Pmode the structural closure and Pmax is 5 m deeper than the deepest spill point of the high GRV scenario.

4.1.5 QI

AVO screening of the Valdar reservoir indicated effectively no observable AVO effect consistent with a HC accumulation. The seismic amplitudes within the Valdar structure are not significantly different from the near offset 30/4-1 well and any bright amplitudes within the structure are small. A bayesian POS update based on QI interpretation was applied and resulted in a downgrade from19% to 11%.

4.1.6 Reservoir properties

Reservoir properties were defined using analogue data per depositional element type and position characteristics i.e. channel vs. distal lobe. Databases with analogues have been used for input parameter distributions and anchored to observations made at the 30/8-2 Hermod Sandstone penetrations. Refer to Appendix A for full details.

4.1.7 Volume and Risk summary

Prospect volumes are displayed in Table 1 and the risk chance factors are shared in Appendix A. Overall, Valdar was evaluated to be 11% POS after an 8% QI downgrade. Reservoir was the key risk at 0,5. The QI downgrade is reported by means of an adjustment to the charge chance factor.

4.2 Bjørn

4.2.2 Overview

A prospect overview of Bjørn is shown in Figure 11. Bjørn is defined by a structural closure in depth at Base Balder/Base Top Seal. The deepest closing contour encompasses two separated structures – a North West structure and a South East structure. The interpreted horizons displayed are Base Balder Formation (red) and Top Jorsalfare (yellow). The Bjørn structural closure is highlighted in the depth structure map (top right) and the Bjørn Hermod Formation fan is highlighted in the spectral decomposition extraction (bottom right).

The Bjørn amplitudes are relatively consistent across the Base Top seal (Figure 11.), with no clearly observable bright spots. Beneath the north western structure (seismic line A to A′ and B to B′) a brighter hard (red) event is observed. This is considered a candidate hydrocarbon amplitude effect on the base reservoir.

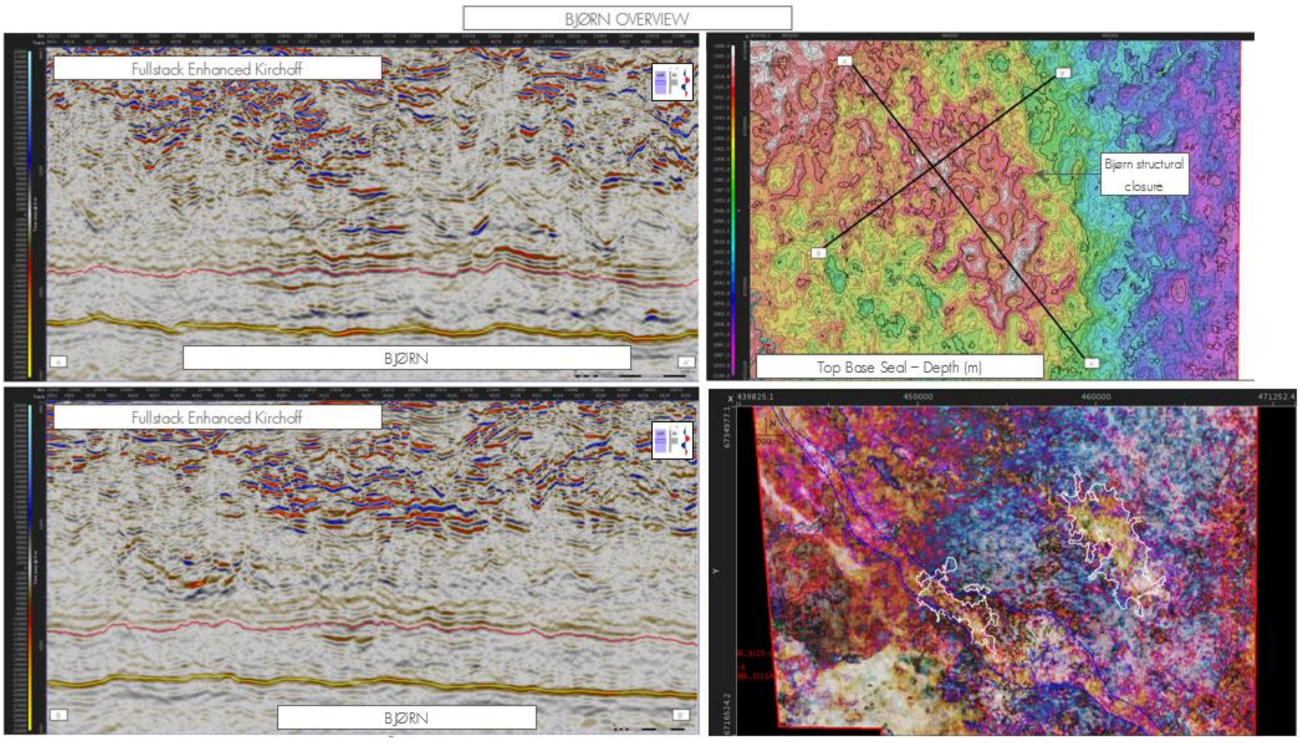

Figure 11 - Bjørn Prospect overview

4.2.3 GRV

Bjørn is characterised by three polygons; the outline of the structural closure, the reservoir extent and the extent of observed higher amplitudes on relative impedance data. An overview map of Bjørn is shown in **Figure** *12*. Each of the GRV polygons are shown. Owing to the presence of elevated amplitudes, Bjørn was evaluated under the assumption that the observed amplitudes are indicative of hydrocarbons. In consideration of related uncertainty to HC phase, two GRV extremes were utilised;

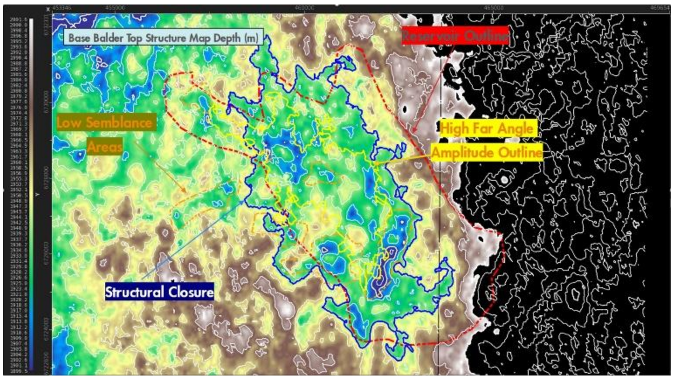

Figure 12 - Bjørn Prospect segmentation Overview

1) Minimum GRV/Minimum area; High amplitudes represent the area of hydrocarbon fill. Thus, only rock within the yellow polygon is considered charged.
2) Maximum GRV/Maximum area; High amplitudes are indicating the area of the gas phase and beneath that in locations of reservoir within structural closure, oil is present. Therefore, the maximum charged reservoir is area within both the reservoir and structure polygons.

4.2.4 Hydrocarbon contact

Two HC phase scenarios were included in the column statement:

<u>Scenario 1:</u> Absolute highest amplitudes (a subset of the high amplitudes) considered to indicate the gas cap and the other above background amplitudes indicate oil.

<u>Scenario 2:</u> All higher amplitudes indicate the gas cap and the Oil/Heavy Oil is not seismically detectable vs. Background.

The gas water contact was varied to account for these two scenarios, whilst the Oil Water Contact was varied ± 5 m around the spill point, which in both GRV Area scenarios was equivalent.

4.2.5 QI

Interpretation of the Bjørn reservoir indicated effectively no amplitude brightening with offset, a potential HC indicator, across the whole structure. However, on the north western structure, an area of 1-3km2 with highest amplitude around the crest had near structural conformance – Red-orange amplitudes in Figure 13. In addition, is it noted that the Bjorn structure is overlain by several injectites and candidate gas escape features that interfere with the seismic image and increase uncertainty on depth estimation.

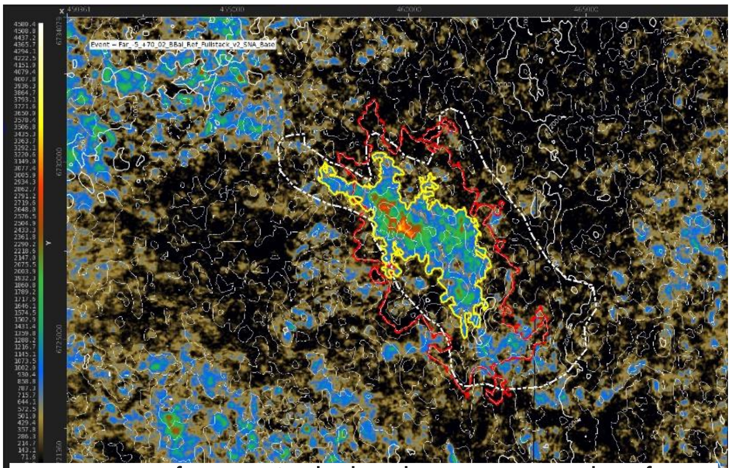

Figure 13 - Sum of negative Amplitudes Relative acoustic impedance far angle data. 75 ms window beneath base Balder.

With reference to the prospect GRV description of oil beneath a gas cap, the previously described AVO scenario modelling and the amplitude and structure observations. QI risking applied a small downgrade of 3% from 20% to 17% to the POS. On balance the general lack of AVO gradient and the limited evidence for structural conformance favoured a brine or poor reservoir result.

4.2.6 Reservoir Properties

The same methodology was applied to Bjørn as Valdar. Details are depicted in Appendix B.

4.2.7 Volume and Risking

Prospect volumes are displayed in Table 1 and the risk chance factors are shared in Appendix B. Overall, Bjørn was evaluated to be 17% POS after a 3% QI downgrade. Mapping suggests the presence of a Heimdal lobe underlying Bjørn that may mean Bjørn lies in a migration shadow for vertical charge. As a result, charge was considered the key risk at 0,5 chance factor. In addition, the charge chance factor was further adjustment on reporting to account for the QI downgrade.

4.3 Blood Moon

4.3.1 Overview

A lead overview of Blood Moon is shown in Figure 14 - Blood Moon Overview. Blood Moon is defined as a bright, acoustically soft seismic geobody. The geobody is interpreted on relative acoustic impedance data on the zero crossings preceding and following the soft loop. The Blood Moon Top (yellow) and Blood Moon Base (green) are shown. As discussed previously (Section 3.1.3), two possible geological models were considered for the Blood Moon lead at the point of licence extension. A 100% injectite sandstone and a Grid Formation turbidite that has been partially remobilised. In the seismic sections shown it is observed that the Blood Moon amplitudes are distinctive in comparison with the background stratigraphy. It is also observed that the Blood moon soft loop continues beyond the interpreted geobody bounding horizons toward the south west (B'-B).

Regarding the Blood Moon top structure map and amplitude extraction shown, there are several candidate closing contours shown as coloured lines. These contours loosely correlate with the identification of soft high amplitudes. As a result, Blood Moon was interpreted as a candidate direct hydrocarbon indication lead.

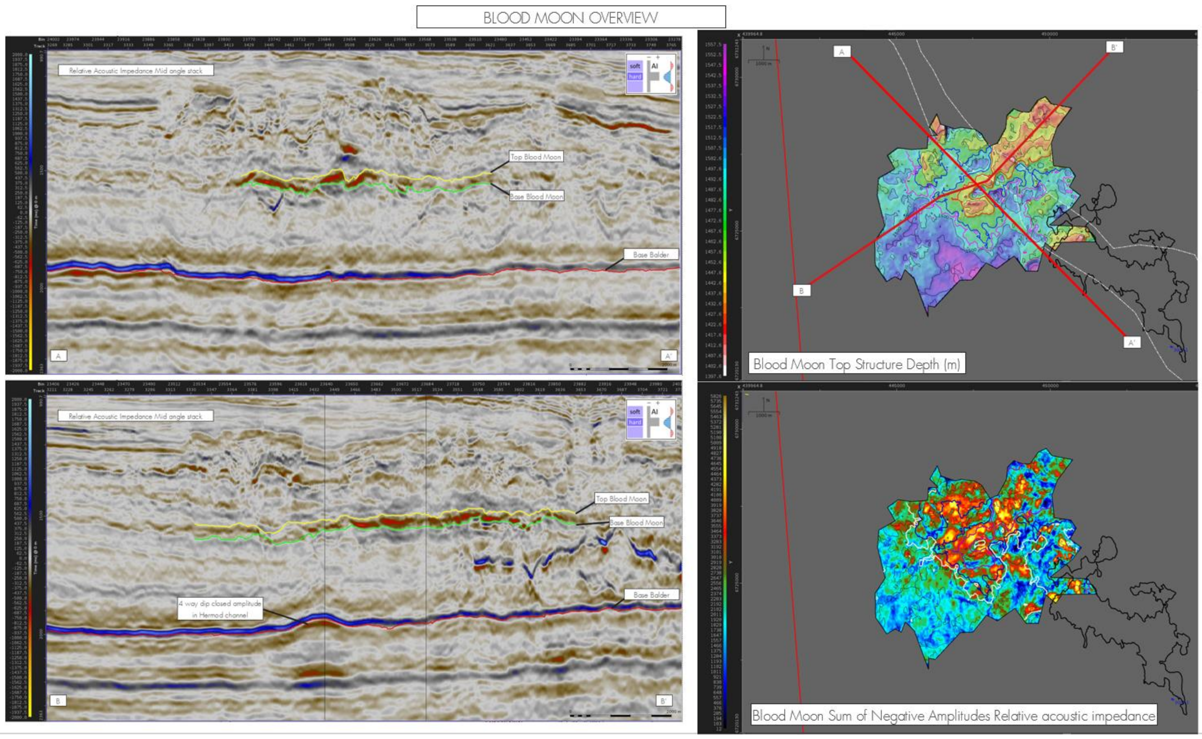

Figure 14 - Blood Moon Overview

4.3.2 Geological Model Resolution

Sub regional mapping to correlate the Blood Moon lead to offset wells and spectral decomposition to de-risk the presence of a depositional system favoured either a mudstone, or a 100% injectite sand interpretation of the Blood Moon soft anomaly. Consequently, it is considered that if sands are present in the wider interval of interest (~100-200 ms around the Blood Moon soft geobody), the sands are most likely hard geobodies beneath or above the anomalous soft. An alternative model would be to consider Blood Moon as a 100% injectite. Thus, inferring that the facies, specifically in the location of Blood Moon are different from the offset wells. This, however, is considered unlikely due to the confidence in the seismic correlation away from the Blood Moon anomaly to the 30/4-2 and 30/7-6R.

4.3.3 GRV and Contact Variation

The gross rock volume of Blood Mood was defined by interpretation of the zero-crossing preceding the high amplitude soft body on relative acoustic impedance data. The mappable extent of the anomaly formed a 2 to 3-way dip structure (Figure 14 - Blood Moon Overview) that abruptly terminates to the north and north west. The oil water contact range was varied to account for the elevated amplitudes, different sub structures and the spill to the west and south. The resulting P90-P50-P10 contact areas utilised are shown on the top structure map and refer to 1460 m, 1480 m and 1490 m respectively.

4.3.4 QI

The seismic conditioning and processing test efforts to improve the fidelity of the AVO signal in the challenging imaging and velocity modelling context of Blood Moon did not significantly reduce the variability of the AVO character. In addition, a structurally conformant amplitude that one may interpret as a direct hydrocarbon indicator was not observed with confidence.

As outlined in 3.4.2., Rock physics modelling showed that there exists a high degree of rock property variability, which when combined with tuning and interference reduces certainty of interpretation greatly. Nevertheless, the operator favoured a hard sand model when qualitatively interpreting Blood Moon based on rock physics models and offset well observations. This interpretation infers that the soft, flat AVO character of the Blood Moon reservoir loop is likely shale. In the alternative soft sand interpretation scenario, gas sands would be expected to be acoustically soft and show a detectable increase in amplitude with offset. Oil sands are expected to be near invisible / or hard when the overburden shales are on trend with most of the offset well data. The exception to the rule, would be the harder shales observed in 30/8-2. In this scenario, one would hope to identify a structurally conformant amplitude or fluid contact, which was not achieved.

4.3.5 Reservoir Properties

The reservoir properties used in the lead level evaluation of Blood Moon are shown in Appendix . The volume summary is displayed in Table 1. They were selected from comparison with analogues. However, it is important to note that the extent of the analogue database for injectite and Grid sands is limited.

4.3.6 Volume and Risking

Overall Blood Moon was evaluated at 10% POS. Appendix C shows an overview of the individual risk factors. Reservoir is considered the key risk at 0.4 chance factor as a result of the base case interpretation that the Blood Moon soft loop is shale. The second key risk was seal, due to the almost ubiquitous sand presence in the poorly correlatable grid interval and the stratigraphic nature of the trap (0,5). Charge is considered to share the same risks as Valdar(0.6) and finally, owing to the very complex overburden and undulating nature of Blood Moon, the structure chance factor is reduced to 0.8. In combination, these factors give an overall POS of 10%.

5. Technical Evaluations

Screening level economic evaluation were completed by the operator on Valdar and Bjørn. The prospect volume range was not clearly economic with a high proportion of the Valdar volume range clearly sub economic. The volume upside was not considered enough to warrant further study when considered in combination with the POS. This work was completed in Q3 2018.

6. Conclusions

Overall the PL876 S technical studies were targeted on maturing the Hermod prospects, Bjørn and Valdar, and at reviewing the additional prospectitivy of the injectite interval, which ultimately led to the definition and attempted maturation of the Blood Moon lead. These studies have concluded that there is not a drill worthy candidate in the Hermod interval and that the Blood Moon lead cannot be upgraded to prospect.

The technical evaluations have resulted in the following:

1. Overall the Hermod prospects of PL876 S remain challenging with high risk, low volume opportunities in the base case.
2. Near P10 volume of Valdar and Bjørn are likely commercially attractive, but unfortunately there was insufficient seismic evidence to favourable shift the volume range to high case outcomes. This evidence would also have resulted in a QI uplift and thus an improved POS/Volume opportunity.
3. Blood Moon remains an enigmatic seismic feature. Unfortunately, base case interpretations in terms of Rock Physics, QI and well correlations favoured a reservoir failure outcome for the Blood Moon geobody as described. Ultimately, the risk and general uncertainty was too large to mature.

Having fulfilled the work commitment and based on the results of the technical evaluation, no drill worthy prospect has been identified and the partnership unanimously agreed to relinquish PL876 S.

7. Appendix

Appendix A

Table 4: Discovery and Prospect data (Enclose map)

Block	30/4	Prospect name	Valdar	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)		Outside play (Y/N)					
Oil, Gas or O&G case:	Oil	Reported by company	A/S Norske Shell	Reference document	PL876S Relinquishment Report			Assessment year	2018
This is case no.:	1 of 1	Structural element	Rungne Sub Basin	Type of trap	Structural/Strat.	Water depth [m MSL] (>0)	130	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)	0.66	6.20	7.80	17.00				
	Gas [10^9 Sm^3] (>0.00)					0.02	0.23	0.47	1.20
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0.27	2.60	3.40	7.50				
	Gas [10^9 Sm^3] (>0.00)					0.01	0.10	0.20	0.54
Reservoir Chrono (from)	Late Paleocene	Reservoir litho (from)	Hermod Fm	Source Rock, chrono primary	Upper Jurassic	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Late Paleocene - Eocene
Reservoir Chrono (to)	Late Paleocene	Reservoir litho (to)	Hermod Fm	Source Rock, chrono secondary	Middle Jurassic	Source Rock, litho secondary	Heather Fm	Seal, Litho	Sele Fm - Hordaland Gp
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.11	Oil case (0.00-1.00)	1.00	Gas case (0.00-1.00)	0.00	Oil & Gas case (0.00-1.00)	0.00		
Reservoir (P1) (0.00-1.00)	0.45	Trap (P2) (0.00-1.00)	0.80	Charge (P3) (0.00-1.00)	0.34	Retention (P4) (0.00-1.00)	0.90		
Parametres:	Low (P90)	Base	High (P10)	*Base parameters are P50. Reservoir (P1) has been modified to account for risk of no recovery (P1 = chance factor reservoir x chance factor recovery). The chance factor for recovery is 0.9. Charge (P3) represents potential for oil charge and has been modified to account for a QI downgrade. The pre downgrade chance facrtor is 0.6.*					
Depth to top of prospect [m MSL] (> 0)		1920							
Area of closure [km^2] (> 0.0)	1.0	5.2	9.8						
Reservoir thickness [m] (> 0)	40	60	80						
HC column in prospect [m] (> 0)	22	37	46						
Gross rock vol. [10^9 m^3] (> 0.000)	250.000	325.000	471.000						
Net / Gross [fraction] (0.00-1.00)	0.42	0.71	0.88						
Porosity [fraction] (0.00-1.00)	0.27	0.30	0.33						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0.14	0.26	0.45						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0.88	0.90	0.93						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	9	62	136						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0.30	0.46	0.55						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0.30	0.46	0.55						
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)	60			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)	193			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation								Kart nr	NPD will insert value

Appendix B

Table 4: Discovery and Prospect data (Enclose map)

Block	30/4	Prospect name	Bjørn	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)		Outside play (Y/N)					
Oil, Gas or O&G case:	Oil	Reported by company	A/S Norske Shell	Reference document	PL876S Relinquishment Report			Assessment year	2018
This is case no.:	1 of 1	Structural element	Rungne Sub Basin	Type of trap	Structural/Strat.	Water depth [m MSL] (>0)	140	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)	2.20	7.30	8.70	17.30	0.00	0.01	0.01	0.02
	Gas [10^9 Sm^3] (>0.00)	0.07	0.33	0.41	0.88	0.05	0.30	0.55	1.30
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0.90	3.00	3.80	7.80	0.00	0.00	0.00	0.01
	Gas [10^9 Sm^3] (>0.00)	0.03	0.18	0.24	0.53	0.02	0.13	0.24	0.59
Reservoir Chrono (from)	Late Paleocene	Reservoir litho (from)	Hermod Fm	Source Rock, chrono primary	Upper Jurassic	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Late Paleocene - Eocene
Reservoir Chrono (to)	Late Paleocene	Reservoir litho (to)	Hermod Fm	Source Rock, chrono secondary	Middle Jurassic	Source Rock, litho secondary	Heather Fm	Seal, Litho	Sele Fm - Hordaland Gp
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.17	Oil case (0.00-1.00)	0.00	Gas case (0.00-1.00)	0.00	Oil & Gas case (0.00-1.00)	1.00		
Reservoir (P1) (0.00-1.00)	0.63	Trap (P2) (0.00-1.00)	0.80	Charge (P3) (0.00-1.00)	0.43	Retention (P4) (0.00-1.00)	0.80		
Parametres:	Low (P90)	Base	High (P10)	*Base parameters are Pmean. Reservoir (P1) has been modified to account for risk of no recovery (P1 = chance factor reservoir x chance factor recovery). The chance factor for recovery is 0.9. Charge (P3) has been modified to include the QI downgrade of 3% to the total POS. The pre downgrade charge chance factor was 0.5.*					
Depth to top of prospect [m MSL] (> 0)		1870							
Area of closure [km^2] (> 0.0)	5.0	10.0	15.0						
Reservoir thickness [m] (> 0)	15	30	45						
HC column in prospect [m] (> 0)	67	70	73						
Gross rock vol. [10^9 m^3] (> 0.000)	175.000	390.000	734.000						
Net / Gross [fraction] (0.00-1.00)	0.20	0.50	0.75						
Porosity [fraction] (0.00-1.00)	0.27	0.30	0.33						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0.20	0.30	0.50						
Bg [Rm3/Sm3] (< 1.0000)	0.0060	0.0050	0.0040						
1/Bo [Sm3/Rm3] (< 1.00)	0.88	0.90	0.93						
GOR, free gas [Sm^3/Sm^3] (> 0)	28500	45500	100000						
GOR, oil [Sm^3/Sm^3] (> 0)	9	48	136						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0.30	0.46	0.55						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0.30	0.46	0.55						
Recov. factor, gas main phase [fraction] (0.00-1.00)	0.37	0.62	0.75						
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0.30	0.46	0.55	For NPD use:					
Temperature, top res [°C] (>0)	60			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)	193			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation								Kart nr	NPD will insert value

Appendix C

Table 4: Discovery and Prospect data (Enclose map)

Block	30/4	Prospect name	Blood Moon	Discovery/Prosp/Lead	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:	Oil	Reported by company	A/S Norske Shell	Reference document	PL876S Relinquishment Report			Assessment year	2019
This is case no.:	1 of 1	Structural element	Rungne Sub Basin	Type of trap	Stratigraphic	Water depth [m MSL] (>0)	140	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)	2.20	7.30	8.70	17.30	0.00	0.01	0.01	0.02
	Gas [10^9 Sm^3] (>0.00)	0.07	0.33	0.41	0.88	0.05	0.30	0.55	1.30
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0.90	3.00	3.80	7.80	0.00	0.00	0.00	0.01
	Gas [10^9 Sm^3] (>0.00)	0.03	0.18	0.24	0.53	0.02	0.13	0.24	0.59
Reservoir Chrono (from)	Eocene	Reservoir litho (from)	Grid Fm/ Injectite	Source Rock, chrono primary	Upper Jurassic	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Eocene
Reservoir Chrono (to)	Eocene	Reservoir litho (to)	Grid Fm/ Injectite	Source Rock, chrono secondary	Middle Jurassic	Source Rock, litho secondary	Heather Fm	Seal, Litho	Hordaland Gp
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.10	Oil case (0.00-1.00)	1.00	Gas case (0.00-1.00)	0.00	Oil & Gas case (0.00-1.00)	0.00		
Reservoir (P1) (0.00-1.00)	0.40	Trap (P2) (0.00-1.00)	0.80	Charge (P3) (0.00-1.00)	0.60	Retention (P4) (0.00-1.00)	0.50		
Parametres:	Low (P90)	Base	High (P10)	*Base parameters are P50.*					
Depth to top of prospect [m MSL] (> 0)		1400							
Area of closure [km^2] (> 0.0)	5.3	9.7	15.5						
Reservoir thickness [m] (> 0)	13	25	38						
HC column in prospect [m] (> 0)	60	77	90						
Gross rock vol. [10^9 m^3] (> 0.000)	222.000	450.000	696.000						
Net / Gross [fraction] (0.00-1.00)	0.70	0.80	0.90						
Porosity [fraction] (0.00-1.00)	0.27	0.30	0.33						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0.17	0.24	0.32						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0.87	0.91	0.95						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	19	36	73						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0.25	0.35	0.45						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0.55	0.65	0.75						
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)				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)				Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation								Kart nr	NPD will insert value