PL 1046 Status Report –

License Surrender

Part of blocks 24/3, 24/6, 25/1 & 25/4

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1.0 History of the production licence

Award date and licensees and operator

The PL 1046 license is located within the South Viking Graben, between the Alvheim and Frigg fields (Figure 1). The license was awarded to a license group consisting of Chrysaor Norge AS (Op.) 40%, Suncor 30% and Petoro 30% in February 2020 (APA 2019).

Work obligations with deadlines

The work obligations for Phase 1 have been fulfilled comprising 3D seismic reprocessing and G&G work. The original drill or drop deadline was by 14.02.2022 but was subsequently extended by 6 months to 14.08.2022.

Applications for and decisions to extend deadlines

The license applied for a 6-months extension to the original drill or drop deadline to perform detailed seismic data analysis of the Heracles Prospect to try to de-risk and mature the prospect for a drill or drop decision.

Overview of meetings held

The MC and EC meetings held during the licence period are listed below. All meetings have been on Teams effectively due to COVID 19 restrictions.

- 31.03.2020 ECMC start-up meeting
- 18.06.2020 EC Workmeeting
- 23.11.2020 ECMC Meeting
- 12.05.2021 EC Workmeeting
- 13.09.2021 EC Workshop
- 15.09.2021 EC Workmeeting
- 23.11.2021 ECMC meeting
- 22.06.2022 MC Meeting

Brief substantiation for surrender/lapse/expiration

The Paleocene prospects which were identified in the original license application as the main targets have been re-evaluated resulting in the volumes being revised down, and the risks increased. In particular the seal risk is high and post well analysis demonstrates that hydrocarbons generally migrate to and accumulate in the shallowest reservoir sequence within a structure and that top seal failure is the main reason for the deeper reservoirs being dry. The volumes were decreased following enhanced seismic quality as a result of seismic reprocessing, resulting in more accurate well ties, and detailed mapping of both top and base reservoir.

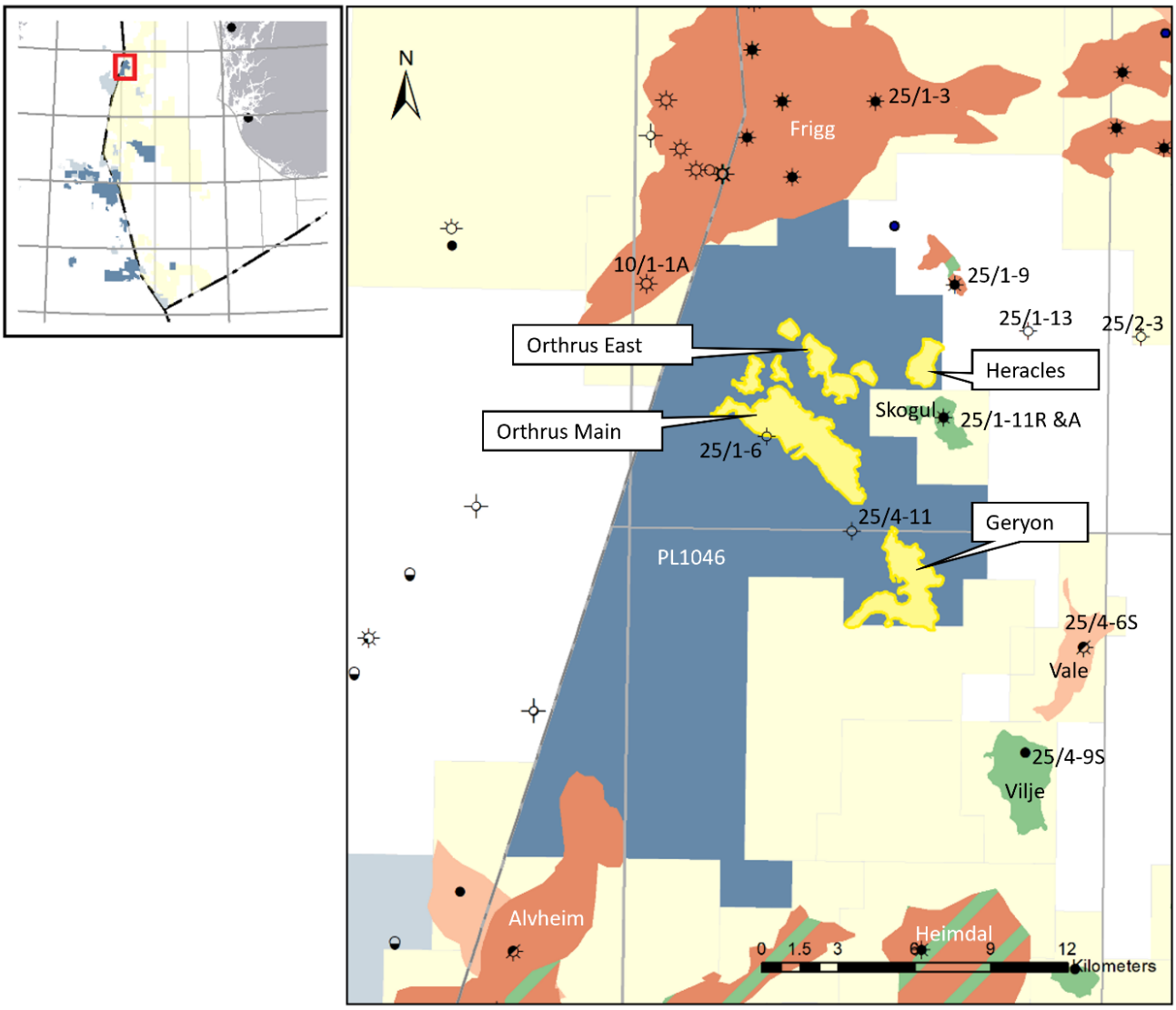

Figure 1: Location map. PL 1046 is in blue and the prospects in yellow.

2.0 Database overviews

2.1 Seismic data

The common seismic database consists of the PGS multiclient 3D survey MC3D-PGS16M01-PGS15917. The dataset is based on broadband acquisition for surveys MC3D-NVG09, MC3D-NVG10 and MC3D-NVG11. As a part of the work programme the license performed a reprocessing project with PGS covering the key prospectivity, offset wells and fields adjacent to the license. The proprietary reprocessed dataset with the official name PGS16M01-PGS15917CHRR21 covers an area of 305 km^2 with fully migrated data (Figure 2). In addition, Harbour performed an inhouse seismic Common Reflection Angle Migration (CRAM) imaging reprocessing project for the license covering an area of approximately 227 km^2. Processed shot gathers from the reprocessed data (PGS16M01-PGS15917CHRR21) were used as input for this project. The seismic database is listed in Table 1 and shown in Figure 2.

3D Survey Name / Project Name	NPDID	Public	Area km^{2*}	Dataset / Comments
Input to reprocessing: MC3D-NVG09 MC3D-NVG10 MC3D-NVG 11	 - 7189 7377	 Commercial Commercial Commercial	406	*Area (km^2) not including aperture.
PGS Reprocessing: PGS16M01-PGS15917CHRR21	n/a	N	305	-Kirchhoff PSDM Full Offset & Angle Stacks in Time & Depth Raw. -Kirchhoff PSDM Full Offset & Angle Stacks in Time & Depth Final -Velocity Models
Harbour In-house Reprocessing: PGS16M01-PGS15917CHRR21	n/a	N	227	-CRAM Full Offset & Angle Stacks in Time Final -CRAM Full Offset in Depth Final

Table 1: Seismic database. The official name for the PL1046 seismic reprocessing is PGS16M01-PGS15917CHRR21.

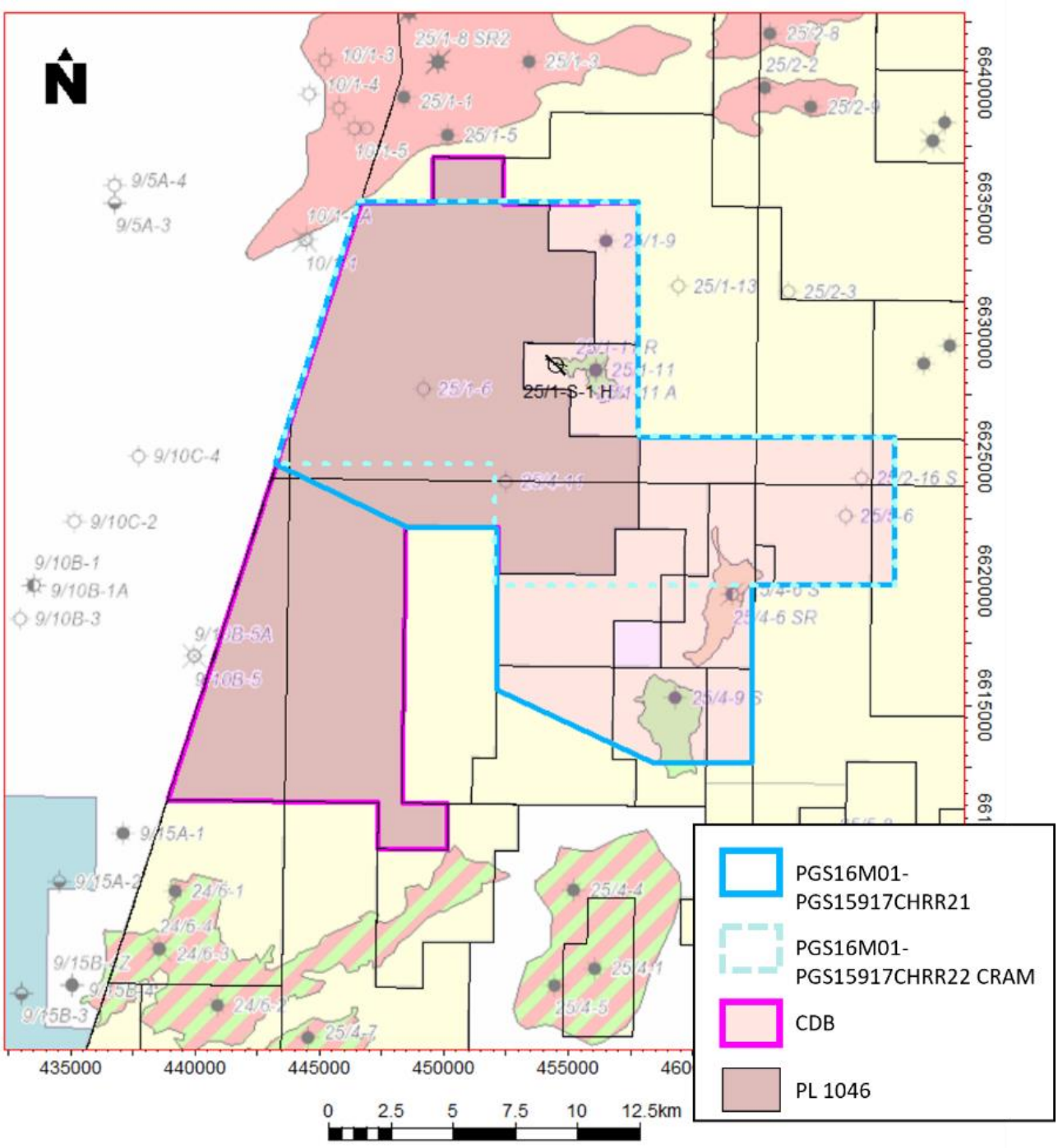

Figure 2: Seismic database. CHRR21 reprocessed area blue polygon, CHRR22 (CRAM) reprocessed area light blue dotted polygon and common database pink polygon.

2.2 Well data

Data table showing analytical techniques performed per study well (Y=Yes, - =No)

Well Name	NPD ID	Year	Biostrat.	Electro-facies	XRF	Sedim-entology	QEMSCAN	Rock Physics	CPI
25/1-3	349	1972	Y	Y	Y	Y	Y	-	Y
25/1-6	352	1978	Y	Y	Y	Y	-	Y	Y
25/1-9	1001	1986	Y	Y	Y	Y	-	Y	Y
25/1-11 A	6376	2010	Y	Y	Y	-	Y	-	Y
25/1-11 R	6368	2010	Y	Y	Y	-	Y	Y	Y
25/1-S-1H	8798	2019	-	-	-	Y	-	-	Y
25/1-13	8658	2019	Y	-	-	-	-	-	-
25/2-3	355	1974	Y	Y	Y	-	-	-	Y
25/2-16S	4385	2001	Y	Y	-	-	-	-	-
25/4-6S	1703	1991	Y	Y	Y	-	-	-	-
25/4-9S	4278	2003	Y	Y	-	Y	-	Y	Y
25/4-11	8227	2017	Y	Y	Y	-	Y	Y	Y
25/5-6	6167	2009	Y	Y	Y	-	-	Y	Y
UK 10/1-1A	-	1972	Y	Y	Y	-	-	-	Y

Table 2: Well database

3.0 Results of geological and geophysical studies

Several proprietary studies have been undertaken as a part of the license work to evaluate the prospectivity in the PL1046. All study results were integrated to reach a conclusion. These studies are described briefly below.

Integrated geological reservoir characterisation of the Palaeocene – Eocene deep-water sands and muds - CGG Robertson

The study provides a comprehensive geological reservoir characterisation of the deep-water Paleocene to Eocene sandstone reservoir units within PL1046. This has been achieved through the integration of biostratigraphy, chemostratigraphy, petrophysics, electrofacies and sedimentology. Additionally, QEMSCAN analysis were performed and integrated with the petrophysics to assess the clay mineral content to evaluate the sealing potential of possible cap rocks.

The biostratigraphy study achieved more accurate dating of the Selandian to Ypresian reservoir sandstones and potential mudstone /tuffaceous seals, with some units being completely re-dated resulting in a greater understanding of the stratigraphy of the area. Sub-division of some reservoirs and mudstone/tuffaceous into sub-units have had a big impact on the Hermod/Sele formations in relation to the reservoir sandstone presence, distribution and quality. It also allowed for greater resolution of correlative units, sand to sand correlations and sand to coeval muds. The enhanced stratigraphy allowed for more accurate seismic to well ties.

Sedimentology and Wireline log studies: This resulted in a comprehensive understanding of the sedimentological facies, from available cored sections, to understand the depositional processes (mainly restricted to the Frigg sands) and to use those as analogues. An extensive and detailed understanding of the Electro-facies was developed in the wells for the reservoir and seal units. Various Electro-facies were identified within the sandstone and mudstone/tuffaceous dominated sediments allowing for a greater understanding of reservoir facies and seal mineralogy.

Chemostratigraphy and Qemscan Analysis: The results of the XRF analysis show that the individual main reservoir sands have distinct elemental signatures and can be correlated and mapped more accurately. This allowed the development of more detailed GDE maps for the reservoirs and seals when integrating with seismic structure, amplitude and isopach maps.

Petroleum System Analysis – APT (Applied Petroleum Technology)

The license is located within the deep part of the South Viking Graben where thick Draupne and Heather formation source rocks occur. An integrated source rock, maturation and charge migration model was developed for the area. The basin model shows that excess volumes of hydrocarbons have been generated and trapped within the area. The model predicted that the prospects and leads were likely charged with hydrocarbons. The prospects are modelled as oil-bearing, but the HC-phase is sensitive to the top seal capacity as modelled gas leaks whereas oil is trapped. Although some alteration (biodegradation and water washing) of the oil is possible, good oil quality with gravity up to ~35°API is anticipated as indicated by comparison to oils in wells 25/1-11R (Skogul) and 25/1-9 (Litjklakken). Therefore, the charge and migration risks are considered to be low for the prospects.

Formation Evaluation - Harbour

Detailed petrophysics was carried out on all the key wells in the area to evaluate reservoir quality. In addition, water resistivity and pressure data were examined and integrated with the new stratigraphic and facies data to understand the petroleum systems connectivity. Reservoir quality for the sandstones is generally very good

to excellent. The resistivities and pressures suggest the reservoir sandstones in the area are connected, indicating seal breaching locally.

Rock Physics study - DUG

The objective of this study was to determine petrophysical properties for the Paleocene and Eocene reservoirs intersected in the license area, which could be used for further rock physics and seismic modelling work performed by the operator.

AVO Rock physics modelling – Rock Physics Technology A/S

Inverse Rock Physics Modelling (IRPM) is a rock physics based inversion method for predicting reservoir properties such as porosity, lithology and fluid saturation. IRPM calculates a spectrum of solution types. The IRPM for the prospects shows a positive response towards brine filled clean sandstones but the amplitudes could also come from a brine saturated argillaceous sandstone. The hydrocarbon responses observed are weak and considered to be inconclusive.

CRAM reimaging project – Harbour

Harbour undertook an inhouse seismic CRAM depth imaging project in the license covering an area of approximately 227 km^2. The input seismic data was pre-processed shot gathers from the reprocessed survey PGS16M01-PGS15917CHRR21 and the project aim was to obtain an improved seismic image of Hermod and Heimdal Fms sandstones.

The project was performed using Common Reflection Angle Migration (CRAM) which is part of the software suite from Paradigm. CRAM offers several advantages over standard Kirchhoff migrations as well as other accurate techniques e.g., wavefront reconstruction and beam migration. The CRAM algorithm does not require regularized data at the surface. It tracks rays from gridded subsurface points to any given surface coordinate, coupling all possible source-receiver pairs. In this project Q compensation was applied within the migration algorithm to accurately measured ray-paths.

The interpretation and SDA work using the CRAM data gave the same results as using the PGS data and demonstrates that the anomaly at Heracles is not caused by processing/gather/stacking artefacts.

4.0 Prospect update report

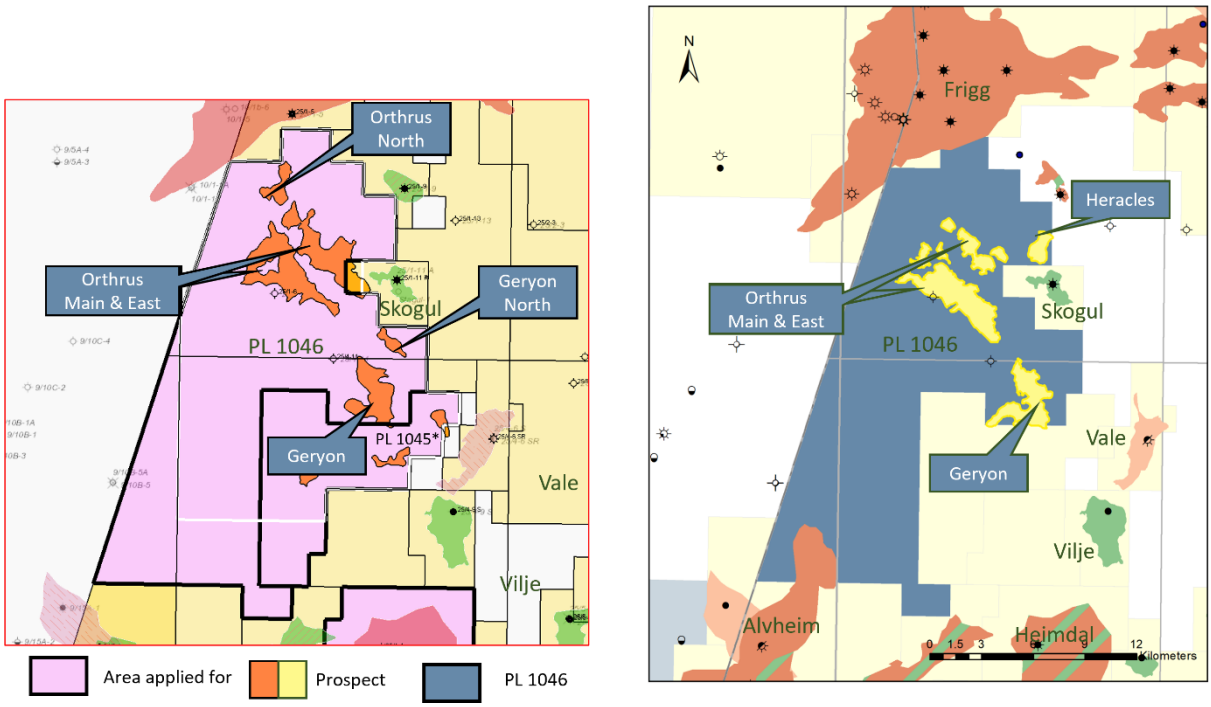

Figure 3: Original APA 2019 prospectivity (left) vs updated current prospectivity (right).

A detailed prospect evaluation of the license has been undertaken during Phase 1 of the work obligation. The Orthrus and Geryon prospects, which were initially identified in the original license application as the main targets, have been re-evaluated with their volumes revised down, and their risks increased. The Heracles prospect located 1.5 km north of the Skogul Field was identified on the reprocessed seismic dataset which was subject to detailed geological and geophysical analysis and demonstrated that its geological risk is high, and the volume potential is low (Figure 3).

The deep-water depositional systems of the Paleocene Heimdal, Hermod, Odin and Frigg formations are mapped in the license and are the main reservoirs in nearby fields, e.g. Frigg, Skogul and Vilje. Post well analysis, within the vicinity of the license, demonstrates that hydrocarbons generally accumulate in the shallowest reservoir within the structures and that top seal failure is the main reason for the deeper reservoirs being dry. Remobilisation and injection of Heimdal, Hermod and Odin Fms sandstones have been identified and mapped, and these injectite systems tend to breach the top seal and create migration conduits into the overlying strata, culminating in the accumulation in the uppermost reservoirs. In the northern area this is the Frigg and Odin Fms and to the south, around the Vilje Field, this is the Heimdal Fm.

The pressure history derived from wells also shows that the different formations are connected in the area. The Frigg field production depletes pressure in the area and the closer the wells are to the Frigg field the more depletion is occurring. It is apparent that the depletion is taking place at almost the same rate in all reservoir layers (Frigg, Odin, Hermod, Heimdal) although the field has only produced from Frigg sandstones. This indicates sandstones at all stratigraphic levels are in connection at least via aquifer. Also, the water composition/resistivity in all these reservoir sands is very similar, supporting pressure communication of the reservoirs. The communication of the reservoirs is due to downcutting by younger high energy submarine fan sandstone systems and sand remobilisation/ injection breaching top seals. Thus, the prospects with Heimdal and Hermod Fms reservoir carry a high top seal risk when Odin and Frigg sandstones are present above the

structures. Furthermore, the prospects do not have any Direct Hydrocarbon Indicators (DHI), which do occur in associated nearby fields e.g., Frigg, Litjklakken, Skogul and Vilje also suggesting seal breach.

The Orthrus Main Prospect is a stratigraphic/ structural combination trap with reservoir in the Hermod Fm sandstones. The structure is bounded to the southwest by the pinch-out of Hermod depositional system, proven in well 25/1-6 where only thin sandstones occur, and by structural closure to the north. Orthrus East is located within the axial part of Hermod sand system dominated by thick amalgamated and accreting channel/ lobes in a mid to distal outer fan setting. The structure consists of a series of mounded structures enhanced by differential compaction and sand remobilization. Basin modelling shows charging of the prospects by oil but the presence of younger sandstones above, sandstone remobilisation/injection and the lack of a DHI suggest the prospects seals are breached (Figure 4).

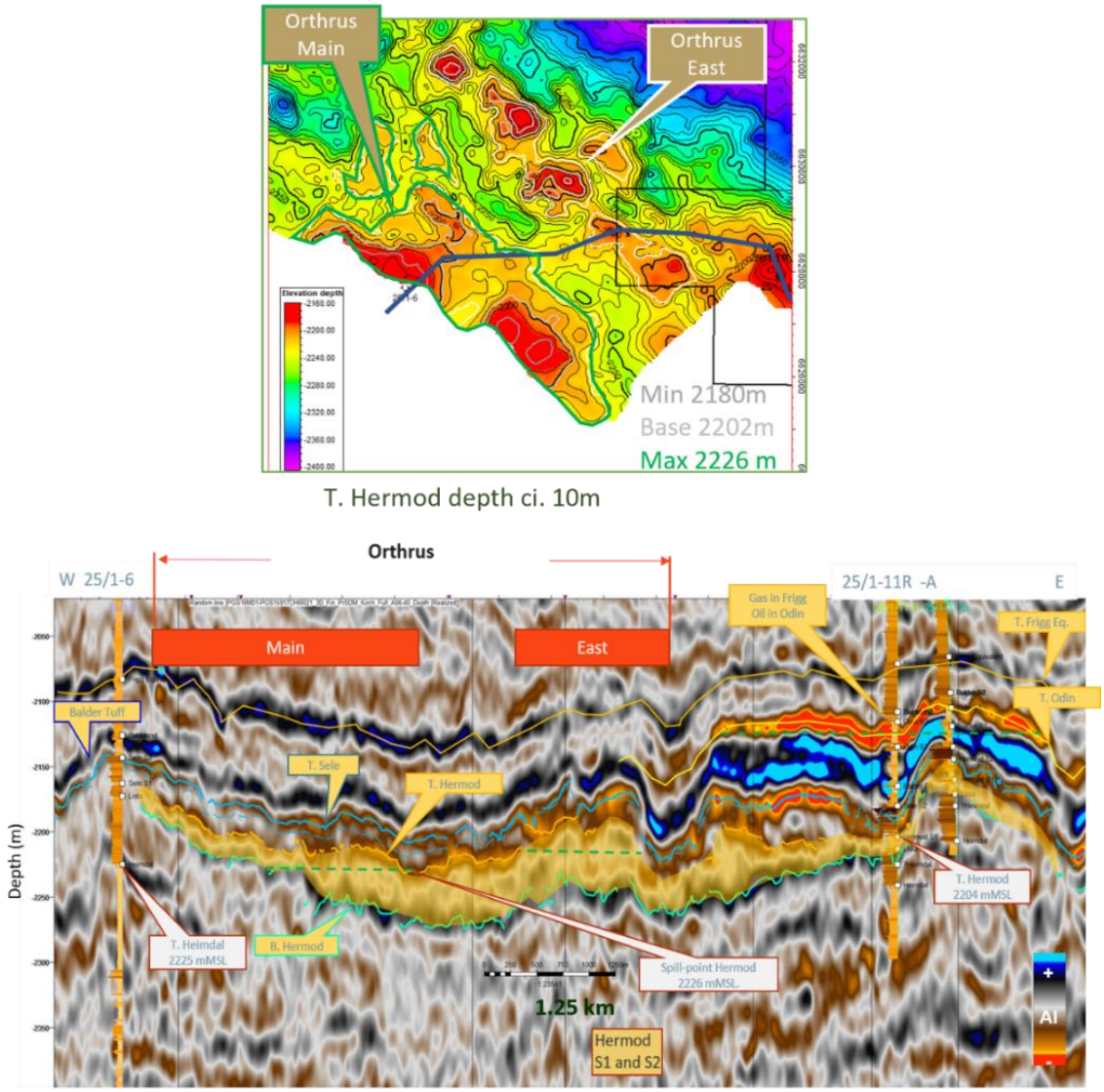

Figure 4: Orthrus Main and Orthrus East prospects. Top Hermod depth map and seismic section in depth from well 25/1-6 to wells 25/1-11R & A. Hermod Fm shown in orange.

The Geryon prospect is a structural trap with reservoir in the Heimdal Fm. Top seal is provided by shales of the Lista and Sele formations, but since the structure is onlapped by Hermod sandstones from the north the seal is probably breached and this may be the reason why the structure does not have a DHI as mapped in the Vilje Field to the south (Figure 5).

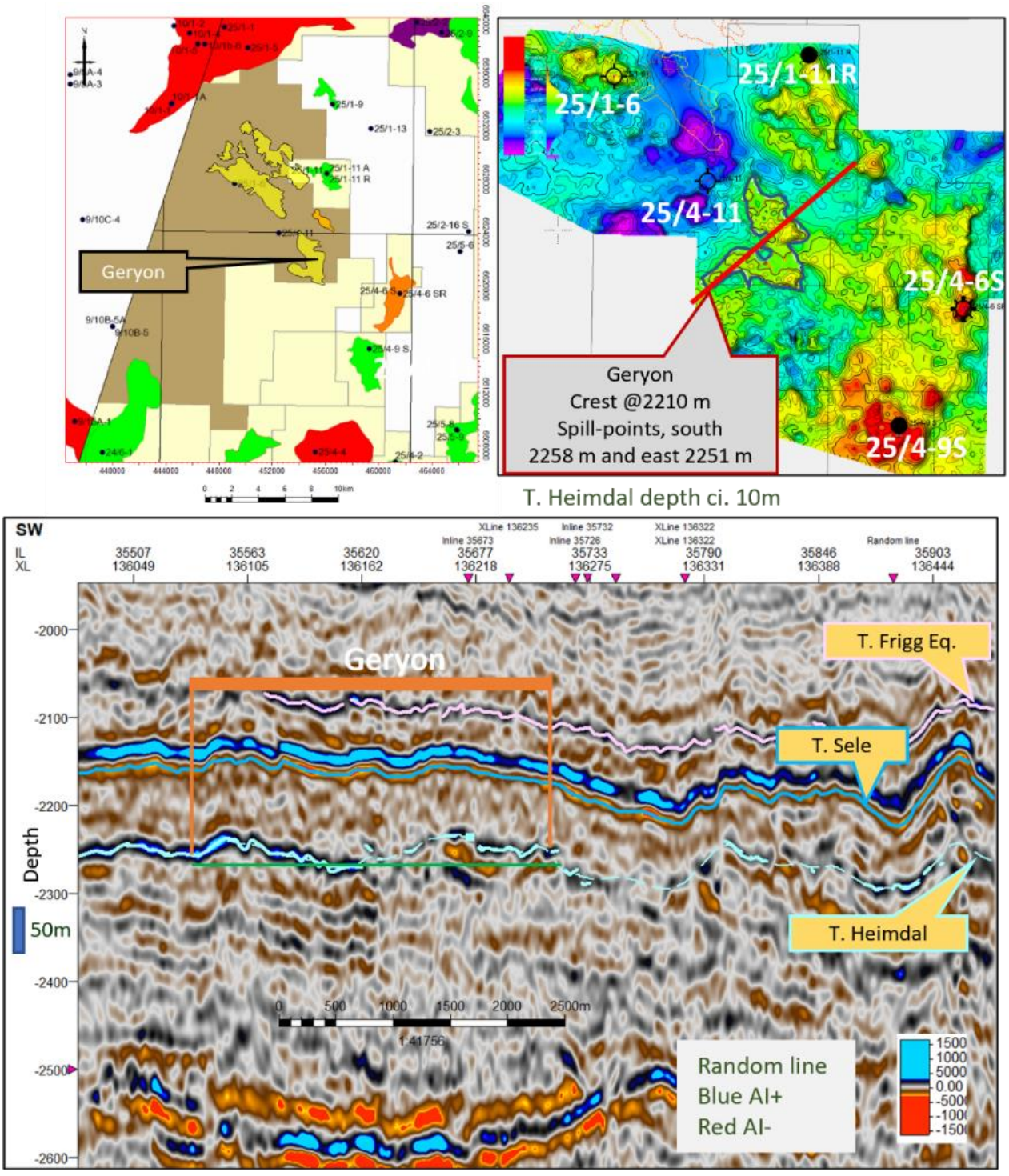

Figure 5: Geryon Prospect. Top Heimdal depth map and seismic section in depth in SW-NE direction.

The Heracles prospect (not originally mapped in the APA 2019 application) was observed as a seismic anomaly on the reprocessed data, and is different to the other prospects, and was therefore subject to more detailed analysis. The seismic data analysis indicated the presence, in the Hermod sandstones, of a possible DHI with an AVO response which is distinctively different from the reflectors above and below. It has an intercept-gradient plot which has a distinct trend significantly different from the background data and matches the predicted response from the modelling of a hydrocarbon filled reservoir. However, alternative factors such as lithology effects for example injected high porosity sandstones, cementation or difference in overburden

shales can mimic a hydrocarbon response. It was concluded that the DHI was likely negative and the prospect should not be given an uplift in geological risk (Pg) due to the seismic amplitudes.

Seal and trap are the key risks to the Heracles prospect. Like the Orthrus and Geryon prospects, Heracles has Odin and Frigg sandstones present above the structure and the Hermod reservoir is probably connected to the reservoirs above via faults and sandstone sill and dyke intrusions. The trap is complex, a fault and dip closed, jack-up structure, formed by sand remobilisation, syn-sedimentary faulting and sand injection. The faults, where the fault plane was filled with injected sandstones, would need to juxtapose against shales to seal which was regarded as unlikely. Top seal and lateral fault seal are therefore considered the main risk to the integrity of the prospect (Figure 6).

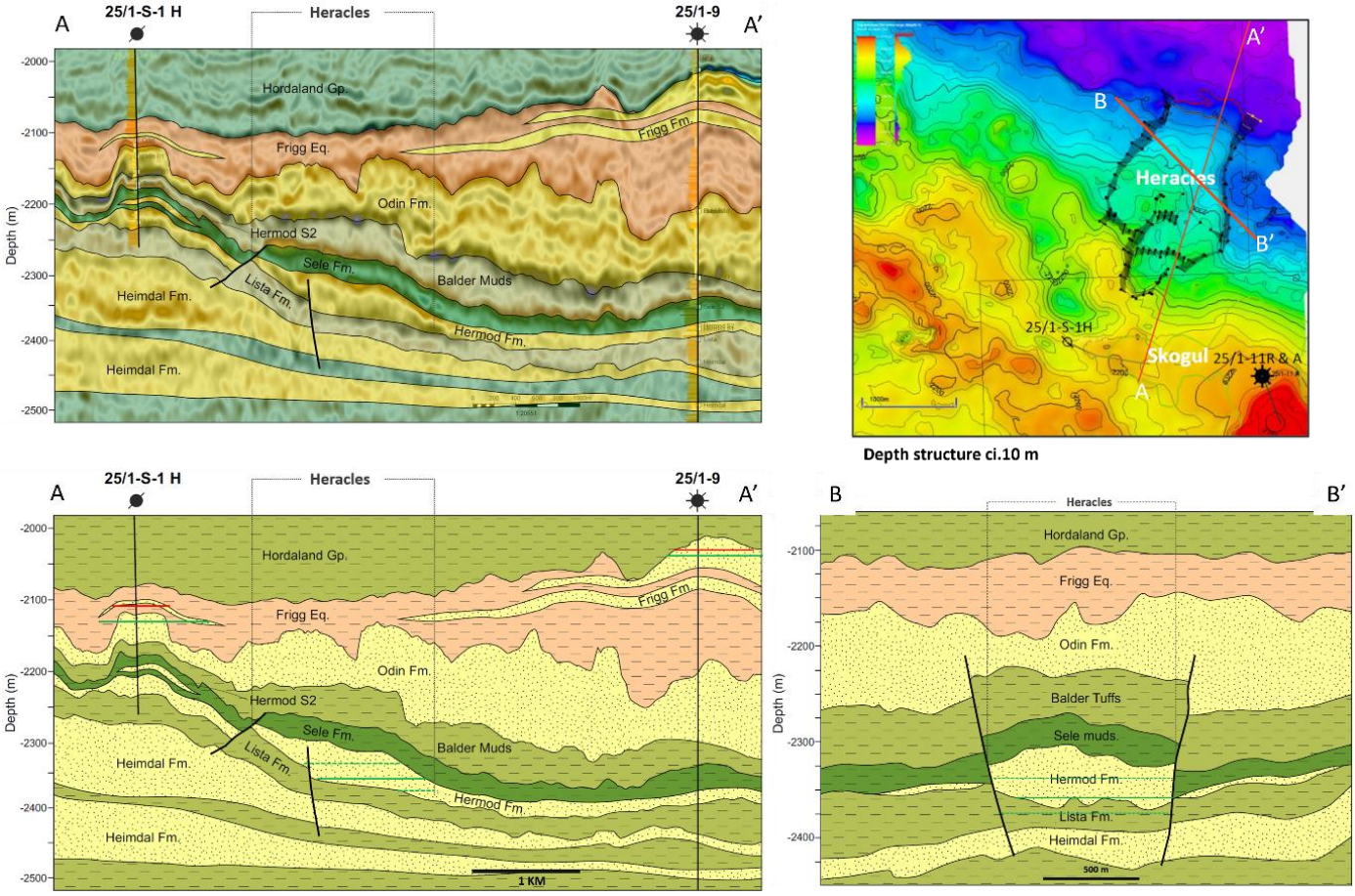

Figure 6: Heracles Prospect geoprofiles and depth structure map. Profile AA' Skogul development well 25/1-S-1H to well 25/1-9 upper and lower left. Profile BB' prospect strike line lower right. Top Hermod depth structure map upper right.

In conclusion, the prospects risk parameters have been reassessed and especially seal risk has increased. The volumes have been reduced for two reasons, i) a detailed mapping of both top and base reservoir (base reservoir was not mapped for APA) and ii) a more conservative approach to HC-column height because the structures most likely leaks via the top seal and not at the spill-point. An overview on the updated volumes and risking is given in Table 3.

PL 1046 - Recoverable resources and risk								
Prospect	Fluid Type	Oil (10^6 Sm^3)			Ass. Gas (10^9 Sm^3)			P_g %
		P90	Mean	P10	P90	Mean	P10	
Orthrus Main	Oil	0.56	1.68	3.12	0.06	0.15	0.27	17%
Orthrus East	Oil	0.17	0.63	1.23	0.02	0.06	0.11	14%
Geryon	Oil	0.28	0.89	1.69	0.03	0.08	0.15	18%
Heracles	Oil	0.26	1.35	2.75	0.03	0.15	0.29	15%

Table 3: Recoverable resources and risk

Tables with Discovery and Prospect data (NPD Table 4)

Table 4: Discovery and Prospect data (Enclose map)

Block	25/1	Prospect name	Orthrus Main	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	Chrysaor	Reference document	PL1046 status report for surrender of production license			Assessment year	2022
This is case no.:	1 of 1	Structural element	Viking Graben	Type of trap	Structural-stratigrap	Water depth [m MSL] (>0)	100	Seismic database (2D/3D)	3D
Resources IN PLACE and RECOVERABLE		**Main phase**				**Associated phase**			
Volumes, this case		Low (P90)	Base, Mode	Base, Mean	High (P10)	Low (P90)	Base, Mode	Base, Mean	High (P10)
In place resources	Oil [10^6 Sm^3] (>0.00)	1.89	2.76	4.62	8.04				
	Gas [10^9 Sm^3] (>0.00)					0.17	0.32	0.43	0.75
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0.56	0.99	1.68	3.12				
	Gas [10^9 Sm^3] (>0.00)					0.06	0.08	0.15	0.27
Reservoir Chrono (from)	Thanetian	Reservoir litho (from)	Hermod Fm	Source Rock, chrono primary	Tithonian	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Paleocene
Reservoir Chrono (to)	Ypresian	Reservoir litho (to)	Hermod Fm	Source Rock, chrono secondary	Oxfordian	Source Rock, litho secondary	Heather Fm	Seal, Litho	Sele Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.17	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)	0.80	Trap (P2) (0.00-1.00)	0.27	Charge (P3) (0.00-1.00)	0.80	Retention (P4) (0.00-1.00)	1.00		
Parametres:	Low (P90)	Base	High (P10)	*Comments*					
Depth to top of prospect [m MSL] (> 0)		2158							
Area of closure [km^2] (> 0.0)	1.9	3.2	6.5						
Reservoir thickness [m] (> 0)									
HC column in prospect [m] (> 0)	33	45	56						
Gross rock vol. [10^9 m^3] (> 0.000)	0.016	0.036	0.060						
Net / Gross [fraction] (0.00-1.00)	0.57	0.72	0.86						
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	0.25	0.31						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0.74	0.78	0.83						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	70	95	115						
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)	0.25	0.35	0.45						
Recov. factor, gas main phase [fraction] (0.00-1.00)									
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)				For NPD use:					
Temperature, top res [°C] (>0)	75			Innrapp. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)	203			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. Phi>10%	2. Vclay<45%	3. Sw<60%					Kart nr	NPD will insert value

Table 4: Orthrus Main Prospect

Table 4: Discovery and Prospect data (Enclose map)

Block	25/1	Prospect name	Orthrus East	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	Chrysaor	Reference document	PL1046 status report for surrender of production license			Assessment year	2022
This is case no.:	1 of 1	Structural element	Viking Graben	Type of trap	Structural-stratigrap	Water depth [m MSL] (>0)	100	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)	0.56	0.87	1.73	3.30				
	Gas [10^9 Sm^3] (>0.00)					0.05	0.07	0.16	0.31
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0.17	0.35	0.63	1.23				
	Gas [10^9 Sm^3] (>0.00)					0.02	0.03	0.06	0.11
Reservoir Chrono (from)	Thanetian	Reservoir litho (from)	Hermod Fm	Source Rock, chrono primary	Tithonian	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Paleocene
Reservoir Chrono (to)	Ypresian	Reservoir litho (to)	Hermod Fm	Source Rock, chrono secondary	Oxfordian	Source Rock, litho secondary	Heather Fm	Seal, Litho	Sele Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.14	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)	0.90	Trap (P2) (0.00-1.00)	0.20	Charge (P3) (0.00-1.00)	0.80	Retention (P4) (0.00-1.00)	1.00		
Parametres:	Low (P90)	Base	High (P10)	*Comments*					
Depth to top of prospect [m MSL] (> 0)		2155							
Area of closure [km^2] (> 0.0)		1.0							
Reservoir thickness [m] (> 0)									
HC column in prospect [m] (> 0)	29	41	51						
Gross rock vol. [10^9 m^3] (> 0.000)	0.009	0.014	0.025						
Net / Gross [fraction] (0.00-1.00)	0.57	0.72	0.86						
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	0.25	0.31						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0.74	0.78	0.83						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	70	95	115						
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)	0.25	0.35	0.45						
Recov. factor, gas main phase [fraction] (0.00-1.00)									
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)				For NPD use:					
Temperature, top res [°C] (>0)	75			Innrapp. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)	203			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. Phi>10%	2. Vclay<45%	3. Sw<60%					Kart nr	NPD will insert value

Table 5: Orthrus East Prospect

Table 4: Discovery and Prospect data (Enclose map)

Block	25/1	Prospect name	Geryon	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	Chrysaor	Reference document	PL1046 status report for surrender of production license			Assessment year	2022
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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)	0.77	1.12	2.20	4.07				
	Gas [10^9 Sm^3] (>0.00)					0.07	0.10	0.20	0.38
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0.28	0.56	0.89	1.69				
	Gas [10^9 Sm^3] (>0.00)					0.03	0.04	0.08	0.15
Reservoir Chrono (from)	Thanetian	Reservoir litho (from)	Heimdal Fm	Source Rock, chrono primary	Tithonian	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Paleocene
Reservoir Chrono (to)	Thanetian	Reservoir litho (to)	Heimdal Fm	Source Rock, chrono secondary	Oxfordian	Source Rock, litho secondary	Heather Fm	Seal, Litho	Lista Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.18	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)	1.00	Trap (P2) (0.00-1.00)	0.20	Charge (P3) (0.00-1.00)	0.90	Retention (P4) (0.00-1.00)	1.00		
Parametres:	Low (P90)	Base	High (P10)	*Comments*					
Depth to top of prospect [m MSL] (> 0)		2210							
Area of closure [km^2] (> 0.0)	0.7	1.9	3.2						
Reservoir thickness [m] (> 0)									
HC column in prospect [m] (> 0)	17	34	41						
Gross rock vol. [10^9 m^3] (> 0.000)	0.006	0.017	0.032						
Net / Gross [fraction] (0.00-1.00)	0.70	0.80	0.90						
Porosity [fraction] (0.00-1.00)	0.24	0.27	0.30						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0.20	0.25	0.30						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0.74	0.78	0.83						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	70	95	115						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0.30	0.40	0.50						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0.30	0.40	0.50						
Recov. factor, gas main phase [fraction] (0.00-1.00)									
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)				For NPD use:					
Temperature, top res [°C] (>0)	75			Innrapp. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)	207			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. Phi>10%	2. Vclay<45%	3. Sw<60%					Kart nr	NPD will insert value

Table 6: Geryon Prospect

Table 4: Discovery and Prospect data (Enclose map)

Block	25/1	Prospect name	Heracles	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	Chrysaor	Reference document	PL1046 status report for surrender of production license			Assessment year	2022
This is case no.:	1 of 1	Structural element	Viking Graben	Type of trap	Structural-stratigrap	Water depth [m MSL] (>0)	100	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)	0.82	2.55	2.87	4.87				
	Gas [10^9 Sm^3] (>0.00)					0.09	0.31	0.31	0.53
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0.26	1.13	1.35	2.75				
	Gas [10^9 Sm^3] (>0.00)					0.03	0.08	0.15	0.29
Reservoir Chrono (from)	Thanetian	Reservoir litho (from)	Hermod Fm	Source Rock, chrono primary	Tithonian	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Paleocene
Reservoir Chrono (to)	Ypresian	Reservoir litho (to)	Hermod Fm	Source Rock, chrono secondary	Oxfordian	Source Rock, litho secondary	Heather Fm	Seal, Litho	Sele Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.15	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)	0.90	Trap (P2) (0.00-1.00)	0.18	Charge (P3) (0.00-1.00)	0.90	Retention (P4) (0.00-1.00)	1.00		
Parametres:	Low (P90)	Base	High (P10)	*Comments*					
Depth to top of prospect [m MSL] (> 0)		2260							
Area of closure [km^2] (> 0.0)	0.5		1.5						
Reservoir thickness [m] (> 0)									
HC column in prospect [m] (> 0)	36	68	100						
Gross rock vol. [10^9 m^3] (> 0.000)	0.007	0.022	0.036						
Net / Gross [fraction] (0.00-1.00)	0.59	0.75	0.90						
Porosity [fraction] (0.00-1.00)	0.26	0.29	0.32						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0.15	0.21	0.28						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0.69	0.76	0.85						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	85	108	130						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0.25	0.45	0.65						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0.25	0.45	0.65						
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)	73			Innrapp. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)	215			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation	1. Phi>10%	2. Vclay<45%	3. Sw<60%					Kart nr	NPD will insert value

Table 7: Heracles Prospect

5.0 Technical assessment

A detailed technical-economic evaluation was performed for the Heracles prospect.

The exploration strategy comprised a vertical exploration well drilled by either a semi-sub or a jack-up rig. The development was planned with 1 single multi-lateral well, with one main bore and one single lateral bore. The production was planned by pressure depletion only and the production wells were assumed to be drilled from a spare slot at the Skogul template. The Skogul pipeline carries hydrocarbons via the Vilje Field to the Alvheim FPSO operated by AkerBP to the south.

The Skogul development was used as a benchmark for Capex and Opex.

The evaluation demonstrates that the mean recoverable resources at 9 mmboe are marginally larger than the estimated B/E reserves for the prospect, and combined with a low chance for success, Pg 15%, this makes the prospect not a viable drilling target.

6.0 Conclusion

The prospectivity within license PL1046 has been thoroughly evaluated and all the license commitments have been fulfilled. As a result of the license work the partnership conclude that the geological risk (Pg) is too high, and the recoverable hydrocarbon volumes potential is too low to make a viable business case to warrant further work and development. The partnership has unanimously decided to relinquish PL1046 in its entirety.