WELLESLEY
PETROLEUM

Relinquishment report
PL 1118

Revision:	Date:	Prepared by:	Approved by:
00	28.04.2022	[redacted]	

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1 History of the production licence

PL1118 was awarded in the APA2020 licensing round to Wellesley Petroleum AS (Operator, 50%) and Equinor Energy AS (50%). The licence is located in Mid Norway and covered 55 km² within blocks 6406/3, 6 and 6407/4.

The PL1118 work commitment was to reprocess modern 3D seismic data, perform geological and geophysical studies and make a Drill or Drop decision within 2 years (Table 1.1). The license work obligations have been fulfilled. The work programme and decision gates for PL1044 are presented in Table 1.1

Table 1.1 PL1118 License work programme and decision gates

Work obligations	Decisions	Task status	Expiry date
Reprocess modern 3D seismic and G&G studies		Completed	
	Decision to drill or drop	Completed	19.02.2023
Drill exploration well			
	(BoK) Decision to concretize	N/A	19.02.2025
Conceptual studies			
	(BoV) Decision to continue	N/A	19.02.2027
(PDO) Prepare a plan for development			
	(PDO) Submit plan for development	N/A	19.02.2028
	Decision to enter extension period	N/A	19.02.2028

During the duration of the license, the following Exploration Committee and Management Committee meetings took place.(Table 1.2)

Table 1.2 Licence meetings

Meetings	Date
2021-04-22-EC-MC PL1118 Licence Kick-off Meeting	22.04.2021
2021-11-17-MC-EC PL1118 ECMC meeting	17.11.2021

Reason for relinquishment

An updated evaluation of the PL1118 prospectivity has been completed using the reprocessed seismic cubes (PGS18M05 Sharp Q Denoised dataset) together with Geoteric Stratum, an AI technology for automatic fault detection. For the main prospect, Goldfinger, the conclusion is still that the most robust part of the structure lies in PL091, whilst the part in PL1118 is potentially heavily compartmentalized. The final volumes and risks for the Goldfinger Prospect are insufficient to recommend this as a drilling candidate in PL1118. A high level screening on other potential prospective intervals has also been completed. No other credible targets have been identified. Based on these conclusions, the partnership does not see any attractive drilling candidate in PL1118 and have decided to drop the license.

2 Database overviews

2.1 Seismic data

The common seismic database in PL 1118 is listed in Table 2.1 and with the areal coverage shown in Fig. 2.1 and Fig. 2.2

Underlying data:	PGS18M05
Vintage:	Wellesley post migration de-noised data (TWT)
Area:	Approx 200 sq km, to cover license, identified prospectivity, offset wells and major fault complexes

Corner points of proposed CDB polygon:
(UTM m; ED50-32N)

Poly	Vert	X	Y
1	1	401710.44	7190702.50
1	2	409117.88	7186924.00
1	3	406057.66	7180914.00
1	4	408507.75	7179656.50
1	5	403168.72	7169195.00
1	6	396486.28	7172598.50
1	7	398470.50	7176494.50
1	8	393294.06	7179137.00
1	9	396301.25	7185039.50
1	10	394745.09	7185833.50
1	11	396333.66	7188951.00

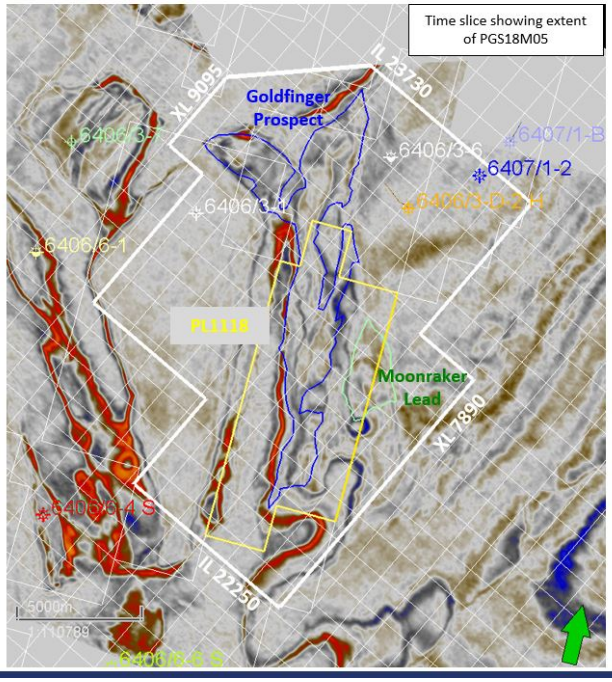

Fig. 2.1 PGS18M01

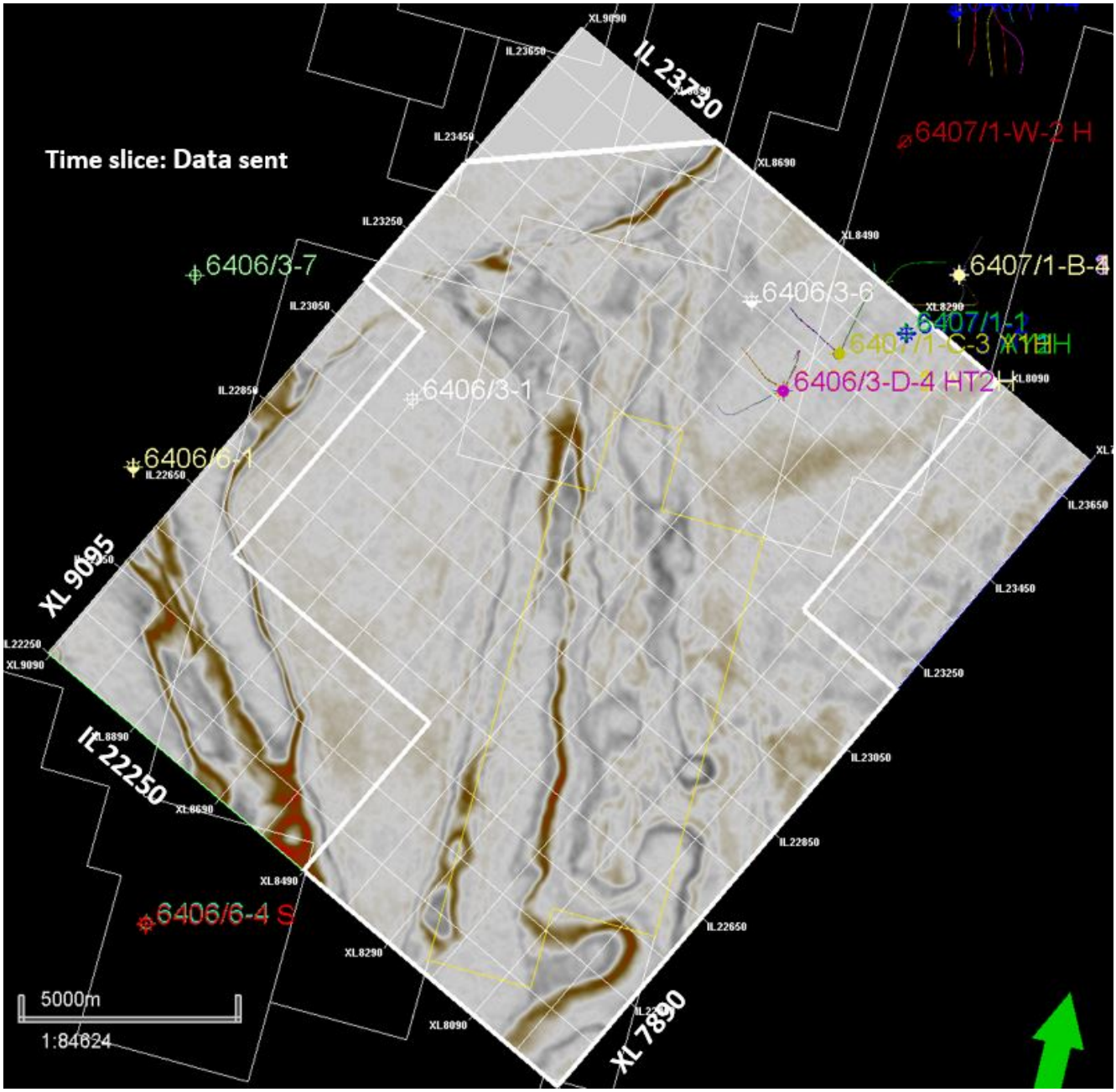

Fig. 2.2 PGS18M01 - Sharp

Table 2.1 Seismic database

Seismic survey	Aquisition	Status	Area km²	Datasets	Processing year	Quality
PGS18M01	2014-16	Multi-client	200	PSDM, partial stacks and gathers	2018	Very Good
PGS18M01 - Sharp	2014-16	Proprietary	200	Geoteric Stratum AI technology	2021	Very Good

2.2 Well data

Table 2.2 Well database

Well	Completion	Field	Status
6406/3-1	1984		Interpreted data released >20 years
6406/3-2	1986	Trestakk	Interpreted data released >20 years
6406/3-6	2002	Tyrihans Sør	Raw data only < 20 years
6406/6-1	1985		Interpreted data released >20 years
6406/6-3	2013	Mjøsa	Raw data only < 20 years
6406/6-6 S	2018	Jasper	Raw data only < 20 years
6407/1-2	1983	Tyrihans Sør	Interpreted data released >20 years
6407/4-1	1985	Spinell Sør	Interpreted data released >20 years
6406/3-D-2-H	2010	Tyrihans Sør	Raw data only < 20 years
6407/1-B-3-H	2008	Tyrihans Sør	Raw data only < 20 years

3 Results from geological and geophysical studies

A number of of internal and external studies have been carried out to address the geological and geophysical understanding of the license prospectivity. An overview of these studies are given below.

Seismic reprocessing

The seismic broadband survey PGS18M01 was used in the APA 2020 application and all prospects were evaluated based on this survey. However, all prospects were defined as downtrown fault traps and thereby dependent on the presence of effective fault seals. To derisk this element, improved seismic quality was required. Fault seal and degree of compartmentalisation was a key challenge for defining the main prospect Goldfinger. It was very important to understand the geometry of the faults; what throw they have, how they link up, and the presence of ramps. An automated fault tracking by the use of the GeoTeric STRATUM AI High Quality Fault mapping logarithm was carried out to get guidance and better understand these issues, and thereby understand the associated risks and gain increased confidence level of the seismic interpretation and mapping.

The key components of the entire processing workflow is outlined below:

- Pre-stack de-noise workflows
    - Additional radon passes
    - Random noise removal along offset planes
    - Offset alignment & spectral shaping
- Post-stack de-noise workflows with Dip Filter
- Auto detection of faults using machine learning engine creating Fault confidence attributes

A summary of the Geoteric's Stratum technology is listed below and some examples are shown in Fig. 3.1

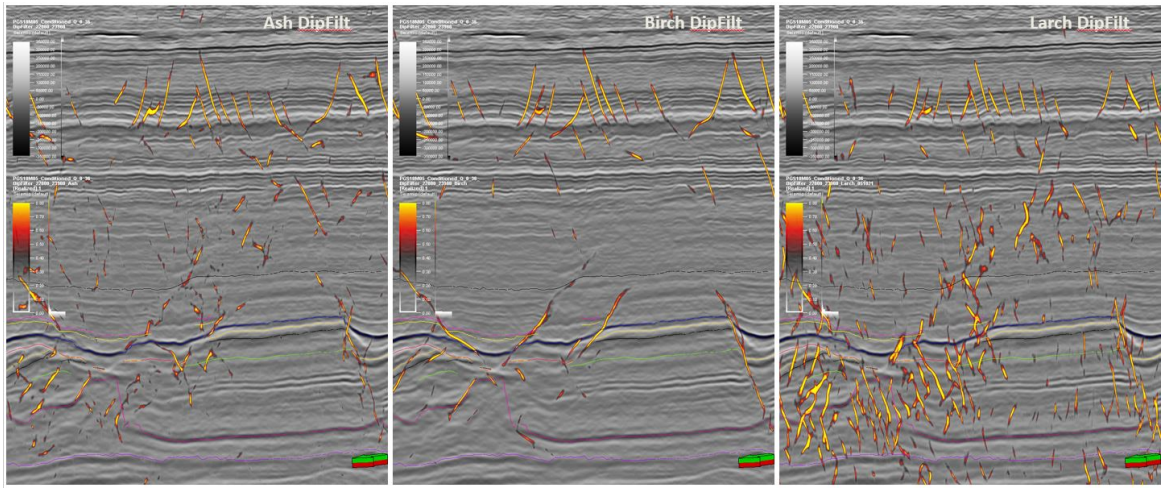

Fig. 3.1 Example of Geoteric automatic fault detection

- Network development
  - R&D consortium from 2018-2020
  - Neural networks powered by an AI engine to process seismic volumes for potential discontinuities (faults)
  - Available as a 2D and 3D technology
- Available 3D foundation networks
  - Three networks which broadly process and detect faults at different scales
    - Ash – localised faulting characterised well
    - Birch - regional faulting characterised well
    - Larch – small scale faulting characterised well
- Outputs are confidence attributes (0-1, 1 being highest confidence). Attributes can be combined and/or filtered in a variety of ways
- 3D networks can be fine tuned, to remove misclassified faults and increase confidence in the correctly classified faults (Birch and Larch networks only)

Fault Seal Study
A internal study to investigate the fault seal potential of the main faults bounding the largest prospect Goldfinger.

Pressure Study
An internal study was carried out by Wellesley Petroleum to understand the pressure distribution for Jurassic in the area and identify transition for the highly overpressured areas in block 6406/6 in the west and the moderate pressures seen in well 6407/7-1 well Spinell Sør and the Tyrihans field.

Basin modelling study
Wellesley Petroleum performed an in-house basin modelling, main focus was to investigate what effect the presence of faults seal could have on the migration of hydrocarbons.

4 Prospect update report

In the APA2020 application Wellesley Petroleum presented two prospects. These were the Goldfinger and Moonraker defined at the Middle Jurassic level. A summary of the potential at end time of surrender is listed in Table 4.1 The Goldfinger Prospect having the largest risked volume potential within the license boundary was the main prospect in this evaluation. As the Goldfinger structure had the most robust part of the structure in PL091, part of the evaluation was to re-evaluate the shape and fault patterns across the entire structure. The re-evaluation confirmed the view at application stage with a small independent closure within PL091 whilst the part in PL1118 appeared heavily compartimentalized following the seismic reprocessing. Re-evaluation of the Moonraker indicates that majority of the resource potential is off-block The key elements and conclusions following the licence work is illustrated in Fig. 4.1 and Fig. 4.2 . The final volumes and risks for the Goldfinger Prospect Fig. 4.3 are insufficient to recommend this as a drilling candidate in PL1118. A high level screening on other potential prospective intervals has also been completed. No other credible targets have been identified. Based on these conclusions, the partnership does not see any attractive drilling candidate in PL1118 and have decided to drop the license.

Table 4.1 Table 4.1 APA 2020 Resource Potential

Discovery/ Prospect/ Lead name [1]	D/ P/ L [2]	Case (Oil/ Gas/ Oil&Gas) [3]	Unrisked recoverable resources [4]						Probability of discovery [5] (0.00 - 1.00)	Resources in acreage applied for [%] [6] (0.0 - 100.0)	Reservoir		Nearest relevant infrastructure [8]	
			Oil [10^6Sm^3] (>0.00)			Gas [10^9Sm^3] (>0.00)					Litho-/ Chrono-stratigraphic level [7]	Reservoir depth [m MSL] (>0)	Name	Km (>0)
			Low (P90)	Base (Mean)	High (P10)	Low (P90)	Base (Mean)	High (P10)						
Goldfinger	P	Oil&Gas	5,07	11,10	30,07	1,94	3,70	14,10	0,16	52,0	Garn Fm / Middle Jurassic	3925	Kristin	28
Moonraker	P	Oil&Gas	0,26	2,23	4,81	0,03	0,68	1,69	0,25	60,0	Garn Fm / Middle Jurassic	3840	Kristin	36

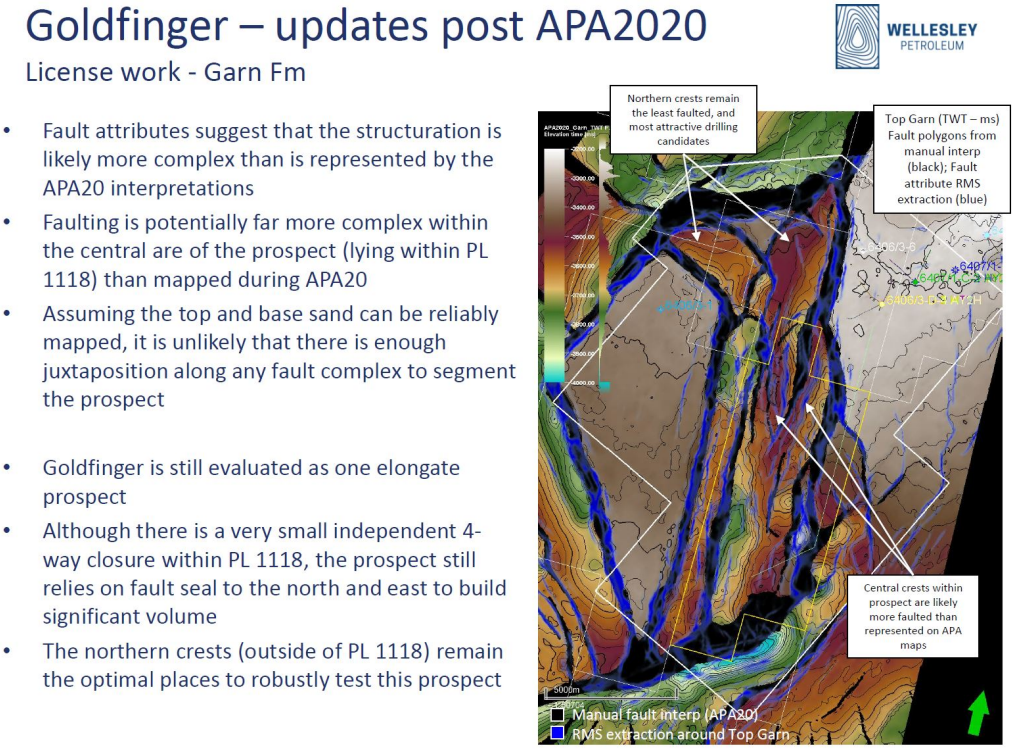

Fig. 4.1 Goldfinger

Moonraker – volumetric summary

APA 2020 - Garn Fm

- Only the Garn Fm evaluated
- Additional resources may lie in the Ile and Tilje Fms
- Only approx 60 % of the estimated Mean & P10 Garn Fm volumes are within PL1118; giving a mean ~10 mmboe

Moonraker : Prospect Garn Fm - Low Pressure case		*Structural Crest: 3840 mTVDss* *Water Depth: 273 m*	
	P90	**Mean**	**P10**
Area (km2)	0.8	3.3	5.0
GWC (mTVDss)	3900	4000	4100
Column Height (m)	60	160	260
% Gas Column	30	50	70
Reservoir thickness (m)		Mapped Direct +/- 20%	
Net:Gross	75	85	95
Porosity (%)	11	15	19
Sw (%)	21	28	35
Bo (Sm3/Rm3)	2.04	2.17	2.30
Dry Gas FVF 1/Bg (Sm3/m3)	220	234	248
Oil Rec. Factor (%)	25	37.5	50
Gas Rec. Factor (%)	45	55	65
STOIIP (mmbbls)	4.8	37.4	78
GIIP (bcf)	2.12	43.5	108
Rec. Oil (mmbbls)	1.64	14	30
Rec. Gas (bcf)	1.15	23.9	60
Total Recoverable (mmboe)	**2.1**	**18**	**38**

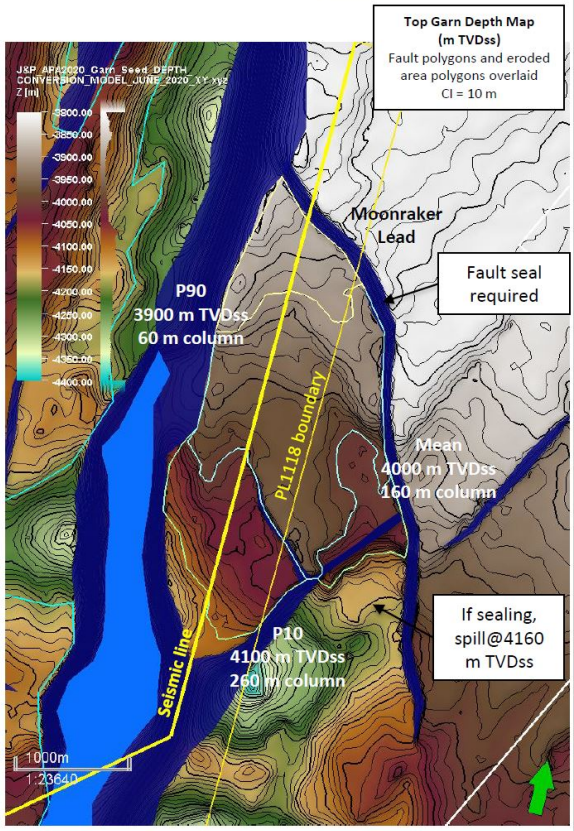

Fig. 4.2 Moonraker

Table 4: Discovery and Prospect data (Enclose map)

Block	6406/3,6 & 6407/4	Prospect name	Goldfinger (Low	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)	No	Outside play (Y/N)	No				
Oil, Gas or O&G case:	Gas	Reported by company	Wellesley	Reference document				Assessment year	2021
This is case no.:	1 of 2	Structural element	Halten Terrace	Type of trap	Hangingwall Anticli	Water depth [m MSL] (>0)	273	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)					4,48	8,20	15,90	30,50
	Gas [10^9 Sm^3] (>0.00)	8,01	17,12	25,60	47,00				
Recoverable resources	Oil [10^6 Sm^3] (>0.00)					1,94	3,70	7,21	14,10
	Gas [10^9 Sm^3] (>0.00)	5,07	11,10	16,60	30,70				
Reservoir Chrono (from)	Bajocian	Reservoir litho (from)	Garn	Source Rock, chrono primary	Kimm - Tithonian	Source Rock, litho primary	Spekk	Seal, Chrono	Bathonian - Tithonian
Reservoir Chrono (to)	Bajocian	Reservoir litho (to)	Garn	Source Rock, chrono secondary	Oxfordian	Source Rock, litho secondary	Melke	Seal, Litho	Melke-Spekk
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,19	Oil case (0.00-1.00)		Gas case (0.00-1.00)	0,50	Oil & Gas case (0.00-1.00)			
Reservoir (P1) (0.00-1.00)	0,50	Trap (P2) (0.00-1.00)	0,54	Charge (P3) (0.00-1.00)	0,80	Retention (P4) (0.00-1.00)	0,90		
Parametres:	Low (P90)	Base	High (P10)	*c.100 bar overpressured gas-condensate scenario, similar to Spinell Sør fluid.*					
Depth to top of prospect [m MSL] (> 0)		3925		*Approx. 52% of the mean recoverable resources are on block.*					
Area of closure [km^2] (> 0.0)	8,7	19,7	29,3	*Reservoir thickness as mapped.*					
Reservoir thickness [m] (> 0)									
HC column in prospect [m] (> 0)	140	200	260						
Gross rock vol. [10^9 m^3] (> 0.000)	0,349	1,020	1,811						
Net / Gross [fraction] (0.00-1.00)	0,75	0,85	0,95						
Porosity [fraction] (0.00-1.00)	0,11	0,15	0,19						
Permeability [mD] (> 0.0)	0,1	20,0	750,0						
Water Saturation [fraction] (0.00-1.00)	0,21	0,28	0,35						
Bg [Rm3/Sm3] (< 1.0000)	0,0034	0,0036	0,0038						
1/Bo [Sm3/Rm3] (< 1.00)									
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	1205	1625	2425						
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)	0,55	0,65	0,75						
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0,35	0,45	0,55	For NPD use:					
Temperature, top res [°C] (>0)	148			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)	494			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. Vsh 0.5	2. Porosity 0.10	3.					Kart nr	NPD will insert value

Fig. 4.3 Table 4 Goldfinger Discovery and Prospect Data

5 Technical evaluation

An extensive review of the prospectivity with most focus on the main risk elements, fault seal capacity and imaging of trap, has been carried out. The result of these studies is that the main prospect defined in the APA 2020 application, the Goldfinger Prospect, has been downgraded due to increased degree of compartimentalisation of the main part within PL1118 , while the Moonraker Prospect is mainly mostly located outside the license boundary. On the account of the risks and limited potential onblock, no prospect were considered as attractive drilling candidates and it was apparent that no development realisation would result in a commercially viable or attractive outcome.

6 Conclusion

Phase 1 of the work program leading up to the Drill-or-Drop decision has been fulfilled by reprocessing the 3D PGS18M01 and carrying out geological studies with focus on the main risk elements. These studies concluded that the prospectivity within the license is not viable to pursue to a drilling phase, and the license partnership unanimously recommended the relinquishment of PL1118.