PL1111 Relinquishment Report

February 2023

PGNiG | UPSTREAM NORWAY
ORLEN GROUP

Lime PETROLEUM

Table of contents

1 History of the production licence **1**

2 Database overviews **3**

3 Results of geological and geophysical studies **6**

4 Prospect update report **8**

5 Technical assessment **13**

6 Conclusions **14**

7 Reference **15**

List of figures

1.1 PL1111 Area Overview 1
2.1 PL1111 Common Seismic and Well Database 4
4.1 PL1111 Prospectivity 8
4.2 Picual Prospect 9
4.3 Kings Canyon Prospect 11

List of tables

1.1 Licence Meetings **2**
2.1 Common Database - Seismic **3**
2.2 Common Database - Wells **5**
4.1 Picual Main NPD Table 4 ..... **10**
4.2 Picual East NPD Table 4 ..... **10**
4.3 Kings Canyon NPD Table 4 ..... **11**

1 History of the production licence

PL1111 is located in blocks 6306/4 and 6306/5 (part) in the Norwegian Sea (**Fig. 1.1**). The Klakk Fault Complex separates the eastern part of the licence belonging to the Frøya High from the western part sitting within the Rås Basin.

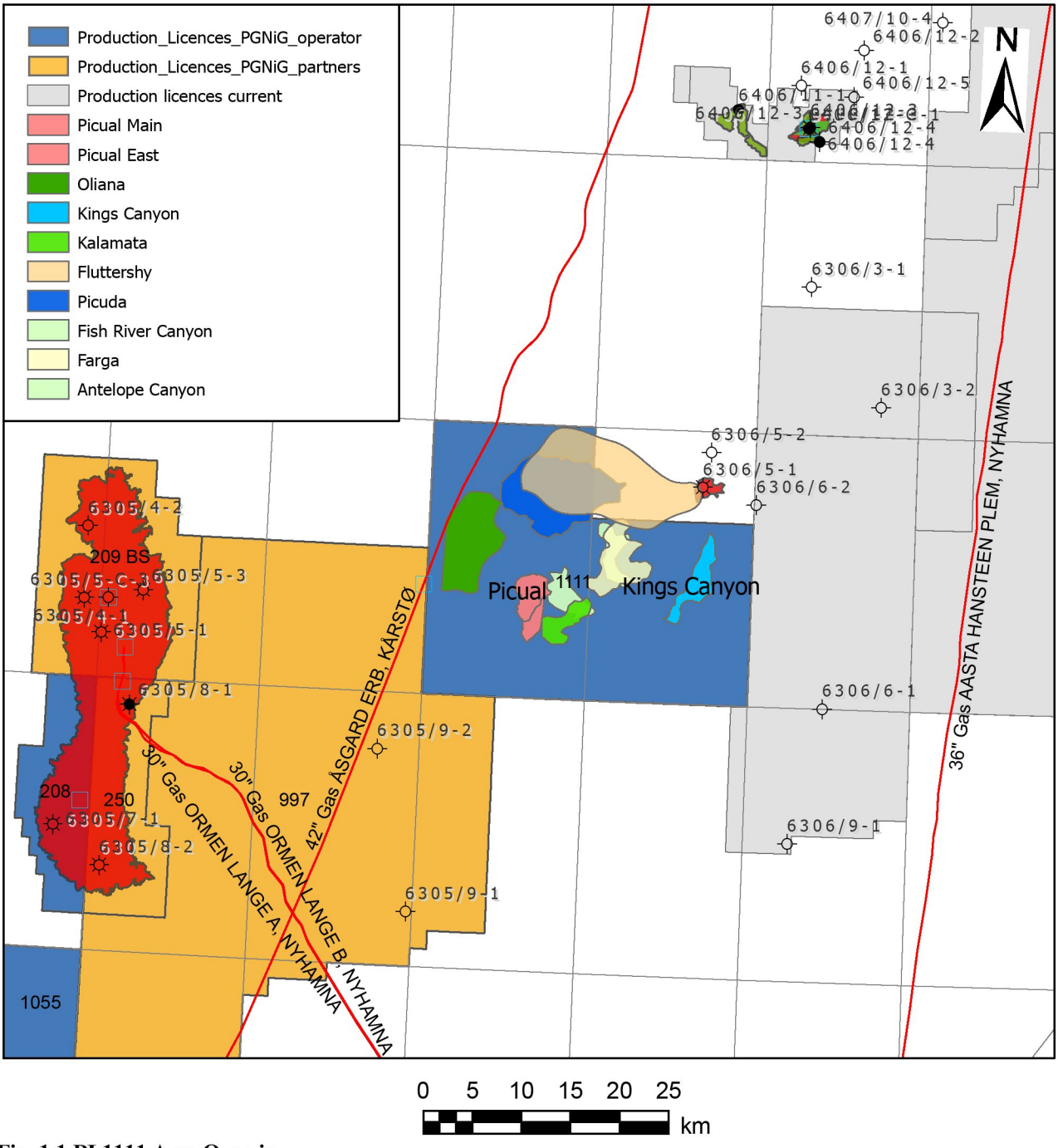

Fig. 1.1 PL1111 Area Overview

Summary of Award and Participants

PL1111 was awarded 19th February 2021 to INEOS E&P Norge AS (60%) and Lime Petroleum AS (40%) as partner following the award of the APA 2020 application. PGNiG Upstream Norway AS took over the Operatorship and equity from INEOS E&P Norge on 30th September 2021.

At the time of application the Early Cretaceous / Late Jurassic Kings Canyon was the main prospect. Additional prospectivity consisted of the Devonian Picual prospect, the Lower Cretaceous Antelope Canyon and Fish River Canyons leads and Upper Cretaceous Fluttershy lead.

Work Programme

Reprocessing of 3D seismic data (minimum 600 km^2) and G&G studies constituted the work programme for Phase 1 prior to a Drill or Drop decision 19th February 2023. As part of the licence work program the 3D survey CE14001 was reprocessed resulting in the CE14001PGUR22 survey. Basin modelling and geophysical studies were carried out as part of the G&G studies. The licence prospectivity covered by the CE14001PGUR22 survey was reinterpreted along with additional seismic data in order to mature the identified prospects and leads for a drill or drop decision. The outcome of the analogue Fat Canyon well 6306/3-1S drilled by PGNiG Upstream Norway AS on PL937, north of PL1111 was integrated as part of the work to de-risk the Kings Canyon prospect. The PL1111 Phase 1 work program is considered fulfilled.

Licence Meetings

The technical evaluations and their results were shared within the partnership through a series of meetings and workshops listed in

Table 1.1 Licence Meetings

Committee	Date
MC/EC Meeting #1	14th April 2021
Seismic Workshop #1	26th May 2021
MC/EC Meeting #2	14th June 2021
MC/EC Meeting #3	26th November 2021
MC/EC Meeting #4	3rd June 2022
EC Working Meeting #5	25th October 2022
MC/EC Meeting #6	28th November 2022

Reason for Relinquishment

Based on the technical evaluations performed in the licence all prospects and leads are considered to have limited volume potential and high risk.

2 Database overviews

Seismic database

For the purpose of regional and prospectivity evaluations, a selection of public 2D and 3D seismic surveys listed in **Table 2.1** were included in the Common Data Base (CDB), **Fig. 2.1**. As part of the licence work program 750 km² (input) of the CE14001 3D pre-stack depth migration was reprocessed by ION Geophysical resulting in the 3D CE14001PGUR22 survey (600 km² output). The primary objective of the project was to improve the resolution and interpretability below

Table 2.1 Common Database - Seismic

Survey	NPDID	Type	Year	Company	Status
CE14001	8068	3D	2014	SPIRIT ENERGY NORGE	Public
CE14001M1	Reprocessed 8068	3D	2018	SPIRIT ENERGY NORGE	FULL-Public
CE16M01	Reprocessed 8068	3D	2016	SPIRIT ENERGY NORGE	FULL-Public
CN6306	3638	3D	1994	AKER_BP	Public
CN6306R97	Reprocessed 3638	3D	1998	AKER_BP	Public
MC3D-FH2004-CN6306R05	Reprocessed 3638	3D	1994	PGS	Public
MC3D-FH2006	4352	3D	2006	PGS	Public
SEN1101-PSTM	7443	3D	2011	PANDION ENERGY	FULL-Public
CE14001PGUR22	Reprocessed 8068	3D	2022	PGNIG	Proprietary
FH91	3384	2D	1991	NOPEC AS	Public
GFB-84	2607	2D	1984	WESTERN GECO	Public
GFI-85	2719	2D	1985	WESTERN GECO	Public
GMT-84	2609	2D	1984	SHELL_NORGE	Public
MC2D-OLE2003	4207	2D	2003	PGS	Public
MC2D-HDV2006	4349	2D	2006	PGS	Public
MN89	3231	2D	1989	EXXONMOBIL	Public
MNR08	4571	2D	2008	TGS_NOPEC	Public
MNR09	7001	2D	2009	TGS_NOPEC	Public
MNR10	7224	2D	2010	TGS_NOPEC	Public
MNR11	7389	2D	2011	TGS_NOPEC	Public
MR02	NA	2D	2002	TGS_NOPEC	Public
NH0163	NA	2D	2001	STATOIL	Public
NPD-FB-84	2645	2D	1984	NPD	Public
SG9110	3433	2D	1991	STATOIL	Public
SG9208	3551	2D	1992	STATOIL	Public
SH8806	3175	2D	1988	SHELL	Public
ST8705	3049	2D	1987	STATOIL	Public
ST8707	3051	2D	1987	STATOIL	Public
VMT95	3749	2D	1995	TGS_NOPEC	Public

the main hard event corresponding to the BCU/Top Acoustic Basement of the structural high interpreted as Top of Picual prospect. The improved image quality of the PreSDM achieved at the target level owes a great deal to the care taken with the six iterations of velocity model building, involving densely gridded, tomographic, velocity updates, in addition to a suite of full waveform inversion tools. Running full volume migrations with both Kirchhoff and Beam algorithms provided optimal volumes suitable for interpretation of Picual Prospect.

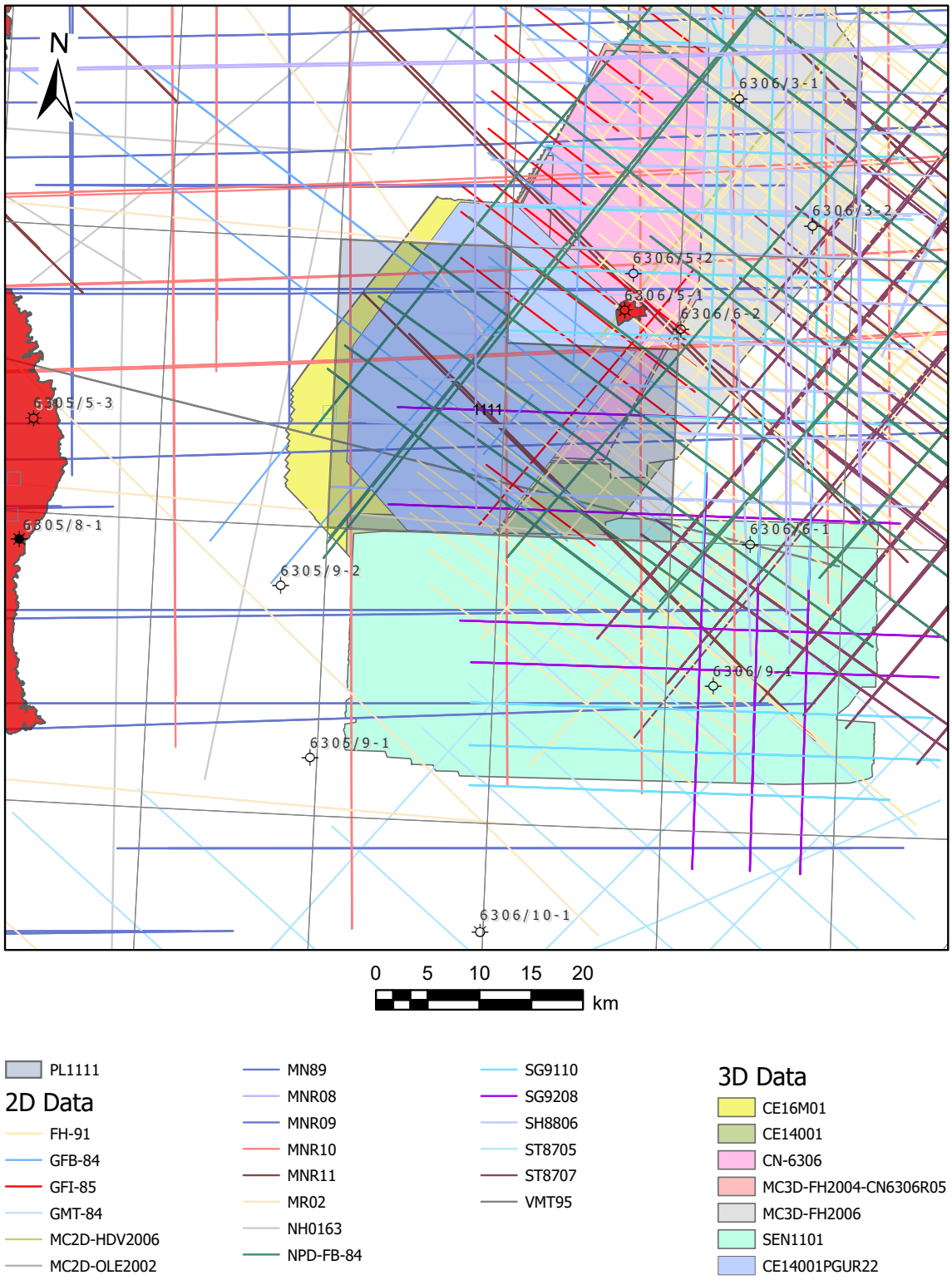

Fig. 2.1 PL1111 Common Seismic and Well Database

Table 2.2 Common Database - Wells

Well	NPDID	Year	TD (TVDm RKB)	Fm@TD	Age	Status
6306/6-1	2384	1996	1317	Basement	Pre- Devonian	Public
6306/6-2	6143	2009	2080	Basement	Pre- Devonian	Public
6306/5-1	3060	1997	2044	Kvitnos Fm	Late Cretaceous	Public
6306/5-2	7726	2015	3215	Intra-Melke Fm	Middle Jurassic	Public
6305/8-1	4109	2000	3175	Nise Fm	Late Cretaceous	Public
6305/9-1	4297	2001	2654	Springar Fm	Late Cretaceous	Public
6305/9-2	6502	2010	3075	Springar Fm	Late Cretaceous	Public
6306/3-1 S	9401	2021	2675	Basement	Pre- Devonian	Proprietary
6306/9-1	9474	2022	1055	Basement	Pre- Devonian	Proprietary
6306/10-1	1551	1990	3183	Basement	Pre- Devonian	Public

Well database

The well database consist of released wells from the Frøya High and surrounding areas and two recently drilled wells (**Table 2.2**, **Fig. 2.1**) with the 6306/3-1S Fat Canyon well, being of key importance for the Kings Canyon prospect evaluation.

3 Results of geological and geophysical studies

A number of geological and geophysical studies have been undertaken during the licence period to understand the regional geological setting, evaluate the potential plays and perform prospectivity evaluations. A brief summary of each study is provided below:

Reprocessing of 3D CE14001 Survey

The main objectives of the studies were:

- Increase resolution below BCU/Top Basement.
- Better handling of the signal-to-noise ratio of the low frequency below BCU/Top Basement.
- Remove higher frequency noise and multiples below BCU/Top Basement.
- Improve imaging of faults / structures below BCU / Top Basement.
- Better handling of the shallow velocity contrast in the velocity model below the seabed.
- Velocity model optimisation below BCU / Top Basement.
- Achieve flat gathers at the Picual Prospect location.
- Optimal Migration Technique.

The reprocessing resulted in producing CE14001PGUR22 Kirchoff and Beam migration volumes suitable for regional and prospect interpretation. This data set was loaded to Diskos on 3rd June 2022. This volume was the key seismic data to evaluate licence portfolio.

Seismic Conditioning and Spectral Decomposition of CE14001PGUR22

- Noise cancellation to reduce the amount of noise in the data and preserve the subtle edges.
- Spectral Decomposition to screen for stratigraphic and structural features. Results of the study revealed a morphology of several paleo-surfaces and possible presence of Cretaceous fan systems providing an input to geological models for all opportunities.

Regional Interpretation of Common Database Seismic Surveys, including Seismic Interpretation of CE14001PGUR22

This study was carried out to deliver regional grids as input to the Basin Modelling and provide detailed seismic horizons and faults interpretation of CE14001PGUR22 for Picual Prospect. CE14001PGUR22 data was also screened for other opportunities using attributes and gradient vs intercept in Petrel and horizon stacks in Paleoscan. A Fluid Factor Cube was created to screen for seismic anomalies. The study provided the basis for evaluation of the Picual Prospect and led to identify number of new opportunities (Oliana, Picuda, Farga).

Gather inspection, Rock Physics and AVO

The main objectives of this study was to inspect gathers for AVO suitability and determine potential need / feasibility for further data conditioning (e.g., removal of remaining multiples, spectral balancing, denoise, etc.) and to perform AVO analysis and interpretation on data if feasible. Moreover, to include relevant wells, define well tops and intervals for reservoir and sealing rocks, analysis of elastic properties for various ranges of depths, porosities, fluid content, and perform AVO modelling for prospective intervals (Cretaceous and Jurassic). AVO anomalies have been identified for Picuda and Oliana, while the Picual prospect is lacking an AVO response. Agat sand modelling indicates low porosities at the Oliana location, increasing the risk of finding good quality reservoir.

Basin Modelling

A dedicated basin modelling was performed in order to:

- Establish the hydrocarbon phase for the Picual, Kings Canyon, Picuda prospects.
- Estimate the hydrocarbon volumes (including degree of fill) for Picual, Kings Canyon and Picuda.
- Estimate the timing of charge.
- Estimate the expected formation temperatures and pressures.
- Studies on seal integrity.

The key conclusions from the study are:

- The Picual Prospect is favourably located for receiving gas and is not charge constrained in the most likely scenario.
- Kings Canyon is a multiphase prospect, charge constrained, migration requires presence of sand carrier beds and Lange Fm source rock.

6306/3-1S Fat Canyon Well Interpretation

Integration of the Fat Canyon well results with a conclusion that the expected reservoir for Kings Canyon prospect is sandstone of Rogn Fm (previously Lyr & Rogn Fms). This resulted in a volume reduction.

Reservoir presence and quality for Devonian and Upper Jurassic

The study was performed in order to understand the chance of reservoir presence at play level for the Picual and Kings Canyon prospects and update reservoir parameters for GeoX input for those prospects. The key conclusions are:

- Devonian seen as potential reservoir for Picual. Low matrix porosity anticipated at Picual location, fracture porosity introduced
- Rogn Fm is likely developed at Kings Canyon location and is likely to be of similar quality as encountered at the 6306/3-1S Fat Canyon and 6306/6-2 wells. Possible calcite cementation may have taken place.

4 Prospect update report

An overview map with the identified prospects and leads in PL1111 is shown in **Fig. 4.1**.

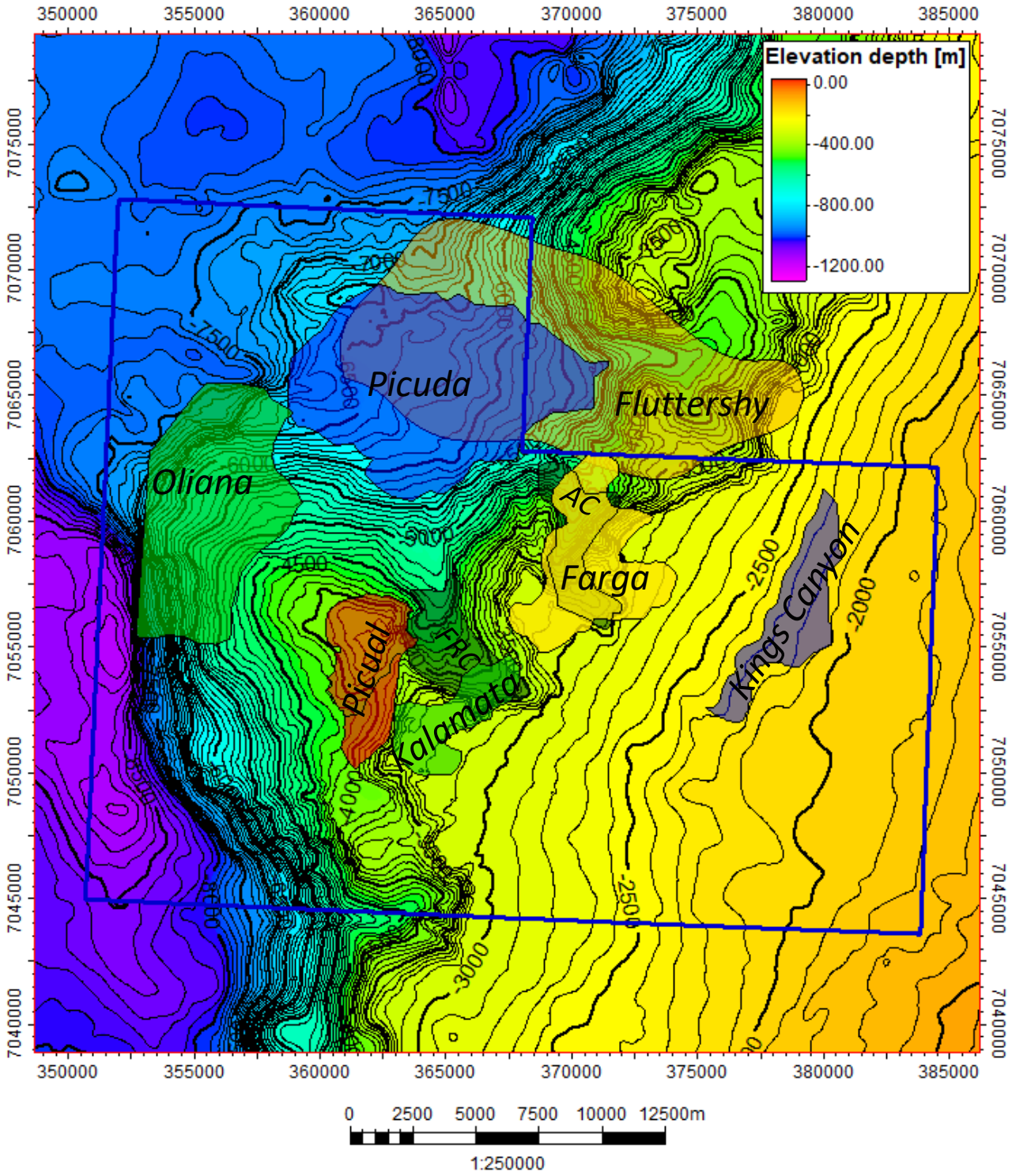

Fig. 4.1 PL1111 Prospectivity
Base Cretaceous Unconformity Depth Map with all opportunities identified in PL1111 during APA2020 and 2022 evaluations.
AC - Antelope Canyon, FRC - Fish River Canyon.

The two main prospects identified at the time of APA 2020 application were the Devonian Picual Prospect and Early Cretaceous / Jurassic Kings Canyon Prospect. Antelope Canyon, Fish River Canyon and Fluttershy leads were identified as additional prospectivity.

The Picual Prospect (**Fig. 4.2**) is located on the flank of the Frøya High and is identified as a 3-way structural closure against the up-dip Klakk Fault Complex, mapped at top acoustic basement. The basement is anticipated to comprise fractured Devonian Continental Red Beds, and reservoir (presence and quality) is the main risks (unproven play). The structure is overlain by Upper Jurassic and Lower Cretaceous shales, and located on the margin of the Rås Basin, from where it is anticipated to receive charge from the Spekk Fm.

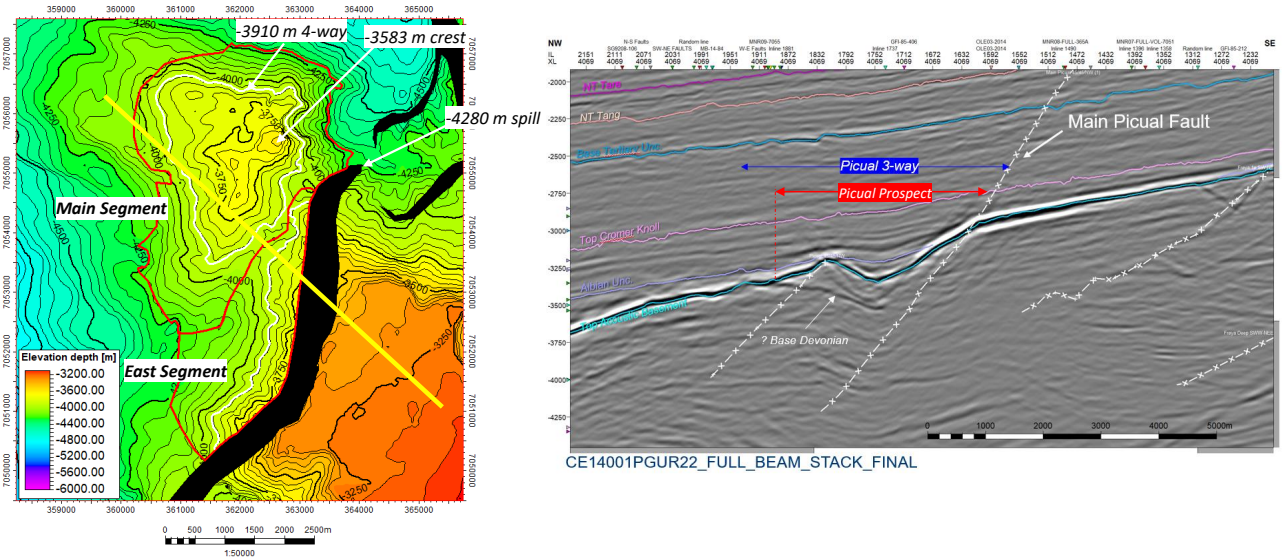

Fig. 4.2 Picual Prospect
Depth Map of Top Acoustic Basement and seismic section over the Picual structure.

Reprocessing of the 3D survey CE14001 was undertaken by ION Geophysical in 2021-2022 with a focus on improving seismic imaging of Top Basement / BCU, investigation of the stratigraphic reflectors below Top Basement / BCU and better imaging of the fault and fractures for the Picual Prospect. The new CE14001PGUR22 dataset allowed redefinition of the Klakk Fault Complex and interpretation of an intra-Basement reflector believed to represent the base of a Devonian sedimentary basin (**Fig. 4.2**). Volume calculation was done for the redefined Picual trap. As fractured Devonian reservoir is not well known in Norway, worldwide analogues were investigated, and the chosen reservoir parameters implemented in the GeoX model. A dedicated basin modelling study shows that the Picual Prospect is favourably located for gas charging. However, the charge is not constrained only if lower migration losses from Spekk source rock than normal are anticipated. A dimming of the amplitude is observed at the top of the Picual Prospect, however, no AVO response is seen.

The Picual structure consists of two separated segments based on the drainage area – the Main segment (**Table 4.1**) with total in place Mean volumes of 12.6 MMSm^{3}O.E. and Chance of Success (CoS) of 13% and the East segment (**Table 4.2**) with total in place Mean volumes of 4.3 MMSm^3 O.E. and CoS of 9%. The main risks for both segments are related to reservoir presence (unproven play) and quality.

Table 4.1 Picual Main NPD Table 4

Table 4: Discovery and Prospect data (Enclose map)									
Block	6306/4	Prospect name	Picual 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:	Gas	Reported by company	PGNiG Upstream No	Reference document				Assessment year	2022
This is case no.:	1 of 1	Structural element	Rås Basin	Type of trap	Structural	Water depth [m MSL] (>0)	225	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)								
	Gas [10^9 Sm^3] (>0.00)	1,76	7,91	10,50	23,00	0,32	1,49	2,07	4,54
Recoverable resources	Oil [10^6 Sm^3] (>0.00)								
	Gas [10^9 Sm^3] (>0.00)	0,50		5,20	16,10	0,00		0,50	1,60
Reservoir Chrono (from)	Cambrian	Reservoir litho (from)		Source Rock, chrono primary	Tithonian	Source Rock, litho primary	Spekk Fm	Seal, Chrono	Lower Cretaceous
Reservoir Chrono (to)	Devonian	Reservoir litho (to)		Source Rock, chrono secondary	Cenomanian	Source Rock, litho secondary	Lange Fm	Seal, Litho	Cromer Knoll Gp
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,13	Oil case (0.00-1.00)	0,00	Gas case (0.00-1.00)	1,00	Oil & Gas case (0.00-1.00)	0,00		
Reservoir (P1) (0.00-1.00)	0,16	Trap (P2) (0.00-1.00)	0,80	Charge (P3) (0.00-1.00)	1,00	Retention (P4) (0.00-1.00)	1,00		
Parametres:	Low (P90)	Base	High (P10)	*Comments: Matrix Porosity show. Caluclation using Dual Porosity with input for Fraction Fracture (%) Low 2,38 - Base 4,4 - High 7 and Fraction Porosity (%) Low 55 - Base 60 and High 65. Fracture Pearmeability is 0,001 - 0,.05- 0,7. Matrix Water Saturation in a table. Fracture Water Saturation is: Low 0,25 - Base 0,2 - High 0,15*					
Depth to top of prospect [m MSL] (> 0)	3583	3583	3583						
Area of closure [km^2] (> 0.0)	0,5	5,7	11,2						
Reservoir thickness [m] (> 0)	350	350	350						
HC column in prospect [m] (> 0)	213	348	513						
Gross rock vol. [10^9 m^3] (> 0.000)	3,746	3,746	3,746						
Net / Gross [fraction] (0.00-1.00)	0,44	0,58	0,72						
Porosity [fraction] (0.00-1.00)	0,04	0,06	0,08						
Permeability [mD] (> 0.0)	0,0	0,1	0,1						
Water Saturation [fraction] (0.00-1.00)	0,39	0,30	0,20						
Bg [Rm3/Sm3] (< 1.0000)	0,0034	0,0033	0,0032						
1/Bo [Sm3/Rm3] (< 1.00)									
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)									
Recov. factor, oil main phase [fraction] (0.00-1.00)									
Recov. factor, gas ass. phase [fraction] (0.00-1.00)									
Recov. factor, gas main phase [fraction] (0.00-1.00)	0,40	0,50	0,60						
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0,20	0,50	0,60	For NPD use:					
Temperature, top res [°C] (>0)	207			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)	535			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation	1.	2.	3.					Kart nr	NPD will insert value

Table 4.2 Picual East NPD Table 4

Table 4: Discovery and Prospect data (Enclose map)									
Block	6306/4	Prospect name	Picual 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:	Gas	Reported by company	PGNiG Upstream No	Reference document				Assessment year	2022
This is case no.:	1 of 1	Structural element	Rås Basin	Type of trap	Structural	Water depth [m MSL] (>0)	225	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)								
	Gas [10^9 Sm^3] (>0.00)	0,61	2,47	3,58	8,14	0,11	0,47	0,70	1,60
Recoverable resources	Oil [10^6 Sm^3] (>0.00)								
	Gas [10^9 Sm^3] (>0.00)	0,20		1,80	5,70	0,00		0,20	0,60
Reservoir Chrono (from)	Cambrian	Reservoir litho (from)		Source Rock, chrono primary	Tithonian	Source Rock, litho primary	Spekk Fm	Seal, Chrono	Lower Cretaceous
Reservoir Chrono (to)	Devonian	Reservoir litho (to)		Source Rock, chrono secondary	Cenomanian	Source Rock, litho secondary	Lange Fm	Seal, Litho	Cromer Knoll Gp
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,09	Oil case (0.00-1.00)	0,00	Gas case (0.00-1.00)	1,00	Oil & Gas case (0.00-1.00)	0,00		
Reservoir (P1) (0.00-1.00)	0,16	Trap (P2) (0.00-1.00)	0,54	Charge (P3) (0.00-1.00)	1,00	Retention (P4) (0.00-1.00)	1,00		
Parametres:	Low (P90)	Base	High (P10)	*Comments: Matrix Porosity show. Caluclation using Dual Porosity with input for Fraction Fracture (%) Low 2,38 - Base 4,4 - High 7 and Fraction Porosity (%) Low 55 - Base 60 and High 65. Fracture Pearmeability is 0,001 - 0,.05- 0,7. Matrix Water Saturation in a table. Fracture Water Saturation is: Low 0,25 - Base 0,2 - High 0,15*					
Depth to top of prospect [m MSL] (> 0)	3619	3619	3619						
Area of closure [km^2] (> 0.0)	0,4	2,4	4,9						
Reservoir thickness [m] (> 0)	350	350	350						
HC column in prospect [m] (> 0)	217	323	473						
Gross rock vol. [10^9 m^3] (> 0.000)	1,464	1,464	1,464						
Net / Gross [fraction] (0.00-1.00)	0,44	0,58	0,72						
Porosity [fraction] (0.00-1.00)	0,04	0,06	0,08						
Permeability [mD] (> 0.0)	0,0	0,1	0,1						
Water Saturation [fraction] (0.00-1.00)	0,39	0,30	0,20						
Bg [Rm3/Sm3] (< 1.0000)	0,0034	0,0033	0,0032						
1/Bo [Sm3/Rm3] (< 1.00)									
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)									
Recov. factor, oil main phase [fraction] (0.00-1.00)									
Recov. factor, gas ass. phase [fraction] (0.00-1.00)									
Recov. factor, gas main phase [fraction] (0.00-1.00)	0,40	0,50	0,60						
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0,20	0,50	0,60	For NPD use:					
Temperature, top res [°C] (>0)	207			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)	535			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation	1.	2.	3.					Kart nr	NPD will insert value

The Kings Canyon Prospect (**Fig. 4.3**) was defined by a thickness anomaly overlaying crystalline basement of the Frøya High. It was seen as an exploration analogue to the Fat Canyon Prospect (located 60 km north) with the main difference being the areal extent and the charge and migration routes into the prospect. Similarly to the Fat Canyon pre-drill prediction, Kings Canyon anticipated reservoir consist of Lyr Fm and Rogn Fm sandstone. The Fat Canyon well drilled in 2021 didn't find any reservoir in the Lyr Fm, only in the Rogn Fm. The Fat Canyon well results have been integrated in the Kings Canyon Prospect evaluation and current volumes includes only Rogn Fm reservoir. The results from a Basin Modelling study shows that migration to the prospect is possible, but requires the presence of Jurassic and Cretaceous sandstone carrier beds and that both Spekk and Lange source rocks are present. Moreover, charge is constrained, even with lower migration losses than anticipated, therefore the maximum column high for the prospect has been adjusted accordingly.

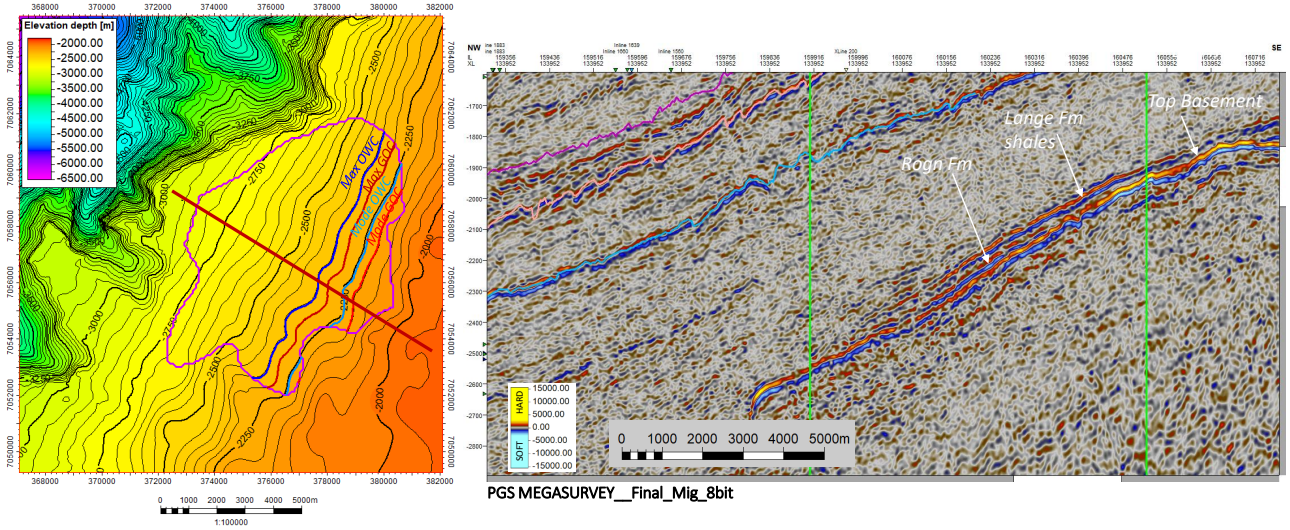

Fig. 4.3 Kings Canyon Prospect
Depth Map of Base Cretaceous Unconformity and seismic section over the Kings Canyon Prospect.

The Kings Canyon Prospect (**Table 4.3**) total in place Mean volumes are 6 MMSm³OE with CoS of 8%. Charge and migration together with trap are the main risks for the prospect.

Table 4.3 Kings Canyon NPD Table 4

Table 4: Discovery and Prospect data (Enclose map)

Block	6306/5	Prospect name	Kings Canyon	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&Gas	Reported by company	PGNiG Upstream No	Reference document				Assessment year	2022
This is case no.:	1 of 1	Structural element	Frøya High	Type of trap	Stratigraphic	Water depth [m MSL] (>0)	250	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)	0,85	3,15	3,81	7,66	0,10	0,38	0,46	0,92
	Gas [10^9 Sm^3] (>0.00)	0,10	0,74	1,04	2,43	0,01	0,12	0,16	0,38
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,28	1,24	1,64	3,49	0,03	0,15	0,20	0,42
	Gas [10^9 Sm^3] (>0.00)	0,06	0,49	0,71	1,63	0,01	0,04	0,06	0,14
Reservoir Chrono (from)	Oxfordian	Reservoir litho (from)	Spekk Fm	Source Rock, chrono primary	Tithonian	Source Rock, litho primary	Spekk Fm	Seal, Chrono	Lower Cretaceous
Reservoir Chrono (to)	Kimmeridian	Reservoir litho (to)	Rogn Fm	Source Rock, chrono secondary	Cenomanian	Source Rock, litho secondary	Lange Fm	Seal, Litho	Cromer Knoll Gp
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,80	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)	0,72	Trap (P2) (0.00-1.00)	0,32	Charge (P3) (0.00-1.00)	0,36	Retention (P4) (0.00-1.00)	1,00		
Parametres:	Low (P90)	Base	High (P10)	*Comments*					
Depth to top of prospect [m MSL] (> 0)	2095	2095	2095						
Area of closure [km^2] (> 0.0)	2,3	5,7	15,3						
Reservoir thickness [m] (> 0)	8	14	18						
HC column in prospect [m] (> 0)	93	164	307						
Gross rock vol. [10^9 m^3] (> 0.000)	1,505	1,505	1,505						
Net / Gross [fraction] (0.00-1.00)	0,53	0,72	0,87						
Porosity [fraction] (0.00-1.00)	0,15	0,18	0,22						
Permeability [mD] (> 0.0)	10,0	100,0	750,0						
Water Saturation [fraction] (0.00-1.00)	0,35	0,30	0,25						
Bg [Rm3/Sm3] (< 1.0000)	0,0050	0,0050	0,0050						
1/Bo [Sm3/Rm3] (< 1.00)	0,76	0,75	0,72						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	107	117	136						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,22	0,42	0,65						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,22	0,42	0,65						
Recov. factor, gas main phase [fraction] (0.00-1.00)	0,22	0,42	0,65						
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0,22	0,42	0,65	For NPD use:					
Temperature, top res [°C] (>0)	96			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)	200			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation	0,1	0,1	0,1					Kart nr	NPD will insert value

The Antelope and Fish River Canyon leads identified prior to the APA 2020 application are only seen as patchy anomalies on the CE14001PGUR22 dataset and have therefore not been further matured. The Fluttershy lead was interpreted further to the north, but bleeding of amplitudes in a large area is observed, and the trap cannot be defined.

New opportunities identified during evaluation of the CE14001PGUR22 survey are Oliana, Picuda, Kalamata and Farga:

Oliana is an amplitude anomaly in the Agat Fm deep water sandstone probably originating from the Picual structure. Oliana is trapped by a fault to the southeast, while the trap to the northwest relies on possible pinch-out of the Agat reservoir. The seal consists of Cretaceous shales while the Spekk Fm is regarded as the main source rock. Oliana has an AVO class II/III anomaly

response. The geophysical modelling suggest that the reservoir porosity for Oliana may be in the range of 8-11% making the reservoir quality the main risk component. The Oliana total in place Mean volumes are 6.3 MMSm^{3}O.E. and the CoS is 11%.

Picuda is a Jurassic opportunity with possible sand provenance from the Frøya High via the 6306/5-2 well (Hagar). The reservoir quality is regarded as the main risk since the top of the lead is located at 5000m. Picuda has an AVO class I anomaly response. The **Kalamata lead** is identified as a Lysing Fm seismic anomaly located in one of the canyons downflank of the Frøya High. It has a limited area of 11.5 km^2.

Farga has been identified based on seismic anomalies in the Naust Fm. The opportunity is covered by less than 600m overburden, which carries a high risk related to top seal capacity and challenges with the reservoir energy during production.

5 Technical assessment

A full technical evaluation of the economical value and possible development solution was only carried out for the Picual Main Prospect as this has the biggest volume potential. In case of a Picual gas discovery a development scenario with tie-back to Nyhamna via an existing Ormen Lange subsea template is envisaged. For production one 4-slot subsea template with two production wells is assumed. The results of the economic evaluation was negative for the P90 and Mean cases.

6 Conclusions

Reprocessing of 3D seismic data resulting in CE14001PGUR22 and G&G studies constituted the work program for PL1111Phase 1. All work commitments are considered fulfilled. The interpretation of CE14001PGUR22 3D seismic together with the G&G studies concluded that all prospects and leads identified in the licence have limited volume potential and low chance of success. The key prospect, Picual Main, has been technically and economically evaluated with the conclusion of having negative project economy for the P90 and Mean cases.

The partnership has unanimously decided to relinquish PL1111 in its entirety.

Reference

ION,2021 - PGNiG – PL1111, Survey: CE14001, Processing and Imaging Report: CE14001PGUR22