PL 882 B

Relinquishment report (Neptune)

vår energi

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1 History of the production licence

PL 882B is located on the Tampen Spur, covering parts of Blocks 34/4 and 33/6, and was awarded on 11.03.2022 to a licence group consisting of Neptune Energy Norge AS (O), Petrolia NOCO AS, INPEX Idemitsu Norge AS and Concedo AS as an extension licence to PL882. The 2022 Awards in Predefined Areas (APA 2021) application was delivered by Neptune Energy Norge AS.

General Licence Information

Table 1.1 Key license information

PL882B	
Awarded	11.03.2022
DoD (Drill and Drop)	10.03.2024
Licence period	7 years (initial)
Licence area	39km^2

Licence extensions

No licence extensions have been granted over the licence period.

Work Programme

The PL882B work program followed the same work program as for PL882.

Table 1.2 Status Work Programme

Work Programme Items	**Status**
Purchase and reprocess 3D seismic	Fulfilled
G&G studies	Fulfilled
Assessment of licence prospectivity	Fulfilled

Licence Meetings

During the life of the licence, a number of meetings took place and were documented in License2Share (L2S).

Table 1.3 License meeting overview

Date	**Management Committee Meeting**	**Exploration Committee Meeting**
24.11 2023	x	x
26.02 2024	x	x

Reason for Surrendering

The geological and geophysical evaluation performed through the initial licence period did not identify any prospects that showed a risk and volume potential that fulfilled the technical economical criteria’s to justify a positive drill decision.

2 Database overviews

The PL882 B license common database is the same as for PL882 (Figure 2.1).

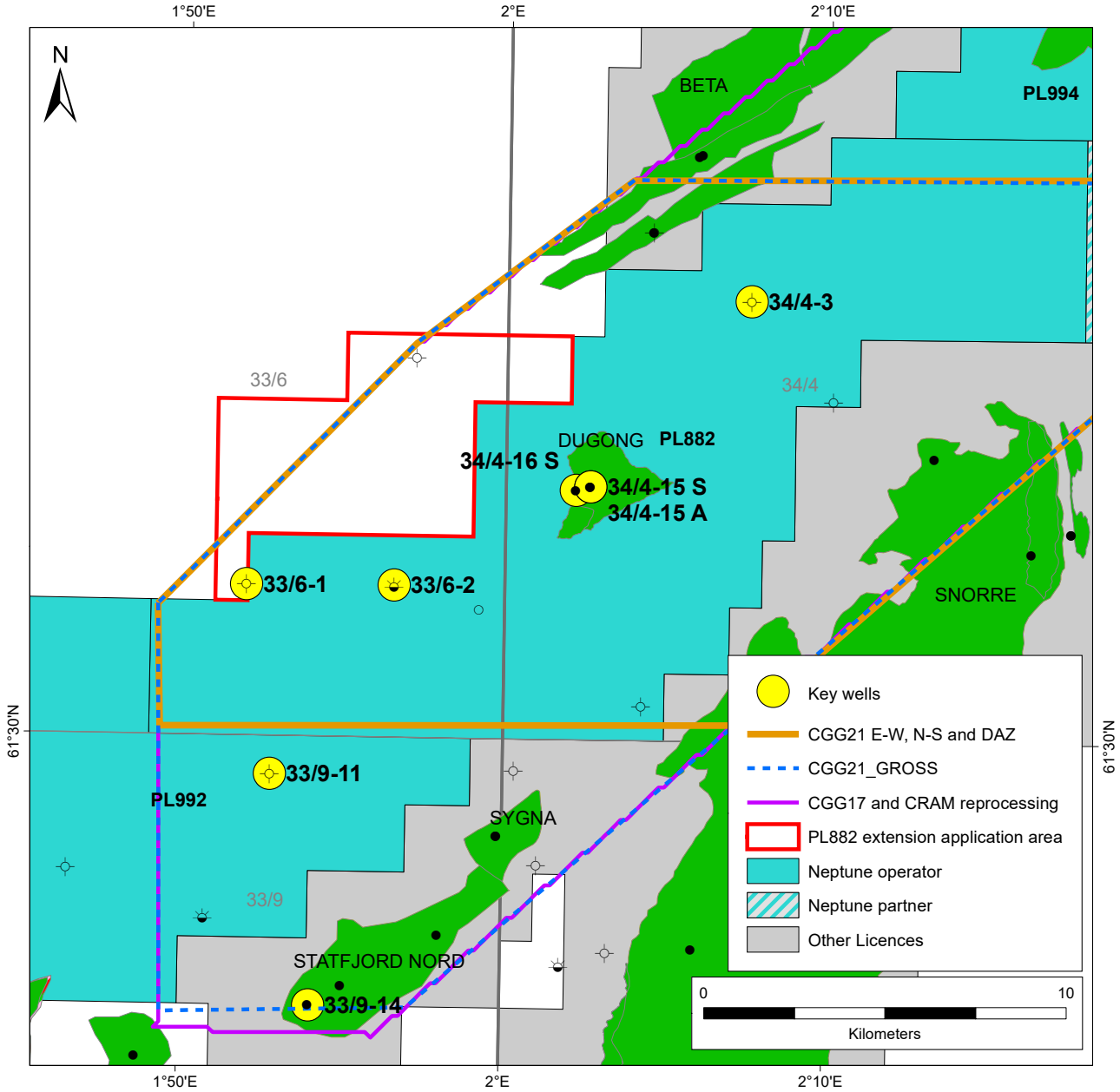

Figure 2.1 Well and seismic database

2.1 Seismic data

Over the licence history the licence group have reprocessed the survey CGG17M01-VNGR18 and later purchased the multi-client survey CGG23M01 DAZ survey in 2022. The reason for the latest addition is due to that the initial reprocessing was deemed to be of such a poor quality that it was not possible to fully de risk the identified prospectivity.

The CGG23M01 DAZ 3D has a state-of-the-art workflow, incorporating latest developments in signal processing (for de-ghosting and de-multiple). Likewise, the imaging models are supported by multi-layer tomography and Time-Lag Full Waveform Inversion (TLFWI) using both azimuths simultaneously to invert the full wave-field, including reflections. The East-West azimuth provides subsurface illumination which is complementary to the North-South survey,

deploying a triple-source configuration for dense wave-field sampling and multi-sensor towed streamers (IsoMetrix). In addition, the East-West azimuth is also shot in a optimal direction as most of the faults are trending North-South in the licensed area.

CGG23M01 DAZ 3D results have shown significant uplift in structural and fault imaging at all levels, with improvements in signal-to noise and event coherency, seismic bandwidth and resolution. Increased wavelet stability and stationarity supports better seismic-to-well ties and the amplitude fidelity offers higher confidence in reservoir characterisation. These improvements have resulted in a better interpretation of the deep pre-BCU targets

Table 2.1 Seismic database

Seismic survey	NPDID	Type	Quality
CGG23M01_NVG21PH2*	7984; 8128; 8179; 8194; 8195; 8196; 8252; 8332	3D	Very good quality
CGG17M01-VNGR18* CRAM and Kirchhoff		3D	The CRAM (and Kirchhoff) reprocessing of the CGG17M01 NVG 3D seismic survey is of moderate quality for imaging, however have some challenges with respect to spatial resolution and accuracy and is not processed in a amplitude friendly manner
CGG17M001	14006, 15001, 15003, 15007, 16001	3D	Moderate quality. Original seismic data purchased by the partnership as part of the common database.

* Reported in DISKOS

2.2 Well data

The wells presented in Table 2.2 have been used for studies and evaluation of the prospectivity in PL882B.

Table 2.2 Common Well database

Well Name	NPDID	Purpose (FS: fault seal analysis, P: regional pressure regime, S:sedimentology, PSA: petroleum systems analysis, CPI: petrophysics)
33/6-1	406	S, FS, CPI
33/6-2	2873	S, FS, P, PSA, CPI
33/9-11	416	S, CPI
33/9-14	1226	S, CPI
34/4-3	423	S, CP
34/4-15 S	9060	S, P, PSA, CPI
34/4-15 A	9061	S, P, PSA, CPI
34/4-16 S	9242	S, P, PSA, CPI
33/6-5 S	9376	S, P, PSA, CPI

3 Results of geological and geophysical studies

A number of G&G studies were undertaken and Table 3.1 summarizes the G&G studies performed

Table 3.1 Summary of Work Programme Scope and outcome

Action	Comments	Outcome
Seismic inversion	CGG	Seismic inversion performed by CGG of CGG21M01 NSRE survey using nearby wells for calibration. It was used to highlight potential fluid response over Tiger (output: AI, Vp/Vs, oil/brine sand probability, shale probability, porosity, intercept, gradient)
Seismic Data Analysis (SDA)	Internal	1D fluid replacement modelling on 33/6-2 well to show the impact of overburden variation on AVO behaviour at top reservoir. Evaluation of fluid response based on CGG21M01 NSRE seismic and inversion over Tiger and comparison with expected response from modelling.
Rock physics	IKON	Rock physics Analysis and modelling of key wells over PL882 and PL992 over the Brent section (Data QC, depth trend estimation, fluid replacement modelling, synthetic generation, inversion feasibility study)
Semi-regional petrophysical study	Internal	Neptune Energy Petrophysical interpretation of MWD/LWD, wireline and the core data. The objective was to evaluate lithology, reservoir and fluid properties of the Brent, Viking and Hordaland Groups in North Tampen.
Fault seal analysis	Internal	Assessment of the sealing capacity of the fault separating Tiger prospect from well 33/6-1
Seismic interpretation	Internal	11 horizons from Seabed to Top Statfjord Gp were interpreted to build a robust regional framework and define the Tiger prospect and additional prospectivity
Prospect assessment	Internal	All prospects and leads have been evaluated using the GeoX software

4 Prospect update report

Prospects and Leads Applied for APA2018

Several prospects and leads were identified at multiple stratigraphic levels in the APA2021 application (Figure 4.1).

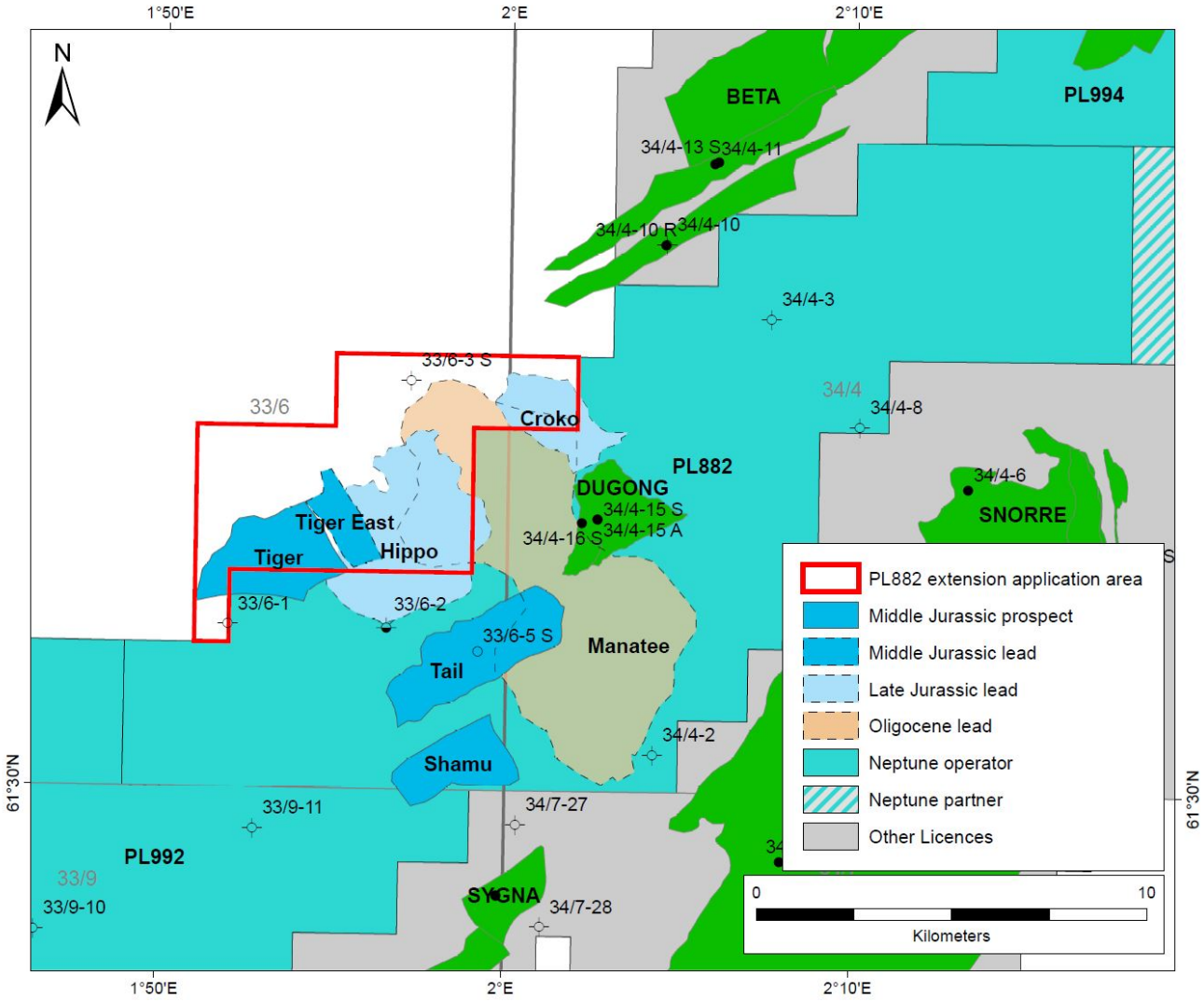

Figure 4.1 Prospectivity identified at APA2021 application submittal

The Tiger Prospect.

The Tiger prospect comprises Rannoch formation reservoir of the Brent Gp and is situated just north of well 33/6-1 (Brent Gp eroded and reservoir section Rannoch not present) and northwest of 33/6-2 (Brent Gp and Rannoch present). The prospect is defined by two surfaces; the top and base Rannoch. Top Rannoch is challenging to interpret in the prospect area and is therefore a constructed surface shifted upwards 75 m from base Rannoch, based on an approximate thickness from nearby wells. Top Rannoch is in places truncated by the Upper Jurassic Unconformity (UJU) surface within the outline of the Tiger prospect, and consequently in these areas of the Prospect, the top reservoir is defined by UJU.

The Tiger prospect is a structural trap bounded by faults to the south, east and north; with dip closure to the west. The southern fault is the largest of the faults (displacement in excess of 300m) and separates the downfaulted Rannoch reservoir from the horst block that was penetrated by the dry well 33/6-1. The eastern and northern faults have displacements less than 150m, and the Rannoch reservoir sits on the footwall side of the faults. The deepest spill point on the structure is at 3900m TVDmsl and is controlled by the location where the northern fault dies out. The crest of the structure is at 3640m TVDmsl which allows for a maximum hydrocarbon column of 260m. The Tiger structure developed during Late Jurassic and has only been slightly modified during the post-rift period. The crest of the Tiger prospect along with approximately 35% of the estimated resources are situated within PL 882.

Draupne Fm shales form the top seal, which is proven to be present in nearby wells 33/6-1 and 33/6-2, and the proven top seal for the Dugong, Sygna and Statfjord North discoveries. Seal risk for the Prospect is therefore related to fault seal. The southern fault juxtaposes the Rannoch Fm reservoir against sediments of the Statfjord and Hegre Gp's. Fault seal analysis indicates that the sealing capacity of this fault is sufficient to hold a hydrocarbon column of more than 300m. The juxtaposition analysis is based on an SGR estimate from an assumed pre-rift stratigraphy (spliced VClay logs from 33/6-1 (partly eroded) and 33/6-2), converted to retention capacity calculated using global equations with fluid parameters derived from fluids analysed from the Dugong discovery wells. The eastern and northern faults juxtapose Rannoch reservoir against Upper Jurassic shales of the Viking Gp along most of their length, but may have Rannoch-Rannoch juxtapositions close to where the eastern fault intersects with the southern fault, and where the northern fault reduces the displacement and dies out towards northwest. Additional lateral seal risk cannot be ruled out considering potential thief sands in the Hippo lead located above the Upper Jurassic Unconformity.

The Tiger East lead.

The Tiger East lead is a downfaulted block relative to the Tiger Prospect and relies on fault seal along the southern and eastern bounding faults. Similar to Tiger, the Tiger East lead is expected to contain Rannoch Fm reservoir and has similar seal and retention challenges. Tiger East is considered a lead, separated from the Tiger Prospect as it can be charged with hydrocarbons independently. A deep oil-water contact in Tiger will however, prove up the volumes in Tiger East. De-risking of Tiger East will be achieved via the same procedure as for the Tiger Prospect.
The Hippo lead is a stratigraphic trap comprising Intra Draupne Fm sandstones, located down-dip from the 33/6-2 well. The expectation is that reservoir thickness and quality improves away from the lowermost Intra Draupne sandstones penetrated by 33/6-2, which is interpreted to test the fringes of the lobe complex. Predictions are in line with analogue studies of spatial variability in depositional reservoir quality of deep-water channel-fill and lobe deposits. Approximately 65% of Hippo is within PL 882 B.

The Croco lead.

The Croco lead is a structural-stratigraphic trap comprising Intra Draupne Fm sandstones. The lead lies in the downfaulted block immediately north of the Dugong discovery. Croco is mapped on a strong hard reflector which pinches out in three directions and buts against the large fault that separates it from the fault block where Dugong is located. Areal extent of the Croco lead is 4.2 km2 and depth to the crest is 3600m. Approximately 60 % of Croco is within PL 882B.

The Manatee lead.

The Manatee lead is a large 4-way closure mapped and interpreted as a north-east, south-west trending prominent fan and channel complex located in a well-developed Lark formation sand fairway of Oligocene-Miocene age, up-dip of exploration wells 33/6-3 and 34/4-16 S where sandstone is encountered. This large mound-like feature has a distinct seismic character, with complex chaotic internal reflectivity indicative of remobilised sandstones. The mound shape is likely enhanced by differential compaction. Migration is considered the biggest risk, with the lead relying on secondary migration/leakage from deeper hydrocarbon accumulations. Top seal is formed by Oligocene and Miocene shales, however highly reflective, parallel packages onlap the closure and may be sand prone channels, representing additional upside potential or a potential seal risk. Approximately 20% of Manatee is within PL 882 and this lead was originally applied for by the operator in 2016.

Prospects Mapped after Award

The post award prospectivity is shown in Figure 4.2.

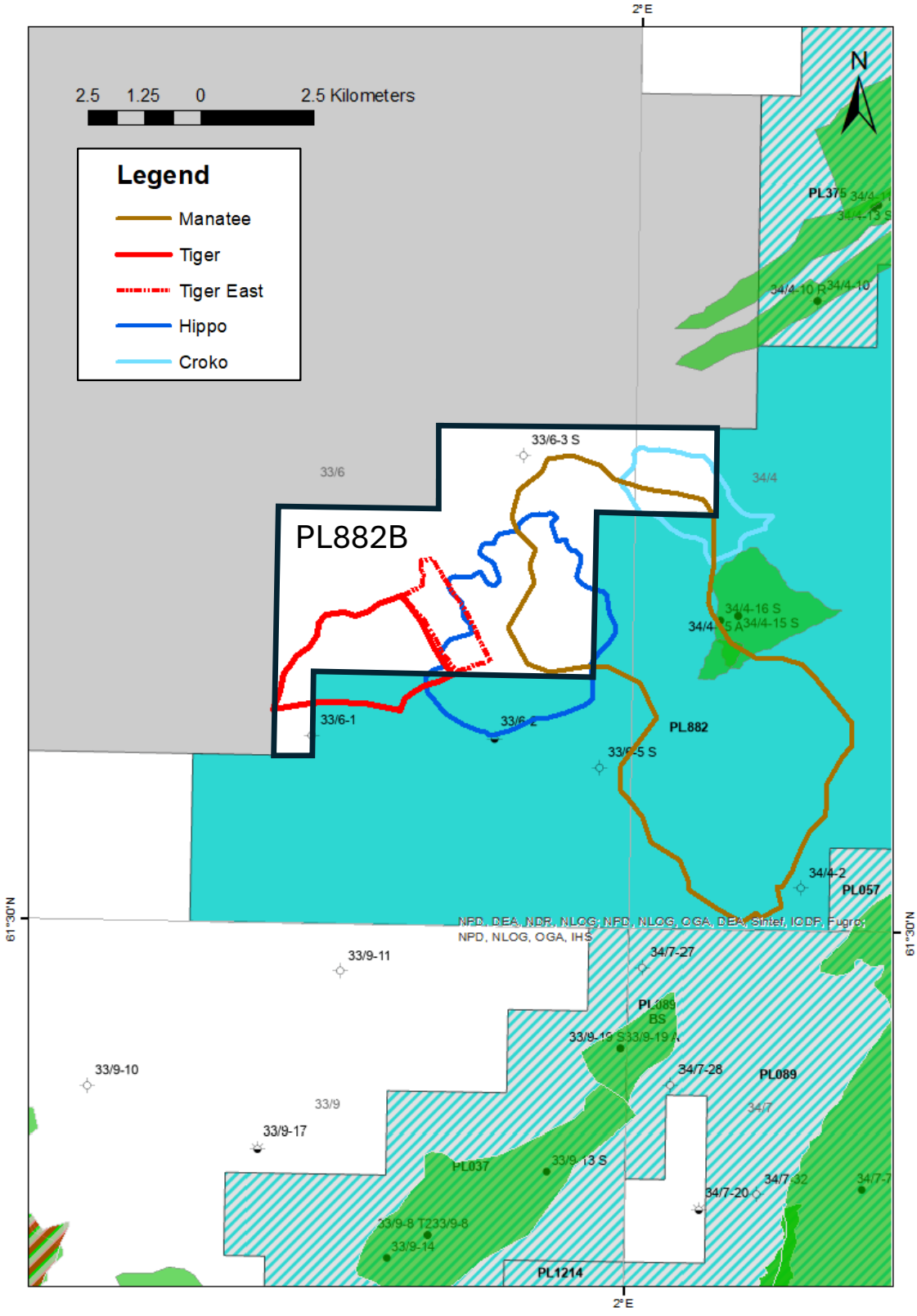

Figure 4.2 Post award prospectivity in PL882B

Upper Jurassic prospectivity.

Hippo and Croco leads are characterised by a thickened Upper Jurassic isopach. Hippo is down dip of well 33/6-2 which penetrated a package of cemented sands and shales and a high probability of connection between Hippo and Dugong Tail (33/6-5S).

Croco is downdip of the Dugong truncation and appears to be the material eroded in the Late Jurassic/early Cretaceous. The lithology cube from inversion indicates that it is predominately shale filled.

Analogs and seismic amplitude modelling show that hydrocarbons have a visible response in the Upper Jurassic. No fluid response is observed at Hippo and Croco, and the leads have not been de-risked.

Remobilised Eocene Sands.

The Manatee Lead is a large NW-SE trending 4-way closure with a complex chaotic internal reflectivity/character. The depositional model for these sands is debated. The seismic character suggests some form of remobilization. Differential compaction is thought to explain the dip closure. Seismic amplitude modelling show that hydrocarbons have a visible response at these depths. No fluid response is observed at within the Manatee structural closure.

The key risks, charge and seal/retention, still remain following the post award work program.

Middle Jurassic prospectivity - The Tiger Prospect (Figure 4.3 and Figure 4.4).

The Tiger prospect definition did not change significantly following the post award G&G work program (Table 4.1).

The GRV in the Tiger Prospect was calculated based on area vs depth on the top (Top Rannoch formation) and base reservoir (Base Rannoch formation) maps. An uncertainty range of +/- 20 % in area (equals P1 and P99) is applied to account for uncertainties in the interpretation and depth conversion. From these input parameters, the P10 and P90 values were calculated using a stretched beta distribution.

Porosity input is derived from wells with the Rannoch formation, representing similar facies as expected for the prospect area adjusted to prospect burial depths. Porosity (fraction) of 0.13 - 0.14 - 0.15 is input in the P90 - Mean - P10 cases. The updated porosity range was reduced compared to the application input parameters.

The water saturation range is based on in-house petrophysical interpretation of nearby wells that encountered hydrocarbon columns in Rannoch formation. Water saturation (fraction) of 0.40 - 0.31 - 0.22 is input in the P90 - Mean - P10 cases.

Nearby key wells are used as input for estimated N/G (fraction) of 0.67 - 0.75 - 0.80 in the P90 - Mean - P10 cases. Cut-off criteria’s in the net-to-gross estimation is Vshale <= 0.40, porosity >= 0,11 and permeability >= 1 mD. The updated N/G range was improved compared to the application input parameters.

Dugong exploration wells discovered oil with increased GOR relative to existing fields and discoveries in the area. Comparable drainage area and source rock facies is expected to provide oil of similar quality migrated into the Tiger Prospect. This is reflected in the GOR input range defined as 150 - 180 - 214 in the P90 - Mean - P10 cases. The corresponding oil shrinkage factor (1/Bo) is defined as 0.67 - 0.63 - 0.59 in the P90 - Mean - P10 cases. The Fluid parameters were kept unchanged from the application input parameters.

The oil recovery factor range from 0.15 - 0.20 - 0.25 in the P90 - Mean - P10 cases. The associated gas recovery factor is assumed to be the same as the oil recovery factor. The updated recovery factor range was reduced compared to the application input parameters.

The Dugong discovery in PL882 has a distinct DHI at base reservoir with structural conformance. Similar DHI's are seen at the Statfjord North and Sygna fields. Geophysical modelling on all nearby wells shows that hydrocarbons should have a visible seismic response if hydrocarbons are present. The Tiger prospect lacks these geophysical characteristics of hydrocarbon presence. The lack of DHI in the Tiger prospect could also be explained by poor reservoir properties (significant lower average porosity and N/G than seen in Dugong).

The input parameters, both reservoir and fluid, are similar to what was seen in the Dugong wells. With these parameters, the Tiger prospect it is expected to have a clear DHI response. The lack of DHI response in the Tiger prospect results in a amplitude downgrade of the Pos, from 29% to 14%.

and

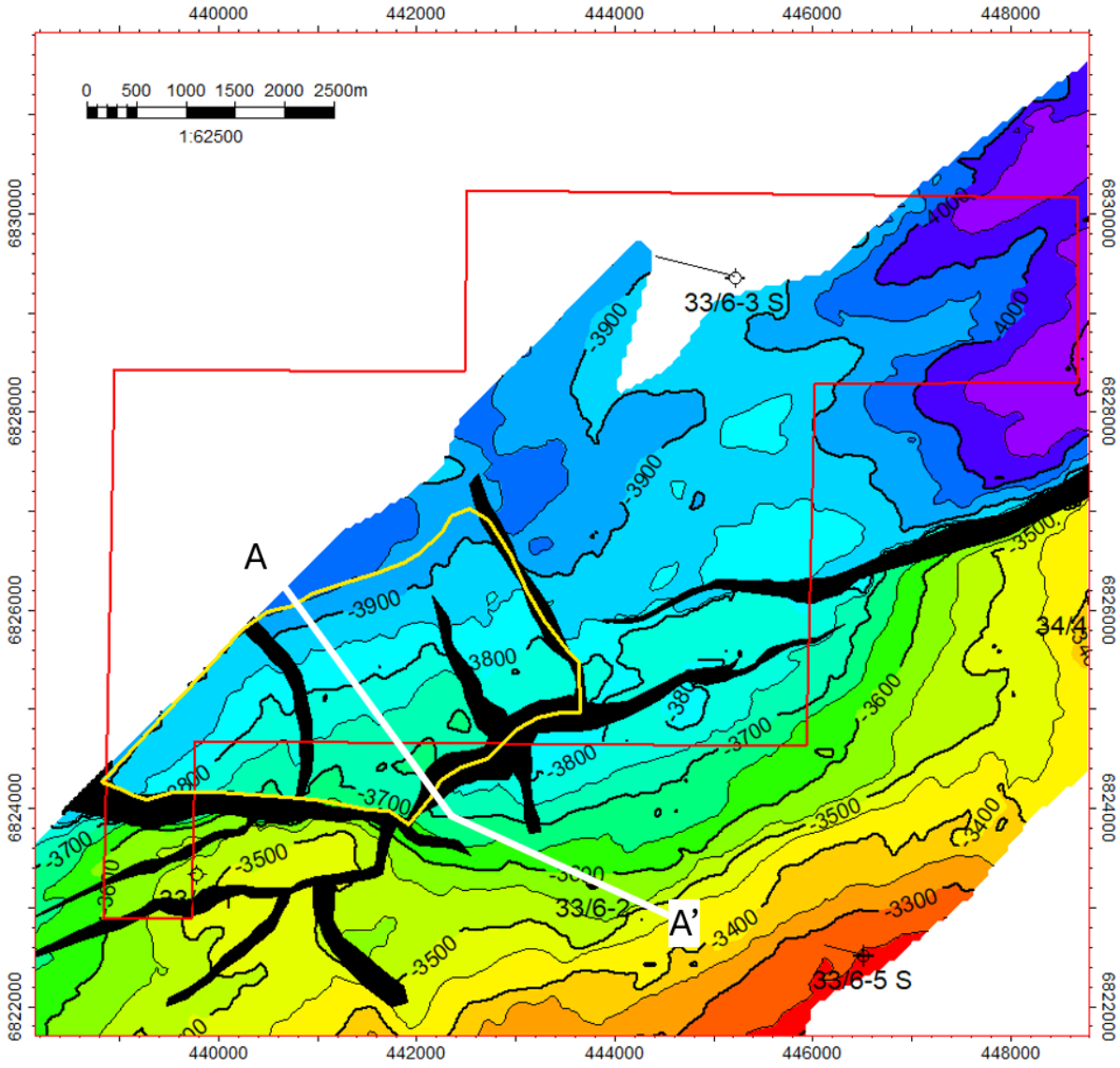

Figure 4.3 Top Brent depth structure map (m)
The Tiger prospect is defined by the yellow polygon.

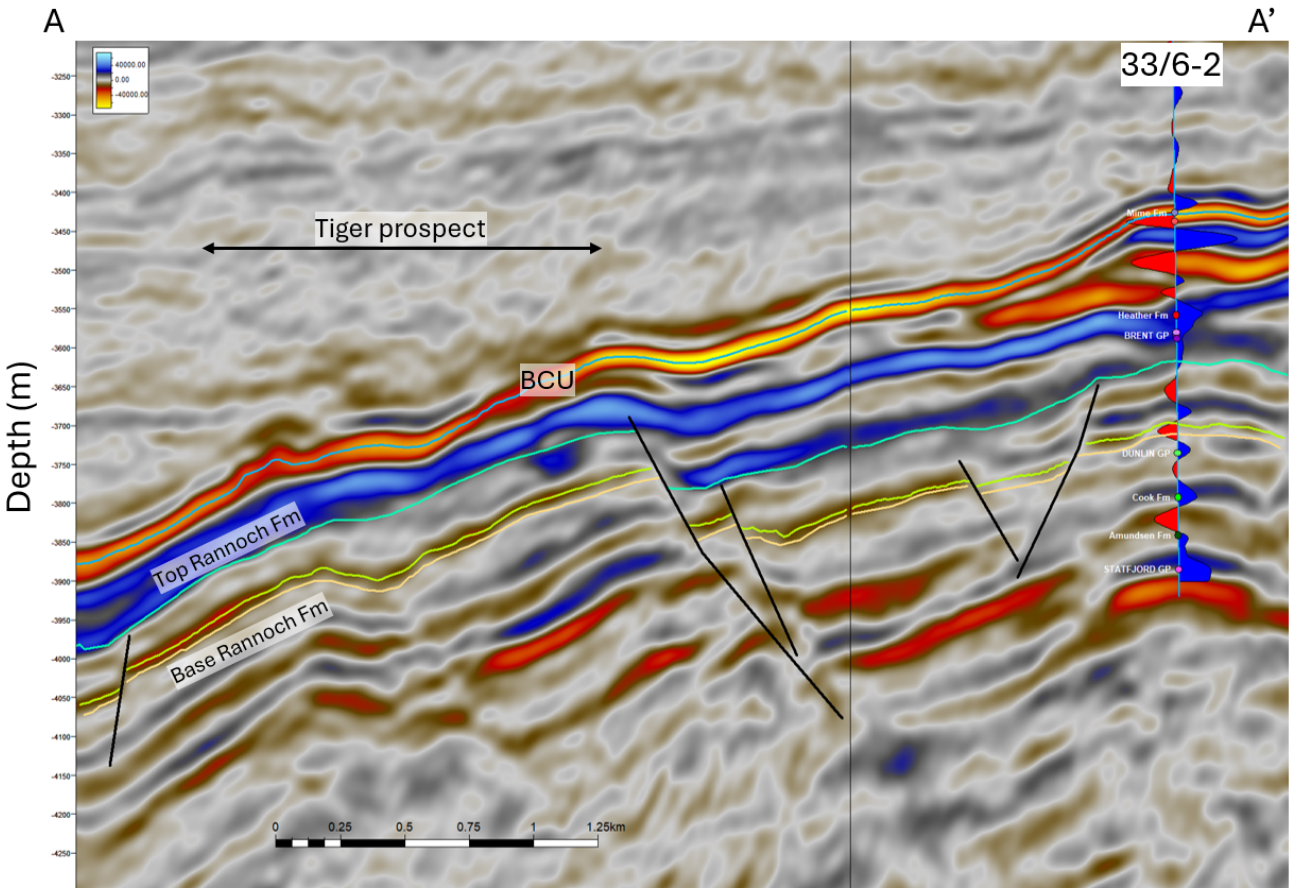

Figure 4.4 Seismic line through the Tiger prospect.
Line location is shown in Figure 4.3.

Table 4.1 NPD Table 4 - PL882B

The Tiger prospect (Rannoch)

Block	33/6 & 34/4	Prospect name	Tiger	Discovery/Prosp/Lead	Prospect	Prosp ID (or New!)	NOD will insert value	NPD approved (Y/N)	
Play name	NOD will insert value	New Play (Y/N)		Outside play (Y/N)					
Oil, Gas or O&G case:	Oil	Reported by company	Vår Energi ASA	Reference document				Assessment year	2024
This is case no.:		Structural element	Tampen Spur	Type of trap	Structural	Water depth [m MSL] (>0)	315	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)	1,41	5,19	5,78	11,00				
	Gas [10^9 Sm^3] (>0.00)					0,25	0,92	1,05	2,00
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,27	1,00	1,16	2,27				
	Gas [10^9 Sm^3] (>0.00)					0,05	0,18	0,21	0,42
Reservoir Chrono (from)	Bajocian	Reservoir litho (from)	Rannoch Formation	Source Rock, chrono primary	Tithonian	Source Rock, litho primary	Draupne Fm	Seal, Chrono	
Reservoir Chrono (to)	Aalenian	Reservoir litho (to)	Rannoch Formation	Source Rock, chrono secondary	Oxfordian	Source Rock, litho secondary	Heather Fm	Seal, Litho	
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0,29	Oil case (0.00-1.00)	0,29	Gas case (0.00-1.00)		Oil & Gas case (0.00-1.00)			
Reservoir (P1) (0.00-1.00)	0,80	Trap (P2) (0.00-1.00)	0,80	Charge (P3) (0.00-1.00)	0,90	Retention (P4) (0.00-1.00)	0,50		
Parametres:	Low (P90)	Base	High (P10)	*Comments: Due to the geophysical response the Tiger prospect is downgrded. The DHI modified POS is set to 14%*					
Depth to top of prospect [m MSL] (> 0)		3700							
Area of closure [km^2] (> 0.0)	1,5	2,9	4,0						
Reservoir thickness [m] (> 0)		75							
HC column in prospect [m] (> 0)	57	105	161						
Gross rock vol. [10^9 m^3] (> 0.000)	0,410	0,512	0,612						
Net / Gross [fraction] (0.00-1.00)	0,67	0,75	0,80						
Porosity [fraction] (0.00-1.00)	0,13	0,14	0,15						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0,22	0,31	0,40						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,66	0,63	0,59						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	150	180	214						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,15	0,20	0,25						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,15	0,20	0,25						
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)	120			Innrapp. av geolog-init:	NOD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)	490			Dato:	NOD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation	Vshale <= 0,4.	Porosity >= 0,11.	Perm >= 0,1 mD					Kart nr	NPD will insert value

5 Technical evaluation

Tiger development solution for the P50 volumetric case (Figure 5.1):

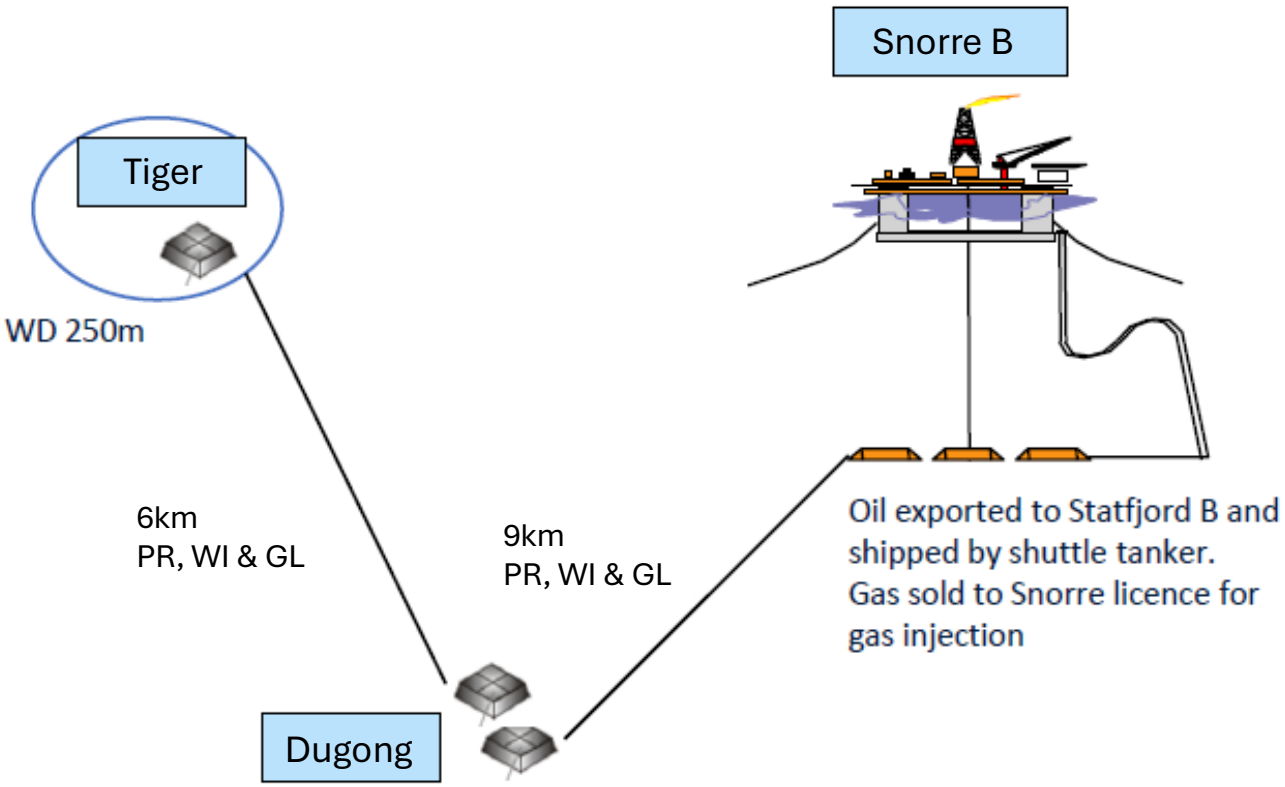

Figure 5.1 Tiger development concept

- One 4-slot template with one oil producer (OP)with gas lift (GL) and one water injector (WI)
- Subsea tieback via future Dugong SPS or Dugong PLEM at SNB (Snorre B host platform)
- Tiger start-up Q1 2032 with 10 years of estimated production.

6 Conclusion

The prospectivity within the PL 882B has been thoroughly evaluated with the highest quality seismic data and a significant number of studies performed through the PL882 licence. All leads and prospects identified in the APA and during the licence period have been evaluated and considered as non-prospective due to limited volume potential and high risk.

The Tiger prospect is a structural closure with limited recoverable resources 0.32-2,66 MSm3 o.e. (P90-P10) due to the wide range in reservoir properties and hydrocarbon contact distribution. The geologic risk is set to 14% with key risk on reservoir quality and seal. Based on the last technical and economic evaluation, the PL 882B licence partners no longer consider Tiger as a prospect that justifies a positive drill decision and no further work to de-risk.