PL648S

Relinquishment Report

PGNiG Upstream International AS

OMV (Norge) AS

January 2015

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1 Key licence history

The PL648S was awarded to PGNiG Norway AS (operator - 50%) and OMV Norge AS (50%) on 3rd February 2012 as part of the APA2011 licensing round (TFO2011). The licence was granted for an initial period of 7 years to 3rd February 2019. The licence applies to all stratigraphic levels above base Cretaceous (Fig. 1.1). The operator's company name was changed to PGNiG Upstream International AS (PGNiG UI AS) on 15.05.2013.

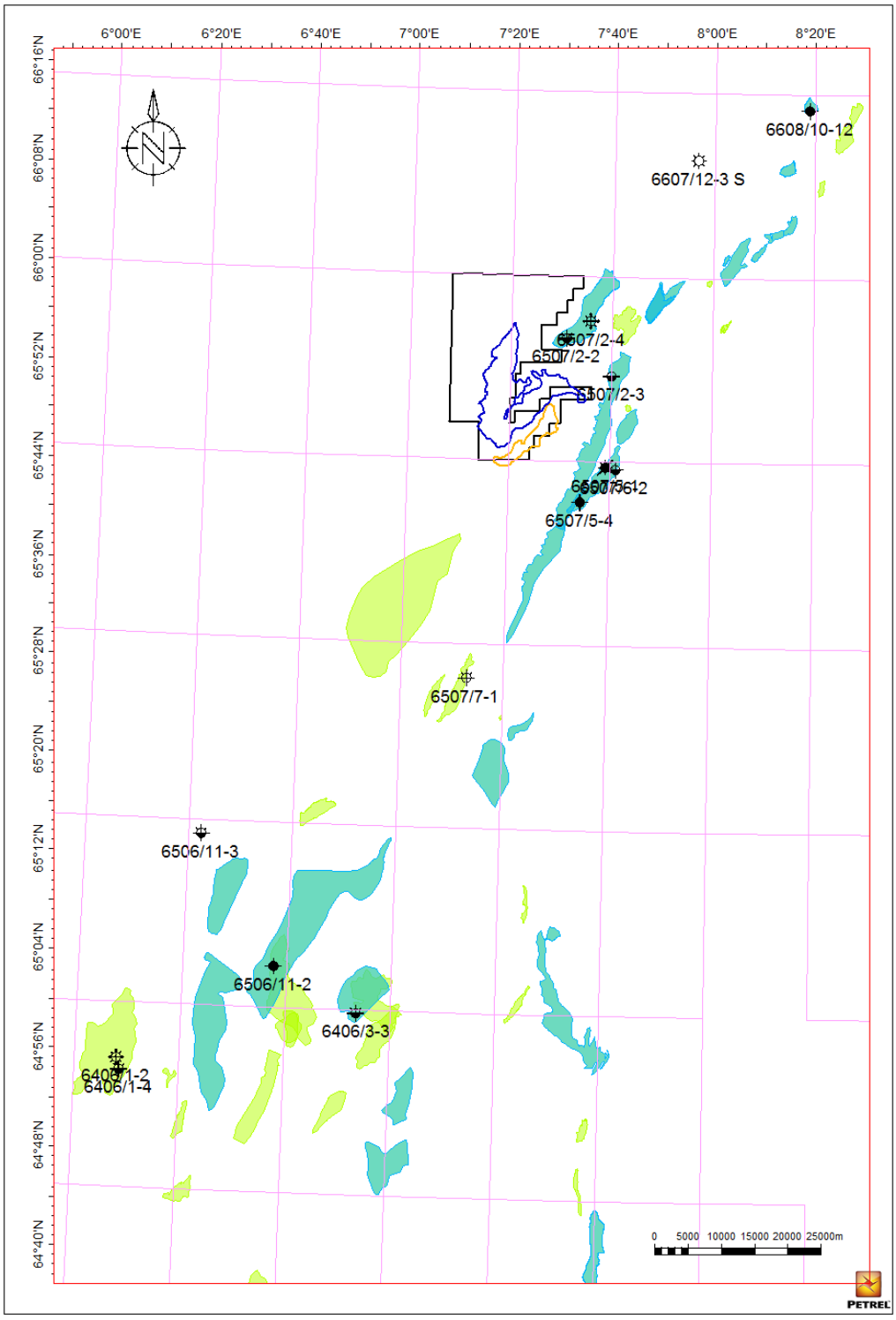

Fig. 1.1 Area map. The map shows the licence boundaries and outlines of Krakow prospect (the blue line) and Warszawa prospect (the orange line).

The work program set by the authorities in the initial period was as follows:
phase 1 - 2 years - reprocess seismic data, G&G studies, drill or drop decision (DoD),
phase 2 - 2 years - drill one exploration well, concretize or drop decision (BoK),
phase 3 - 2 years - perform conceptual studies, continuation or drop decision (BoV),
phase 4 - 1 year - prepare development plan, decision to submit PDO or drop.

An application to postpone the DoD decision by 9 months was submitted to the Ministry of Petroleum and Energy in a letter dated 31.10.2013. The licence extension was approved by the Ministry on 26th February 2014. The new date for DoD decision was set to 3rd November 2014.

Licence meetings overview:
EC/MC Meeting No1 - 26.04.2012
EC/MC Meeting No2 - 14.11.2012
EC/MC Meeting No3 - 17.06.2013
The Lysing core workshop - 27.06.2013
The Karroo Basin Field Trip - 17-23.11.2013
EC/MC Meeting No4 - 10.12.2013
Work Meeting - Lysing Fm. prospect - 08.04.2014
Work Meeting - Lange Fm. prospect - 11.06.2014
Work Meeting - Lange Fm. prospect - 15.09.2014
Work Meeting - Lange Fm. prospect - 8.10.2014
EC/MC Meeting No5 - final recommendation - 27.10.2014

Based on the results from the external studies and extensive internal analysis of both identified prospects, the volume potential recognized within the PL648S licence area is not sufficient for a drill decision. The licence Management Committee has concluded to relinquish the licence.

2 Database

The seismic database consists of a number of proprietary, multi-client and public 2D and 3D data (Fig. 2.1, Fig. 2.2). The prospectivity evaluation and interpretation carried out for the licence application have been mainly performed on the DTN98, MC3D-DTW2000 and ST9717 volumes.

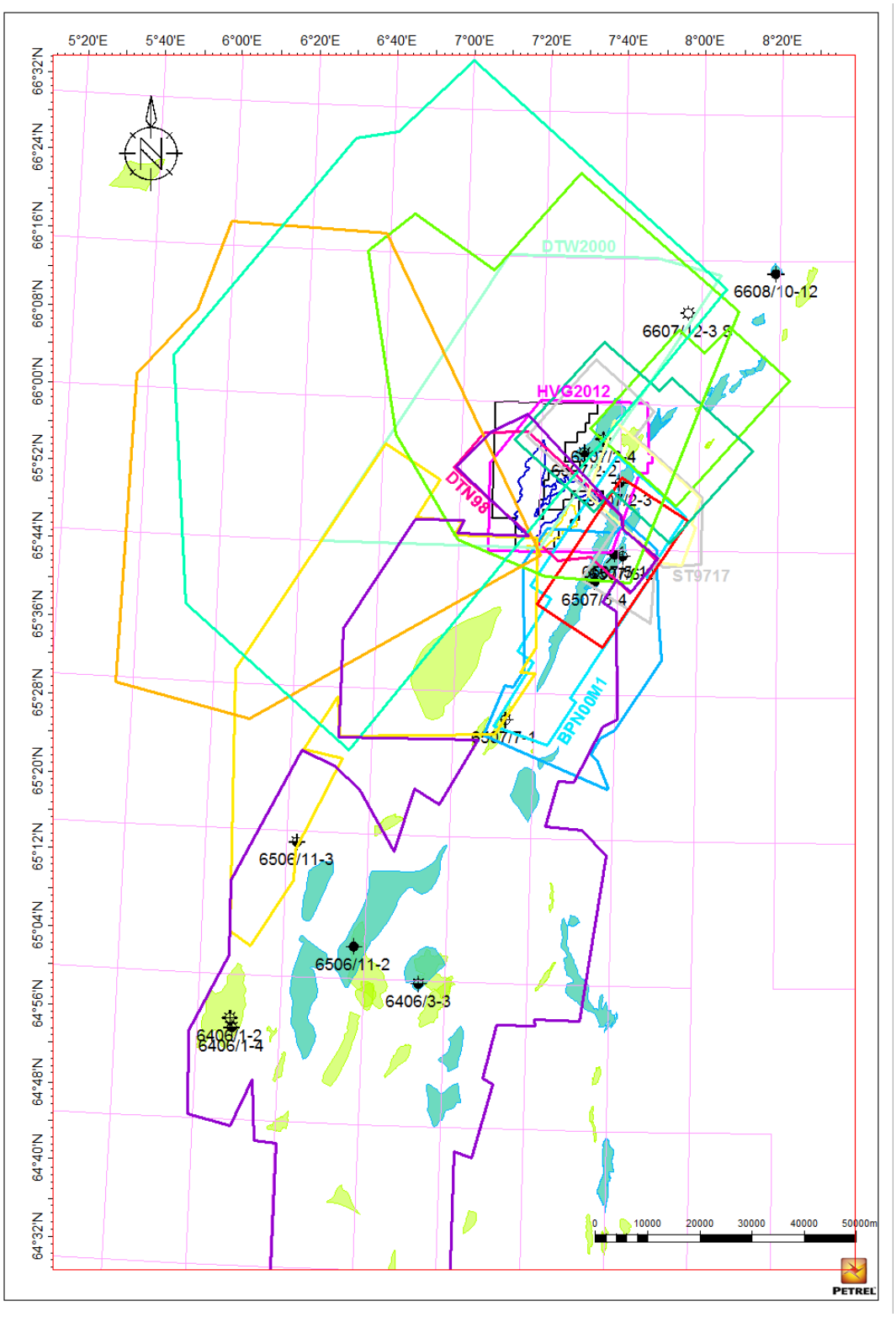

Fig. 2.1 Seismic and well database. The seismic volumes which were used for prospect interpretation are named. The full list of the seismic surveys is in the table below.

3D Seismic Datasets	Original Data	Year	Public	Quality	Comments
MC3D-HVG2012	Unique	2012	No	High(?)	Geostreamer technology by PGS. 2D data acquired with same technique show significant improvement in imaging
ANO9701	Unique	1997	YES	Poor	Partly poor reflectivity in Cretaceous strata, including the Jurassic in the eastern part of the survey
BPN00M1	ANO9701, ST9717DTN98 ++	2000	YES	Fair to good	
DTN98	Unique	1998	YES	Fair to good	Some noise in overburden over prospect due to seabed multiples
MC3D-DTW2000	Unique	2000	YES	Good to very good	Survey covers a large area. Some variations in amplitude response indicate potential for improvements
MC3D-SKHN99M	SKH96, SKHN99, MN9601	1999	YES	Poor	Large merge but no significant signal and reflectivity enhancements from originals
ST9203	Unique	1992	YES	Poor to fair	
ST9717	Unique	1997	YES	Fair to good	
ST9717R99	ST9717	1999	YES	Good	Reprocessing of parts of ST9717
BPN0501R08	BPN0501	2008	NO	Very good	
EN0804	Unique	2008	NO	Very good	Data show better resolution in Cretaceous reservoir level than previous datasets
EN0804M	EN0804	2008	NO	Very good	A crop with offset stack volume of the EN0804
2D Seismic Datasets	**Original Data**	**Year**	**Public**	**Quality**	**Comments**
DW99		1999	YES	Poor	Surveys cover a large area west of PL648S
YFZ99		1999	YES	Poor	
RSD95		1995	YES	Poor	

Fig. 2.2 Seismic database

The new seismic volume - MC3D-HVG2012 (PGS) was purchased in 2013. The survey covers most of the licence area. The main objective for buying the survey was to generate a dataset with optimal imaging of existing fields and discoveries as well as creating a high quality dataset for detailed interpretation and analysis of the prospects in the licence area. The latest mapping of the Krakow prospect (Lysing Fm.) and Warszawa prospect (Lange Fm.) was based on the new cube. The survey has been used for creating pre-stack inversion volumes (Krakow prospect) and to performed an AVO analysis (Warszawa prospect) as a part of the internal evaluation work process.

The well database includes key wells penetrating a semi-regional area of the deposited Lysing Fm. between Marulk, Snadd and Victoria fields (Fig. 2.3). The wells have been studied to evaluate the reservoir potential in Lysing Fm. and in Lange Fm. The wells were the subject of series of external and internal studies which were performed for the licence.

Well	Name	Water depth m	Year	TD m MD RKB	Fm. at TD	Operator	Status	Content
6506/3-1	Cassandra	341	2001	3667	Lange	Chevron	Dry	
6506/6-1	Victoria	434	2000	5491	Åre	Mobil	Discovery	Gas in Jurassic
6506/6-2	Albert	409	2013	3366	Early Cretaceous	Maersk Oil	Dry	
6506/9-1	Victoria	416	2009	5664	Åre	Total	Appraisal	Gas in Jurassic
6506/9-2S	Fogelberg	281	2010	4805	Early Jurassic	Centrica	Discovery	Gas/cond. in Jurassic
6506/11-3		328	1992	4350	Not	Den norske	Oil/gas shows in Lysing&Lange	
6506/11-7	Morvin	356	2001	4977.5	Åre	StatoilHydro	Discovery	Oil/gas in Jurassic
6506/11-8	Morvin	380	2006	4990	Tilje	Statoil ASA	Appraisal	Oil in Jurassic
6506/12-5	Smørbukk S	301	1986	4587	Åre	Den norske	Appraisal	Oil in Lysing&Jurassic
6507/1-1	Sahara	397	2004	3745	Lange	Chevron Texaco	Dry	
6507/2-1		381	1986	4477	Åre	Norsk Hydro	Dry	
6507/2-2	Marulk	384	1992	3958	Åre	Norsk Hydro	Discovery	Gas/cond. in Lysing&Lange
6507/2-3		355	1994	3972	Spekk	Norsk Hydro	Oil shows in Cret.	
6507/2-4	Marulk	365	2008	3600	Lyr	Eni	Discovery	Gas/cond. in Lysing
6507/3-9 S	Snadd Outer	364	2012	2964	Lange	BP	Discovery	Gas in Late Cret.
6507/5-3	Snadd S	417	2000	3000	Lange	BP Amoco	Discovery	Gas in Lysing
6507/5-4	Skarv	421	2001	3812	Åre	BP Amoco	Appraisal	Oil/gas in Lange&Jurassic
6507/5-6 S	Snadd N	325	2010	4991	Lange	BP	Discovery	Gas in Lysing
6507/7-1		367	1984	4825	Tilje	Conoco	Gas shows in Jurassic	
6507/7-11 S		274	1997	3749	Åre	Conoco	Dry	
6507/7-12		333	1999	3976	Spekk	Conoco	Oil shows in Lange	
6507/7-14 S	Zidane 1	344	2010	4534	Tilje Fm.	RWE Dea	Discovery	Gas in Fangst Gp
6607/12-2 S	Alve North	369	2011	4404	Early Jurassic	Total	Discovery	Oil/gas in Cretaceous&Jurassic

Fig. 2.3 Well database

The wells 6507/3-9S, 6506/6-2 and 6607/12-2S were added to the well database after the licence work had started. The data from the wells were incorporated into the ongoing studies for better understanding of the Lysing and Lange sedimentary systems.

3 Review of geological framework

The main prospect identified in the licence area was the Krakow prospect in the Lysing Fm. Primarily the work on the licence was directed towards evaluation of this prospect. During licence extension period the secondary objective, Warszawa lead, was revisited and the work performed resulted in upgrading the lead to a prospect category.
The Krakow prospect belongs to NHKU-2 play; it is a part of the depositional system extending from Nordland Ridge to the east to the Ytreholmen Fault Zone to the west. The Warszawa prospect is part of the NHKL-2 play. It covers sandstones of the Lyr and Lange Fms of Berrias to Turonian age.
This section summarizes the main results of the geological and geophysical work and special studies carried out on the licence.

Seismic interpretation

The main regionally interpreted reflectors were the Seabed, Top Kai Fm., Base Tertiary (Lower Tertiary Unconformity), Top Shetland, Top Cromer Knoll, BCU, Base Viking Gp. and Top Åre coal. The depth grids of these horizons were used for a structural restoration / basin modelling study.
A detailed interpretation was carried out at the prospect levels based on the HVG2012 seismic cube. Synthetic seismograms were generated for discovery and dry wells (Fig. 3.1) for proper interpretation of the Lysing Fm. reflectors. Three seismic horizons were interpreted as Top, Intra and the Base of the Lysing Fm. sandstone. The three horizons show a regional seismic anomaly in Snadd and Marulk area, and also in Hawkes Bay (around 6507/1-1 Sahara well) and in vicinity of the Krakow prospect (Fig. 3.2). The interpretation allowed identification of areas bypassed by sand deposition within the Lysing Fm., west and south-west of the Marulk High. (Fig. 3.3). The other horizons interpreted were Near top-K28 (Fig. 3.4), Cenomanian/Turonian unconformity (Fig. 3.5), Near top-K53 and Near top-K55 horizons (Fig. 3.6). The deposition of the units depended on the relief inherited from the Lower Cretaceous uplift and erosion which controlled depositional environment for Lysing turbidite sedimentation.

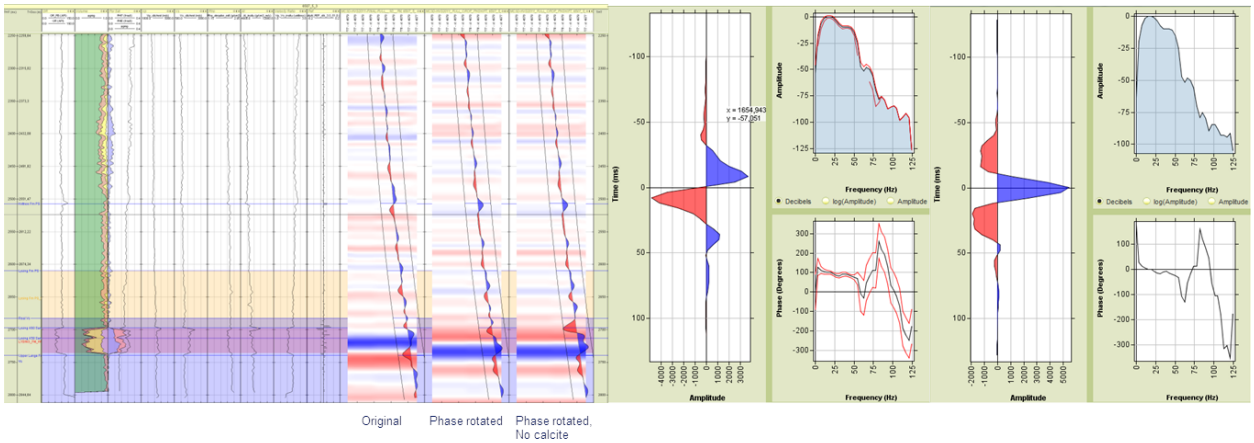

Fig. 3.1 Synthetic seismogram for well 6507/5-3. Wavelets were extracted from MC3D-HVG2011 for the gas discovery well 6507/5-3. The Top Lysing pick is negative on the phase rotated data, while the base of the Lysing Fm. is a zero crossing from positive to negative. Three other wells, 6507/3-9S, 6507/2-4 and 6507/2-3, were used for wavelet extraction from MC3D-HVG2012

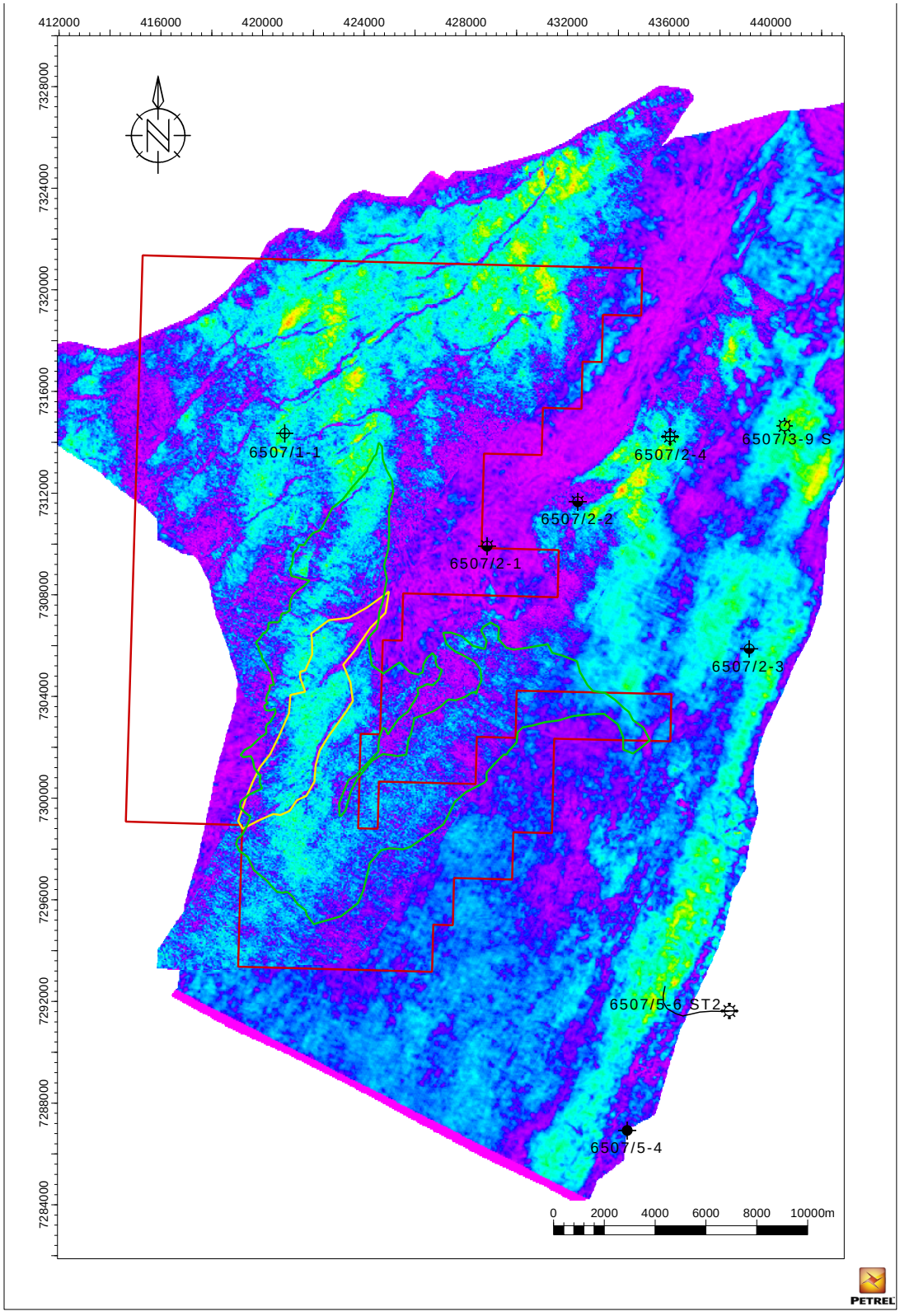

Fig. 3.2 The Lysing Fm. seismic anomaly

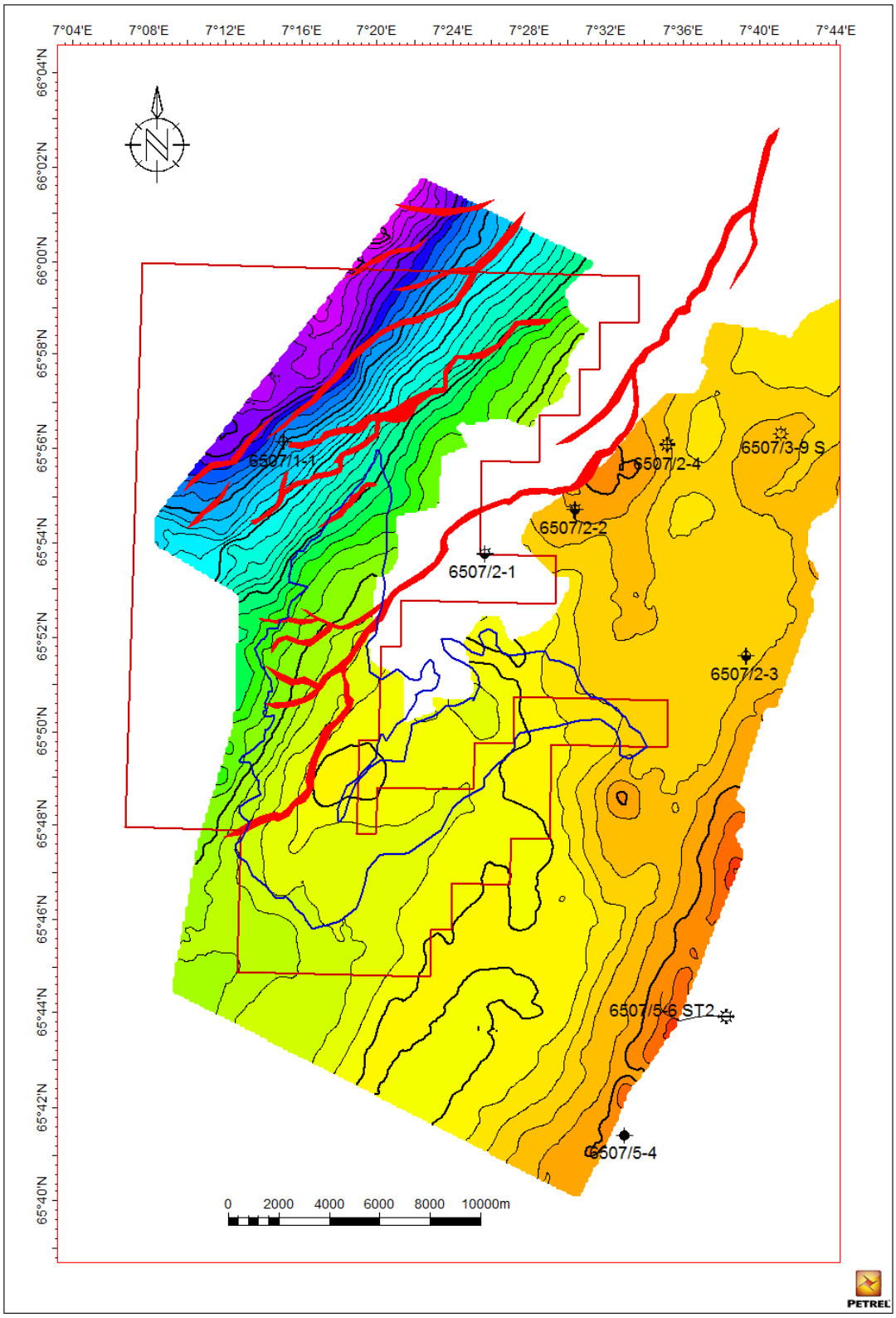

Fig. 3.3 Top Lysing Fm. depth map

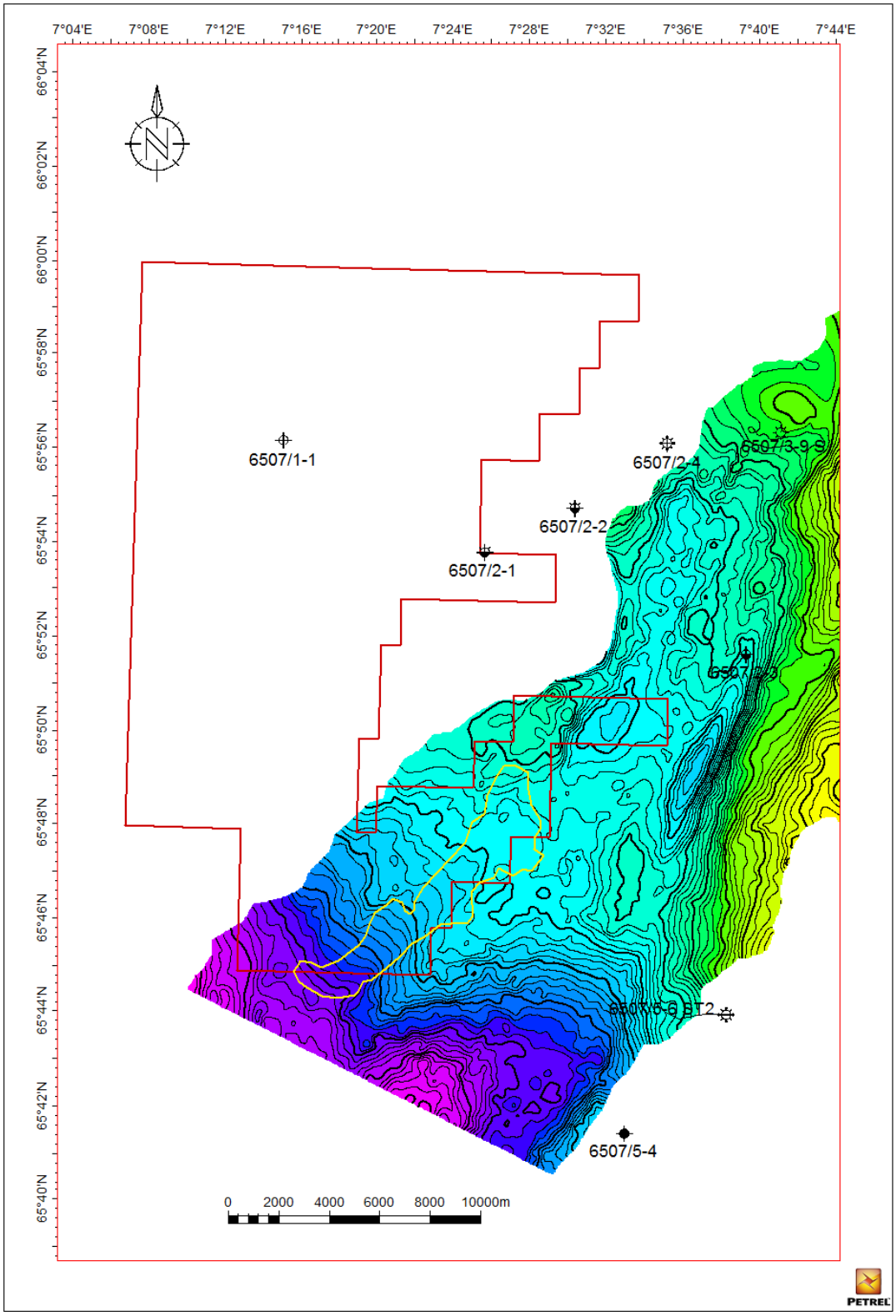

Fig. 3.4 K28 depth map

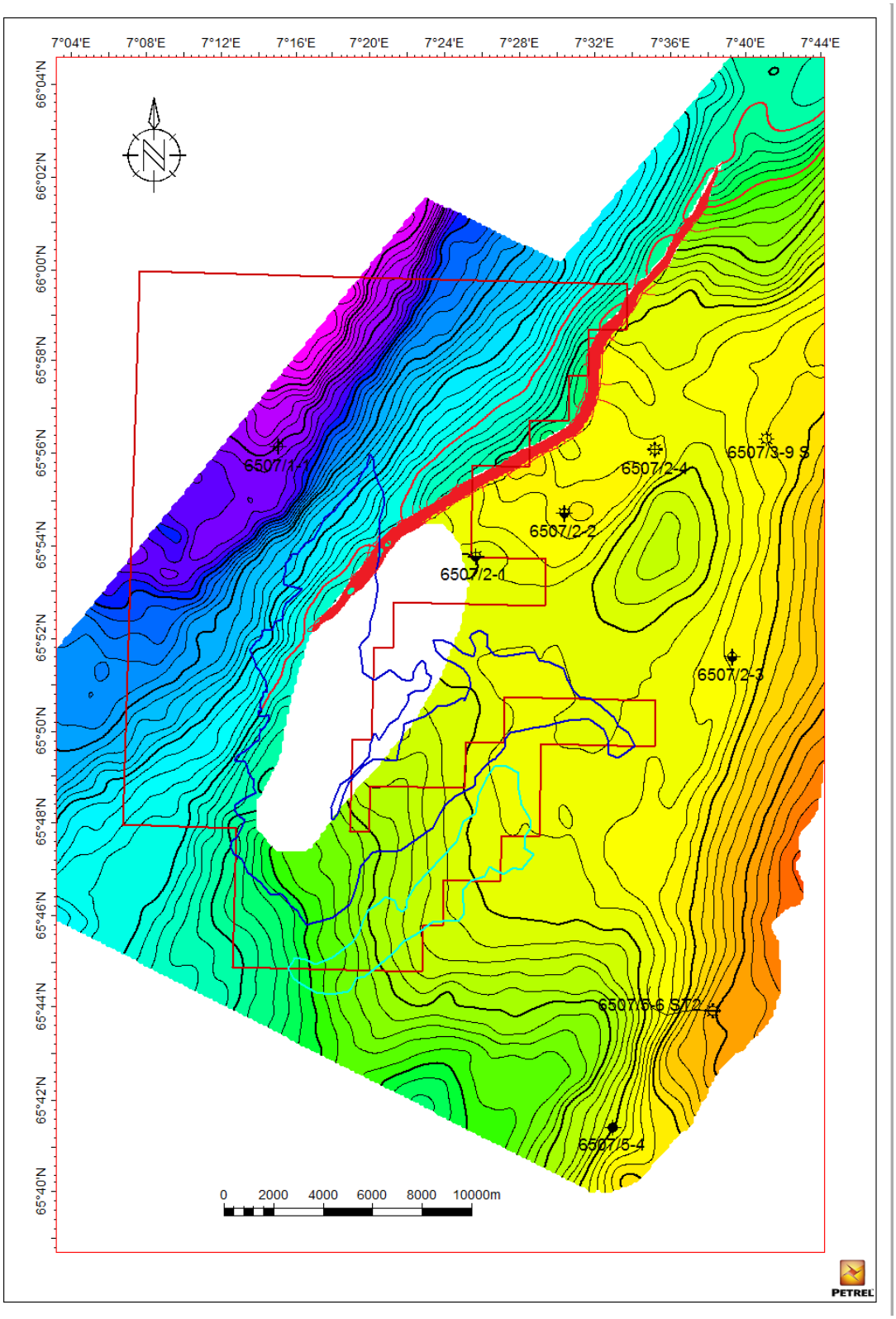

Fig. 3.5 Cenomanian/Turonian unconformity depth map. The stratigraphic gap was distinguished in Petrostrat's stratigraphic studies in each analysed well

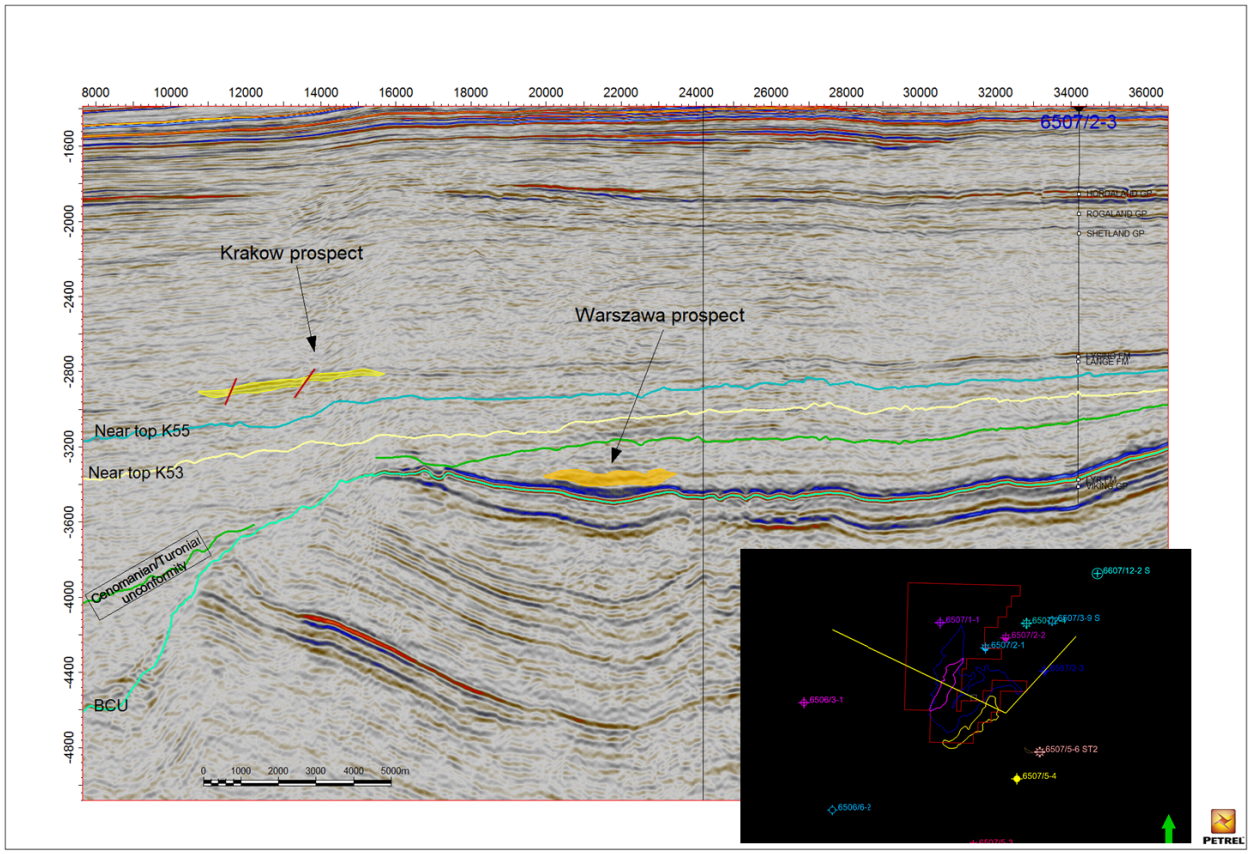

Fig. 3.6 Seismic section showing Krakow and Warszawa prospects and interpreted Cretaceous horizons.. The Krakow prospect is shown according to the new interpretation. The Lysing sandstones are spread over the entire area to the east of 6507/2-3 well.

AVO and seismic inversion

An AVO and seismic inversion study was performed by PGNiG for the Krakow prospect. 12 wells were used for half space model generation and depth modelling. All wells show that the fluid factor should produce relatively high amplitude for a gas saturated reservoir and most of the wells indicate that a water saturated reservoir should be shown as a lower amplitude anomaly. AVO analysis shows that some amplitudes are seen in the fluid factor cube but not as strong as amplitude seen for proven fields. The inversion results fit in general to the well data with regards to the evidence of hydrocarbon. The Bayesian Classification indicates some possibility of gas presence, however the amount of gas would be expected to be very low. The Lysing sand seems to be spread almost all over the licence area.

For the Warszawa prospect, AVO analysis was performed in-house with Sharp Reflections consulting and QC-ing the internal work. Three wells containing the Lange sandstones were analysed - 6507/2-4, 6507/5A-4H and 6607/12-2S. None of the three well synthetics show a reasonable tie to the seismic data. The data show a high level of noise contamination, masking the signal. Generated intercept and gradient maps do not convincingly support hydrocarbon presence in the prospect.

External studies

A series of relevant studies were performed in connection with the work program for PL648S. They are listed in Table 3.1. Special efforts were put on predicting the reservoir presence and quality in the Krakow prospect area as well as on assessing the hydrocarbon generation potential in the area and migration paths into Cretaceous reservoirs.

A **basin modelling study** was carried out to look at source rock maturity of the Spekk Fm., Melke Fm. and Åre Fm. coal and migration possibility to Lysing and Lange Fm. reservoirs. The source rocks of the area are in oil window east of the Marulk fault and in gas window west of the

Table 3.1 External studies performed in PL648S

Year	Study	Author
2012	3D Structural Restoration	Badleys
2012	Basin Modelling	GeoS4
2012	Biostratigraphy Phase 1	Petrostrat
2013	Biostratigraphy Phase 2	Petrostrat
2014	Sedimentology, petrography, reservoir quality analysis and fluid inclusion analysis	CGG Robertson

fault. Charge of the Lysing sands was dominantly via vertical migration from the Jurassic source rocks through the Lower Cretaceous sediments. Thus permeability of the Lower Cretaceous rocks is the main control on Lysing and Lange Fm. charge. HC retention in the Krakow prospect is dependent on the presence and sealing properties of the faults in Lysing Fm. Open or absent faults result in no accumulation in the prospect. The main identified risks were Lysing Fm. sand continuity, fault sealing properties and permeability of the Lower Cretaceous in general.
Biostratigraphy studies have been undertaken by Petrostrat. The studies are based on the review of 9 well sections penetrating the Lysing and Lange Fms. The data interpreted in the studies are correlated to other offset wells in the licence area, included in Petrostrat's "The Lysing and Lange Fms; a High Resolution Stratigraphy, 2006" study. The studies provided an integrated and consistent stratigraphic framework for the study wells. An updated sequence stratigraphic scheme for the Middle to Lower Cretaceous of Mid-Norway was revised and applied (Fig. 3.7). The stratigraphic framework was consistently used for the interpretation of the sand development in Lysing and Lange Fms. The Lysing Fm. sandstone is subdivided into 3 sequence units: K58, K60 and K62. The latter is present only in few wells south of the licence area while K58 and K60 are widespread and are assumed to form the main reservoir in the Krakow prospect. Several sandy horizons were identified in the Lange Fm. (K42, K50, K53 and K55) in study wells. None of the wells drilled an equivalent of the sandstone in the Warszawa prospect. Based on correlation to well 6507/2-3 the reservoir layer was ascribed to the K28 unit.
A **sedimentology and petrography** study was performed by CGG Robertson. The study is based on cored Lysing Fm. sections in wells 6506/3-1, 6507/2-2, 6507/2-3, 6507/2-4, 6507/3-9S, 6507/5-3, 6507/5-6 ST2. The study included facies analysis, petrographic studies and integration with conventional wireline log suites. The aim of the study was to establish a depositional model of the Lysing Fm. based on detailed facies analysis and assessment of the temporal and spatial variations in the depositional system in order to predict the location of the prospect area inside the depositional environment and reservoir properties. Seven depositional processes were identified through core description. The most common sedimentary process observed in the cores is the high density turbidity current. The turbidite fan complex of the Lysing Fm. is divided into three sub-environments (proximal, medial and distal) and each of these is further subdivided into axis, off-axis and fringe settings. The most common depositional environment observed in the Lysing Fm. in the cored wells is medial axis. As wells are mostly located in proximal position, based on depositional model the predicted location of the Krakow prospect is within medial / distal environment, probably in an off-axis setting. The expected processes which dominate in these environments are low density and distal turbidites. The primary control on reservoir quality appears to be the depositional process. Low density turbidites show a wide range of porosity and permeability (5 - 30%, 0.1 - 1000 mD), while distal turbidites have worse reservoir properties (5 - 20%, 0.03 - 2 mD).

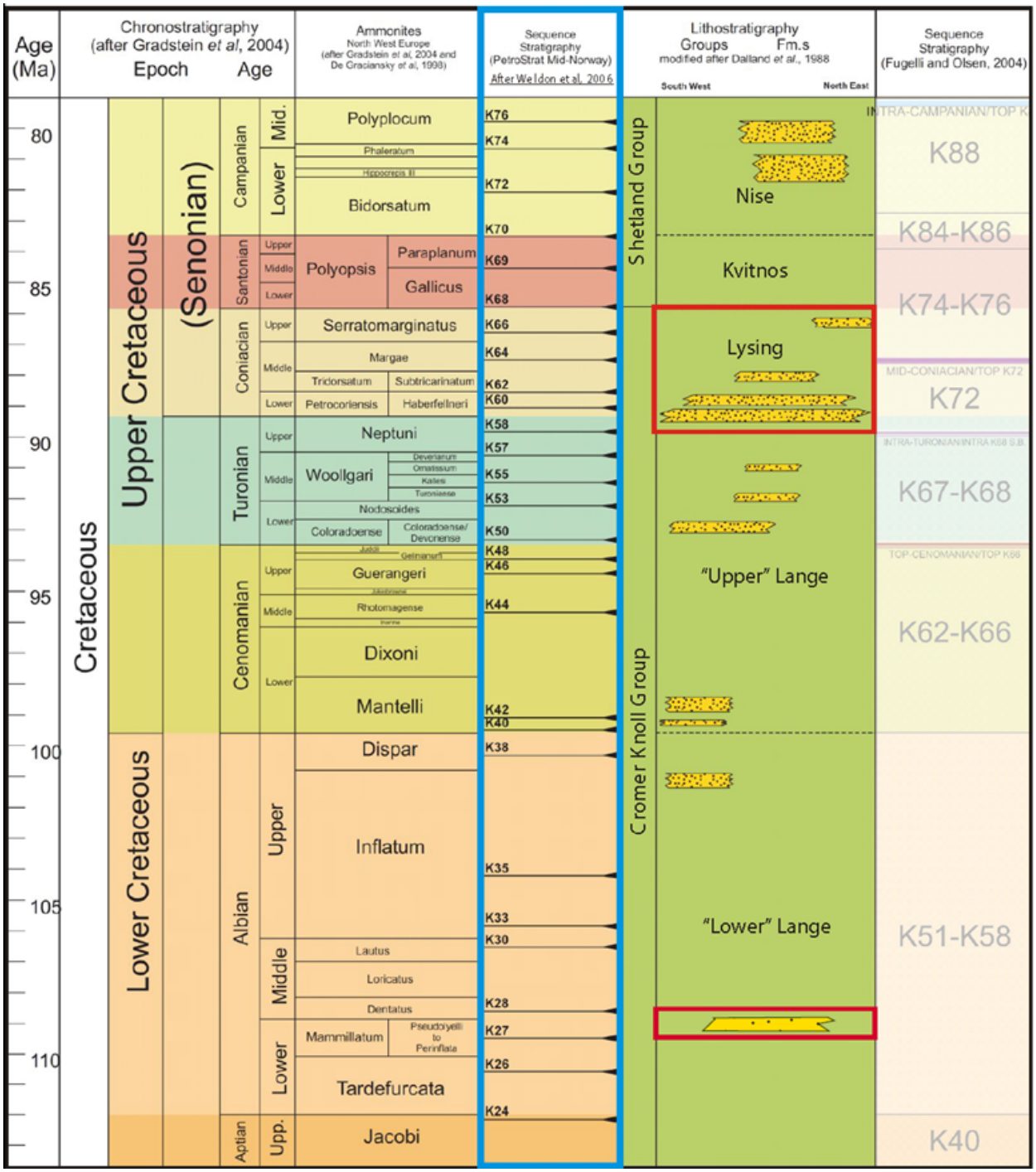

Fig. 3.7 Stratigraphic framework

4 Prospect update

In the APA 2011 application one prospect (Krakow) was identified. The prospect was defined as a stratigraphic trap in the Lysing Fm. The main play type was anticipated to be deep marine sandstones. The main risks were considered to be trap geometry, trap seal and hydrocarbon charge. Additionally, three leads in the Lange Fm. were defined - Warszawa, Wroclaw and Lodz. The work effort focused on reducing the prospect risks through merging / reprocessing of existing 3D seismic in the licence and G&G studies. However, instead of using older seismic data, the licence partners decided to purchase new seismic (PGS MC3D-HVG2012) covering the entire licence area.
The new seismic survey enabled the mapping and analysis of the prospect in more detail compare to the initial description in the APA application. The Krakow prospect has been defined as a 3-way fault dependent dip closure (Fig. 4.1). Sealing property of the main fault was regarded as crucial for the trapping mechanism. Since seismic attribute analysis was inconclusive in terms of the fault continuity, the trap seal remained the significant risk and the size of the prospect had to be decreased. The maximum area ended up being comparable with P90 case from the application stage. The Krakow seismic anomaly appeared to be not as strong as in older dataset and it was weaker than the equivalent Lysing Fm. anomalies defining Marulk, Snadd and Hawkes Bay (Sahara well) areas. The seismic inversion study provided information regarding the reservoir properties and hydrocarbon saturation. Presence of sands of the Lysing Fm. was confirmed over almost the entire licence area except for west and south-west of the Marulk High and in some places west of the Snadd Field. Reservoir thickness, calculated based on seismic interpretation and seismic inversion, has been estimated to be in the range of 25 to 40 m for the Krakow prospect (Fig. 4.2). Partial stacks analysis, pre-stack AVO and seismic inversion study showed no convincing evidence of gas saturation in the prospect area (Fig. 4.3). The results of the assessment led to negative conclusions and downgrading of the Krakow prospect.

Extensive efforts were put towards the evaluation of the next objective in the licence, the Warszawa lead, eventually leading to Warszawa being upgraded to a prospect in the maturation process. The Warszawa prospect has been identified within the Lange Fm. (possibly in K28 sequence stratigraphic unit according to Petrostrat analysis) as a soft seismic anomaly in the south eastern part of the licence area (Fig. 4.4, Fig. 4.5). The prospect is a stratigraphic trap located in an erosional trough and pinching out up-dip towards north. Geophysical modelling and stack analysis show that the anomalous amplitudes are consistent with hydrocarbon filled reservoir (AVO class III), but intercept and gradient maps generated by 3rd party (Sharp Reflections) did not support the hydrocarbon presence. This reduced the confidence in the prospect and has been reflected in risking, as no DHI uplift could be applied to the risking assessment of the prospect.
A volume estimation was performed based on petrographical analysis of the Lange Fm. sandstones in offset wells including Marulk, Gråsel and Alve North fields. Gross thickness, N/G, porosity and oil saturation are presented in Fig. 4.6. Fluid contacts were assessed based on pressure analysis and extent of the seismic anomaly.

The prospective volumes are presented in Fig. 4.6. There was no volume calculation for the prospect in the licence application as it was here presented as a lead.

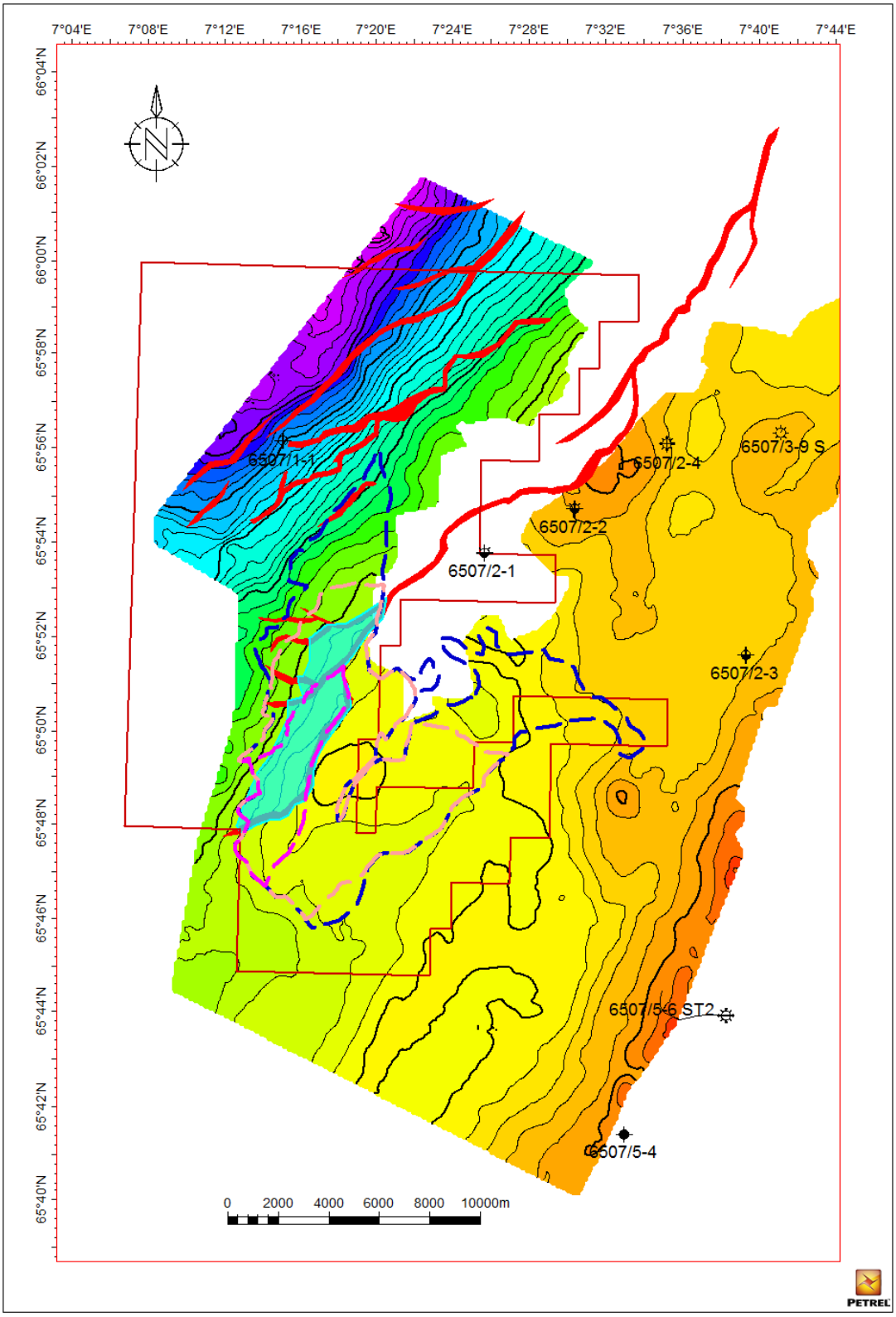

Fig. 4.1 The Krakow prospect based on new interpretation. The depth map of top Lysing sandstone. The stippled lines show max, mean and min outlines of Krakow prospect as in licence application. The final prospect is shown as a green shaded area.

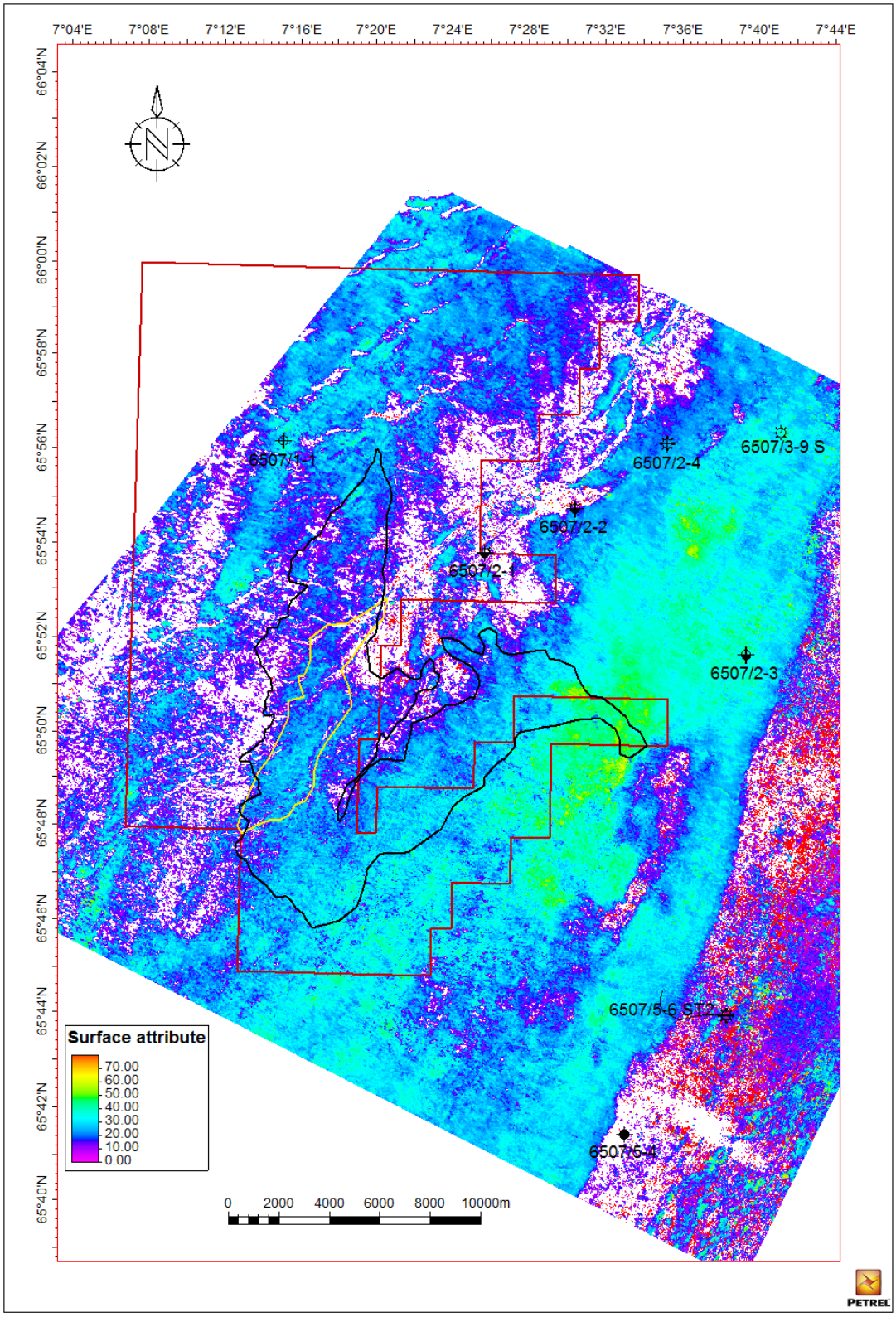

Fig. 4.2 Sand distribution and thickness

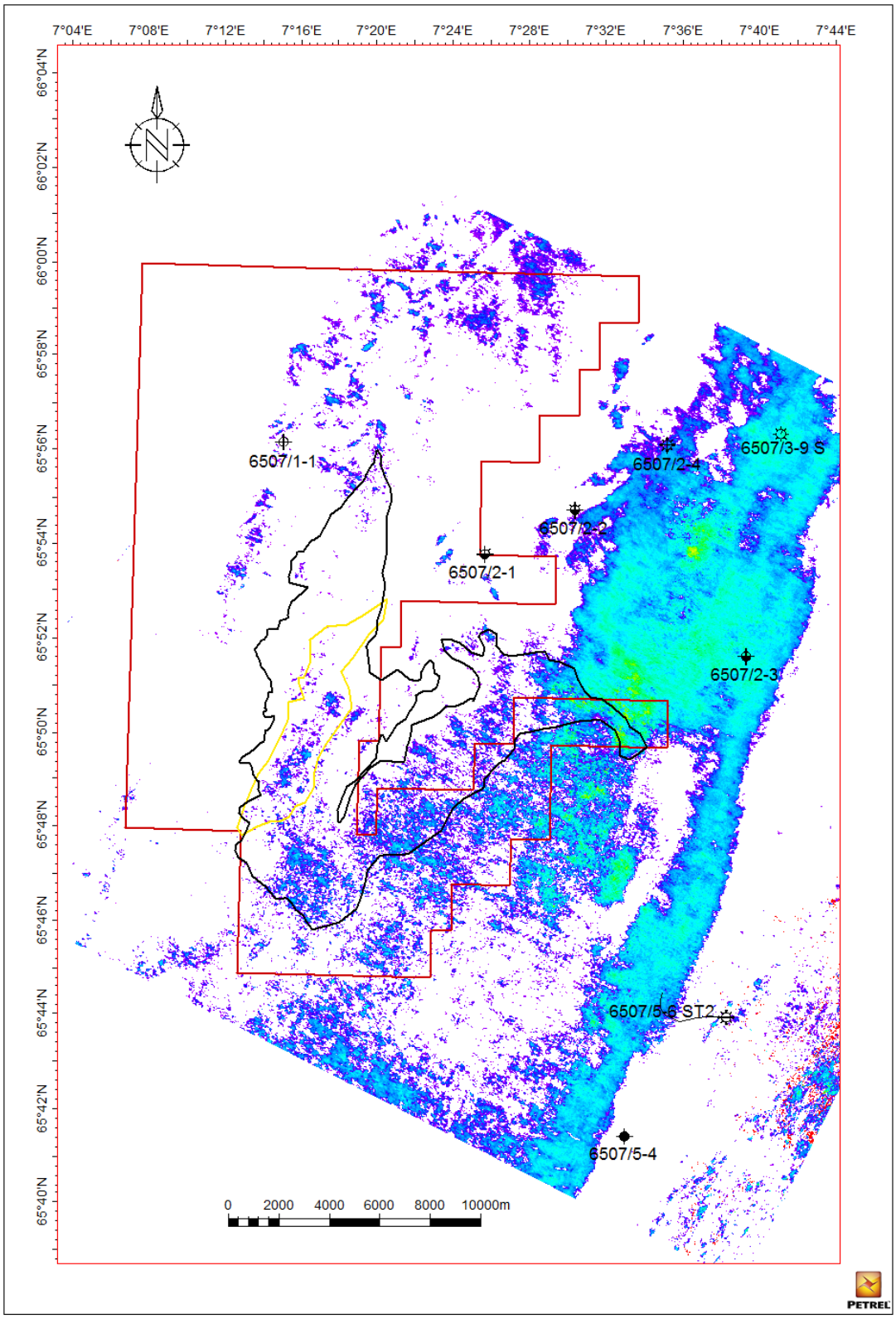

Fig. 4.3 Gas sand distribution

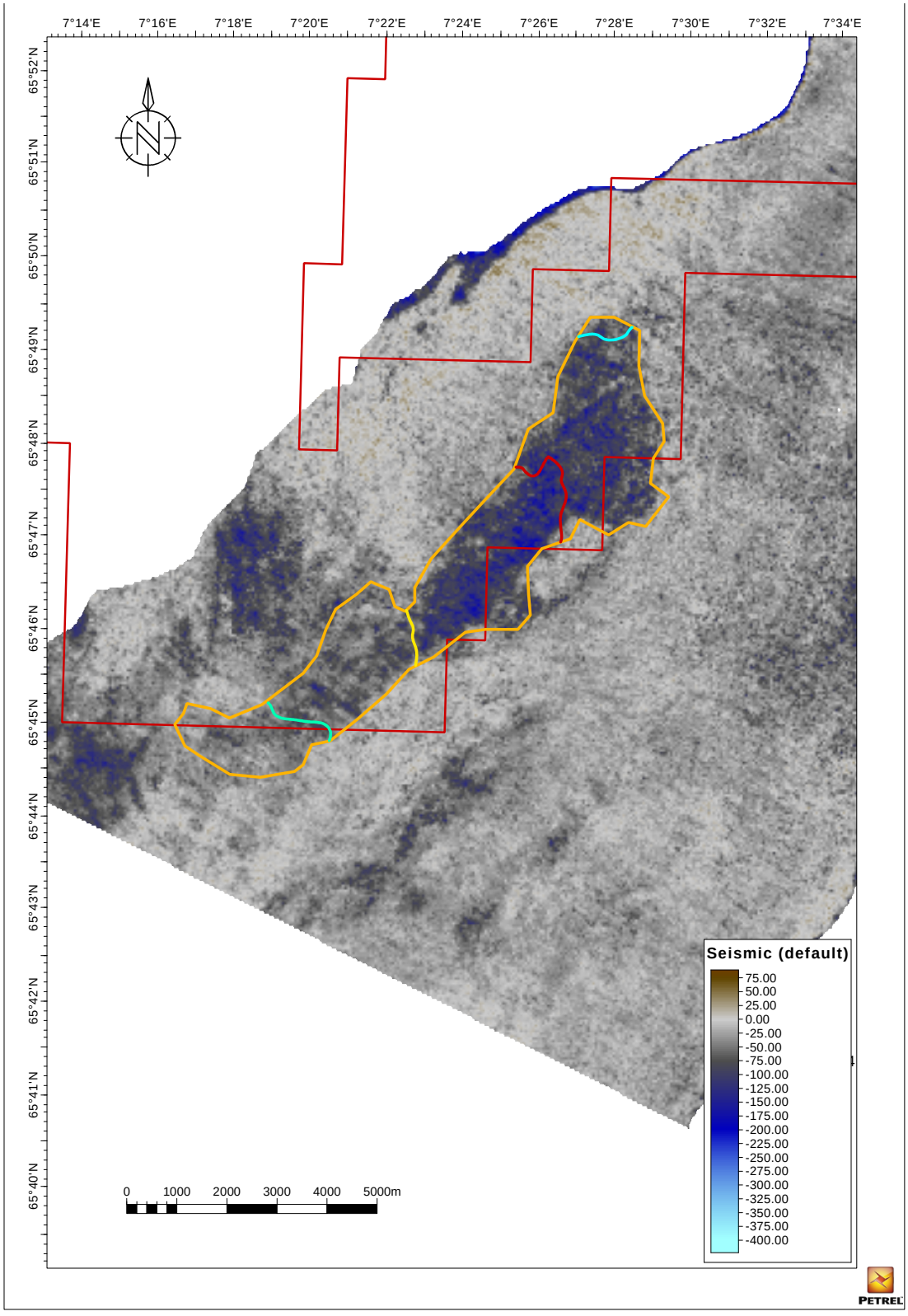

Fig. 4.4 Warszawa prospect

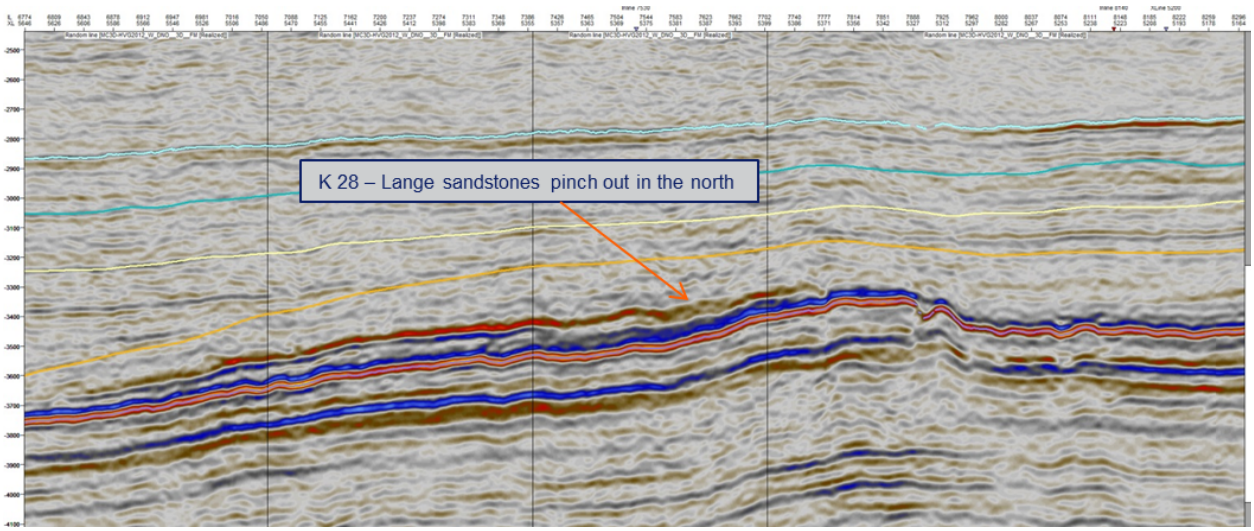

Fig. 4.5 Warszawa prospect - cross section

Table 5: Prospect data (Enclose map)

Block	6507/1&2, 6507/4&5	Prospect name	Warszawa	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	PGNiG UI AS	Reference document				Assessment year	2014
This is case no.:	1 of 1	Structural element	Dønna Terrace	Type of trap	Stratigraphic	Water depth [m MSL] (>0)	400	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)	4,40	10,10	11,40	18,50				
	Gas [10^9 Sm^3] (>0.00)					2,00	4,60	5,20	8,40
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	1,00	2,70	2,85	4,80				
	Gas [10^9 Sm^3] (>0.00)					0,95	2,50	2,60	4,30
Reservoir Chrono (from)	Albian	Reservoir litho (from)	Lange Fm.	Source Rock, chrono primary	Upper Jurassic	Source Rock, litho primary	Spekk Fm.	Seal, Chrono	Albian, Cenomanian
Reservoir Chrono (to)	Albian	Reservoir litho (to)	Lange Fm.	Source Rock, chrono secondary	Lower Jurassic	Source Rock, litho secondary	Åre Fm.	Seal, Litho	Lange Fm.
Probability [fraction]									
Technical (oil + gas + oil & gas case) (0.00-1.00)	1,00	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)	0,52	Trap (P2) (0.00-1.00)	0,80	Charge (P3) (0.00-1.00)	0,80	Retention (P4) (0.00-1.00)	0,70		
Parametres:	Low (P90)	Base	High (P10)	*Comments*					
Depth to top of prospect [m MSL] (> 0)	3640	3640	3640						
Area of closure [km^2] (> 0.0)	22,5	22,5	22,5						
Reservoir thickness [m] (> 0)	21	26	31						
HC column in prospect [m] (> 0)	100	240	420						
Gross rock vol. [10^9 m^3] (> 0.000)	0,470	0,600	0,700						
Net / Gross [fraction] (0.00-1.00)	0,45	0,62	0,73						
Porosity [fraction] (0.00-1.00)	0,14	0,16	0,19						
Permeability [mD] (> 0.0)	12,0	32,0	130,0						
Water Saturation [fraction] (0.00-1.00)	0,34	0,27	0,21						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,50	0,44	0,41						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	455	455	455						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,18	0,25	0,31						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,40	0,50	0,60						
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)	130			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)	580			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation	PHIE>=0,13	Vsh<=0,4	Sw<=0,5					Kart nr	NPD will insert value

Fig. 4.6 Prospect data.

5 Technical evaluation

A technical evaluation for the Krakow prospect was performed for the licence application. It was not updated due to the low volume potential of the Lysing Fm. prospect.

A technical evaluation and an economic analysis were performed for the Warszawa prospect. In-place volumes were generated in GeoX, permeability range was populated from petrophysical analysis of offset wells. PVT characteristic was based on oil properties in the oil leg within the Lange Fm. in the 6507/5 wells. Two drainage strategies were evaluated: depletion and water injection. A development scenario assumed a tie-in to the Skarv FPSO (Fig. 5.1). Results of the economic analysis for both drainage strategies showed negative economic value of the project (EMV). The key elements leading to negative value are reduced CoS, estimated recoverable volumes, assumed high pressure drilling environment for the exploration well and decrease of market oil prices.

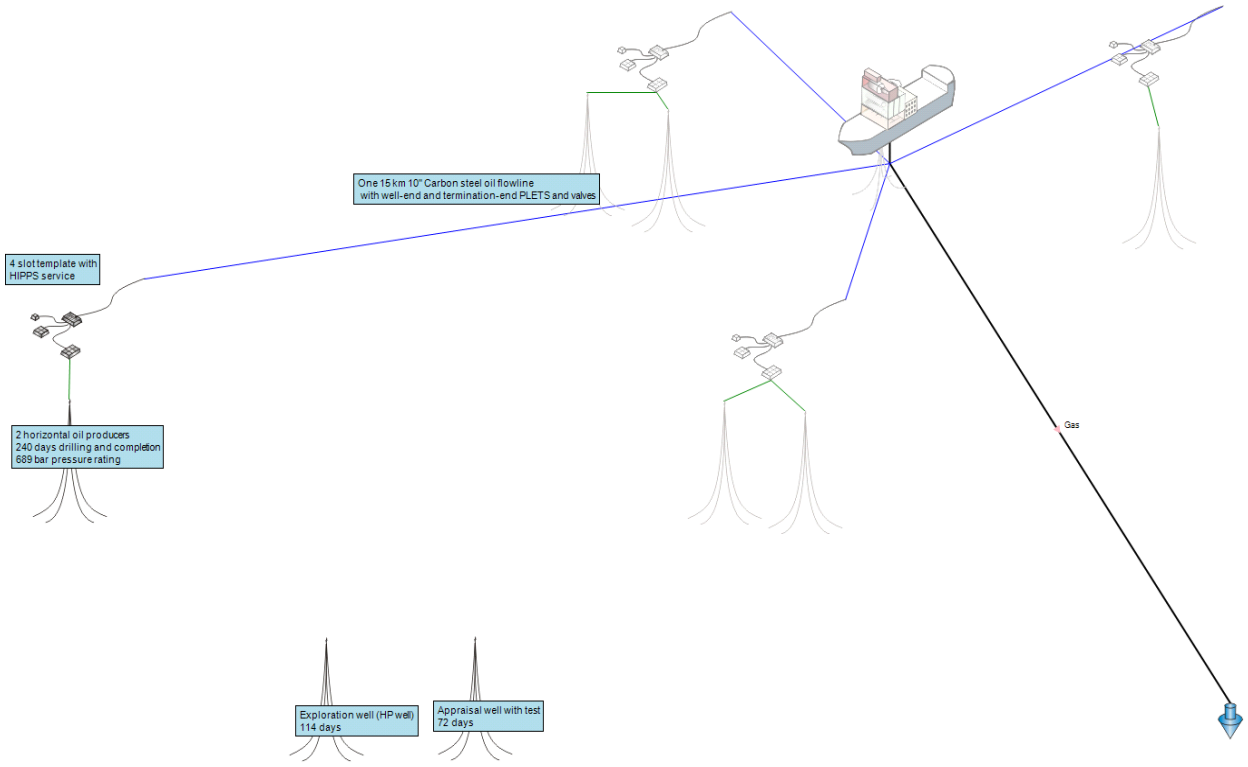

Fig. 5.1 Development scenario. The development concept assumed one exploration well (HP), one appraisal well and two horizontal oil producers

6 Conclusions

The evaluation of the licence area has contributed to increased understanding of depositional system and sand distribution of the Lysing Fm. The analysis showed that turbidity sediments are most likely present in the prospect area.

The reasons for relinquishment:

Krakow prospect:
- No convincing evidence of gas saturation from pre-stack AVO / seismic inversion study.
- A significant risk for trap definition - fault continuity is uncertain, fault sealing properties are uncertain, probable continuity of sandy sediments with no lithological sealing.
- Significantly reduced size of possible trap - volumes are not sufficient for further analysis.

Warszawa prospect:
- AVO analysis does not convincingly support hydrocarbon presence in the prospect.
- Significant risk for trap definition - stratigraphic trap with no structural component, exact range of the Lange sandstone uncertain.
- Significant depth - not many analogs confirming reservoir quality.

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