Relinquishment Report for PL 562

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2. July 2013

Relinquishment Report for PL 562

List of figures

List of tables

List of attachments

Relinquishment Report

1 Key Licence History

Introduction
E.ON Exploration & Production (E.ON), as operator for the PL 562, have together with the majority of the licence partners, decided to relinquish the licence at the drill or drop decision point on 19. February 2013. The majority of the partnership considered the remaining prospectivity to be too small and too high risk to continue the work. One partner, North Energy, was not in agreement and applied for a one year extension of the licence period to continue the work. However, per 6. June E.ON received notice from Olje-og energidepartementet that the licence was relinquished from 19. February 2013.

Key Licence History

Summary of award and participants
PL 562 was originally applied for in an AMI group consisting of Dana Petroleum (Operator), NORECO, North Energy and E.ON. The licence was awarded to the group and Petoro as part of the APA2009 on 19th February 2010. Dana Petroleum was appointed Operator for the license. Shortly after award, in an agreement between E.ON and Dana, E.ON took over the operatorship and 5% of the Dana Petroleum interest. By the drill or drop decision date the licence ownership distribution was as follows: E.ON (operator-30%), Dana (20%), NORECO (20%), Petoro (20%) and North Energy (10%).

Initial work obligations and work periods
Within 3 years of the award (by 19th February 2013):
-Acquisition of 3D seismic data
-Perform geophysical and geological studies
-Decide to drill or drop licence
Within 5 years of the award (by 19th February 2015):
-Make a BOV (Beslutning om videreføring) or drop licence
Within 7 years of the award (19th February 2017)
-Submit PDO (Plan for Development and Operations) or drop licence

Any applications and grants for extension of deadlines
There has not been been applied for any extensions in the licence period operated by E.ON.

Overview of meetings held
Se list below of meetings held in the licence period:
-Combined EC/MC meeting #1-April 2010
-Combined EC/MC meeting #2-November 2010
-Combined EC/MC meeting #3-November 2011
-Combined EC/MC meeting #4-October 2012
-Workmeeting E.ON - Dana-April 2010
-Workmeeting-January 2011
-Workmeeting-March 2011
-Workmeeting-April 2011

Reason for relinquishment
During the licence period the partnership of PL 562 has evaluated, what is believed to be the remaining exploration potential of the blocks. Based on this technical work and the evaluation of what is believed by

the operator to be the last remaing prospect Taurus, (high risk -Triassic) it was recommended to drop the licence at the drill or drop decision point (19. February 2013). A majority of the the licensees supported this recommendation.

2 Database

Work on the licence data base

The most recent mapping of the licence is done on the EO1003 (3D), NLGS95 (3D), NH8102 (2D) and MNR (2D) surveys in the local area in and surrounding PL 562. Fig. 1 shows the location of these surveys.

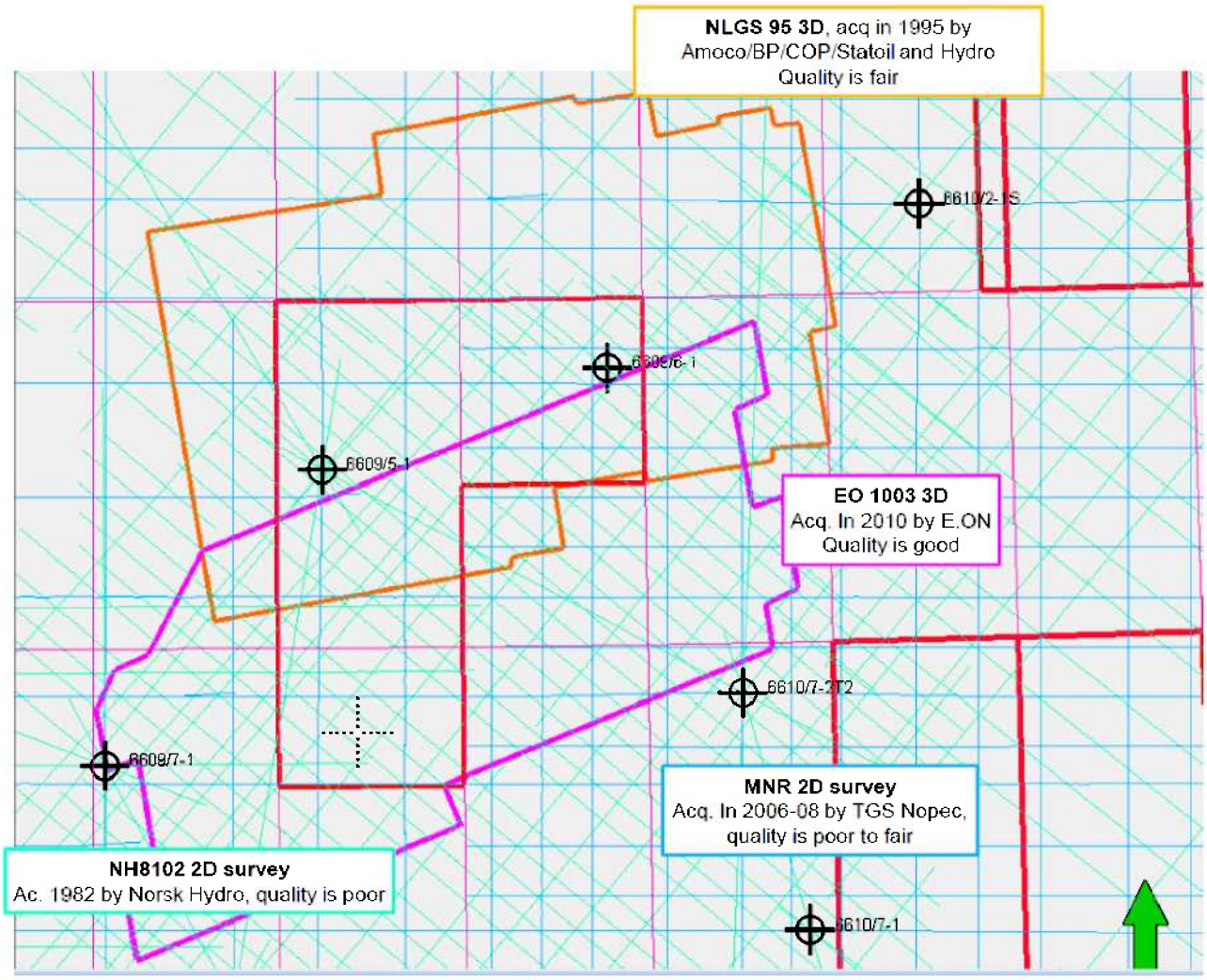

Fig. 1 PL 562 Location map seismic survey and wells

Any new seismic data acquired and interpreted

The 3D survey EO1003 was acquired as part of the work commitment for the licence during the summer 2010. The survey was acquired by the PGS vessel "Apollo". The dual source was towed at 6m depth, a 25m flip-flop shot was used and a source separation of 50m. The survey was set up with 10 streamers, 6 km cable length and 12,5m group intervals. The recording length is 7 sec. The area covered is approximately 1387 km2 and the acquisition took 30 days. The processing was done by WesternGeco during the period November 2010 and June 2011. The fast track data was available in February 2011 and was immediately used to pick main interfaces and build the migration velocity model. The PSTM data was delivered in June 2011.

Any new wells drilled
No wells were drilled in the PL 562 licence period.

Any other new/released well results included in evaluation
The results of following released wells were included in the evaluation: 6608/8-1, 6608/10-2, 6608/11-2, 6609/5-1, 6609/6-1, 6609/7-1, 6609/10-1, 6609/11-1, 6610/2-1, 6610/3-1R, 6610/7-1, 6610/7-2. Well-post mortem analysis were done for all of the mentioned wells.

3 Review of Geological Framework

Studies performed

In connection with the licence work and the preparation to be able to take a drill or drop decision following relevant geological and geophysical studies were performed:
Table 1.

Table 1 Special studies performed in PL 562

Year	Study	Author
2012	Structural and fault seal analysis study	Badleys
2012	Basin modelling study	Exploro
2012	Petrophysical study	E.ON
2012	Regional seismic interpretation	Geolink
	-Trøndelag Platform including Helgeland Basin and Nordland Ridge	
2012	Attribute mapping, AVO modelling and colored inversion study	E.ON

These studies were perfomed in addtion to routine licence work.

Results of block evaluation and any major changes in understanding and expectations based on new data and evaluations, compared to original license application

The licence is located approximately 90 km northeast of the Norne Field and covers parts of the Træna Basin and the Nordland Ridge. The work during the licence period was focused on the evaluation of the exploration potential of the Triassic prospects and on leads on the Permian, Triassic, Lower Jurassic, Cretaceous and Palaeocene levels. During the licence work focus was moved from the original Triassic main Lepus Prospect to the other Triassic prospect, Taurus, which was originally the main prospect for E.ON. See next chapter for more details.
The screening of the Cretaceous and Tertiary possibilities was negative. Finally a Permian lead identified in the APA 2009 application was worked by E.ON, but not matured during the licence period.

4 Prospect Update

Results of block evaluation and any major changes in understanding and expectations based on new data and evaluations, compared to original license application

The licence is located approximately 90 km northeast of the Norne Field and covers parts of the Træna Basin and the Nordland Ridge. The work during the licence period has been focused on the evaluation of the exploration potential of the Triassic prospects and on lead on the Permian, Triassic, Lower Jurassic, Cretaceous and Palaeocene levels.
Originally 2 prospects and 10 leads were identified in the APA application (Fig. 2). The two prospects (Lepus and Taurus) are both structural defined traps with assumed Triassic Tr3 Unit as reservoir (as described by Müller et al. 2005). The Lepus Prospect, located in the north-eastern part of the licence, was originally the main focus in the APA application, however, after a new evaluation after the award the prospect was discarded by the licence due to size and risk. Then the attention was turned to other possiblities including the Taurus Prospect. The Taurus Prospect, which was considered the main prospect by the operator E.ON, was re-interpreted and mapped during 2012.

The Taurus Prospect comprises the segmented downthrown hanging wall to a major high in the west believed to consist of older Triassic/Griesbachian shaly sediments and appears as a wedge of sub-salt sediments of assumed Ladinian age, 3 - way closure inside structural segment . The Taurus wedge is strongly compartmentalised and has a layered seismic response. The prospect is limited to the west by a combination truncation by the BCU and of a fault (N-S trending fault) (combined called "Banana-fault) to the west and is bounded to the east by major NNE/SSW trending fault (Fig. 3 and Fig. 4). The top seal is assumed to be a combination of salt of Ladinian age and Lower Cretaceous shales above the BCU, while lateral seal mainly comprise shaly older Triassic sediment over the western bounding fault. The bottom seal is assumed to be older (Anisian -Griesbachian) Triassic shales. The top Taurus reservoir marker can with some confidence be picked inside most of the main compartment of Taurus and further to the east outside the closure.

A full prospect evalution with volumetrics, risking, reservoir profiles, field development studies and economic studies were performed and presented to the partnership in october 2012. Both oil and gas cases were run giving recoverable resources of approximately 13 mill SM3 OE and a GCF of 14% (high risk). The main risk is associated with seal/retention and charge. The high risk and low IRR did not pass the internal E.ON criteria for a drillable prospect and it was recommended to the partnership to drop the licence.

Parallel to the evaluation of the Triassic potential in the block other identified leads in the Cretaceous and Tertiary were screened. Attention and focus was placed on the possibilities in intra Lange (Albian-Turonian) in the central northern part of the licence as proven in neighbouring wells (6609/5-1 and 6609/6-1). The lead comprise a small amplitude supported closure, located downdip of two dry wells. A major risk is attached to the reservoir quality since the seismic signature indicates cementation. In addition some risk has been attached to geometry and charge. The second possiblity screened is the socalled Karl lead with is a structural 4-way closure with expected reservoir in the Intra Tang Fm. The lead was evaluated in PL 526 by acquiring 2 CSEM lines, giving non-conclusive results, while EM signature was expected from previous modeling. In the final part of the licence period a new concept in the Permian (the Minotaurus lead-located in the southern part of the licence) was being worked by E.ON, with the model in mind of a carbonate fore-reef and slope fan. The maturation of this concept is in the early stage by the time of relinquishment. E.ON is considering dedicating more time in maturation of this type of play in the future in another partnership configuration.

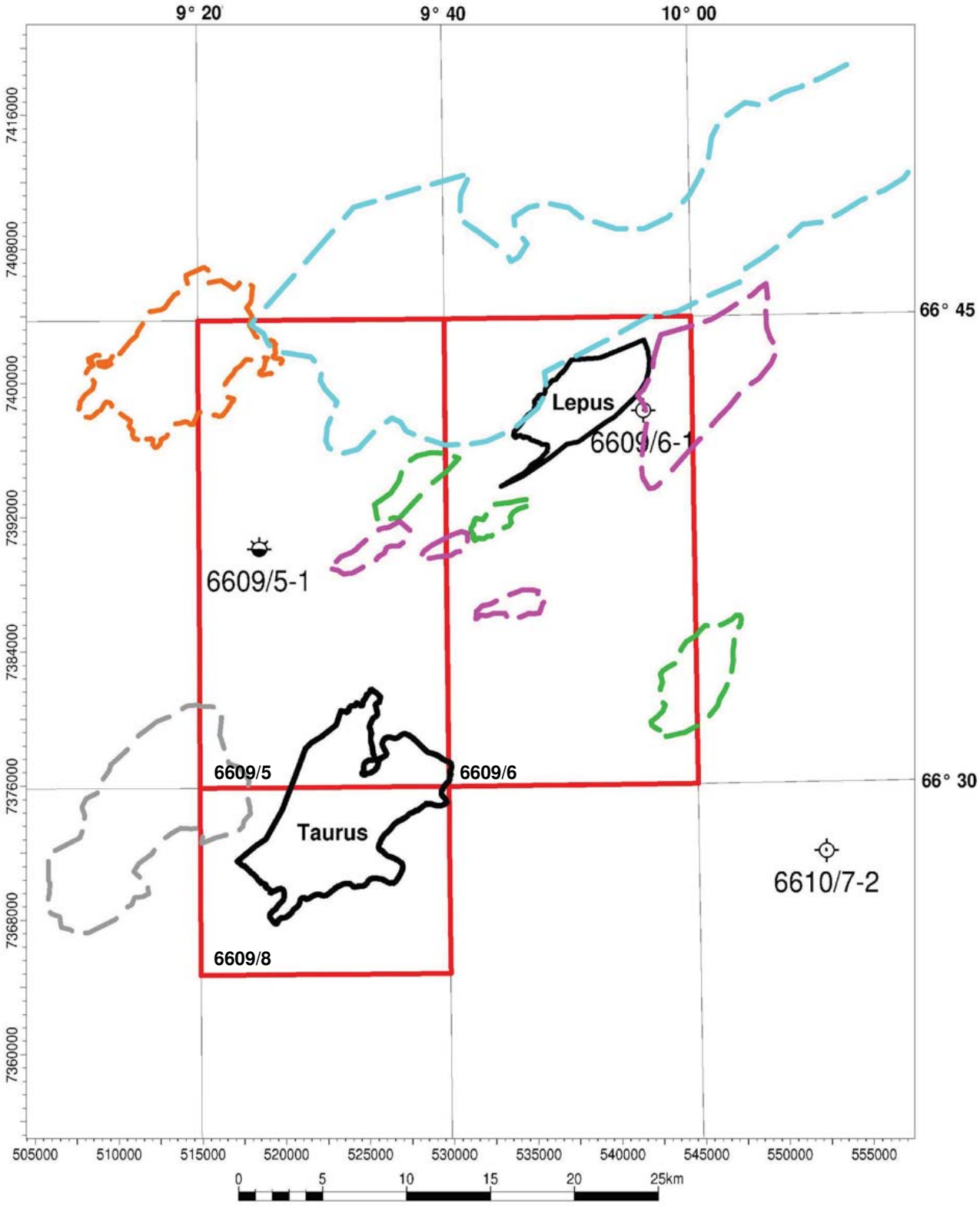

Fig. 2 Outlines of prospects and lead at time of APA 2009. Source: Dana Petroleum Norway APA 2009 Application. Black outlines: Triassic prospects. Grey outline: Permian lead. Pink outline: Triassic leads. Green outline: Lower Jurassic leads. Turquoise outline: Cretaceous lead. Orange outline: Palaeocene lead.

PL562 Seismic interpretation, Taurus

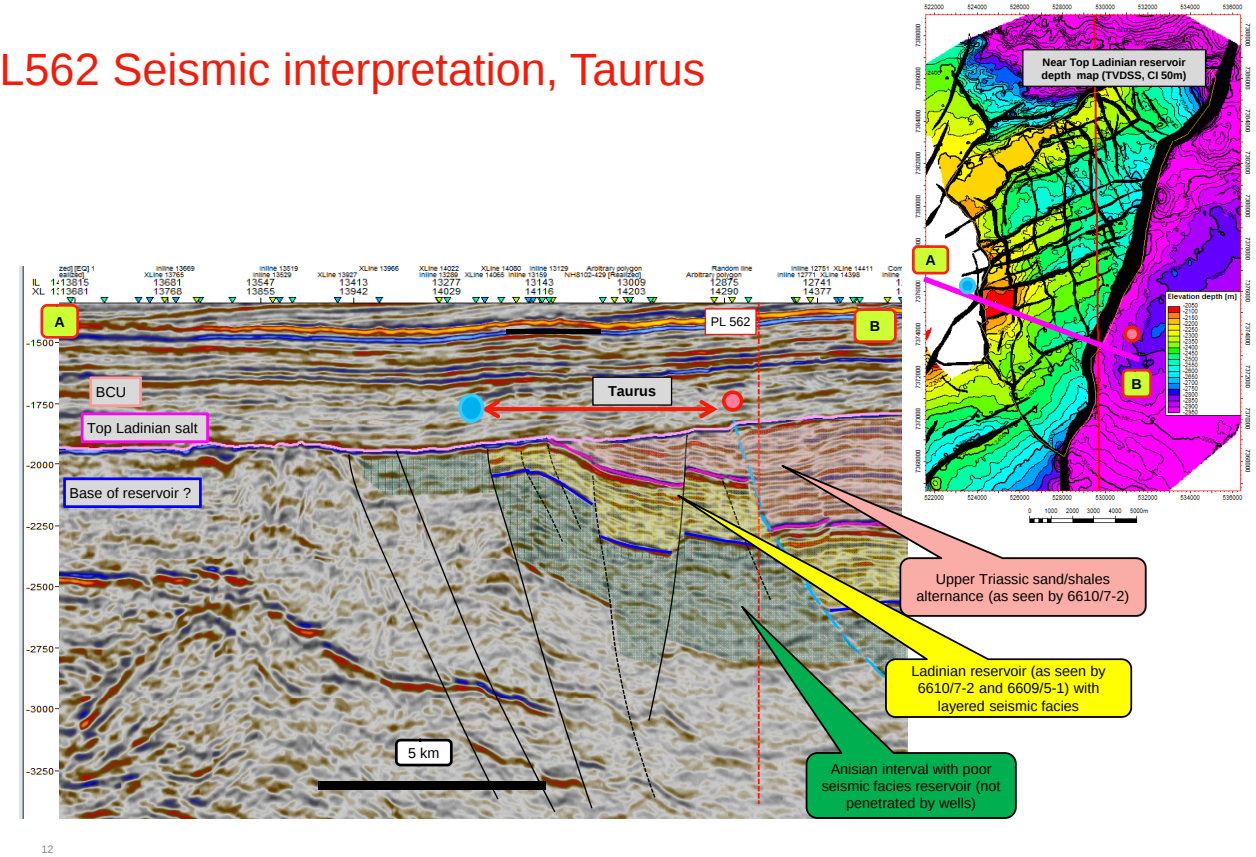

Fig. 3 WNW-ESE Seismic Line through the Taurus Prospect

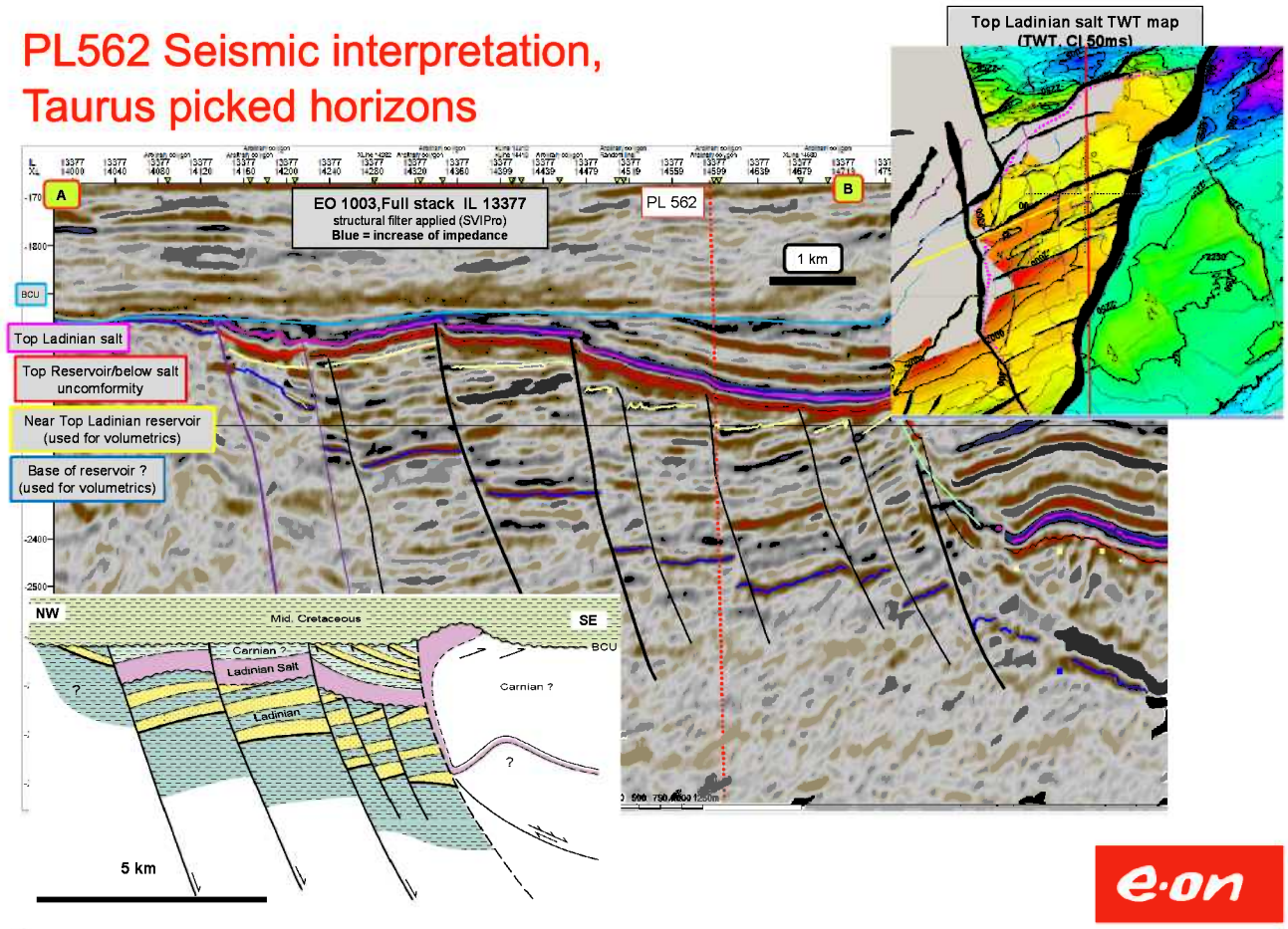

Fig. 4 Seismic Line Illustrating Structural Context and Markers Picked

Changes in resource volumes and probability estimates-revised NPD Table 4 for Taurus Prospect

Attached are the revised NPD table 4 for the Taurus Prospect oil and gas cases with the changes marked in red (Table 2 and Table 3).

Table 2 Revised NPD table 4- Taurus oil case

Relinquishment report for PL 562 - Taurus Oil Case 7/2/2013

Table 4: Prospect data

Block	Prospect name		Discovery/Prosp/Lead		Prosp ID (or New)	NPD approved?
6609/5, 8	Taurus		Prospect		*NPD will insert data*	*NPD will insert data*
Play (name / new)	Structural element		Company/ reported by / Ref. doc.			Year
NPD will insert data	Nordland Ridge		**E.ON Exploration & Production**			**2013**
Oil/Gas case	**Resources IN PLACE**					
Oil	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3	**17.1**	**74.1**	**231.1**			
Gas 10^9 Sm^3				**1.7**	**7.6**	**24.5**
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3	**2.7**	**12.6**	**45.1**			
Gas 10^9 Sm^3				**0.3**	**1.31**	**4.7**
	Which fractiles are used as:		Low:	P90	High:	P10
Type of trap	**Water depth (m)**		**Reservoir Chrono (from - to)**		**Reservoir Litho (from - to)**	
Segmented hanging wa	280		Anisian - Ladinian		Intra Triassic Red Beds (Tr3)	
SourceRock, Chrono	**SourceRock, Litho**		**Seal, Chrono**		**Seal, Litho**	
Tatarian	**Ravnefjeld Fm. equiv**		Ladinian - Carnian & Aptian - Albian		Triassic anhydrite (Tr4) & Lange Fm	
Seismic database (2D/3D):	2D public, MNR-06,08; NLGS95-3D; **EO1003-3D**					
Probability of discovery:						
Technical (oil+gas case)	0.14			Prob for oil/gas case		20/80
Probability (fraction):	Reservoir (P1)	Trap (P2)	Charge (P3)	Retention (P4)		
	0.8	**0.9**	**0.4**	**0.5**		
Parametres:	Low	Base	High			
Depth to top of prospect (m)	**2050**	**2050**	**2050**			
Area of closure (km^2)	**22**	**50**	**88**			
Reservoir thickness (m)	**90**	**108**	**130**			
HC column in prospect (m)	**218**	**339**	**460**			
Gross rock vol. (10^9 m^3)	**7.6**	**9**	**10.7**			
Net / Gross (fraction)	**0.27**	**0.41**	**0.55**			
Porosity (fraction)	**0.13**	**0.17**	**0.20**			
Water Saturation (fraction)	0.35	0.30	0.25			
Bg. (<1)	n/a	n/a	n/a			
Bo. (>1)	1.21	1.28	1.35			
GOR, free gas (Sm^3 /Sm^3)	n/a	n/a	n/a			
GOR, oil (Sm^3 /Sm^3)	80	106	130			
Recovery factor, main phase	**0.1**	**0.17**	**0.3**			
Recovery factor, ass. phase	**0.1**	**0.17**	**0.3**			
Temperature, top res (deg C) :	63	Pressure, top res (bar) :		234		

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Table 3 Revised NPD table 4 - Taurus gas case

Relinquishment report for PL 562-Taurus Gas Case 7/2/2013

Table 4: Prospect data

Block	Prospect name		Discovery/Prosp/Lead		Prosp ID (or New)	NPD approved?
6609/5, 8	Taurus		Prospect		NPD will insert data	NPD will insert data
Play (name / new)	Structural element		Company/ reported by / Ref. doc.			Year
NPD will insert data	Nordland Ridge		E.ON Exploration & Production			2013
Oil/Gas case	Resources IN PLACE					
Gas	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0.3	1.4	5.2
Gas 10^9 Sm^3	4	18.6	67.6			
	Resources RECOVERABLE					
	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				0.1	0.4	1.6
Gas 10^9 Sm^3	2.3	11.2	41			
	Which fractiles are used as:		Low:	P90	High:	P10
Type of trap	Water depth (m)		Reservoir Chrono (from - to)		Reservoir Litho (from - to)	
Segmented hanging wa	280		Anisian - Ladinian		Intra Triassic Red Beds (Tr3)	
SourceRock, Chrono	SourceRock, Litho		Seal, Chrono		Seal, Litho	
Tatarian	Ravnefjeld Fm equiv.		Ladinian - Carnian & Aptian - Albian		Triassic anhydrite (Tr4) & Lange Fm	
Seismic database (2D/3D):	2D public, MNR-06,08; NLGS95-3D; EO1003-3D					
Probability of discovery:						
Technical (oil+gas case)	0.14			Prob for oil/gas case		20/80
Probability (fraction):	Reservoir (P1)	Trap (P2)	Charge (P3)	Retention (P4)		
	0.8	0.9	0.4	0.5		
Parametres:	Low	Base	High			
Depth to top of prospect (m)	2050	2050	2050			
Area of closure (km^2)	22	50	88			
Reservoir thickness (m)	90	108	130			
HC column in prospect (m)	218	339	460			
Gross rock vol. (10^9 m^3)	7.6	9	10.7			
Net / Gross (fraction)	0.27	0.41	0.55			
Porosity (fraction)	0.13	0.17	0.20			
Water Saturation (fraction)	0.35	0.30	0.25			
Bg. (<1)	0.0044	0.0041	0.0038			
Bo. (>1)	n/a	n/a	n/a			
GOR, free gas (Sm^3 /Sm^3)	9524	13158	18182			
GOR, oil (Sm^3 /Sm^3)	n/a	n/a	n/a			
Recovery factor, main phase	0.5	0.6	0.7			
Recovery factor, ass. phase	0.2	0.3	0.4			
Temperature, top res (deg C) :	63	Pressure, top res (bar) :		234		

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5 Technical Evaluation

Technical evaluations performed and concluded regarding possible development of remaining prospect Taurus

E.ON has performed a full technical/economical evaluation in connection with the last EC/MC meeting of the licence held in October 2013 and a revision for the internal E.ON drill or drop decision point in January 2013. Both gas and oil field development scenarios were run. It was finally concluded that the project did not meet the E.ON criteria for IRR and GCF (Geological Chance Factor). The E.ON peer-team supported the recommendation from the evaluation team and E.ON Exploration & Production Board approved the relinquishment of the licence.

6 Conclusions

Comments on the remaining petroleum potential in the area and reason for relinquishment

During the licence period operated by E.ON E & P Norge, extending from 19. February 2010 to 19. February 2013, the partnership of PL562 has evaluated, what is believed to be the remaining exploration potential of the blocks. Based on this technical work and the evaluation of what is believed by the operator to be the last remaing prospect Taurus (high risk -Triassic) it was recommended to the partnership to drop the licence at the drill or drop decision point (19. February 2013). A majority of the the licensees supported this recommendation. One of the partners, North Energy, decided to continue the work by applying for extension of the licence period by one year for the drill or drop decision. Per 6. June 2013 E.ON Exploration and Production received the notice from Olje-og Energidepartementet that the PL562 has been relinquished.

7 Attachments

Table 4: Prospect data

Block	Prospect name	Discovery/Prosp/Lead	Prosp ID (or New!)	NPD approved?
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	Which fractiles are used as:		Low:	P90	High:	P10

Type of trap	**Water depth (m)**	**Reservoir Chrono (from - to)**	**Reservoir Litho (from - to)**
Segmented hanging wall	280	Anisian - Ladinian	Intra Triassic Red Beds (Tr3)
SourceRock, Chrono	**SourceRock, Litho**	**Seal, Chrono**	**Seal, Litho**
Tatarian	**Ravnefjeld Fm. equiv**	Ladinian - Carnian & Aptian - Albian	Triassic anhydrite (Tr4) & Lange Fm
Seismic database (2D/3D):	2D public, MNR-06,08; NLGS95-3D; **EO1003-3D**		

Probability of discovery:					
Technical (oil+gas case)	0.14		Prob for oil/gas case		20/80
Probability (fraction):	Reservoir (P1)	Trap (P2)	Charge (P3)	Retention (P4)	
	0.8	**0.9**	**0.4**	**0.5**	

Parametres:	Low	Base	High
Depth to top of prospect (m)	**2050**	**2050**	**2050**
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Oil/Gas case	**Resources IN PLACE**					
Gas	Main phase			Ass. phase		
	Low	Base	High	Low	Base	High
Oil 10^6 Sm^3				**0.3**	**1.4**	**5.2**
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