Report

Doc. number	#1044426	***Rev. number***	0
Date Effective	02.09.2015	***Date revised***	
Title	PL619 AND PL667 RELINQUISHMENT REPORT TO NPD		

Description

The PL619 license was awarded 3rd February 2012, and the PL667 license was awarded 8th February 2013, both licenses were relinquished May 31st 2015. TOTAL E&P NORGE AS (TEPN) is operator of the licenses with 50%, Det Norske Oljeselskap AS with 30% and Spring Energy Norway AS (Tullow Oil Norge AS) with 20% as partners.

This report contains a summary of collected data, studies and results in addition an account of the prospectivity in the relinquished area.

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1. Executive Summary

The PL619 and PL667 licenses are located in the Greater Ekofisk Area in the Central North Sea and has a total surface of 454.3 km² (covering partially the blocks 1/3, 1/6 and 2/1) - **(Figure 1)**. The PL619 was awarded in APA2011, February 3rd 2012 with the work obligation to acquire and reprocess 3D seismic, perform relevant geology and geophysics studies and make a drill or drop decision within February 3rd 2015.

In APA2012 the Operator on behalf of the partnership applied for protection acreage to the north of the PL619 license. The applied area was awarded February 8th 2013 in production license PL667 with separate work obligations to merge 3D seismic and to perform relevant geology and geophysics studies and make a drill or drop decision within February 8th 2015.

PL619 and PL667 have been evaluated as one license, with budget covering both parts.

TOTAL E&P NORGE AS (TEPN) is operator of both the licenses with 50%, Det Norske Oljeselskap AS with 30% and Spring Energy Norway AS (Tullow Oil Norge AS) with 20% as partners.

With focus on maturation of the prospects and leads in the licenses, the reprocessing with the CGG cornerstone PSDM seismic and the PGS Megasurvey, the interpretation was performed in 2013 and 2014. In addition, special G&G studies have been performed to obtain a regional understanding of the reservoir distribution and hydrocarbon charge of the prospects and leads in the licenses.

From the G&G studies, using the 3D seismic acquired by CGG and the PGS Megasurvey in 2005 and the CGGV VTI PSDM reprocessing from 2013, the partnership have evaluated the prospectivity in the licenses. The operator was positive to the resources in the Færing South prospect, and recommended to the partners to apply for extension to the drill or drop decision to further mature a recommendation to drill. An application for extension of the drill or drop decision for both licenses was sent December 19th 2014. The applications were approved by the ministry February 3rd 2015 for PL667, and March 4th 2015 for PL619.

Given the market situation and the economical context, TEPN recommended to the partners in March 2015 to apply for additional 1-year license extension in order to postpone the drill-or-drop decision to 2016. At the same time the partners evaluated the resources in the licenses and did not conclude with the same result as the operator, Det norske and Tullow considered that the Færing South prospect was found to risky to be drilled, and could not support the operator's recommendation. Both partners recommended dropping the PL619 and PL667 licenses on 31 May 2015; consequently, the license was dropped based on Management Committee voting decision. The license was dropped May 26th 2015 in a letter to the Ministry of Petroleum and Energy.

The remaining exploration potential in the PL619 and PL667 license is:

PL619 & PL667 Licenses: Remaining Exploration Potential			
Prospect & Lead	**Play**	**Main critical factor**	**Prospect & Lead UMR**
Færing South Prospect	Upper Jurassic J60 turbidites	seal	165.1 Mboe - PoS 12%
Færing North Lead (Iso-Færing South)	Upper Jurassic J60 turbidites	seal & thin Upper Jurassic sequence	no stakes
Brann & Leeds Leads	Paleocene - Turbidites stratigraphic remaining play	high reservoir risk Structural closure tested by 1/3-1 & 1/3-8	no stakes
Lead L	Upper Cretaceous Chalk - Top Ekofisk Fm.	small structural closure < 5km^2	no stakes
Lower Cretaceous Floor Fan A & B Leads	Floor Fan stratigraphic play in Færing synclinal	not evaluated unusual lead	no stakes
Rasletind, Ramnane & Sauhøi Leads	Upper Jurassic Ula shorface Oxfordian	already tested by 2/1-11, 2/1-13S, 1/3-8 and 2/1-1 without success	no stakes
Stølsnosi & Snoggeknosi Leads	Triassic pod Skaggerak Fm.	Problem of charging & reservoir quality risk already tested by 2/1-13S	no stakes
Uranostind Lead	Permian - Rotliegendes aeolian sands	high risk of migration and seal - failure in same target at 2/4-22 well (Romeo)	no stakes

2. License History

The PL619 covers 335 km^2 in blocks 1/3, 1/6 and 2/1. The new block awarded, PL619, had three leads defined: Lead E, named today Brann Lead, Lead L, still the same name and Leads I & J, named Rasletind - **(Figure 2)**. The initial date for the drill-or-drop decision was 3 February 2015 (3 years from award).

The screening of PL619 showed prospectivity in the Farsund formation (turbidites an iso-King Lear type of play). The most interesting lead, named Færing, is located at the north of the license and straddled over an open area in block 1/3. This open area was applied for in APA 2012 with the same partnership and work obligations, and as protection acreage for PL619. The PL667 area was awarded with the same partnership; however, the license was awarded with new work obligations. The initial drill-or-drop decision was set to 8 February 2015 (2 years from award).

From the G&G studies, using the 3D seismic acquired by CGG and the PGS Megasurvey in 2005 and the CGGV VTI PSDM reprocessing from 2013, TEPN has evaluated the prospectivity in the licenses.

From the screening, some leads have been recognized on both blocks: Færing North, Leeds, Ramnane, Sauhøi, Stølnosi, Snoggeknosi and the Lower Cretaceous Floor fan A & B. These leads were found no attractive in term of risk associated. The best outcome from the screening of both licenses is the Færing

South prospect - **(Figures 3 & 4)**. The King Lear discovery is the analogue and is located 25 km southeast of the PL619 and PL667. King Lear is a gas and condensate discovery in Upper Jurassic Farsund Formation turbiditic sandstones; it was made in 2012 with well 2/4-21 and its side-track 2/4-21A. In February 2013, TEPN validated 1C/2C/3C resources of 43.5 / 80.1 / 105 Mboe (100%) with PO Geosciences of 100% in the turbiditic sandstones of the Upper Jurassic Farsund Formation.

3. Database

The initial regional interpretation was a necessary prerequisite for the subsequent, more detailed prospect mapping phase. The regional seismic survey is the PGS CNS-NNS MegaSurvey - a large, post-stack merged composite of several 3D surveys which are licensed by TEPN.

Locally, more detailed mapping was carried out on the CGG long-offset "Cornerstone" 3D. TEPN has licensed more than 3300 km^2 of the Cornerstone data in the Norwegian Continental Shelf.

In 2012 and 2013, TEPN contracted CGG to reprocess data using the pre-SDM Cornerstone seismic. This work was committed to the licenses PL618 and PL619. The output area is 1776 km^2 and the seismic dataset is the TO1306R01, referred to "Solaris" pre-SDM. This dataset covers a large extent of the area and are the primary dataset for the interpretation. Outside the extent of Solaris data, interpretation was extended on legacy Cornerstone data last processed in 2006.

TEPN licensed areas of the PGS megasurvey and legacy CGG Cornerstone 3D seismic surveys as well as the "Solaris" pre-SDM output area overlaid on a time-slice through the megasurvey seismic volume - **(Figure 3)**.

The Aker Solutions "HiQbe" corrected velocity cube has been licensed as an option for depth conversion. This cube is based on seismic stacking velocities but converted for use directly as interval velocities and calibrated to well control available to Aker. The cube is regularly updated and it is well calibrated down to top Chalk, less calibrated down to BCU and poorly calibrated for deeper horizons.

Several wells in the vicinity of the Færing basins help calibrating the CGG "Cornerstone" seismic data. 18 wells are available in the area, with a majority ending in the Triassic - **(Figures 3 & 5)**.

The King Lear discovery is the main analogue for Færing South prospect and is located 25 km to the southeast. Five wells have been drilled into the Farsund turbidites sands of the King Lear basin: 2/4-14, 2/4-18R, 2/4-21 and 21A - **(Figures 3 & 5)**.

No wells have been drilled in the deeper parts of the Færing basin. The most relevant wells in the Færing neighbourhood are: 1/3-8, Amoco 1997, 2/1-5, BP 1983 (oil discovery), 2/1-11, BP 1997 (oil discovery), 2/1-13, Talisman 2009 and 2/2-5, Saga 1992 (oil discovery) - **(Figure 5)**.

Of these, only 2/1-5 and 2/2-5 found Kimmeridgian turbidites sands in separate basins. The others are interpreted to lie within the by-pass zones on the flank of the Færing basin where no sand deposition could occur - **(Figure 5)**.

4. Review of geological framework

Structurally, the PL619 and PL667 are situated on the Cod Terrace west of Gyda and Tambar Upper Jurassic. The play type under consideration is Upper Jurassic Farsund turbidites sandstones, lying within the Upper Jurassic stratigraphic interval. Although Upper Jurassic is the favoured play at Færing, the structural and stratigraphic style is rather different from those fields. While Gyda and Tambar occupy a Jurassic collapse graben in an "inter-pod" setting (thin Triassic, thick Zechstein salt), Færing overlies a Triassic pod (thick Triassic, thin salt). Ongoing salt movements created much accommodation space for sedimentation during Upper Jurassic and Lower Cretaceous times in the Færing basin. While Gyda and Tambar are moderately over-pressured, Færing has severe HPHT conditions. This pressure differential implies the presence of a lateral seal immediately to the east of Færing which increases the chance of trapping – **(Figure 6)**.

5. Prospect update and technical evaluation

5.1 Færing South Prospect

The Færing South prospect is a Farsund turbidites (Upper Jurassic) stratigraphic trap sourced by the Mandal and Farsund Formations, located to the North West of the King Lear discovery and also in high pressure and high temperature regimes (1050 bar/185°C prognosed). The prospect is a large elongated monocline west of the Tambar high where the turbidites are interpreted to come from NE. The trap requires an efficient stratigraphic component up-dip with absence of reservoir (by-pass) but also in the South-East – **(Figure 6)**.

1- Source Rock & Migration

The Source Rock are the Upper Jurassic shales (Farsund/Mandal), they are proven mature regarding the petroleum results of the area. The system is compact and migration should not be an issue.

PS SR: 100%, PS M/T: 100%

2- Reservoir and amplitude analysis

The seismic interpretation and the regional geological model predict turbiditic sands derived from the shallow marine environment to the north and the east. The reservoir would be composed of Farsund turbidites, which are identified on King Lear (but probable different source as demonstrated on the 2/1-5 and on the 2/2-5 with K-Feldpath not identified on King Lear).

Some seismic amplitudes anomalies (high energetic facies) are visible on Færing. However, the calibration is not straight forward, as the sands origin should be different and there is no possible direct calibration in the area. As a consequence, no conclusion can be reached to fully explain the seismic amplitudes behaviour, even if they are interpreted as encouraging **(Figures 6 to 8)**. To be noted; a dedicated study on the seismic amplitudes was held on King Lear, showing that on the 2/4-21, the impedance contrast between sands and shales is too weak to detect the Farsund sands, whatever their thickness (but seismic amplitudes are stronger towards the North/North-West, potential entry point an King Lear). Therefore, the reservoir extension and thickness on the whole structure is questionable.

On Færing, the presence of feeders (small canyons identified up-dip – **(Figure 9)**) makes the presence of sand probable. To be noted; the source for sands should not have the same origin as King Lear and thus the extrapolation for reservoir properties remain uncertain. However, all occurrences of Farsund turbiditic sands in nearby wells exhibit good reservoir properties.

The range of burial (around 5000 m) is similar to King Lear. Porosities are estimated to be between 18% and 22%. The global gross thickness is estimated to be 205 m from the seismic picking. The reservoir thicknesses were "back engineered" in order to keep the same order of magnitude as on King Lear for the amount of reserves/km^2. This led to a net reservoir thickness of 24m/32m/48m.

The reservoir presence remains uncertain. However, the seismic amplitudes and the presence of feeders/canyons identified up-dip, even if not calibrated could be an encouragement. If the reservoir exists, the quality should be correctly assessed with the King Lear and other surrounding wells.

PS Reservoir presence: 60%, PS Reservoir quality: 80%

3- Geometry

The Geometry should not be an issue as the seismic quality is fair. To be noted; the sands are hardly detectable. The mini and mode would consider connection between the two Upper Jurassic reservoir intervals (shared contacts – iso-King Lear discovery) and the maxi would consider disconnection and two different contacts between the two intervals (iso-2/2-5 discovery) – **(Figure 10)**.

PS Geometry: 80%

4- Seal

Top Seal

The Top seal would be composed of the Upper Jurassic shales. The pressure plot from the wells in the area is encouraging, as a breach seal does not appear probable.

Lateral seal

The lateral seal is the main risk on Færing, as the trap is stratigraphic in all directions (for the current description based on the amplitudes interpretation – **(Figures 8 &10)**).

On King Lear the fairways coming from the north are trapped on the King Lear structure (ponded effect?) with possibly shaling out up-dip and BCU truncation, i.e. King Lear is a mixed trap with truncation below BCU to the south, closure against fault to the North-East and stratigraphic trap to the East and West. On Færing, the trapping model is different.

It is mentioned that in particular in the southern part of the prospect the stratigraphic pinch out up-dip is not obvious on seismic and looks more as a wedging (risk of leakage up-dip if no by-pass zone) – **(Figure 10)**.

PS Seal: 30%

5- Conclusions

Global PoS 12% and un-risked mean resources (gas and condensates scenario) is 165 Mboe (77-144-281Mboe Resources - MiniP05-Mode-MaxP95), TEPN methodology. See **Figure 11** – NPD Table for Færing

South prospect – P90, Mode, Mean and P10. The critical risks on the prospect are the lateral sealing and the reservoir presence. The lateral sealing needs a stratigraphic shaling out in all directions and is difficult to de-risk. The eastern flank of the trap is steep, and thus would imply potential high columns and potential leakage (seal breach or absence of bypass due to reservoir continuity).

Færing is located in the King Lear prolific HP/HT (1050 bars, 185°C) area, the expected fluid is the same as on King Lear: gas and condensates (GCR 1060m3/m3 in mode).

Given the stakes of the Færing South prospect, it is proposed to re-apply for the relinquished area, or part of it, in APA 2015.

5.2 Remaining Prospectivity

Tertiary – Paleocene: Brann & Leeds Leads:

According to the structural time map at Top Sele shows clearly the 4-way dip closure on top of which lie the Brann lead (Lead E in the APA 2011). The structural closure has already been drilled by 1/3-1 and 1/3-8 wells which failed to encounter good reservoir in the Paleocene – **(Figure 12)**. The lead consists of turbiditic fan lobes at the distal end of the depositional system - from the NE and partially lying over the structural closure. The key risks of Brann are clearly associated with the reservoir's presence, thickness (relatively low NtG) and quality, Hydrocarbon migration route and volume of Hydrocarbon migrated. The Brann lead is not attractive. No stakes evaluated.

The Leeds lead is a potential stratigraphic pinch-out beneath the Vidar Chalk. Key risk on Leeds is access to hydrocarbons and reservoir (two dry well drilled close to this lead – 1/6-4 and 1/3-5.

The Paleocene leads are risky and not attractive.

Upper Cretaceous – Chalk (Top Ekofisk): Lead L

Chalk lead L (APA 2011 nomenclature) is defined by the combination of structural closure and relatively low amplitude (weaker amplitude could imply HC presence?). This lead is quite small in term of structural closure (5.4 km^2), and the chance of occurrence of re-sedimented chalk facies in this area is uncertain. No stakes evaluated.

Lower Cretaceous – Floor fan A & B Lead (Cromer Knoll Gp.)

In the Færing basin (North and South), particularly the northern part, sedimentation continued into the Lower Cretaceous when floor fan turbidites sands might have been introduced. High amplitude, turbulent seismic reflections can be seen in the deepest parts of both basins, in the sequence just above the BCU. Some of these reflectors exhibit a chaotic, turbulent geometry that suggests submarine gravity sliding and, possibly, turbidites sands deposition – **(Figure 13)**.

Situated at the top of the western flank of the Færing basin is the 1/3-8 well. The only live hydrocarbon found in the well corresponds to the gas kick at 4529 m in the Cromer Knoll Group, believed to originate from a fracture in the Sola Formation limestone. This shows that the Lower Cretaceous has access to an active

hydrocarbon system in the Færing area, but the Lower Cretaceous, Cromer Knoll Group turbidites sandstones can be a conceptual play in the Norwegian Central Graben.

The trap definition and the seal are unable to de-risk by mapping and the reservoir environment & quality is unknown and represent a major risk. The Lower Cretaceous leads are unusual and no stakes evaluated.

Upper Jurassic – Ula shore-face Oxfordian - Rasletind, Ramnane & Sauhøi Leads

The Rasletind lead (2/1-11 & 13 wells) and Ramnane lead are located on the Hidra High in the Central Graben. The J50 Ula Fm lead is interpreted as pinch out onto titled Triassic fault block to South-West and dip closed in other directions. The J50 Sands are poorly developed and shown tight sandstones alternating with claystone (2/1-11 & 13 wells). The 2/1-11 well tested the Rasletind structure without good results (presence of reservoir & quality). The Ramnane prospect is an equivalent of Rasletind prospect (already tested). Sauhøi lead seems uncertain in term of structure and sands presence – no connection to the King Lear Basin (SR & Reservoir) and be seated just above Uranostind lead – **(Figure 14)**.

The Upper Jurassic shore-face plays have been tested by the 2/1-11 and 2/1-13 wells and the remaining prospectivity is not attractive and no stakes have been evaluated.

Trias – Triassic pod - Snøggeknosi & Stølsnosi Leads

Three Triassic structural highs with 4 way-dip closure are mapped on the Hidra high. One of them has been drilled at the optimal structural culmination. The 2/1-13ST3 well result is dry in the Triassic sequence. The reservoir targeted was the Skagerrak Formation (Joanne and Judy sandstones). The Snøggeknosi and Stølsnosi Leads structures are situated west of this Triassic tested 2/1-13ST2 well. The Stølsnosi structure, the deeper one, shows a spill to the Snøggeknosi structure and this latter one, has the spill directly into the structure tested by the 2/1-13ST2 well – this mean the petroleum system is failing to fill the Triassic section or the Snøggeknosi is compartmentalized from the 2/1-13ST2 by the NE-SW trending fault separating the two structures apart - **(Figure 14)**. These Triassic Leads are very risky in term of hydrocarbon charging and for the reservoir quality (reference well: 2/1-11 and 2/1-13ST2). The Triassic leads are not attractive and no stakes has been evaluated.

Permian – Rotliegendes Aeolian Sands (Auk Formation) - Uranostind Lead

Uranostind lead is located on the hanging wall block west of the Hidra high. This block is named Hidra Terrace (King Lear trend Basin to NE), east side of Central Graben – separated by the Breiflabb Basin and the Hidra High. The 1/3-5 well objective is to test the Rotliegendes play on the footwall block (Hidra High). The well is dry and the main failure is the hydrocarbon migration (complex fault zone with salt injection and overpressure barrier) and seal.

The Uranostind structure is a 3-way closure against fault (rotated fault block). TEPN has a good confidence in seismic picking of Top Rotliegendes and good well seismic calibration. The reservoir target is the Permian Rotliegendes Gp. (Auk Fm. – aeolian sands). The probability of reservoir presence is “most likely” (regional ref. wells) but reservoir permeability according to the nearest 1/3-5 well (3 km NNW) is low to moderate - diagenesis-authigenic illitic clay minerals. Uranostind lead crest is slightly deeper than the 1/3-5 well and the reservoir quality (diagenetic effects) might be more degraded (Top Rotliegendes 1/3-5 at 4750m, apex Uranostind at 5100m) – **(Figure 15)**.

The source rock is the Upper Jurassic (Farsund/Mandal). Small kitchen drainage via Mandarin area is available but a difficult pathway from kitchen to lead due to complex fault system, probable salt along fault planes that could stop migration with a marginal drainage area (same as 1/3-5 well). The seal integrity is an

issue at the crest of Uranostind. It is sealed by the Chalk and salt in not expected in most part of the Uranostind closure.

Uranostind still a very high risk lead, even less attractive with the well failure of Romeo (2/4-22) at the Rotliegendes target (no seal). The stakes evaluated in 2012 give 232 MBoe with PoS 13%, but no new stakes have been evaluated on the light of the results of Romeo well.

6. Conclusions

Based on the information given in the relinquishment report, the remaining exploration potential in the PL619 and PL667 licenses is:

PL619 & PL667 Licenses: Remaining Exploration Potential			
Prospect & Lead	**Play**	**Main critical factor**	**Prospect & Lead UMR**
Færing South Prospect	Upper Jurassic J60 turbidites	seal	165.1 Mboe - PoS 12%
Færing North Lead (Iso-Færing South)	Upper Jurassic J60 turbidites	seal & thin Upper Jurassic sequence	no stakes
Brann & Leeds Leads	Paleocene - Turbidites stratigraphic remaining play	high reservoir risk Structural closure tested by 1/3-1 & 1/3-8	no stakes
Lead L	Upper Cretaceous Chalk - Top Ekofisk Fm.	small structural closure < 5km^2	no stakes
Lower Cretaceous Floor Fan A & B Leads	Floor Fan stratigraphic play in Færing synclinal	not evaluated unusual lead	no stakes
Rasletind, Ramnane & Sauhøi Leads	Upper Jurassic Ula shorface Oxfordian	already tested by 2/1-11, 2/1-13S, 1/3-8 and 2/1-1 without success	no stakes
Stølsnosi & Snoggeknosi Leads	Triassic pod Skaggerak Fm.	Problem of charging & reservoir quality risk already tested by 2/1-13S	no stakes
Uranostind Lead	Permian - Rotliegendes aeolian sands	high risk of migration and seal - failure in same target at 2/4-22 well (Romeo)	no stakes

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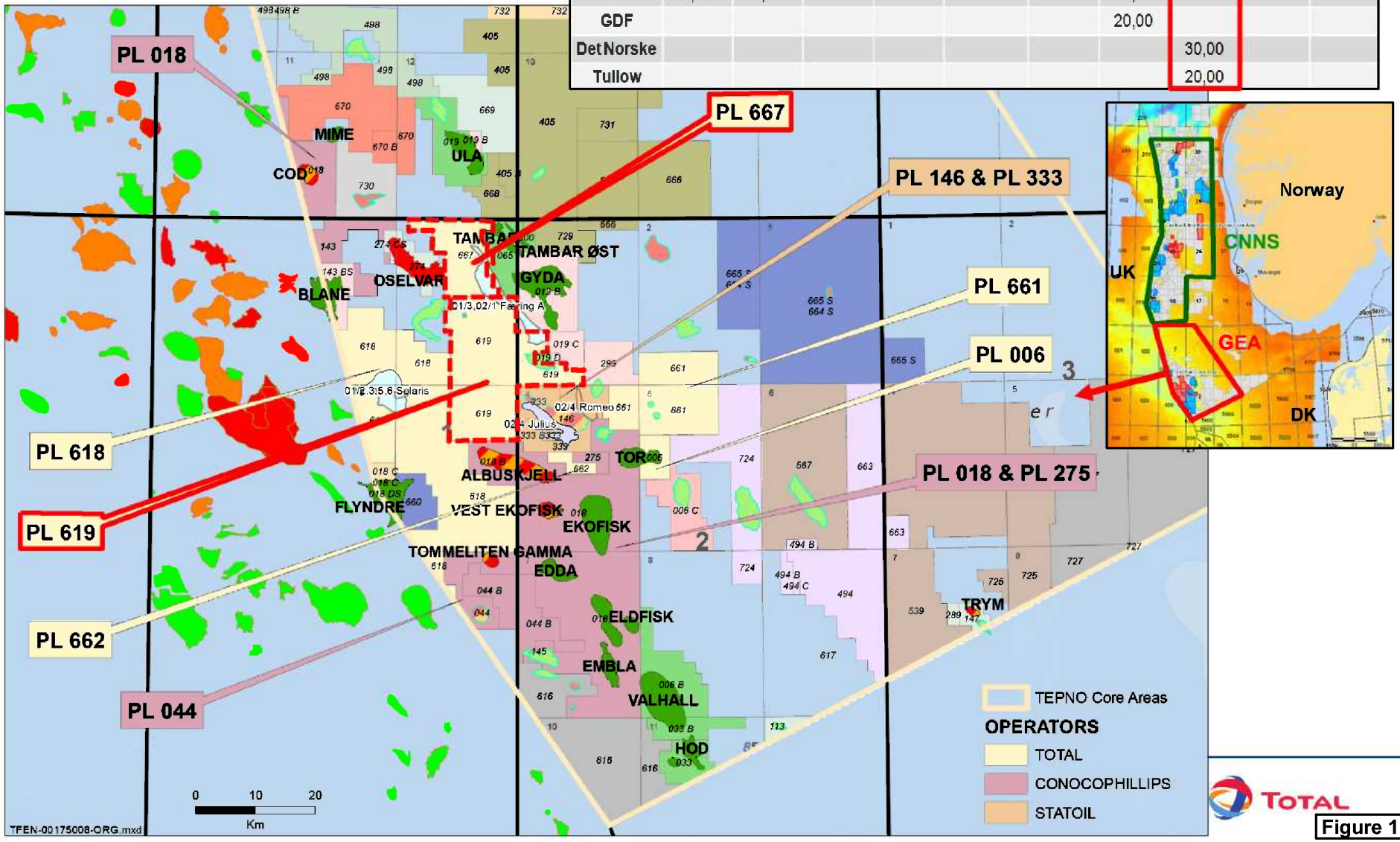
PL619 & 667 Location Map
Southern North Sea
Greater Ekofisk Area

WI %	PL018 PL275	Tor unit	PL006	PL044 chalk	PL044 Non-chalk	PL146 PL333	PL618	PL619 PL667	PL661	PL662
Expiry	31/12/28	31/12/28	31/12/28	31/12/28	31/12/28	08/07/27	03/02/19	03/02/20 08/02/20	08/02/21	08/02/21
COPNO	35,11	30,66		28,26	41,88					
TEPN	39,90	48,19	100,0	20,23	15,00	22,20	60,00	50,00	60,00	60,00
ENI	12,39	10,82		9,13	13,12					
Statoil	7,60	6,64		42,38	30,00	77,80			40,00	40,00
Petoro	5,00	3,69					20,00			
GDF							20,00			
Det Norske								30,00		
Tullow								20,00		



TOTAL

Figure 1

Licenses Award History – PL619 & PL667

APA 2011 & APA 2012 round awarded

- PL619: 335 km^2 (1/3, 1/6 and 2/1)
- Partners: Det Norske (30%) & Tullow Oil (20%)
- Work obligation: G&G studies, reprocess 3D seismic and within 3 years from award, Drill or Drop decision (3 Feb 2015)

- PL667: 118 km2 (1/3)
- Partners: Det Norske (30%) & Tullow Oil (20%)
- Work obligation: G&G studies, reprocess 3D seismic and within 3 years from award, Drill or Drop decision (8 Feb 2015)

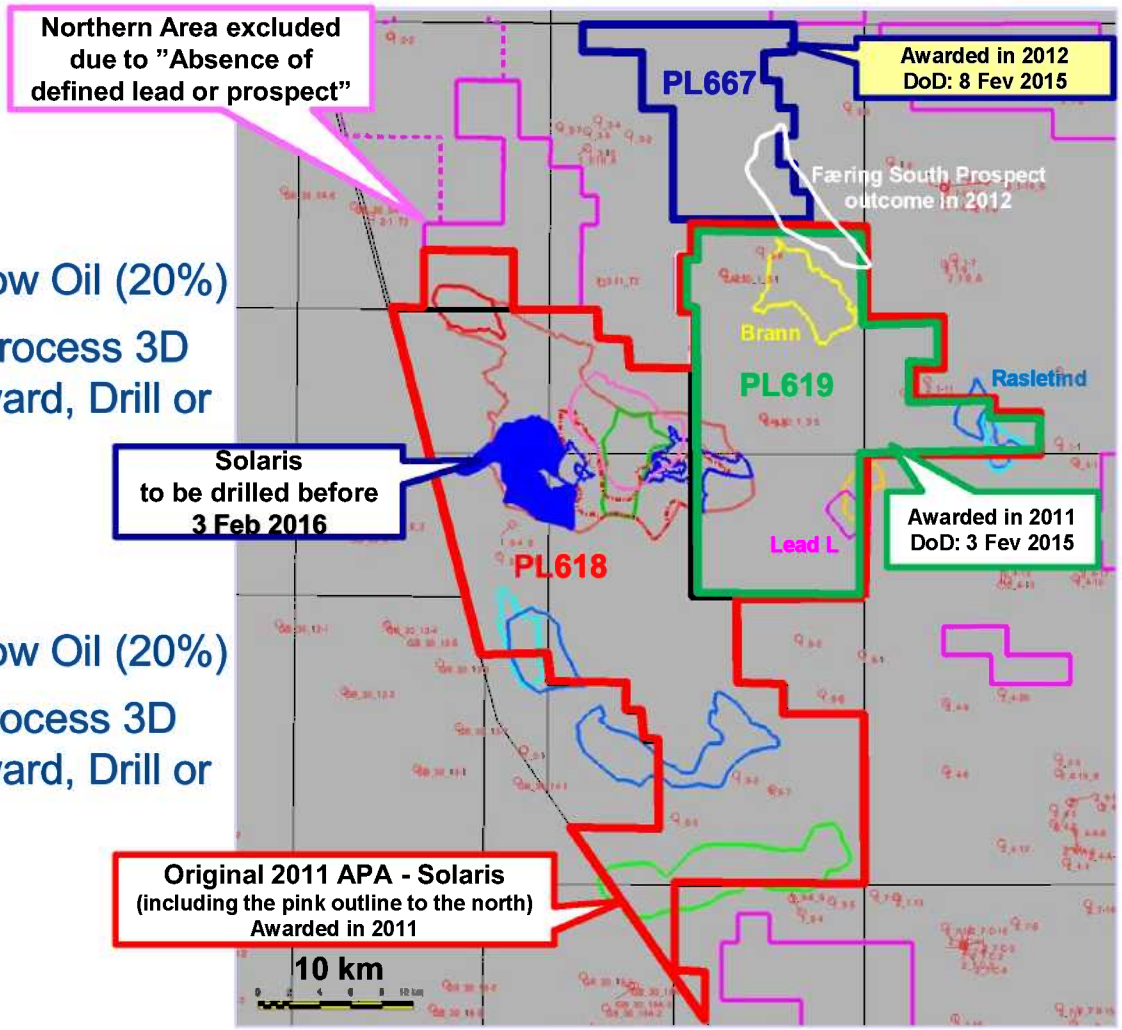
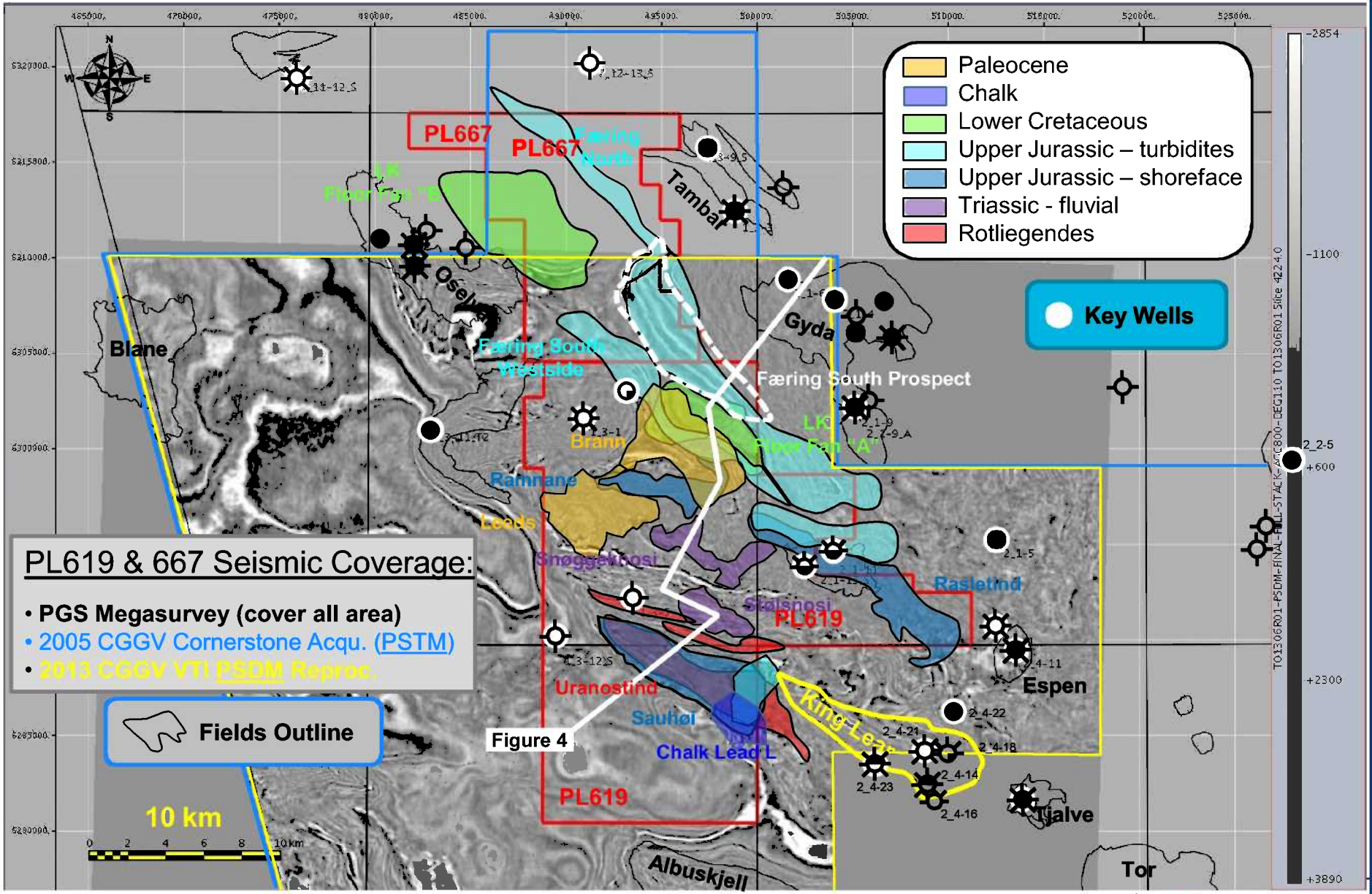


Figure 2

PL619 & 667 Prospect & Leads Map



Background: Time slice 4224 msTWT & discovery fields

TOTAL

Figure 3

Random Seismic Line Through Prospect and Leads

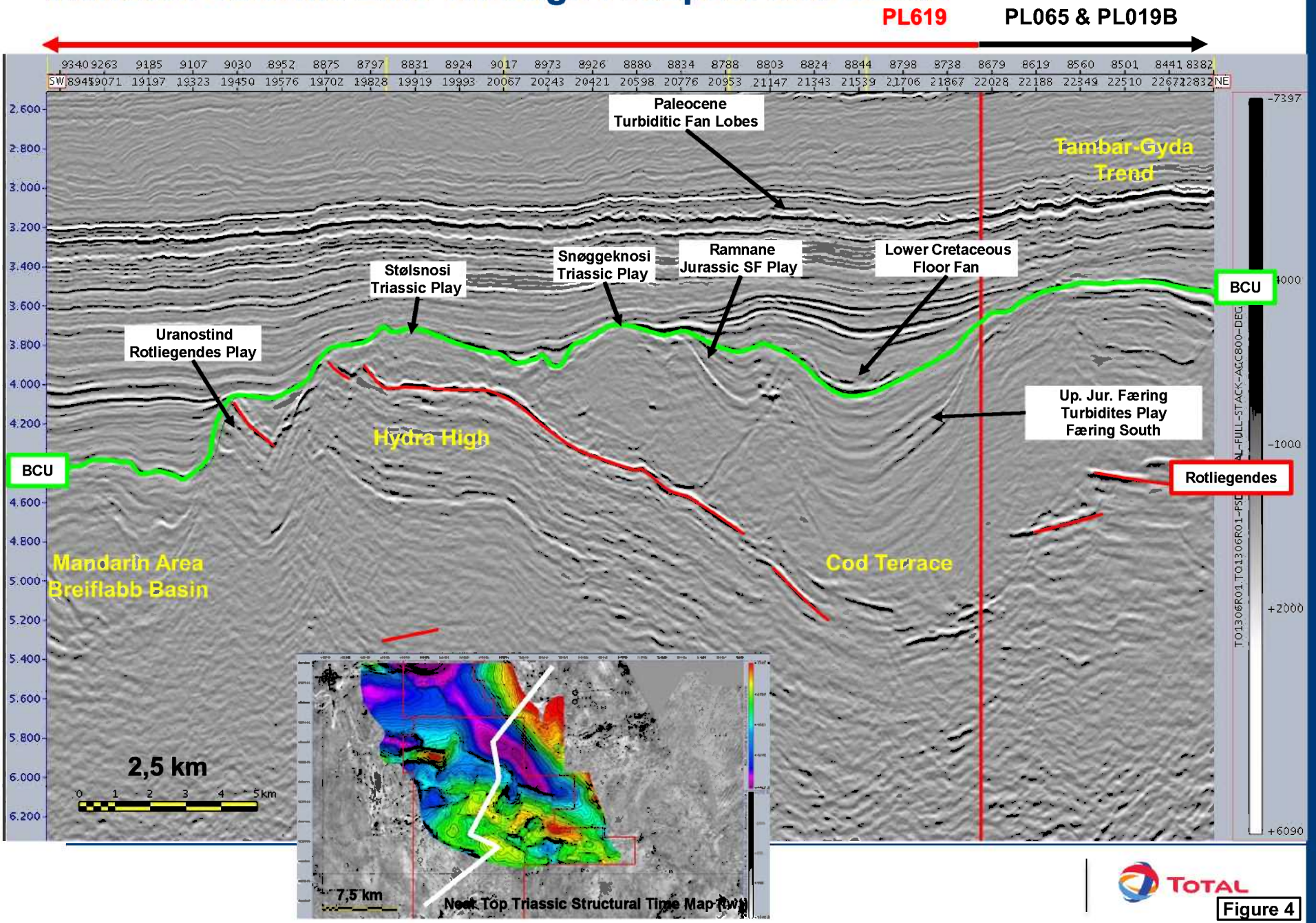


Figure 4

Near Top Triassic Structural Time Map (Regional) - Well Results
(Yellow Cartouches – Farsund Turbidites Discovery or HC Bearing or Shows)

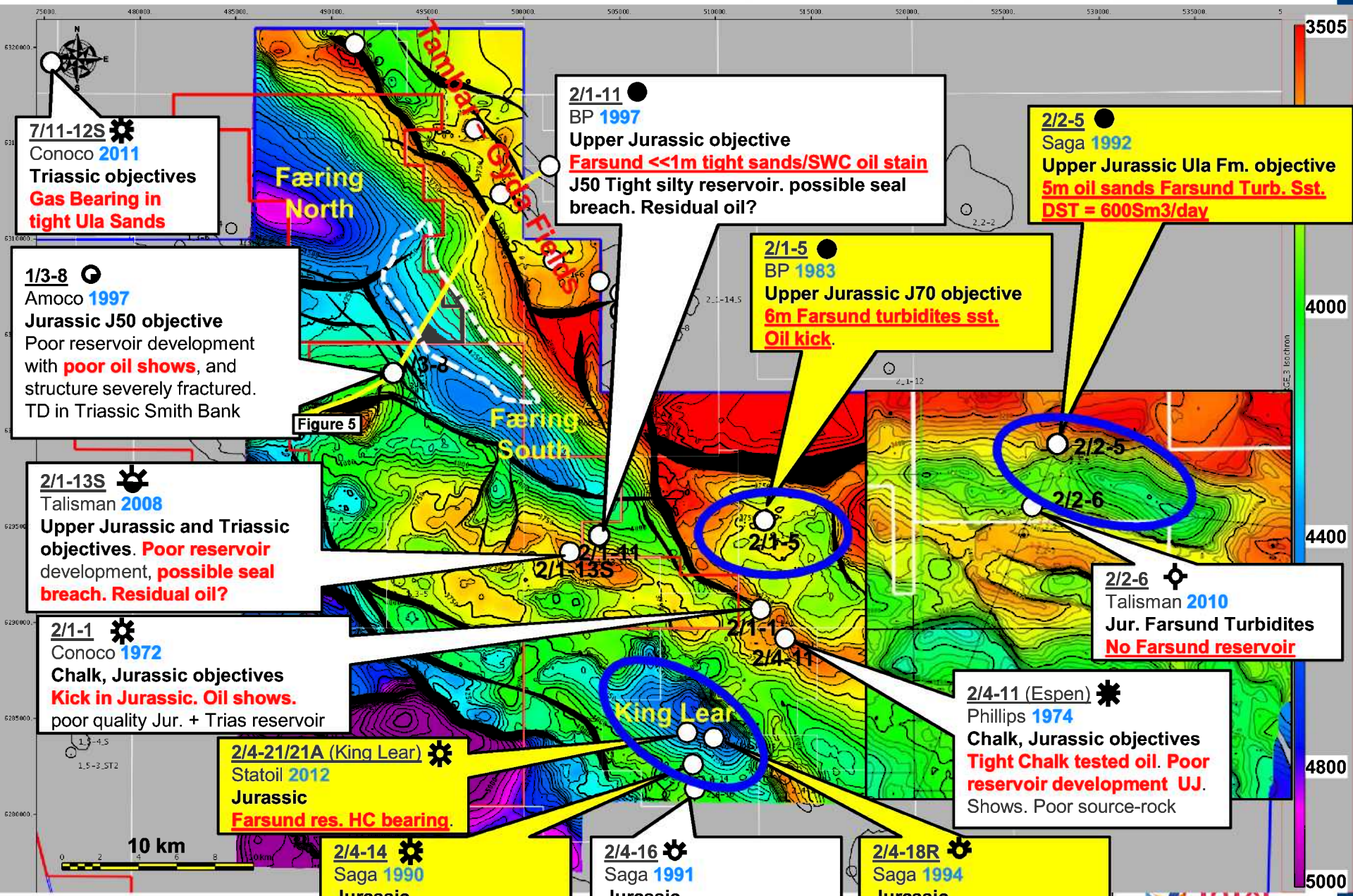


Figure 5

Regional Random Seismic Line through 1/3-8, Færing South & Tambar Field

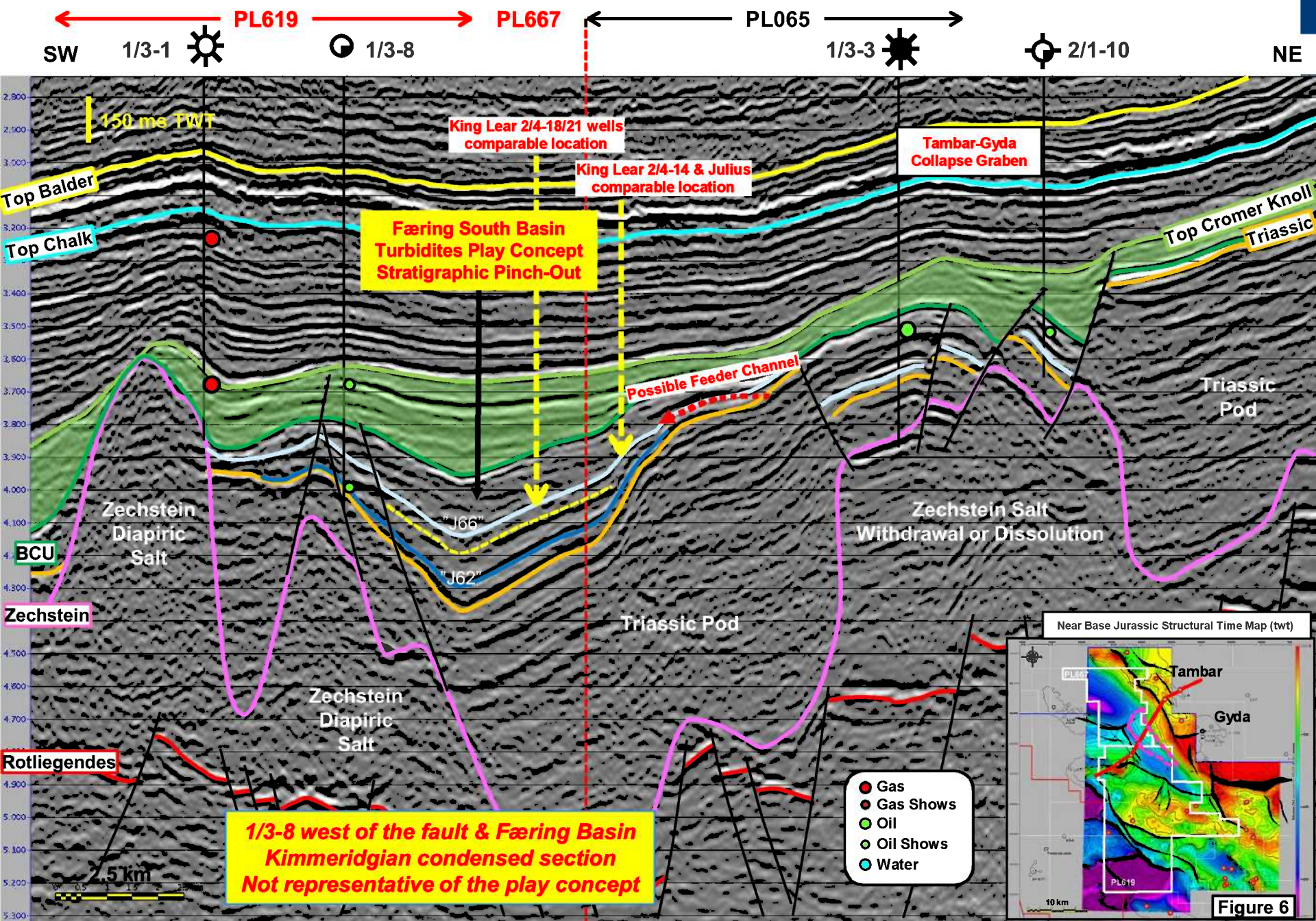
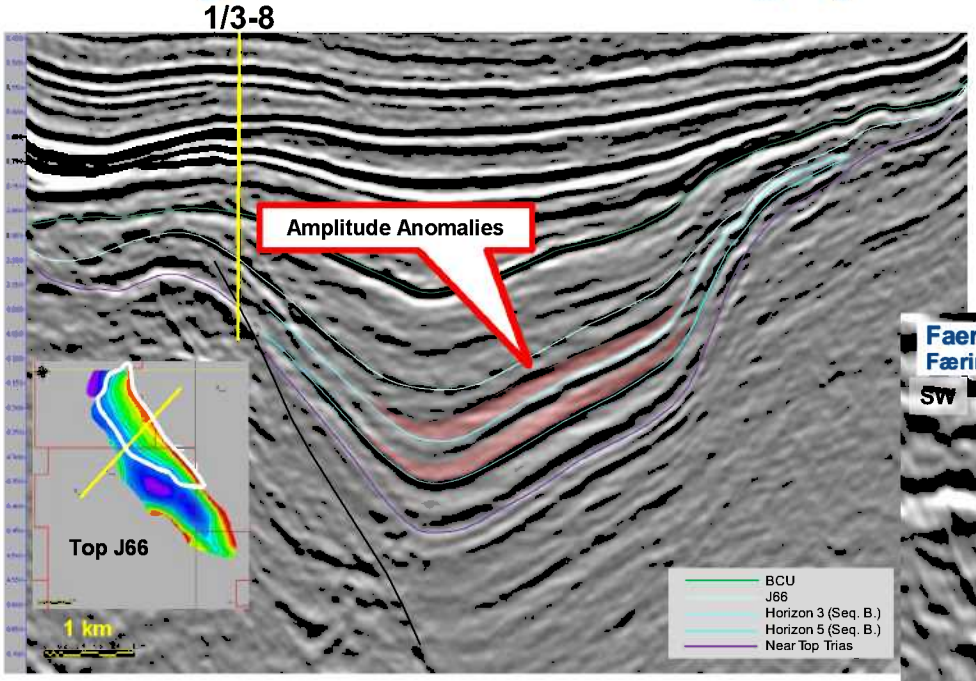
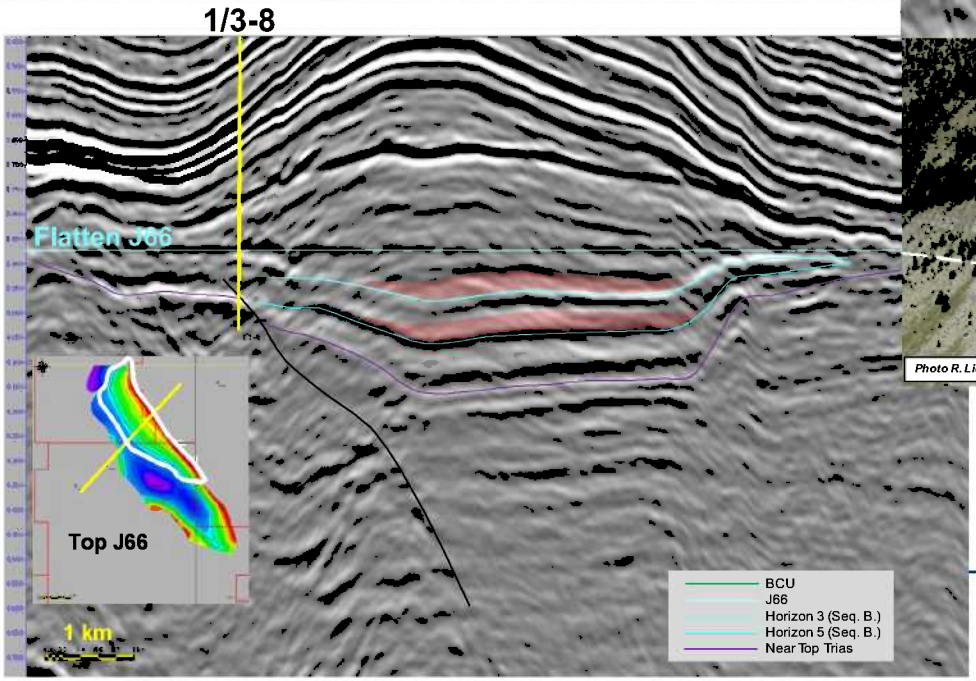


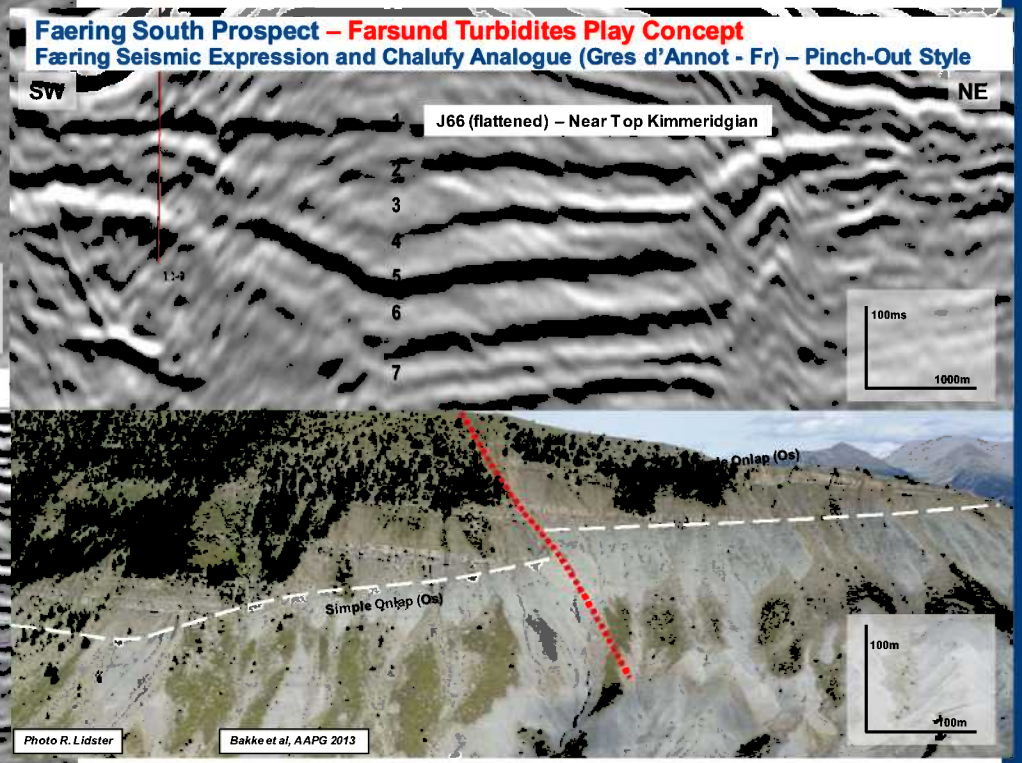
Figure 6

Færing South Basin – Stratigraphic Play Concept (on-lap)





From Seismic to Field
Chalufy Analogue (Gres d'Annot)



TOTAL

Figure 7

Færing South Basin – modelsand1 Present Day Depth + RMS Attribute

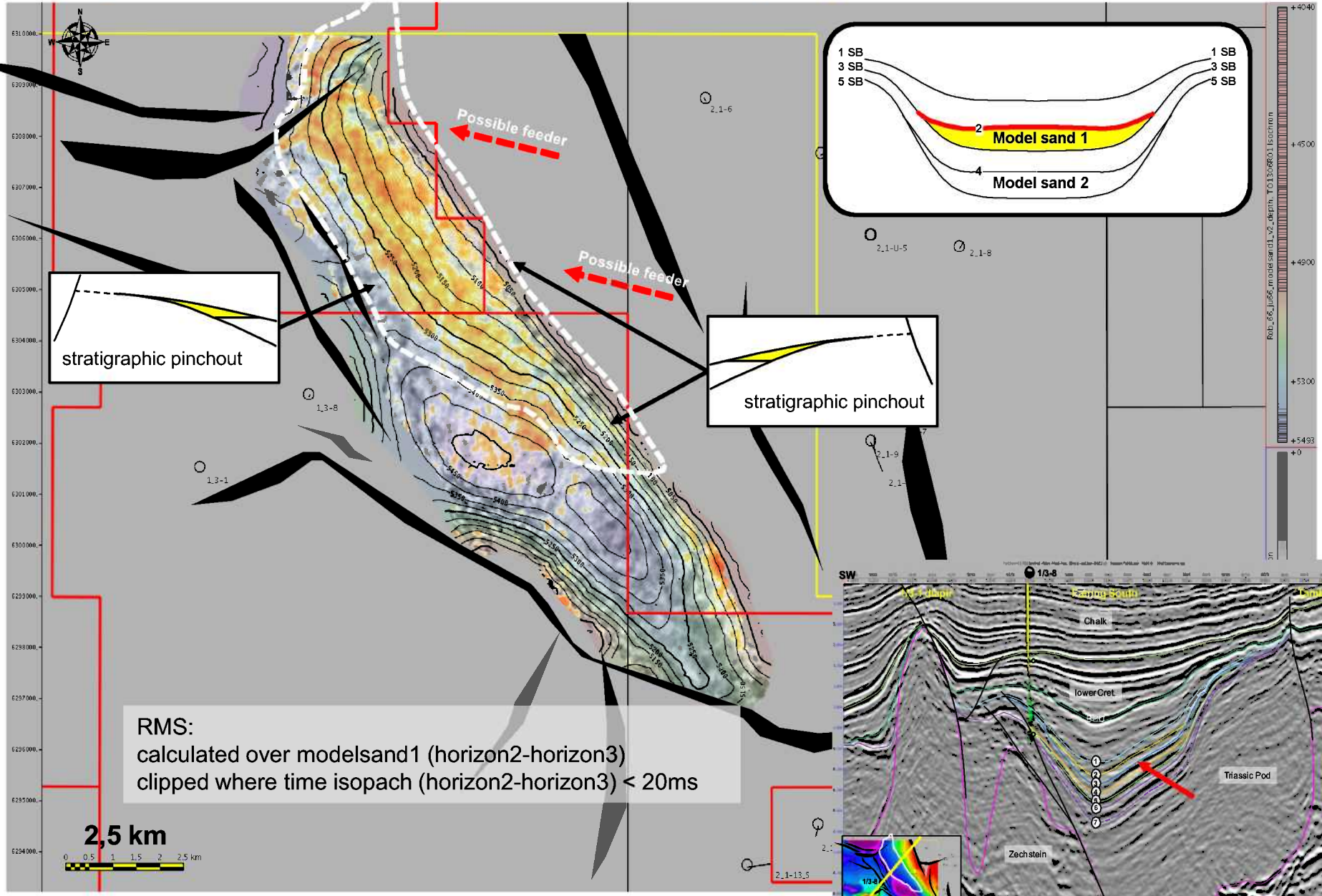
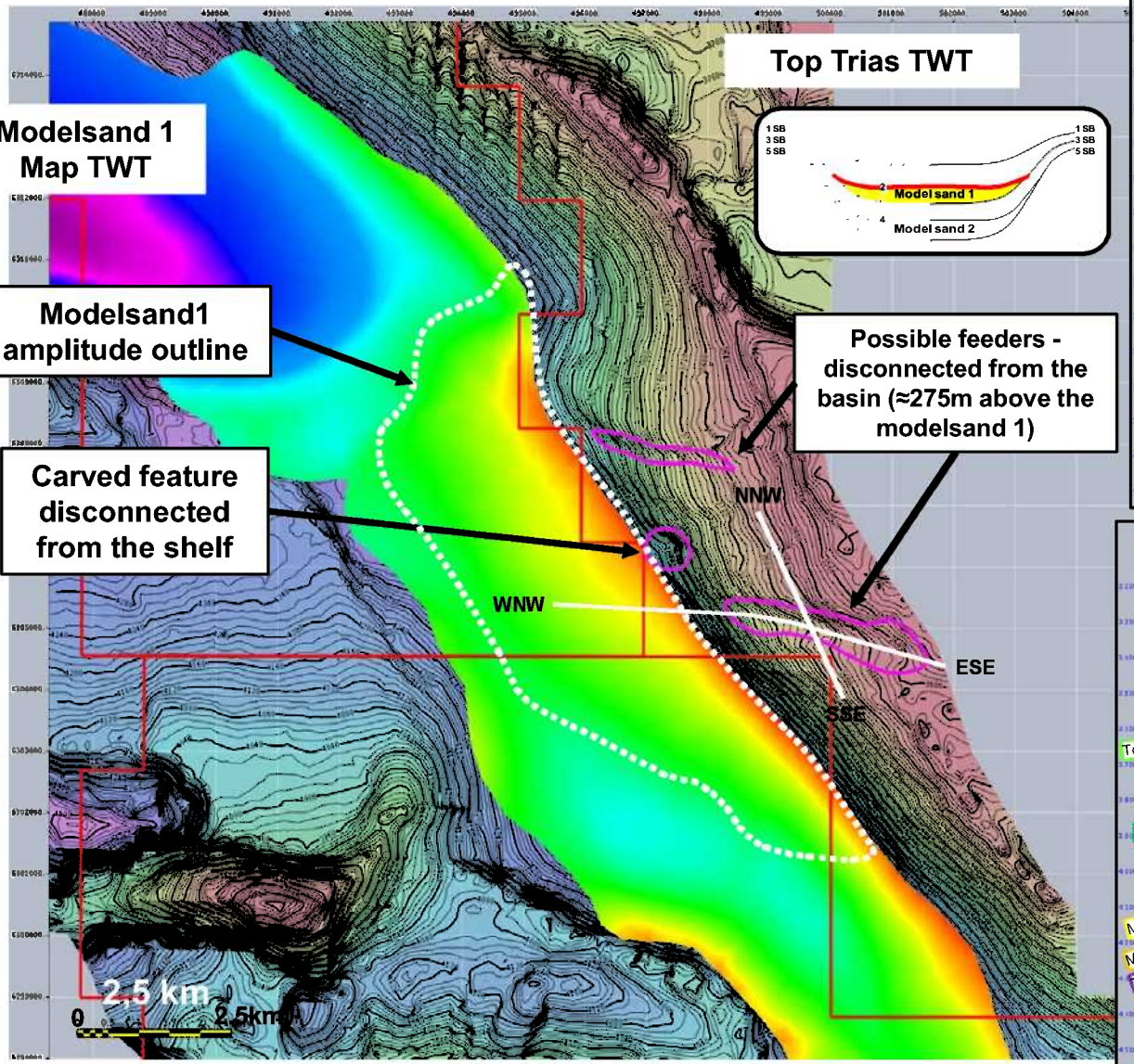
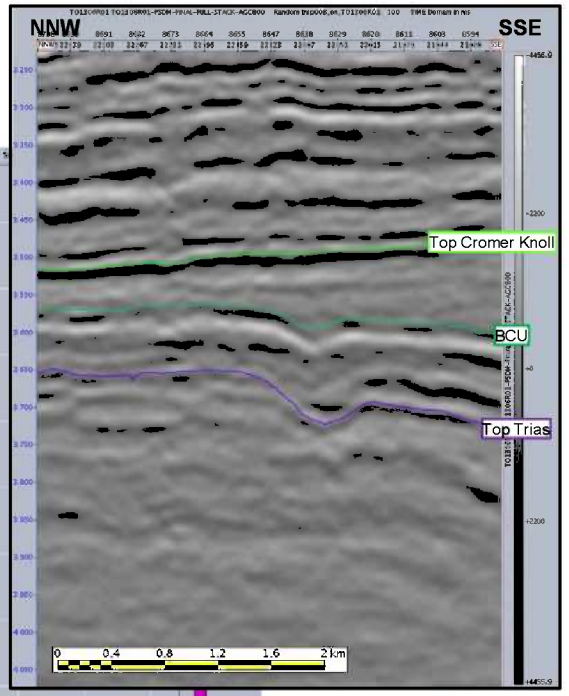


Figure 8

Færing South Eastside Slope
Possible Feeder Channel Fairway





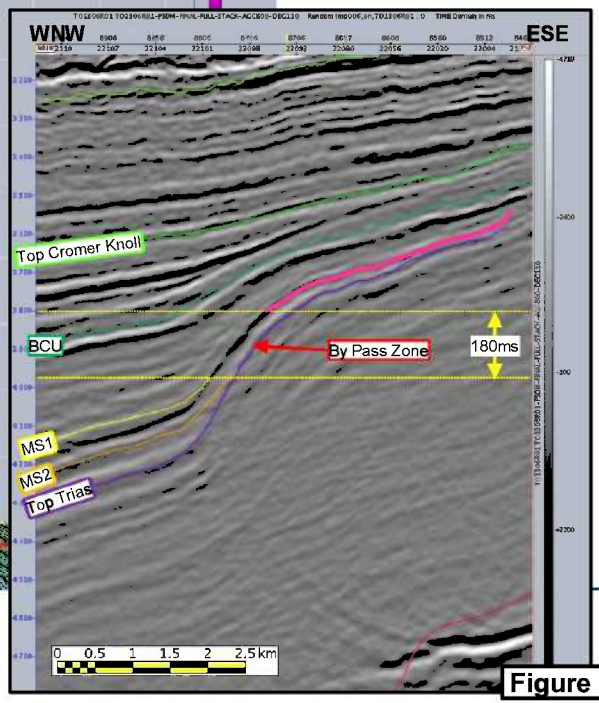
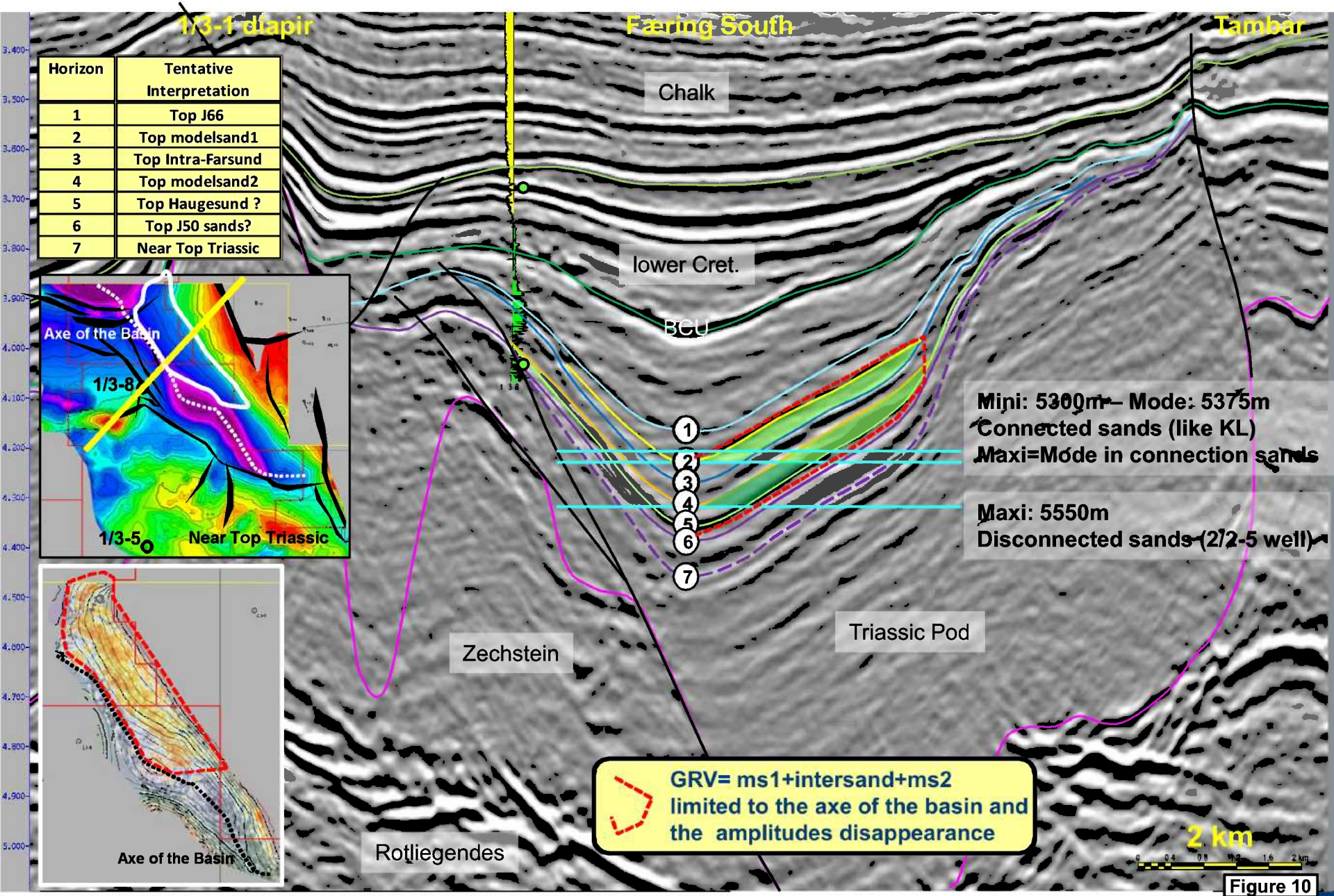


Figure 9

Færing South - Hydrocarbon Trap Model - Seismic Dip Line

SW 1/3-8 NE



Horizon	Tentative Interpretation
1	Top J66
2	Top modelsand1
3	Top Intra-Farsund
4	Top modelsand2
5	Top Haugesund ?
6	Top J50 sands?
7	Near Top Triassic

Figure 10

Færing South Prospect
NPD Table Færing Prospect Data

Block	1/3 and 2/1	Prospect name	Færing South	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)	Yes	Outside play (Y/N)	Yes				
Oil, Gas or O&G case:	Gas	Reported by company	Total Norge	Reference document	Relinquishment of PL619 & PL667			Assessment year	2015
This is case no.:		Structural element	Cod terrace	Type of trap	Stratigraphic	Water depth [m MSL] (>0)	70	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)					15.90	24.10	28.70	43.90
	Gas [10^9 Sm^3] (>0.00)	17.30	24.40	30.50	45.80				
Recoverable resources	Oil [10^6 Sm^3] (>0.00)					6.04	9.79	11.50	17.90
	Gas [10^9 Sm^3] (>0.00)	8.37	12.70	15.30	23.30				
Reservoir Chrono (from)	kimmeridgian	Reservoir litho (from)	Farsund Fm.	Source Rock, chrono primary	Kimmeridgian	Source Rock, litho primary	Farsund Fm.	Seal, Chrono	Kimmeridgian
Reservoir Chrono (to)	Tithonian	Reservoir litho (to)	Farsund Fm.	Source Rock, chrono secondary	Tithonian	Source Rock, litho secondary	Mandal Fm.	Seal, Litho	Farsund Fm.
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)		Oil case (0.00-1.00)		Gas case (0.00-1.00)	0.19	Oil & Gas case (0.00-1.00)			
Reservoir (P1) (0.00-1.00)	0.48	Trap (P2) (0.00-1.00)	0.80	Charge (P3) (0.00-1.00)	1.00	Retention (P4) (0.00-1.00)	0.50		

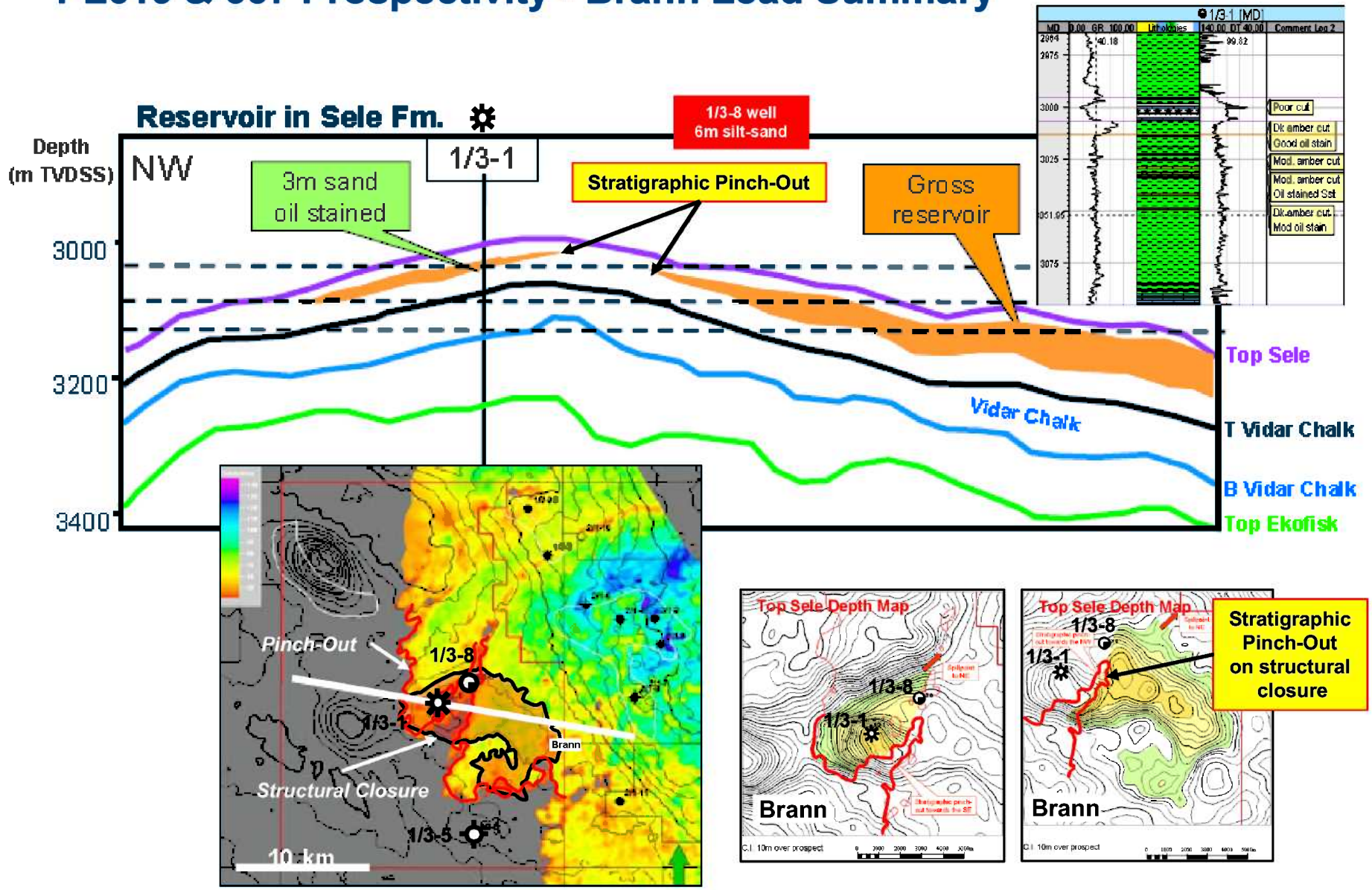
Parametres:	Low (P90)	Base	High (P10)	*Comments*
Depth to top of prospect [m MSL] (> 0)	4930	4950	4970	
Area of closure [km^2] (> 0.0)	23.6	25.3	26.8	
Reservoir thickness [m] (> 0)	205	205	205	
HC column in prospect [m] (> 0)	366	458	564	
Gross rock vol. [10^9 m^3] (> 0.000)	4910.300	5291.800	5604.300	
Net / Gross [fraction] (0.00-1.00)	0.11	0.17	0.23	
Porosity [fraction] (0.00-1.00)	0.18	0.20	0.22	
Permeability [mD] (> 0.0)	10.0	50.0	100.0	
Water Saturation [fraction] (0.00-1.00)	0.20	0.20	0.20	
Bg [Rm3/Sm3] (< 1.0000)	0.0038	0.0035	0.0032	
1/Bo [Sm3/Rm3] (< 1.00)				
GOR, free gas [Sm^3/Sm^3] (> 0)	796	941	1086	
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)	0.42	0.50	0.58	
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0.32	0.40	0.48	For NPD use:

Temperature, top res [°C] (>0)	185	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)	1050	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

TOTAL

Figure 11

PL619 & 667 Prospectivity - Brann Lead Summary



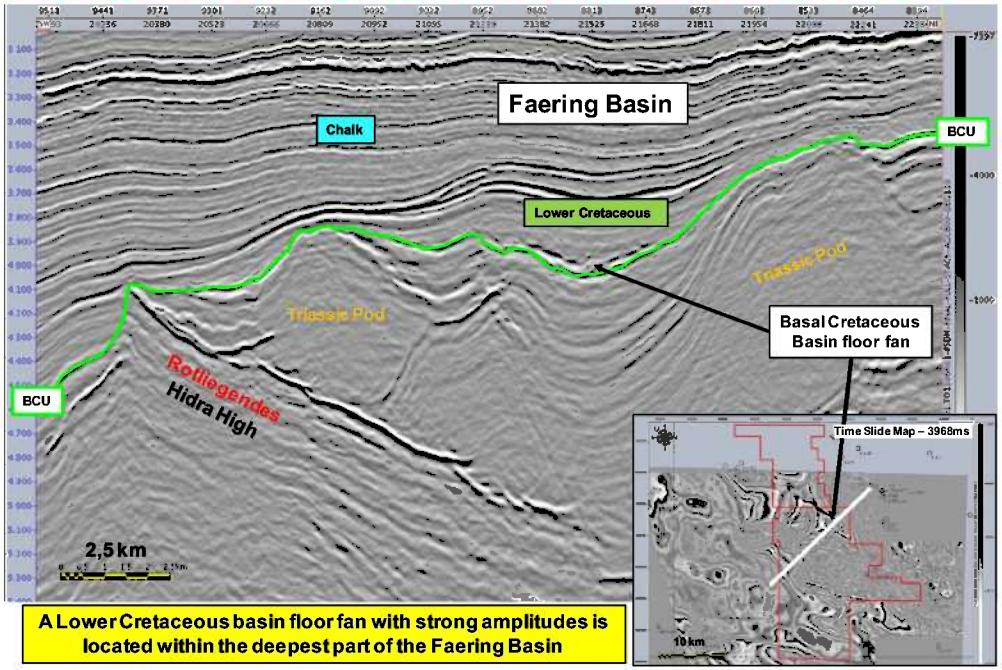
Top Vidar – Top Sele isochore (colour)
Top Sele TWT (50 m contour)

TOTAL

Figure 12

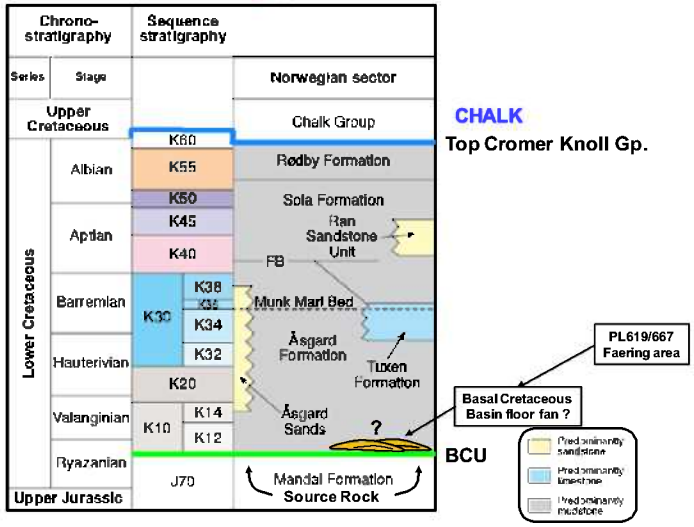
Lower Cretaceous Basin Floor Fan (A - example)

Lower Cretaceous Basin Floor Fan (A) - Strong Amplitudes Random Dip Line

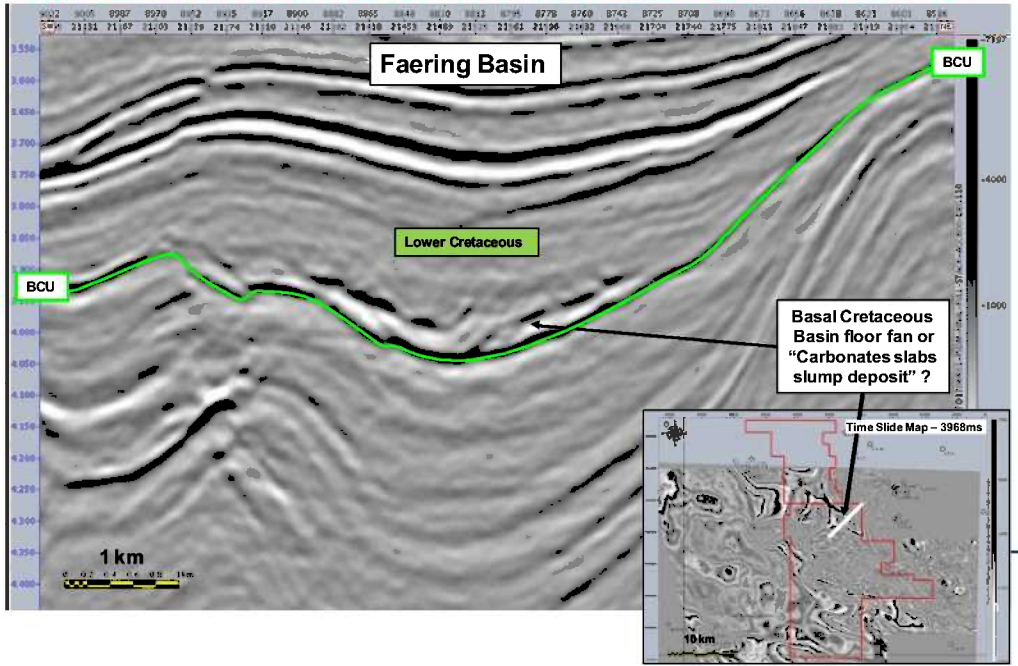


A Lower Cretaceous basin floor fan with strong amplitudes is located within the deepest part of the Faering Basin

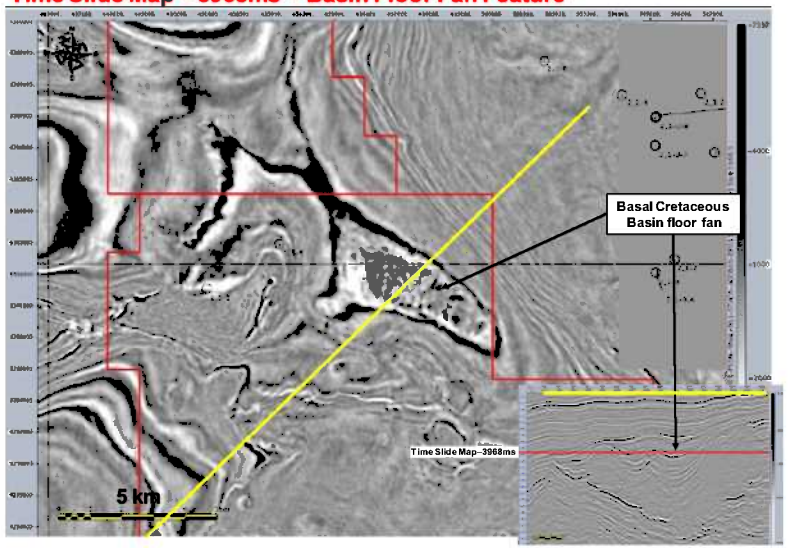
Lower Cretaceous – Stratigraphic Chart – Basal Cretaceous Basin Floor Fan



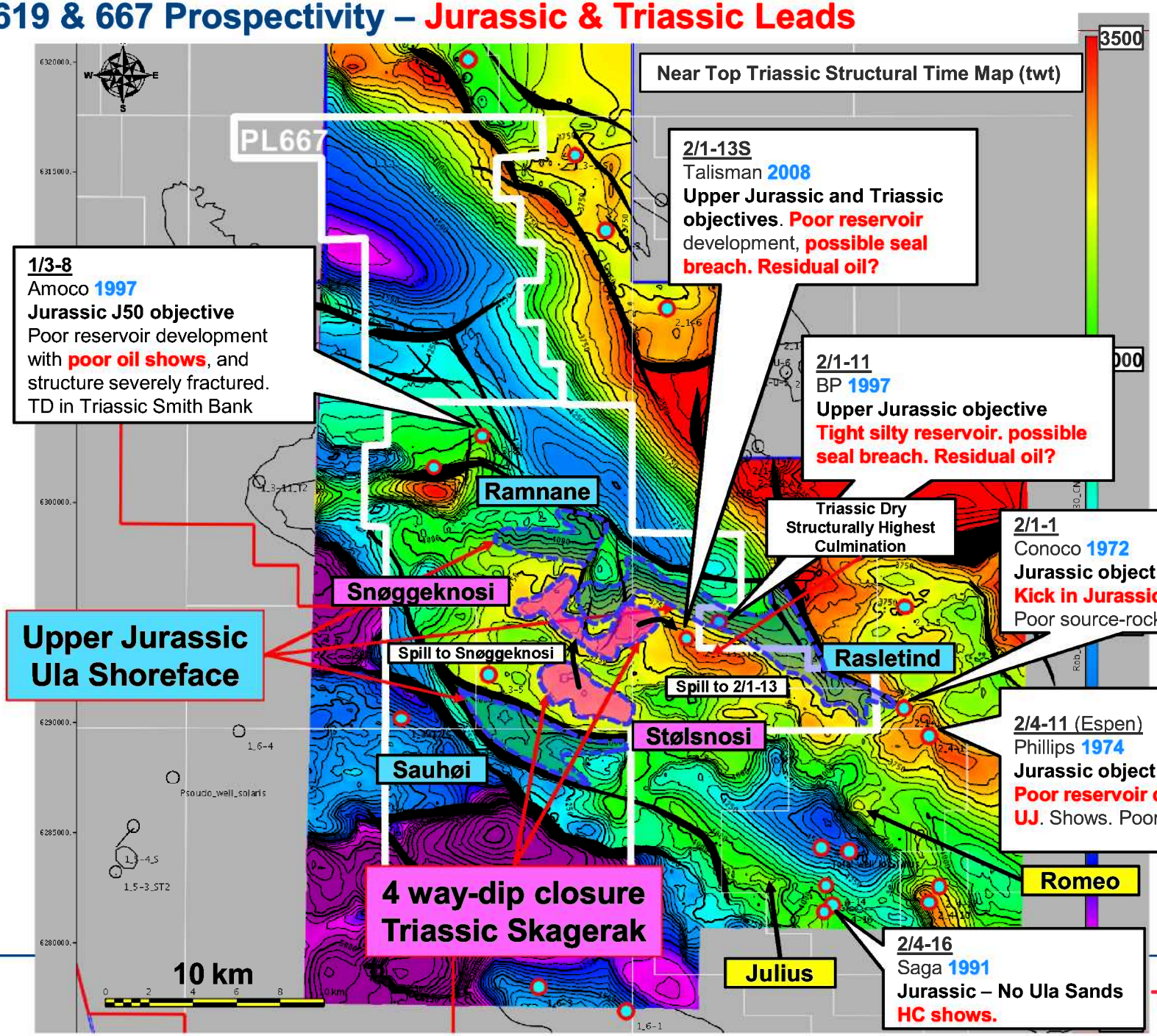
Lower Cretaceous Basin Floor Fan (A) - Strong Amplitudes Dip Line - Close Up)



Time Slide Map – 3968ms - Basin Floor Fan Feature



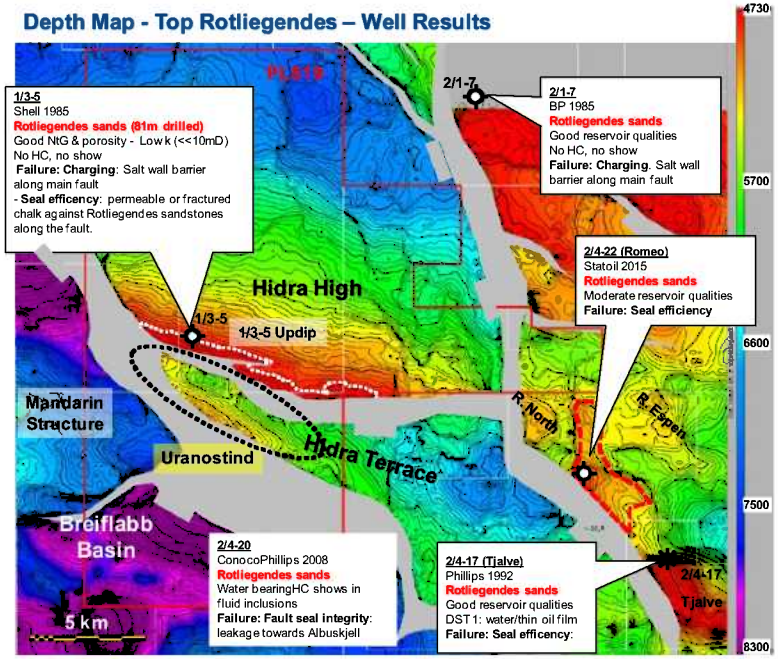
PL619 & 667 Prospectivity – Jurassic & Triassic Leads

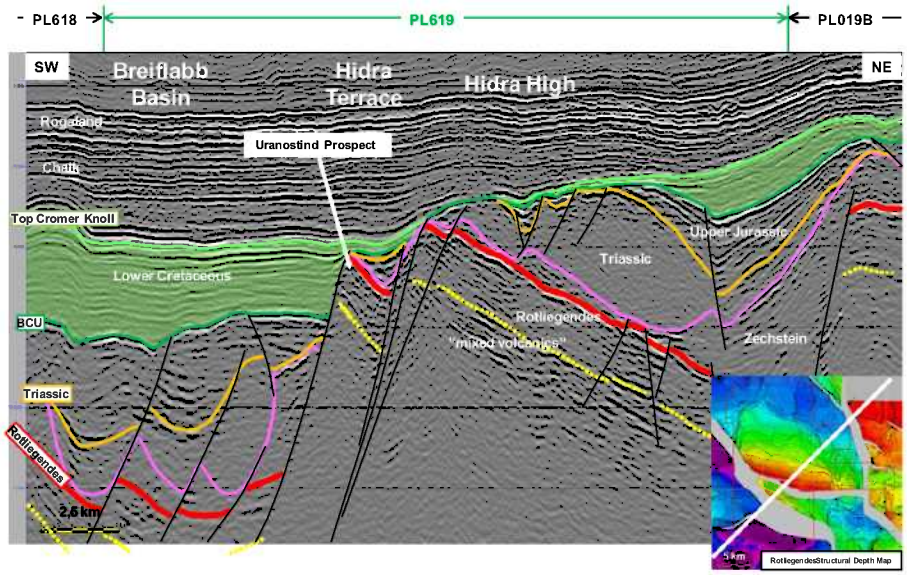


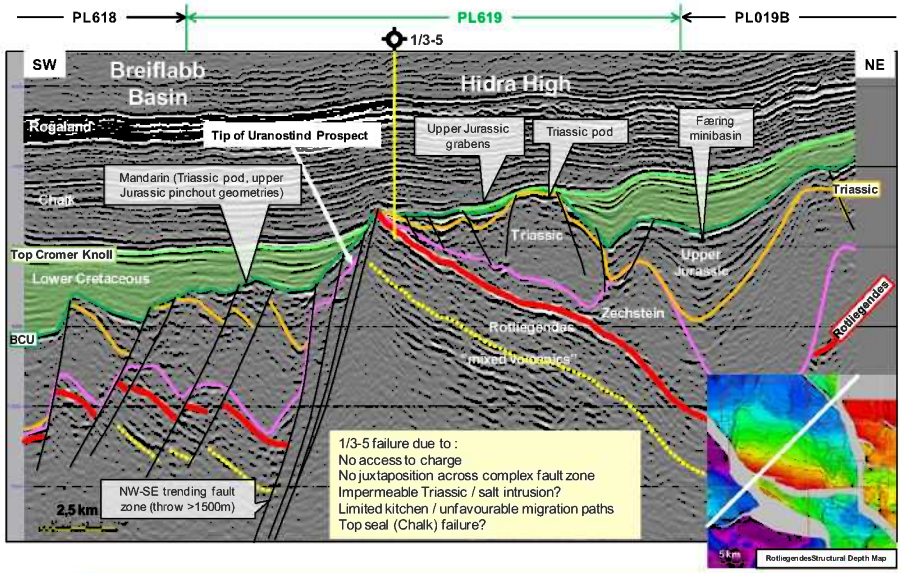
TOTAL

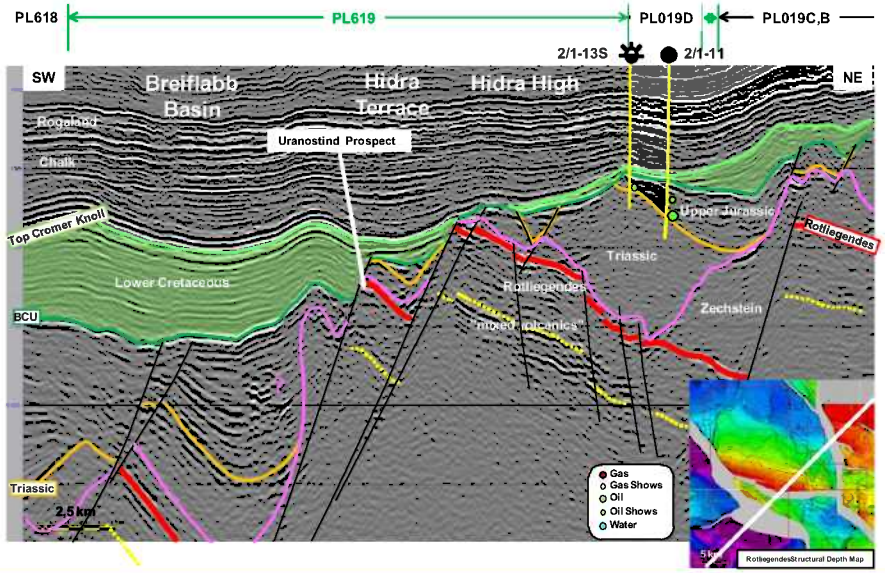
Figure 14

PL619 & 667 Prospectivity – Uranostind Lead









TOTAL

Figure 15