

PL093E Status Report at License Expiry

Restricted

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1 Key Licence History

PL093E is located in the western part of the Trøndelag Platform and is located in block 6407/9. (Fig. 1.1).

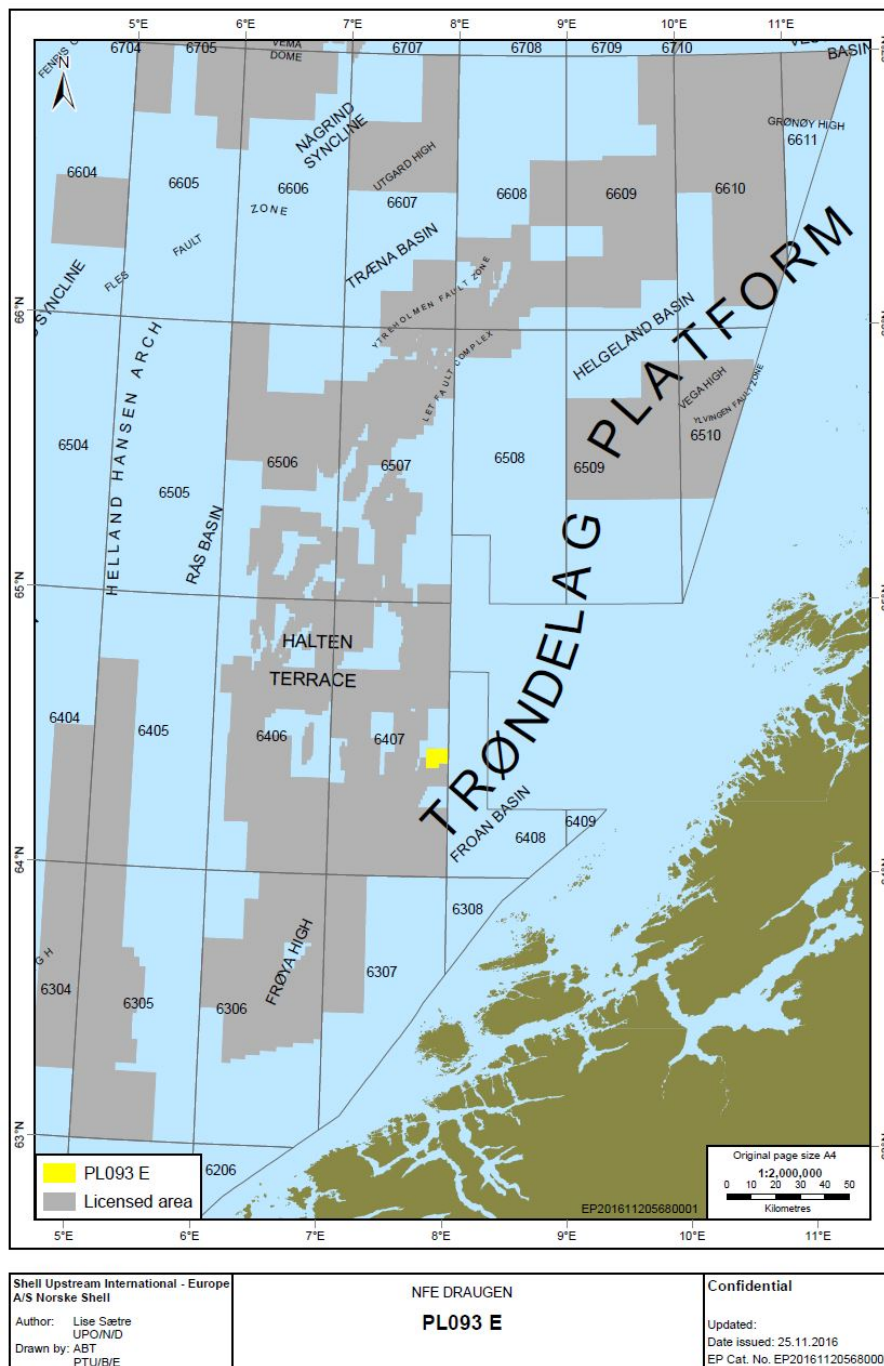


Fig. 1.1 Location map, PL093E

PL093E Partnership and Work Commitment

PL093E was awarded to A/S Norske Shell (Operator, 44.56%), Petoro (47.88%) and VNG (7.56%) on 7th February 2014 as part of the APA13 licensing round. The commitment was to perform a full geological and geophysical re-evaluation within the initial three years in support of a Drill or Drop decision before the license period expiry

date of 7th February 2017. In the case of a drill decision, one (1) exploration well was to be drilled before 7th February 2018. With the relinquishment of PL093E the work program has been fulfilled.

Status on Work Commitment

Geological and geophysical re-evaluation: A series of studies were undertaken and integrated in the evaluation of the licence prospectivity to address main uncertainties. See studies overview in Table 1.1.

Table 1.1 G&G study overview

| | | Activities carried out | |
|---------------|-----------------------------|------------------------|---|
| | | Re-interpretation | Quantitative Analysis (Fluid Substitution, AvO Inversion) |
| Uncertainties | Reservoir Presence /Quality | ✓ | ✓ |
| | Trap | ✓ | |

In October 2016, after completing all studies, the partnership unanimously agreed that a prospect of sufficient volume potential and risk profile to warrant an exploration wellbore cannot be identified. There are no remaining commitments.

Licence Meetings

Meetings have been held at a regular basis in the licence. Technical aspects have been covered in Technical Work Meetings (TWM) and Technical Committee Meetings (TCM) while management aspects has been discussed in Management Committee Meetings (MCM). All meetings held are listed in the table below.

Table 1.2 Meeting History

| Meeting | Date |
|---------|--------------------|
| TWM #1 | 20th April 2015 |
| TWM #2 | 1st June 2015 |
| TWM #3 | 30th June 2015 |
| TWM #4 | 15th December 2015 |
| TWM #5 | 27th April 2016 |
| TWM #6 | 21st June 2016 |
| TWM #7 | 22nd August 2016 |
| | |
| TCM #1 | 12th May 2015 |
| TCM #2 | 22nd October 2015 |
| TCM #3 | 23rd February 2016 |
| TCM #4 | 8th June 2016 |
| TCM #5 | 23rd August 2016 |
| TCM #6 | 25th October 2016 |
| | |
| MCM #1 | 9th June 2015 |
| MCM #2 | 8th March 2016 |

| | |
|--------|--------------------|
| MCM #3 | 10th November 2016 |
| | |

Reason for Relinquishment

The North East Lead (in some figures referred to as NEL) was characterised by a 4 way-dip closure defined on a depth conversion prior to the APA13 application. The geological and geophysical evaluation has downgraded the North East Lead, where we find it challenging to find economic hydrocarbon accumulation even in a high case scenario. An overview of the current prospectivity of PL093E is shown in red in Fig. 1.2 and concluded in Table 1.3. A detailed prospect description can be found in Chapter 4.

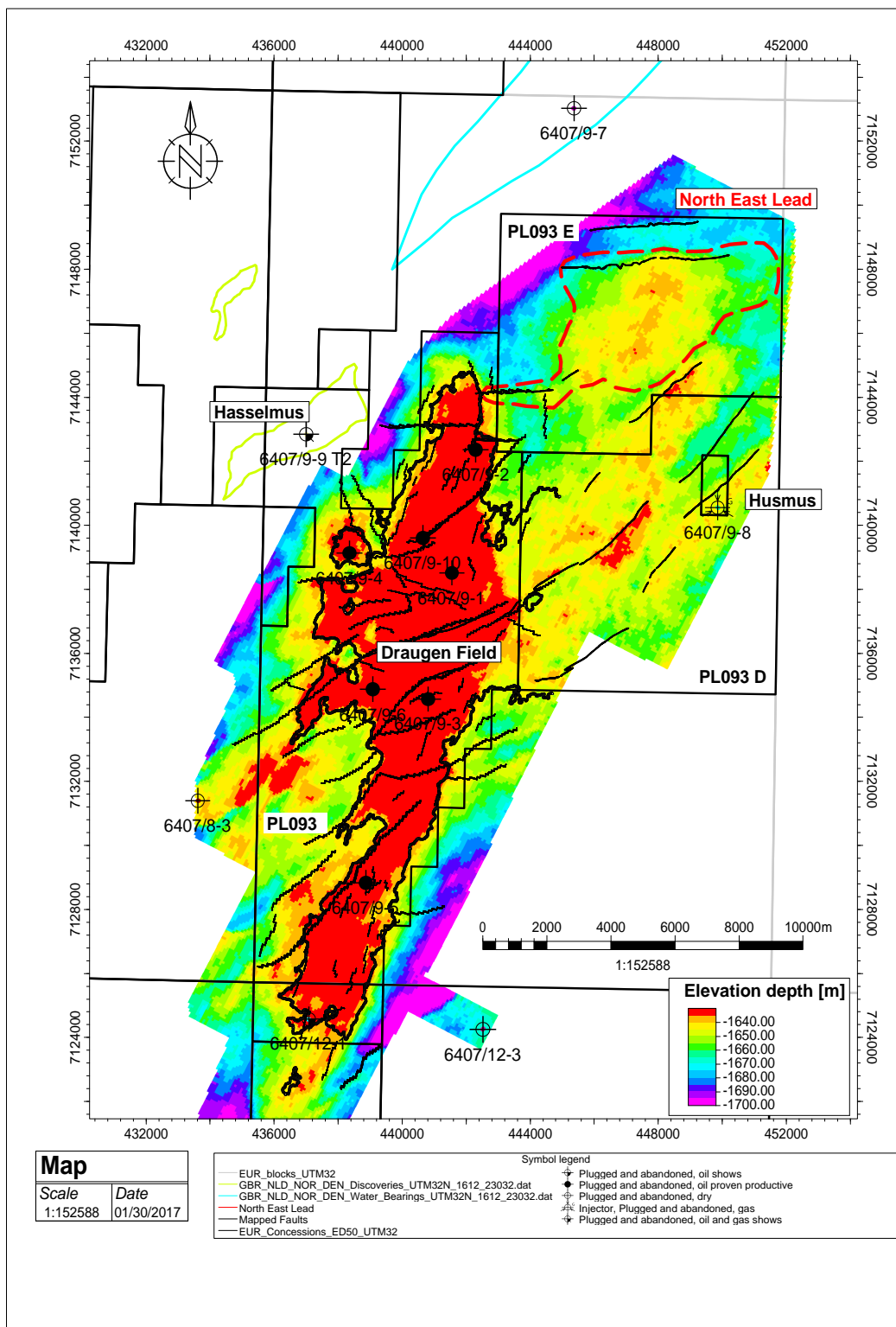


Fig. 1.2 Overview of North East Lead in PL093E

Geological and geophysical evaluations of PL093E resulted in a high risk, and low volume opportunity which do not warrant a drill-worthy opportunity within the license. A technical summary of the evaluations is given in the table below.

Table 1.3 Technical Evaluation Overview

| Name | Current Status | Outcome of Technical Evaluation |
|-----------------|----------------|---|
| North East Lead | Lead | <p>Lead is defined as a broad, low relief 4-way dip closure. The assumed prospective reservoir within the North East Lead is the Rogn Formation. The reservoir properties of the Rogn Formation is expected to degrade east of Draugen, which poses a risk for both reservoir presence and quality in the North East Lead. The depth of apex of the structure is 1633 m TVDSS and the depth of the saddle between Draugen and North East Lead is 1647 m TVDSS, where the original oil water contact depth at Draugen was 1640 m TVDSS. This scenario assumes fill-spill migration/charge route via Draugen and thus only allow a broad, relief trap with short (peaks around 7m in a base case) hydrocarbon column in a base case.</p> <p>The lead has low volumes and high risk with a GPOS of 8%. The broad, low-relief trap configuration in combination with the expected short colum imposes high risk on economic recovery.</p> |

2 Database

The seismic and well database used for the PL093E prospectivity evaluation comprises multiple 3D seismic datasets and a series of wells considered relevant for seismic to well ties and phase and property evaluation of reservoir and rock properties, as well as expected fluid.

Well Database A comprehensive well database in and around Draugen has been used in the evaluation of the Draugen North East Lead, which are listed in **Table 2.1**.

Table 2.1 Well database

| Wellname | Year | Operator | TD depth (m MD) | Well Class | Status |
|--------------|------|------------------|-----------------|-------------|-----------------------|
| 6407/6-1 | 1984 | STATOIL | 2895.00 | Exploration | P&A, dry well |
| 6407/6-7 S | 2009 | STATOIL | 3227.00 | Exploration | P&A, gas well |
| 6407/8-3 | 1997 | BP | 1960.00 | Exploration | P&A, gas shows |
| 6407/8-4 A | 2008 | STATOIL | 2473.00 | Exploration | P&A, gas well |
| 6407/8-4 S | 2008 | STATOIL | 2788.00 | Exploration | P&A, gas well |
| 6407/9-1 | 1984 | A/S NORSKE SHELL | 2500.00 | Exploration | P&A, oil well |
| 6407/9-2 | 1984 | A/S NORSKE SHELL | 1865.00 | Appraisal | P&A, oil well |
| 6407/9-3 | 1985 | A/S NORSKE SHELL | 1868.00 | Appraisal | P&A, oil well |
| 6407/9-4 | 1985 | A/S NORSKE SHELL | 1820.00 | Appraisal | P&A, oil well |
| 6407/9-5 | 1985 | A/S NORSKE SHELL | 1820.00 | Appraisal | P&A, oil well |
| 6407/9-6 | 1986 | A/S NORSKE SHELL | 1800.00 | Appraisal | P&A, oil well |
| 6407/9-7 | 1988 | A/S NORSKE SHELL | 2561.00 | Exploration | P&A, dry well |
| 6407/9-8 | 1992 | A/S NORSKE SHELL | 2126.00 | Exploration | P&A, gas well |
| 6407/9-9 T2 | 1999 | A/S NORSKE SHELL | 1920.00 | Exploration | P&A, oil and gas well |
| 6407/9-10 | 2003 | A/S NORSKE SHELL | 1800.00 | Appraisal | P&A, oil well |
| 6407/9-B-1 H | 1993 | A/S NORSKE SHELL | 2130.00 | Injector | Suspended, oil well |
| 6407/12-1 | 1999 | A/S NORSKE SHELL | 1805.00 | Exploration | P&A, oil well |
| 6407/12-3 | 2010 | CENTRICA | 1968.00 | Exploration | P&A, dry well |
| 6408/4-1 | 1988 | CONOCOPHILLIPS | 2725.00 | Exploration | P&A, dry well |

Seismic Database The PL093E seismic 3D-database is shown in Fig. 2.1. The main 3D seismic cube is SH13001 which is a PGS acquired GeoStreamer dataset, where the processing steps included a PSDM migration.

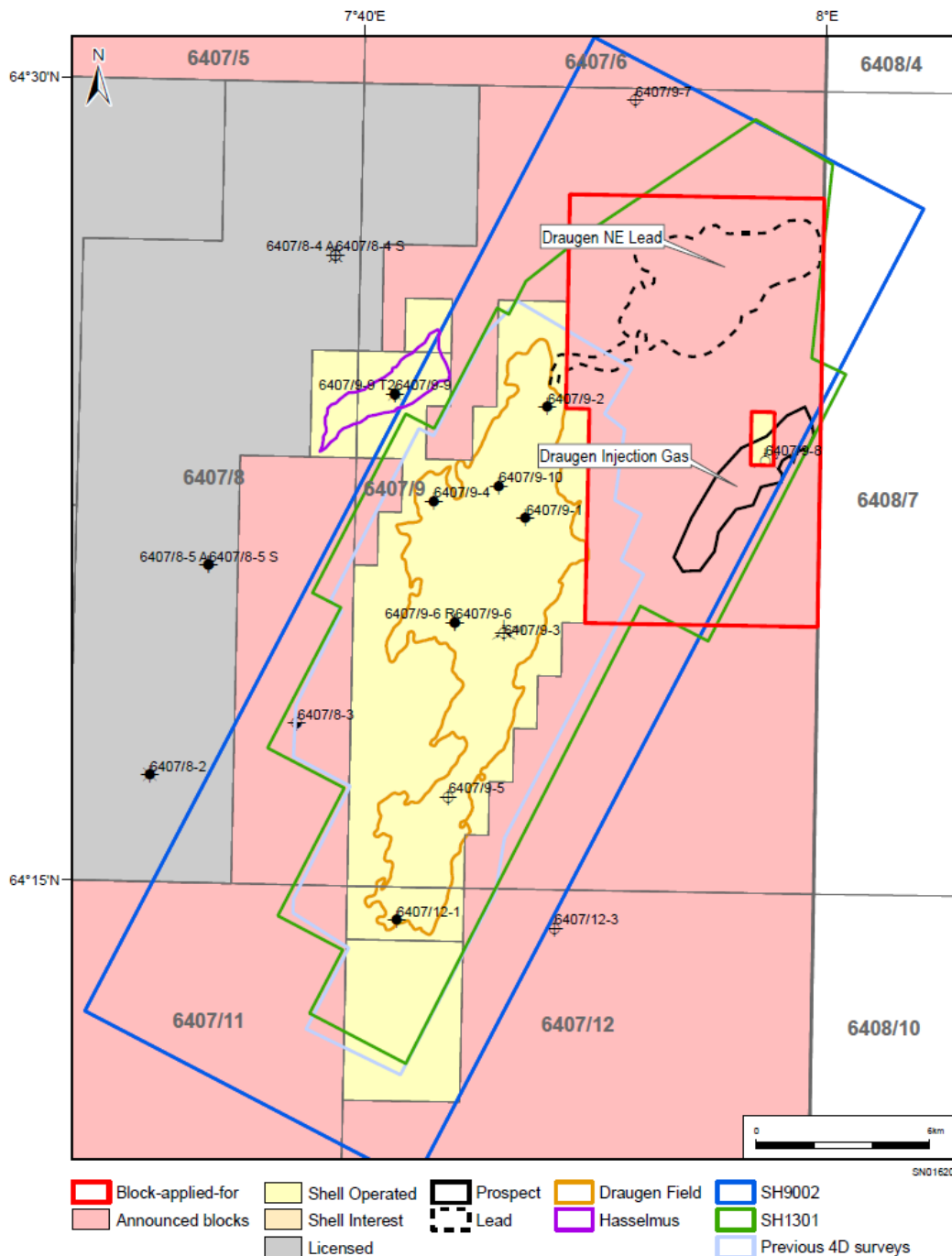


Fig. 2.1 Draugen Field Map Map of Draugen field showing locations of exploration and appraisal wells, OWC at 1640m TVDs (in light brown), Hasselmus (in purple), Draugen 4D survey extent SH13001 (in green), SH9002 survey in (blue), block and license outlines (in black), Draugen Injection Gas outline (in bold black), Draugen North East Lead (in dashed black) and area applied and area applied for in APA13.

3 Review of Geological Framework

Semi-Regional mapping

3D seismic interpretation was carried out (see Fig. 3.1) to provide input to a geological framework and foundation for the QI study, to create a better geological understanding for the Upper Jurassic lead. New 2013 GeoStreamer seismic gave an uplift in terms of S/N levels and resolution compared to the vintage 1990 conventional seismic. As a result, the 3D re-interpretation on the new GeoStreamer seismic resulted in a better and more confident understanding of the lead in the license area:

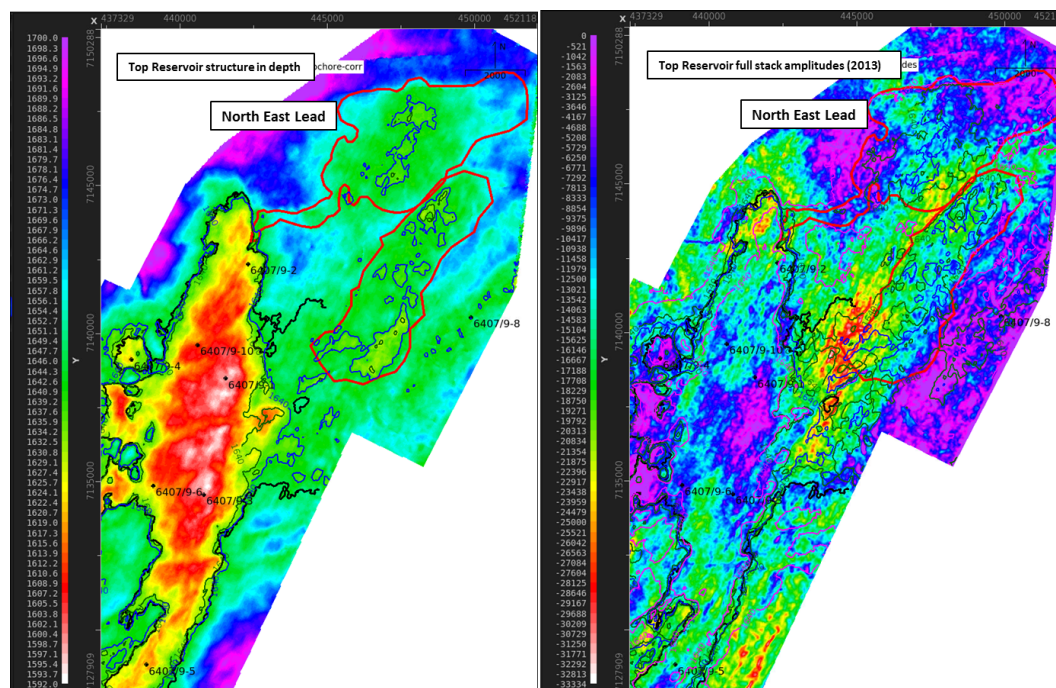


Fig. 3.1 Top structure and 2013 amplitude extraction map Depth structure map of Top Reservoir Equivalent and top structure 2013 full stack amplitudes, which lead to a more detailed AVO analysis, as it's difficult to interpret the fluid fill in the North East Lead area purely based on full stack amplitudes.

- Decreased uncertainty on the seismic loop pick on base Reservoir and new depth structure, places Garn Formation below the shared 1640m TVDSS oil water contact (OWC from the Draugen field) in the North East Lead area in all realisations, and eliminates Garn Formation as a candidate/viable hydrocarbon filled reservoir (see Fig. 3.2)
- Increased confidence in the Rogn Formation evaluation, in terms of rock type and thickness

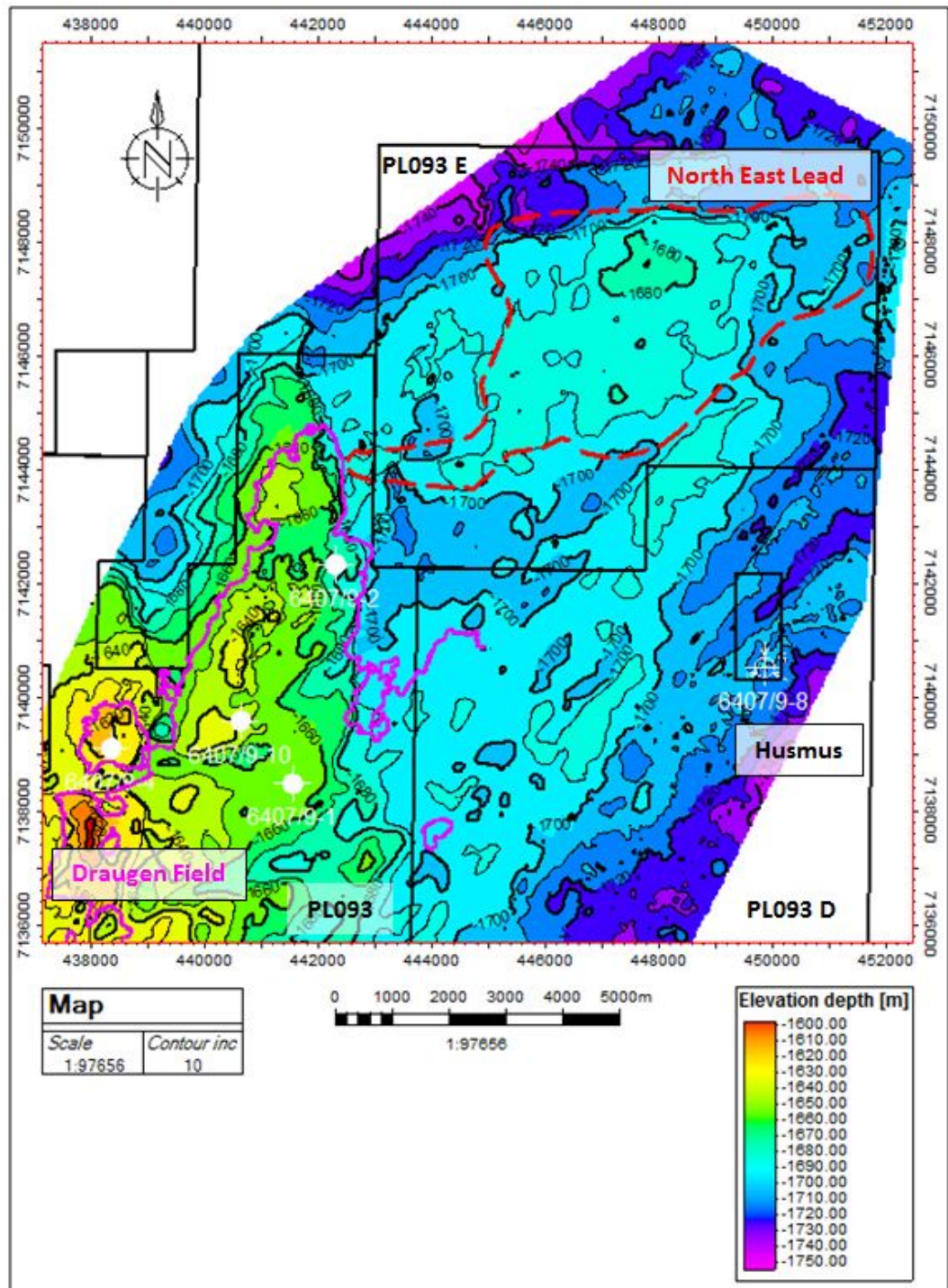


Fig. 3.2 Garn Formation Structure map Showing that the Garn Formation is everywhere structurally deeper than the shared OWC (-1640m TVDSS) in the North East Lead area

Basin development and reservoir

The North East Lead is located in PL093 E on the transition between the Frøya High and Trøndelag Platform, approximately 11km Northeast of the Draugen field. In the APA2013 application the North East Lead reservoir was expected to consist of Middle Jurassic Garn Formation sands, with possible occurrence of Melke Formation sands and Upper Jurassic Rogn Formation sands. Based on new evaluation of offset wells (biostratigraphy study and sand evaluation), and seismic structural, stratigraphic and quantitative interpretation on the new 2013 GeoStreamer data, the likelihood of finding hydrocarbon filled Garn Formation and Melke Formation is considered low. The

6407/9-8 Husmus well was drilled to the east of the Draugen field, in search of potential spill in this area. The well encountered Upper Jurassic sandy silt, time equivalent to the Rogn Formation on the Draugen field. These are now interpreted as evidence that Rogn Formation sands have the potential of reaching the Husmus area. Based on 6407/9-8 well interpretation, and semi-regional seismic interpretation, the reservoir in North East Lead is expected to consist of Rogn Formation. The models considered are middle-lower shoreface sands, with potential re-deposition of Rogn Formation sands as pro-delta turbidites sourced from west (Draugen field). However, the reservoir properties of the Rogn Formation is expected to degrade east of Draugen, which poses a risk for both reservoir presence and quality in the North East Lead.

The licence also considered a possibility of having good reservoir property sands in the area through redistribution of surge ebb and gravity flows deposits (sourced from west) by storm and wave action into sand bars. However, the POS of this geological model is considered low, as there are no positive geophysical nor geological evidence for this theory.

Source rocks and Charge

Draugen oil water contact (OWC) is at 1640m TVDSS. The Draugen oil is interpreted to have been sourced from the same Upper Spekk Formation hydrocarbon kitchen in two phases. The Upper Spekk Formation is not mature over the Draugen area, and charge from the Gimsan Basin in the west, across the Bremstein fault is envisaged. Basin modelling studies results show that the Gimsan Basin have yielded sufficient hydrocarbons to fill the Draugen field.

However, at the same time the oil is not in equilibrium; the Draugen gas oil ratio (GOR) varies, with a decrease in GOR from north to south. This indicates an ongoing gas charge from the Gimsan Basin, into the Hasselmus discovery and from there into the Draugen field. The Hasselmus discovery contains mainly gas with a thin oil rim, where the oil contains more gas and is lighter compared to the Draugen oil.

The likely migration/charge route into the North East Lead is via a Draugen northeastern or eastern spill point. However, the overall possibility of charge into North East Lead is considered relatively low given the reasons mentioned under "spill" in this chapter.

Seal

The Upper Spekk Formation is a regional developed and consistent top seal. Across the greater Draugen area there is good control on thickness distribution; there are no faults that completely offset Spekk Formation across the North East Lead structure. Top Seal competence is more than sufficient to withhold the expected hydrocarbon volumes.

The top seal properties were assessed as adequate for the North East Lead structure.

Spill

Draugen is essentially placed on a spur extending northeast from the Frøya High, fault bounded with steep structural dips to the west and northwest, and more gentle but consistent dips to the south. At reservoir level the structure is open to the east, where it has an interpreted stratigraphic pinch-out.

Both the 6407/9-8 and the 6407/12-3 Caerus well were exploring for hydrocarbon spill out of the Draugen field. As mentioned above the 6407/9-8 well encountered poorly developed Rogn Formation sands, and good Jurassic Garn Formation reservoir sand, the latter at 1729 m TVDSS, significantly below the Draugen OWC at 1640 m TVDSS.

The well had only weak indications of hydrocarbons in the Upper Jurassic siltstones and claystones. The 6407/12-3 Caerus well was drilled to the southeast of Draugen by Centrica. The first Jurassic sands encountered was the Garn Formation at 1762 m TVSS, 122 metres below the Draugen OWC, and no hydrocarbons were observed. Thereby rules out southeasterly spill out of Draugen. It is possible that oil bearing Rogn Formation extends further south of 6407/12-1. However top Rogn Formation is interpreted to be structurally lower than the Draugen OWC in this area.

Thus, the most probable remaining lateral Jurassic spill route is to the north of the Husmus area (see Fig. 3.3). However, the probability of a spill route directly into North East Lead is considered low as there are other potential spill routes out of Draugen leading into more favorable areas for good reservoir quality sands.

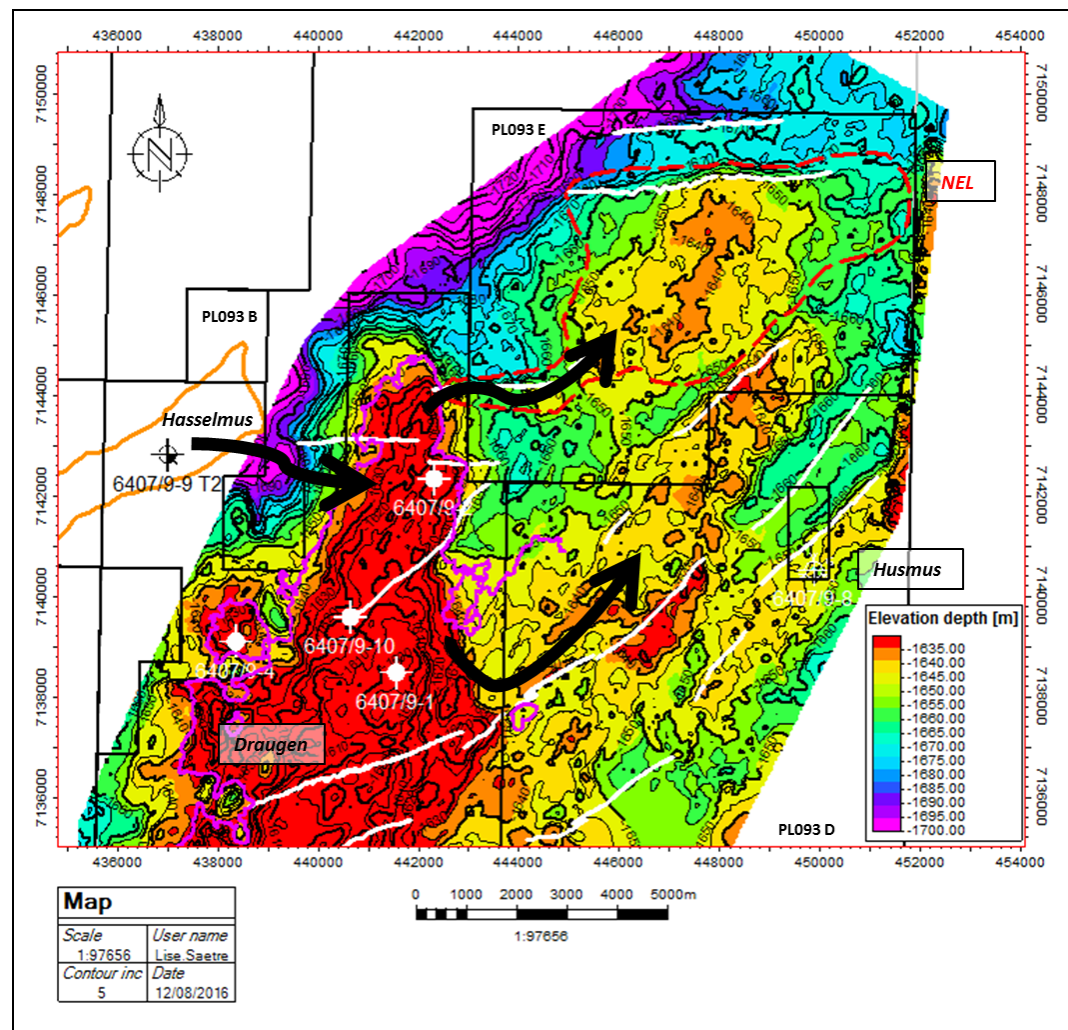


Fig. 3.3 Rogn Formation Structure map Showing the potential spill route into the North East Lead, and other potential spill route out of Draugen

4 Portfolio Update

The North East Lead is the main element opportunity in PL093E.

North East Lead

The North East Lead is defined as a broad, low relief 4-way dip closure. The prospective reservoir within the North East Lead is the Rogn Formation. The reservoir properties of the Rogn Formation is expected to degrade east of Draugen, which poses a risk for both reservoir presence and quality in the North East Lead (Fig. 4.1).

Top seal is provided by the Upper Spekk Formation as proven in the Draugen field.

QI and Geophysics

In order to test/validate/increase confidence, re-interpretation and an AvO inversion study based on the 2013 acquired seismic was carried out. The resolution of the study based on the AvO results was limited to models with relatively thin reservoir sections as expected in the North East Lead area and in line with the Rogn Formation top and base time re-interpretation. For the North East Lead, the inversion showed limited probability of success with respect to hydrocarbon presence.

Failure scenario was supported by the seismic AvO analysis, i.e. fluid fill is water and/or reservoir properties are poor.

The key findings of the inversion study were:

- 1) No seismic DHI was observed in the area of the North East Lead, reducing the PoS of finding hydrocarbons in good reservoir Sst thicker than 10 meters
- 2) Forward synthetic modelling indicated limited confidence in identification of cases with hydrocarbon accumulations between 1 and 8 meters
- 3) High N/G Sst with economical hydrocarbon accumulation was considered less probable as it did not match the seismic response
- 4) Thin (5-10m) medium N/G (approximately 50%) Sst filled with hydrocarbons can explain the AvO response and is considered more likely
- 5) Thin (5-10m) poor reservoir property Sst filled with water can explain the AvO response and is considered most likely

Key Risks and Uncertainties

Compared to the APA13 evaluation, volumes have significantly decreased in addition to an increased risk picture. The main risks for North East Lead are reservoir presence, reservoir quality and hydrocarbon charge. The GPOS for the North East Lead is 8%. It is believed that derisking activities have been exhausted and that the lead remains a low POS, low volume opportunity.

Lead parameters are summarised in NPD format in: Table 4.1.

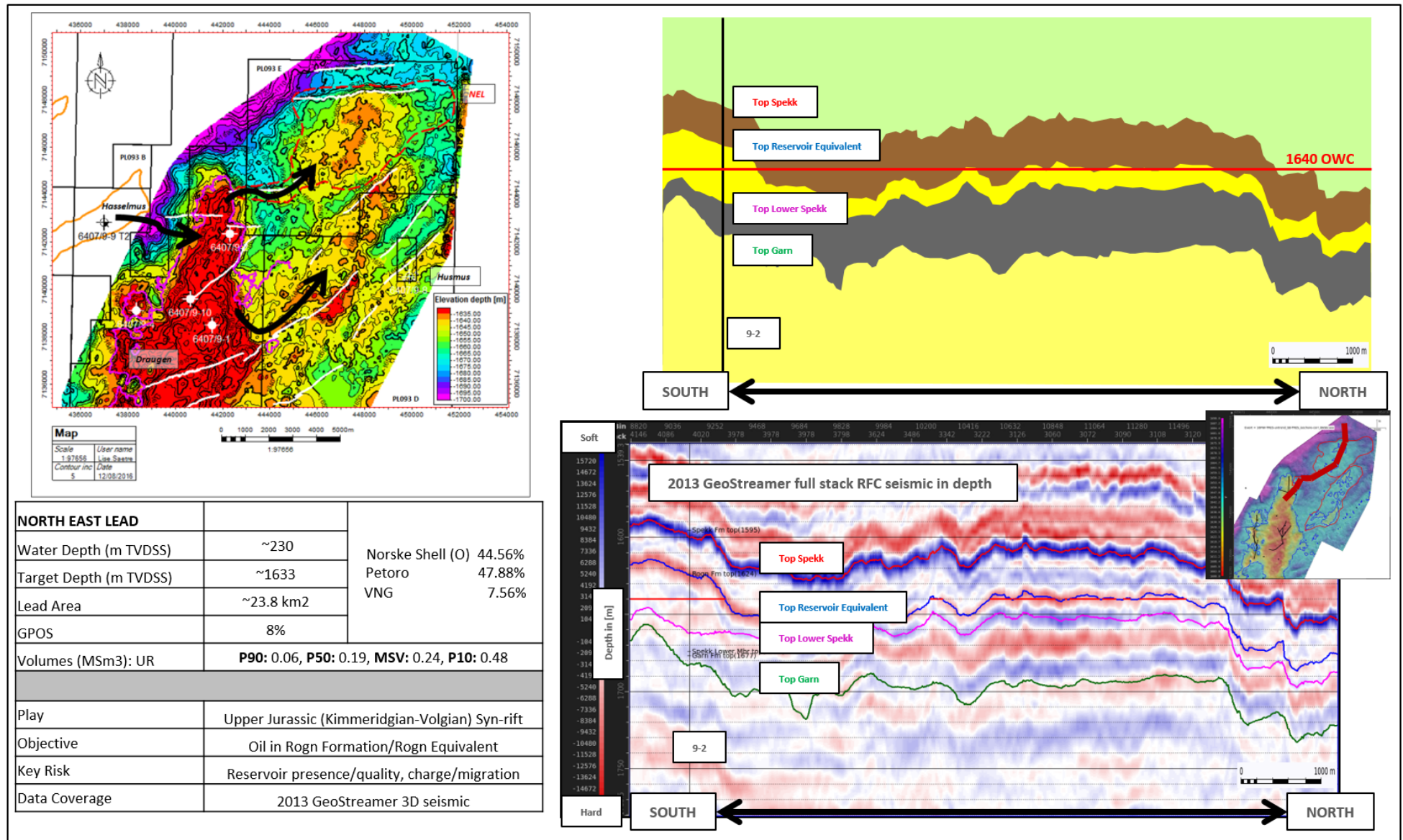


Fig. 4.1 North East Lead summary

Table 4.1 North East Lead, NPD prospect table

| | | | | | | | | | |
|---|--|------------------------|-----------------|-------------------------------|----------------------------|------------------------------|-----------------------|--------------------------|-----------------------|
| Block | 6407/9 | Prospect name | North East Lead | Discovery/Prosp/Lead | Lead | Prosp ID (or New!) | NPD will insert value | NPD approved (Y/N) | |
| Play name | NPD will insert value | New Play (Y/N) | No | Outside play (Y/N) | No | | | | |
| Oil, Gas or O&G case: | Oil | Reported by company | Shell | Reference document | APA13 application document | | | Assessment year | 2016 |
| This is case no.: | 1 of 1 | Structural element | Haltenbanken | Type of trap | Structural | Water depth [m MSL] (>0) | 230 | Seismic database (2D/3D) | 3D |
| Resources IN PLACE and RECOVERABLE | | Main phase | | | Associated phase | | | | |
| Volumes, this case | | Low (P90) | Base, Mode | Base, Mean | High (P10) | Low (P90) | Base, Mode | Base, Mean | High (P10) |
| In place resources | Oil [10 ⁶ Sm ³] (>0.00) | 0.22 | 0.68 | 0.79 | 1.52 | | | | |
| | Gas [10 ⁹ Sm ³] (>0.00) | | | | | | | | |
| Recoverable resources | Oil [10 ⁶ Sm ³] (>0.00) | 0.06 | 0.19 | 0.24 | 0.48 | | | | |
| | Gas [10 ⁹ Sm ³] (>0.00) | | | | | | | | |
| Reservoir Chrono (from) | Upper Jurassic | Reservoir litho (from) | Rogn | Source Rock, chrono primary | Upper Jurassic | Source Rock, litho primary | Spekk | Seal, Chrono | Upper Jurassic |
| Reservoir Chrono (to) | | Reservoir litho (to) | | Source Rock, chrono secondary | | Source Rock, litho secondary | | Seal, Litho | Spekk |
| Probability [fraction] | | | | | | | | | |
| Total (oil + gas + oil & gas case) (0.00-1.00) | | Oil case (0.00-1.00) | 1.00 | Gas case (0.00-1.00) | 0.00 | Oil & Gas case (0.00-1.00) | | | |
| Reservoir (P1) (0.00-1.00) | 0.20 | Trap (P2) (0.00-1.00) | 1.00 | Charge (P3) (0.00-1.00) | 0.40 | Retention (P4) (0.00-1.00) | 1.00 | | |
| Parametres: | Low (P90) | Base | High (P10) | Comments | | | | | |
| Depth to top of prospect [m MSL] (> 0) | | | 1633 | | | | | | |
| Area of closure [km ²] (> 0.0) | 23.8 | | 23.8 | 23.8 | | | | | |
| Reservoir thickness [m] (> 0) | | | | | | | | | |
| HC column in prospect [m] (> 0) | 1 | | 1 | 10 | | | | | |
| Gross rock vol. [10 ⁹ m ³] (> 0.000) | | | | | | | | | |
| Net / Gross [fraction] (0.00-1.00) | 0.20 | | 0.40 | 0.60 | | | | | |
| Porosity [fraction] (0.00-1.00) | 0.10 | | 0.20 | 0.30 | | | | | |
| Permeability [mD] (> 0.0) | | | | | | | | | |
| Water Saturation [fraction] (0.00-1.00) | 0.40 | | 0.65 | 0.90 | | | | | |
| Bg [Rm3/Sm3] (< 1.00000) | | | | | | | | | |
| 1/Bo [Sm3/Rm3] (< 1.00) | 0.83 | | 0.83 | 0.83 | | | | | |
| GOR, free gas [Sm ³ /Sm ³] (> 0) | | | | | | | | | |
| GOR, oil [Sm ³ /Sm ³] (> 0) | | | | | | | | | |
| Recov. factor, oil main phase [fraction] (0.00-1.00) | 0.00 | | 0.30 | 0.50 | | | | | |
| Recov. factor, gas ass. phase [fraction] (0.00-1.00) | | | | | | | | | |
| 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) | | | | Innrappt. av geolog-init: | NPD will insert value | Registrert - Init: | NPD will insert value | Kart oppdatert | NPD will insert value |
| Pressure, top res [bar] (>0) | | | | 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 |

5 Technical Evaluations

Development and economic analysis have been performed in support of the identified lead throughout the license period.

The development concept for the PL093E lead centered around a tie-back option to the closest subsea well on the Draugen field. Some of the key issues identified with this concept: potential increase in scope and cost related to water injection requirement to produce the hydrocarbons, water capacity and trade offs with water injection on the field (as the total amount of injected water would be constant with or without the North East lead) and timing (North East Lead does not have the potential to extend the end-of-field-life, currently estimated to 2027).

The cost estimate is based on experiences from similar tiebacks that have been executed on the Draugen field in the past 3-5 years, hence most of the attached scope has a large degree of replication with previously executed infill wells, i.e. 2013 Infill Drilling campaign and 6407/9-G-5 H. Therefore, a cost estimate for the entire scope could be assessed with a reasonable high certainty according to the phase.

In order to assess the upside potential, an optimistic approach has been applied. The commercial cut off used in economic analysis has been based on assuming the lead can be tied in to the Draugen production system (assumes ullage and compatibility - with respect to fluids and no back out effect to Draugen / other production in the system), and that effective recovery can be achieved without additional water injection.

On the basis of these technical evaluations, North East Lead was assessed not economically viable and deemed not attractive to warrant an exploration well. (Fig. 5.1).

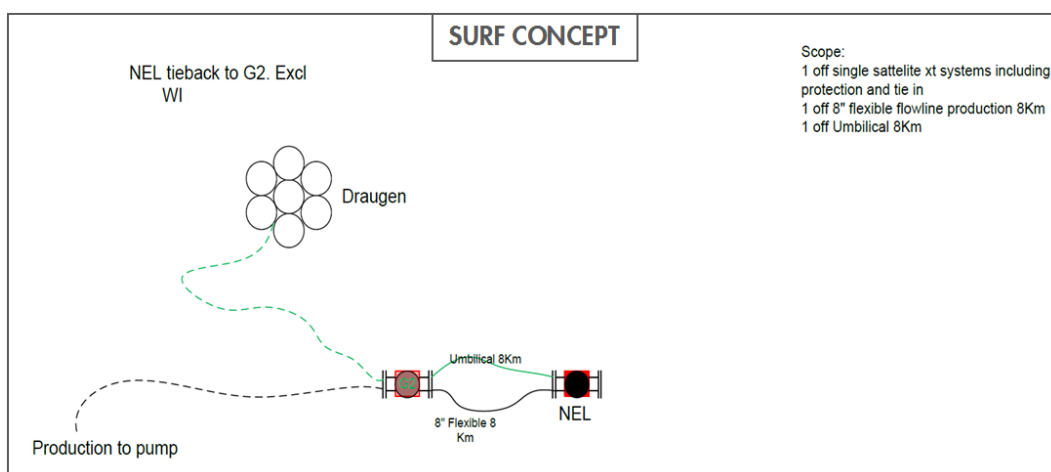


Fig. 5.1 North East Lead Development

6 Conclusions

The prospectivity in PL093E has been evaluated and concluded based on the outcomes of licence specific studies.

The evaluation has resulted in the following view:

- Overall, prospectivity for PL093E remains challenging with high risk and low volume opportunities
- North East Lead volumes are not economic
- The risk/volume profile for the portfolio within PL093E is regarded as insufficient to warrant further follow up data acquisition and de-risking activities neither a drill decision

Having fulfilled the work commitment and based on the results from the evaluation, no drill-worthy prospect has been identified and the partnership unanimously recommends the relinquishment of PL093E.

7

References

- APA13 license Round Application Document
- Hand-out material from all relevant meetings - Work meetings, Technical Committee and Management Committee Meetings available on "Licence to Share