

PL 407 Vette and PL 406 Mackerel & Herring Licence Relinquishment

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1 Key Licence history

Reference is made to the “Agreement regarding Co-Ordination of Petroleum Activities in Production Licences PL 406 and PL 407” effective as of 1st January 2015. Art. 2.3 in said agreement clearly states the management of the joint activities related to the licence coordination area shall be conducted as if the production licences 406 and 407 were one production licence. For this reason, the relinquishment for both PL 406 and PL 407 is described here.

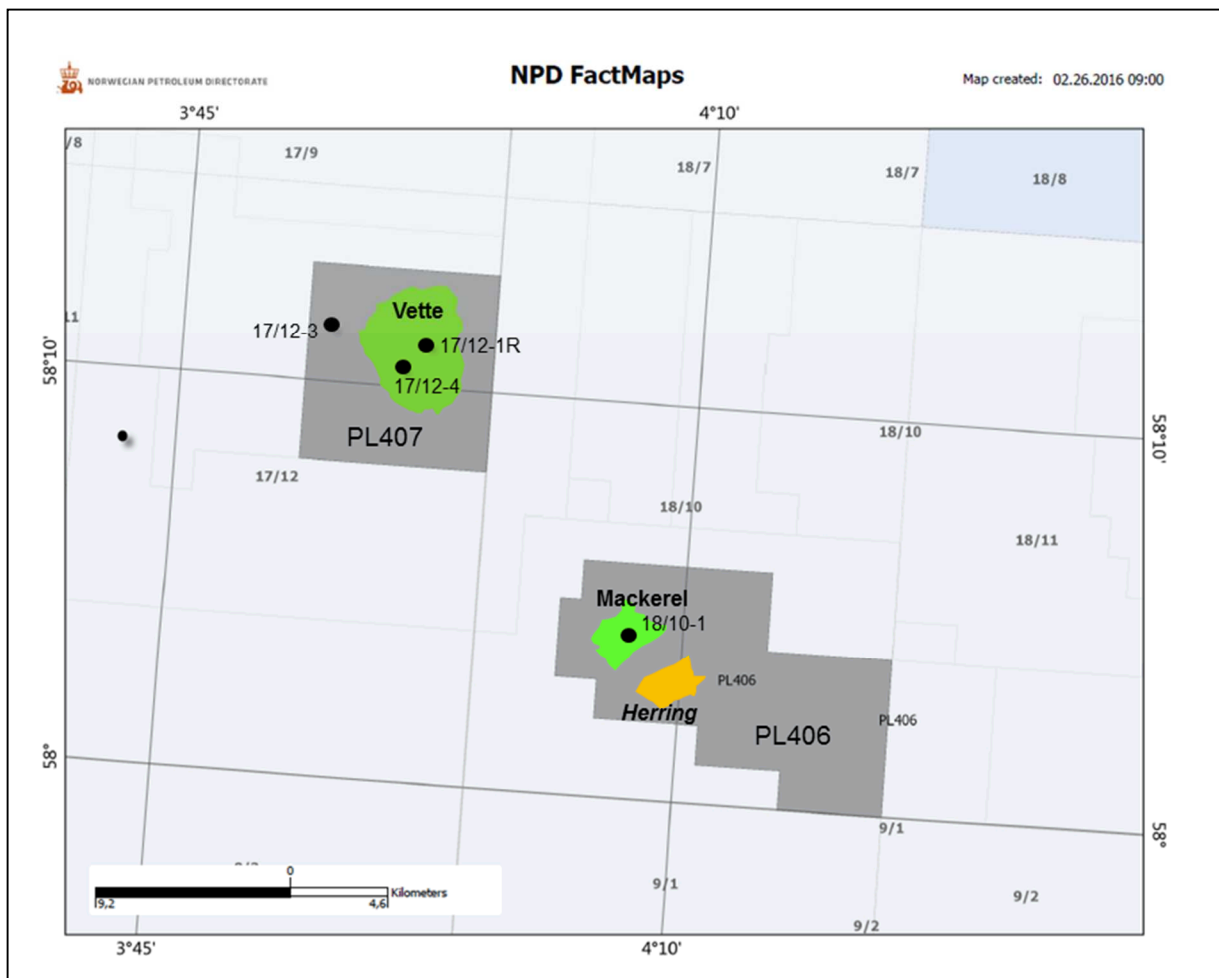


Figure 1: Current licence area for PL 406 and PL 407 with the Vette and Mackerel discoveries and the Herring Prospect highlighted.

Licence	Discovery	Prospect
PL 407	Vette (previously Bream)	non
PL 406	Mackerel	Herring

Table 1: Discoveries and prospects within the PL407 and PL 406 licences.

1.1 PL 407 Vette

The Bream discovery (now known as Vette) was made by Phillips Petroleum Company Norway (operator) in well 17/12-1R in 1972, within production licence PL 016. An appraisal well, 17/12-3, was drilled in 1980, but this failed to prove a commercially viable project and PL 016 was relinquished in 1994.

The PL 407 licence was awarded to BG Norge (operator) and partners on 16th February 2007 as part of the TFO 2006 licence round. In 2009 an appraisal well on Bream 17/12-4 and its two geological sidetracks 17/12-4 A and 17/12-4 B was drilled to evaluate productivity of the wells.

The work programme for PL 407 included one firm appraisal well on the Bream (Vette) structure within 16.02.2011 – Well 17/12-4 was completed July 2009.

It was further stipulated that a submission of a plan for development and operation should be made within 2 years, and if such was submitted, a firm exploration well with TD in the Triassic formation to be drilled within 2 years;

The initial license period expires 16.02.2017 and the relinquishment report is to be submitted within 16.05.2017.

The appraisal well 17/12-4 was drilled in 2009 with two highly deviated sidetracks (17/12-4 A and 17/12-4 B). The well was considered successful, and proved that productivity from horizontal production wells was possible. Some uncertainties regarding commercial productivity remain as PLT was not executed in conjunction with the DST.

An initial concept select (BoV) was made by BG Norge in 2012 following feasibility and conceptual studies. The selected concept was a subsea development of Bream using the Teekay Petrojarl 1 FPSO. Following more detailed engineering studies, conducted in 2012, it became clear that the costs for upgrading the vessel were much higher than expected, which made the project uneconomic. An alternative concept with a new build Sevan FPSO was identified at this point and conceptual studies commenced in 2013, but this concept fell through and a move to evaluate Maersk Inspirer and Teekay Varg was initiated.

On 2nd December 2013, Premier Oil Norge AS took over operatorship of PL 407 and an additional 10% interest in PL 407 from BG Norge. KUFPEC Norway also acquired a 30% interest in PL 407. On 16th November 2015, Det norske oljeselskap ASA purchased Premier Oil Norge AS and took over operatorship.

A number of extensions have been granted for the production licence. As part of these extensions the deadline for a possible PDO was extended to 16th February 2017, 10 years after award of the licence. There have been two partial relinquishments of the original area of PL 407. The licence currently has an area of 81.9 km² covering part of block 17/12.

1.2 PL 406 Mackerel and Herring

The exploration well 18/10-1 in PL 008 was drilled in December 1979 by Elf Petroleum Norge AS and proved oil in Mackerel. However, a development was not seen to be economical and the license was relinquished. PL 406 was awarded on the 16th February 2007 with Premier Oil Norge as operator. The licence exploration well 9/1-1 S was drilled in November 2011 but proved to be dry and was followed by a partial area relinquishment in February 2013. The licence currently has an area of 115 km² covering part of block 18/10.

PL 406 was awarded 16 February 2007

PL 406 work programme included 3D seismic acquisition within 16.02.2012 and one well drilled to be drilled within 16.02.2012. The seismic lines MC3D-EGB2005 was purchased in May 2007 and the well 9/1-1S (Gardrofa) was completed in November 2011.

Further, the initial license period for PL 406 was extended by MPE's letter dated 13 February 2015 provided that the licensees performed reprocessing and analysis of seismic data within 16.08.2016. The Sharp Reflections Study was completed Feb 2015.

Further, the PL 406 will be annulled if a drilling decision regarding the Herring prospect is not made within 16.08.16.

The initial license period for PL 406 expires 16.02.2017 and the relinquishment rapport is to be submitted within 16.05.2017.

Since PL 406 and PL 407 licence awards, a number of extensions to the initial periods and changes in ownership have occurred. Since 20th December 2013 licences PL 406 and PL 407 have had the same ownership. The most recent changes occurred with Det norske oljeselskap ASA purchase of Premier Oil Norge AS and became operator for both licences.

The joint venture partner interests in PL 407 and PL 406 are currently:

Company	Interest
Det norske oljeselskap ASA (operator)	50%
KUFPEC Norway AS	30%
Tullow Oil (Bream) Norge AS	20%

2 Database

Wells:

17/12-1R Vette discovery well (PL 407)

17/12-3, 17/12-4, 17/12-4 A, 17/12-4 B Vette appraisal wells (PL 407)

17/12-2 Brisling discovery well (now Open Area)

18/10-1 Mackerel discovery well (PL 406)

8/3-1, 8/3-2, 9/2-1, 9/2-2, 9/2-3, 9/3-2, 17/9-1, 17/11-1, 17/11-2, 17/12-2, 17/12-3, 18/11-1

Seismic:

Survey	2D Lines/3D Coverage
MC3D-EGBRM13 PSDM	area of PL 407 and part area of PL 406
MC3D-EGB2005	Full survey extent towards the NW plus 3°44'40"E, 58°03'20"N 4°09'30"E, 58°03'20"N 4°09'30"E, 58°12'00"N
NS	Lines: 04, 05, 06, 10, 11, 21, 22a, 23, 26, 26a, 27a, 28, 29a, 30, 30a, 31
ST 8107	Lines: 128, 132, 136, 140, 356, 360, 364, 368
81M	Lines: 03-7D, 58-10D, 58-12D, 58-14D, 58-110D

3 Review of geological framework

The overall geological framework remains unchanged since the licence award. The new wells have supported the common geological models and most likely have demonstrated the lateral depositional extension of the main Bryne reservoir zone (B2) over the PL 407 and PL 406 areas.

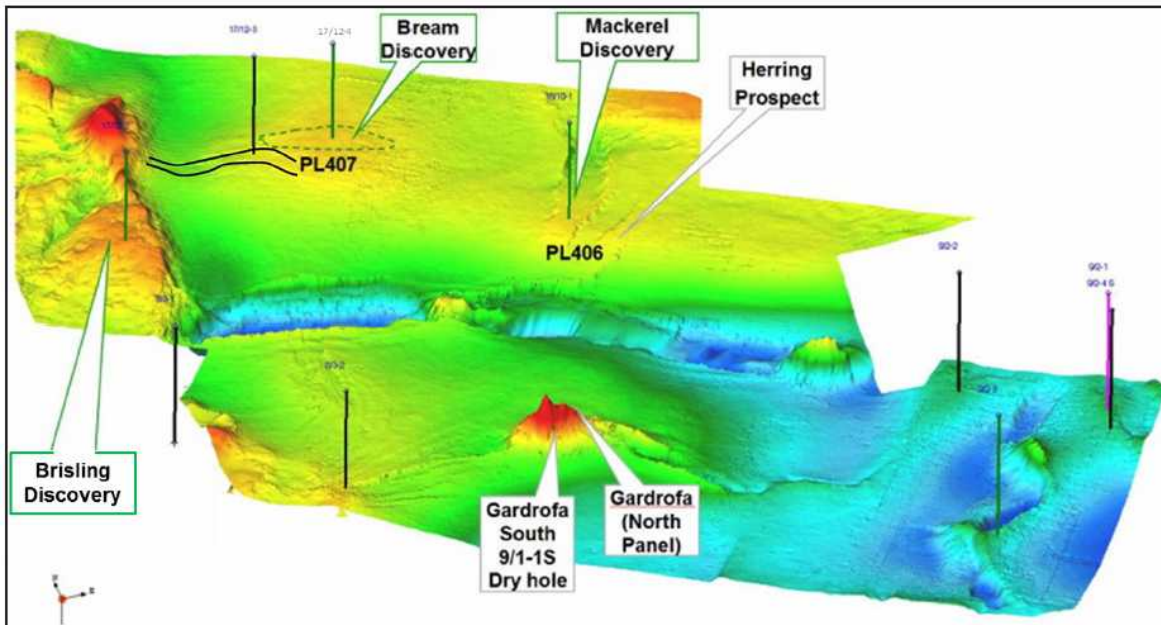


Figure 2: Bream (now Vette) area overview. Top Bryne Fm. depth map showing hydrocarbon accumulations, faults and local structure outline

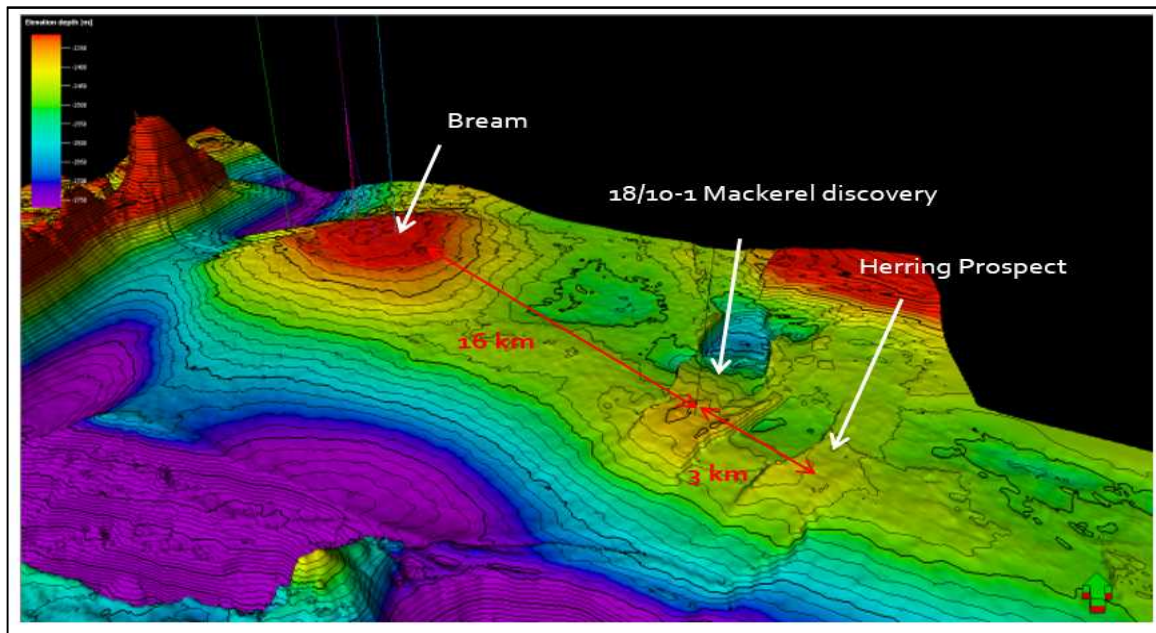


Figure 3: Top Bryne depth map showing the Bream (now Vette) and Mackerel discoveries and the Herring Prospect. The proposal was to tie Mackerel and a potential Herring discovery into a Vette field development.

3.1 PL 407 Vette

The 17/12-4 17/12-4 A and 17/12-4 B appraisal wells provided new information regarding the B2 reservoir. Interpretation of the wells showed the B2 reservoir to be somewhat laterally extensive and a DST in the 4A well demonstrated productivity from deviated wells. However due to the lack of PLT data, more thorough interpretation of the DST is limited.

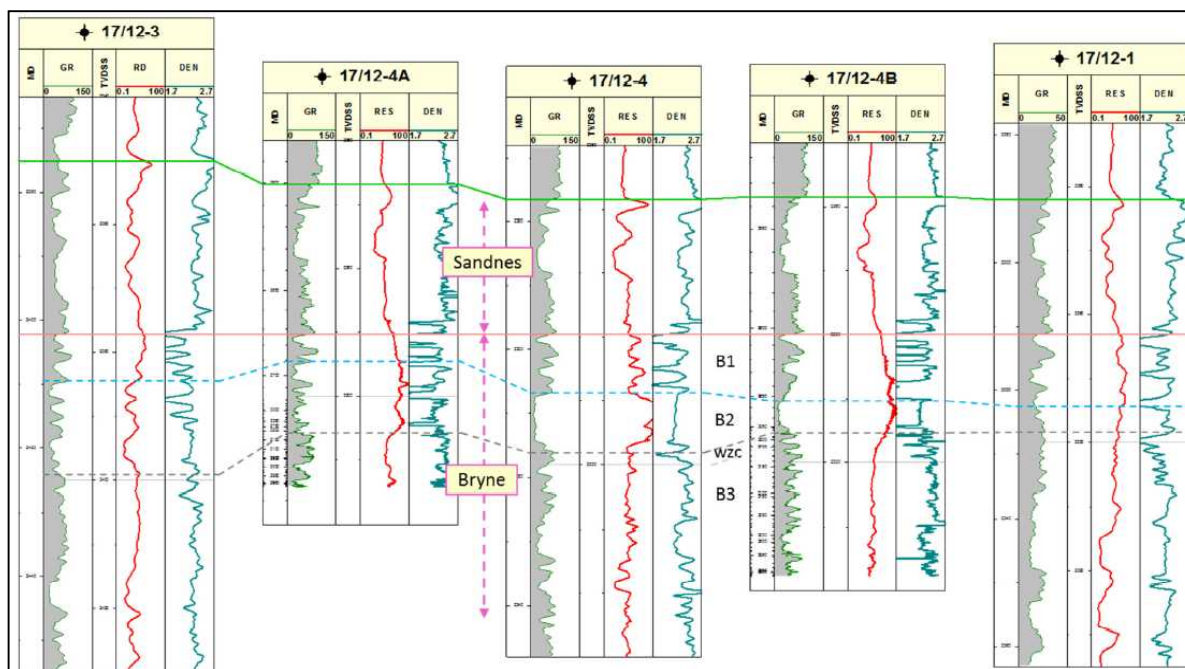


Figure 4: Well correlation of the Sandnes and Bryne Formations on Vette. The Bryne reservoir consists of heterolithic fluvial deposits dominated by thin sandstones and coal beds. Connectivity of these sandstones across the field is uncertain.

A new seismic dataset (MC3D-EGBRM13 PSDM) was purchased by the licence on the 22nd December 2015 as a result of a highlighted risk of poor reservoir connectivity.

The data has been evaluated and shows indication of more faults in the licence than previously interpreted. The effects of the faults on reservoir connectivity is inconclusive but as the net reservoir is on average 5 m thick this adds a considerable risk to recoverable reserves.

Reservoir simulation with the faults acting as barriers significantly reduce the recoverable reserves to close to 21 mmboc, and this value falls outside the uncertainty range from 2015.

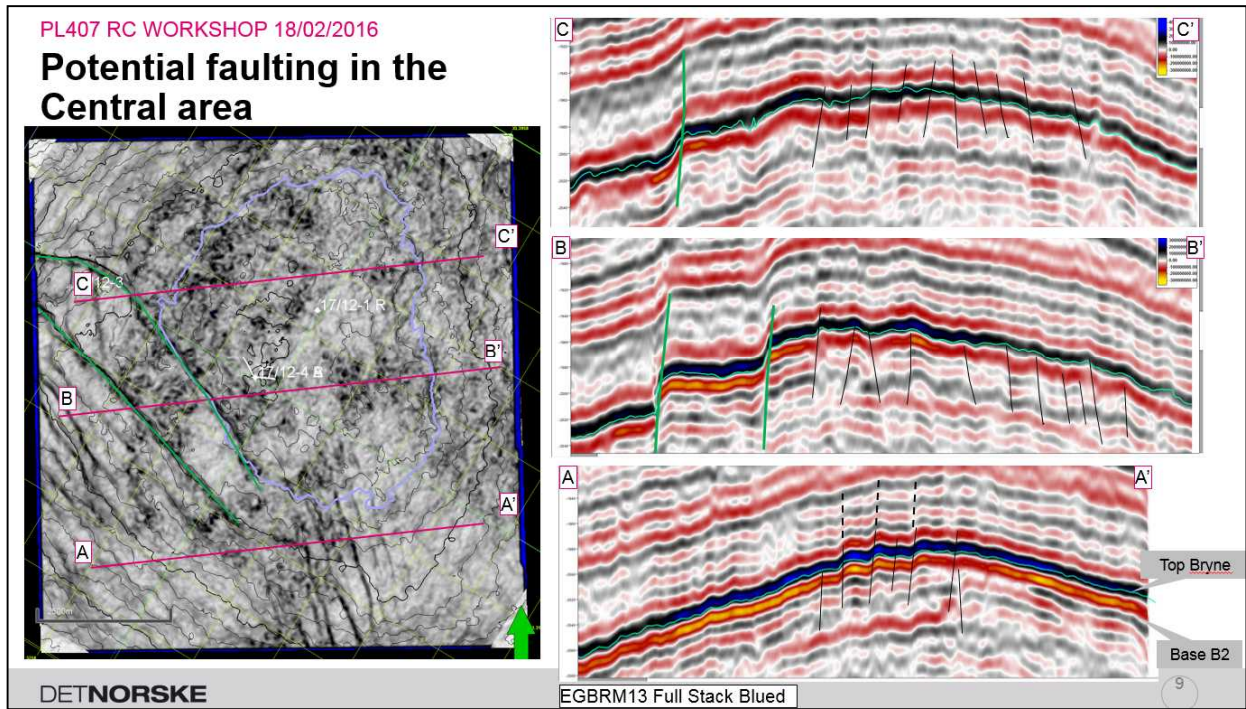


Figure 5: Newly purchased reprocessed seismic over Vette indicating the potential for more faults and more segmentation than previously evaluated on the Vette field.

Vette (pre- new seismic evaluation)	P90	P50	P10
STOIIP (mmbbls)	81	108	143
Technical Recoverable Reserves (mmboe)	35	50	66

Vette (post- new seismic evaluation)	Lowside	P50	Highside
STOIIP (mmbbls)	81	108	143
Technical Recoverable Reserves (mmboe)	21	45	66

Table 2 – Vette summary of estimated in-place oil volumes (mmbbls STOIIP) based on uncertainty evaluation in 2015 prior to purchase of the new reprocessed seismic in Dec 2015. There are additional and significant lowsides on recoverable reserves identified partially based on the new seismic. These link to geological scenarios with poor connectivity between the water injection and production wells or technical failure of the injection wells, impacting the recovery factor. Lowside recoverable reserves could be ~21 mmboe.

3.2 PL 406 Mackerel

The Mackerel (18/10-1) discovery comprises stacked fluvial channel sands of Middle Jurassic age (Bryne Fm.). On the basis of observations from log and seismic data the oil bearing interval can be broadly subdivided in two discrete Bryne Fm. Zones, Upper Member (B1) and Lower Member (B2 + B3).

Pressure data (RFT, XPT) indicate separation of the Upper and Lower intervals which is consistent with the increased potential for isolation with decreasing channel size and frequency. Between offset wells significant (>25 psi) differences between pressure trends suggests lateral as well as vertical separation.

The OWC is interpreted to be 2412 mTVDSS, defined by the abrupt decrease in saturations observed in core and calculated from logs. It should be noted that the potential for compartmentalisation and changes in rock quality adjacent to the contact (size of transition zone) have the potential to move the contact (up or down) away from the well control. This is significant since minor changes (+/->2m) have a measurable impact on the GRV and resultant resource estimate.

Mackerel	P90	P50	P10	Mean
STOIIIP (mmbbls)	15.3	20.2	26.8	20.7

Table 3 – Mackerel summary of estimated in-place oil volumes (mmbbls STOIIIP)

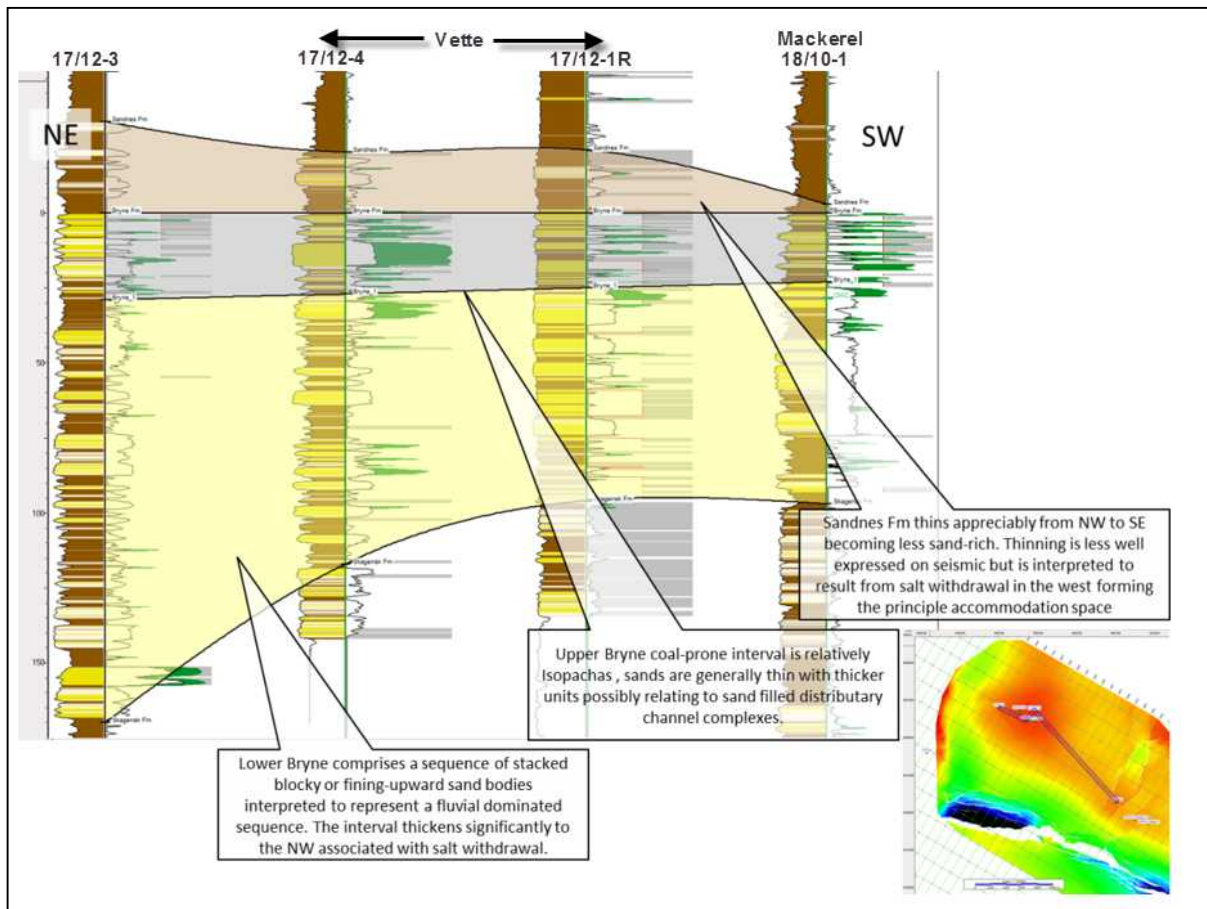


Figure 6: Well correlation from Vette to Mackerel fields to show the lateral changes in the Bryne and Sandnes formation (flattened on Top Bryne).

4 Prospect update

There has been a reduction in the PL 407 licence area to limit it to the Vette field. As a result there are no identified prospects within the licence. Within PL 406 there is one remaining prospect called Herring, a similar play to Mackerel and Vette.

4.1 PL 406 Herring

Herring is the adjacent closure to the south east of Mackerel. The structural configuration is similar, Herring has a central horst block, like Mackerel, but the ultimate structural spill is limited by the NE tip of only the western bounding fault. This larger 3-way fault closure covers a larger but low relief area. The low relief of this larger area results in little additional contribution to the in-place volumes since it comprises mostly the Upper Member poorer reservoir.

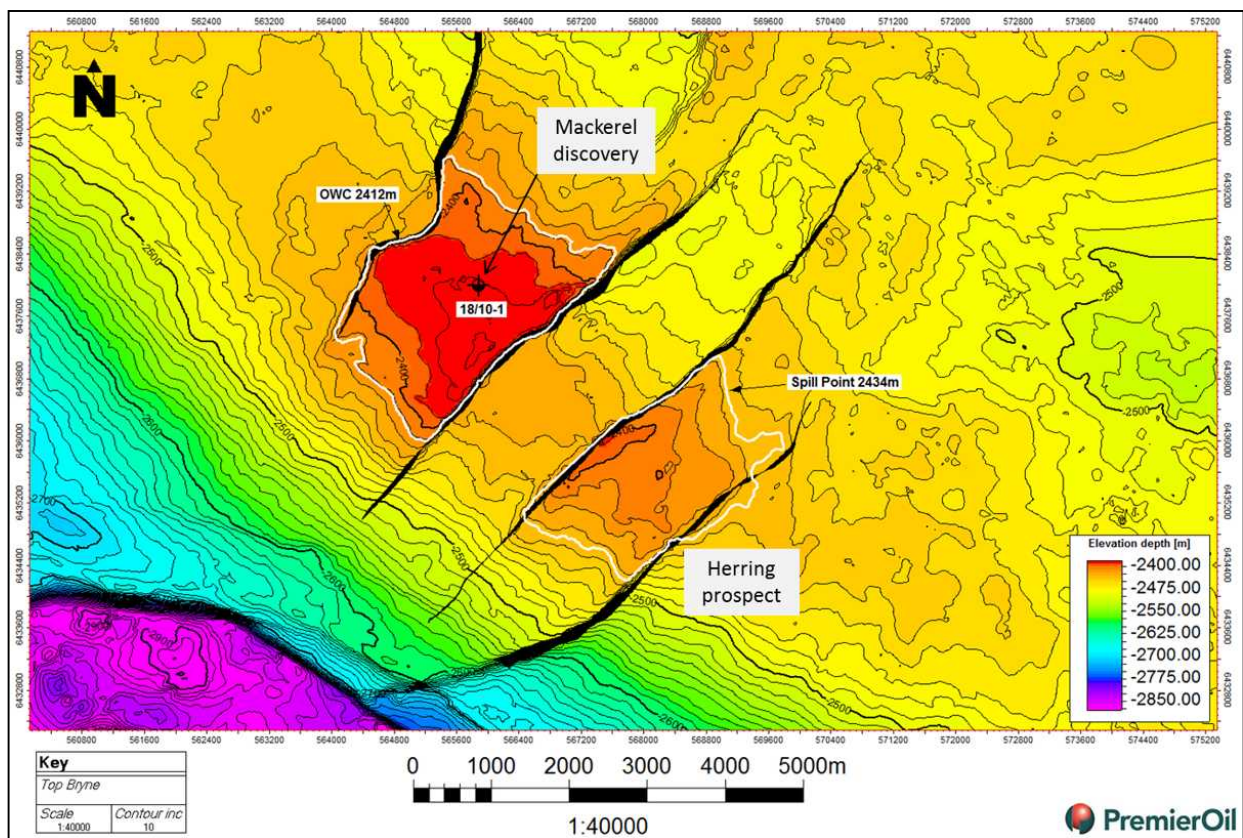


Figure 7: Top Bryne depth map with Mackerel discovery and Herring Prospect highlighted.

Model inputs for Herring are similar to Mackerel. However, there is a greater uncertainty in GRV. A range of column heights has been constructed relative to the interpreted fault seal capacity and ultimate structural spill point of each map – this assumes Mackerel is charged via Herring and fault seal is effective at least to the point of self-juxtaposition of the Top Bryne.

Herring STOIP (mmbbls)	P90	P50	P10	Mean
Upper Mb.	0.9	3.1	10.5	4.7
Lower Mb.	6.7	27.7	54.2	30.1

Table 4 – Herring summary of in-place oil volumes (mmbbs STOIP).

The probability of geological success is 63%. Charge is interpreted to be the key risk associated with the Herring structure. Modelling exercises suggest that Herring will most likely receive charge if there are source rocks present in the adjacent kitchen to the south, irrespective of spill to Mackerel or not.

There is a small risk on the reservoir effectiveness and the low relief of the Herring structure can result in a greater proportion of the Upper Member reservoirs being the hydrocarbon zone which are typically thinner and of poorer quality.

There are no other prospects in the licence.

5 Technical evaluation

5.1 PL407 Vette

An update of the Vette Field development with the Maersk Inspirer and Teekay Varg concept has been undertaken in February 2016. Based on the updated forward price assumptions and development costs, the Vette field development has been evaluated to be non-economical as a stand-alone development with the assessed reserves.

The success case reflects the P50 estimation of reserves inherited from the licence at the end of 2015 with updated cost and price assumptions. The failure case reflects lowside reserves as a result of poor reservoir connectivity and limited pressure support. This case had not previously been included in the uncertainty evaluation. The success and failure cases were both evaluated to be non-economical for the two evaluated concepts.

Figure 8: Technical economic evaluation of the Vette Field. Success case is based on the 2015 evaluation, the failure case from 2016 based on a scenario where the field is segmented and a consequential reduction in reserves. This failure scenario is linked to potential faults from the new seismic.

As an alternative concept to Maersk Inspirer and Teekay Varg, a jack-up used as wellhead platform was investigated. The model consisted of modifying an older jack-up drilling unit into wellhead carrying structures and production units. The concept contained major technical challenges that had to be resolved, but even with significant cost reductions compared to the other two concepts, it turned out to be a non-economically viable solution.

No recent technical evaluation of Mackerel or Herring has been performed given that Vette is shown to be non-economical.

6 Conclusion

The Vette field in PL 407 has shown to be non-economic under the current commercial scenarios and with the reserve estimates both in the success and the failure case. The licence period will end February 2017, and Mackerel and Herring rely on a tie-in to a development on Vette.

In conjunction with the “Agreement regarding Co-Ordination of Petroleum Activities in Production Licenses PL 406 and PL 407” it is hereby recommended to relinquish both PL 406 and PL 407.