PL 1195 – Licence status report

2025-024350

Summary

PL1195 was applied for and granted in APA 2022. The licence included acreage within block 6605/4, located 90 km southwest of the Aasta Hansteen field (Figure 1).

No wells have been drilled within the PL1195 acreage previously, but discoveries are made both to the north (Irpa, Obelix upflank) and to the southwest (Balderbrå) of the licence. All discoveries in the area have seismic DHIs and the same is to be expected if hydrocarbons are present within PL1195.

PL1195 has a somewhat different geological setting to the nearby discoveries. The only prospect in the area, Trubadurix, is a poorly defined pinch out trap. Hence, trap seal is regarded as the key risk in this area since thief sands can be present but are not mappable.

3D seismic data covers the entire licence acreage as well as reference discoveries. The seismic data are of sufficient quality for prospect evaluation and a potential uplift from further re-processing of the data is not expected to have a viable impact on the business decision. The OMV15M02 was the main seismic survey used to evaluate the prospectivity within the licence and the PGS23M02NWS fast track data was used to verify the results. The PGS23M02NWS fast track data was not a part of the licence common database, and the work done on it was done by the operator. The Trubadurix prospect has been mapped on the OMV15M02 and shown to have a partially depth conformed Amplitude anomaly. This anomaly is similar in character to the anomaly mapped on the new PGS23M02NWS fast track data seismic data. The nature of the anomaly means that the prospect does not have a DHI upgrade.

The volume potential of the Trubadurix prospect is regarded as feasible to be tied back to Aasta Hansteen as a part of a cluster development. However, the geographic location and limited volume potential mean that the Trubadurix prospect is currently not a candidate to any potential cluster development. Based on this, the PL1195 partnership did not see any timely development solution for the Trubadurix prospect and has unanimously decided to drop the licence.

Table of contents

Table of figures

1 Licence history

Licence:	1195	
Awarded:	17.02.2023	
Licence period:	17.02.2023-17.02.2025	
Licence group:	Equinor Energy AS	70 % (Operator)
	Harbour Energy Norge AS	30 %
Licence area:	192 km^2	

Work programme:
Geological and geophysical studies.
Drill or drop decision within 2 years from award.
Geological and geophysical evaluation of the prospect has been finalized. Work obligations are fulfilled within the drill or drop deadline 17.02.2025.

Meetings held:

30.03.2023	EC/MC startup meeting
23.11.2023	EC/MC meeting
21.11.2024	EC/MC meeting

Work performed:
Geological and geophysical evaluation of the Trubadurix prospect were conducted to fulfil licence obligations. The PGS23M02NWS fast track data 3D seismic data was studied in detail especially focusing on AVO assessment.

Reason for surrender:
The partnership has decided to relinquish the licence. The volume potential of the Trubadurix prospect is not large enough for a stand-alone development and it does not fit into to area development plans at this time.

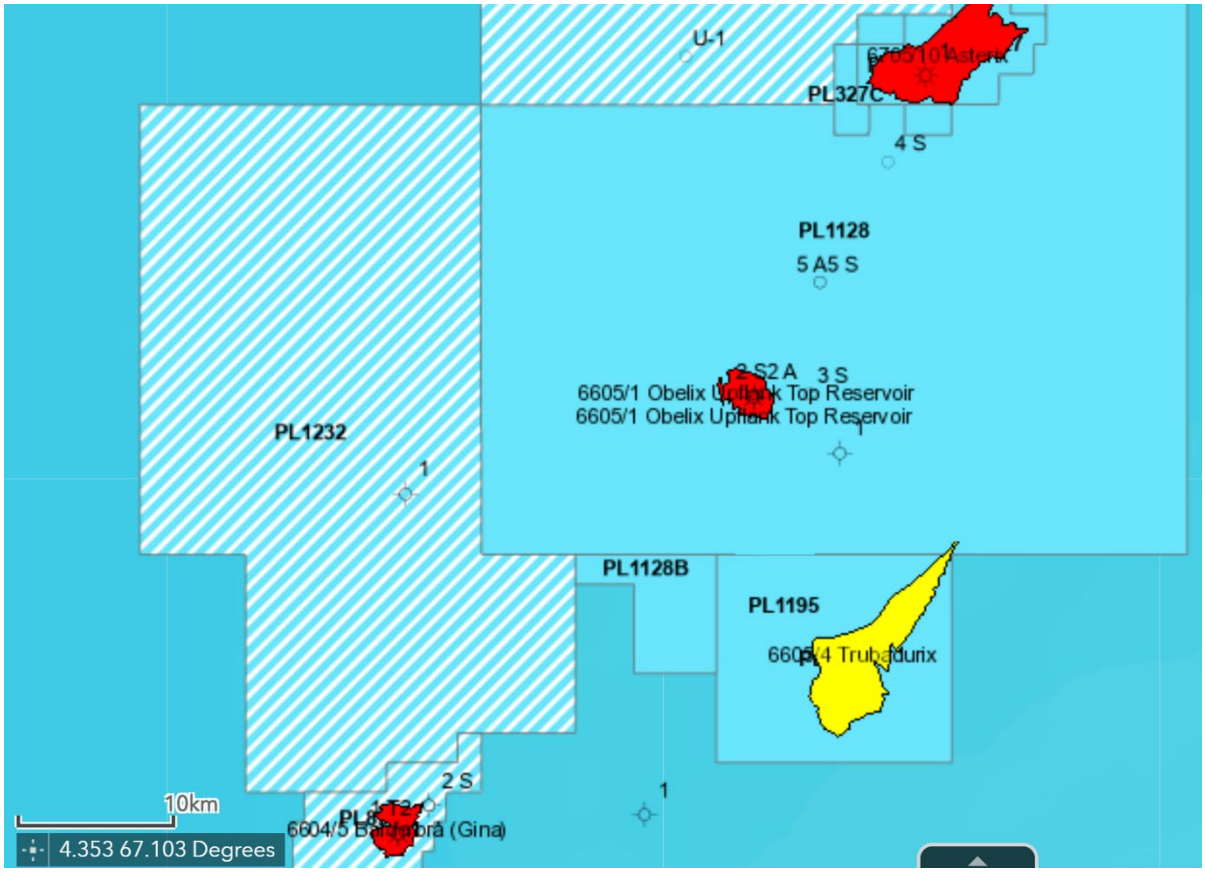

Figure 1 Licence map showing PL1195 and surrounding licences and discoveries. The only prospect, Trubadurix, in the licence is indicated by the yellow polygon.

2 Database overviews

2.1 Seismic data

The seismic database (Table 1) consists of released 2D data and two 3D-surveys covering the licence (Figure 2). The datasets OMV15M02 and WIN18M01 were the main seismic datasets used. In addition, the PGS23M02NWS_FT survey, that was not part of the common licence database, was used by the operator in the evaluation.

Table 1 Overview of 2D and 3D seismic database.

Seismic survey	Type	2D/3D	Year	Quality
OMV15M02	Full offset, angle stacks	3D	2015	Good
WIN18M01	Full offset, angle stacks	3D	2018	Good
PGS16004	Full offset, angle stacks	3D	2016	Good
ST0410	Full offset, angle stacks	3D	2010	Good
MNR07-402	Full offset	2D	2007	Good
MNR06-7365	Full offset	2D	2006	Good
MNR06-7360	Full offset	2D	2006	Good
MNR04R06-745207-402	Full offset	2D	2006	Good

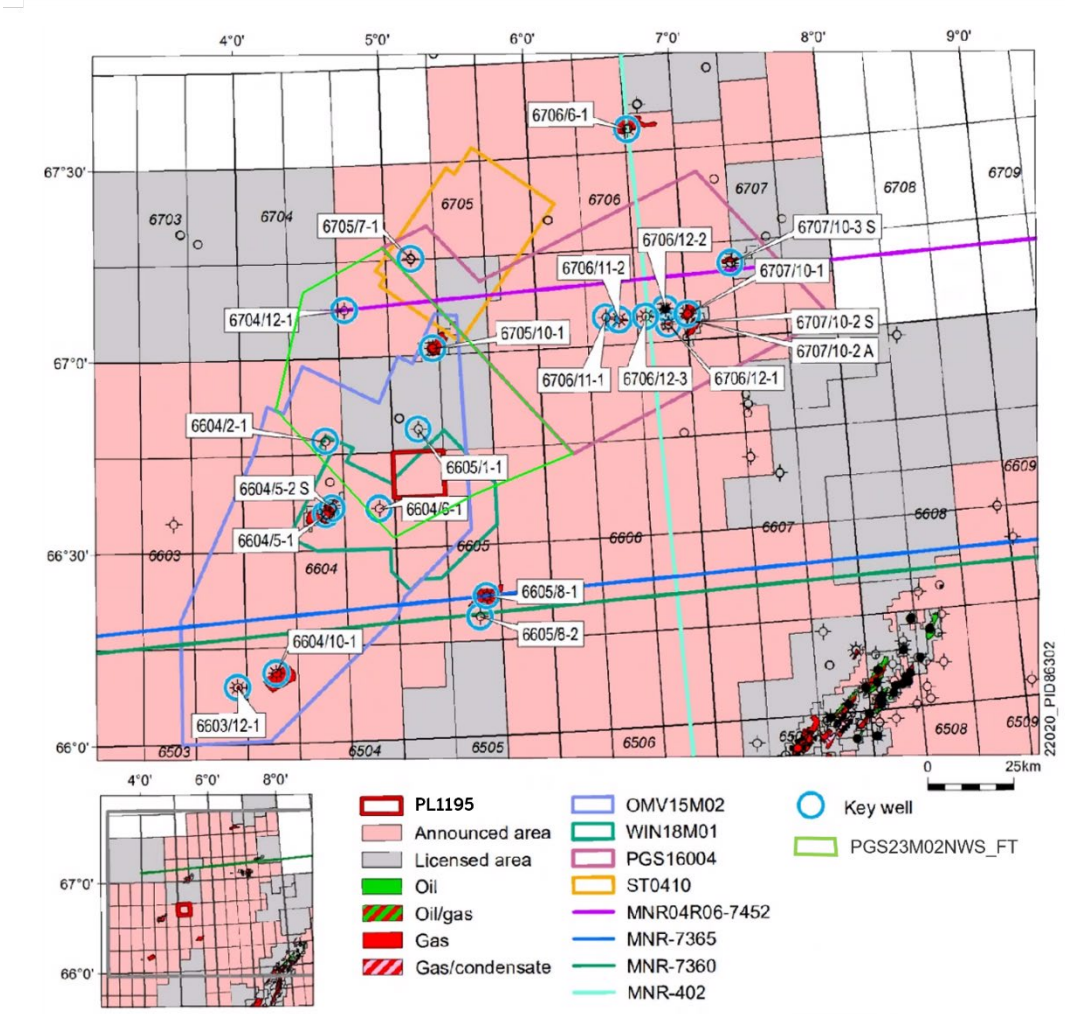

Figure 2 Map view of key 3D seismic surveys for PL1195. Key wells are marked.

2.2 Well data

The common well database consists of released proximal exploration wells on the same geological trend as the prospects. Discovery wells are drilled on the same geological play as is the main play model in PL1195. Since APA 2023, A new relevant drilled well is 6605/1-2 S, which proved gas in the same reservoir formation as make up the prospectivity in PL1195. In addition, the 6605/6-1S well was drilled but the data is not publicly available. The most relevant wells are 6705/10-1, and 6605/1-1 proving the working play model, including reservoirs, source and migration. All discoveries are covered by the same seismic surveys as PL1195, and hence, comparison and calibration of prospects towards reference wells can be done with large confidence.

Table 2 Overview of well database.

Well	Year	Operator	Well name	Status	Age at TD
6605/1-1	2009	Equinor AS	Obelix	Dry with shows	Late Cretaceous
6605/1-2 S	2022	Equinor AS	Obelix upflank	Gas	Late Cretaceous
6605/8-1	2005	Norsk Hydro	Stetind-1	Gas	Late Cretaceous
6605/8-2	2008	Equinor AS	Stetind-2	Dry	Late Cretaceous
6704/12-1	1999	Saga Petroleum	Gjallar	Gas	Late Cretaceous
6705/7-1	2017	Repsol Norge AS	Stordal	Dry	Late Cretaceous
6705/10-1	20}9	Equinor AS	Asterix	Gas	Late Cretaceous
6706/6-1	2003	Esso Exploration and production Norway AS	Hvitveis	gas	Late Cretaceous
6706/11-1	1998	Den norske stats oljeselskap a.s.	Ægir	Dry	Late Cretaceous
6706/11-2	2015	Equinor AS	Gymir	Gas	Late Cretaceous
6706/12-1	2008	Equinor AS	Aasta Hansteen/ Snefrid Sør	Gas	Late Cretaceous
6706/12-2	2015	Equinor AS	Aasta Hansteen/ Snefrid Nord	Gas	Late Cretaceous
6706/12-3	2015	Equinor AS	Roald Rygg	Gas	Late Cretaceous
6707/10-1	1997	BP Norway Limited U.A.	Aasta Hansteen/ Luva	Gas	Late Cretaceous
6707/10-2A	2008	Equinor AS	Aasta Hansteen/ Haklang West	Gas	Late Cretaceous
6707/10-2S	2008	Equinor AS	Aasta Hansteen/ Haklang	Gas	Late Cretaceous
6707/10-3S	2014	Centrica Resources	Ivory	Gas	Late Cretaceous

3 Results of geological and geophysical studies

The understanding of the prospectivity in PL1195 is briefly summarized in the section below.

Source and migration

A number of Cretaceous rocks have been shown to have source potential in the area. A significant gas generation potential has been observed for the Albian, Middle Cenomanian and Santonian/ Campanian successions. A fetch area analysis performed on the Top Springar Formation shows that the Trubadurix fetch area is small (166.5 km^2) but adequate to potentially fill the structure.
The Santonian Kvitnos Formation is presumed to be the main source rock in the fetch area of the Trubadurix prospect. The Kvitnos Formation is gas- to post-mature in the PL1195 area, based on modelled transformation ratio maps of the Coniacian to Danian succession.

Reservoir quality

Reservoir presence and quality are not regarded as high risk for the Trubadurix prospect. Regional sand fairway trends have been identified using amplitude analysis from seismic. Based on seismic interpretation and regional compilations, the suggested primary reservoir in the PL1195 licence is sandstone-rich submarine fans of the Maastrichtian age.

Several wells in the Vøring Basin have penetrated the Springar Formation reservoir. The Balderbrå well (6604/5-1) has confirmed the presence of a functioning reservoir associated with observed seismic amplitudes. The Trubadurix prospect is not believed to have been deeply buried and exposed to high temperatures for a prolonged period of time.

Within more distal reservoirs (as encountered in the Balderbrå and Gro discoveries), sandstones tend to be more fine-grained, even for sandstone-rich facies, or contain a higher percentage of clay-rich facies. Both of these factors result in lower-permeability reservoirs. This is believed to be the scenario for the Trubadurix prospect where grain size is expected to be similar to the 6604/5-1 and 6604/6-1 wells and facies are predicted to be similar or better than encountered in the wellbores. However, lateral facies variability is common in this type of reservoir and more clay-rich, low permeability sandstones may be encountered laterally across the prospect area. This possibility is captured in the low-side NTG, porosity and permeability ranges for the prospect.

Trap and seal

The Trubadurix prospect is a stratigraphic and structural closure with a poorly defined up-dip structural three-way trap.

The key risk for the Trubadurix prospect is trap seal integrity, since the prospect has a poorly defined updip pinch-out trap mechanism. In addition, hydrothermal vents and faults are observed within the prospect outline.

The regional top seal is provided by shales of the Springar Formation. Thick sequences of shale have been found in the closest wells Obelix (6605/1-1) and Gullstjerne (6604/6-1). Based on a conservative top seal capacity estimate, the entire structure might can hold a gas column of more than 600 m.

Geophysical studies

An AVO study of Trubadurix prospect was performed by using the WIN18M01 six angle stacks (0-48) for the APA 2022 application. A similar AVO workflow was done for the PGS23M02NWS fast track data by the operator.

The two seismic surveys show similar AVO anomalies that differ only in details. The Trubadurix prospect has a depth conformant AVO anomaly to the Northeast but to the Southwest there are bright amplitudes that cannot be explained by trapped hydrocarbons. This leads to a neutral DFI risking.

4 Prospect update report

The Trubadurix prospect has been reevaluated since the 2022 APA, giving a small decline in volumes and probability of success. The Trubadurix prospect is a single cycle sand without DFI uplift in an AVO driven play. In addition, the closing mechanism being an up dip pinch out is inherently high risk.

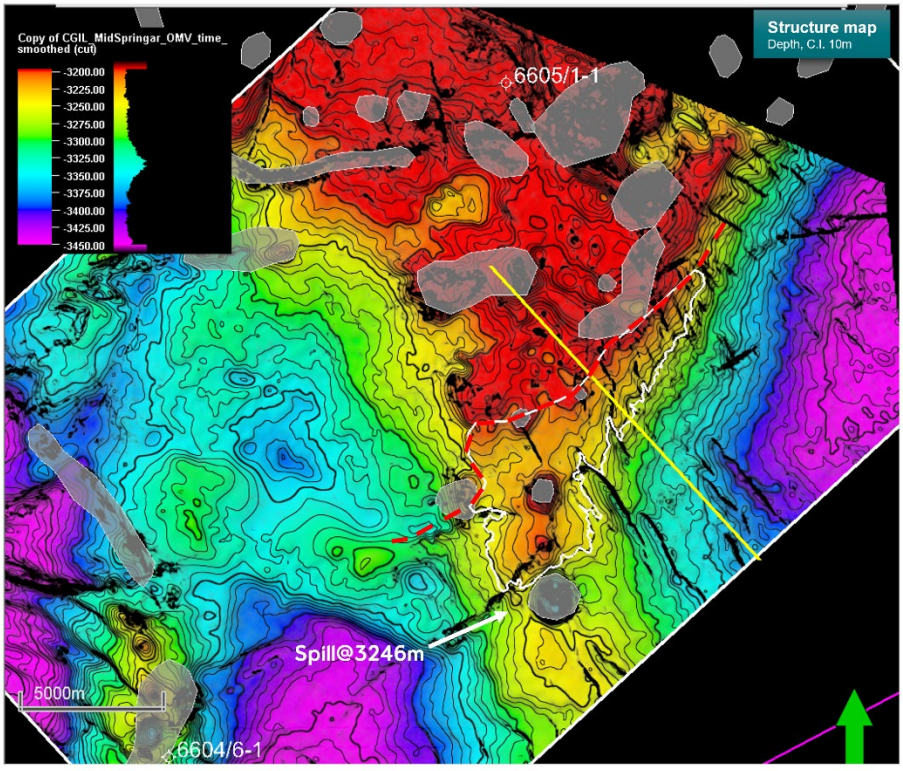

Figure 3 Structural depth map of top reservoir. Line increment is 10 meters. The white polygon is the Trubadurix prospect outline. The dashed red line is the pinch-out line, defining the northern boundary of the prospect. Grey polygons indicate vents mapped in the area.

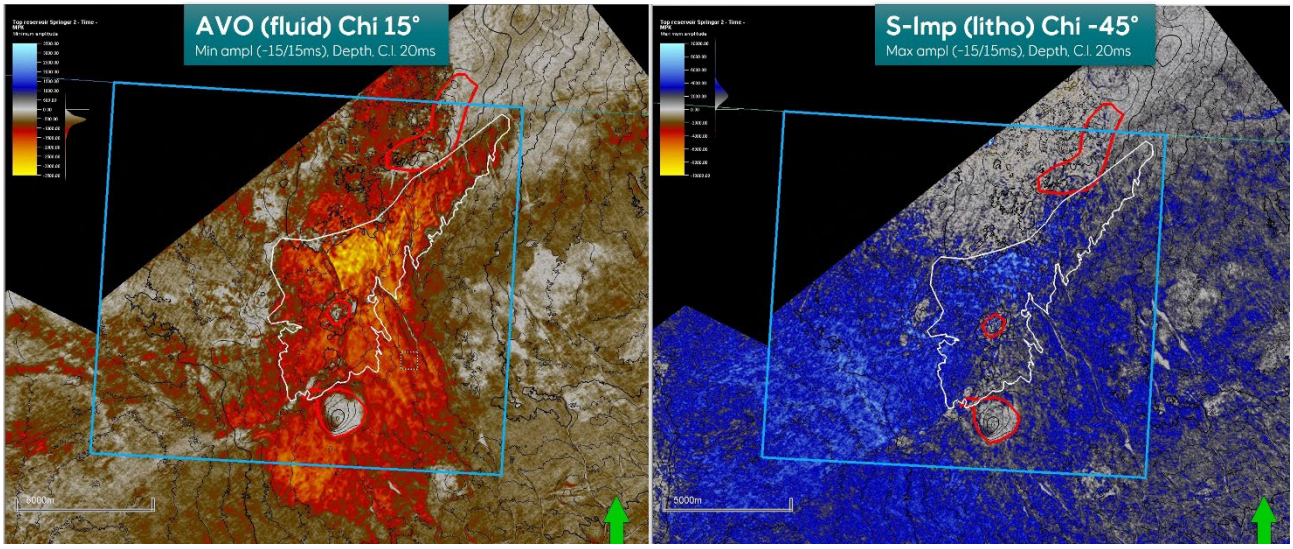

Figure 4 Structural depth maps with attribute overlay from the OMV15M02 seismic survey. Left: AVO (fluid). This map is indicating hydrocarbon presence. Right: S-Imp (litho) indicating presence of sandstones in blue. Both attribute extraction windows are +15m / -15m. The White outline in both maps correspond to the Trubadurix prospect.

Table 3 Overview of resource potential within PL1195

Prospect	**Lithostrat**	**Depth at apex** [m TVD MSL]	**HC phase**	**In place, gas** [GSm^3]			**Recoverable gas** [GSm^3]			**Pg** [%]
				P90	**Mean**	**P10**	**P90**	**Mean**	**P10**	
Trubadurix	Springar Fm.	3190	gas	1.79	6.24	11.7	0.97	3.49	6.65	23

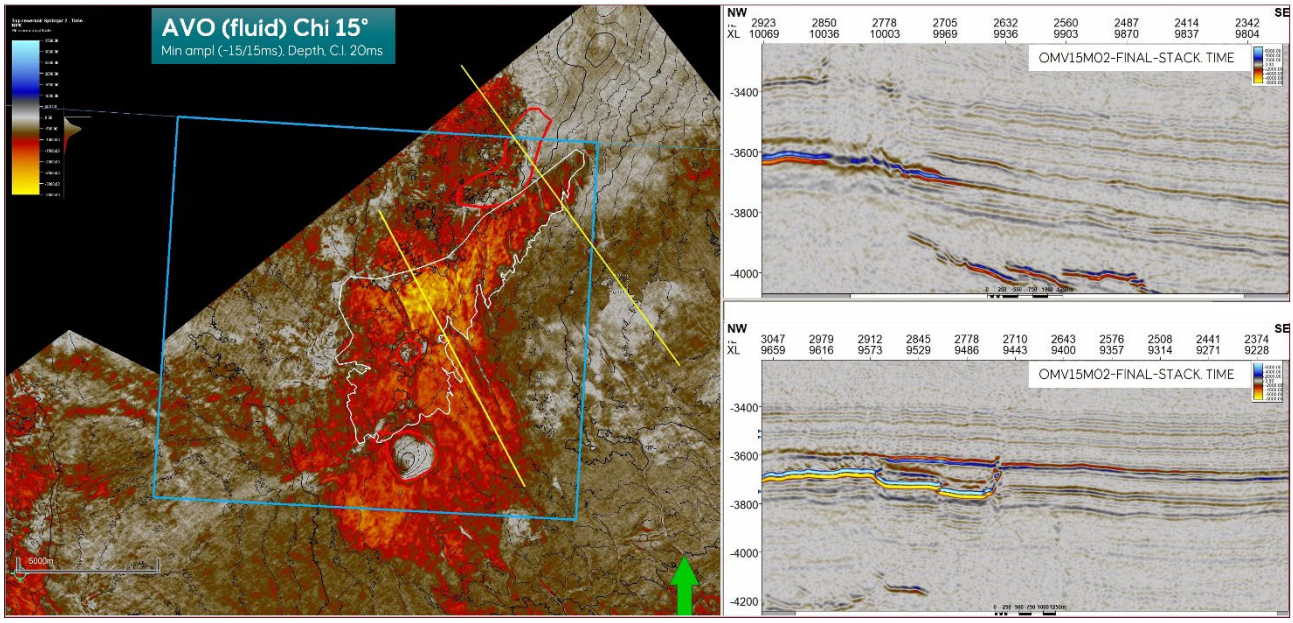

Figure 5 Trubadurix prospect. To the left is a structural depth map with AVO fluid cube attribute extraction overlay indicating potential hydrocarbons in red. The upper seismic line is from the full stack cube showing the partial amplitude conformance to depth, a vent and the pinch out to the northwest. The lower seismic line is from the full stack cube showing bright amplitudes within the closure and the pinch out to the northwest.

The main risk of the Trubadurix prospect is seal due to the high-risk nature of an up dip pinch out seal. While the new PGS23M02NWS fast track seismic data allows for a better mapping of the pinch out, this does not significantly reduce the risk of leakage.

The amplitude anomaly on the structure has not changed fundamentally but does seem to have a good depth conformance to the mapped spill along the southeastern part of the structure. The fact that there are large amplitude anomalies beyond the closure to the west means that the structure is seen as DHI neutral.

Additional prospectivity has not been identified within the licence.

5 Technical evaluation

Only a gas case has been evaluated for the Trubadurix prospect. The volume potential of the Trubadurix prospect is regarded as feasible to be tied back to Aasta Hansteen as a part of a cluster development. However, the geographic location and limited volume potential mean that the Trubadurix prospect is currently not a candidate for any potential cluster development.

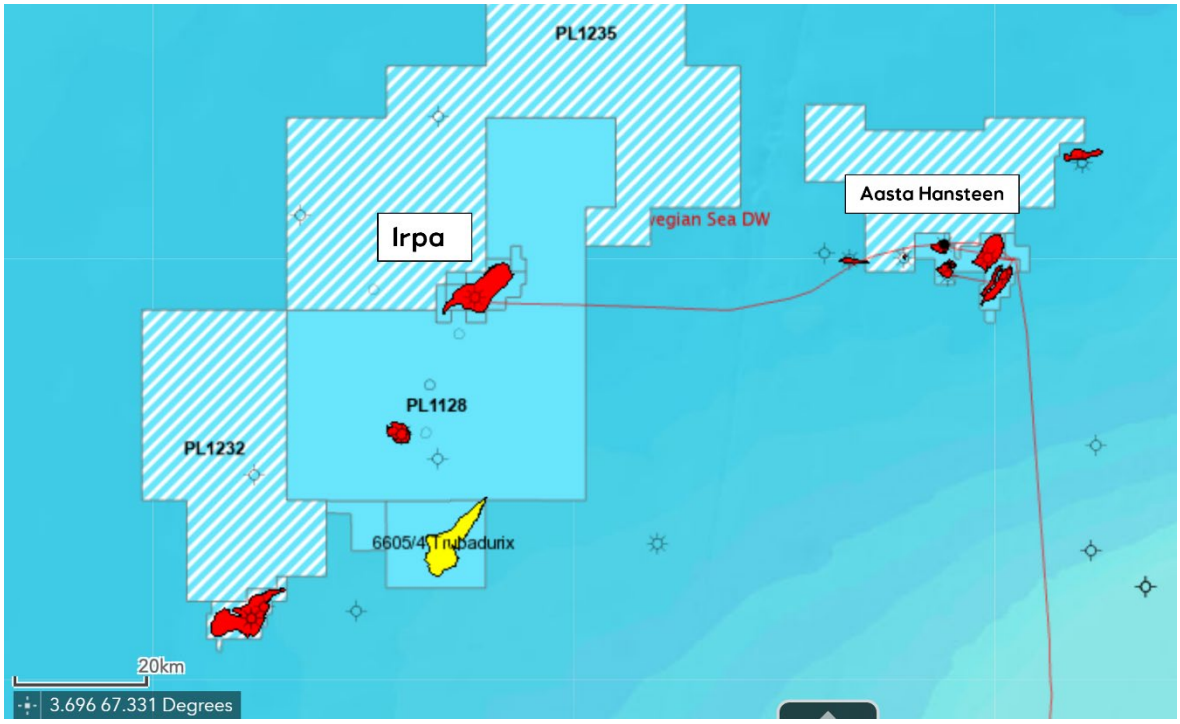

Figure 6 Infrastructure map showing the Trubadurix prospect in relation to The Irpa and Aasta Hansteen developments and the location of pipelines marked in red lines.

6 Conclusion

The licence partnership has unanimously decided to surrender the licence at the drill or drop decision deadline on 17.02.2025 due to the limited volume potential of the prospectivity within the licence and a missing line of sight for timely development in case of a discovery.

References

Equinor (2022). Application Part of blocks 6605/4 - APA2022, Norwegian continental shelf.

Appendices

1. Shapefile Trubadurix
2. NPD Table 5 Prospect data status-report-surrender – Trubadurix