

PL1065 relinquishment report

2021



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 vår energi

1 History of the production licence

- Awarded 14.02.2020
- Block 6507/3, 28.274 km²
- Vår Energi AS operator 40%, Equinor Energy AS 30% and PGNiG Upstream Norway AS 30%
- Work program:
 - Reprocessing of 3D seismic. Drill or drop decision by 14.02.2022
 - BoK 14.02.2024
 - BoV 14.02.2026
 - PDO 14.02.2027
- Management and Exploration committee meetings overview
 - MCEC meeting # 1: 06.05.2020
 - MCEC meeting # 2: 24.11.2020
 - MCEC meeting # 3: 22.06.2021
 - MCEC meeting # 4: 29.10.2021

The PL1065 license was awarded 14.02.2020 to Vår Energi AS, Equinor Energy AS and PGNiG Upstream Norway AS. Vår Energi was granted the operator-ship with 40% of the equity and the partners 30% each (Fig. 1.1).

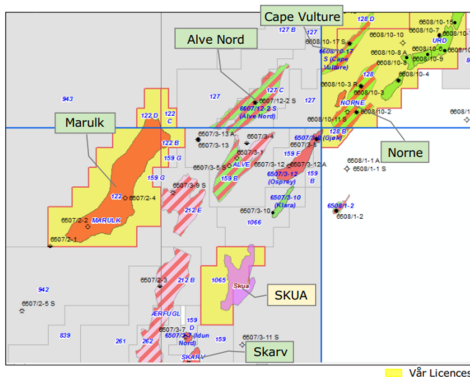


Fig. 1.1 License overview

The PL1065 license map with the Skua prospect APA outline.

The initial 2-year work program was to purchase new 3D seismic. PGS had acquired new broadband data in the area in 2016. The 237 km² PGS18M01-16909 dataset was purchased over the license area and further to the north to tie in to the Cape Vulture discovery well 6608/10-17S.

The PL1065 license was acquired based on one prospect called Skua identified in the Cretaceous Lange Formation. The Skua prospect was defined as an amplitude anomaly in a stratigraphic trap.

The new 3D seismic improved the resolution over the license, but the near angles was hampered with multiples. A reprocessing project was initiated to improve the imaging.

The Lange Fm sequence stratigraphic model suggest that the sands are deposited within a depositional wedge above the regional extensive Cenomanian Unconformity. However, in the licence area, the licence group finds it highly unlikely that this depositional wedge is present. The licence group recommends to relinquish the acreage.

2 Database overviews

2.1 Seismic data

The PL1065 license acquired 237km² of the PGS18M01-PGS16909 dataset (Fig. 2.1). The broadband data was Pre Stack Depth Migration of good quality albeit ringing noise on the near angles. For regional work the MegaSurvey consisting of released 3D seismic was used.

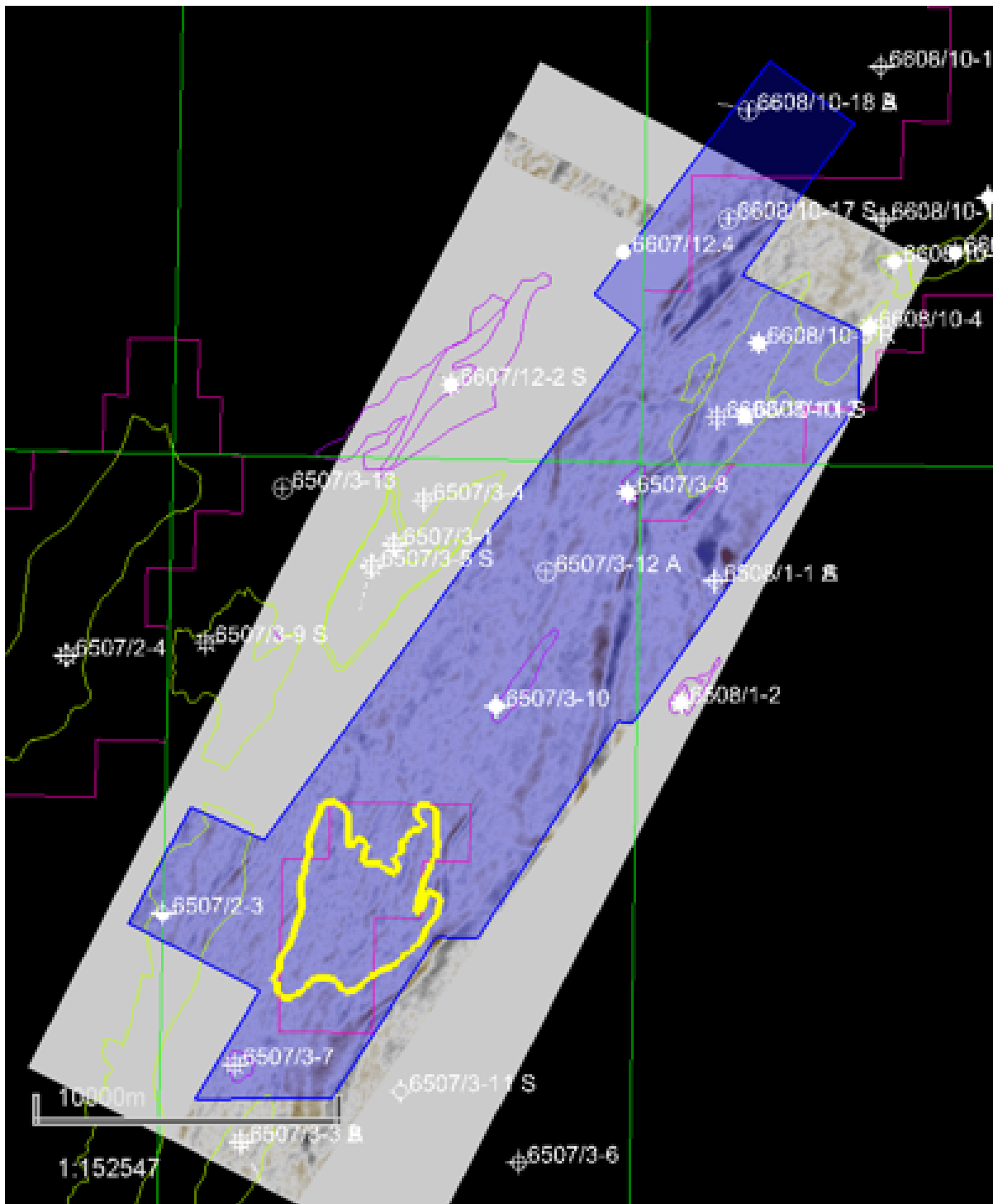


Fig. 2.1 Common seismic database

The Skua prospect outlined in yellow with the PL1065 outline in red. The blue polygon is the common database 3D seismic coverage.

2.2 Well data

List of all the wells in the common database with well name, status, completion date, production license, TD formation and reservoir unit with petroleum

Table 2.1 Well database

Wells	Status	Completion date	License (@today)	Stratigraphy @ TD	Reservoir with HC
6507/2-2	Gas	16.03.1992	PL122	Åre Fm	Lysing and Lange Fms
6507/2-3	Residual Oil	05.05.1994	PL262	Spekk	Lange Fm
6507/3-3	Gas shows	25.03.1999	PL159	Åre Fm	Lange Fm
6507/5-1	Oil	03.05.1998	PL212	Åre Fm	Lange Fm
6507/5-2	Dry	23.09.1999	PL212	Åre Fm	None
6507/5-4	Oil/ Condensate	15.04.2001	PL212	Åre Fm	Lange Fm
6507/6-2	Shows	16.07.1991	PL212	Åre Fm	Lange Fm
6507/3-10	Oil	13.08.2013	Open	Åre Fm	Jurassic
6607/12-2S	Gas/Oil	25.10.2011	PL127C	Åre Fm	Lange Fm
6607/12-3	Gas	26.12.2012	PL943	Åre Fm	Lange Fm
6608/10-12	Oil	12.12.2008	PL128	Åre Fm	Lysing Fm
6608/10-17S	Oil	31.01.2017	PL128	Spekk	Lange Fm
6608/10-18	Oil	17.08.2018	PL128D	Spekk	Lange Fm
6608/10-18A	Oil	15.09.2018	PL128D	Lange Fm	Lange Fm

3 Content of relinquishment report

3.1 Results of geological and geophysical studies

The Skua prospect was identified as an amplitude anomaly in the Lange Formation close to the Revfallet fault complex.

Semi-regional geology

The Skua prospect is located on the Dønna Terrace in the Norwegian Sea. The Dønna Terrace is a sub-structural element of the Vøring Basin to the west, and is separated from the Nordland Ridge to the east by the Revfallet Fault Complex, see Fig. 3.1. The terrace formed during the Mesozoic regional rifting, and has rotated fault blocks of the Middle- and Late Jurassic Fangst- and Viking groups overlain by the Cretaceous Lyr-, Lange- and Lysing formations (Fig. 3.2). During the Cretaceous, the receiving basin was effectively a southerly dipping half-graben ramp bounded by the Revfallet Fault Complex to the east.

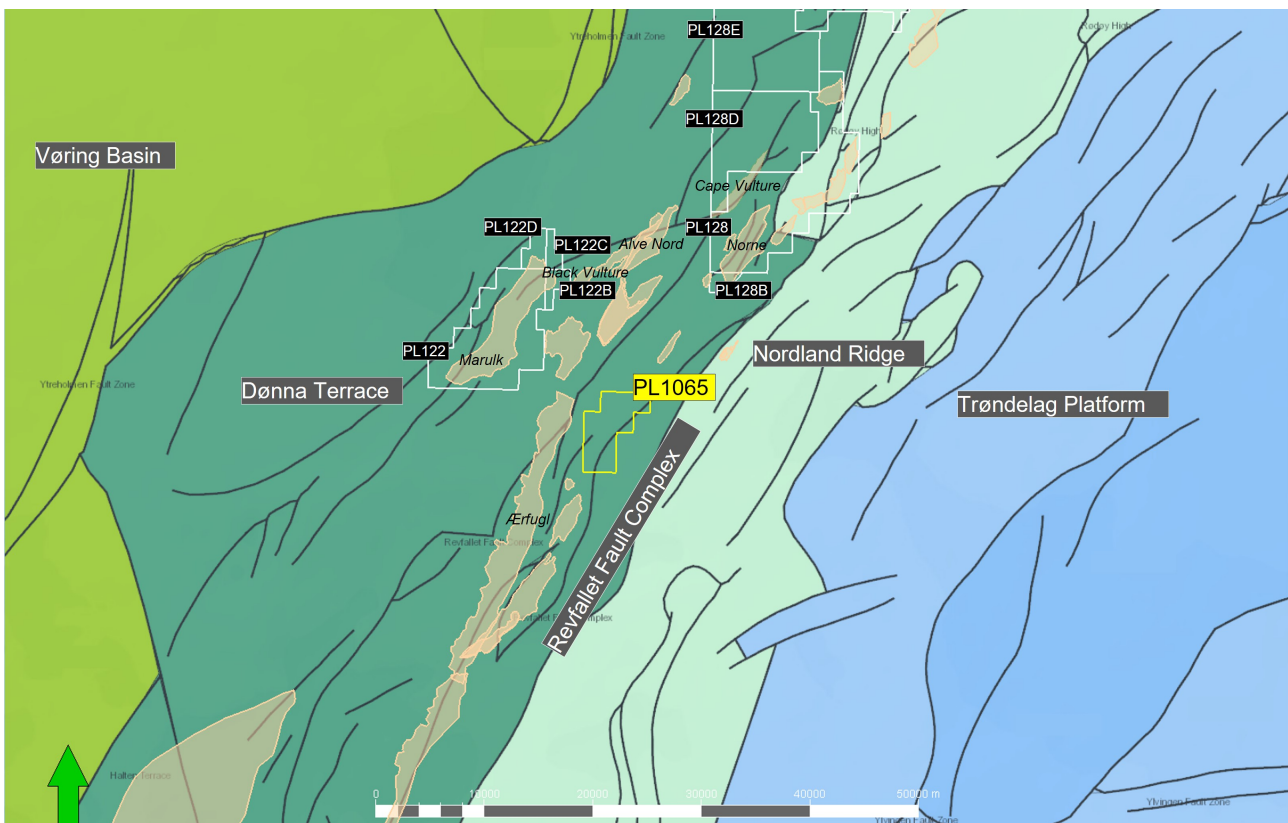


Fig. 3.1 Regional overview

PL1065 located on the Dønna Terrace east of the Marulk Field. PL1065 marked in yellow. Other Vår Energi licences marked in white. All discoveries in the area are marked in light orange.

LITOSTRATIGRAFISK DIAGRAM NORSKEHAVET

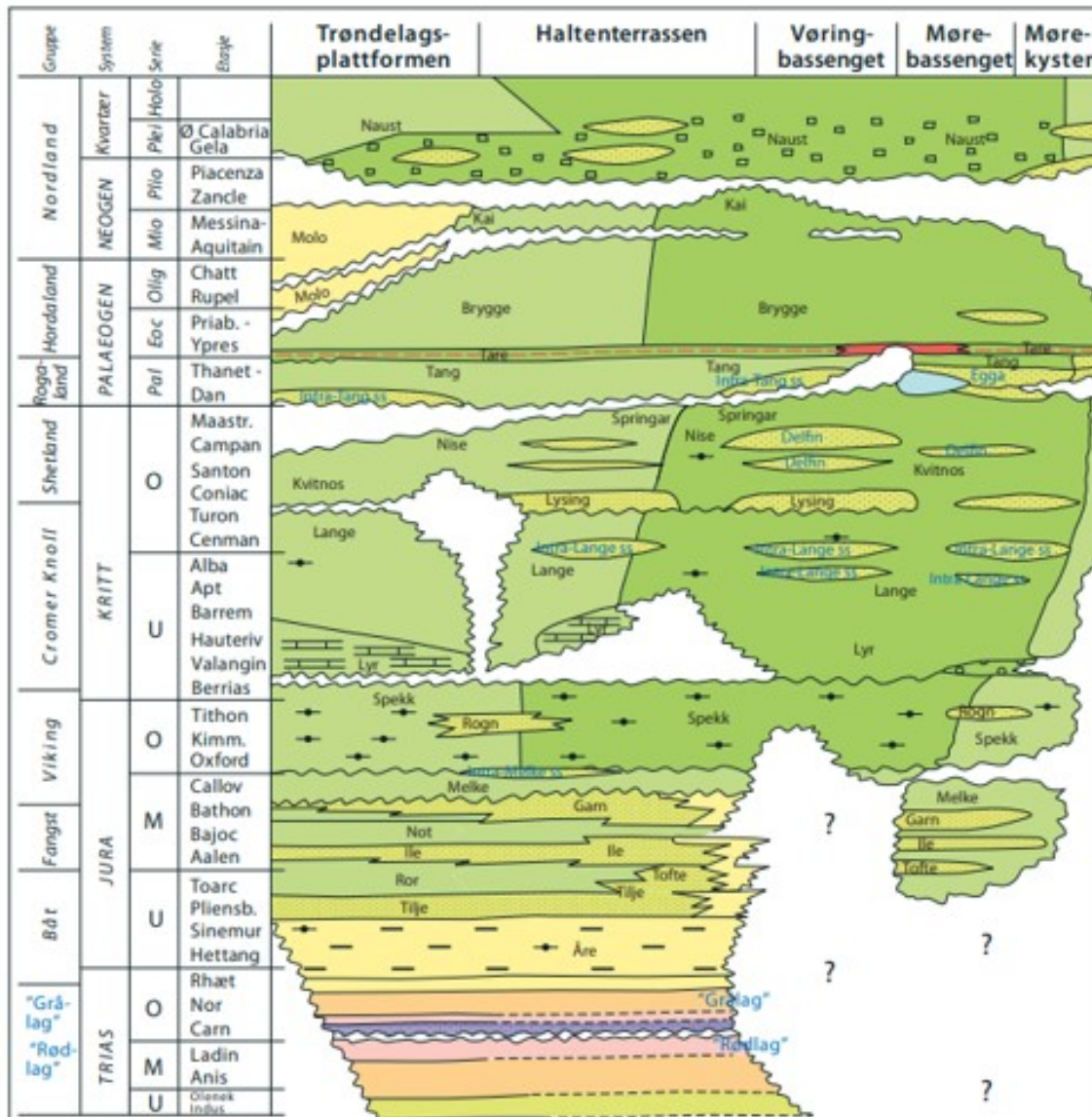


Fig. 3.2 Lithostratigraphic diagram Norwegian Sea
From NPD, 2014. The Lange Fm of the Cromer Knoll Gp deposited during the Lower Cretaceous, overlying the Lyr Fm and below the Lysing Fm.

The opening of the North Atlantic led to continuous uplift and erosion of the Nordland Ridge. The uplift led to extensive erosion of the subaerially exposed hinterland, and sediments were redistributed to the basin. These sediments are found above an unconformity, and are onlapping the unconformity surface towards the east. Biostratigraphy data indicates the unconformity to be Cenomanian of age. The sands were transported as gravity flows towards the basin, and are characterised by a series of point sourced intra-slope turbidite deposits, preferentially located in relay zone entry points which fed detached slope fans. Remnant rift topography forced associated gravity flows towards fault-controlled depocenters. The Lange sands are deposited within a lowstand progradational wedge above the unconformity at maximum regression.

As the sea level rises, the deposition of Lange Formation sands ends. Mostly muds are deposited during the following transgression phase. The Nordland Ridge was again partially flooded.

A new tectonic event took place in the Turonian, and the hinterland was uplifted yet again. The response was extensive erosion, and sediments were redistributed to the basin as gravity flows of the Lysing Formation.

Skua prospect

Based on the model above, the Lange Formation sands are located within the lowstand progradational wedge. As for the PL1065 Skua prospect, the wedge is located downflanks from the licence area (Fig. 3.3). Marulk, Black Vulture and Cape Vulture are located within this wedge, further west on the Dønna Terrace.

The provenance area is of most importance with regards to sediment source for the Skua prospect. Upflanks from the PL1065, Fangst group sediments are still present. This is a clear indicator of that during deposition of Lange Formation sands, the provenance area was not sand prone. The area was probably covered and protected by Viking Group sediments, Melke- and Spekk formations muds. Also, there is no relay ramp zone to focus the sediments towards the Skua licence. The most obvious area is to the north, however, this relay ramp does not focus the sediments towards the Skua prospect.

There is, however, some amplitudes in the licence area that needs some investigation. On top of the Skua anomaly, there is a hard event. The hard event is interpreted to be a hardground, which is a horizon cemented by precipitation of calcite just below the sea floor during sediment starvation. Hardgrounds often represent stratigraphic hiatuses (unconformities), as early lithification in fine-grained deposits can only develop during long abandonment periods. The licence area has probably been abandoned for quite some time, as the lowstand progradational wedge is located downflanks. The hardground corresponds to the Cenomanian Unconformity.

On top of the hardground, there is a laterally limited soft event. The shape and location of this leads to the interpretation of a barrier island/longshore bar/shoal feature. The anomaly is called the Butterfly lead.

Geophysics

In the APA application the Skua prospect amplitude anomaly was identified as a Class 2p Amplitude Vs Angle (AVA), the same as the analogue Cape Vulture discovery to the north (6608/10-17S). The PGS18M05-PGS16909 dataset is hampered with ringing noise on the near angles. The ringing noise may lead to a false Class 2p AVA anomaly where a hard multiple interfere with a soft primary event. Therefore the work program was to reprocess the seismic with focus on removing as much of the noise as possible without affect the primaries. A

comprehensive gather conditioning workflow was carried out. After the gathers was conditioned and most of the noise was removed, the Skua amplitude anomaly also disappeared (Fig. 3.3).

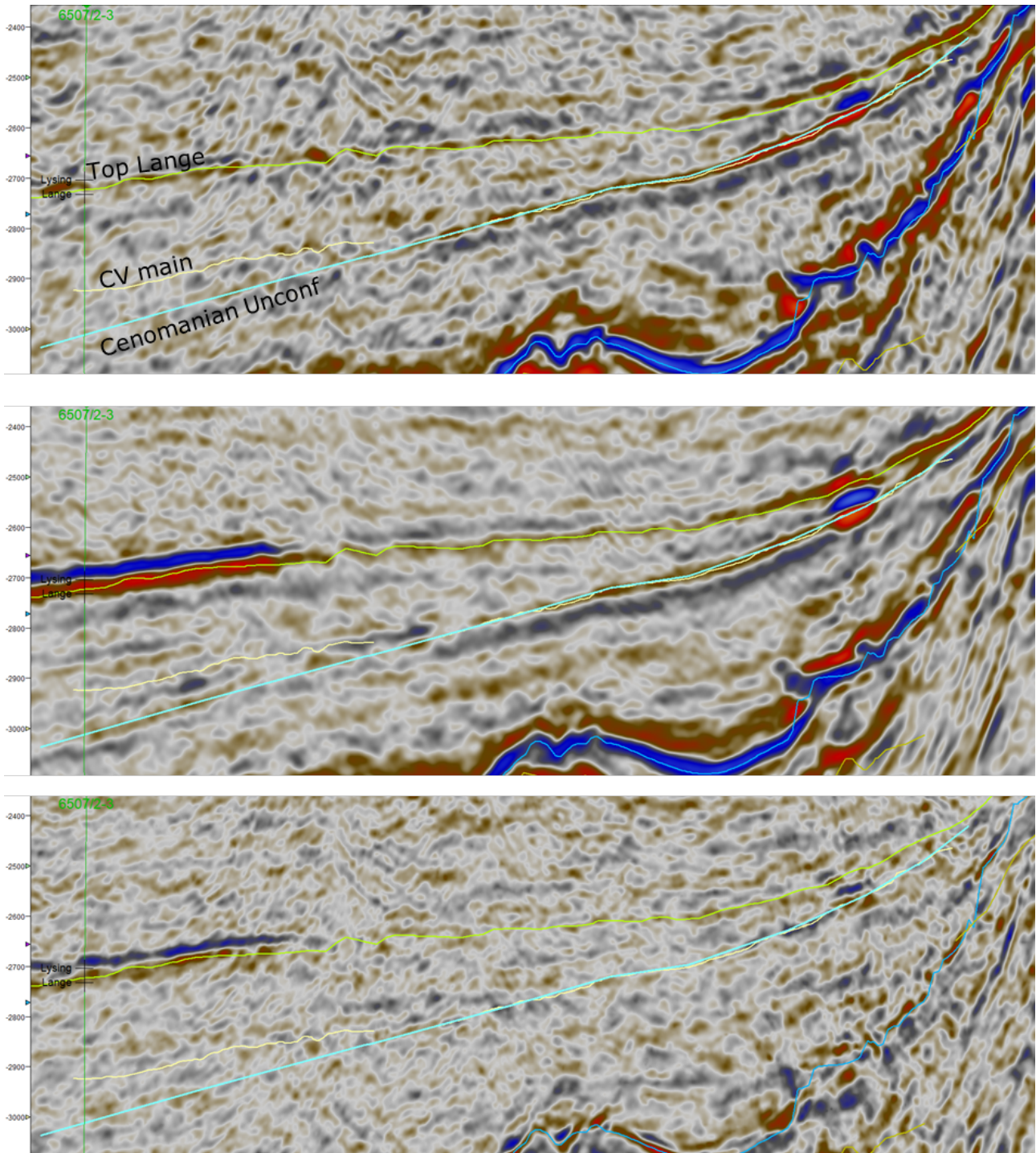


Fig. 3.3 Comparing near, far and gradient datasets.

A west to east time line going from the 6507/2-3 well across the PL1065 license. The top picture shows the near angle with Top Lange, Cape Vulture main sand time equivalent event and the hard Cenomanian Unconformity. The middle section is the far angle seismic and the bottom shows the gradient attribute. An increase in a acoustic impedance is a red peak.

Lowstand progradational wedge between the unconformity and the the Lange CV Main.

3.2 Technical assessment

The prospect evaluation has shown that the Skua prospect no longer exist. Thus, a technical assessment is not valid.

4 Prospect update report

The result of the geological and geophysical evaluation the Skua prospect no longer exists.

5 Conclusion

Based on the technical work done in the PL1065 licenses the partner group has decided to relinquish the area.

The prospect evaluation has shown that the chance of having Lange Fm turbidite sands deposited in the Skua prospect above the Cenomanian Unconformity is very unlikely. The seismic data analysis supports the geological observation. There is not an AVA anomaly where the Skua prospect was identified. The reason the AVA Class 2p anomaly disappeared is related to noise on the near angle overlapped with a soft primary. Removing most of the near angle noise in the data also took the Class 2p AVA response away.