



TOTAL E&P NORGE AS

Konfidensielt – Unntatt offentlighet

Oljedirektoratet
Postboks 600
4003 Stavanger

Deres dato:

Deres ref.:

Vår ref.:
1088780

Vår dato:

Stavanger, 8. februar 2017

Vedrørende utvinningstillatelsene 760/760B/760C

Det refereres til utvinningstillatelsene 760, 760B og 760C, tildelt henholdsvis den 7. februar 2014, 6. februar 2015 og 5. februar 2016.

Videre vises det til brev fra Total på vegne av rettighetshaverne i de nevnte lisensene datert 30. desember 2016 hvor det varsles om at en borebeslutning ikke har blitt tatt og lisensene dermed leveres tilbake.

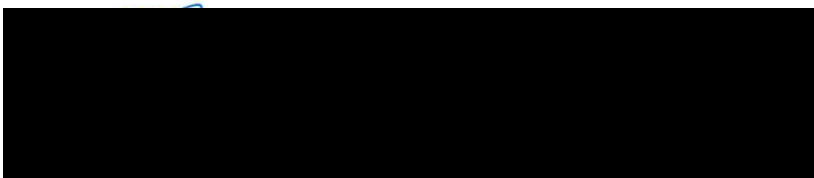
Interessentskapet har siden 30. oktober 2015 bestått av:

TOTAL E&P NORGE AS	50%
Lime Petroleum Norway AS	50%

I medhold av utvinningstillatelsen punkt 4 i) oversendes statusrapport til Oljedirektoratet (vedlagt). Med dette anses myndighetsforpliktelser for rettighetshaverne i utvinningstillatelse nr. 760/760B/760C å være oppfylt i sin helhet.

Dersom det skulle være behov for ytterligere opplysninger, vennligst ta kontakt med Kristine Holm (Tlf.: 51 50 38 12, epost: kristine.holm@total.com)

Vennlig hilsen
TOTAL E&P NORGE AS



Kopi: Olje og Energidepartementet v/ Lars Jakob Alveberg

Vedlegg: PL760/B/C relinquishment report
PL760/B/C relinquishment report figures

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PL760/B/C Relinquishment Report

08.02.2017

1. KEY LICENSE HISTORY

PL760 was awarded 7 February 2014 as part of APA2013 to Total E&P Norge (50%, operator), and EnQuest Norge (50%) with a work commitment of seismic reprocessing and Drill or Drop date of 7 February 2016.

The work program was completed. PSDM reprocessing was carried out on 934km² (output area) of the seismic survey MC3D-DTW2000. This was completed in May 2015. There was good improvement, notably the structural image was improved, and the resultant gathers were suitable for AVO analysis.

Two extensions were applied for and awarded. PL760B (to cover lateral extension of the Karaburan prospect) was awarded 6 February 2015 as part of APA2014. PL760C (to cover lateral extension of the Sirocco prospect) was awarded 5 February 2016 as part of APA2015. Both extension areas shared the original PL760 work program and deadlines. On 30 October 2015 the 50% interest in the license was transferred from EnQuest Norge AS to Lime Petroleum Norway AS.

An application for a 1 year extension of the drill-or-drop date was submitted on August 31st, 2015. An extension of the drill-or-drop date by 6 months, from February 7th 2016 to August 7th, 2016 was granted and communicated by the MPE on October 20th, 2015.

Based on the challenging situation with a need for use of existing infrastructure, joint development with other licenses and a lack of available export capacity, the license owners applied, on July 1st, 2016, for a longer extension of all work obligations. The extension was based on what the license owners saw as a realistic development timeline, given the export capacity situation and existing infrastructure uncertainties.

On December 7th, 2016, the license owners were notified by the MPE that the application had not been granted, however an effective date of December 31st, 2016 was given for a final drill decision.

The license partners unanimously agreed that they were not ready to make a drill decision and hence it was decided to drop the licence. A relinquishment notification letter was sent to the MPE on December 30th.

The table below summarizes the license meeting schedule during the license timeframe:

Date	Meeting			Comments
	MC	EC	WM	
04.03.2014	x			
18.11.2014	x	x		Combined MC & EC
04.06.2015	x	x		Combined MC & EC
17.11.2015	x	x		Combined MC & EC
10.03.2016		x	x	
07.06.2016	x	x		
23.11.2016	x	x		Not held due to drop

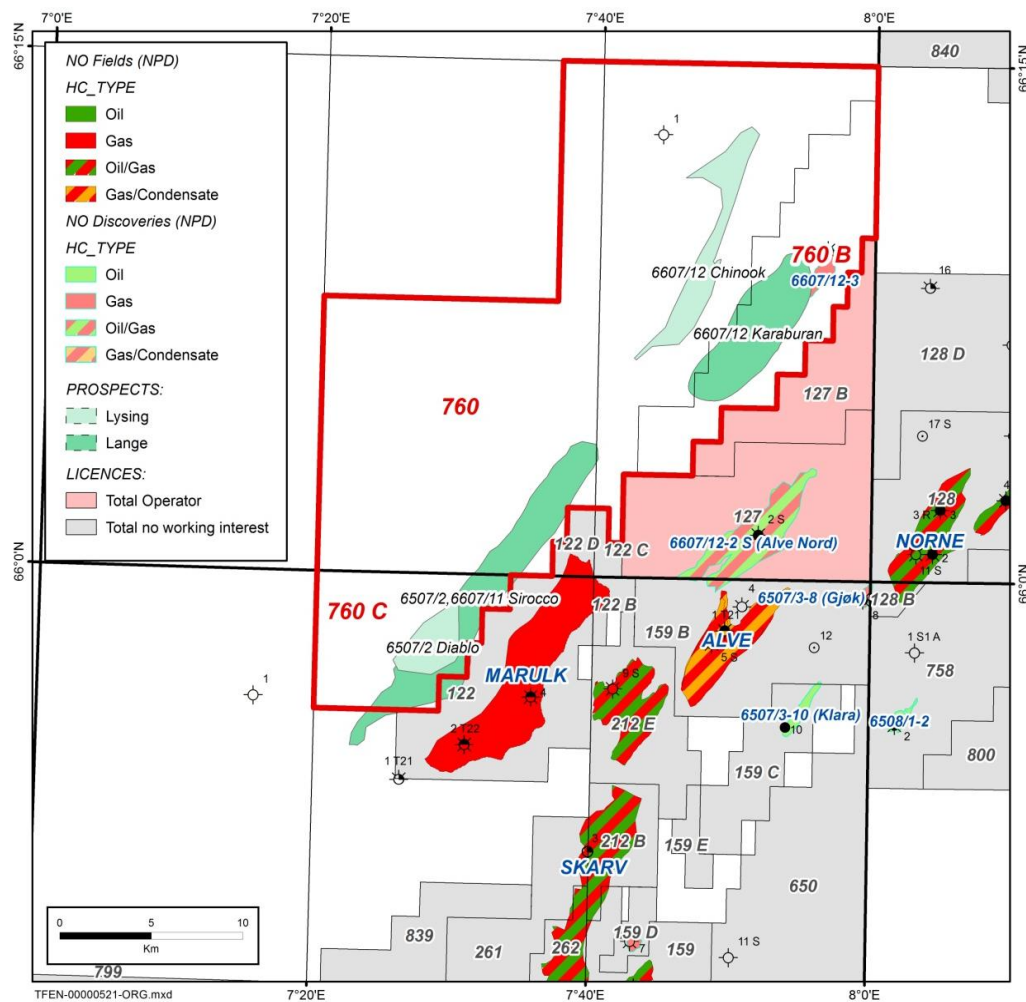
2. DATABASE

The common license database (**Figure 1**), agreed by the license partners, consists full-stack data for the MC3D-DTW2000 survey (entire survey 2332 km²), and angle stacks and raw data for the reprocessed (2014) area of 934 km²). Additionally 12 wells were included in the agreed common license database (**Figure 1**).

3. REVIEW OF GEOLOGICAL FRAMEWORK

The identified prospectivity at the outset of the license from the partner companies was presented at the first MC meeting. Key prospectivity was identified at Cretaceous Lange and Lysing levels (Diablo, Karaburan, and Chinook), with several leads.

The license area is located in the Dønna Terrace. The main reservoirs consist of locally deposited turbidite sands of the Lange and Lysing Formations, with the sands most likely sourced from the uplifted Nordland Ridge to the SE. All prospects are partly or purely stratigraphic traps relying on the pinchout at the onlaps of the Lysing and Lange sands. Lateral seal is the key risk for all prospects.



4. PROSPECT UPDATE

Sirocco prospect

Sirocco was identified as a lead at the time of the award, but subsequent work in the license resulted in it being upgraded to a prospect.

The Sirocco prospect (**Figure 2**) is a stratigraphic-structural trap of a Lange turbidite sand. Turbidite sands of the Lange Fm were deposited in an actively rifting environment with sand deposition topographically controlled, in part. The Lange onlaps onto the tilted Albian-Cenomanian unconformity, and a strong amplitude anomaly indicates, most likely, a local sand body near the onlap. Whether the amplitude and corresponding AVO represent lithological effect or also, in part, fluid effects is not well understood.

The Sirocco prospect is downthrown against a large fault to the east, and is stratigraphically trapped along strike to the NE around the fault tip. The main risk for Sirocco is lateral seal, due to this configuration. The Sirocco prospect is evaluated as a gas-condensate prospect with an unrisks mean volume of 63Mboe, and a geological risk (Pg) of 38%. The evaluation is summarized in the table below:

	mini (P90)	P50	maxi (P10)
GRV (km3)	937	1359	1840
GWC (m/msl)	4500	4550	4600
column height (m)	300	350	400
porosity (%)	8	13	18
N/G (%)	0,30	0,50	0,72
gas saturation (%)	50	65	80
1/Bg	275	300	325
GCR (m3/m3)	2000	3300	10000
recovery factor gas	40	60	75
recovery factor condensate	15	25	40

Sirocco Volumes	mini (P90)	P50	maxi (P10)	mean
recoverable resources (M boe)	32	59	100	63

RISK	
Source	100 %
Migration	100 %
Reservoir	80 %
Geometry	80 %
Seal	60 %
POS	38 %

Diablo prospect

Diablo was the main interest of the license for the original APA application. It is a stratigraphic trap in the Lysing Fm, downdip from the Marulk field. Amplitudes in the Lysing indicate sand presence, this is confirmed by the 2004 Chevron well 6507/1-1 well which drilled a thick but wet Lysing sand near to Diablo (a petrophysical study carried out by the license confirmed this interpretation, which was uncertain due to the limited log suite in the reservoir interval). The Diablo trap was defined by a large indentation in the Lysing pinch-out which, combined with a fault, allowed a potentially large volume to the NE of the indentation (**Figure 3**). Subsequent interpretation found that this was an artifact, a shadow under a glacial moraine at seafloor. The re-interpreted, much smaller, pinch-out defines only a very small volume. With updated mapping the prospect has a unrisksed mean resource of 6Mboe.

Karaburan prospect

Karaburan is an area of slightly brighter amplitude in the Lange, at the level of the Lange sands encountered in the Marulk wells, downdip from its onlap onto the Albian-Cenomanian unconformity (**Figure 4**). There is no sand at this level in the 6607/12-3T2 well to the East, although this could have been a bathymetric high. Karaburan amplitude is not associated with along strike closure, and is interpreted to be related to lithology. The prospect has an unrisksed mean resource of 31Mboe, with Pg 13%.

Chinook prospect

Chinook is a large downthrown fault block with weak amplitudes at Lysing level associated with possible sand presence (**Figure 5**). Amplitudes are not conform with structure and are interpreted as indicating

sand presence. The Lysing is juxtaposed with Lange sands across the fault. The prospect has a unrisked mean resource of 94Mboe but is very high risk with Pg<10% (critical risk on seal).

5. TECHNICAL EVALUATIONS

Prospectivity analysis of the license indicated only one prospect of interesting size and acceptable risk. This is well below the possible size for a stand-alone development. The most likely host for an eventual Sirocco discovery is at Norne. Commercial studies looked at the possible development of Sirocco tied-back to Alve North, and on to Norne. At present the economy of this arrangement is not sufficient to justify a drill decision on Sirocco.

6. CONCLUSIONS

As a result of the license work, the PL760/B/C partners have concluded that there is not sufficient economical basis to undertake a drill decision, and the unanimous decision was to drop the license at the revised Drill or Drop deadline of 31 December 2016.

Attachments:

Figure 1 – PL760 Common license database

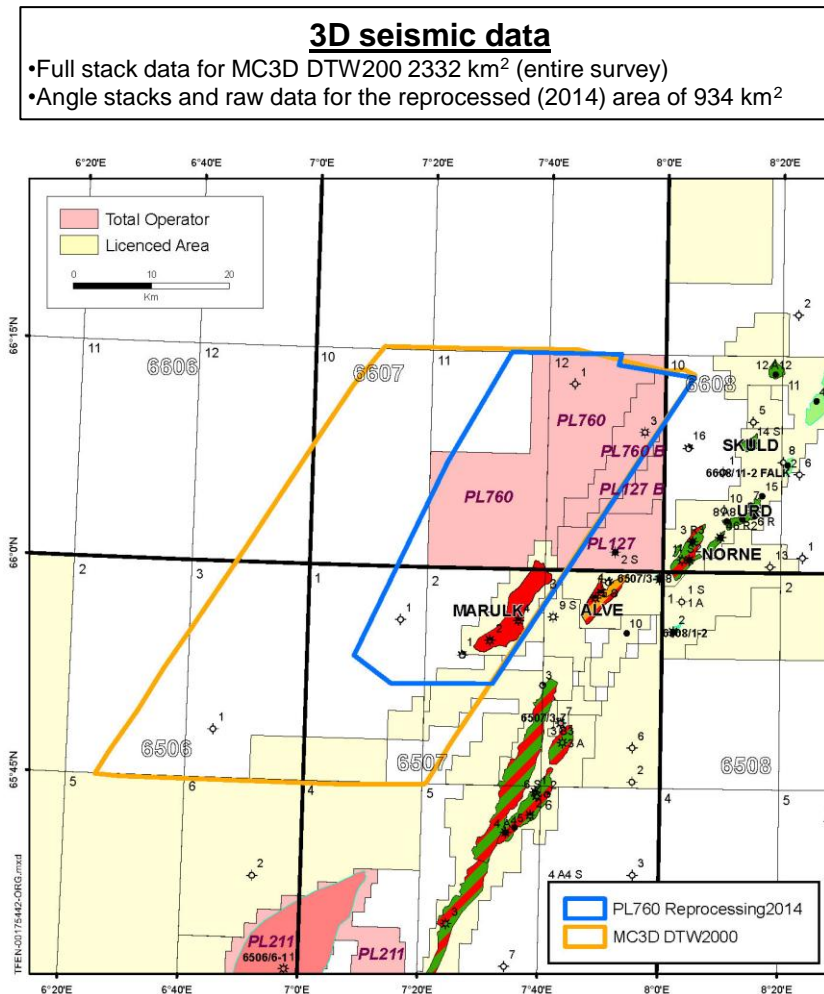
Figure 2 – Sirocco Lange prospect summary

Figure 3 – Diablo Lysing prospect summary

Figure 4 – Karaburan Lange prospect summary

Figure 5 – Chinook Lysing prospect summary

FIGURE 1: PL760 COMMON LICENSE DATABASE



Wells

- 6506/3-1 (Chevron 2001)
- 6507/1-1 Hawkes Bay (Chevron 2004)
- 6507/2-1 (Norsk Hydro 1986)
- 6507/2-2 Marulk (Norsk Hydro 1992)
- 6507/2-4 (ENI 2008)
- 6507/3-1 (Det norske 1990)
- 6507/3-4 (Statoil 2004)
- 6507/3-5S (Statoil 2008)
- 6507/3-9S (BP 2012)
- 6607/12-1 (Elf 1986)
- 6607/12-2S Alve Nord (Total 2011)
- 6607/12-3 Jette Nord (Statoil 2012)

FIGURE 2: SIROCCO LANGE PROSPECT SUMMARY

- Turbidite sand reservoir in stratigraphic trap against Albian-Cenomanian unconformity and downthrow along fault on west side of Marulk.
- 63Mboe unrisksd mean resource (gas condensate): Pg 38%
- AVO interpretation uncertainties: prospect closed at spill to SW

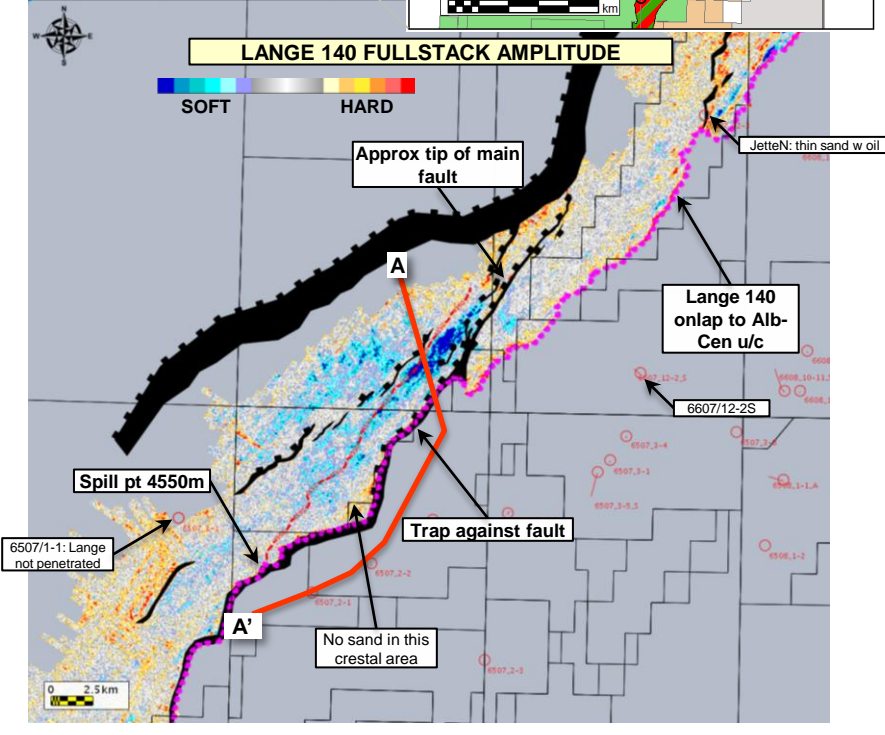
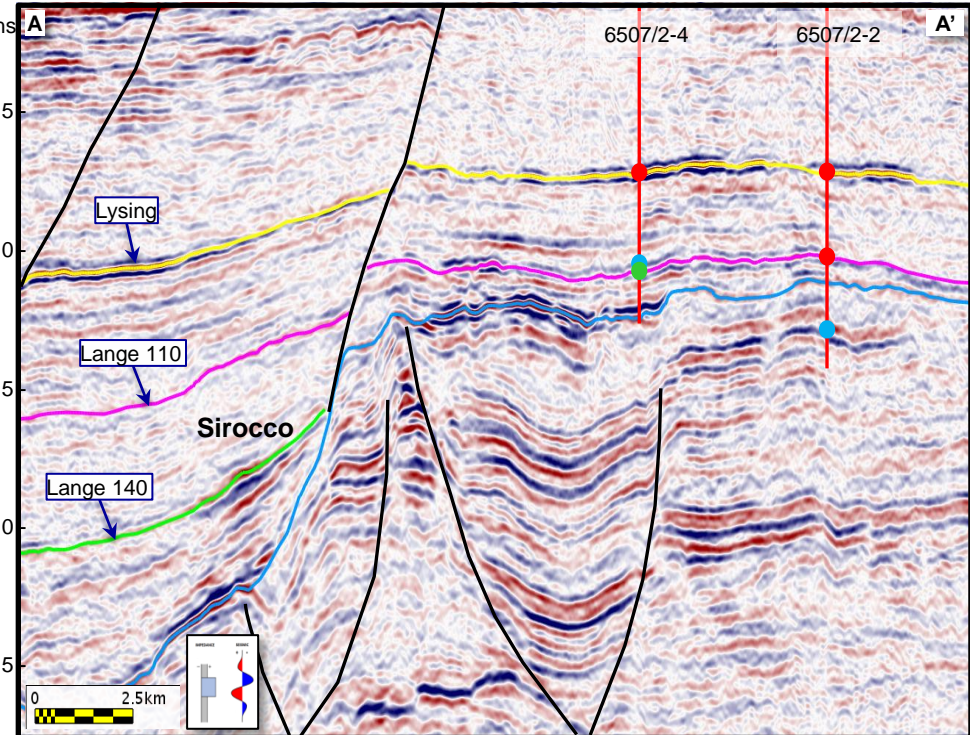
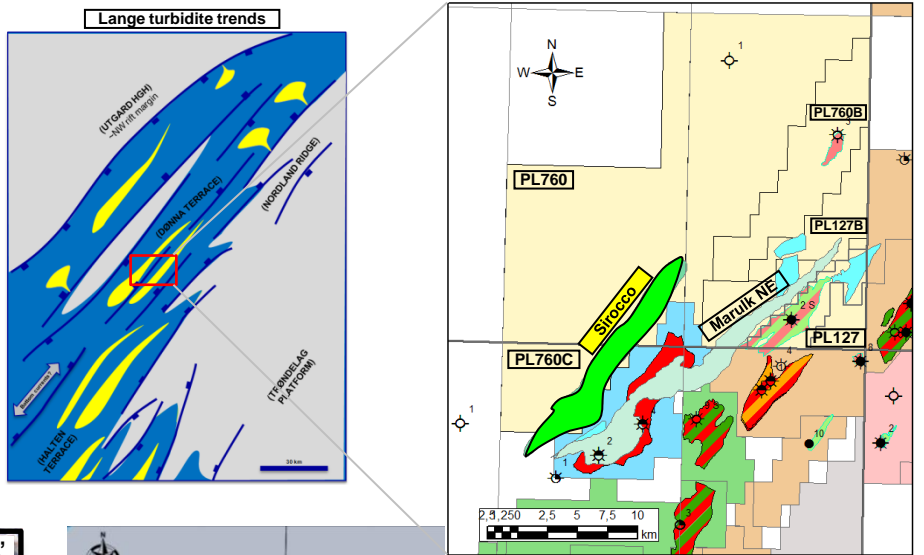


FIGURE 3: DIABLO LYISING PROSPECT SUMMARY

- Diablo prospect is updip from wet 6507/1-1 well.
- Original prospect was based on interpretation of large indentation in Lysing pinch-out.
- Subsequent work showed that indentation is much smaller. → Revised prospect 6Mboe.
- Larger trap not supported by AVO: Diablo amplitude similar to wet 6507/1-1 well.

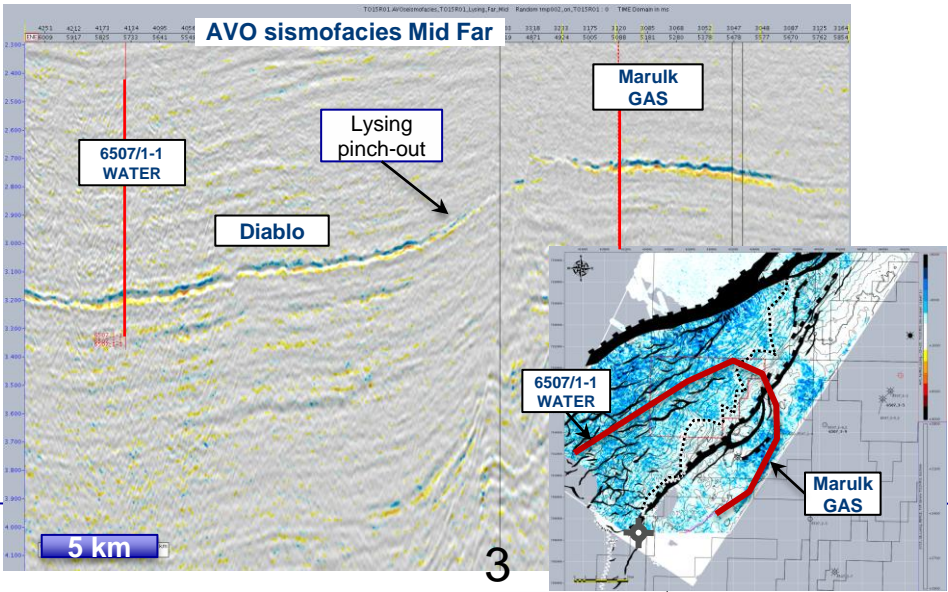
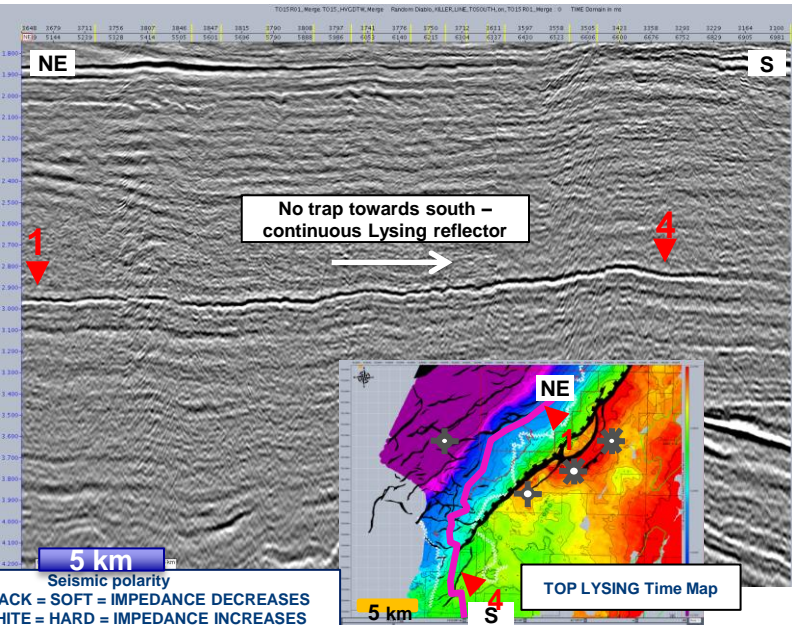
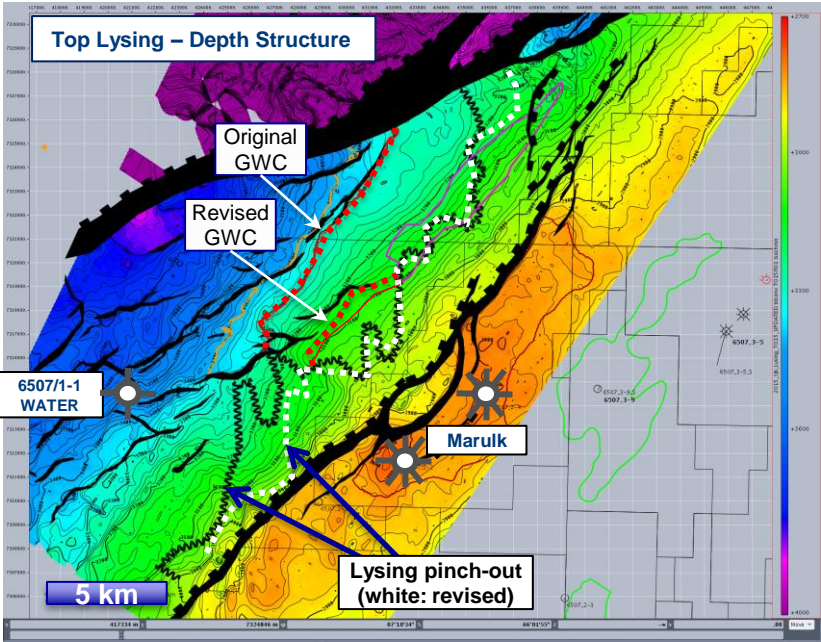


FIGURE 4: KARABURAN LANGE PROSPECT SUMMARY

- Karaburan was identified as a lead based on weak amplitude anomaly in the Lange 110
- No trap geometry defined, weak AVO anomaly interpreted as lithology.
- 31Mboe mean resource, Pg 13%.
- (risk on seal, geometry, reservoir)

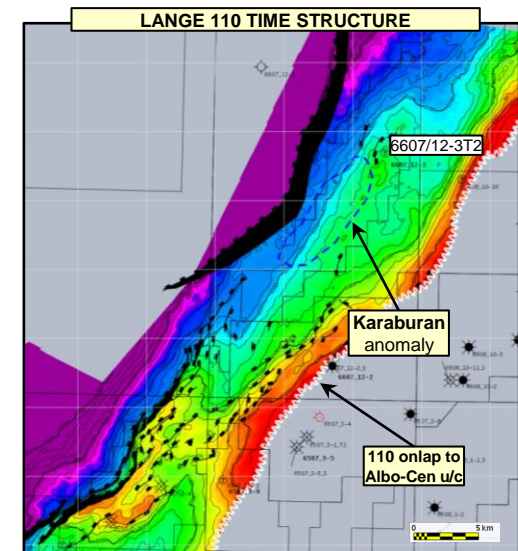
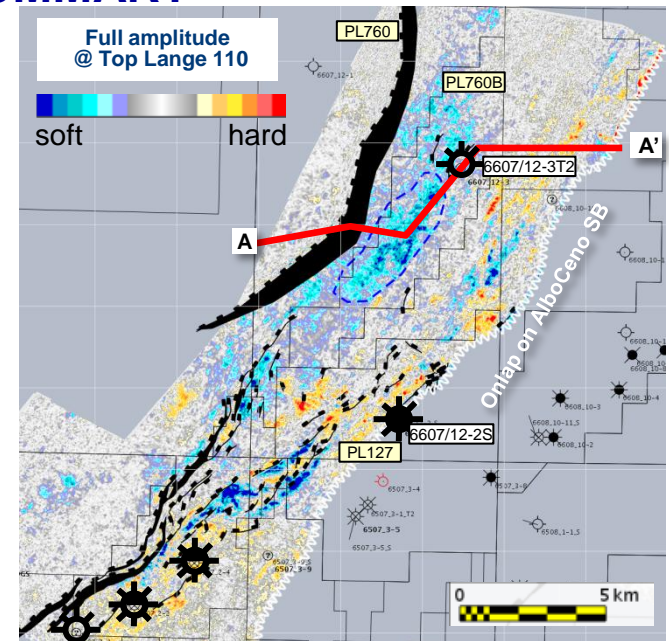
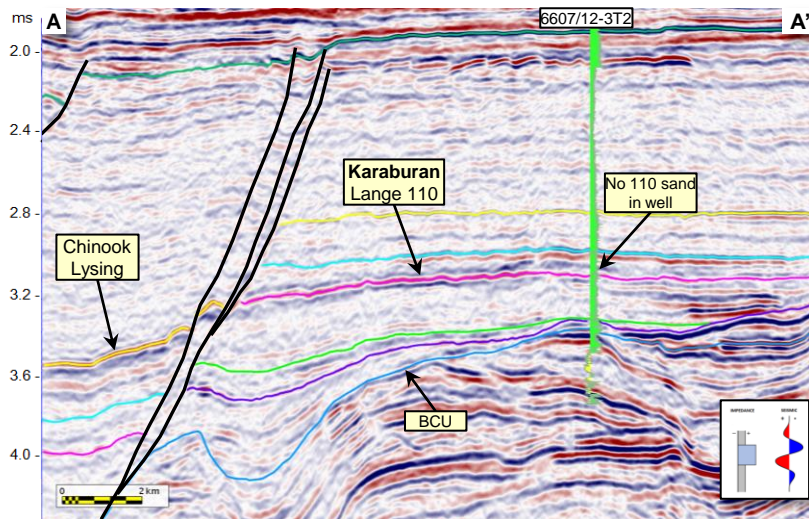


FIGURE 5: CHINOOK LYISING PROSPECT SUMMARY

- Chinook is a downthrown fault block north of Diablo.
- A weak amplitude anomaly in the Lysing is not conform to depth and is interpreted as indicating sand presence.
- Downfaulted, in juxtaposition with Karaburan Lange interval.
- 94Mboe mean resource, Pg <10%.
- (risk on seal (critical risk), geometry, reservoir quality)

