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Santos

15 April 2009

Dr A V Brown
Director of Mines
Department of Infrastructure, Energy and Resources
Mineral Resources Tasmania
PO Box 56
ROSNY PARK TAS 7018

Dear Dr Brown,

Re: Exploration Permit T/40P – Seismic Interpretation Report

Santos Offshore Pty Ltd as Operator of Exploration Permit T/40P hereby submits the SOSN06A Seismic Interpretation Report.

If you have any questions please do not hesitate to contact me on 08 8116 7866.

Kind Regards



Paul Strong
Exploration Manager, Eastern Australia

Santos

Seismic Interpretation Report

Exploration Permit T/40P

SOSN06A 2D Seismic Survey

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Introduction

The SOSN06A 2D Seismic Survey was acquired by Santos in 2006 as part of the work commitment for the Permit Year 1.

Acquisition occurred over the period 5th June to the 23rd June 2006. The survey was recorded by Multiwave using the Pacific Titan seismic vessel. A total of 884.21 Km of seismic data was acquired, over 26 lines (Figure 2). One line, namely SOSN06B-45, extended from the T/32P block into the T/40P block, of which 26.70 Km were included in the T/40P total whilst 39.03 Km were included in the T/32P total.

Processing commenced in June 2006 and the final PSTM stacks were sent to Santos in October 2006. The remaining deliverables including angle stack, final PSTM gather and velocity archives were delivered at the end of October 2006. All processing was undertaken at the Fugro Seismic Imaging office in Perth, Western Australia.

Permit History

Exploration Permit T/40P in the Sorell Basin was awarded to Santos Ltd on 23 June 2005 for an initial term of 6 years (Figure 1).

The permit consists of 49 part and whole graticular blocks covering an area of approximately 3151 km² (GDA) in water depths of approximately 200m, deepening to 1500m towards the south-western part of the block.

Company	Percentage Interest
Santos Offshore Pty Ltd	100%

The work obligations for T/40P are set out below:

PERMIT YEAR (Commencing)	PRIMARY WORK PROGRAM	INDICATIVE EXPENDITURE
One (23 June 2005)	800 km 2D Seismic Surveying; seismic reprocessing	\$2,000,000
Two (23 June 2006)	Geological and Geophysical Studies	\$1,000,000
Three (23 June 2007)	Geological and Geophysical Studies	\$1,000,000
	TOTAL FIRM PROGRAM	\$4,000,000

PERMIT YEAR (Commencing)	SECONDARY WORK PROGRAM	INDICATIVE EXPENDITURE
Four (23 June 2008)	Geological and Geophysical Studies	\$1,000,000
Five (23 June 2009)	350 km² 3D Seismic Surveying	\$5,700,000
Five (23 June 2010)	One Exploration Well	\$12,000,000
	TOTAL SECONDARY PROGRAM	\$18,700,000

Exploration History

Described below are the results of the offshore wells closest to the T/40P exploration permit. Well completion reports issued by the Operator and the updated interpretation of seismic data provide the primary source of information for detailing the exploration history. No wells to date have been drilled on the permit.

Prawn-A1 (Esso, 1967). Intersected 712m of Waarre Formation equivalent. Measured porosities in the sandstone exceeded 20% with permeabilities up to 235 mD.

Clam-1 (Esso, 1969). Tested structural closure of the basal Tertiary and updip pinchout of Cretaceous sediments against the Clam High. Good reservoir sandstones with porosities up to 20% were intersected. Clam-1 reached a depth of only 1592m, intersecting Devonian conglomerates on Pre-Cambrian metamorphic basement. The penetrated sedimentary section is immature for hydrocarbon generation.

Whelk-1 (Esso, 1970). Drilled an anticlinal closure 120 km north of Clam in the southern Otway Basin to test anticipated Waarre Formation sandstones with good reservoir characteristics. Although 94m of Waarre Sandstone was intersected, top seal (Belfast Mudstone) lithologies were not developed.

Thylacine-1 (Origin, 2001). Successfully tested a mapped Waarre Formation closure, with associated amplitude anomaly. It encountered gas within the Thylacine/Flaxman/Waarre section.

Geographe-1 (Origin, 2001). This well was a successful test of a mapped Waarre Formation closure, with associated amplitude anomaly. It encountered gas within the Thylacine/Flaxman/Waarre section.

Geographe North-1 (Origin, 2001). This well drilled as a follow-up test of Geographe-1 and was a dry hole (no full stack amplitude anomaly).

Thylacine-2 (Origin, 2001). This well was an appraisal to follow up success at Thylacine-1.

Jarver-1 (Santos, 2008). This well is not yet open file.

Geology and Hydrocarbon Prospectivity

The Sorell Basin formed during oblique rifting between the Australian and Antarctic continents in the Late Cretaceous and is considered to be a southern extension of the Otway Basin. While relatively open ocean conditions existed to the north and west in the Otway Basin, a restricted marine embayment was formed in the Sorell region, bounded to the southeast by a land-bridge between the two continents, which did not separate until the Eocene.

Late Cretaceous reservoir sandstones, belonging to the Waarre Formation, Flaxman Formation and Thylacine Sandstone Member (Figure 3), form the main productive zones within Otway Basin fields such as Casino (Santos-operated), Minerva, La Bella, Thylacine and Geographe, located north of the deep water acreage trend. These sandstones exhibit excellent reservoir quality with average log porosity in the range of 15-28% and permeabilities of up to 8 Darcies.

These sandstones are mapped extending southwards into Santos' Sorell Basin permits. Deposition of coarse-grained siliciclastics in the Turonian-Santonian is associated with periodic fluvio-deltaic pulses into

an overall upwards-deepening/fining section (Belfast Mudstone), providing an effective reservoir-seal couplet. Regional regression in the Campanian led to renewed coarse-grained, fluvio-deltaic input to the basin as the Paaratte and Timboon sandstones. Potential sealing sequences of the Skull Creek and Timboon mudstones and the Massacre Shale are observed to thicken into the basin. Mild structural inversion in the latest Cretaceous was followed by rapid subsidence and transgression resulting in retrogradation of the deltaic systems and deposition of the Wangerrip Group in the Palaeogene. Eventually the marginal sedimentary systems were drowned and, in association with the opening of the seaway in the late Eocene and subsequent formation of the Circum-Antarctic current, deposition came to be dominated by cool-water carbonates that persist to present day.

Nine offshore discoveries have been made in the Otway Basin to date proving in excess of 1.6 TCF recoverable gas. These discoveries have been full to spill, with liquids content increasing generally from north to south. Hydrocarbon charge in the basin is considered to come from Albian-aged, Eumeralla Formation source rocks.

Seismic Mapping

Area and Data Mapped

The new SOSN06A seismic data infilled the existing (Fugro) multi-client OR01 and DS01 data. This SOSN06A data was spread across the permit, covering five prospects or leads already identified, namely the Seabass Lead, Raymond Lead, Ridley Lead, Harrison Lead and Hancock Lead (Figure 4). The new data was incorporated into the existing interpretation.

Interpretation Methodology

Geoframe IESX was used in the structural interpretation of this seismic data. Well synthetics were created in Geoframe for the Thylacine, Geographe, Prawn (Figure 5), Whelk (Figure 6) and Clam wells, and the correlations taken into T/40P using the existing regional seismic lines.

Seismic interpretation was undertaken using the all-offset pre-stack time migrated volumes. The new SOSN06A data was interpreted in conjunction with the multiclient OR01 data.

Horizons Interpreted

Key horizons interpreted include the water bottom (WB), base Tertiary (T1), top Belfast (K90), and near top Eumeralla (K75). The Waarre Fm was hard to pick extensively over the permit. The Prawn-1 and Whelk-1 well logs suggest this could be related to the sand on sand nature of the Waarre interface in this region.

Depth Conversion

Depth conversion was undertaken in Petrosys using seismic stacking velocities extracted as average velocity to the target intervals.

Structure Maps Prepared

Structure maps prepared include the Water Bottom (WB), base Tertiary (T1) and near top Eumeralla (K75) depth maps (Enclosures 1-3).

Discussion of Seismic Record Quality

Most of the SOSN06A seismic data is of poor-fair quality. Some lines in particular appear to be acquired at a poor orientation to faulting, as the faults appear poorly imaged and suggestive of side-swipe (Figure 8). This was also observed on the OR01 seismic lines, which are in a different orientation. This appears to be related to the complex structural style of this area, which does not lend itself to 2D seismic.

Additionally, several mounds can be observed in the Late Tertiary, which are thought to be extrusive volcanics. Imaging below these mounds is extremely poor, with significant signal attenuation beneath them (Figure 7).

Apart from the poorly imaged faults and the signal attenuation beneath the Tertiary mounds, the SOSN06A seismic data is of comparable quality to the multi-client OR01 and DS01 seismic data (Figure 7).

Play Types

The key play type targeted in this permit is Cretaceous in age, with Late Cretaceous Waarre Formation reservoirs and Belfast or Skull Creek top seals, and hydrocarbons sourced from the Eumeralla or Waarre coals, within faulted structural traps. These plays have been proven in the Otway Basin fields to the north.

Leads and Prospects

Seabass

The largest lead or prospect in the permit is the Seabass Lead (Figure 3), which was identified as a lead during gazettal evaluation on the multi-client OR01 seismic data. Seabass was originally identified as a broad faulted anticline, exhibiting high amplitudes over the structure. Interpretation of the SOSN06A seismic data indicates this is in fact a horst block and that the amplitudes are more likely related to Eumeralla lithology than Waarre gas sands, as the amplitudes dim on far offsets (Figure 10). The current mapped prospect area is significantly smaller than that mapped during gazettal evaluation. Additionally, as depth to the K75 is approximately 3000mSS, any Waarre reservoir at this level could be expected to have very poor porosity and permeability.

Raymond

The Raymond lead is also a horst block, although slightly shallower at approximately 2500mSS. Again, as the amplitudes dim on far offsets (Figure 9), the amplitudes are more likely related to Eumeralla lithology than Waarre gas sands.

Hancock

The Hancock Lead is a poorly defined low-side fault closure, mapped on only three seismic lines. This lead exhibits no elevated amplitudes over the structure (Figure 8). Imaging is also very poor in this area. Additionally, since depth to K75 is about 3500mSS, it is unlikely that any reservoirs intersected at this depth would have preserved porosity or permeability.

Harrison and Ridley

These leads appear no longer present on the new seismic data.

Conclusions

The SOSN06A seismic data is poor quality, but comparable to the OR01 seismic data.

Interpretation of the SOSN06A seismic data and incorporation into the regional grid has led to a better understanding of the leads and prospect. Unfortunately, this has reduced the size of the Seabass Lead and increased the risk on the Seabass, Raymond and Hancock Leads, by showing that the amplitude is most likely related to the high acoustic impedance contrast of the Eumeralla Formation, rather than hydrocarbons. With no AVO effect to indicate possible trapped hydrocarbons, it is likely that these leads lack top seal, as observed in the Prawn-A1 and Whelk-1 wells. The size of these prospects is insufficient to meet minimum economic pool sizes for drilling, even on an unrisked basis.

Figures

Permit Location Map

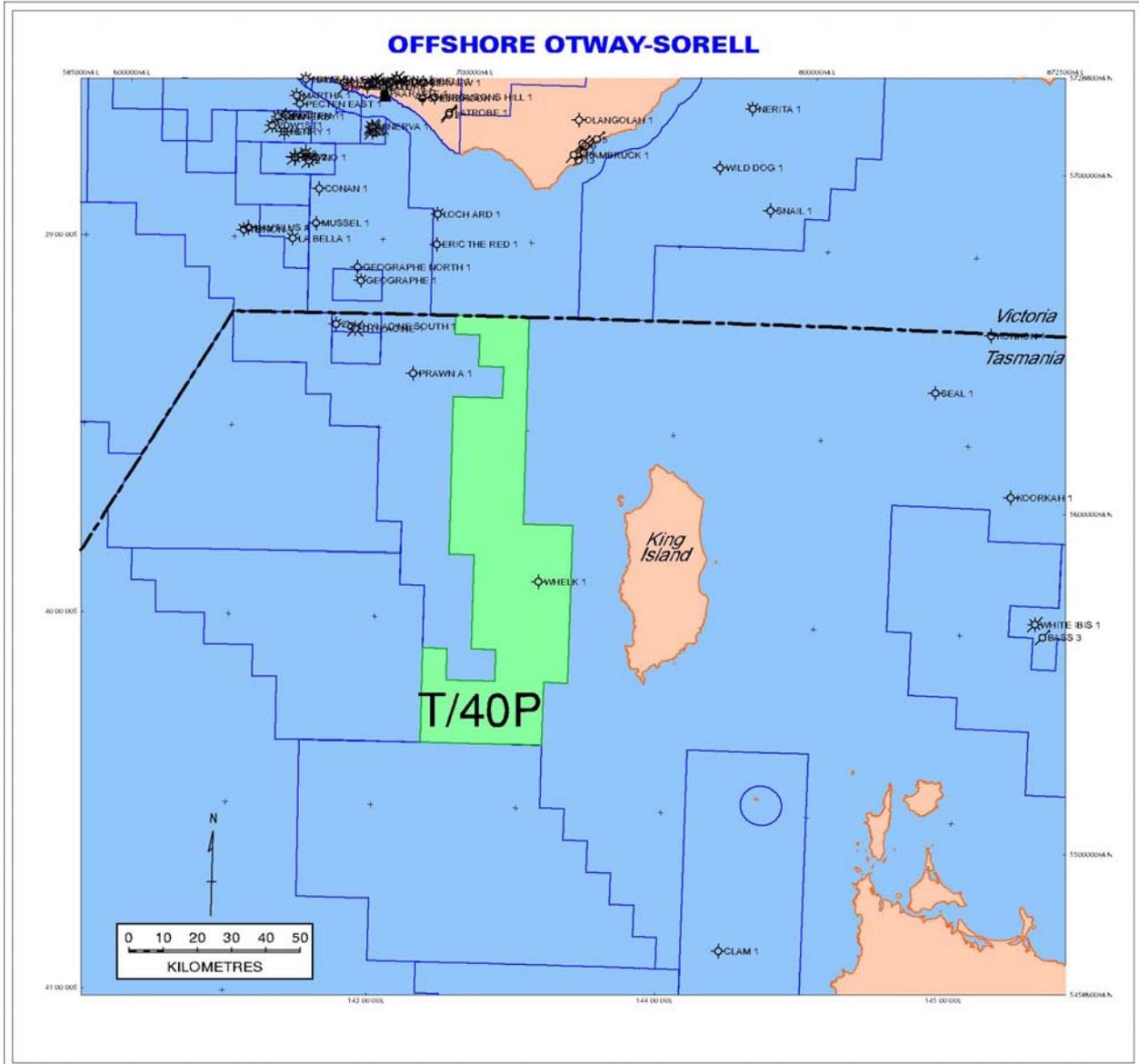


Figure 1. Permit Location Map

Data Location Map

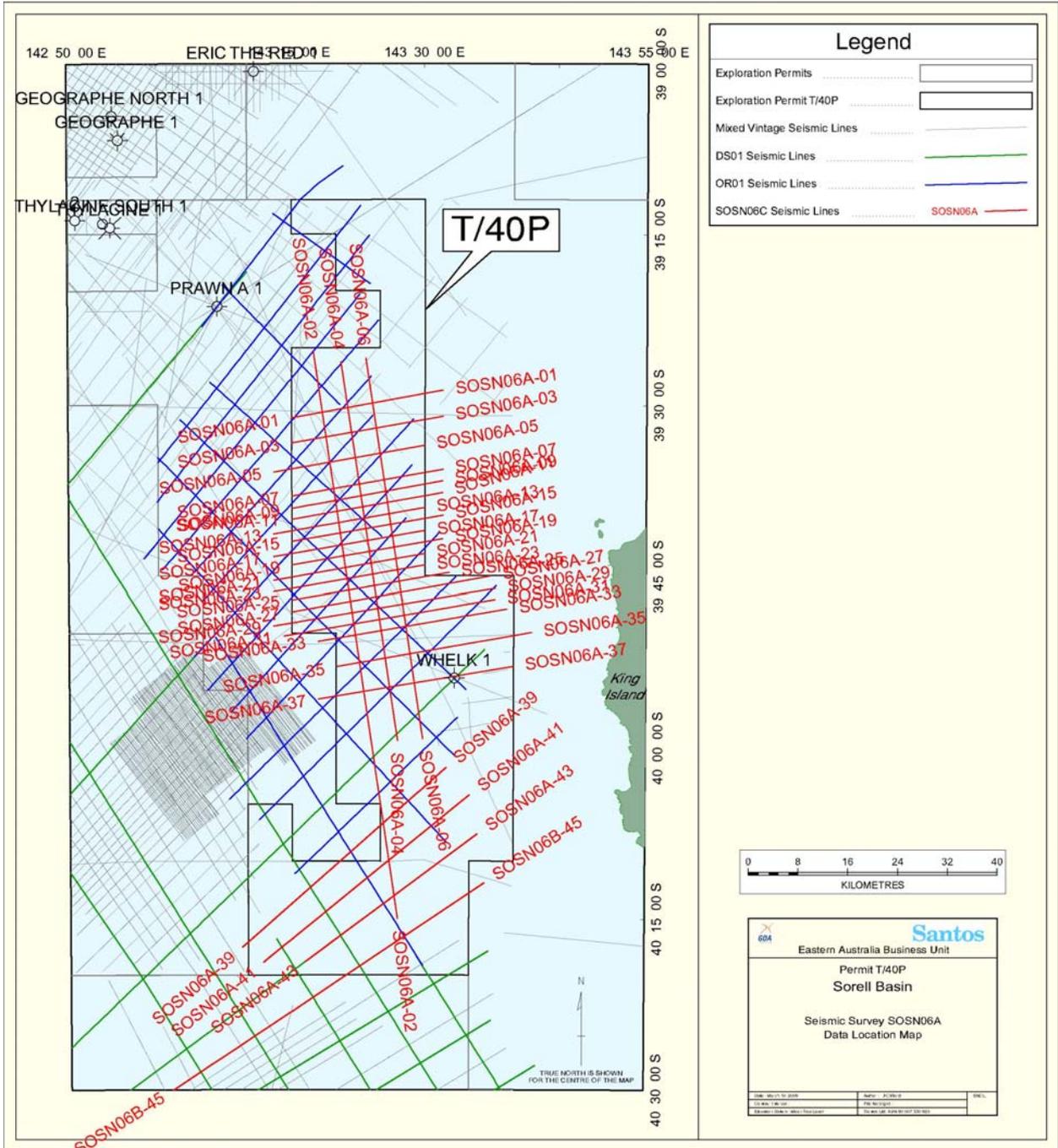


Figure 2. Seismic Survey Location Map

Stratigraphic Chart

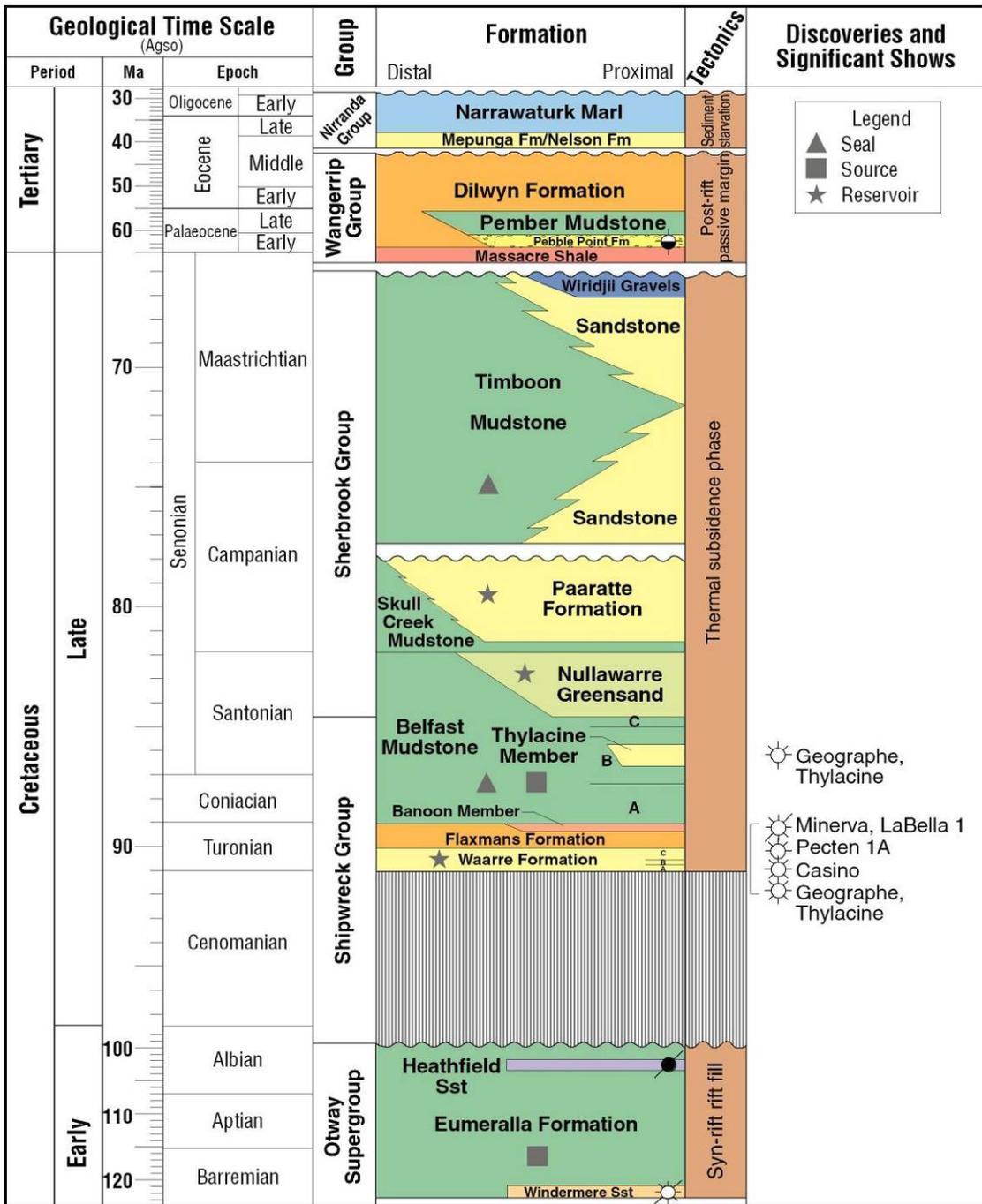


Figure 3. Stratigraphic Chart

Prospects and Leads Map

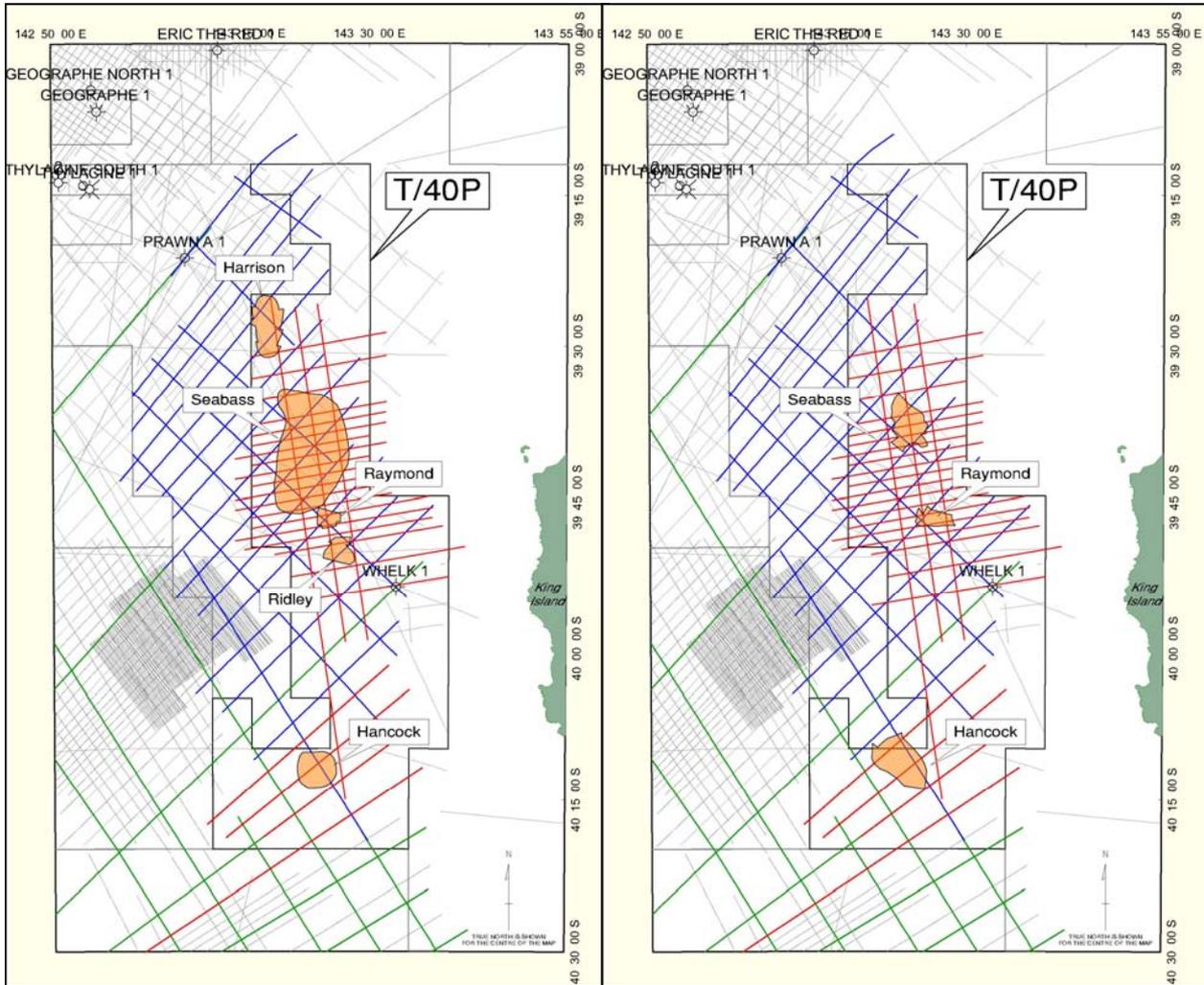


Figure 4. Prospects and Leads Map. Map on left shows pre-SOSN06A prospect outlines. Map on right shows post-SOSN06A prospect outlines.

Synthetic Seismograms

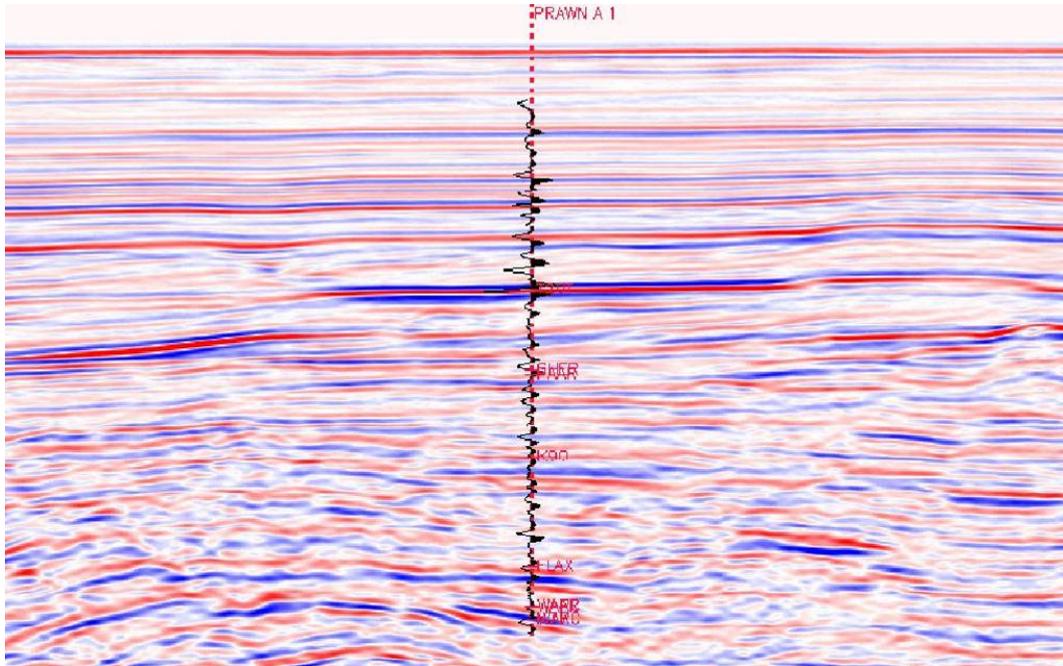


Figure 5. Synthetic seismogram at Prawn A1.

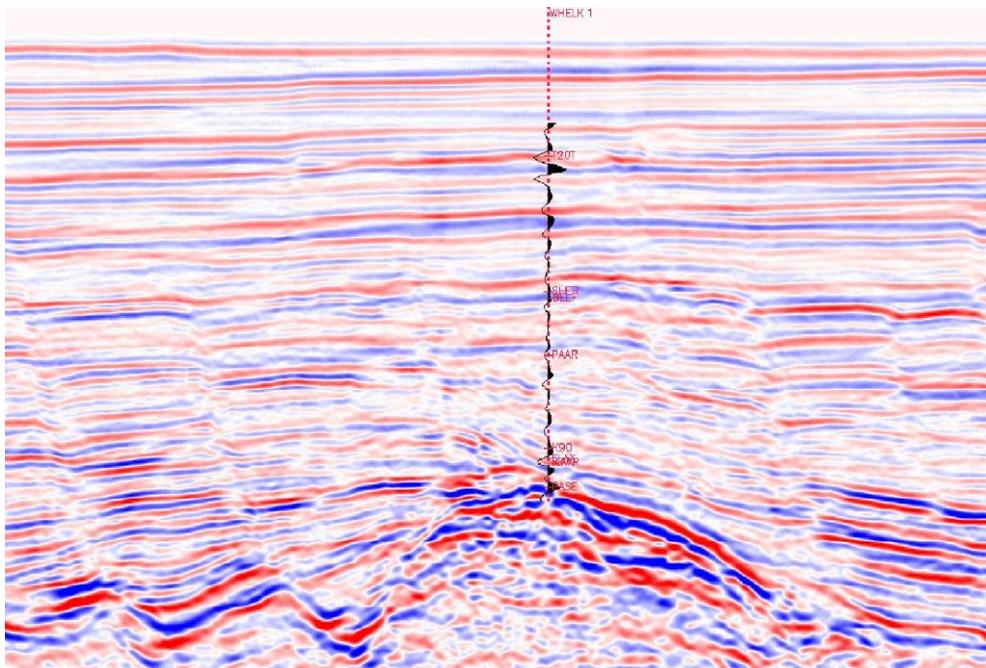


Figure 6. Synthetic seismogram at Whelk 1.

Seismic Data Quality Comparison

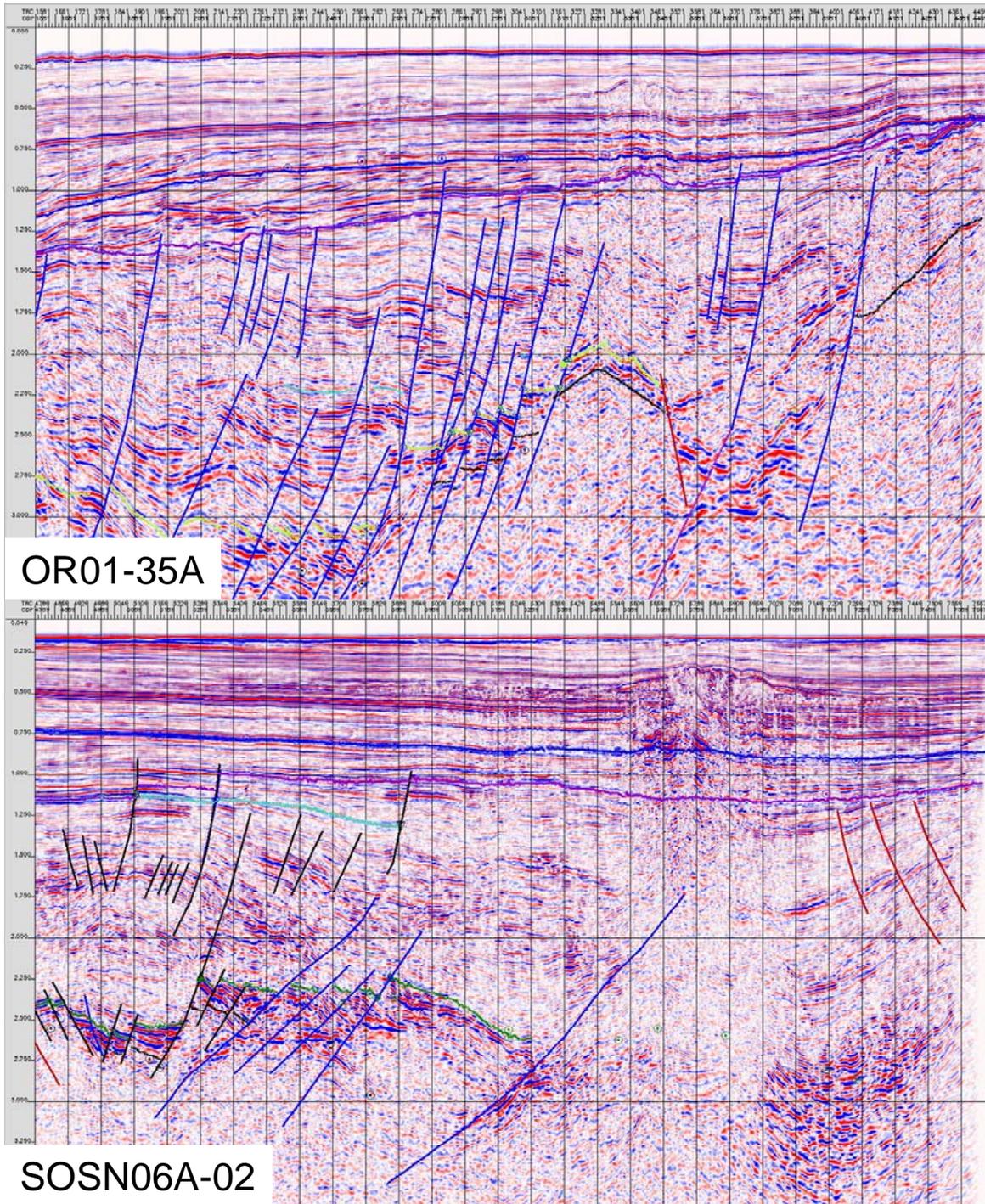


Figure 7. Seismic sections from OR01 and SOSN06A surveys for comparison of data quality.

Interpreted Seismic Sections

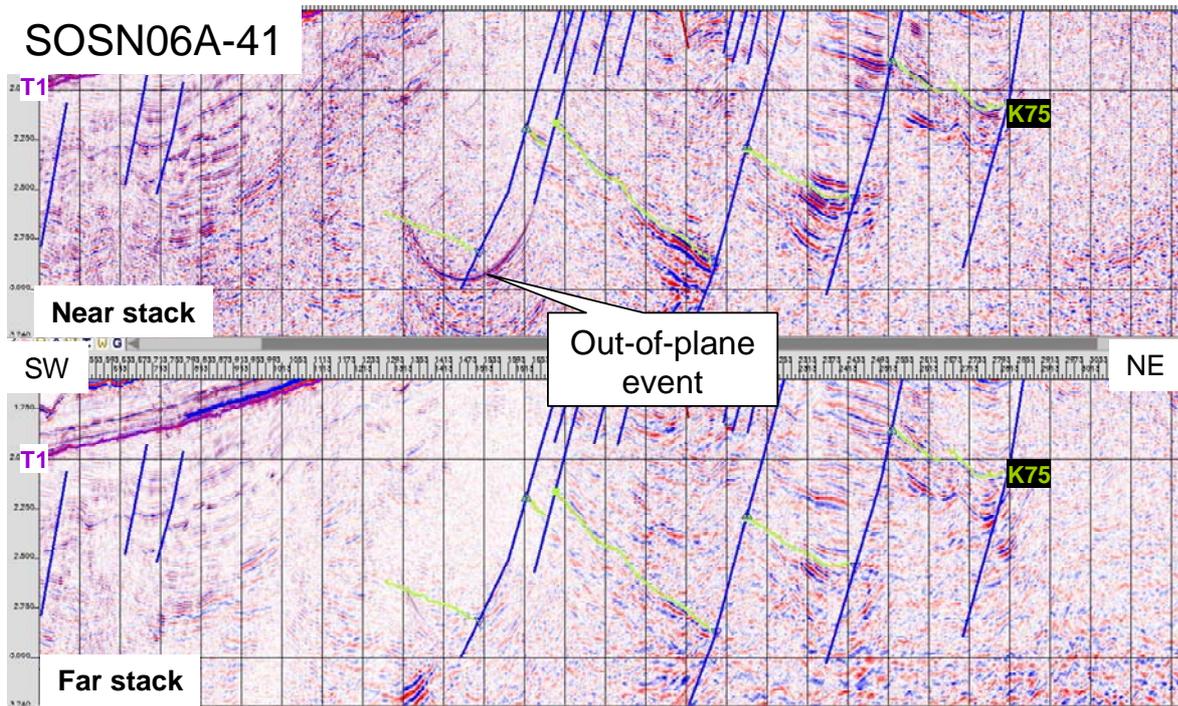


Figure 8. Seismic section (SOSN06A-41) through the Hancock Lead. Note the out-of-plane event which shows up on the near, but not far stack.

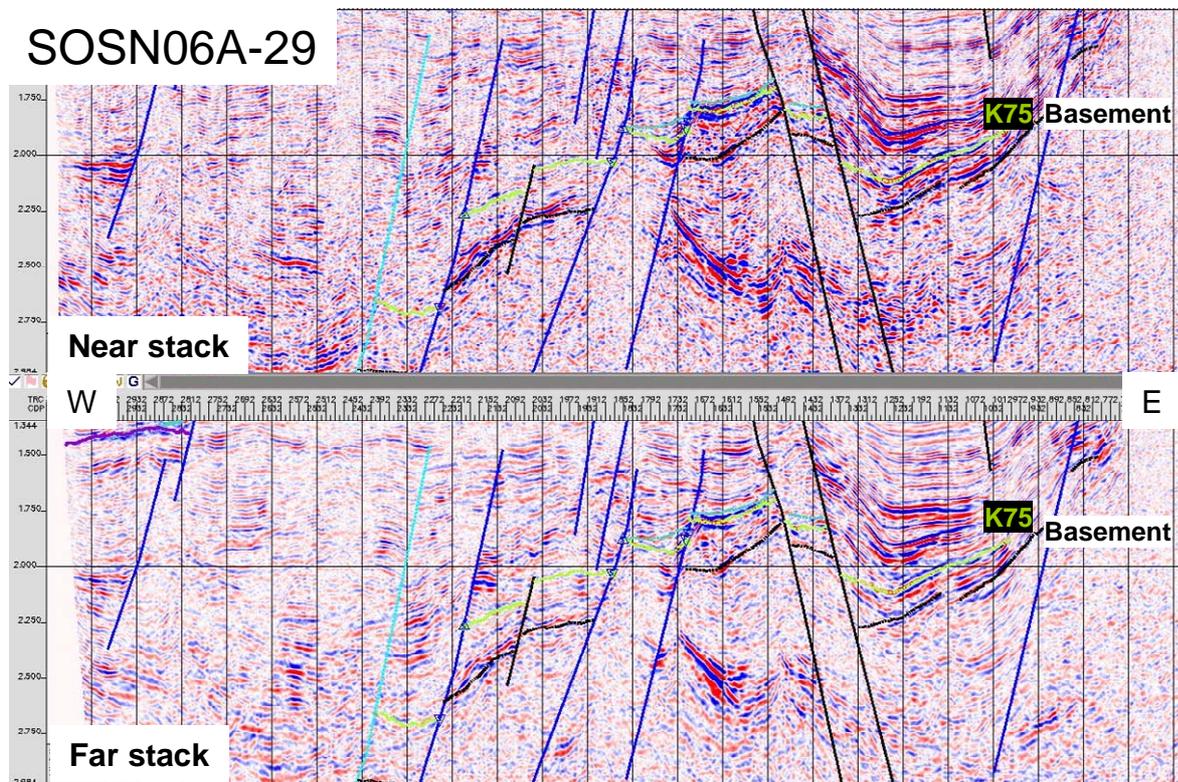


Figure 9. TWT section of seismic line (SOSN06A-29) through the Raymond Lead. Note the poor fault imaging and high noise content at K75 level. A dimming of amplitudes on the far stack indicates that the amplitudes near K75 are most likely related to lithology, not fluid content.

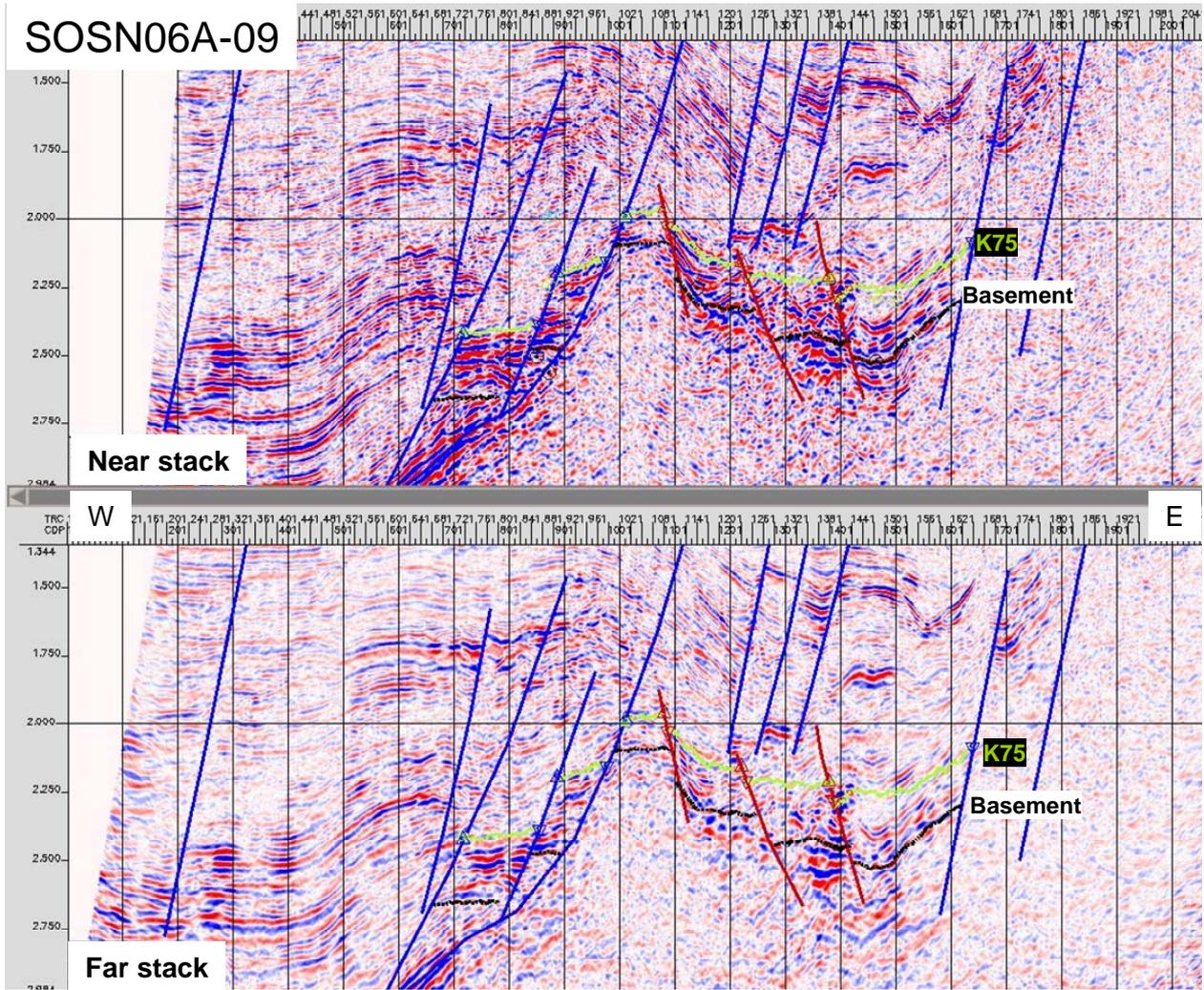
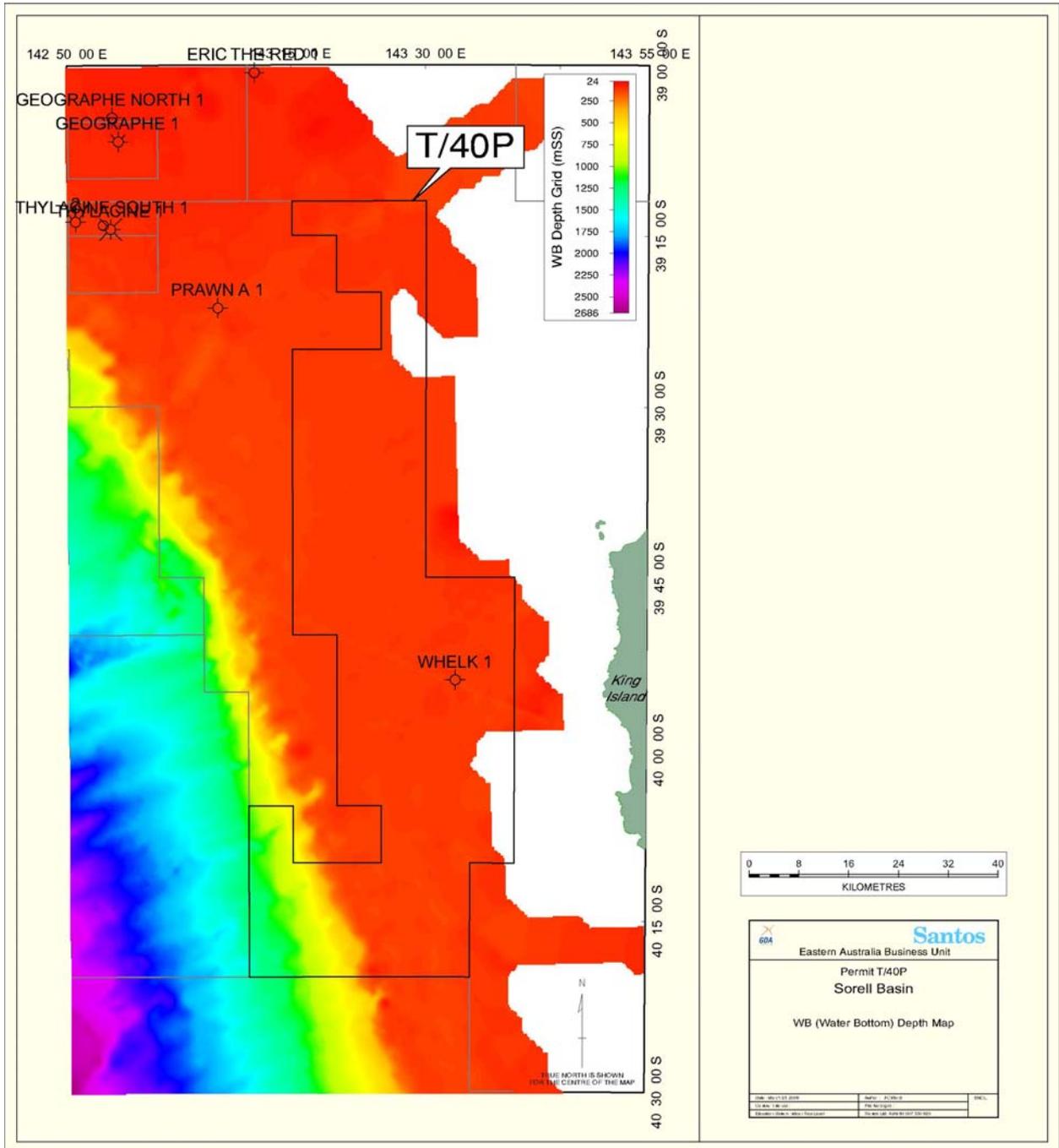
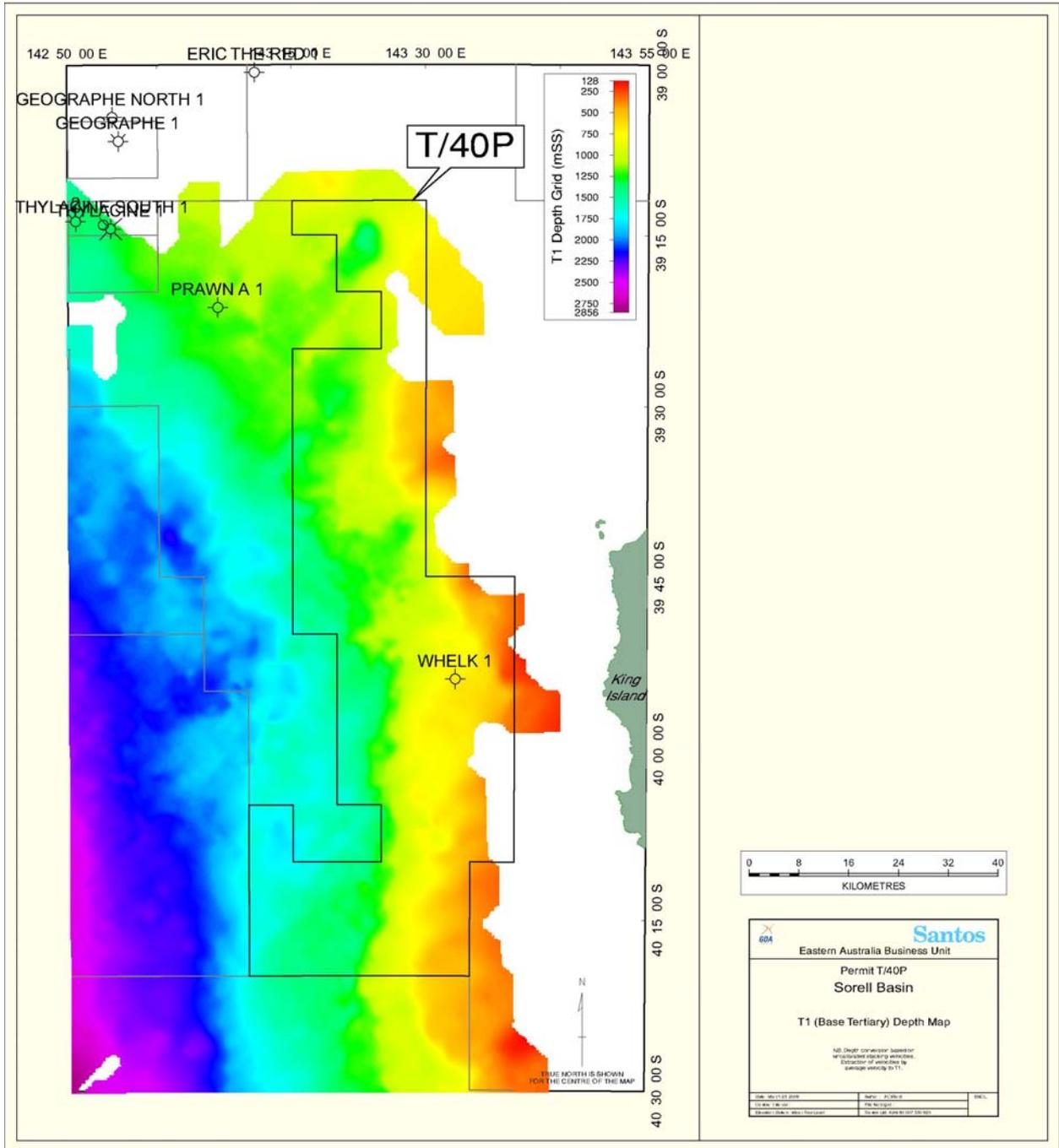


Figure 10. TWT section of seismic line (SOSN06A-09) through the Seabass Lead. Note the poor fault imaging and high noise content at K75 level. A dimming of amplitudes on the far stack indicates that the amplitudes near K75 are most likely related to lithology, not fluid content.

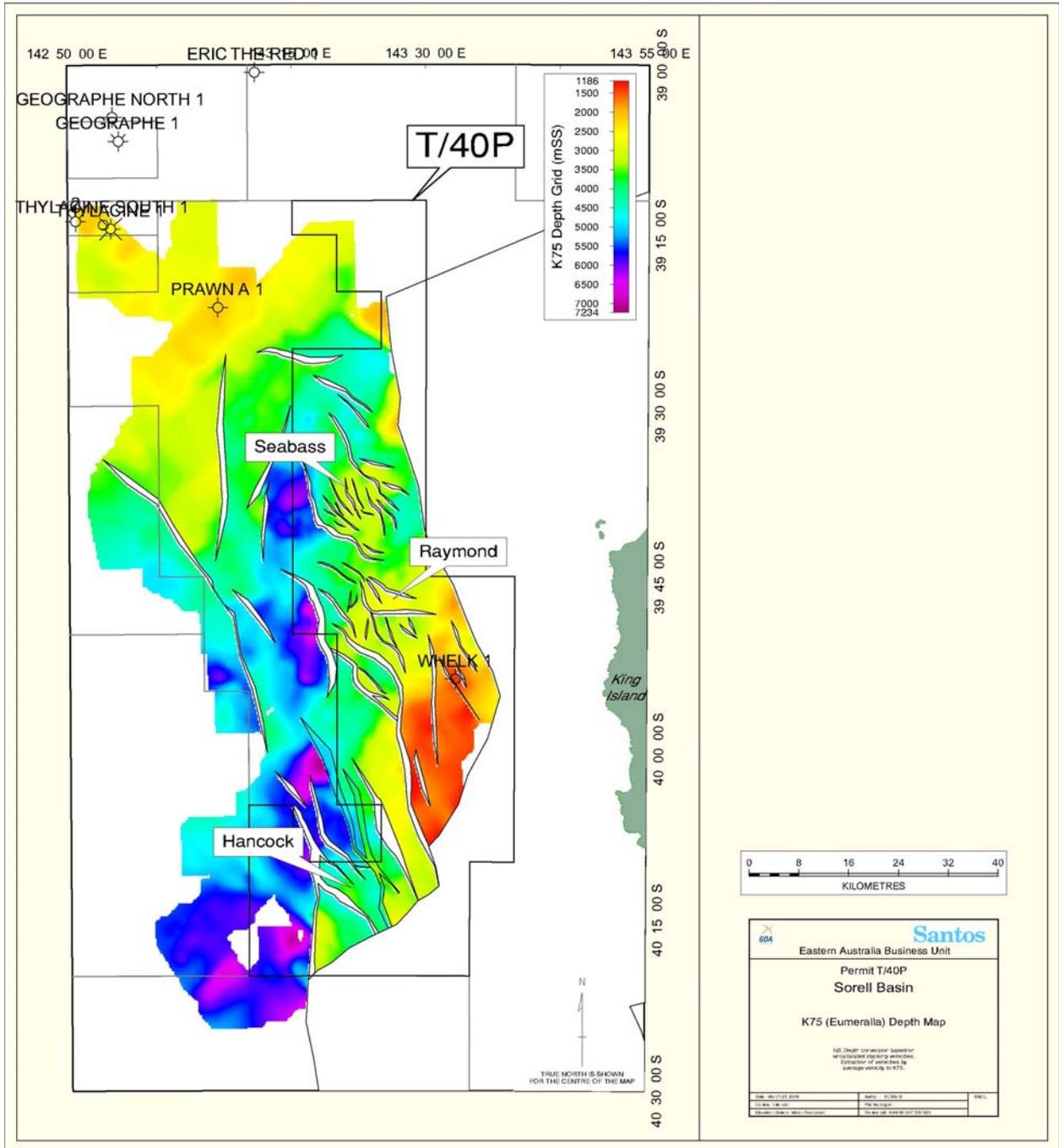
Enclosures - Maps of Key Horizons



Enclosure 1. Water bottom depth structure map



Enclosure 2. Base Tertiary (T1) depth structure map



Enclosure 3. Near Top Eumeralla (K75) depth structure map