Esso Australia Pty Ltd

G01 Seismic Survey

Interpretation Submission

GIPPSLAND BASIN

VICTORIA / AUSTRALIA

August 2005

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Note: all figures and enclosures are sized to be printed on a 36 inch plotter.

Northern Fields (G01) 3D Seismic Interpretation Submission

Seismic Data Quality

The data quality of the 2001-G01 Northern Fields 3D seismic survey is similar to or better than existing 2D and 3D surveys acquired on the northern margin of the Gippsland Basin. A major benefit is that the survey covers an area previously covered by 2D data or a sparse patchwork of 3D surveys acquired from 1980 onwards (Figure 1). In particular there was no 3D data over the Snapper Field and relatively poor 1980s vintage 3D data over both the Wirrah and Sunfish Statics. Another main objective was to provide a clear image of the Intra-Latrobe and Golden Beach sections. Unfortunately a thick coaly section in the Upper Latrobe in the western basin (west of the Tuna Field) continues to result in a poor seismic image of the deep section. In areas where the coals are thin or absent seismic imaging at depth is good with clear structural & stratigraphic resolution. In areas away from the shallow coals fault imaging is good and it is noted that the fault pattern observed in the shallow horizons is similar at depth. This general model is used to guide the fault interpretation at depth in the poorly resolved western basin.

Time Structure Mapping

Two interpreted seismic traverses (seismic traverse 1-Enclosure 3 & seismic traverse 2-Enclosure 4) are included. Seismic traverse 1 (central basin area) ties wells Patricia 1, Spermwhale 1, Sunfish 1, Remora 1, Snapper 2, Snapper 1, Snapper A21 and Whiting 1. Seismic traverse 2 (eastern basin area) ties wells Drummer 1, Flounder 1, Grunter 1, Stonefish 1, East Pilchard 1, Kipper 1 and Admiral 1. A network of faults and seismic surfaces were mapped across the full extent of the survey. Rigorous depth conversion will be undertaken on an area specific basis due to the highly localized variation of controls on velocity.

Top of Latrobe Group

A surface commonly referred to as Top Latrobe has been mapped across the full extent of the 3D survey. This surface marks the boundary between the siliclastics of the Latrobe Group and the overlying calcareous sediments of the Seapspray Group. A time structure map (Enclosure 1) is included with this report. In general this event marks an increase in acoustic impedance, and on this Quadrature phase data set is represented as a zero-crossing above a peak. For ease of interpretation the peak below the zero-crossing is mapped across the 3-D survey. Over most of the survey this is a straightforward unambiguous interpretation close to the regional unconformity at the Top of the Latrobe Group, however in areas of channeling the interpretation is less clear and the base of the Seapspray Group is interpreted.

Oriental Blue SB

The Oriental Blue marker has been mapped across the full survey extent and is representative of the intra-Latrobe Gp structural form. Biostratigraphic control at this level suggests an Upper *T.longus* age, close to the Cretaceous/Teriary bounday. In the eastern part of the basin this event marks the base of a major marine transgression. The marine shale has a relatively high acoustic impedance and is a prominent peak on the seismic data. The seismic interpretation follows this peak. Westwards the event is harder to pick within the coastal plain section and the interpretation follows events tied to well control. A time structure map (Enclosure 2) is included. Fault traces at this level are indicated on the map by blue lines. This fault pattern is representative of the structural pattern for the Intra-Latrobe.

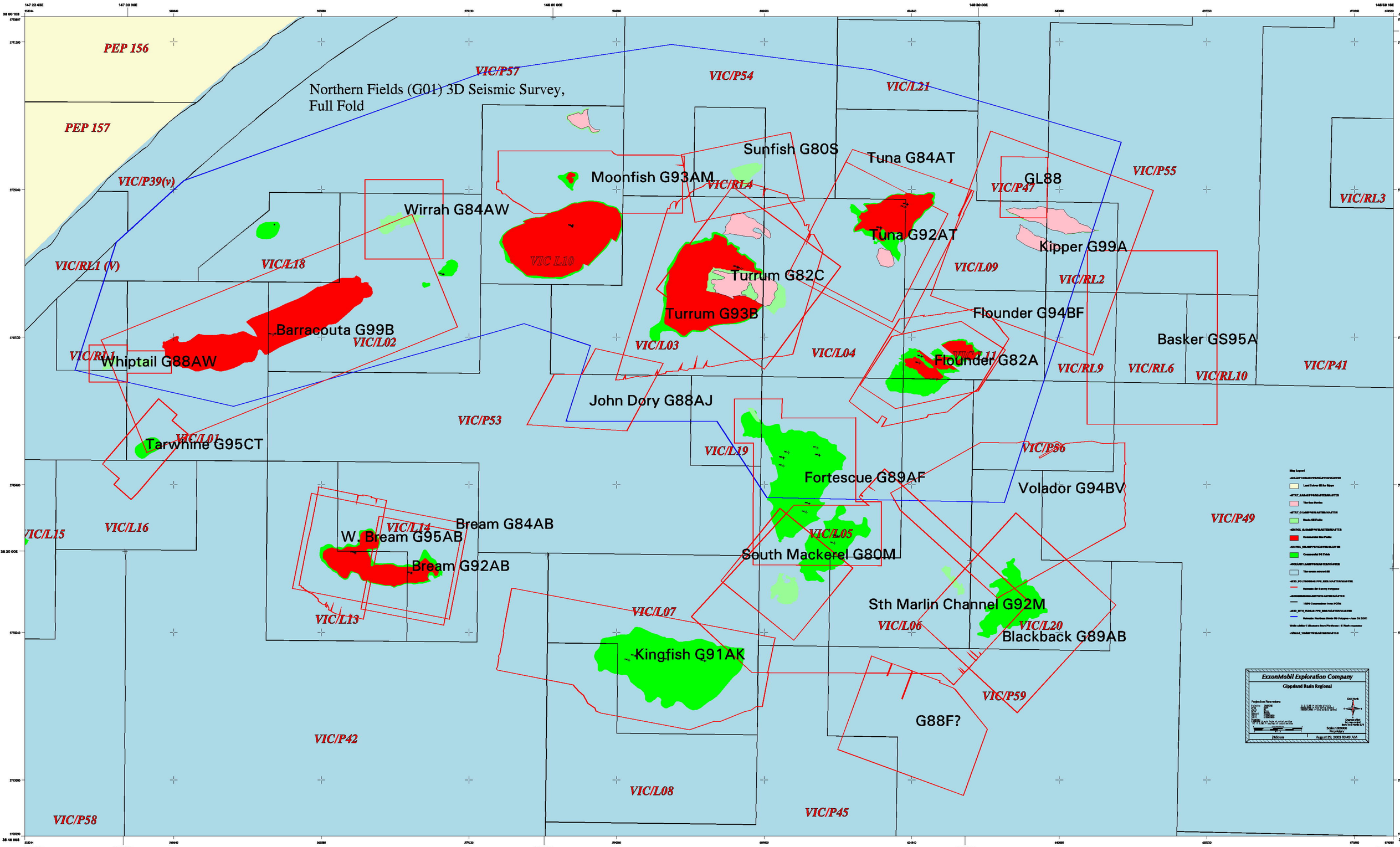
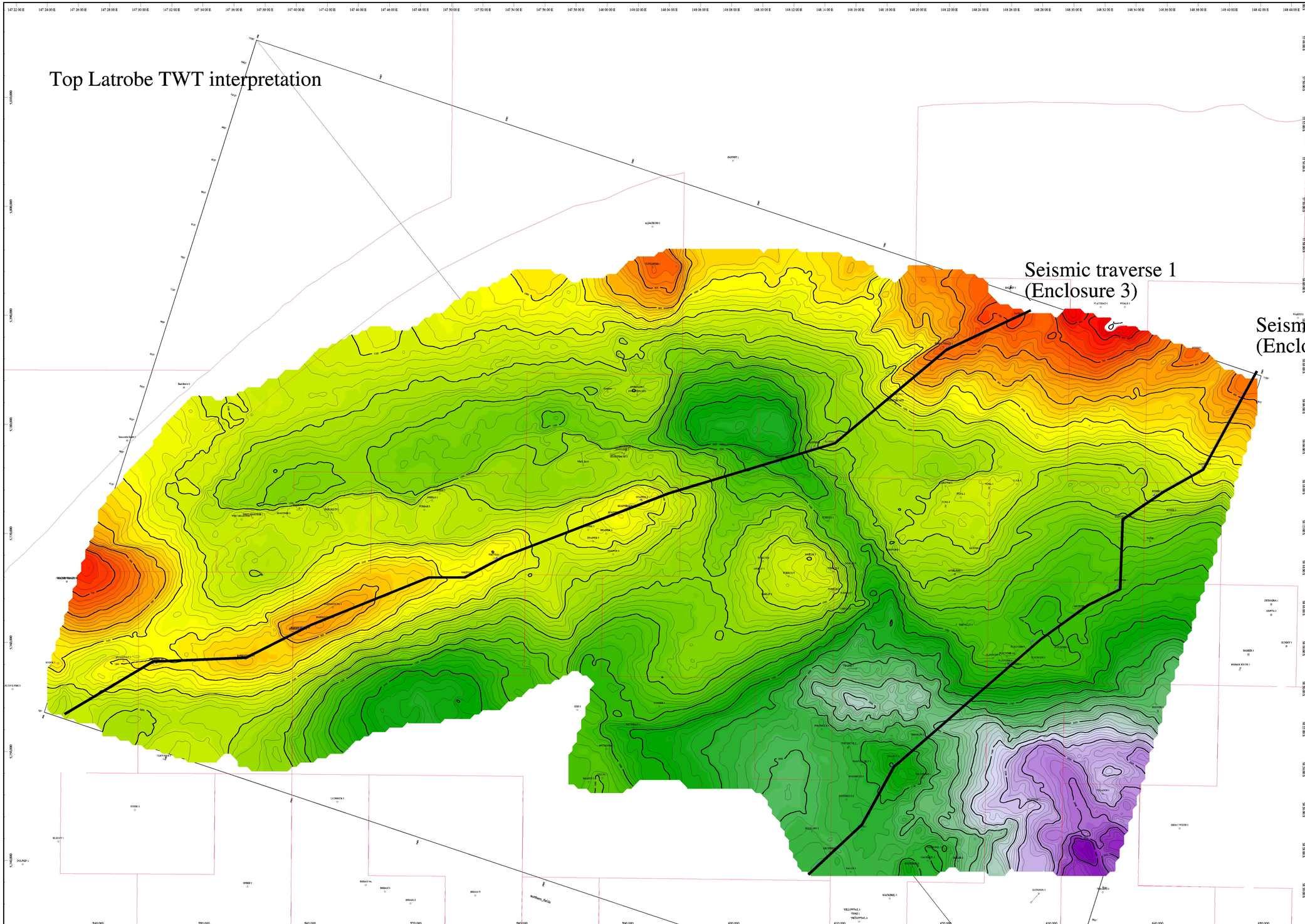


Figure 1: Gippsland Basin 3D Seismic Coverage (red outline) Pre-Northern Fields (G01) 3D Seismic Survey (blue outline)

Enclousre 1

Top Latrobe TWT interpretation



Project name : au_w_gpum_hgk
Map name : Nu99_1203
Map type :

Surface name : Top Latrobe TWT
Description :
Datum :

Projection : Universal Transverse Mercator Zone 55, Southern Hemisphere
Zone : None
Spheroid : World Geodetic System of 1984
Units : Meters

Prepared by :
Plot creation date : February 24, 2005 11:22 AM

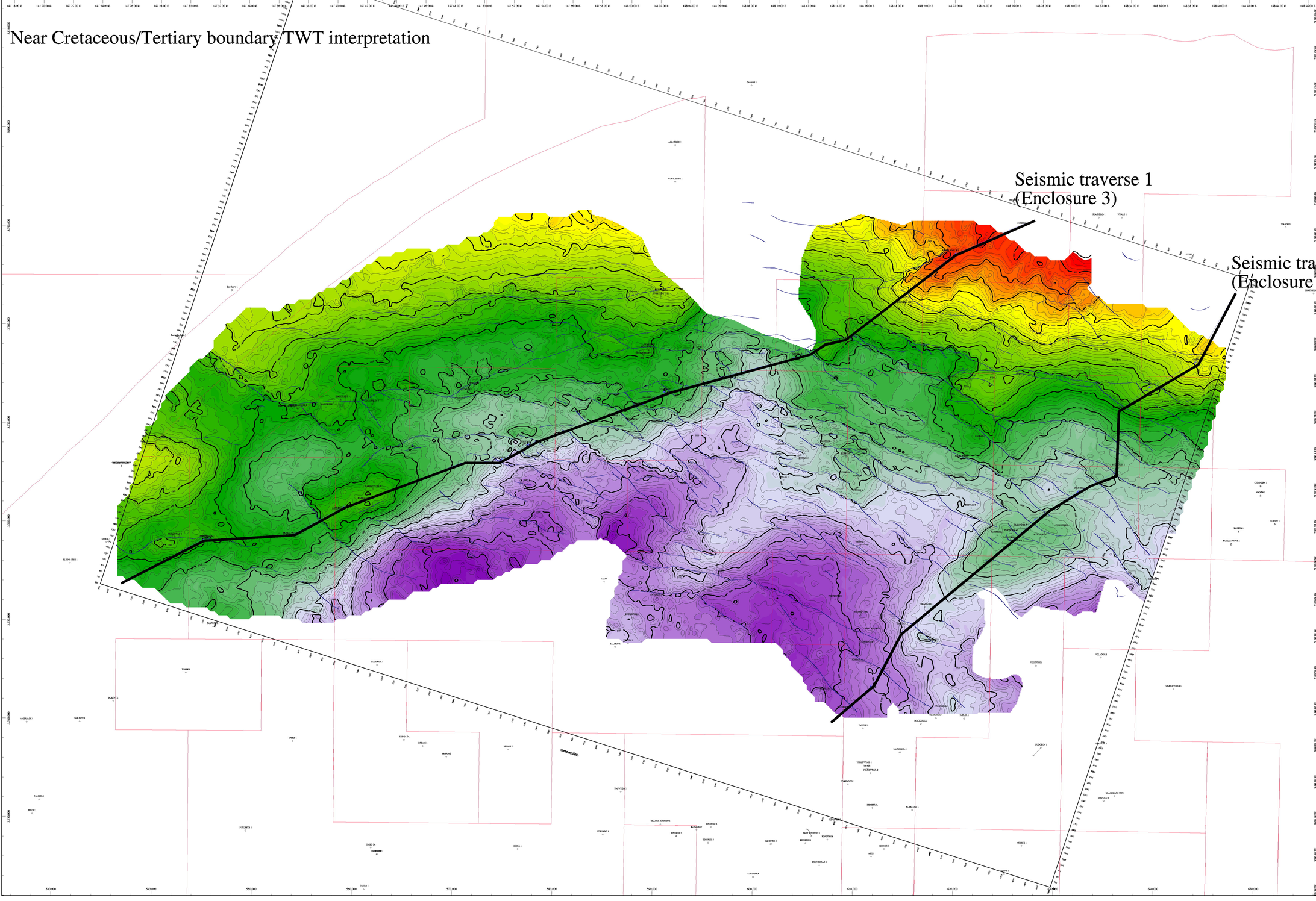
Time (ms)
500
750
1000
1250
1500
1750
2000
2250
2500

N

Scale 1 : 100000
Meters
0 2,000 4,000

Near Cretaceous/Tertiary boundary TWT interpretation

Enclosure 2



Project name : au_w_gram_hgk
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Map type :

Surface name : Cretaceous/Tertiary boundary TWT
Description :
Datum :

Projection : Universal Transverse Mercator Zone 55, Southern Hemisphere
Zone : None
Spheroid : World Geodetic System of 1984
Units : Meters

Prepared by :
Plot creation date : February 24, 2005 11:13 AM

Time (ms)
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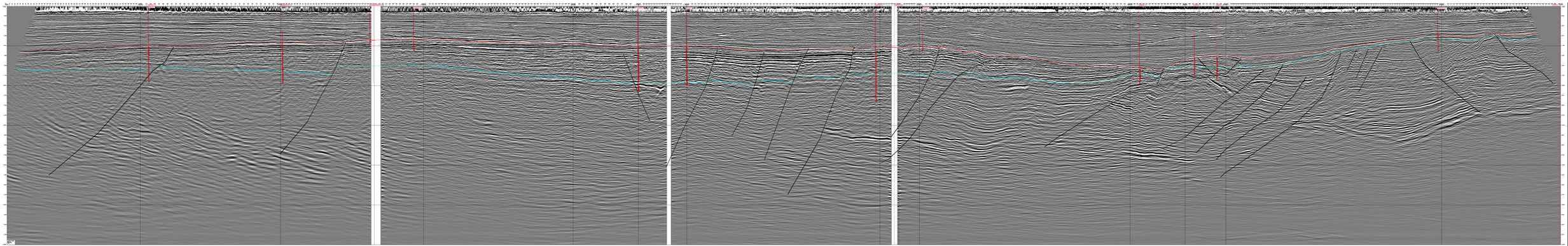
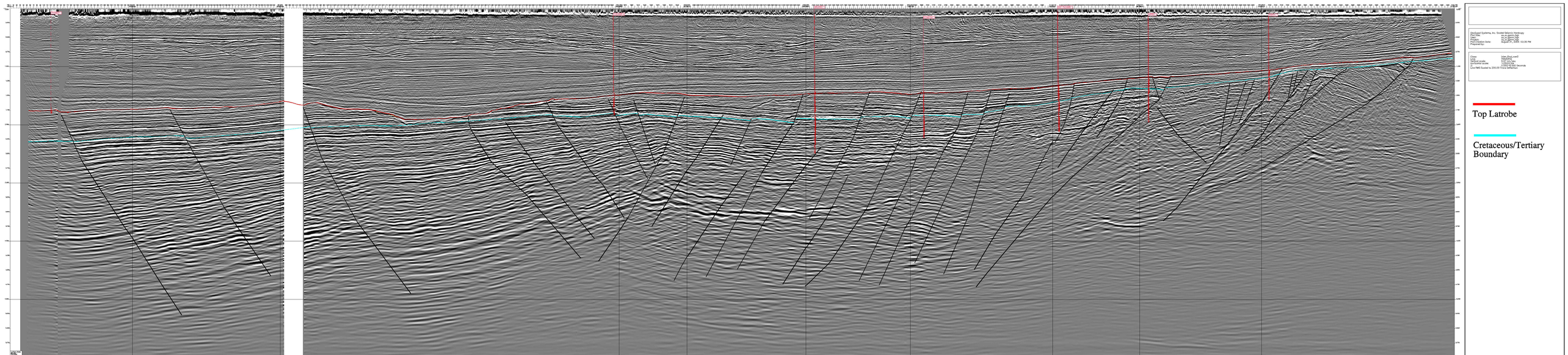
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400

N

Scale 1 : 100000
Meters
0 2,000 4,000

Enclosure 3 (Seismic Traverse 1)



Enclosure 4 (Seismic Traverse 2)