

APPENDIX F

**Preliminary Interpretation
Seismic Survey TB01
by
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TB01 Seismic Survey – Brief Summary.

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Introduction.

In 2001 Great South Land Minerals (GSLM) acquired over 600km of seismic reflection data across the Tasmania Basin and the Longford Sub-basin (Figure 1), with the aim of imaging structures within the Parmeener and Wurawina Supergroups that might act as commercial hydrocarbon traps.

Robertson Research Australia Pty. Ltd. processed the data acquired by the TB01 Survey with both paper and digital copies of the processed data produced. The final migrations being subsequently loaded into Kingdom Suite™, a seismic interpretation software package.

Michael Swift, an independent geophysical consultant based in Brisbane, produced a brief report of the preliminary data aimed at prioritising (focusing) GSLMs current program on leads that were best defined by the seismic (Figure 1). Andrew Stacey, a Ph. D student and member of the ARC Linkage Project: *Petroleum Systems Modelling Onshore Tasmania*, based at the University of Tasmania has also conducted a 1st pass interpretation of the data across the Tasmania Basin identifying large structures in both the Parmeener and Wurawina Supergroups (Figures 2-14).

Interpretation.

The seismic data has been acquired in an area where the presence of large bodies of Jurassic Dolerite as sills or as scree has resulted in data of variable quality. Also due to the constraints of terrain data along straight lines (dip and strike lines) were difficult to acquire, a vast majority of the lines having been acquired along roads, where bends have also affected data quality.

Technical problems were also encountered where many of the lines were loaded either backwards or shortened has lead to difficulties in interpretation (Table 1). In which case the data does not lend itself to the across basin identification of reflectors, the interpretation has been necessarily confined to those parts of sections where the quality of the data has been of sufficient to identify large structures (Figures 2-14).

Lines Interpreted.

TB01-PA
TB01-PB
TB01-PD
TB01-ST
TB01-TA
TB01-TB
TB01-TC
TB01-TD
TB01-TI

Names of Structures Identified.

Mt. Arrowsmith
Derwent Bridge
Laughing Jack
Bronte/Bellevue
Steppes
Hunterston
Scotts Tier
Interlaken

Structures in detail.

Mt Arrowsmith (Figure 2):

- Defined on TB01-TB.
- Structures identified in the Parmeener and Wurawina Supergroups.

Derwent Bridge (Figure 3):

- Defined on TB01-TB.
- Structure identified in the Wurawina Supergroup.
- Small structure with very little roll over, closed by faults.

Laughing Jack (Figure 4):

- Defined on TB01-TB.
- Structure identified in the Wurawina Supergroup.
- Steeply dipping reflectors, structure possibly fault closed, may constitute part of the Bronte/Bellevue structure, will require more data to be properly defined.

Bronte/Bellevue (Figures 5-8):

- Defined on TB01-PB, TI, TD.
- Large structures identified in both the Parmeener and Wurawina Supergroups.
- Parmeener outcropping at the surface, Eldon – Gordon Group boundary identified by seismic character.
- Possible Traps:
 - Bronte/Bellevue (Parmeener) is an anticlinal trap approximately 6500m in length (TB01-PB) with an estimated closure of 25msec.
 - Bronte (Wurawina) is a fault-closed structure, approximately 5000m in length (TB01-PB) with an estimated closure of 250msec. Depth to the top of the structure (top Gordon Group) estimated to be 4000m (13100ft).
 - Bellevue (Wurawina) is an anticlinal trap approximately 5000m in length (TB01-PB) with an estimated closure of 50msec. Depth to the top of the structure (top Gordon Group) is estimated to be 2900m (9500ft).
 - Bellevue (Wurawina) if the fault at the southwestern end of the structure does not leak then the structure with fault closure is approximately 9000m in length (TB01-PB), with an estimated closure of 250msec.
 - There is also the possibility of traps being formed in palaeokarst at the Tabberaberan Unconformity.

Steppes (Figure 9):

- Defined on TB01-PB.
- Structure identified in the Parmeener and Wurawina Supergroups.

Hunterston (Figure 10-12):

- Defined on TB01-PB, TA (PA, PD).
- Structure identified in the Parmeener and Wurawina Supergroups.
- Lower Parmeener (Ferntree Formation) (Fairbridge, 1949) outcropping at surface. Dome at surface identified by Fairbridge (1949), a dome structure can also be identified in the Wurawina (Lines PB & TA).

Scotts Tier (Figure 13):

- Defined on TB01-ST.
- Structure identified in the Parmeener and Wurawina Supergroups.
- Possible trap:
 - Anticlinal trap identified in the Parmeener is approximately 19000m in length (TB01-ST), with an estimated closure of 25msec.

Interlaken (Figure 14):

- Defined on TB01-ST.
- Structure identified in the Parmeener.

Technical Problems with digital seismic data.

- Areas of poor quality restrict interpretation.
- Bends in lines make interpretation difficult.
- Errors in electronic data when compared to the paper data:
 - Lines loaded back to front.
 - Lines longer (more SP) on paper. Ties with other lines in wrong location or don't occur.

Table 1: Differences in electronic seismic (Kingdom Suite) compared to paper copy.

Line	Start SP (E)	End SP (E)	Start SP (P)	End SP (P)	Difference	Comments	Recommendations
TB01-PA	100	339	106	344	11	Traces loaded backwards compared to paper.	Reload SEGY data
TB01-PB	100	3553	100	3816	263	Location of ties with TD, SP same, traces different.	Reload SEGY data
TB01-PD	100	576	142	620	87	Traces loaded backwards compared to paper.	Reload SEGY data
TB01-ST	100	2316	100	2500	185	Location of ties with PB, SP same, traces different.	Reload SEGY data
TB01-TA	100	569	101	570	2		
TB01-TB	100	1735	100	1877	142	Traces and SP loaded backwards compared to paper.	Reload SEGY data
TB01-TC	100	1354	100	1484	130		
TB01-TD	100	700	107	712	20	Traces and SP loaded backwards compared to paper, No tie with TB or PB.	Reload SEGY data
TB01-TI	100	638				Does not appear on paper copy basemap	

Recommendations.

- Reload entire project into Kingdom Suite™.
- Improve data quality through reprocessing.
- Modify acquisition parameters to maximize data quality at time of acquisition.
- More crosslines are required to better define structures identified by TB01 survey, as a single line has only identified many structures.

Further Work. Reload SEGY data into project.

- Geotraverse across Bronte/Bellevue structure to ascertain what Parmeener strata is outcropping.
- Interpret northern portion of TB01 Seismic Survey.

Mt. Arrowsmith

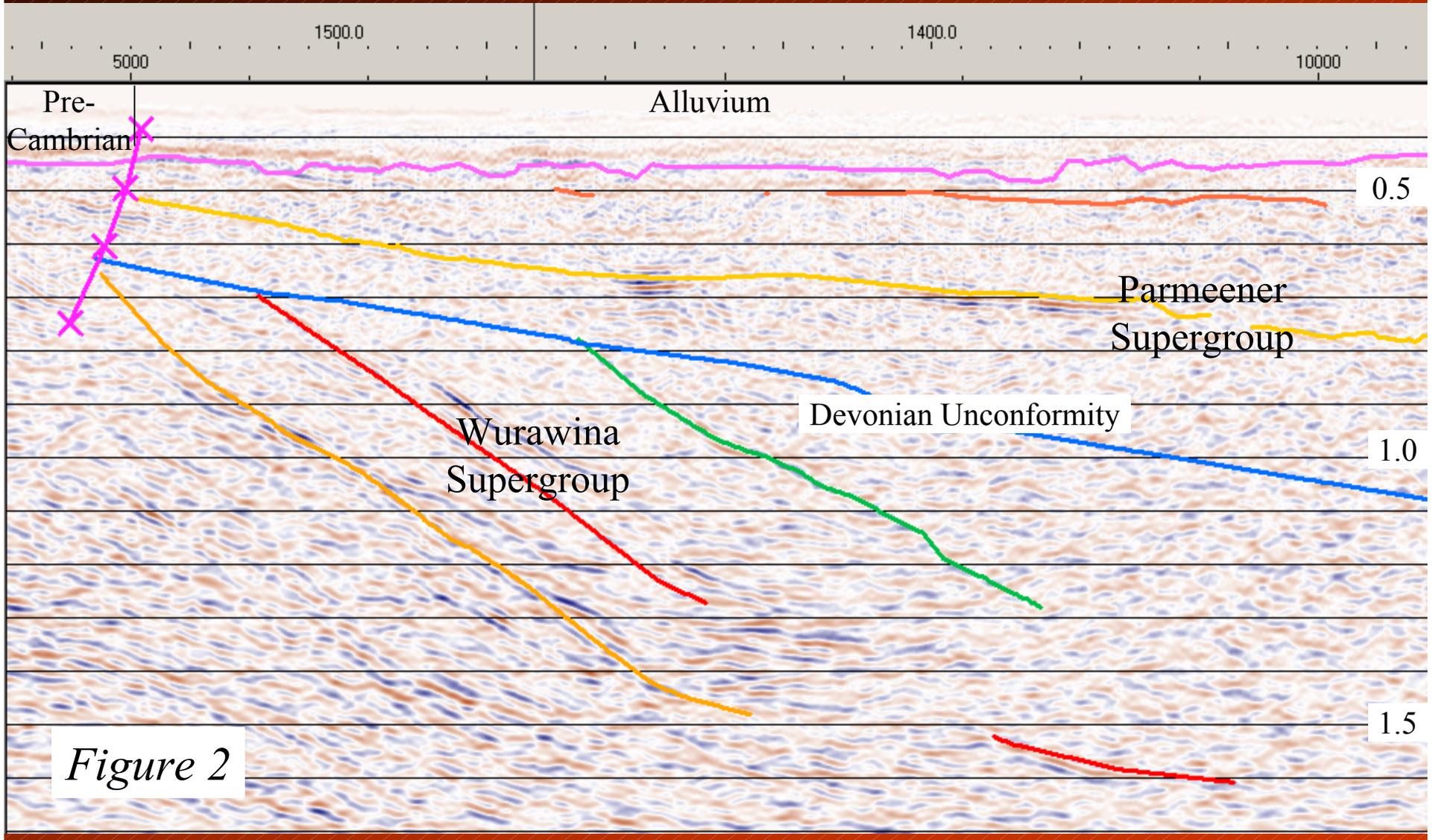
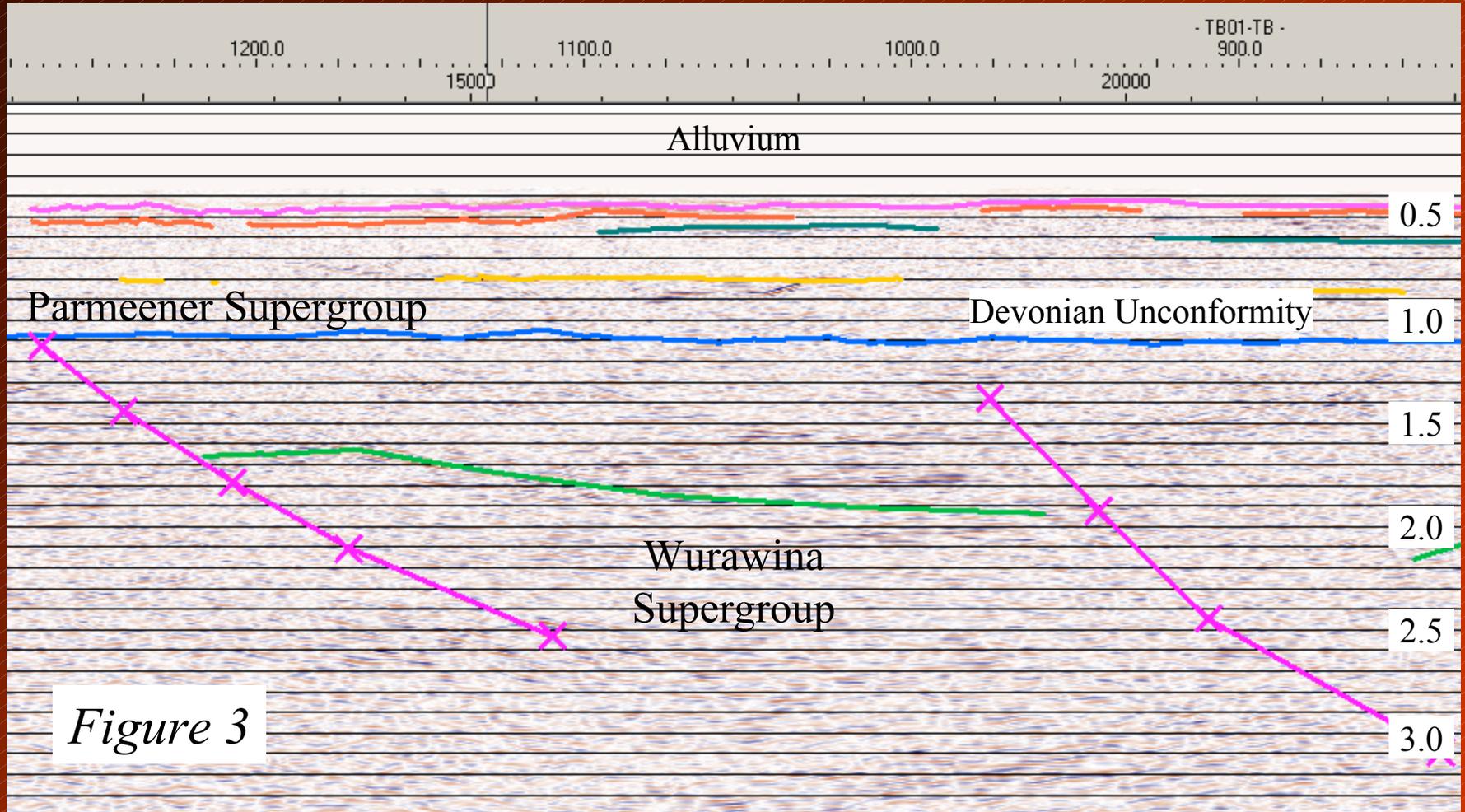
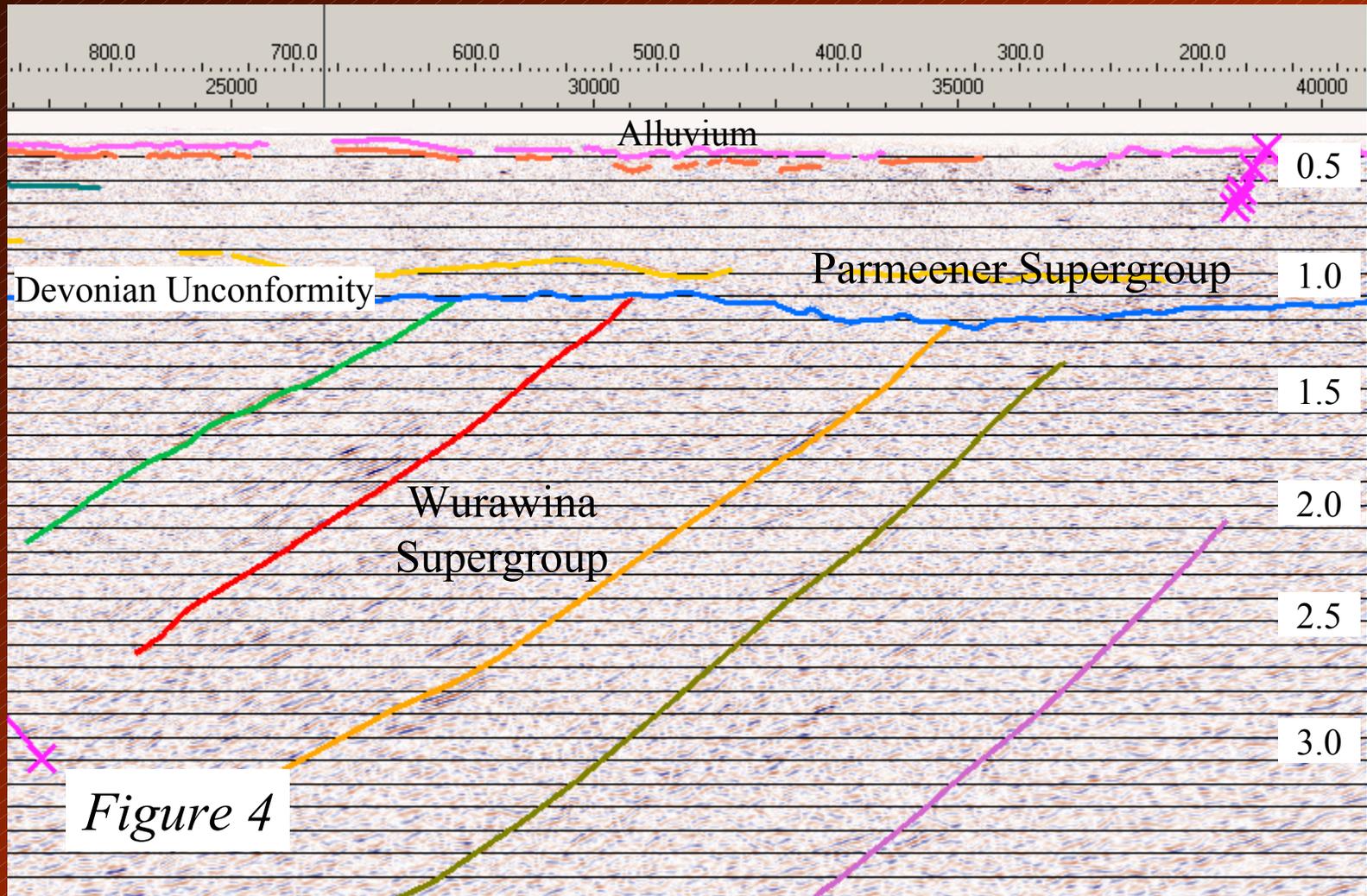


Figure 2

Derwent Bridge



Laughing Jack



Bronte/Bellevue – TB01-PB

(Parmeener)

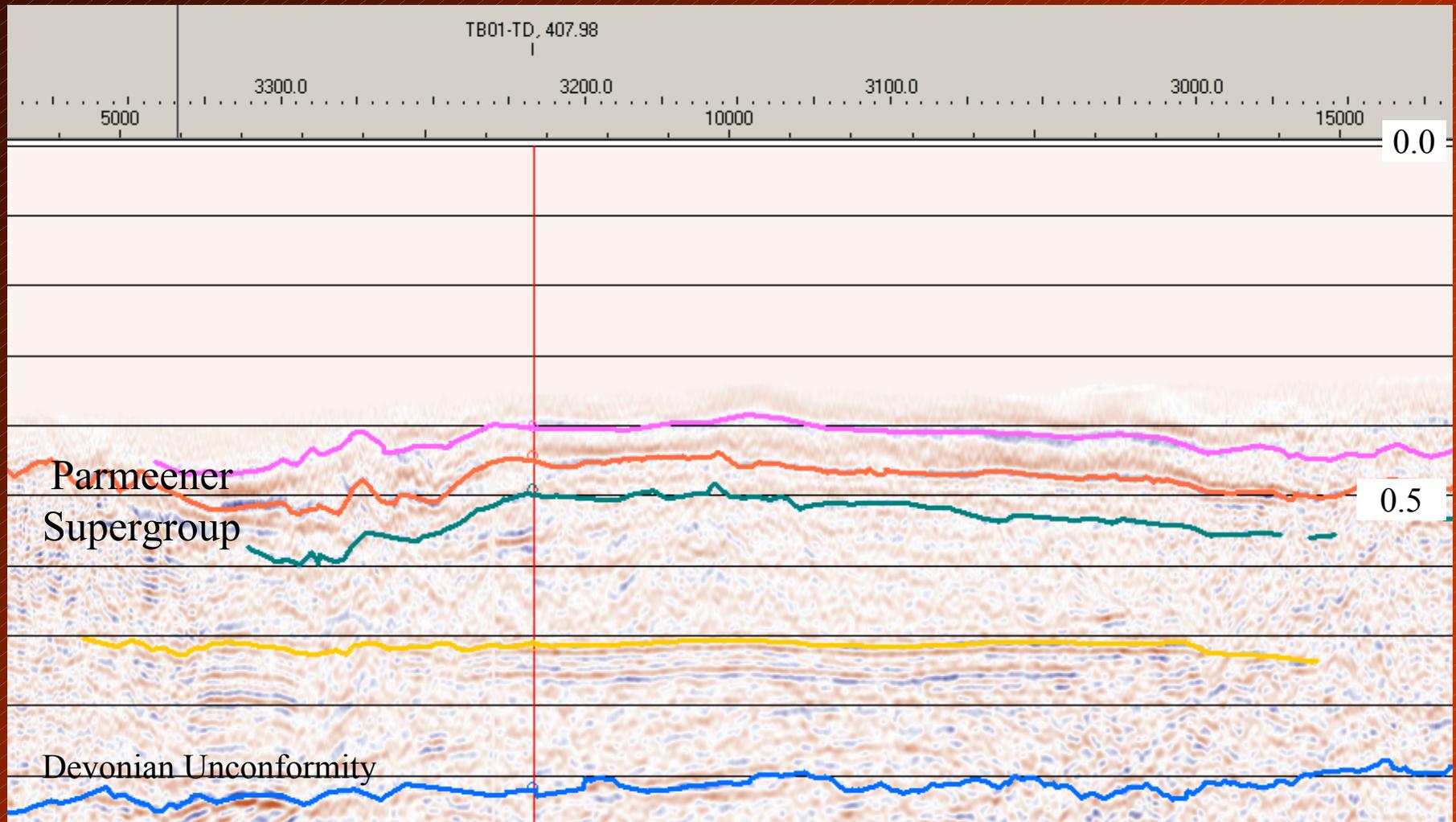
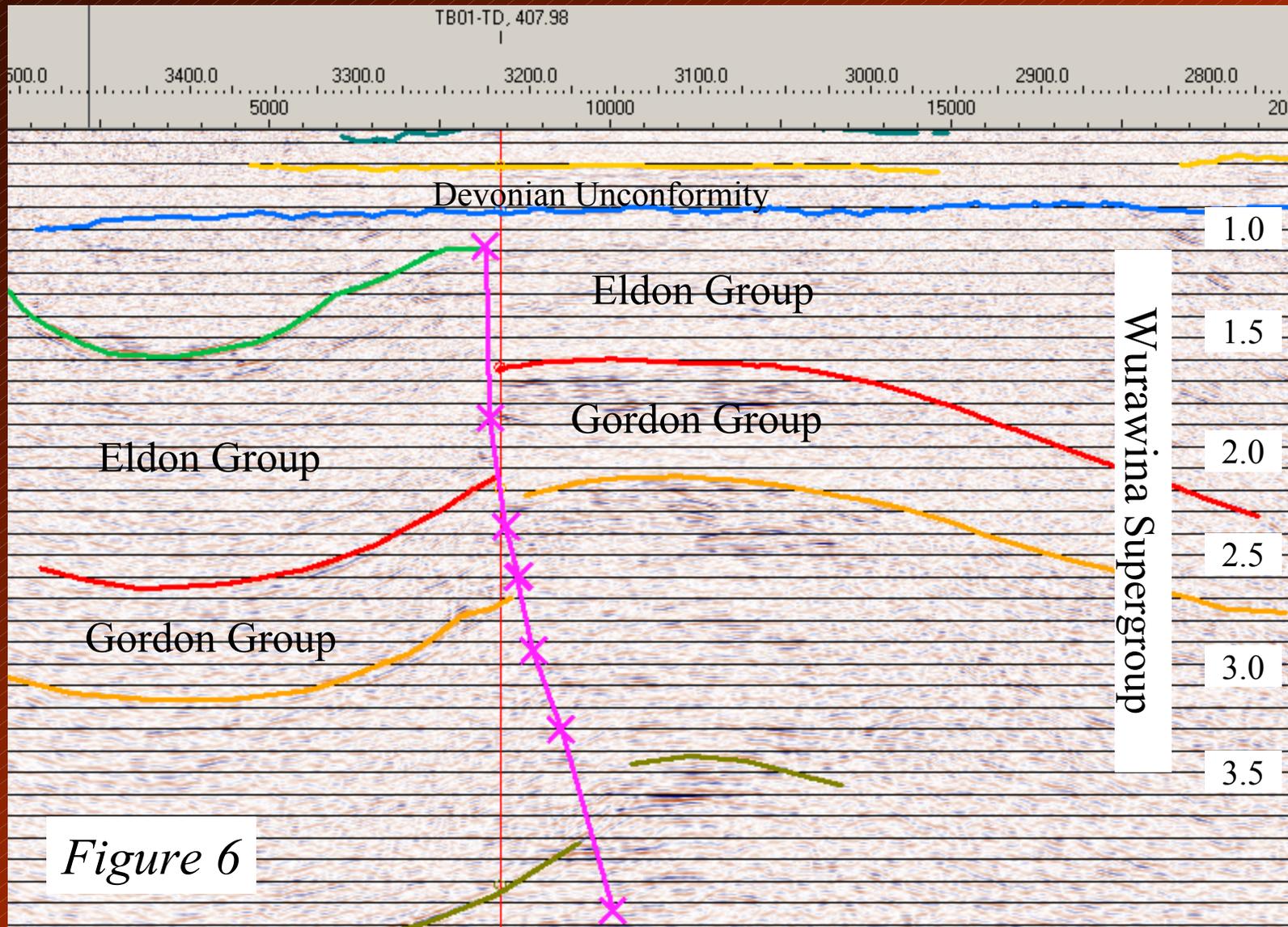


Figure 5

Bronte/Bellevue – TB01-PB



Bronte/Bellevue – TB01-TI

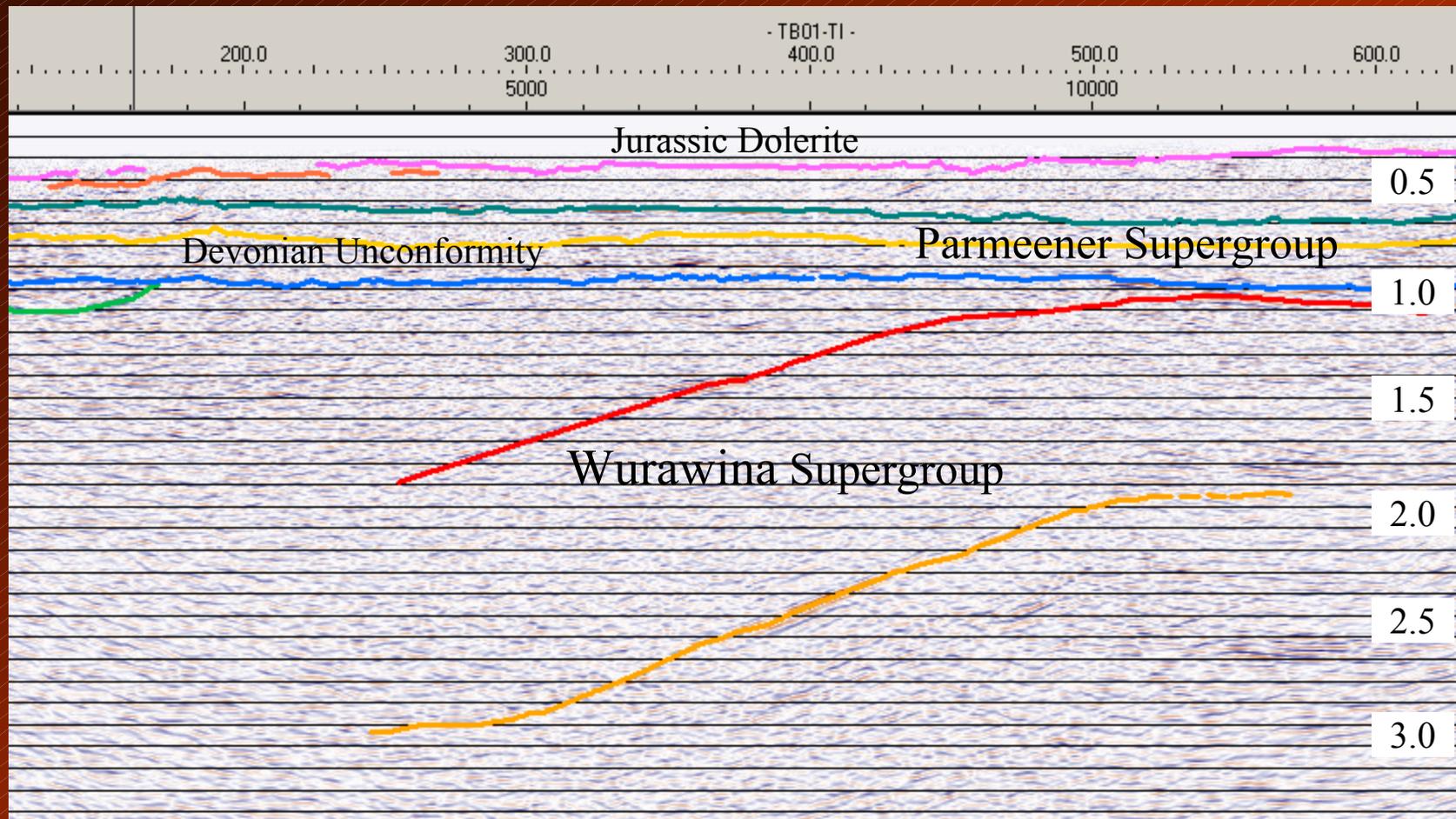


Figure 7

Bronte/Bellevue – TB01-TD

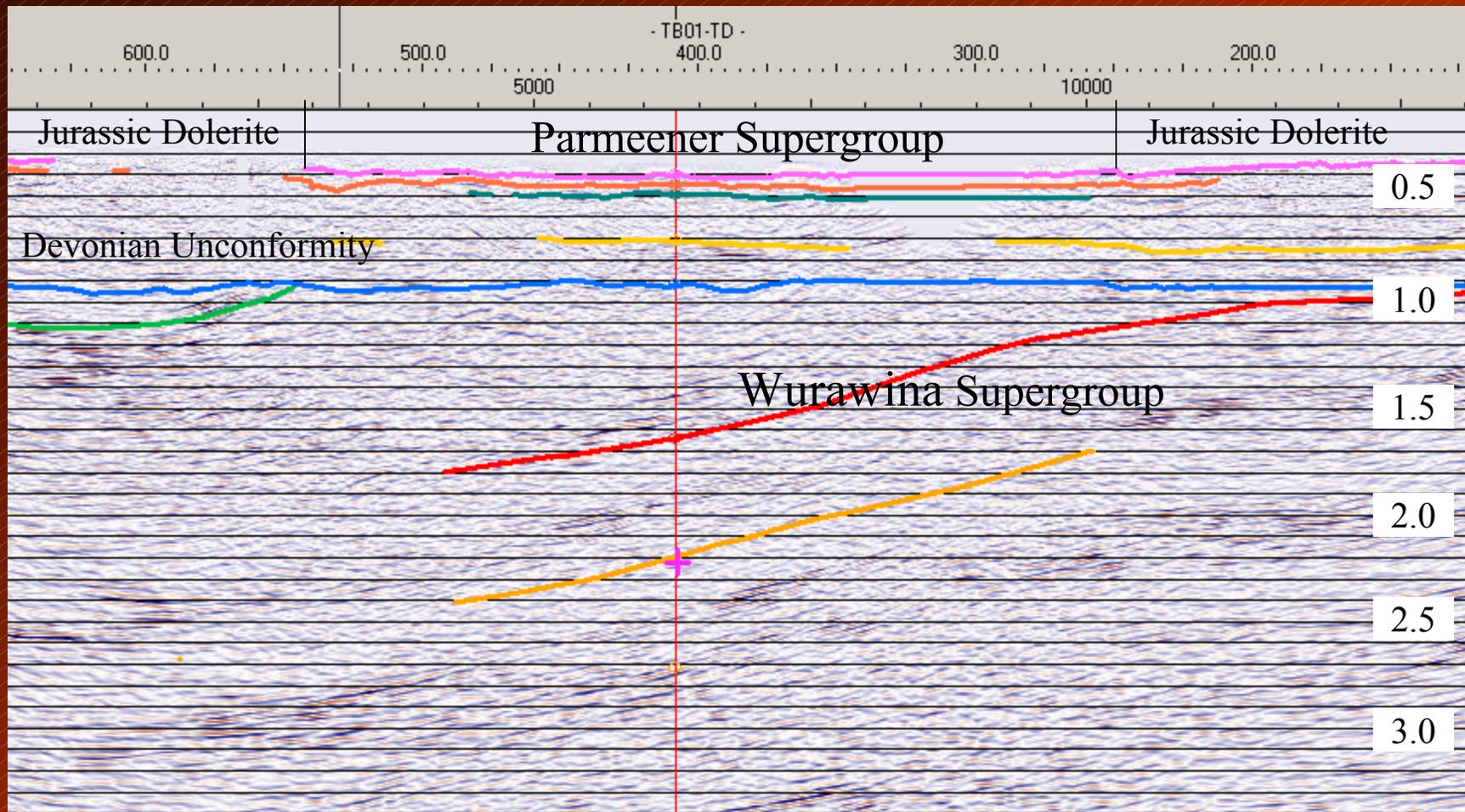


Figure 8

Steppes

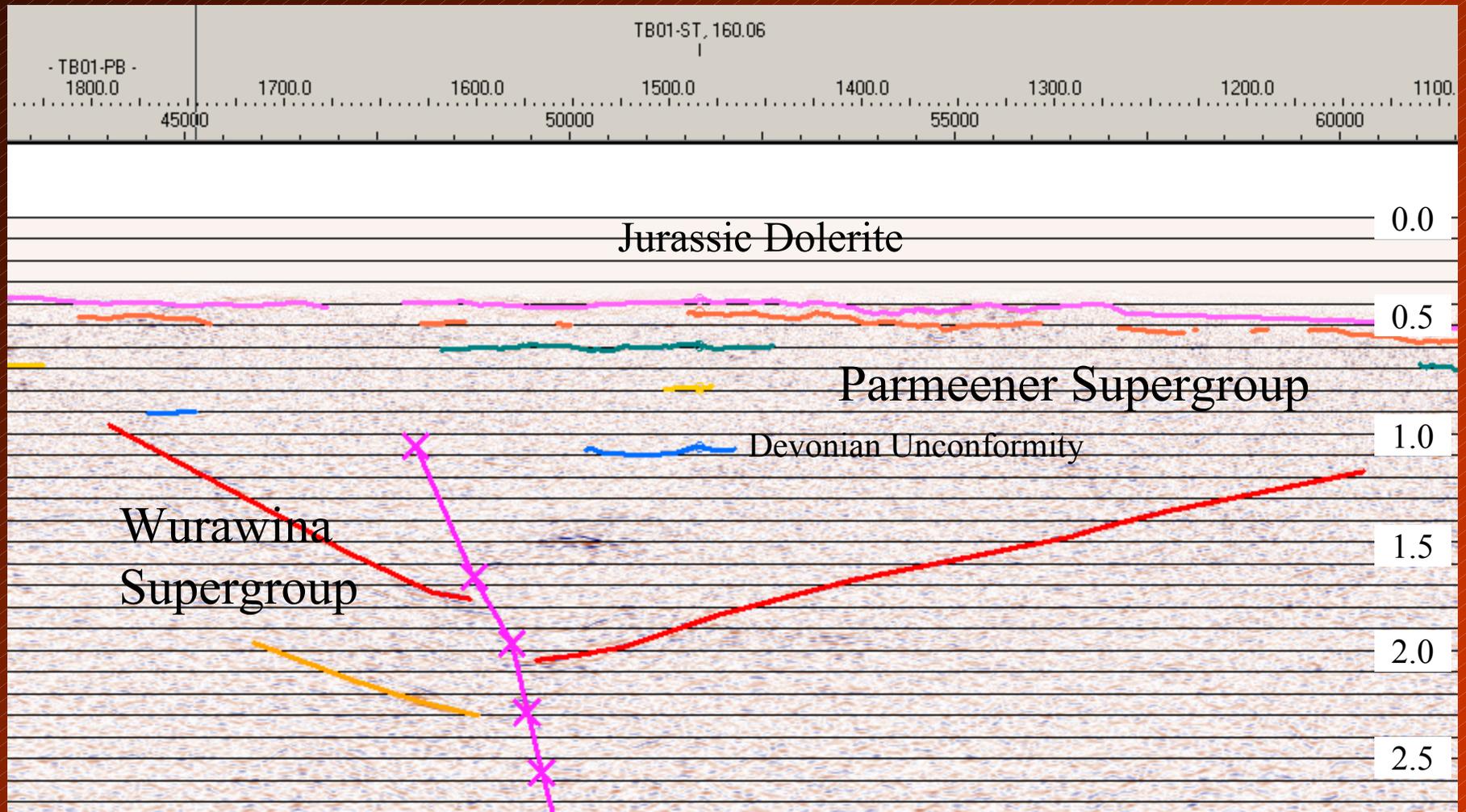


Figure 9

Hunterston – TB01-PB

(Parmeener)

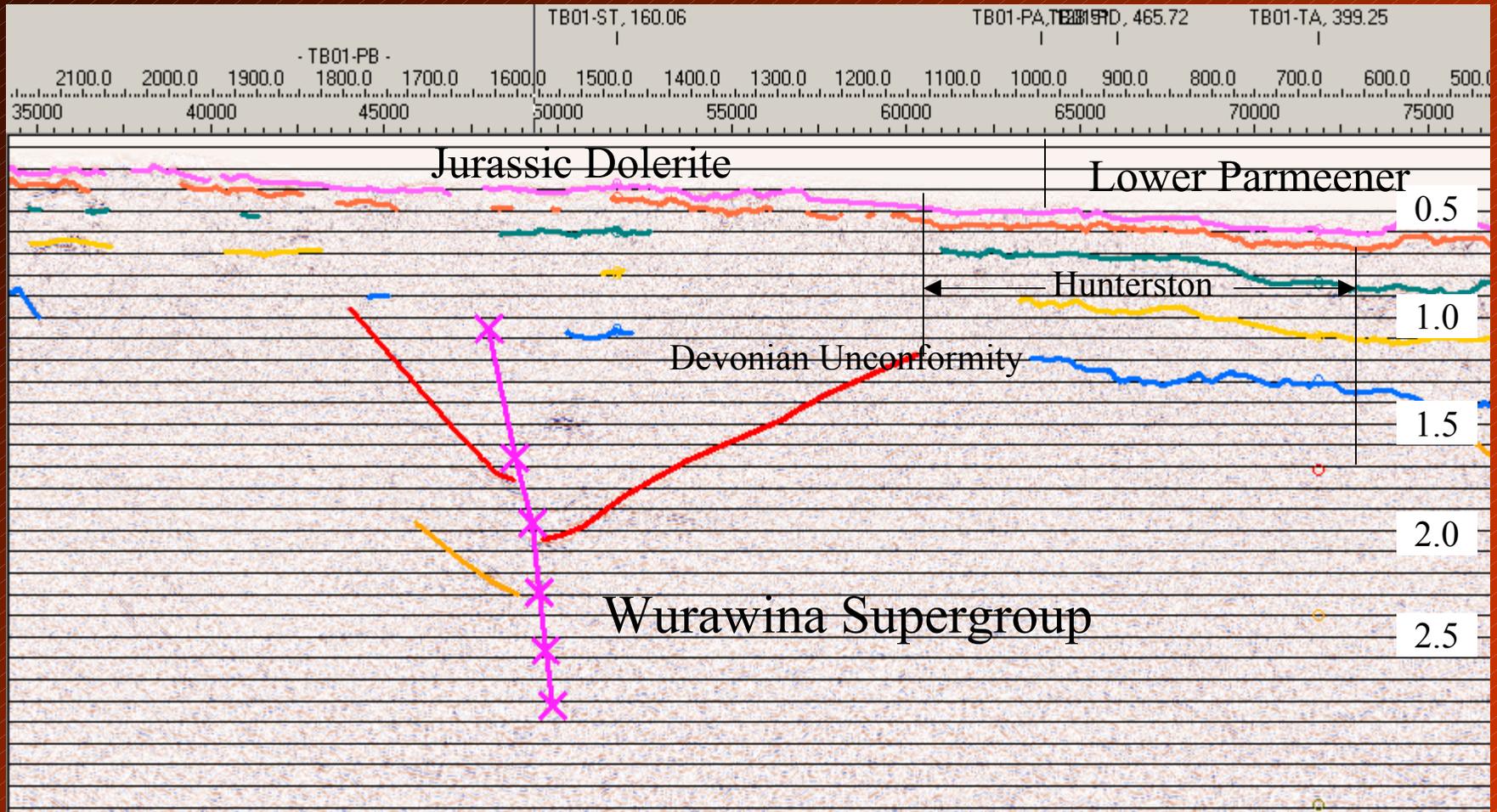


Figure 10

Hunterston – TB01-PB

(Wurawina)

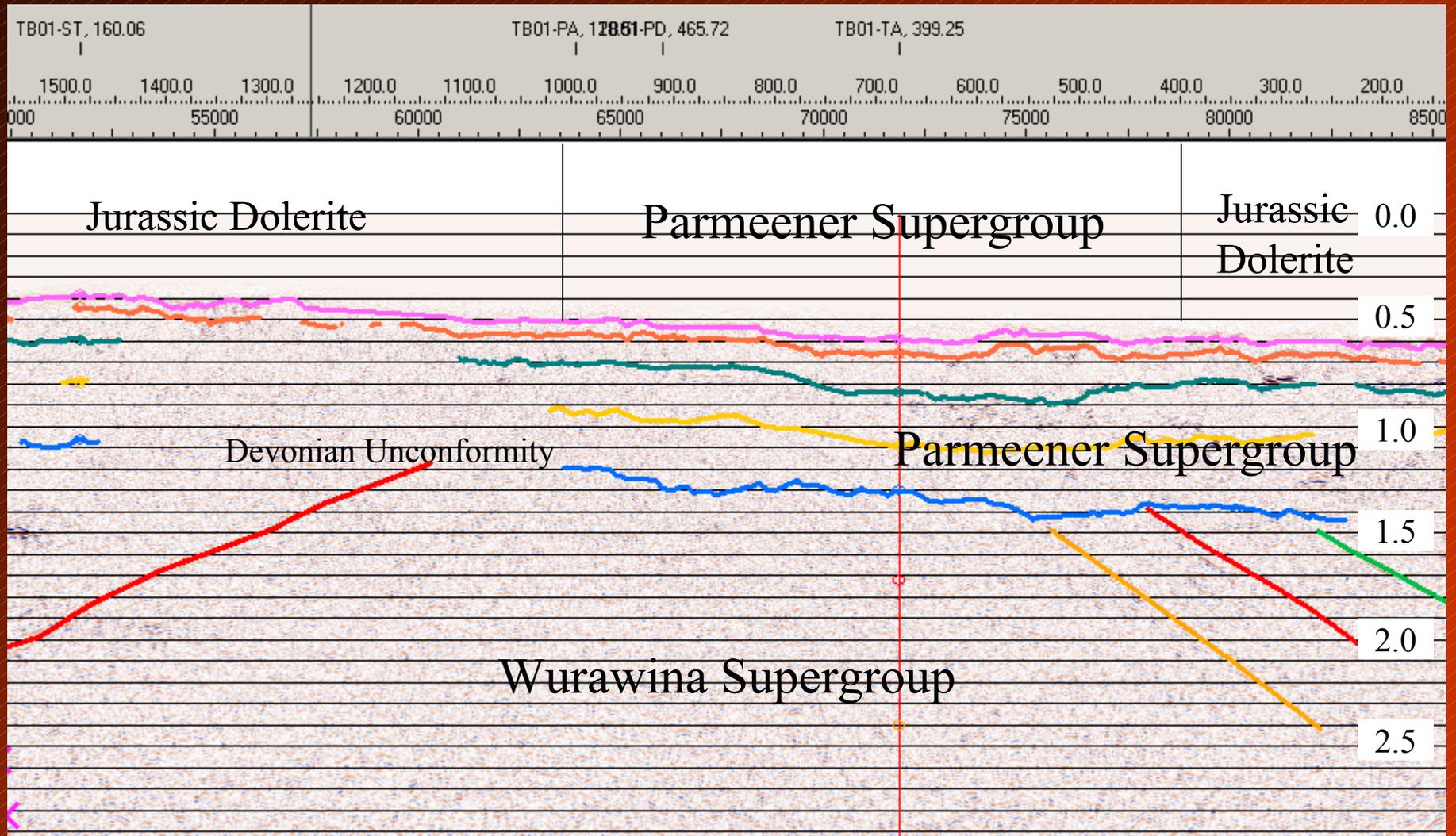


Figure 11

Hunterston – TB01-TA

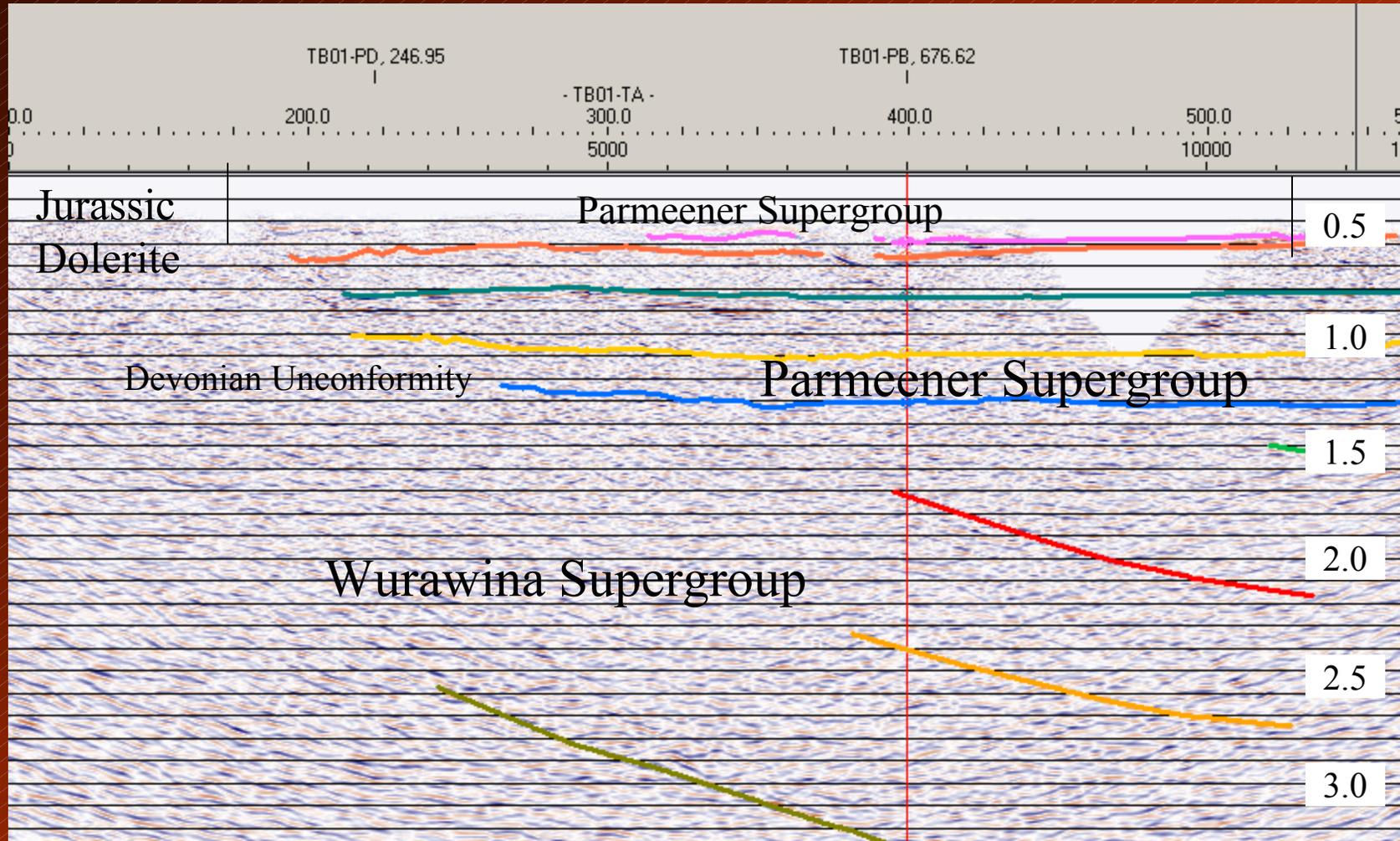


Figure 12

Scotts Tier

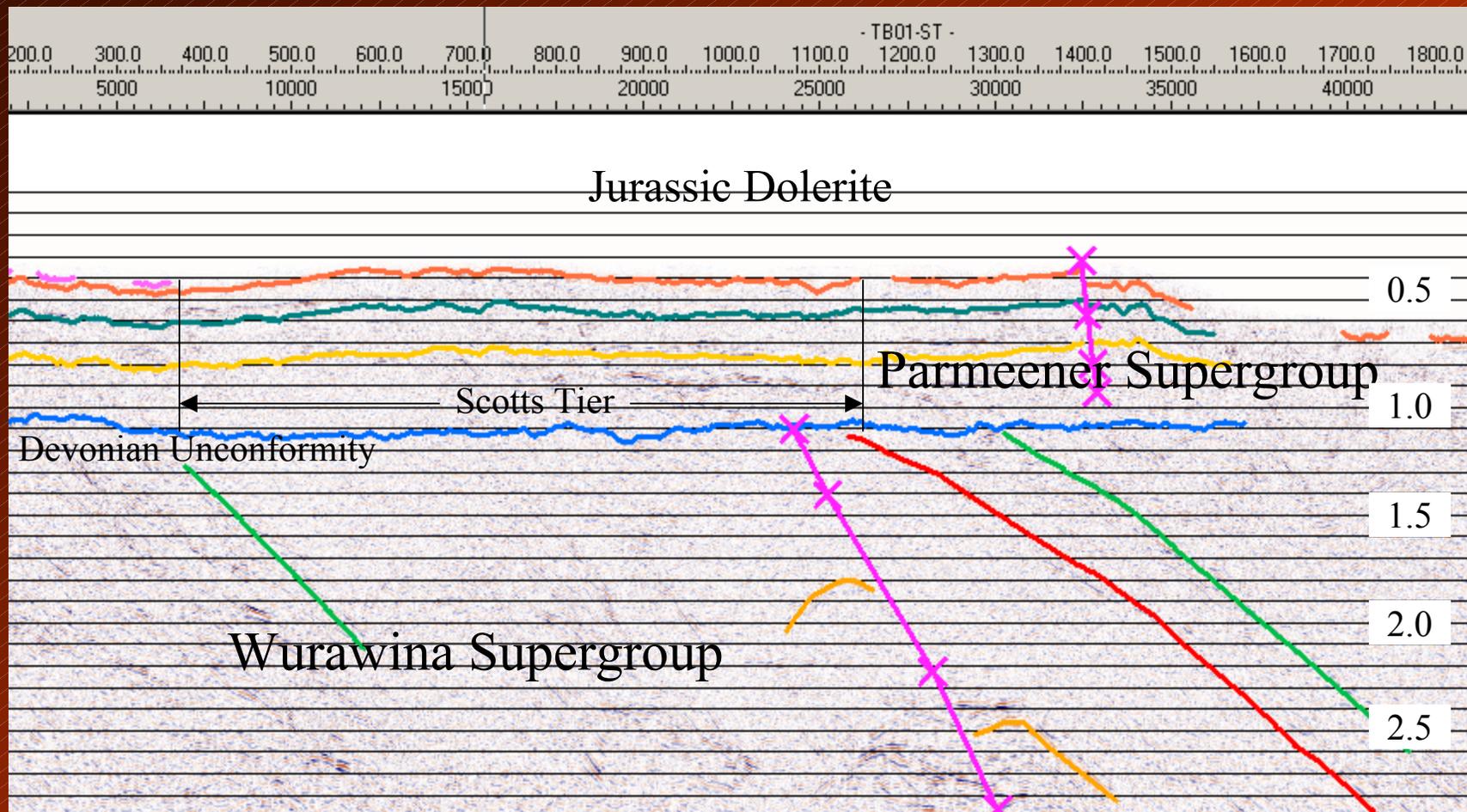


Figure 13

Interlaken

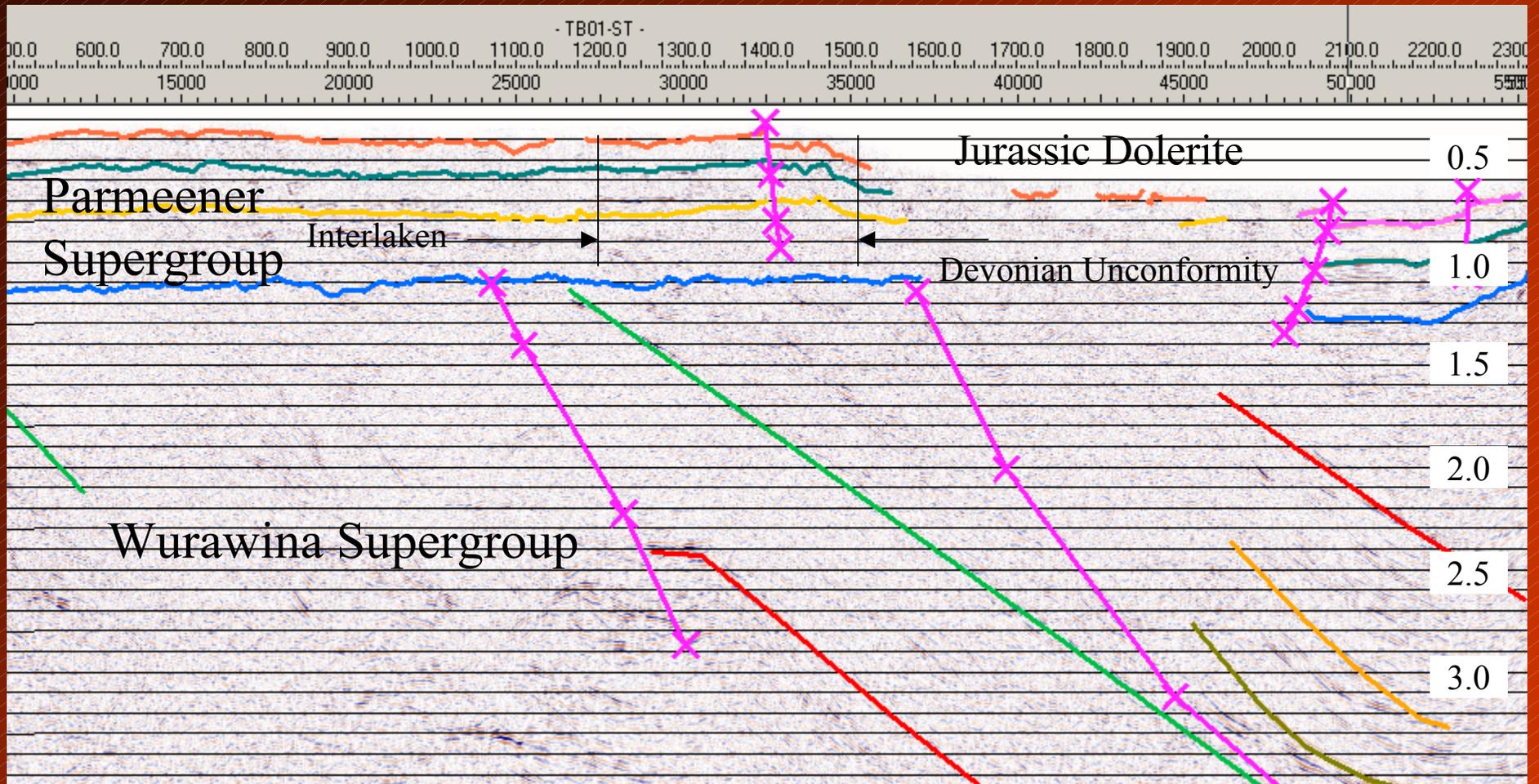


Figure 14