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# **ABSTRACTS**

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*Jim  
My paper  
attached.  
Tony*

**New Developments in Research  
for Ore Deposit Exploration**

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# HIGH-RESOLUTION REFLECTION SEISMIC IN THE HELLYER ORE ENVIRONMENT

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The richly mineralised Cambrian Mount Read VHMS district of Tasmania contains diverse submarine lavas and volcanoclastic rocks (Corbett, 1992). Lenticular, bulging and domal lava forms (Cas, 1992) in basaltic and andesitic lavas of a host unit, the Que-Hellyer Volcanics (QHV) (McPhie & Allen, 1992; Waters & Wallace, 1992) may be imaged on high-resolution reflection seismic sections. Some high-grade mineral deposits in the region, e.g. classic mounds such as the Hellyer Zn-Pb-Cu (Ag, Au) deposit (Large, 1992a) also have potential for being detected by seismic surveying due to their density contrast (Read, 1989) and form

A 1.2 km-long high resolution reflection seismic test line was shot over a prospective portion of the Hellyer ore environment, northwest Tasmania, to determine to what extent the seismic method might have potential to identify key described geological features in gently to moderately dipping sequences at depths greater than those currently being explored. The work formed a small part of a seismic traverse across the Dundas Trough (Fig 1; Drummond et al., 1996). AGSO's Land Seismic Group conducted the survey and processed the data. Recording parameters for the high resolution line were: 10m station spacing, 60m shot point interval and a 2kg charge at 5m depth (Barton et al., 1995). Gravity data were acquired at 120m intervals by Richardson (1995).

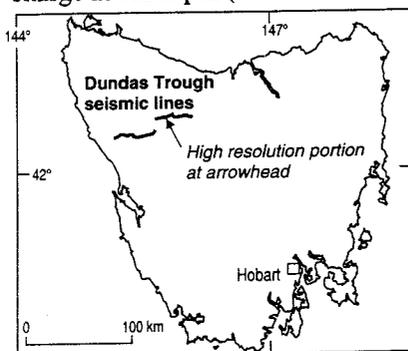


Fig. 1 Location (see Barton et al., 1995).

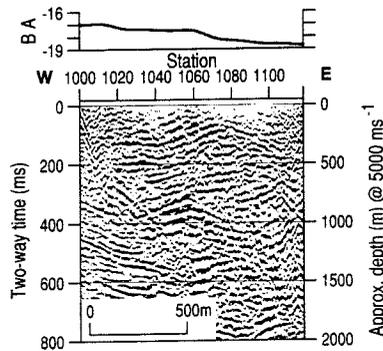


Fig 2 Results uninterpreted

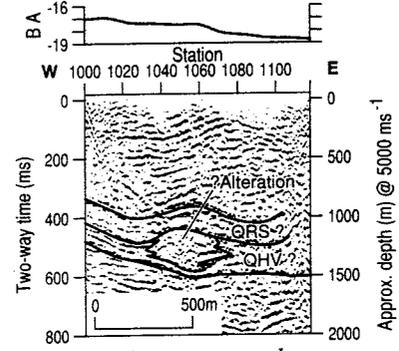


Fig 3 Results interpreted

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Figures 2 and 3 reveal weak flat reflectors at 100-200m. They are considered spurious, perhaps multiples from the base of weathering. Between 200 and 500m, dips accord better with projected surface and drillhole values (but note V/H < 1 to show reflectors better). Below 500m, geological control in the vicinity is lacking. Beneath station 1055, prominent reflectors at about 900 and 1150m are interpreted as the top and base of the Que River Shale (QRS). It overlies the QHV whose base is interpreted as the reflector about 1500m below station 1055 (Fig 3). There, interpreted QHV has a notable bulge, with a small coincident gravity gradient. Reflections are weaker in the bulge, suggesting alteration. Strong reflectors above, at 1150m, suggest high-velocity rocks, e.g. carbonate, dolerite, or ?massive sulphides, a potential target warranting consideration for drilling (cf. Gemmill & Large, 1992, fig. 6). Results are exciting, as new deposits in the region are thought more likely to be found below depths of 300m (Large, 1992b). [Acknowledgements: J Mifsud (artwork); Published with permission].

## REFERENCES (Note: titles of several papers have been shortened for brevity).

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