

A 3D 3C Shallow Seismic Refraction Survey Across a Shear Zone at Bungendore

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A three dimensional (3D) three component (3C) shallow seismic refraction survey was recorded across an extension of the Lake George fault in the butcher's paddock at Bungendore. The ANSIR equipment employed 348 channels in a static spread set out as 4 lines of 29 stations with 3 component geophones. The seismic energy source was a IVI Minivib, T15000. P- & S-wave sweeps were employed. Shear zones are an important concern in most geotechnical investigations. However, they can be especially difficult to separate from artifacts of inversion algorithms, because the traveltimes anomalies are relatively small. Saline groundwater in major bedrock fractures, appears to be the source of dryland salinity in the Dubbo area. In other areas of dryland salinity, eg Wagga, the source is wind blown salt. Identifying the source of the salinisation is important in selecting the correct remediation strategy.

The head wave amplitudes are not satisfactorily described with the ratio Of the specific acoustic impedances. Not only is there a decrease in amplitudes associated with the lower velocities of the shear zone, but there is also an increase in amplitudes with increases in velocities. Appealing to strong attenuation in the shear zone does not account for the other discrepancies. It is possible that the geological structure is complex, as is suggested by marked change in character the refraction convolution section (RCS) across the shear zone. For this June 30 deadline, only the P-wave data have been examined. However it is a fascinating case history which should be ready to go for the deadline in extended abstracts in October, if accepted for presentation.