



Bedrock Geology of the DFDP-2B Drill-Site, Central Alpine Fault, New Zealand

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Bedrock was encountered at drilled depths (MD) of 238.5–893.2 m (vertical depths of 238.4–818.0 m) in DFDP-2B, Whataroa River, Westland, New Zealand. Continuous sampling and onsite description of whole cuttings samples and thin sections allowed identification that the borehole terminated within amphibolite facies, Torlesse Composite Terrane-derived mylonites >200–400 m above the Alpine Fault principal slip zone (PSZ). The most diagnostic macro- and micro-structural features were the occurrence of shear bands and reduction in mean quartz grain sizes toward the Alpine Fault. Onsite optical microscopy and subsequent offsite electron microscopy both demonstrate: (i) reduction in grain size and (ii) change in composition to greater mica:quartz+feldspar, most markedly at 720 m MD (vertical depth of 695 m), inferred to result from either heterogeneous sampling due to variations in drilling parameters, or a change in rock type across a minor fault. Major oxide variations suggest the Alpine Fault alteration zone, as defined during DFDP-1, was not sampled.