Project 3.2

Geological representivity of returned cuttings from Coiled-Tubing drilling.

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Introduction
The DET CRC is currently developing a Coiled-Tubing (CT, Fig. 1) drill rig combined with a Lab-at-Rig® system and AMC Solids Removal unit (SRU) which will allow for rapid drilling through deep cover, and give real-time geochemical/mineralogical analysis, whilst cleaning/recycling drilling fluid for continued use. Contrary to conventional drilling techniques, CT drilling produces cuttings rather than core, which can travel along the drilling fluid and be processed through the SRU. However, these cuttings have the potential to mix with others from adjacent depths, and can give an ‘untrue’ sample of the rock mass drilled. To assess the representivity of drill cuttings, CT simulated experiments were run at 100m depth in a hard rock environment. Sources of contamination were identified through the CT to SRU system, and parameters were developed to mitigate against smearing.

Smearing is the contamination adjacent samples experience through mixing during transport via the annulus, the collar capture device, and/or the SRU (Fig. 2).

Conclusions
Smearing is most likely occurring in the SRU due to particle separation and residence time in shaker tanks.
Work is being done to optimise the SRU performance by reducing the ROP, creating a bit design which reduces particle size and narrows PSD, and to minimise water volume in SRU tanks.