

## PART III - FISSION TRACK ANALYSIS ON CORE #2 (3345 m) AND JUNK SUB SAMPLE (3173 m)

### SUMMARY

An unsuccessful attempt was made to date the volcanics near T.D. in Yolla-1 using fission track analysis. Although apatite was recovered from a doleritic rock, the present downhole temperature of approx. 140°C is in excess of that required to erase all fission tracks in this mineral, so no age data was possible. Insufficient zircon was present for analysis in the samples submitted, but this mineral could provide an age date at ambient temperatures below about 200°C.

### SAMPLES AND SUITABILITY

A 1 kg sample of altered vesicular basalt from core #2, Yolla-1 and a junk basket sample from 3173 m which contained approx. 90 g of a medium to coarse grained doleritic rock were received for analysis (Table 1).

The mineral separation procedure recovered a good apatite yield from the junk basket sample (8522-129) but only a few probable grains of zircon. The basalt sample (8522-130) contained no apatite or zircon.

### TECHNIQUES

Apatites were mounted in epoxy resin on glass slides, polished and etched for 20 sec. in 5M HNO<sub>3</sub> at 20°C to reveal the fossil fission tracks. Zircons were mounted in FEP teflon and etched in a molten eutectic of NaOH:KOH at 210°C for several hours.

### RESULTS

No tracks were revealed in the apatite sample (8522-129) after the etching procedure due to the present downhole temperature of this sample being in excess of approx. 125°C (Gleadow et al., 1983). For times of the order of 10 Myr at this temperature, all fission tracks in this mineral are erased.

The few grains of probable zircon recovered from 8522-129 did not survive the etching step and the sample was therefore abandoned.

### CONCLUSIONS

1. Fission track analysis for age dating purposes at present downhole temperatures in excess of approx. 125°C require the presence of zircon.
2. In the majority of cases basalts do not provide sufficient zircon for analysis.
3. Coarse-grained doleritic rocks often contain some zircon, but approx. 1 kg of rock sample is usually required to be certain of a reasonable yield.