

- 0014
- Continue interpretation of the core geochemical data base using statistical techniques such as trend surface analysis.

#### 4. SOUTHWELL - LEVEN RIVER

##### 4.1 Introduction

Exploration of the Southwell Sub-Group, a volcano-sedimentary sequence conformably overlying the QHV, was concentrated in the Southwell valley this reporting period. Mapping was completed over the grid established in 1989, with the aim of locating the source of Pb, Zn and As -72# stream sediment anomalies (McNeill 1989). During the course of the mapping a zone of footwall style alteration was located. A small (2.5 line km) extension to the existing grid was cut and the alteration zone surveyed with UTEM.

##### 4.2 Geology

###### 4.2.1 DDM MAC-20

During the course of relogging this hole, as part of a study of the Southwell Sub-Group (Section 3.2.4) Dr. K.D. Corbett, noted the presence of trilobite fossils in unusual carbonate rich clasts from a coarse lapilli volcanoclastic at 350-365m down-hole. Two samples were provided to Dr. J. Jago, University of South Australia, who identified the fossils, see appendix 9 for report. He concluded that the fauna was older than the Crade Mt. Link road locality (Tyndall Group) but the same age or slightly younger than the fauna in the Que River Shale, confirming the correlation of this unit with the Southwell Sub-group.

###### 4.2.2 Southwell Valley

Mapping at 1:2500 scale was completed on lines 10200N-12200N and in the small creeks around 11700N, 7800E. Results are shown on plates MAC89WW, A1 and 7 (see plate MAC114 for legend). An interpretation is shown on plate MAC161B. Major lithological types in this area have been described previously (McNeill 1989c) and no further petrological work has been completed. It is now considered that, using the criteria of Allen (1988), some lithologies previously identified as volcanoclastic (flv on interpretive geology plans) are rhyolitic-dacitic lavas or intrusives, with false clastic texture produced by a combination of alteration and devitrification. These felsic lavas/intrusives are much more widespread than previously interpreted and form two major N-S trending bodies, disrupted by interpreted N.W. trending faults. Between these two bodies is a sequence of felsic medium lapilli to ash volcanoclastics and interbedded micaceous greywacke-shale, which are intruded by small rhyolitic bodies that appear to be sub-parallel to bedding in some outcrops (e.g. 10400N, 8170E).