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such a Devonian event were proposed. Rather these data, and the analogous data from the Fukazawa deposit (op.cit.) argue in favour of a Cambrian alteration signature being preserved through the Devonian metamorphic event.

It is therefore reasonable to infer from the above that Rb and the Rb/Sr concentration ratio, may be used as exploration vectors in conjunction with whole rock geochemical data. The search radius provided by these geochemical and isotopic vectors is in the range 0.2 to 2km.

The magnitude of the depletions observed is related to the cumulative fluid flow through the footwall. Since the mass of metal present in a deposit is itself related to the cumulative fluid flow rate (albeit in a complex fashion) the slope of the Rb/Sr, Rb and Sr concentration data against distance may itself provide an indication of proximity to a potentially viable deposit. **Alteration geochemical Rb/Sr data, for example, may potentially be used to locate possible trends at Mount Charter and to seek new drilling targets.**

Further interpretation of these data is not strictly warranted as directly related to exploration but will impact on the growing data base for ore formation controls in the district.

Water-rock ratios and basement interactions. Only a limited number of data are available for the primary Rb and Sr isotope composition of host rocks to the Hellyer deposit. Sr isotope ratios for primary volcanics fall in the range .7066 - .7086 in published data. The present data confirm suggest this range for least altered samples (AI<40) in the Hellyer footwall sequence are in the range .706 - .709. Data for basement rocks are of course few: Brooks (1966) gives values for granites from .7354 - .700 and the McIvors Hill Gabbro (518 Ma) has a ratio of .7132.

The primary Sr isotope composition of Upper Cambrian seawater is broadly known from global data but local variations may have been present in the marine environment of the Mount Read belt. The flow schema for a VMS style deposit involves fluid both from seawater directly and seawater modified by alteration reactions deeper in the volcanic pile and its basement. The isotope ratio of the latter relates to primary host rock values or of specific minerals preferentially undergoing alteration.

One way of deriving a local 'mean' for this mixture of fluids is from Sr isotope data for barite. Data for stratiform and vein barites (from miscellaneous CSIRO reports to Aberfoyle) are in the ranges .7130 - .7180 and .7100 - .7112 respectively. Both ranges are higher than the estimated Upper Cambrian seawater value of .7091 - .7096 (e.g. Whitford et al., 1985).

An additional sample of a limestone clast from the Upper Rhyolite sequence has been sent for analysis to attempt to constrain the primary seawater Sr isotope ratio and to allow comparison with Sr isotope data for barites. This additional data may allow some estimate of the minimum fluid rock ratios involved in ore formation and comparison with genetic scenarios based on other techniques such as Pb isotopes (Gemmell, 1990)

Hydrology. Field mapping of alteration and the isotopic data reported above define a sub-sea floor hydrothermal alteration system of at least 4 km in extent transverse to the Que-Hellyer alteration corridor. There have been a number of models proposed to describe the hydrodynamics of such alteration systems and, through these, interpretations of, for example, leach source geometry for the ore metals and specific isotope data. Gemmell (1990), for example, utilises a popular focused convection schema and invokes progressive deepening of the convection system with time to account for singularities in the lead isotope