

M.I.M. Exploration Pty. Ltd.

Memorandum

FROM : Keith Hannan
TO : Regional Managers (for Team circulation)

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Hydromorphic Chemical Dispersions above the Ernest Henry Cu-Au Deposit

Groundwater-assisted (hydromorphic) dispersion of metals from the Ernest Henry deposit into overlying, semi-consolidated Phanerozoic sediments was established from an in-house examination of selected drill hole materials late last year (Hannan, 1994). This important feature has been recently confirmed by the work of Western Mining personnel, as part of the Mount Fort Constantine Joint Venture (MIMEX-WMC).

Continuous assaying of drill hole material along a 3.5 km, east-west traverse centred on the Ernest Henry deposit provides a clearer picture of the scale and intensity of dispersion than that achieved by MIMEX. In addition to confirming anomalous molybdenum and arsenic abundances in Cretaceous shales near the Mesozoic unconformity and sands between the Mesozoic and Cainozoic unconformities (see Figs.1 and 2), the plots provided by WMC show:

- (a) As-Mo dispersion along the Cainozoic unconformity (Fig.3);
- (b) mushroom-shaped dispersions of As and Mo at both unconformities centred vertically above the ore deposit (Figs.3 and 4); and
- (c) Elevated Cu values in Cainozoic sands, without a vertical connecting 'feeder' to the ore deposit (Fig.5).

The Mo and As patterns confirm and clarify our results, but I am not convinced that elevated Cu in the Cainozoic sands represent a dispersive halo to the ore deposit. Our assays indicate both elevated Cu and U in these sands compared to the deeper Cretaceous sands, features interpreted as a possible sediment provenance effect (Hannan, 1994).

Study areas within the AMIRA P417 Project (Geochemical Exploration in Regolith-Dominated Terrain, N. Queensland) provide more evidence of widespread hydromorphic dispersion of metals from Proterozoic rocks into younger cover sediments. A 5x15km Zn anomaly occurs in weathered Mesozoic silts between the Cannington and Pegmont Pb-Zn deposits and anomalous Cu-Au occurs in similar material below the first redox front (25m depth) above the Brumby Cu-Au prospect southwest of Cannington.

To conclude, cover sediments should be regarded as a valid sampling medium, particularly where redox zones (groundwater still-stands) are present and target rocks are not unreasonably deep. At the very least, multi-element analysis of ferruginous/iron-stained materials within cover materials should become standard practice within MIMEX. Pattern drilling and chemical analysis of cover materials (aircore) above extensive geophysical targets may be appropriate in some instances.

Copies For Circulation To J.Anderson, K.Harvey, V.Irarrazaval, J. Noakes, D.Wilson, V.Wall, I.Willis

ReferencesHannan, K.W., 1994, Summary of Partial Extraction Geochemical Trials at Ernest Henry:

MIMEX Technical Report 2283 (3pp discussion, data, plans and graphs).

Baker P.M. *et al.*, 1995, Proposal for Jointly Funded Geochemical Research - MFC Joint Venture: WMC report to MIMEX, June, 1995.