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GEOLOGICAL ENGINEERING

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May 6th, 1974

MEMO to Mr. D. A. McLeod

RE: - Northair Property -- Callaghan Creek

The property was visited on April 19 and 20 in company with J. W. McLeod. You had requested that we attempt to gain an appreciation of the possibilities regarding extensions to depth. This was of some concern at the time because of the prevalence of dykes in or near the mineralized zone in the drill holes recently completed below the 3500 level on the Warman Zone.

We examined the core from most of the pertinent drill holes, examined the two levels (on the Warman and Manifold zones) and had some discussion with Plen Dickson, the resident geologist.

I had recognized during my visit of July 17, 1973, that the deposit showed some aspects that indicated a volcanogenic origin, and hence could be stratiform. These aspects were mainly the mineralogy and the nature of the host volcanics. Further observations during the recent visit strengthen the impression to a state of conviction. The presence of argillaceous septa in the lode in some places, and the concordance of the lode with a long narrow lens of grey and white banded sugary carbonate which has all the characteristics of limestone, left very little doubt. It should be emphasized, however, that not all the geologists who have been emphasized however that not all the geologists who have

examined the property are agreed on the volcanogenic origin. The abundance of quartz-carbonate stringers and veinlets in the walls do present an unusual amount of remobilization if this material was originally deposited sub-aerially and/or sub-aqueously as an inter-volcanic horizon. But the area does also show a strong schistosity, and hence the means of remobilization and redistribution is there. The implication of a volcanogenic origin is that the lode would tend to be more uniform over larger areas than if it were a vein.

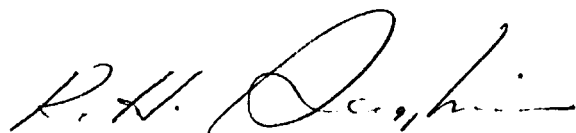
We attempted to separate the volcanics into specific flows (?) by comparing the core in a couple of neighbouring drill holes. Although we did find three or four places which we suspected to be flow contacts (because of finer grain size, shearing, brecciation, and alteration such as epidote) we could not match up individual flows from hole to hole because of the phasy patches of different rock types even within an individual flow. There could be some more investigation of the stratigraphy, however, using the horizon which appears to be arkose and which outcrops at the 3500 level portal.

We examined the dykes, and found that two types are present. An andesite dyke, medium green coloured and fine grained, had been mapped on the level where it interrupts the lode for about twenty feet. A very similar, in fact probably the same, dyke was intercepted in DDH 589. This type of dyke is very similar to the andesitic volcanic host-rocks and is probably a 'feeder' to one of the flows higher in the sequence of host-rock volcanics. I would not consider any of these to be related to the overall volcanism

of the lode down to the next several levels at least.

The other type of dyke is a medium brown fine grained basaltic variety which looks like and with little doubt is related to the tertiary volcanics prevalent in the district. I left you a tracing showing which of the drill holes intercepted these dykes (coloured brown). They may develop into a nuisance in that they could provide considerable dilution during mining if they follow or cut across the vein system at a very low angle. Their presence in three drill holes towards the eastern end of the Warman section of the lode and in or near the lode indicates that a cluster of such dykes (or one dyke following the lode) may occur here, perhaps related to the fault zone or zones separating the Warman and Manifold sections. However, as with the green andesite dykes, I would be surprised if they constitute a much larger volume on the next one or two levels below the 3500 than they do on the 3500 level.

Actually, driving at least one more level is not even debatable. How else can you extract at reasonable cost the excellent values going into the floor of the 3500 level?

  
R. H. Seraphim, Ph.D., P.Eng.

cc: J. W. McLeod

(compiled April 29, 1974)