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MEMO TO : F. J. L. Guardia, c.c. J. P. Franzen

MEMO FROM: Frank L. Jagodits

SUBJECT : Review of a Pulse-Em PEM Survey - Iron Mountain, Nicola Provincial Forest, B.C.

DATE : April 11, 1983

The work under review was conducted in the fall of 1981 by Geoterrex on behalf of Chevron Standard Ltd., Minerals Division. The Crone PEM System was used in the moving coil mode. The diameter of the transmitter loop was 15 m, the separation between the transmitter loop and the receiver coil being 100 m. The decay of the vertical component of the secondary magnetic field was observed at stations 25 m apart.

Low amplitude signals, flat backgrounds characterize the results over both grids surveyed. The rough topography of the survey area prevented the proper alignment of the transmitter and receiver coils, resulting in decreased signal strength. The low signal strength coupled with the weak responses obtained created a very poor signal to noise ratio; consequently only a very few anomalous situations developed, which are distinguishable amongst the noise apart from the anomalies due to artifacts (power-line).

Unfortunately the geology map of the area cannot be related readily to the survey map, but is quite clear that the underlying geology is complex. Galena mineralization is indicated at two locations. It would appear that the northern showing was not covered by the survey. If the conductor indications of the geological map are accepted as being correct, then there is no em signature over Showing 52, which is not surprising since galena is a poor conductor in polycrystalline specimens, even in fairly concentrated ores. Galena mineralization itself is usually

a poor conductor, but when mixed with other metallic minerals, which tend to connect the grains, it may possibly conduct quite well.

If the conductors in the area are mainly composed of galena, one could assume that all of the conductors are poor and that an em system with higher frequencies and/or with more power to improve the signal to noise ratio would have been more applicable to explore the region.

There are no conductors of significance on Grid AN. On Grid BN the small anomalies centred about St. 5500E along Lines 6400N, 6300N, 5800N, 5700N, 5000N and 4600N are indeed weak, dubious responses. The best quality anomaly occurs along Line 4100N at about St. 4500E.

The half-space apparent resistivity calculations suggest a high resistivity environment, which is an ideal situation for electromagnetic prospecting. However, these calculations should be taken with a grain of salt, when the complex geology of the area is taken into count together with the very low signal levels.

Assuming that the area is still of interest, it is suggested that it should be surveyed using the new GENIE (SE-88) System developed by Scintrex. The geometrical errors due to improper coil orientations are reduced to a minimum with this system. The unit was used effectively by ESSO Minerals in British Columbia and was found that the depth penetration of the system is about 50% of the coil separation increasing to 75% in resistive environment. The observations could be unreliable within 200 m swath around power lines.

There is one instrument which is available from Scintrex, the cost being approximately $100/day. Scintrex would also provide an operator.

It is also recommended that the chargeability (frequency effect) of mineralized and unmineralized samples from the area should be measured with the view of possible application of the induced polarization technique.

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MEMO TO : J. P. Franzen, c.c. F. J. L. Guardia, D. Reinsford

MEMO FROM: Frank L. Jagodits

SUBJECT : Ground Em Test Surveys - Gyprock Property,
Iron Mountain, Nicola Provincial Holes, B.C.

DATE : April 18, 1983.

The following memo intends to be a summary of our telephone conversations regarding the test surveys over the Gyprock Property.

The review of the PEM survey of the property showed that there are no conductor of significance on Grid AN. Weak, dubious responses were noted on a number of lines on Grid BN, the best quality anomaly being along Line 4100N at about St. 4500E. Considering the low signal levels (poor signal to ratio) of the PEM survey, it can be said that the deeper conductors, if they exist, were not detected, especially if the mineralization is a poor conductor.

In order to explore for deeper conductors, it is suggested that a reconnaissance survey should be carried out using a versatile horizontal loop em system like the MaxMin II. The survey should be conducted using a coil separation of 200 m and the in-phase and quadrature phase components should be measured at the following frequencies: 444 Hz, 1777 Hz and 3555 Hz. The station interval can be 20 m or 25 m depending on the existing picketing of the grid. Survey line interval of 150 m or 200 m would be preferred, again it will depend on the existing grid.

It is of utmost important that the in-phase component is corrected for topography. The contractor should get in touch with Desmond in

Fredericton, he has the T1-59 programmes and the survey procedures for topographic correction. The MaxMin II survey results should be represented as stacked profiles of the in-phase and quadrature phase components observed at the three frequencies, together with the profile of the topography (no vertical exaggeration) for each line surveyed. If a GENIE survey is also carried out (see below), the results should be shown together with the MaxMin II stacked profiles.

It was indicated earlier that the new Scintrex instrument, the GENIE (SE-88) could be an applicable system for the reconnaissance. The coil separation should be 200 m. Although there may not be any detectable conductors, surveying with both instruments would serve as a comparative test.

Obviously surveying with both instruments is a function of the costs. If a choice is to be made between the two instruments, I would recommend the GENIE because it is more suited for reconnaissance work in hilly topography, especially if there are no survey lines.