AGASSIZ - M454

NOTES

SELF POTENTIAL TEST

A total of 90 stations, at 50' spacing, were surveyed during August. They were placed at the pit and near favourable drill intersections to test the applicability of S.P. for future surface exploration on the Agassiz property. The fixed reference station method was used for greater accuracy, despite the thick bush.

Instrumentation

A Fluke Model 8000A digital multimeter with an input impedance of 10 mega ohms was used, and apart from an occasional failure on part of the full digital display to light up, it seemed to work well. Ground contact was through two porous porcelain pots carrying a saturated copper sulphate solution. A 1000 foot long sheathed multistand light copper wire connected the pots and the instrument via a back-pack reel with one sliding contact.

The reference electrode (pot) was connected to the back (common, and presumably negative) terminal on the multimeter.

Conditions

The water table was as low as it is ever likely to be in this region. Recent showers had, however, left the upper few inches of soil slightly damp to slightly moist. In most cases the pots were in contact with a non-organic coarse sandy loam, 2" to 4" below ground surface.

Technical Problems

The repeatability of the readings varied considerably, and fairly frequent re-checks were carried out, in many cases with good results. However the re-run of part of line 14S did not match particularly well. The reason for this is unknown.

A mistake was made in taking insufficient readings to properly relate each segment of the survey, since the electrical asymmetry of the electrodes was not immediately appreciated and the pots were not previously stabilized. Thus the readings for line 16S and for the immediate pit area are related through one station only and could be in error up to 10 or 15 millivolts or more. No computable relationship at all was established for line 14S, relative to the others.

Results

Despite the aforementioned problems it has been possible to assemble a tentative conclusion as to the applicability of the method.

The strong but deep mineralization of drill hole 37 (Line 16S) may be reflected where it approaches the surface, but the response is weak and might not be obvious if one did not know where to look for it. Much the same might be said of the selected profile through the pit. In this case the most anomalous point (-122mv) is on oxidized mineralized rubble in the pit floor, only 30' from good grade outcropping mineralization.

The weak near-surface mineralization at drill hole 38 (Line 14S) does not seem to be reflected at all in the S.P. profile.

I conclude from the foregoing that although the method is working, it is unlikely to be satisfactory for any ore that is not both high grade, and very shallow. We should consider undertaking localized surveys, of 100 stations or so in size, in the vicinity of geochemical anomalies. To cover large areas, particularly if free of geochemical response, would not seem to be valid. In any case, at least a portion of this orientation survey should be repeated with stabilized electrodes.

David Arscott
1978-09-05

Memorandum

San Francisco, California
December 15, 1978

COMMENTS ON THE AGASSIZ
SELF-POTENTIAL TEST

MR. DAVID ARSCOTT
Vancouver

It seems to me that SP is working, but barely. Attached are your notes and maps on which I indicated a few things in red and blue.

On profile 16S, if we are allowed to smooth the data and to draw the regional the way I did, we see a -32 MV negative center and a weeker positive center. The dip, relative to the surface, is in the proper direction and the source of the SP seems to extend perhaps 300 - 400 ft. below the surface. Obviously, this is a borderline type of anomaly. However, I did not expect a good one (over 100 MV), because the sphalerite does nothing for SP. I believe such week and long-wave-length anomalies may be isolated by smoothing closely spaced measurements.

The only other geophysical method that I can think of that would be applicable to your problem is a sophisticated, deep-penetrating and expensive spectral IP (complex resistivity), as we discussed before. We know that near-surface ores yielded simple IP anomalies in the past but we do not know whether the ore intersected at DDH 37 will ever show up in spectral IP. On the other hand, a properly done SP survey would probably cost a small fraction of a deep spectral IP. For these two reasons, I am somewhat inclined to recommend an extensive and very carefully done SP survey before deciding for spectral IP.

We have not received the laboratory measurement results on the Gataga samples yet. Perhaps I should postpone my trip to Vancouver until after I have a chance to study these results, unless you think otherwise.

S. H. YUNGUL

SHY:rf
Attachments