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REPORT ON
TURAM ELECTROMAGNETIC SURVEY
IN THE
GALENA HILL AREA, YUKON TERRITORY

for

SILVER TITAN MINES

by

HUNTING SURVEY CORPORATION LIMITED

Toronto, Ontario

August, 1962

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INTRODUCTION

Between May 27th. and June 14th., 1962, Hunting Survey Corporation Limited carried out a Turam Electromagnetic survey on a group of claims held by Silver Titan Mines. This claim group is located along the highway from Mayo Landing to Elsa, Yukon Territory.

The survey was carried out by Mr. W. J. Scott and Mr. A. Skeoch of Hunting Survey Corporation Limited and two helpers, provided by the client.

The crew arrived at Mayo in the evening of May 28th., returned to Mayo in the evening of June 14th. and moved to Peso Silver Mines the next day.

A total of approximately 21 line miles was surveyed.

The instrument used was an A. B. E. M. type 1182 Turam electromagnetic prospecting unit. This instrument uses two horizontal search coils, separated by 100 feet, to record the distortions in an electromagnetic field generated by an alternating current which passes through a long grounded cable. The quantities measured are (a) the ratio of the field strength at each coil, and (b) the phase difference of the field between the two coils. The grounded cable was laid out along a base line and readings were taken along picketed cross lines perpendicular to the base line. Readings were plotted at the center of the 100 foot spread. The plotting was done in the field and a preliminary interpretation was provided to the client. The data were checked and replotted at the Toronto office of Hunting Survey Corporation Limited and a final interpretation was carried out.

GEOLOGICAL SETTING

The following geological description is taken from a report by Dr. A. E. Aho. The general area is underlain by Precambrian formations which can be divided into three major units:

- Upper Schists: quartz-mica schists with small lenses of limestone and thin layers of quartzite near its base.
- Central Quartzites: hard, blue grey, grey and white, thick bedded quartzites with minor intercalations of thin bedded quartzites, graphite schists, quartz-mica schists, quartz-mica-chlorite schists and greenstones. This series covers almost the entire survey area.
- Lower Schists: thick schist-greenstone belt.

The formations strike approximately east-west and dip 20°-40° to the south. Mineralization is mainly concentrated in the Central Quartzites and occurs mostly in northeast-trending vein-fault systems dipping moderately to steeply south. The ore tends to be localized in the most massive members, particularly where the vein-faults intersect with each other. One of the mineralized veins which occurs in the area, the Gerlitzki vein, has been explored by trenching and drilling. The encountered mineralization consists of pyrite, siderite, sphalerite and galena. The galena is rich in silver.

PREVIOUS WORK

Part of the general area had been covered by a resistivity survey in 1956 and a few lines reached into the southeastern part of the present survey area, notably in the vicinity of the Gerlitzki vein. A reasonably strong anomaly was obtained over this vein and a weaker anomaly slightly north of the Gerlitzki vein. A third anomaly, west of the Gerlitzki vein, was tested by two pits which revealed the occurrence of graphitic schists.

SURVEY RESULTS

A larger number of anomalies were detected from the Turam survey. In many cases these anomalies interfered with each other resulting in a rather complex pattern. We have tried to obtain an accurate location for each individual anomaly but in some cases the pattern was so confusing that the interpretation must be regarded as one of several possibilities.

To facilitate the description of the various anomalies, we have divided them into several groups, indicated by the letters A to G. Each group is subdivided into trends, indicated by numbers. Also it should be noted that in the description of the separate groups, the term "(grid) north" etc. is used, meaning north in the direction of the grid system.

Group A

This group is formed by several smaller trends, all apparently striking in the general direction of the geological formations. The individual anomalies vary from weak to fairly good. A complete evaluation of the anomalies of Group A cannot be given because some of the trends are still open, particularly trend 4 which is the most important trend here. The depth to most of the conductors seems to be of the order of 100 feet or less. Trends 3 and 4 seem to coincide more or less with a resistivity low of 80 ohm-meters. Trends 5 and 6 coincide with the extension of another resistivity low (40 ohm-meters). These last trends have been tested by drill holes (DDH 1, 2, 3 and 4) in which pyrite and traces of silver, lead and zinc were found.

From the Turam survey it is apparent that the drill holes missed the strongest conductors in this part of the area (trends 3 and 4). It is therefore recommended that trends 3 and 4 be further investigated by additional Turam lines to determine their exact extension. Drilling could then be more advantageously recommended than at this stage of investigations.

Group B

A series of parallel conductors was outlined here. The anomalies in this area however were very complex due to interference of the various trends and the interpretation as given should by no means be considered as the only possible solution.

The individual anomalies are of weak to moderate intensity and indicate a good conductivity.

Though the general strike of the conductors seems to be parallel to the strike of the formations, it appears that the most significant anomalies of Group B fall on a trend striking northeast in the grid system and cross-cutting the normal strike of the anomalous trends. The significance of this is not quite clear, this trend could possibly represent a cross fault and in such a case it is conceivable that wherever this cross fault cuts through a mineralized zone, the mineralization is enriched. It should also be noted that although no resistivity anomalies were observed in this general area, several weak anomalous trends of the resistivity survey, notably the ones between the resistivity lines 2 and 9, parallel this cross trend.

The depth to the various conductors is estimated not to exceed 150 feet.

To test this anomalous group a drill hole is recommended to intersect the anomaly of trend 3 on Line 44+00N at a depth of 150 feet. No first priority however is given to this drill hole.

Group C

Here again a series of parallel conductors was outlined, following the same direction as the trends of Group B. Most of the anomalies are very weak and only trend 1 and possibly the (grid) southern part of trend 4 are of importance.

Trend 1 is probably the (grid) northern continuation of Group D trend 1 and 2 and further investigation of this trend should be guided by the results obtained over trends 1 and 2 of Group D (drilling here has been recommended in our telegram to Dr. Aho on July 9th.).

Trend 4, the (grid) southern part of which could also be favourable, could be the extension of trend 5 of Group D on which drilling was also recommended previously. Here further work should also depend on the results obtained from this drilling.

All anomalies of Group C are rather shallow (less than 100 feet).

Group D

This is one of the most important groups of the area. It contains five trends, four of which, trends 1, 2, 4 and 5, should definitely be followed up by drilling.

Trends 1 and 2 are closely inter-related and they could very well be caused by the same conductor, trend 1 being the reflection of a poorer conducting top part or (grid) western half and trend 2 being the reflection of a better conducting lower part or (grid) eastern half of a (grid) north-south striking conductor.

The depth to this combined conductor is possibly of the order of 100 to 150 feet but could be shallower.

Trends 4 and 5 show a similar picture, trend 4 indicating a relatively poor conductor and trend 5 a relatively good conductor. Here, however, the distance between the two is such that it is more likely that we have two completely separated conductors instead of one combined conductor. The depth to conductor 4 is of the order of 100 feet or less and the depth to conductor 5 seems to vary between 100 and 200 feet.

Drilling to test trends 1, 2 and 5 has already been recommended (see telegram dated July 9th., 1962). It is also recommended to test trend 4 by drilling, a suitable location would be Line 22+00N, intersecting the conductor at a depth of approximately 150 feet.

The last trend of this group, trend 3, is of much less importance and no further work is at the moment recommended here.

Group E

The only trends of some importance within this group are trends 1 and 2. Trend 1 possibly represents the (grid) southern extensions of trend 5 of Group D, possibly even continuing further southwards through trends 4 and 7. Trend 2 is a rather doubtful trend of two medium strong anomalies possibly also related to trend 5 of Group D. The remaining trends are all formed by rather insignificant anomalies. At the moment no drilling is recommended on any trends of Group E. If favourable results are obtained from the drilling on trend 5 of Group D, trends 1 and 2 of Group E will gain in significance and further investigation could be warranted.

Group F

This group of conductors is one of the most important ones as promising mineralization has been encountered here (Gerlitzki vein). Various significant trends have been outlined which deserve further attention.

Trends 2 and 4: these two parallel trends are clearly indicated. The anomalies between Lines 10+00N and 18+00N however could not accurately be located on account of mutual interference of the two trends and of trend 5. This is rather unfortunate as this section shows the strongest anomalies. The individual anomalies indicate a medium conductivity and a depth of 100 feet or less. A resistivity low of 80 ohm-meters more or less coincides with these trends, but this low is not sufficiently outlined.

It is recommended to test trends 2 and 4 by diamond drilling. A suitable location would be Line 14+00N, intersecting the conductors at a depth of between 100 and 150 feet.

Trend 5: a number of very significant anomalies, all more or less related to the Gerlitzki vein, are combined under trend 5. From the present survey it is not quite possible to establish the strike of the conductors; two directions seem to stand out clearly: a (grid) north-easterly direction and a (grid) northwesterly direction. It seems possible that the first direction represents the strike of the formations and the latter a fault system. ^{FRACTS} ^{BEARING} NO!

The strongest anomalies have been encountered between Lines 12+00N and 18+00N and some diamond drilling is strongly recommended here. The anomalies indicate medium to good conductivity at a depth of

100-200 feet. Drilling was previously recommended on Line 16+00N to intersect the (grid) easternmost anomaly. A second drill hole to test the (grid) easternmost anomaly on Line 14+00N is likewise recommended (intersection depth 150-200 feet).

Trends 10 and 11: these two trends seem also related to the Gerlitzki vein system. The anomalies are weak to medium in strength but gain in strength on the southernmost line of this part of the survey area and some relationship with the trends of Group G, further to the south, could possibly exist.

Trends 1, 3, 6, 7, 8 and 9 are all rather weak and at the moment no further work is recommended here.

Trend 12: a very strong anomaly was observed on Line 11+00N. This line was, however, the only line that reached far enough to the (grid) east to intersect a possible trend here. There is some indication that the anomalous trend reaches at least as far north as Line 13+00N and as far south as Line 10+00N but without further measurement no evaluation of this trend can be made.

Group G

Three lines, measured from Baseline No. 2, intersected three parallel trends of very strong anomalies. On account of mutual interference the location of the various conductors is not accurate and a certain amount of variation is indicated on the interpretation map. The trends are still open to the (grid) north as well as to the (grid) south and it is recommended to close the gap between Lines 0+00 and 12+00S and to continue the survey south of Line 16+00S. If drilling is contemplated at the present stage it is recommended to test trend 2 on Line 14+00S as previously recommended.

SUMMARY AND RECOMMENDATIONS

From a Turam electromagnetic ground survey on a claim group of Silver Titan Mines a number of conductors have been outlined. These conductors, divided into several groups, definitely warrant further investigation. It is in the first place recommended to test the major anomalous trends with a few Turam lines measured from a closed loop in order to obtain a better idea of the conductivity of the observed conductors. Our further recommendations can be summarized as follows:

Group A

Before any drilling is recommended on this group, it is recommended to properly outline trends 3 and 4 by an additional Turam survey.

Group B

A second priority drill hole is recommended on Line 44+00N to test trend 3 at a depth of 150 feet. It is also recommended to survey additional fill-in lines with the Turam equipment to obtain a better knowledge of the (grid) northeast striking cross trend within this group.

Group C

Any drilling on this group should be postponed until the drilling results of Group D are evaluated.

Group D

Four important trends have been outlined within this group and drilling is recommended on all four of them:

Trends 1 and 2 : Line 32+00N intersect at depth of 150 feet

Trend 4 : Line 22+00N intersect at depth of 150 feet

Trend 5 : Line 22+00N intersect at depth of 200 feet

No drilling is recommended on trend 3.

Group E

No drilling recommended at the present stage of the investigations. If the drilling on trends 4 and 5 of Group D is successful, some drilling might be warranted on trends 1 and 2.

Group F

Trends 2 and 4 provide a target of secondary priority and drilling is recommended on Line 14+00N to intersect the conductors at a depth of 100 to 150 feet.

Trend 5 is a complex of anomalies related to the Gerlitzki vein. Drilling is recommended on Line 16+00N to intersect the (grid) easternmost anomaly and on Line 14+00N to intersect the (grid) easternmost anomaly. The depth to the main conductor is in both cases estimated to be of the order of 150 feet.

Additional Turam survey is furthermore recommended to outline trend 12 and to close the gap between Group F and Group G.

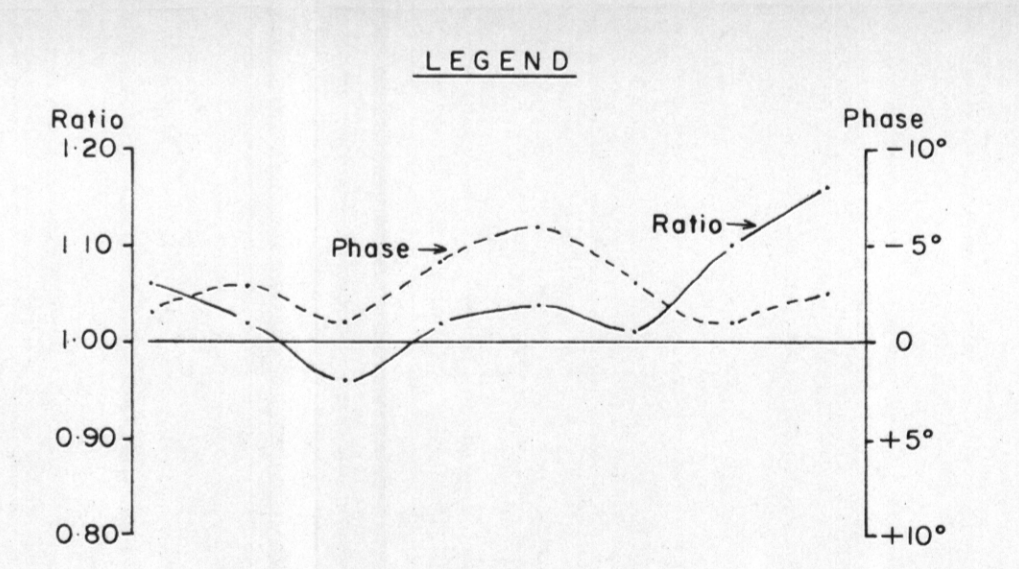
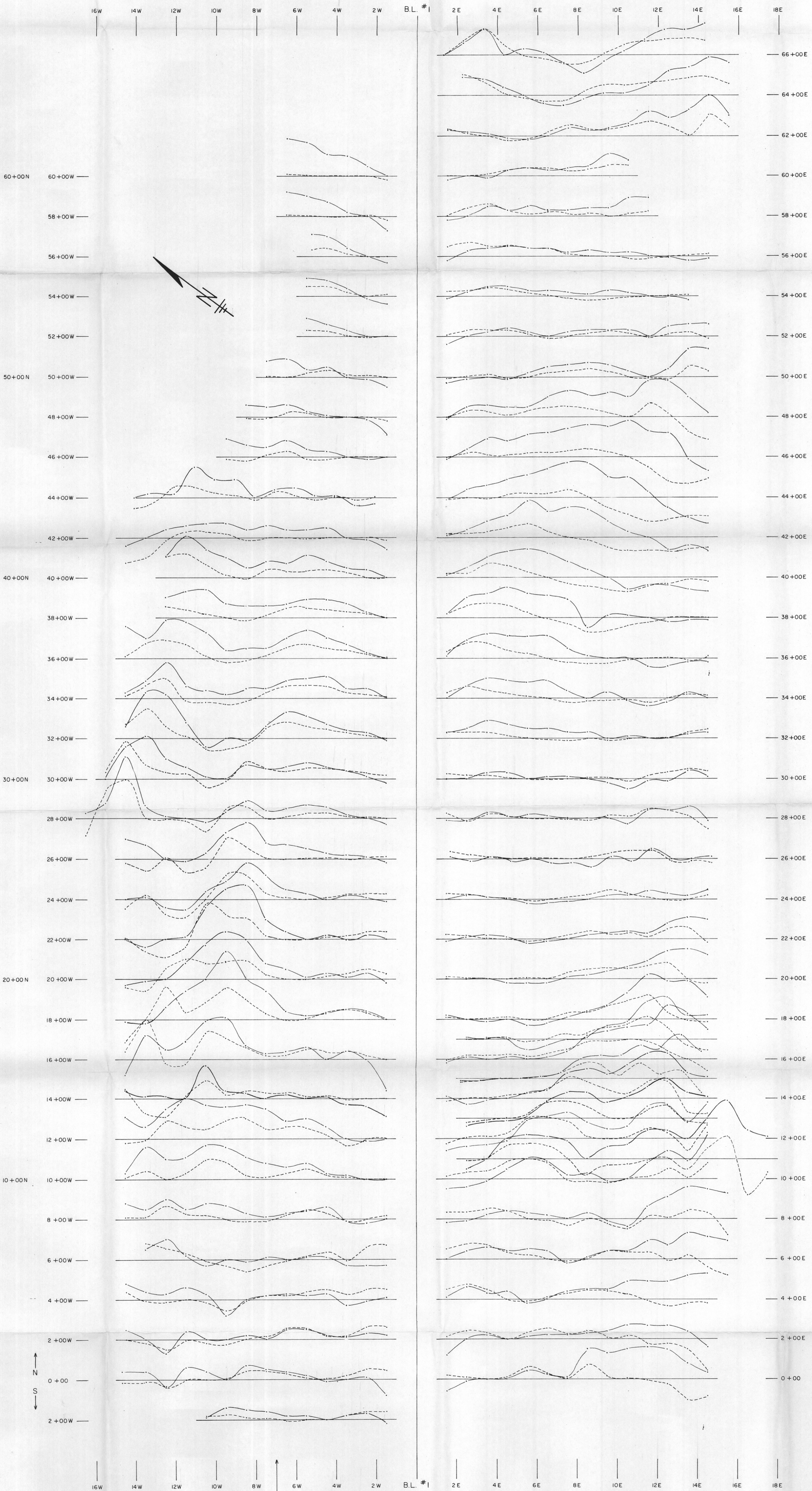
Group G

Drilling could be recommended on Line 14+00S to test trend 2 (intersection depth of the order of 150-200 feet). It is however more advantageous to properly outline the anomalous trends by additional Turam survey to the (grid) south and (grid) north.

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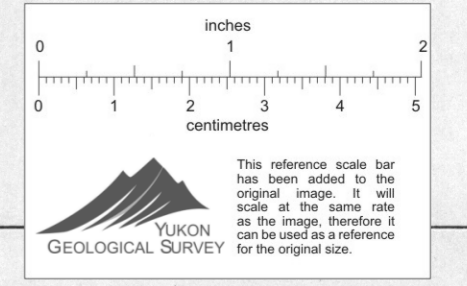


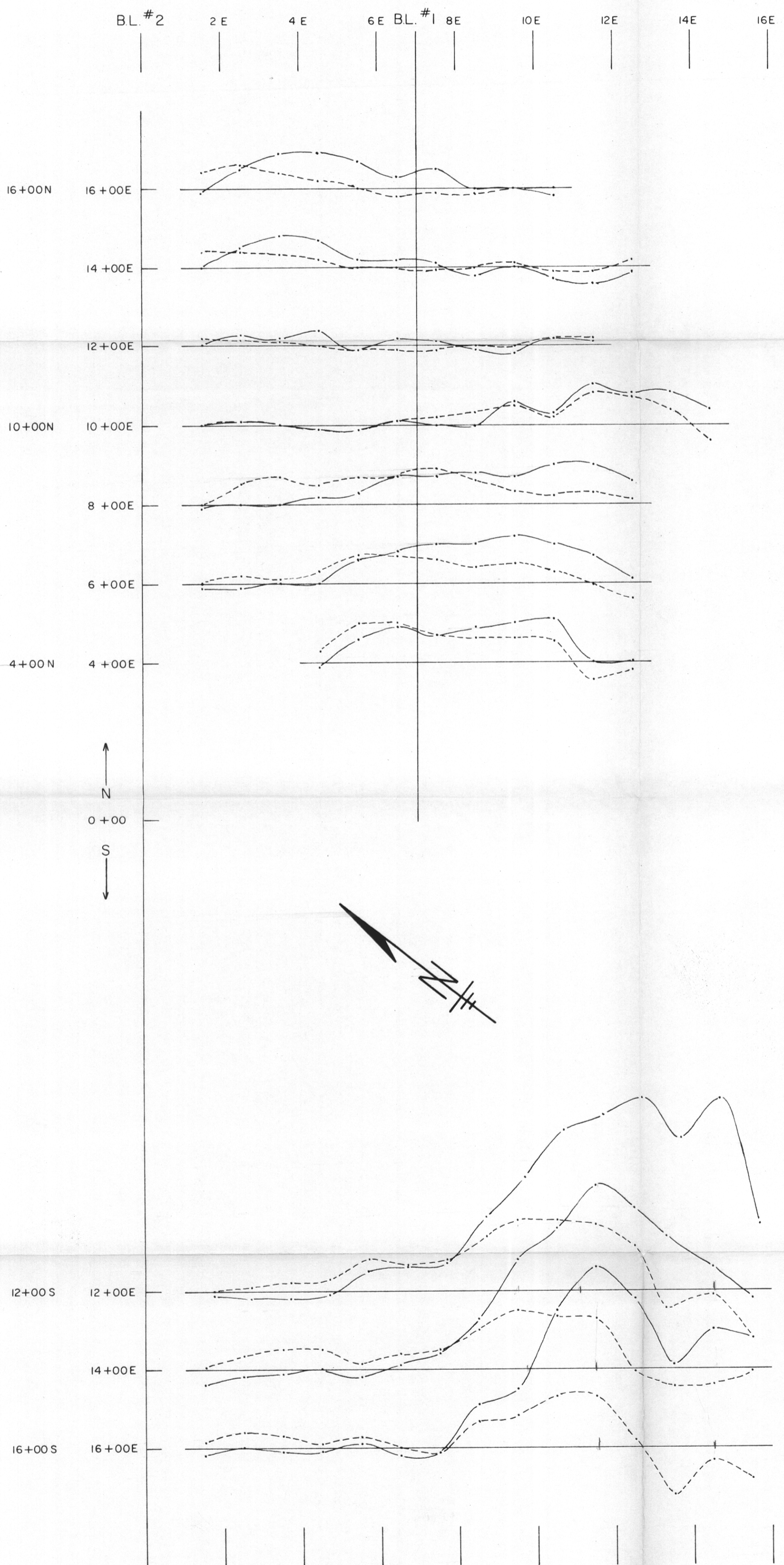
J. C. Stam,
Geophysicist.



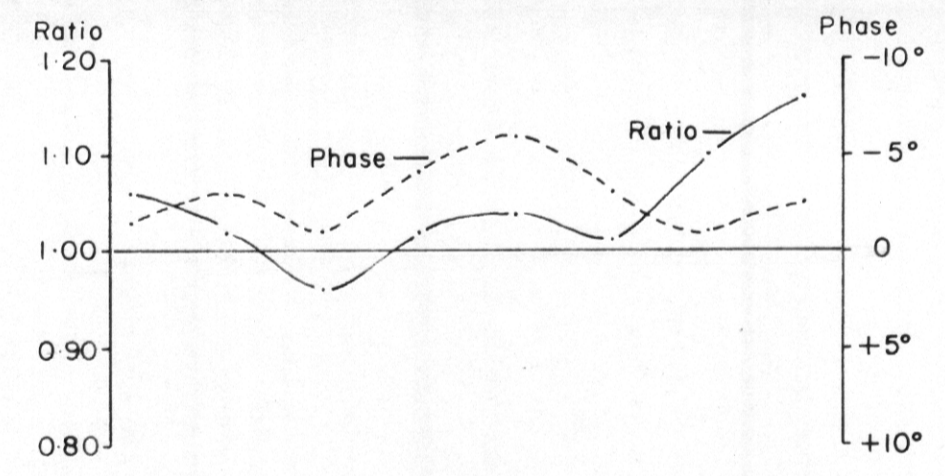
SILVER TITAN MINES
LEO PROPERTY
GALENA HILL, YUKON TERRITORY
TURAM ELECTRO - MAGNETIC SURVEY
SURVEY RESULTS
 Scale: 1 inch = 200 feet
BASELINE NUMBER 1

HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA
 JULY, 1962



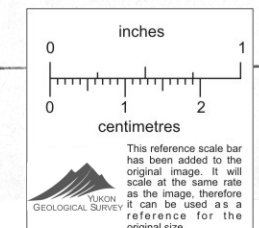


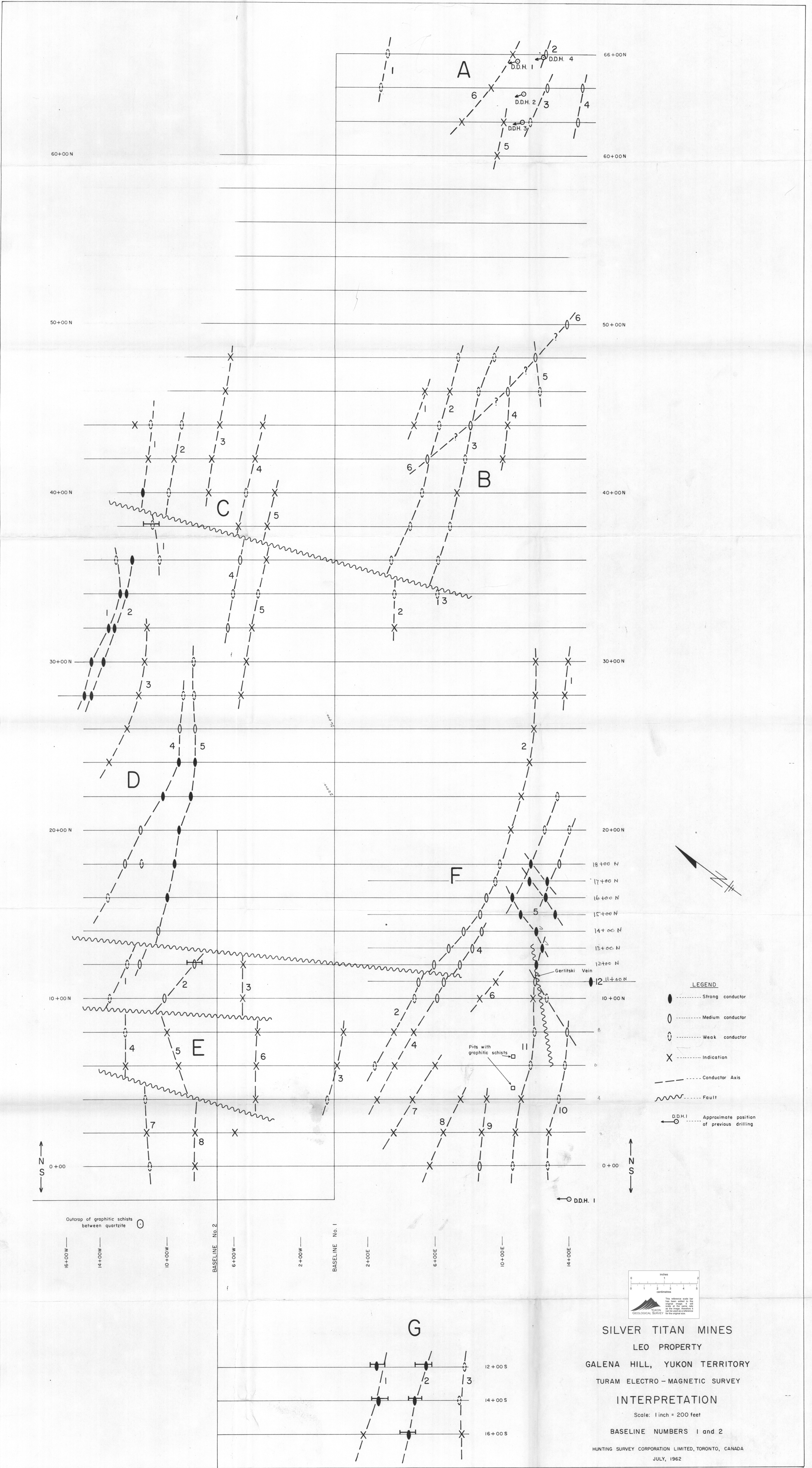
LEGEND



SILVER TITAN MINES
 LEO PROPERTY
 GALENA HILL, YUKON TERRITORY
 TURAM ELECTRO-MAGNETIC SURVEY
SURVEY RESULTS
 Scale: 1 inch = 200 feet
 BASELINE NUMBER 2

HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA
 JULY, 1962





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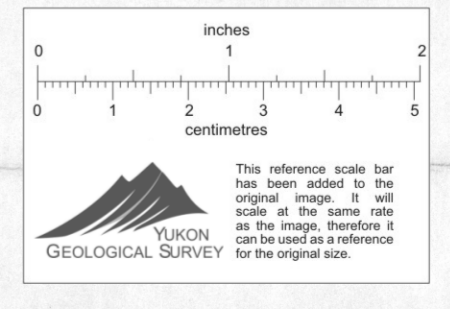
N
S

Outcrop of graphitic schists
between quartzite

BASELINE No. 2

BASELINE No. 1

G



SILVER TITAN MINES
LEO PROPERTY
GALENA HILL, YUKON TERRITORY
TURAM ELECTRO-MAGNETIC SURVEY
INTERPRETATION
Scale: 1 inch = 200 feet
BASELINE NUMBERS 1 and 2

HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA
JULY, 1962