



41P12SW0116 63.2693 CHESTER

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REMARK EXPLORATIONS, CHESTER TOWNSHIP, ONTARIO

Summary

Remark holds 15 unpatented mining claims in Chester Twp. roughly midway between Sudbury and Timmins, Ontario.

The late Kenoran granite which underlies the property is a known host for gold and copper. The gold veins commonly include conductive sulphides, and an EM16 survey is most appropriate.

Some fifty conductors were located and are categorized into groups, three natural and one man-made, (powerlines). The natural conductors appear likely to reach bedrock surface and recommendations are made for stripping the overburden with a bulldozer or sampling the various categories of conductor with a Winkie drill, prior to any more exhaustive drill programme.

Introduction

Remark Explorations holds 15 contiguous unpatented mining claims in Chester Twp. District of Sudbury, Ontario numbered as follows: S209405 to S209419 inclusive, total 15 claims.

The property narrows from a tier of three claims in the east to a row of single claims in the west. The eastern tier is followed by Hwy. 560 which terminates at Cogame, about 15 miles to the north and joins the area to Gowgande, Elk Lake and hence New Liskeard on Hwy. 11, some 120 miles to the east. Hwy. 144 which will shortly join Sudbury and Timmins, lies a few hundred feet to the east of the property. The old Northern Development Company road into the Three Duck Lakes area bisects the eastern part of the property and runs about a thousand feet south of the western row of claims.

All claims except S209411, which is a water claim, were surveyed, but the results in much of the eastern tier were nullified by power lines.

The property is not known to have been surveyed geophysically, and the only known previous work is the prospecting for gold 40 years ago.

General Geology

H. C. Laird included the area in his report and map "Geology of the Three Duck Lakes Area", Ont. Dept. of Mines, Vol.41, part 3 1932 and Map 41d. I have done considerable geological and geophysical work on adjacent properties to the west, and find that Laird's description is still valid (op.cit.P 28). The area is within what he describes as younger granite (it might be described as a late tectonic granite of the Kenoran orogeny.) "As might be

expected in a granite mass of this extent many variations in the type are found from place to place. Normal pink to grey granite and quartz syenite are the predominant types". Laird goes on to describe "a characteristic and rather uncommon type of rock which is thought to be closely associated with the granite, if not, indeed, a phase of it". The zone is exposed near the bridge at the narrows on Mesomikenda Lake and on Wooduck Lake. "In most cases, the rock is almost white on the weathered surface, and yellowish-gray on fresh surfaces. The texture varies from granu-lose porphyritic. In some places it bears a strong resemblance to a highly metamorphosed arkose, while in others it has the appearance of a quartz porphyry phase of the granite. For this reason some difficulty was experienced in the field in trying to decide whether this rock was of sedimentary or igneous origin". A description of microscopic characters followed, from which "In general, therefore, it may be said that this rock borders on a type of granite known as alaskite".

Economic Geology

At the time Laird was writing (1931), gold was of prime interest. Copper is also known in the area, but the type of occurrences is still open to question. Of gold, on the other hand, Laird wrote (P 24, op. cit. paras. 1, 3 and 4), "The main showings of gold occur within the area mapped as "younger" granite and close to the contact with the kidout sediments. From this association it seems obvious that the gold is genetically associated with the more acid phases of this intrusive, the nature of which has been noted in a previous section. The gold occurs in narrow quartz veins occupying well-defined fractures or "breaks" in the intrusive rock, or in quartz veins along the contact between the acid intrusive and a basic dike, commonly lamprophyre. The majority of the fractures strike in a direction a few degrees south of east, and, in general, they show a regional parallelism. Although the fractures for the most part seem to be rather persistent in length, the vein material occupying them in any one place often pinches out after having been traced for a short distance. This condition is not unexpected, since in fissure veins of this kind the vein material commonly occurs at intervals separated by barren stretches. Under these conditions, the writer wishes to point out that work should not be abandoned because of the discontinuance of vein matter, but rather that the fracture should be followed as far as possible in the hope of locating other gold-bearing quartz lenses.

Although the gold commonly accompanies pyrite and chalcopyrite, it occurs in the native state and is seldom found in intimate association with these sulphides. Other minerals observed in the veins are as follows: sphalerite, galena, covellite, malachite, ^{born-}azurite, molybdenite and its yellow oxide molybdite, and tetradymite (bismuth telluride). Closely associated with tetradymite on the Shannon property, Bennerman found a black mineral with a bluish-brown tarnish, which he believed to be a mixture of two or more tellurides (gold, silver, mercury). In addition to the quartz and silicate minerals already noted, the ordinary gangue minerals consist of calcite, ankerite, and sericite.

An important feature of the veins here is the fact that both gold and sulphides commonly penetrate the wall rock for several feet. The gold is in too fine a state of subdivision to be seen, but its presence has been determined by assays. The ore minerals were introduced into the wall rock by a replacement process associated with hot ascending ore-bearing solutions in the fractures. In addition to alteration by replacement, the wall rock in some places was extensively silicified; in other places sericitization was the dominant type of alteration.

The EM16 Electromagnetic Survey

The instrument and its use are described in an appendix to this report, and technical details of the survey in a further appendix.

It is the practice of Milmount Explorations Limited, who undertook the survey, to utilize the EM16's adeptability to receive signals from two transmitters. In practice this means that while traversing on N-S lines one not only surveys in a N-S direction (so intersecting conductors in the E and W quadrants) by use of a transmitter to the east, NAA, Cutler, Maine, but can also take readings using a transmitter to the south, in this case NBA, Balboa, Canal Zone, Panama, and so survey conductors in the N and S quadrants. Readings from the two stations are drawn on separate maps.

Readings on the two transmitters are taken at each station, by switching from one receiving plug to the other, and facing south for one (NAA) and west for the other (NBA). As the grid pattern is rectangular rather than square, the conductors located in the E-W quadrants may be more precise than those in the N-S quadrants, and in reading the curves and joining up conductors from line to line, this should be borne in mind. Our experience in this area is that the EM16 is better able to locate the relatively small sulphide-gold (i.e. conductor) veins than other instruments tested, and in follow-up work, by bulldozing or drilling, I have found it convenient to take the instrument into the target area and do a very closely spaced survey (say on 10 ft. or 25 ft. stations) as I was spotting drill holes, so that the exact location of the cross-over was known, and so drilling or bulldozing effort and cost would be conserved.

In interpreting the present data, I first picked up the more evident anomalies, and as local experience was gained, knowing that the targets might be small and narrow conductors, went over the profiles in detail, to sharpen up curves and to check on the continuity of minor variations in slope from line to line. Commonly, a smoothing of lines drew out the series of two or three degree flexures which are sufficient to indicate the type of target for which the search is being made.

In the outcome, four types of conductor are apparent. In order of conductivity they are:

- A. The power lines (which mask everything for at least 200 ft. on each side).

- B. Mesomikenda Lake, in which the conductor causes readings of about 100 degrees change.
- C. Many readily identifiable cross-overs, varying from 5 to 75 degrees change.
- D. Many smaller cross-overs, in which the 3 or 4 degrees change, is apparent only from the curves and not from the readings at stations (e.g., in passing from stations reading -15 to 0, 0, and -5, it is presumed that the curve goes up through the first 0 to a peak, and down through the second 0).

The conductors are categorized by these letters (A, B, C and D) on the accompanying interpretation maps. In many cases, conductors on adjacent lines fall on similar curves and are readily linked. In some cases, the linking line could only be extended by a review of critical curve, and in such cases both C and D categories may be found on the same line. Minor deviations of the cross-over points may indicate an echelon or curving veins.

In general, good curves were obtained. Two more unusual features are listed:

In claim S209407, a particularly sharp crossover on the NAA sheet looks unnatural. The cause may be man-made - e. g. old telephones.

In the centre of claim S209408 two curves on the NAA sheet overlap. The reason is probably the result of two conductors on one line as against one on the other.

Several individual anomalies do not appear related to any conductor on adjacent lines. One conductor in the northeast of the most westerly claim, is apparent on both surveys. Its NW direction midway between the two favoured E-W and N-S directions, is no doubt responsible, but recognition might have been difficult were it short.

About a third of the fifty or so conductors located are in the ESE direction noted by Laird as gold-bearing. Those ESE conductors, and the ENE ones were located one in the N-S survey and most fall in the clearly evident C category. In contrast, the D category is common for N-S conductors in the east part of the property, perhaps because the readings are 4 times as far apart (200 ft. as compared to 50 ft.) or perhaps because they are merely subsidiary faults parallel to the major Mesomikenda Lake fault.

Conclusions and Recommendations

Veins with gold accompanied by conductive sulphides are known in the area. Three categories of natural conductor have been located, and each should have its source identified by a sampling procedure. The various directions should also be considered; e.g. the ESE conductors are in a direction in which veins are known to carry gold. Where one or all give returns with economic appeal, a comprehensive exploration programme will be merited.

A conductor (B) is indicated at Mesomikenda Lake. The survey is incomplete over the lake, and it should be completed as soon as the ice is safe.

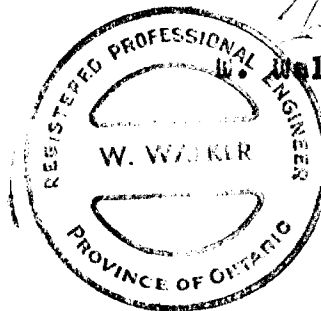
The distance between high and low on a line is the approximate equal to the effective centre of conductivity. This is rarely more than a couple of hundred feet for category C, less than 100 ft. for category B. Most of the conductors probably reach bedrock surface.

Bedrock is near surface on much of the property, and where conductors are known to be near outcrop, the depth of overburden should be tested with a rod to evaluate the possibility of stripping the overburden with a bulldozer.

Where stripping is not readily undertaken, shallow drilling will suffice to locate the conductor, and particularly where the conductor is pinpointed by more detailed readings, a Winkie drill may prove most convenient to make a larger number of short holes than would be possible if the expense of moving a heavy drill were entertained.

The continuing guidance of a stripping and drill programme is best done by the company's consulting geologist, and no phase recommendations and costs are made here.

Respectfully submitted,



Walker, F.G.A.C., P.Eng.

ADDENDUM

RONKA EM16 (with reference particularly to the Property of Renmark Explorations Limited in Chester Township, Ontario).

1. Principle of Operation

The VLF-radio stations operating for communications with submarines have a vertical antenna. The antenna current is thus vertical, creating a concentric horizontal magnetic field around them. When these magnetic fields meet conductive bodies in the ground, there will be secondary fields radiating from these bodies. This equipment measures the vertical components of these secondary fields.

The EM16 is simply a sensitive receiver covering the frequency band of the new VLF-transmitting stations, with means of measuring the vertical field components.

The receiver has two inputs with two receiving coils built into the instrument. One coil has normally vertical axis and the other is horizontal.

The signal from one of the coils (vertical axis) is first minimized by tilting the coil. The tilt-angle is calibrated in percentages. The remaining signal in this coil is finally balanced out by a measured percentage of a signal from the other coil, after being shifted by 90°. The axis of this coil is at right angles to the axis of the first coil. This coil is kept normally parallel to the primary field.

Thus, if the secondary signals are small compared to the primary horizontal field, the mechanical tilt-angle is an accurate measure of the vertical real-component, and the compensation 11/2 - signal from the horizontal coil is a measure of the quadrature vertical signal.

2. Station Selection

The selection of a transmitting station is done by a plug in unit inside the receiver. The equipment takes two units simultaneously. A switch is provided for quick station-changing.

The magnetic field lines are always at right angles to the direction of the transmitting station. Thus where a station is to the east of the survey area, its N-S field will make the best intersection with E-W conductors.

In practice, in Northern Ontario readings on the following two stations cover both E-W and N-S quadrants of the compass: Station NAA, Cutler, Maine, Frequency 17.80K is to the east and station NBA, Balboa, Canal Zone, Panama, frequency 24.00K is to the south.

When the cover on top of the instrument is removed, the appropriate plugs can be inserted.

Survey lines should be made approximately along lines at right angles to the direction of the station being used, i.e. run the survey north or south when using NAA, and east or west when using NBA. On the Benmark property 4 readings were taken at all stations in phase and quadrature facing south on NAA, west on NBA.

3. Taking a Reading

To take a reading, first orient the reference coil on the lower end of the handle along the magnetic lines. Rock the instrument back and forth for minimum sound intensity in the headphone. Use the volume control to set the sound level for comfortable listening. Then use your left hand to adjust the quadrature component dial on the front left corner of the instrument to further minimize the sound. After finding the minimum signal strength on both adjustments, read the inclinometer by looking into the small lens. Also mark down the quadrature reading on the front edge of the instrument.

While travelling to the next location you can, if you wish, keep the instrument in operating position. If abrupt changes in the position occurs while travelling, you might take extra stations to accurately pinpoint the details of the anomaly.

The dials inside the inclinometer are calibrated plus and minus percentages, and in degrees. Either ones can be used. If the instrument is facing 180° from the original direction of travel, the polarities of the readings will be reversed. When plotting the readings, care should be taken to correct the polarities. The important thing is to know the actual physical tilt-angle of the instrument. The lower end of the handle will, as a rule, point towards the conductor. The instrument is so calibrated that when approaching the conductor, the angles are positive in the in-phase component.

4. Plotting the Results

For easy interpretation of the results, it is good practice to plot the actual curves on the paper, using suitable scales for the percentage readings as well as horizontal distances.

5. Interpretation

The determination of depth can be done with fair accuracy with this instrument by noticing the horizontal distance between the maximum positive and negative readings. This should be the same as the actual depth from the ground surface to the center of the effective area of the conductive body. This point is not the center of the actual body, but somewhat closer to the upper edge.

A vertical sheet type of conductor, if it comes close to the surface, gives a sharp cross-over of large amplitude and slow roll-off on both sides.

When looking at the plotted curves, one notices that two adjacent conductors may modify the shape of the anomalies for each one. In cases like this, one has to look for the steepest gradients of the vertical (plotted) field, rather than the actual zero-crossings.

Sometimes the quadrature-component shows a reversed polarity compared to the in-phase readings. This can be due to the conductive overburden on top of the area of deeper (better) conductor. The vertical secondary field penetrating through the overburden has negative quadrature component.



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RENMARK EXPLORATION LIMITED

GOGAMA AREA PROPERTY.

REVIEW OF GEOLOGY & GEOPHYSICS.

REFERENCES.

1. Geology of the Three Duck Lakes area by H.C. Laird, 41st Annual Report of Ontario Department of Mines, Vol. 41, part 3, 1932.
2. Qualifying report by Michael Ogden, August 1969.
3. Ronka EM-16 Electromagnetic Survey by W. Walker, Dec. 1969.

SUMMARY

The detailed Ronka EM 16 electromagnetic survey of the whole property, on lines 200 feet apart, has located some 50 anomalies. Of these, five reflect significant conductors in depth and four of them should be further explored. (One is a major unmineralized fault.)

All four areas of conductors lie within the broad contact zone of granite and sediments which has been host to some spectacular showings of copper and gold to the east of the property and also to the west.

Some of the conductors are expected to be caused by iron and copper sulphides carrying gold and silver. Others may be magnetic iron formation or graphitic argillites.

A detailed geological investigation of all four areas is recommended with further check electromagnetic work on at least one anomaly. This, at a cost of about \$1,000 would be followed by a drilling program of 4 to 6 holes which would probe each conductive anomaly for a total cost of \$20,000.

ECONOMIC GEOLOGY

The interest in the property lies in the fact that it straddles the contact between granite and sediments and this contact area has been host to good showings of copper and gold within a few miles of the property.

The old "Lawrence" on "Errington" showing is 500 feet east of the claim group. An average specimen from the muck pile here was assayed by Laird (Ref. 1) ran 20% copper and 6 ounces of silver. The pit exposes a well mineralized zone, some 200 feet long, by 3 feet wide, striking 152° in altered granite. 60 tons of rock is reported to have been shipped to New York in 1916 from here. It assayed 7% copper and about 0.175 ounces of gold. Other exposures of lesser interest were found on strike toward the south.

Two and a quarter miles west-southwest of the property is the Bruce Young showing. (Ref. No.1) A well defined shear zone striking 120° is exposed here for 200 feet. The zone is mineralized with pyrite and chalcopyrite and lies in altered granitic rock. Laird took a couple of chip samples and got 1.8 oz. of gold plus 12% copper in one sample and 3.5 ozs. gold, 1.9 ozs. silver and 4.8% copper in the other. In a wide section at a cross fracture, a 9 foot channel is reported to have assayed 5.3% copper and 0.14 ozs. gold.

At Schist Lake, some 5 miles west of the property, the character of the sediments is well displayed. They consist mostly of conglomerate, greywacke and arkose but also have some strata that are likely to show as conductors; e.g. there is some banded sulphide iron formation, (with or without copper) some banded magnetic or hematitic iron formation, some sericite schist, and some closely banded black and white argillites which are probably graphitic.

THE ELECTROMAGNETIC ANOMALIES

The fifty conducting zones found by the EM-16 survey can be reduced to four zones of interest wherein exploration should be concentrated. Most of the numerous small electromagnetic effects are considered to be caused by conductive overburden; layers of clay or clay filled valleys. However, there are four areas of anomalous results that clearly indicate the presence of buried conductors. In descending order of importance these are:

Area No. 1 in claim S-207407 is a sinuous, east-west, highly conductive zone that varies from about 30 feet deep in the west, to 150 feet or so toward the east. It seems to dip vertical on the west end and toward the north at the east end. The most interesting aspect of this anomaly is that it is crossed by another one in the middle, striking southeast. Thus the anomalous area appears to be an east-west band of mineralization cut by a shear whose movement is mostly vertical. (east side down)

Area 2 in the west part of claim S-209406. Although two anomalies are shown here, there is some doubt as to what the true configuration is. The two or more conducting zones are interfering with each other so that a more detailed survey will have to be done in order to separate them.

Area No. 3 in claim S-209408 This curved conductor appears to be the continuation of the No. 1 anomaly and may reflect a conducting strata in the underlying sediments. An interesting feature of the zone is the incipient cross structure near the east end.

Area No. 4 in claim ~~S-298417~~ ^{S-209417}. This sinuous conductive zone which is about 1,200 feet long is probably a conductive strata in the underlying sediments. It seems to dip toward the south throughout most of it's length.

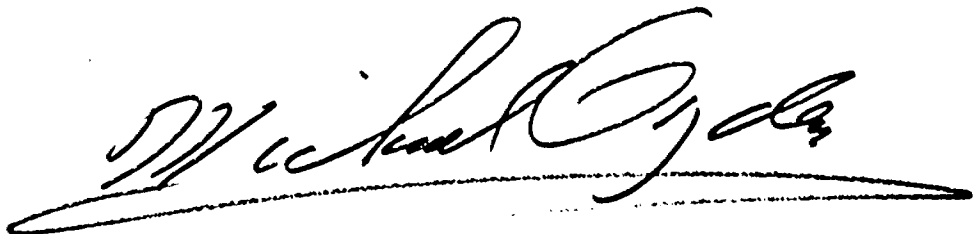
CONCLUSIONS

1. The four selected conductors must be strong zones because the exposures of pyrite mineralization (see map of anomaly No.4) are not even detectable as minor conductors.
2. All the conducting zones are ⁱⁿ a geological environment that has been productive of some good copper-gold showings on both sides of the property. Hence they require further exploration.
3. Anomalous area No.2 should be re-surveyed in detail by the E.M.-16 to clearly define the configuration of conductors.
4. The four anomalous areas should be examined by a geologist to look for exposed mineralization, seek geological reasons for the conductors, and refine the proposed diamond drill layout.
5. Six drill holes are envisaged to properly test the four conductive zones. Hole No.1 of 500 ft. in length would test the deep double anomaly in the area 1. Hole No.2 of 200 ft. would probe the shallow west end of anomaly No. 1. Hole No.3 of 300 to 600 ft. would investigate both anomalies in area No. 2. Hole No.4 of 400 ft. would check anomaly No.3. Hole No.5. of 300 ft. would check anomaly No.4. Hole No.6 of 300 ft. would check anomaly No.4 also, but toward the west.

COST ESTIMATE

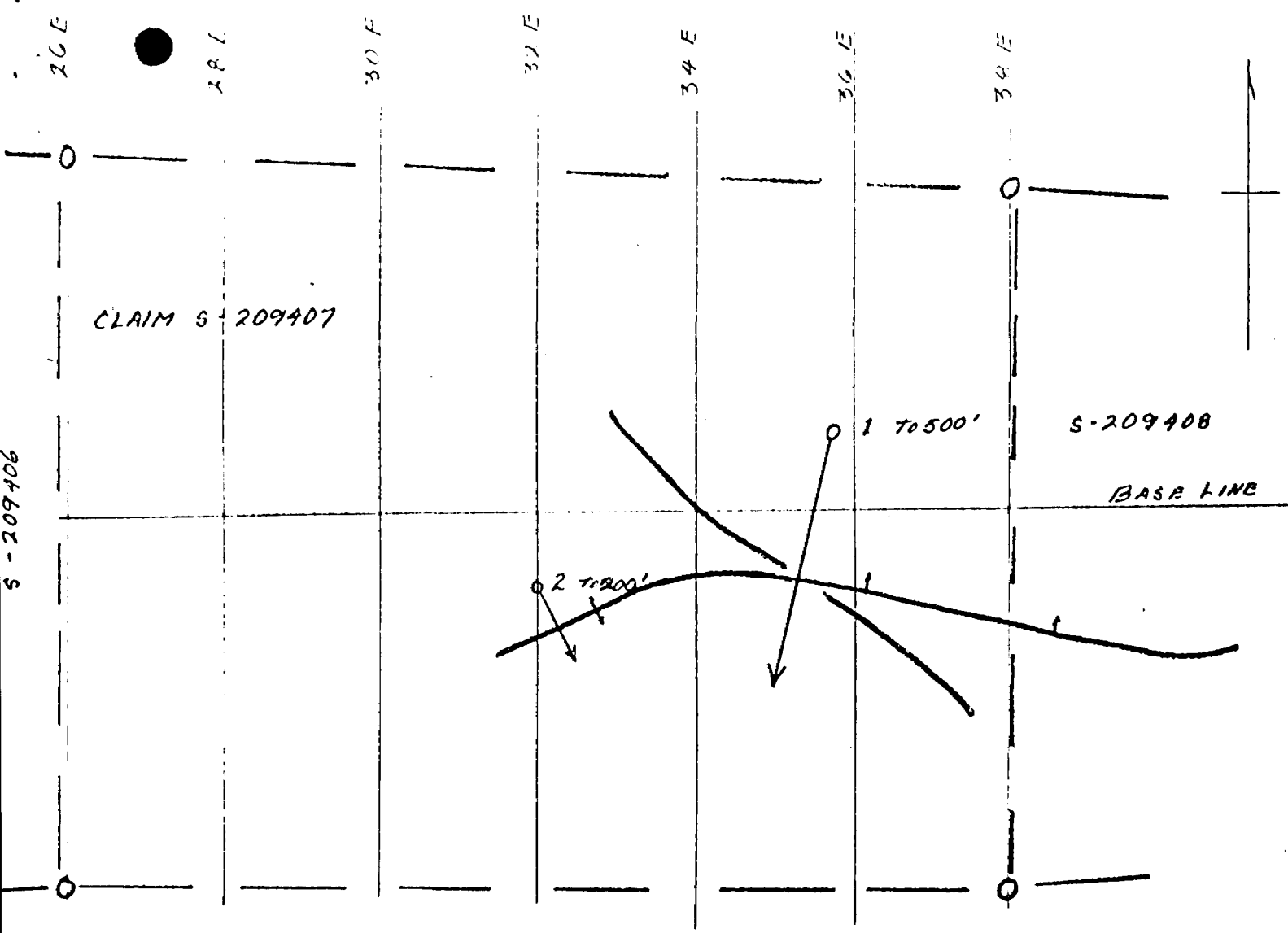
An examination with geologist and EM-16 operator would cost between \$800 and \$1,200. The drill program of approximately 2,000 lineal feet is estimated at \$20,000 to complete.

Respectfully submitted,

A large, stylized handwritten signature in cursive script, reading "Michael Ogden". The signature is written in dark ink and is underlined with a single horizontal line.

Michael Ogden, B.A. Sc. P. Eng.

Jan 14. 1970



LEGEND



CONDUCTOR
DIP VERTICAL

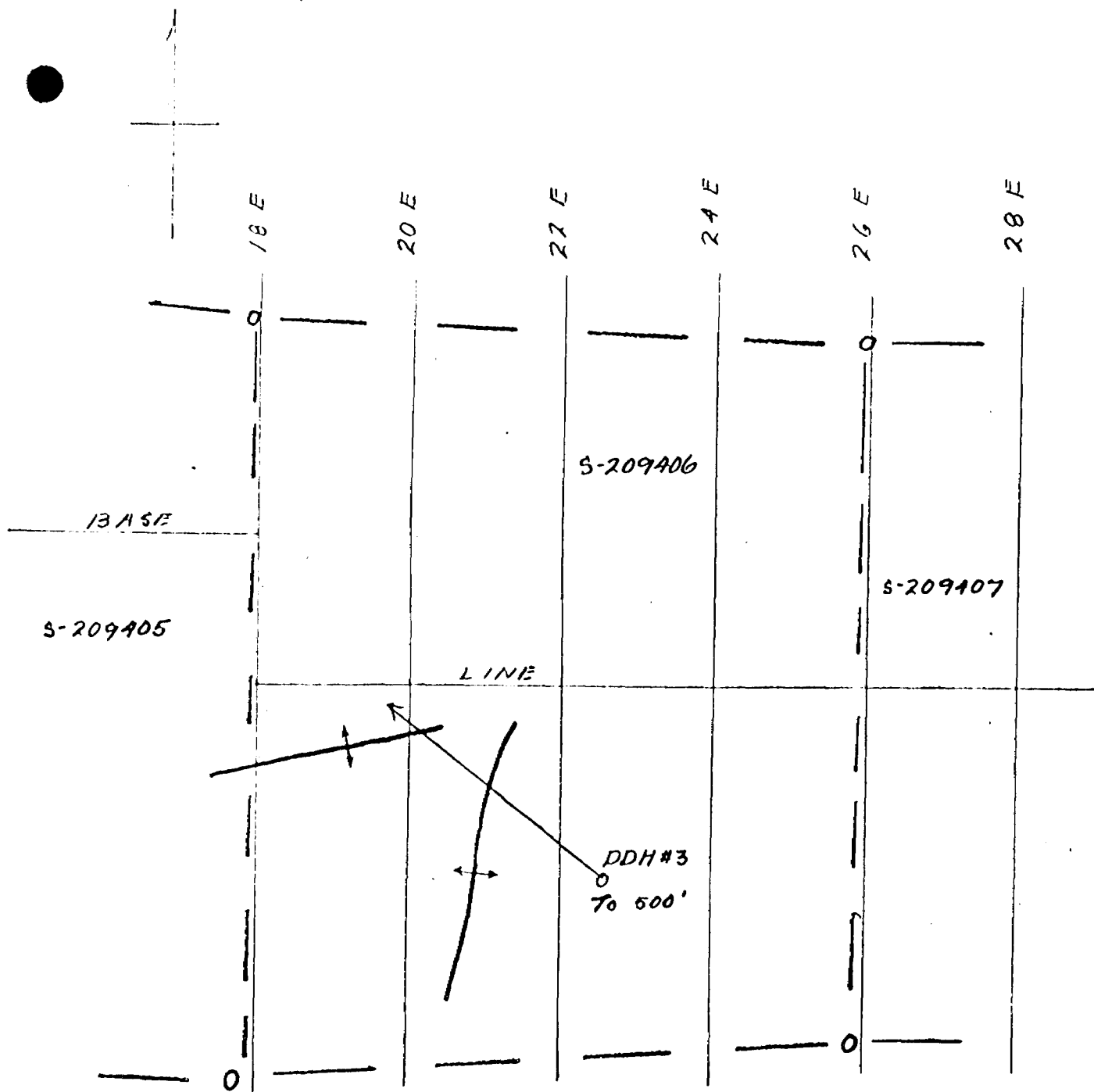


CONDUCTOR
DIP TO NORTH

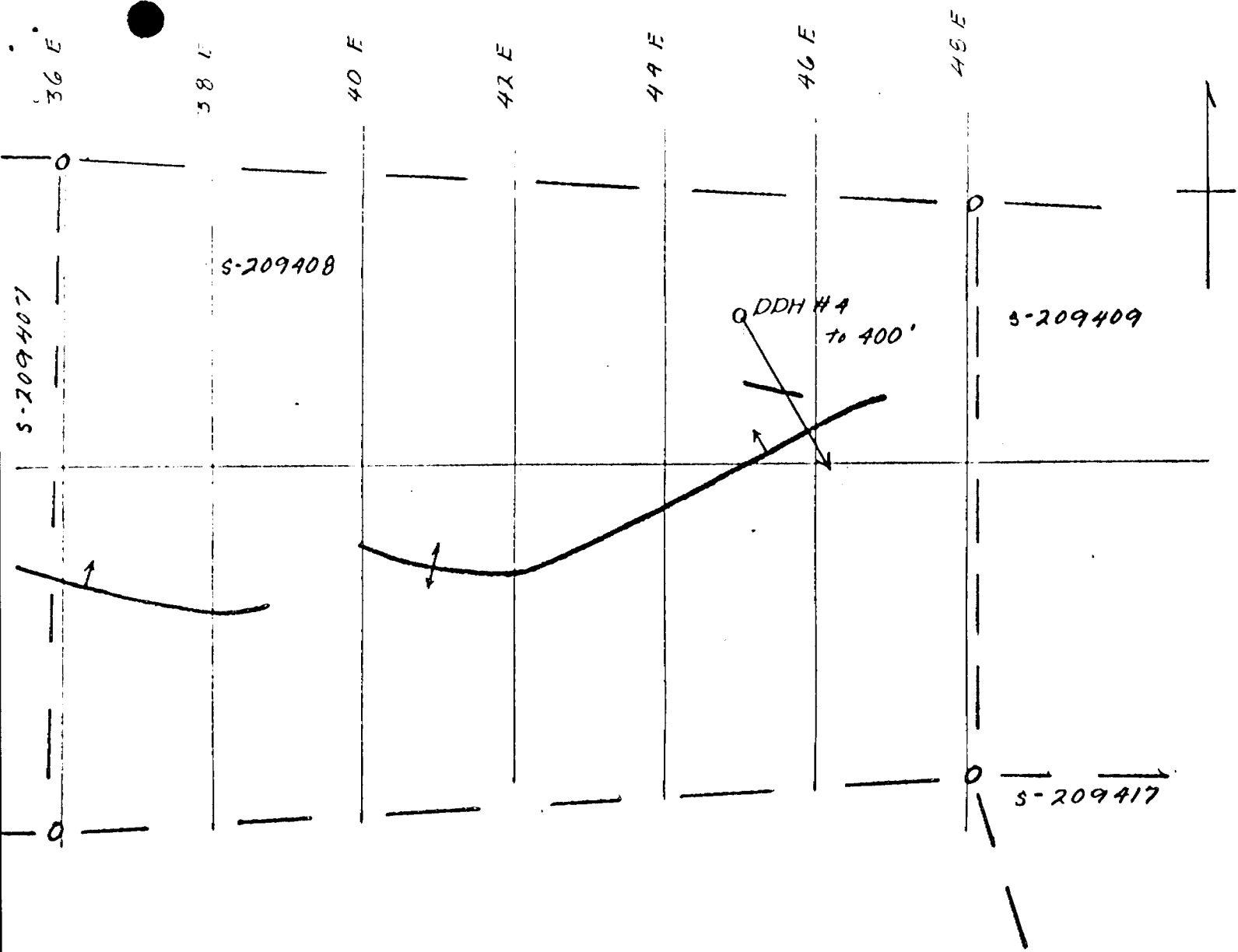


PROPOSED DRILL HOLE

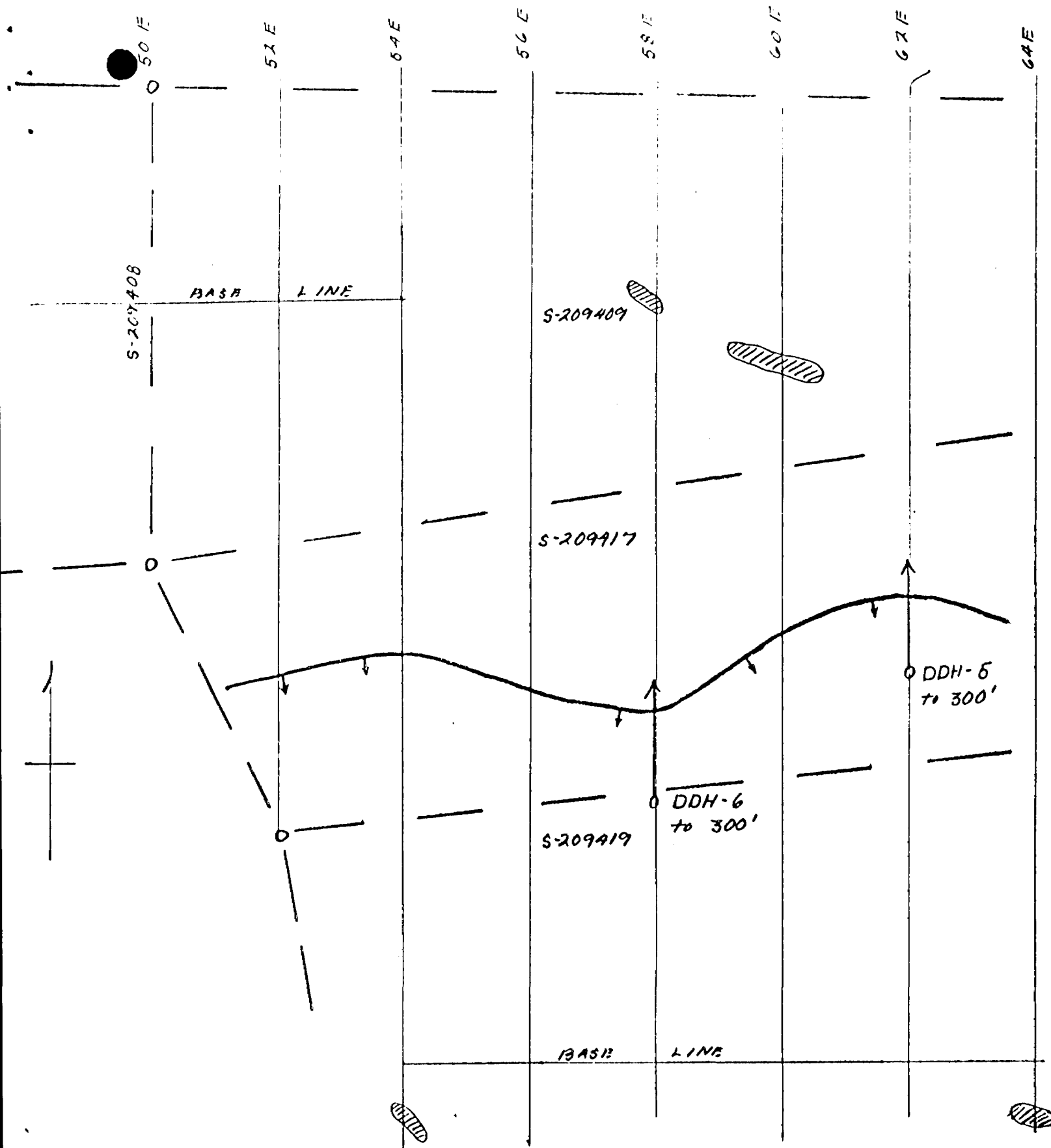
RENMARK EXPL.
ANOMALY NO 1
CLAIM S-209407
SCALE 1 IN = 200 FT.
OGDEN JAN/70




REMARK EXPLORATION
 ANOMALY NO 2
 CLAIM S-209406
 SCALE: 1IN = 200 FT.
 OGDEN JAN / 70

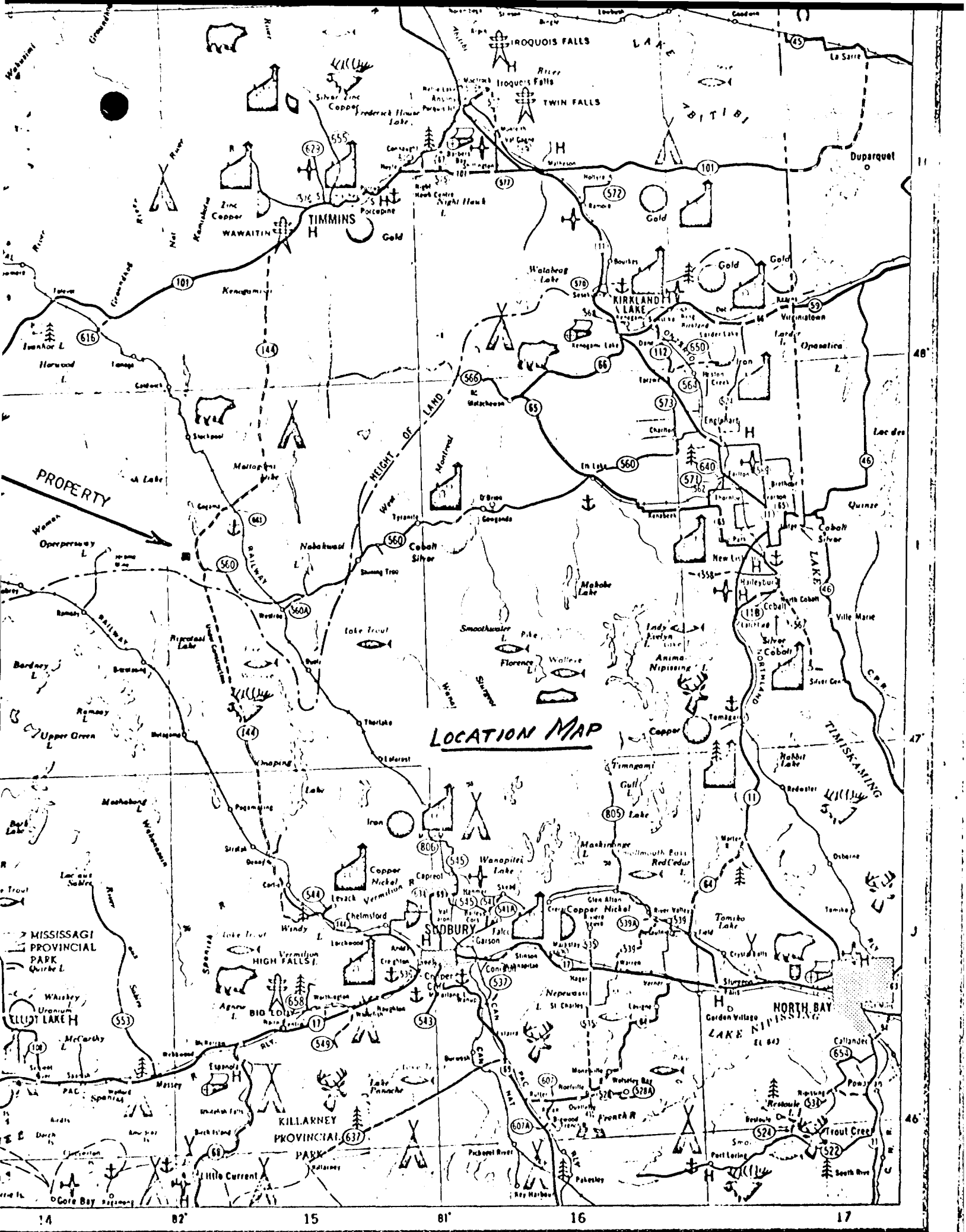


RENMARK EXPLORATIONS
 ANOMALY NO 3
 CLAIM S-209408
 SCALE: 1 IN = 200 FT.
 OGDEN JAN / 70




 SHOWING OF
 PYRITE & CHALCOPYRITE

RENMARK EXPLORATIONS
 ANOMALY No 4
 CLAIM S-209417
 SCALE: 1 IN = 200 FT.
 DADEN JAN/70



LOCATION MAP

MISSISSAGI
PROVINCIAL
PARK
Quirk L.

Whiskey
Uranium
ELLIOT LAKE H.

KILLARNEY
PROVINCIAL
PARK

NORTH BAY
MISSISSAGI
LAKE

Neville Twp. (M.-888)

THE TOWNSHIP
OF
**CLAIM MAP
CHESTER**

DISTRICT OF
SUDBURY

SUDBURY
MINING DIVISION

SCALE: 1-INCH=40 CHAINS

LEGEND

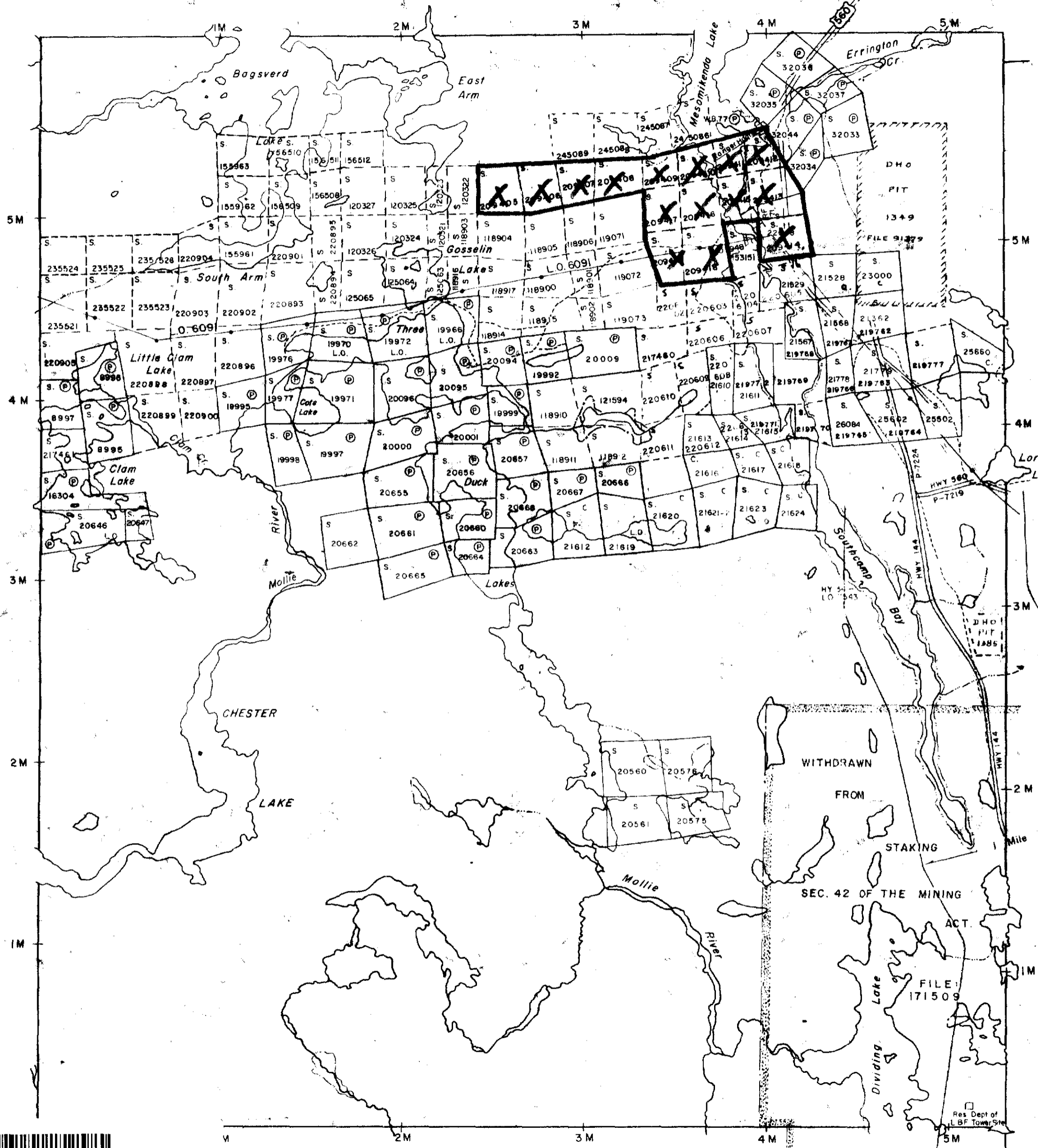
- PATENTED LAND Ⓟ
- CROWN LAND SALE Ⓢ
- LEASES Ⓛ
- LOCATED LAND Ⓛ
- LICENSE OF OCCUPATION L.O.
- MINING RIGHTS ONLY M.R.O.
- SURFACE RIGHTS ONLY S.R.O.
- ROADS —
- IMPROVED ROADS —
- KING'S HIGHWAYS —
- RAILWAYS —
- POWER LINES —
- MARSH OR MUSHEG —
- MINES *
- CANCELLED C

NOTES

- 400' Surface Rights Reservation around all Lakes and Rivers.
- Flooding Rights To 1200' Contour Reserved To H.E.P.C. File: 10621.

Yeo Twp. (M.-1188)

Bennewiss Twp. (M.-658)



Surface Rights Only
Withdrawn from staking under Section 42
of The Mining Act - File No. 171509



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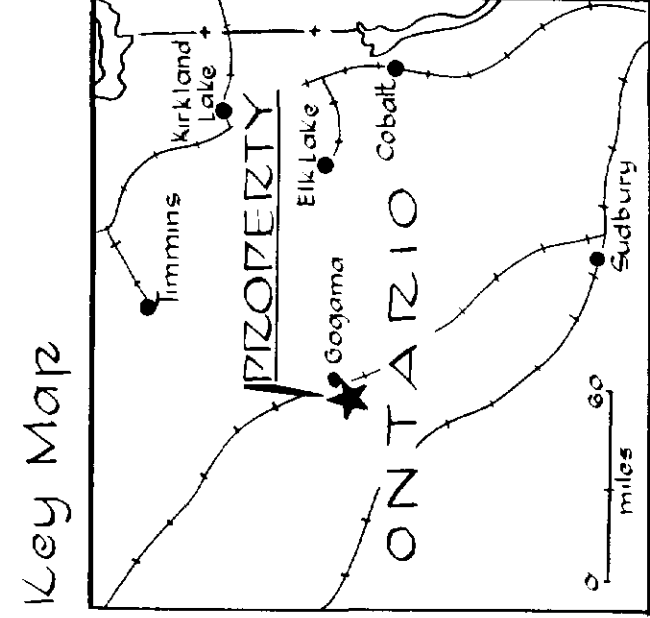
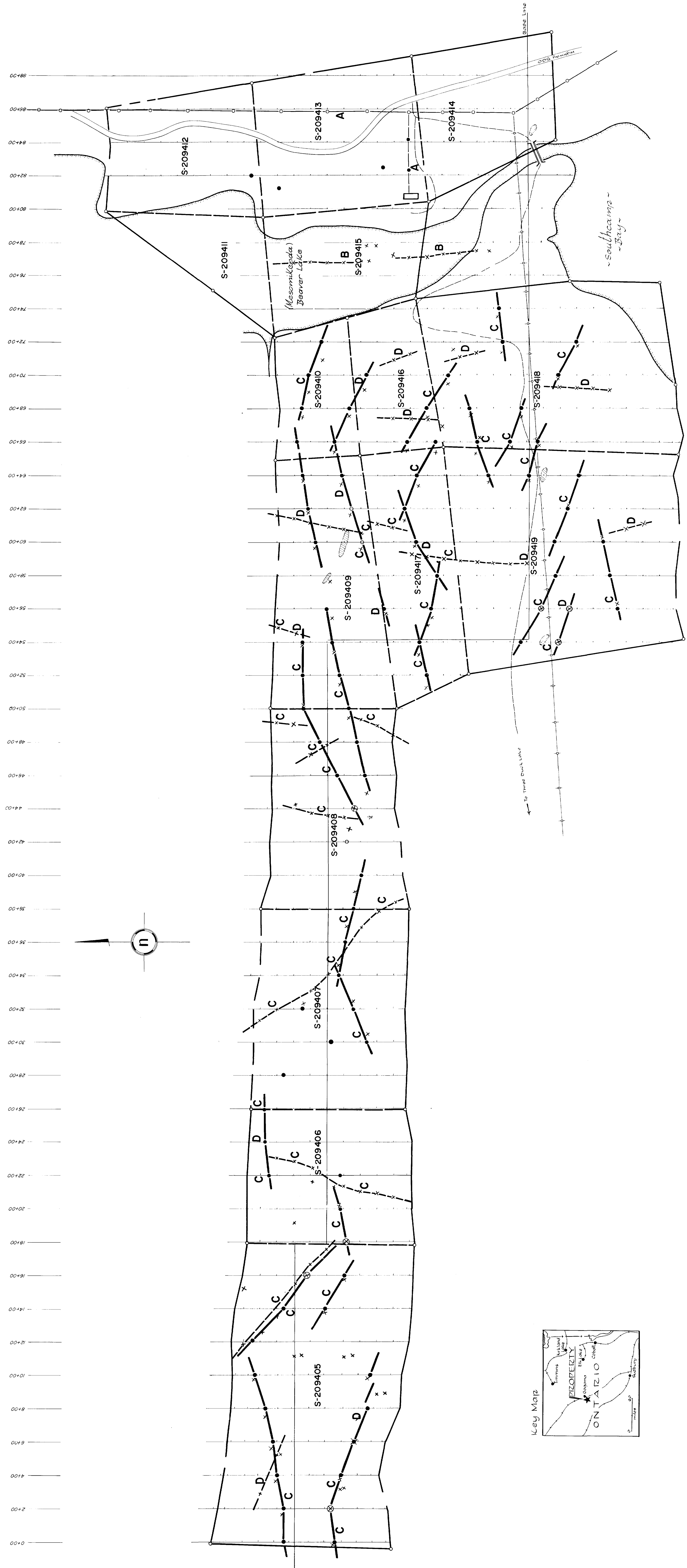
200

Invergarry Twp. (M.-948)

PLAN NO.-M.717

DEPARTMENT OF MINES

— ONTARIO —



-Legend-

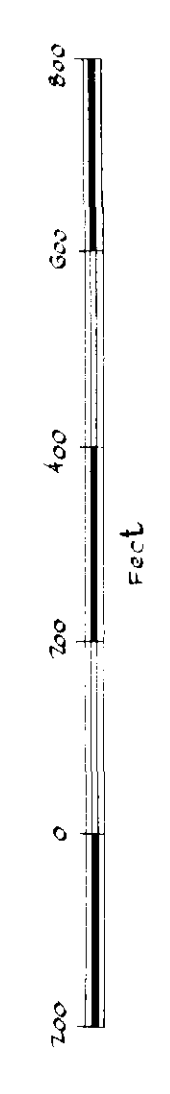
- Area hydro line main supply line - HIGH VOLTAGE
- Hydro service line to comp polaris - SMALLER VOLTAGE
- Old JEROME MINES hydro line -outlines- one steel cable left
- Polaris camp main edge
- Swamp
- Showing
- Property boundary
- No reading due to high voltage hydro
- Road & bridge

---x--- Completion of conductors from readings on NGA, Galboa and N.A.A. cellular

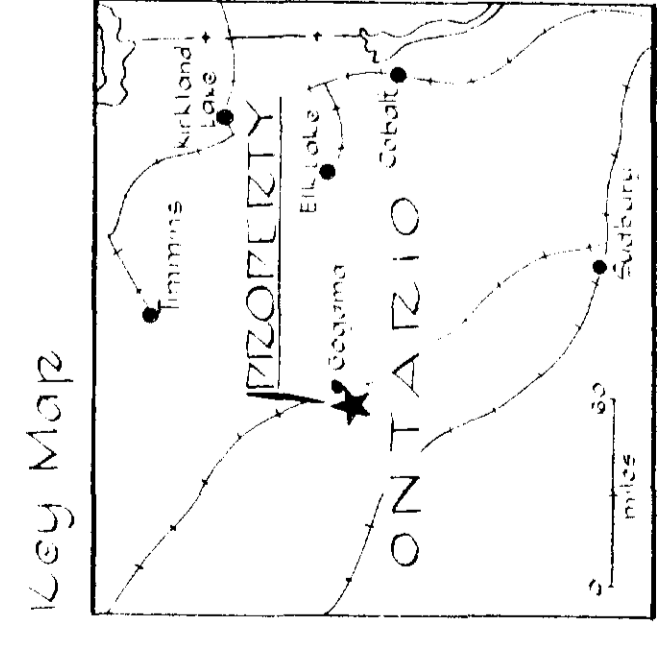
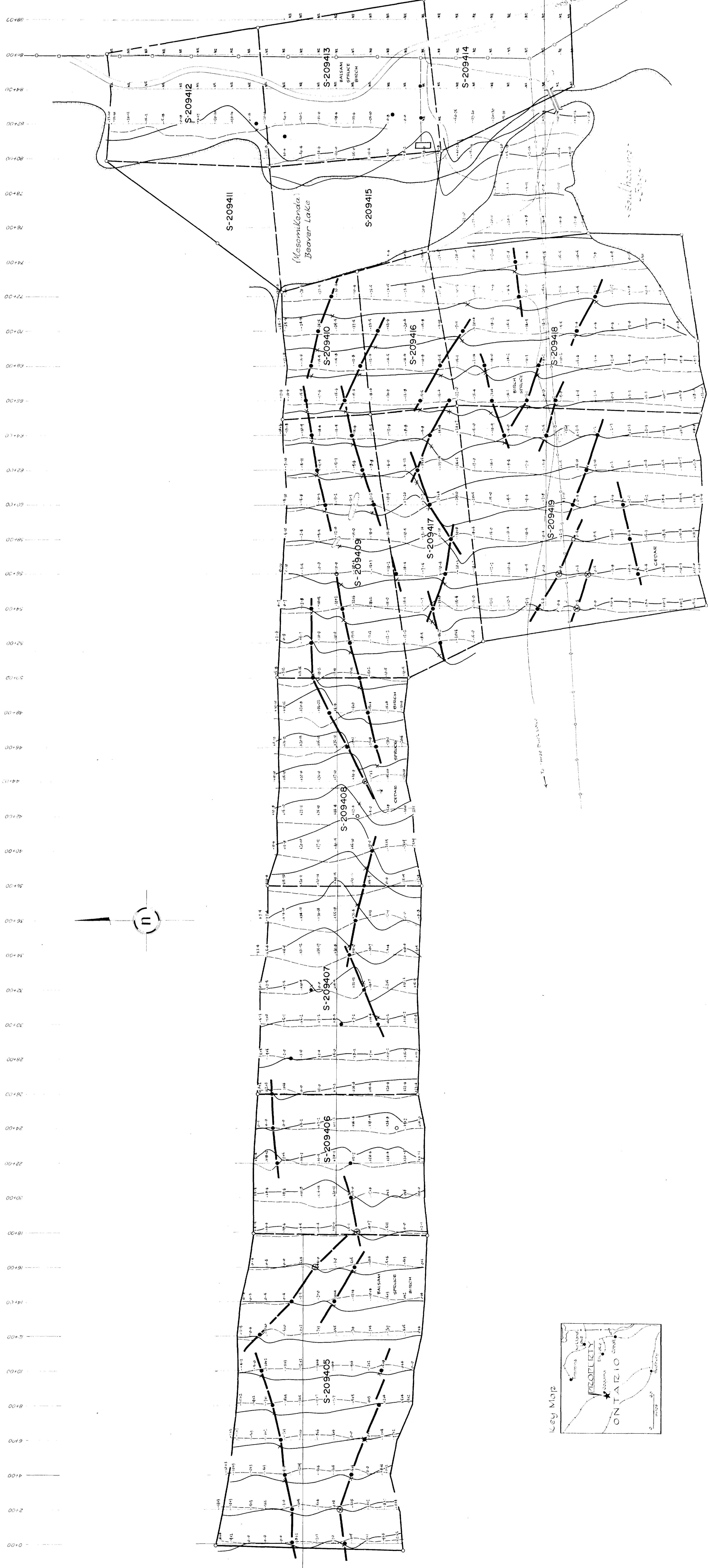
A·B·C·D - Category of conductors (See accompanying report for description)

RENMARK EXPLORATION LTD.
CHESTER TWP. ONTARIO PROPERTY

RONKA E.M. 16 ELECTROMAGNETIC SURVEY

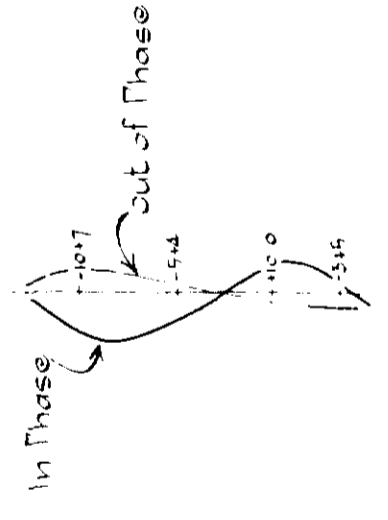


Handwritten signatures and initials



Legend

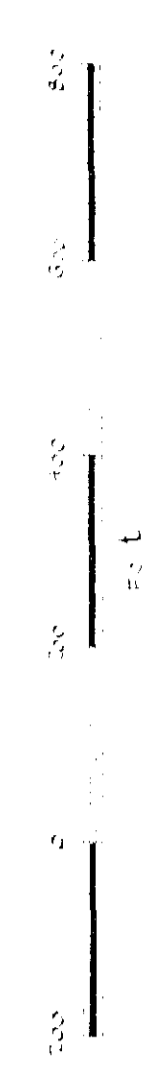
- Area hydro line main supply line - HIGH VOLTAGE -
- Hydro service line to camp pole - SMALLER VOLTAGE -
- ULC JEROME MINES hydro line - station - one steel cable #11
- Points some main edge
- Swamp
- Stewing
- Property boundary
- No points due to high voltage hydro
- Road 1/2 mile
- Number of stations this map 705



RENMARK EXPLORATION LTD.
SHEPPARD AVENUE EAST, SCARBOROUGH, ONTARIO

RONKA E.M. 16 ELECTROMAGNETIC SURVEY

— V.L.F. STATION NAA CUTLER, MAINE, READING SOUTH —



W. Waller & Sons
W. Waller & Sons