



42L06NE0040 2.637 0'SULLIVAN LAKE

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REPORT  
ON  
GEOPHYSICAL SURVEY  
AMAX EXPLORATION INC.  
O'SULLIVAN LAKE AREA  
ONTARIO

INTRODUCTION

Ground geophysical work, consisting of an electromagnetic survey, was completed over the 25 claim property of Amax Exploration Inc. in the O'Sullivan Lake Area in the Thunder Bay Mining Division, Ontario. The program was carried out in March 1971.

The following report and accompanying map describes the results of the survey and gives a geological interpretation of the results.

CONCLUSIONS AND RECOMMENDATIONS

The electromagnetic survey shows two areas of conductivity, namely conductors "A" and "B", which are probably caused by

MARCH 20, 1971

concentrations of sulfide mineralization and which warrant investigation by trenching or diamond drilling.

Conductor "A" coincides with an area of known chalcopyrite-pyrrhotite mineralization, it has a length of 1600 feet and an apparent width of up to 250 feet.

Conductor "B" is a fairly strong one line conductor and will require more detailed geophysical work in order to ascertain its length, width, strike and dip. The area is overburden covered and there is no record of any known sulfide mineralization in this area.

In addition to these conductors three other poorly conductive areas, namely "C", "D", and "E" were detected.

#### PROPERTY AND LOCATION

The property consists of 25 contiguous unpatented claims in the O'Sullivan Lake Area, Thunder Bay Mining Division, Ontario, covering approximately 1000 acres. They are all registered with the Ontario Department of Mines as follows and are shown on the accompanying map.

<u>Claim No.</u>	<u>Status</u>	<u>Acres</u>
299530	Unpatented	40
299531	"	40
299772	"	40
299773	"	40
293535	"	40

293536	Unpatented	40
293537	"	40
300364	"	40
300965	"	40
300966	"	40
300967	"	40
300968	"	40
300969	"	40
300970	"	40
300971	"	40
307405	"	40
307406	"	40
307407	"	40
307589	"	40
307607	"	40
307608	"	40
307609	"	40
307610	"	40
307611	"	40
307612	"	40

The claim group is situated on the north shore of the Northeast arm of O'Sullivan Lake, approximately twenty miles Northwest of Nakina, a divisional point on the main line of the C. N. R.

A gravel road north from Cavell, a flag station fifteen miles west of Nakina passes close to the west shore of O'Sullivan Lake. From this point it is approximately nine miles to the property.

#### GEOLOGY

The claims lie close to the junction of an east-west trending greenstone belt and a northeasterly trending greenstone belt

which extends some fifty miles from the east shore of Lake Nipigon, through O'Sullivan Lake and some ten miles beyond. O.D.M. map No. 1955-2 "O'Sullivan Lake Area" shows the general geology of the area.

The property is underlain by tightly folded Keewatin andesites, rhyolites and acid fragmentals which have been intruded by numerous small bodies of gabbro, diorite, quartz-feldspar porphyry and finally by northwesterly striking diabase dikes. The general trend of the volcanics is northeast.

Previous work on the property consisted of magnetometer and vertical loop electromagnetic surveys. Some trenching and 17 diamond drill holes were also completed in 1955 and 1956. The previous survey method was not very successful in outlining areas of sulfide mineralization. Trenching and diamond drilling located some good grade pyrrhotite-chalcopyrite mineralization but correlation of drill intersections was problematical.

#### SURVEY METHOD AND PRESENTATION OF RESULTS

The Electromagnetic survey employed the SE-600 Electromagnetic instrument operated in the horizontal coil configuration with a transmitter-receiver separation of 300 feet. Readings of the in-phase and out-of-phase components of the resultant field at 1600 C.P.S. were recorded generally at station intervals of 100 feet. Readings were recorded at 50 foot intervals

where greater detail was required. Line spacing was generally at 400 feet but the spacing was reduced to 100 feet where greater detail was desirable.

The in-phase component of the secondary field as plotted on the accompanying map is corrected for topography and for convenience of interpretation the in-phase reading which would normally read 100 over flat non conductive ground is reduced to a zero base.

A conductor will produce a curve going from positive readings through zero to a negative and back to positive. Both the in-phase and out-of-phase readings show the same general curve. The ratio between the in-phase and out-of-phase readings over a conductor is an indication of the conductivity of the body. In general the ratio increases as the conductivity of the detected conductor increases and a ratio greater than 1.0 is considered to represent a good conductor.

The electromagnetic results are plotted on a map on a scale of 200 feet to the inch.

#### INTERPRETATION OF RESULTS

The Electromagnetic survey, as plotted on the accompanying map shows two areas of medium conductivity, probably caused by concentrations of sulfide mineralization. In addition there are three other areas showing weak conductivity.

A brief description of each of the conductive areas follows.

Conductive Area "A"

This conductive area appears to correspond in part with the known chalcopyrite-pyrrhotite mineralization on the property, although its length appears to be substantially greater than the known mineralized zone. It has a length of 1600 feet with a variable apparent width of up to 250 feet. The conductor is variable in strength showing conductivity varying from medium to poor but is definite and in the writer's opinion is caused by concentrations of sulfides. Although not very definitive the dip appears to be near vertical.

Conductor "B"

This is a fairly strong one line conductor showing medium to weak conductivity. The response however is definite and in the writer's opinion is due to concentrations of sulfide mineralization. This area is overburden covered with vegetation consisting of birch and spruce indicating good drainage.

The conductor has an apparent width of up to 250 feet but neither its width, length or dip can be ascertained without doing additional detailed geophysical work. Since the conductor was detected using a transmitter-receiver separation of 300 feet it appears reasonable to assume a minimum length of close to 300 feet.

Conductor "C"

This is a one line out-of-phase conductor occurring close

to the south boundary of the property. It is a poor conductor but could however be of interest since it could be indicative of a conductive area beyond the south boundary of the property.

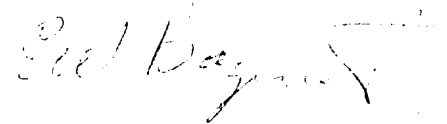
Conductor "D"

Conductor "D" is a weak poorly conductive response on two lines and in the writer's opinion could be due to conductive overburden.

Conductor "E"

This is an out-of-phase conductor occurring on line 4+00W only. Although of medium strength it shows poor conductivity and could conceivably be caused by a shear zone closely paralleling line 4+00W west.

Respectfully Submitted



E. W. Bazinet, P. Eng.

Timmins, Ontario.

Notes on Topography and Overburden Conditions

Over Conductive Areas

Conductor "A"

<u>Line</u>	<u>Station</u>	<u>Note</u>
6+00E	200S to 700N	Low flat, wet, overburden covered
4+00E	6+50 to 250N 200N to 0+00	Low Spruce Area no o.c. Outcrop Area
3+00E	700N to 100N	Low overburden covered
2+00E	100S to 400N	Low overburden covered
1+00E	200N 250N to 1000N	Outcrop Low ground, overburden covered
0+00E	300S to 200N 250N to 11N	Outcrop Area Appears to be mainly overburden covered
1+00W	500S 400S 300S and 250S 200S to 50S	Outcrop Trench 25 ft. north Outcrop Low ground, overburden covered
1+00W	100S to 0+00 0+50N to 150N 200N 200N to 500N	Outcrop Overburden Outcrop Overburden
2+00W	550N, 500N 450N to 300N 310N to 150N 100N to 100S	Outcrop Low ground, overburden Outcrop Area Low ground, overburden Area
300W	350S	North Shore of Lake



300W

300S to 100S  
50S to 50N  
100N to 30N

Low land, Shore at 100S  
Lake, Shore at 50N  
Rolling, Some Outcrop ?  
light overburden ?

Conductor "B"

Line

Station

Notes

4+00E

2000N to 2100N

Overburden covered rolling  
terrain Birch and Spruce  
Light overburden ??

ASSESSMENT WORK DETAILS



Type of Survey Electromagnetic Survey  
A separate form is required for each type

Township or Area O'Sullivan Lake

Chief Line Cutter E.W. Bazinet, Name  
or Contractor 456 Brousseau, Address  
TIMMINS, Ontario

Party Chief E.W. Bazinet, Name  
456 Brousseau, Address  
TIMMINS, Ontario

Consultant J.E. Steers, Name  
204 - 231 Arthur St., THUNDER BAY (P), Ontario Address

Geological field mapping by \_\_\_\_\_ Name  
\_\_\_\_\_ Address

COVERING DATES

Line Cutting January 20, 1971 to February 23, 1971

Field March 1 - 10, 1971  
Instrument work, geological mapping, sampling etc.

Office \_\_\_\_\_

INSTRUMENT DATA

Make, Model and Type SE-600

Scale Constant or Sensitivity + 1%  
Or provide copy of instrument data from Manufacturer's brochure.

Radiometric Background Count \_\_\_\_\_

Number of Stations Within Claim Group \_\_\_\_\_

Number of Readings Within Claim Group 1295

Number of Miles of Line cut Within Claim Group 25.63

Number of Samples Collected Within Claim Group \_\_\_\_\_

CREDITS REQUESTED

20 DAYS per claim

40 DAYS per claim

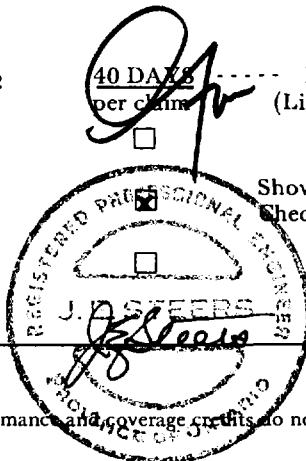
Includes (Line cutting)

Geological Survey

Geophysical Survey

Geochemical Survey

DATE Oct. 5, 1971 SIGNED \_\_\_\_\_



Show Check

**MINING CLAIMS TRAVERSED**  
List numerically

Table with 10 rows for listing mining claims. Includes handwritten note 'all right' and 'RECEIVED OCT 12 1971 PROJECTS SECTION'. Total Claims 25

Send in Duplicate to:  
FRED W. MATTHEWS  
SUPERVISOR-PROJECTS SECTION  
DEPARTMENT OF MINES &  
NORTHERN AFFAIRS  
WHITNEY BLOCK  
QUEEN'S PARK  
TORONTO, ONTARIO

If space insufficient, attach list

## SUBMISSION OF GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL SURVEYS

### AS ASSESSMENT WORK

In order to simplify the filing of geological, geochemical and ground geophysical surveys for assessment work, the Minister has approved the following procedure under Section 84 (8a) of the Ontario Mining Act. This special provision does not apply to airborne geophysical surveys.

If, in the opinion of the Minister, a ground geophysical survey meets the requirements prescribed for such a survey, including:

- (a) substantial and systematic coverage of each claim
- (b) line spacing not exceeding 400 foot intervals
- (c) stations not exceeding 100 foot intervals or
- (d) the average number of readings per claim not less than 40 readings

it will qualify for a credit of 40 assessment work days for each claim so covered. It will not be necessary for the applicant to furnish any data or breakdown concerning the persons employed in the survey except for the names and addresses of those in charge of the various phases (linecutting contractor, etc.). It will be assumed that the required number of man days were spent in producing the survey to qualify for the specified credit.

Each additional ground geophysical survey using the same grid system and otherwise meeting these requirements will qualify for an assessment work credit of 20 days.

A geological survey using the same grid system, and meeting the requirements for submission of geological surveys for maximum credits will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geological survey a credit of 40 days per claim will be allowed for the survey.

Similarly, a geochemical survey using the same grid system with the average number of collected samples per claim being not less than 40 samples, and meeting the requirements for the submission of geochemical surveys for maximum credits, will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geochemical survey a credit of 40 days per claim will be allowed for the survey.

Credits for partial coverage or for surveys not meeting requirements for full credit will be granted on a pro-rata basis.

If the credits are reduced for any reason, a fifteen day Notice of Intent will be issued. During this period, the applicant may apply to the Mining Commissioner for relief if his claims are jeopardized for lack of work or, if he wishes, may file with the Department, normal assessment work breakdowns listing the names of the employees and the dates of work. The survey would then be re-assessed to determine if higher credits may be allowed under the provisions of subsections 8 and 9 of section 84 of the Mining Act.

If new breakdowns are not submitted, the Performance and Coverage credits are confirmed to the Mining Recorder at the end of the fifteen days.



BASE LINE 3000 N

307612

307611

307610

307609

"B"

300966

299530

300970

300967

1200 E

800 E

299531

300971

300965

300964

400 E

"E"

1200 W

400 W

1600 W

2000 W

O' SULLIVAN LAKE

293537

293536

293535

299773

2800 W

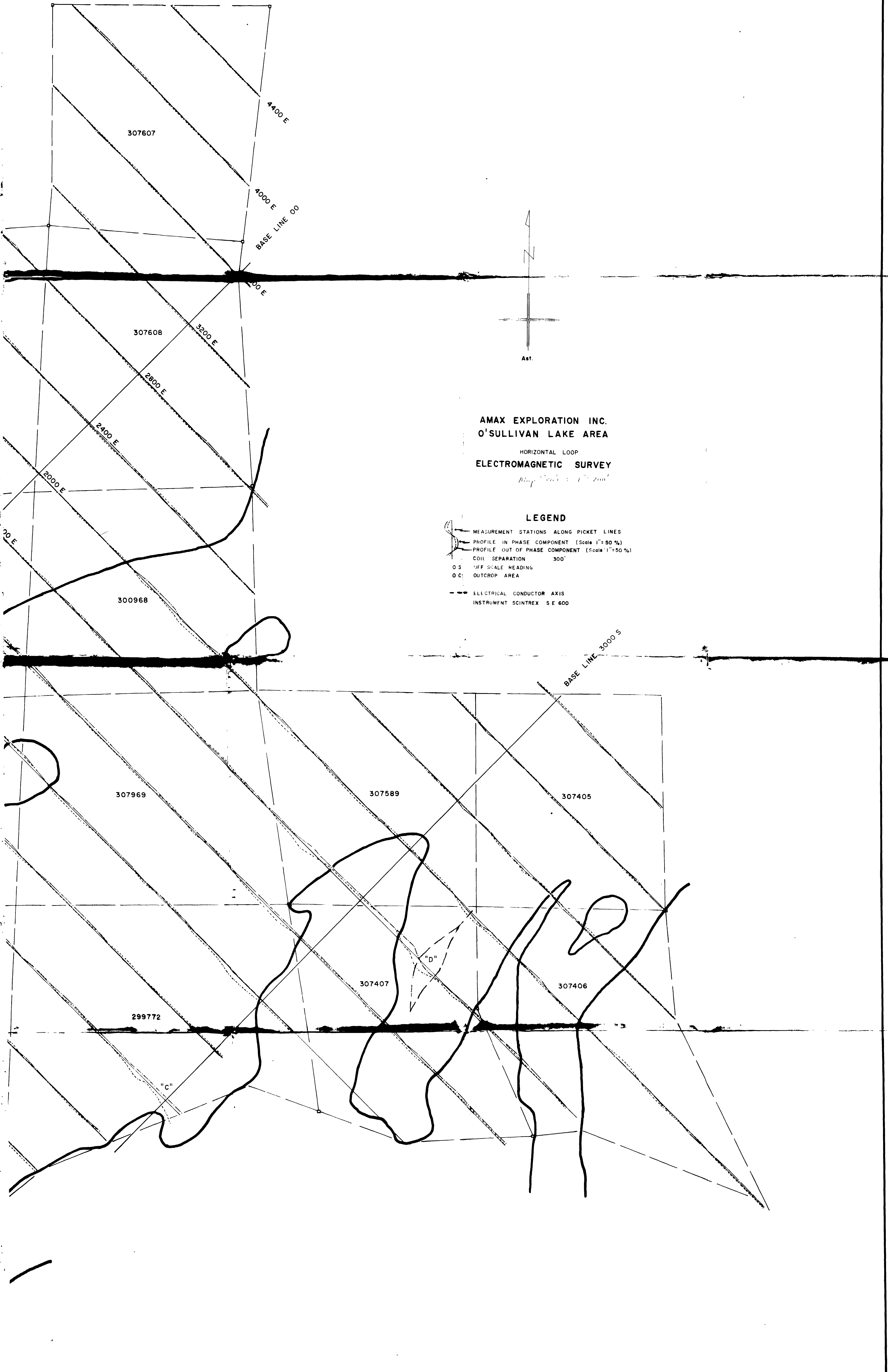
3200 W

3600 W

4000 W

4400 W





AMAX EXPLORATION INC.  
 O'SULLIVAN LAKE AREA  
 HORIZONTAL LOOP  
 ELECTROMAGNETIC SURVEY  
*Map Scale 1" = 200'*

**LEGEND**

- MEASUREMENT STATIONS ALONG PICKET LINES
- PROFILE IN PHASE COMPONENT (Scale 1" = 50%)
- PROFILE OUT OF PHASE COMPONENT (Scale 1" = 50%)
- COIL SEPARATION 300'
- O S OFF SCALE HEADING
- O C OUTCROP AREA
- ELECTRICAL CONDUCTOR AXIS  
INSTRUMENT SCINTREX S E 600