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LITHOSYSTEMS LIMITED
EXPLORATION FOR NATURAL RESOURCES

REPORT ON: SUMMARY OF 1982 FIELD SURVEYS
STURGEON LAKE PROJECT PROPERTY
(OUILLETTE GOLD PROSPECT)
AREA OF BECKINGTON LAKE
PATRICIA MINING DIVISION
ONTARIO

PREPARED FOR: MID-NORTH ENGINEERING SERVICES LTD.
AND
CANDORE EXPLORATIONS LTD.

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BY: B.A. Edmond, P.Eng.

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STURGEON LAKE PROJECT PROPERTY
(OUILLETTE GOLD PROSPECT)
AREA OF BECKINGTON LAKE
PATRICIA MINING DIVISION
ONTARIO

1. Introduction

In recent years exploration for gold in Archean greenstone belts in the Superior Province of the Canadian Shield has tended to focus on the discovery and evaluation of stratabound or stratiform gold-sulphide deposits. As opposed to relatively small but high grade vein systems which were the principal targets in the past, stratabound deposits present large, uniform, relatively low grade situations which are amenable to extraction by modern mining methods. The first important discovery of this class was the Detour Lake deposit found by Amoco Canada Petroleum Co. in 1974 in the Burntbush-Detour Lakes area, District of Cochrane, Ontario. The initial drilling program outlined a 10 million ton orebody with an average grade of 0.20 oz./ton of gold. The main mineralized zone consists of gold-bearing sulphidized intermediate and cherty tuffs lying between a basalt flow sequence and a horizon of ultramafic rocks. A more recent discovery of an apparently related kind of mineralization has been made in the Hemlo area near Marathon, Ontario. At the Goliath deposit surface drilling has outlined 2.5 million tons grading 0.249 oz./ton gold (Northern Miner, Oct.23, 1982). The host rocks are reported to be a highly altered, sulphide-bearing tuff unit. In western Ontario exploration is also underway on gold mineralization of possible economic dimensions in tuffaceous metasediments and related rocks in the Shebandowan area and elsewhere. It is evident that stratabound or stratiform bodies of gold mineralization which have excellent economic potential are geographically widespread in the Archean volcanic complexes of the Superior Province and that the re-examination of many of the old gold camps in the light of new geological information may well prove to be rewarding.

In reviewing geological data on the former Ouillette gold prospect in the Sturgeon Lake area of western Ontario the attention of the writer

was drawn to evidence which points to large scale alteration and sulphidization effects within a succession of tuffaceous volcanic rocks with reported gold occurrences. The geological setting is one which is thought to be conducive to the development of stratabound gold mineralization. A brief examination of the property was carried out on behalf of Mid-North Engineering Services Ltd. of Toronto and the property was taken under option.

The purpose of this report is to summarize field investigations and surveys carried out during the 1982 field season and to recommend additional exploratory work.

2. Property description

The Sturgeon Lake Project property consists of a roughly rectangular block of 23 contiguous, unpatented mining claims in the Area of Beckington Lake, Patricia Mining Division, Ontario as follows:

PA 611973 to 611990 inclusive (18) recorded Aug.6/82

PA 611993 to 611997 " (5) " "

Total (23)

The claim group is situated about 6 miles (10 km) southeast of the settlement of Savant Lake on the Canadian National Railway. Under an agreement dated November 18, 1982 the owner, Silver Pack Resources Ltd. of Toronto, optioned the property to Candore Explorations Ltd., a Toronto Corporation. The property is held in trust for Candore by Mid-North Engineering Services Ltd.

3. Location, access, etc.

Access from the settlement of Savant Lake is gained by travelling south on Highway 599 and then proceeding easterly on the Beckington Lake road for about 6½ miles (10 km.) to a creek flowing southerly into Sturgeon Lake. From this point a flagged line on the west bank of the creek follows an old winter road south and then southwest for a distance of about 1½ miles (2.5 km.) to the Main Shaft on the property.

Glaciated bedrock in the area of the property has a ridge-and-swale topography which follows the regional structural grain. Low lying parts are covered by glacial overburden, swamp or small lakes but numerous ridges afford exposures of bedrock which are thickly encrusted with moss or lichens. There is a dense cover of mature coniferous forest over the entire region.

4. Geology

The Savant Lake-Crow Lake metavolcanic-metasedimentary belt is the most extensive terrain of Archean supracrustal rocks in the western part of the Wabigoon Subprovince of the Superior Province in western Ontario (6)*. It extends from the vicinity of Lake of the Woods northeasterly to Savant Lake - a distance of about 180 miles (300 km). In form it consists of a series of arcuate, interconnected greenstone belts which are surrounded by granitic batholiths or gneissic rock complexes.

The Sturgeon Lake Project property is located within a northerly striking band of metavolcanics which lies between the Lewis Lake-Robinson Lake batholiths to the west and the Jutten batholith to the east. The area has been mapped on a scale of 1 inch to 1/4 mile by the Ontario Geological Survey (5). The metavolcanic belt, originally called the Handy Lake Volcanics, comprises an easterly-facing and steeply dipping succession which has been subdivided into seven informal formational units designed C to I in ascending stratigraphic order. Only units C, D and E are of interest here. Formation C, which is at the base of the succession, consists of mafic to intermediate volcanics comprised of massive, pillowed and porphyritic flows with thin interflow tuff beds. These rocks are high-magnesium tholeiites. The overlying unit, Formation D, is much more heterogeneous in nature and of contrasting petrochemical character being calc-alkalic in affinity with compositions ranging from basalt to rhyolite. It is a complexly interbedded accumulation of felsic to intermediate flows, pyroclastics and volcanogenic sediments along with subvolcanic intrusive bodies. Zones of sulphidization, some of which may be sulphide-facies iron formation, appear locally.

Formation D is overlain by Formation E which consists of a sequence of intermediate flows and pyroclastics with lesser amounts of mafic flows and tuffs.

The Sturgeon Lake Project property straddles the boundary between Formations C and D which are evidently the most favourable volcanic units for gold mineralization (see section 5 below). On and in the immediate

*() numbers in brackets designate selected references.

vicinity of the property the dips of primary foliation are steeply east to nearly vertical. Regional metamorphism is of greenschist grade.

The property lies on what appears to be the axis of a local cross-fold which affects units C and D both on the property and for a distance of about 2½ miles (4 km.) to the north where the fold nose is well defined by geological mapping (5, map 2431). The existence of this structure is also supported by aeromagnetic map data (3). The fold axis strikes nearly north-south at a shallow oblique angle to the regional structural trend which changes from north-south to west of north as it is deflected around the fold nose.

The volcanic stratigraphy in the area of the fold, especially in Formation D, is extremely complicated and suggests that the fold developed around a local volcanic centre invaded by leuc and wedge-shaped gabbro intrusives (5, map 2431). The impression of an isolated eruptive centre here is further strengthened by the presence of a cluster of geophysical conductivity anomalies within the core of the fold, particularly on and near the Sturgeon Lake Project property (4). Some of these conductors are attributable to zones of sulphide mineralization which may be of volcanic-exhalative origin.

Fault systems are the only late structures which affect the Archean metasedimentary and metavolcanic rocks. Three general strike directions can be recognized: east-northeasterly to northeasterly, northwesterly and north-south.

5. Gold mineralization

The Sturgeon Lake metavolcanic belt is best known for its zinc-lead-copper-silver massive sulphide deposits, namely the Mattabi and Boundary Mines as well as the Lynx Lake and Creek deposits. However, during the first decade of this century the Sturgeon Lake area was the scene of intense exploration for gold. The first gold discovery was made in 1898 and about fifty additional finds rapidly followed, few of which ever went beyond the prospect stage. The St. Anthony Mine on the shore of the North Arm of Sturgeon Lake was an exception. Discovered in 1900 the main zone was up to 1100 ft. (340 m.) in length and reached a maximum of 25 ft. (7.6 m.) in width. Total production was reported to be 330,000 tons grading 0.19 oz./ton. Gold-bearing quartz veins occurred in sheared, altered porphyry peripheral to the St. Anthony stock, a small granodiorite intrusive emplaced in Formation C at the base of the Handy Lake Volcanics. In general gold showings and prospects in the area appear to be restricted to Formations C and D of the Handy Lake volcanic sequence. At least seven such occurrences including the well documented Dawson-White and Richelieu prospects as well as the St. Anthony Mine appear within a six mile radius of the Sturgeon Lake Project property indicating that this sector of the volcanics is favourable to the development of significant gold mineralization.

A second period of gold exploration took place in the Sturgeon Lake area during the 1930's when the St. Anthony Mine achieved its main production.

6. Sturgeon Lake Project Property (Ouilette gold prospect)

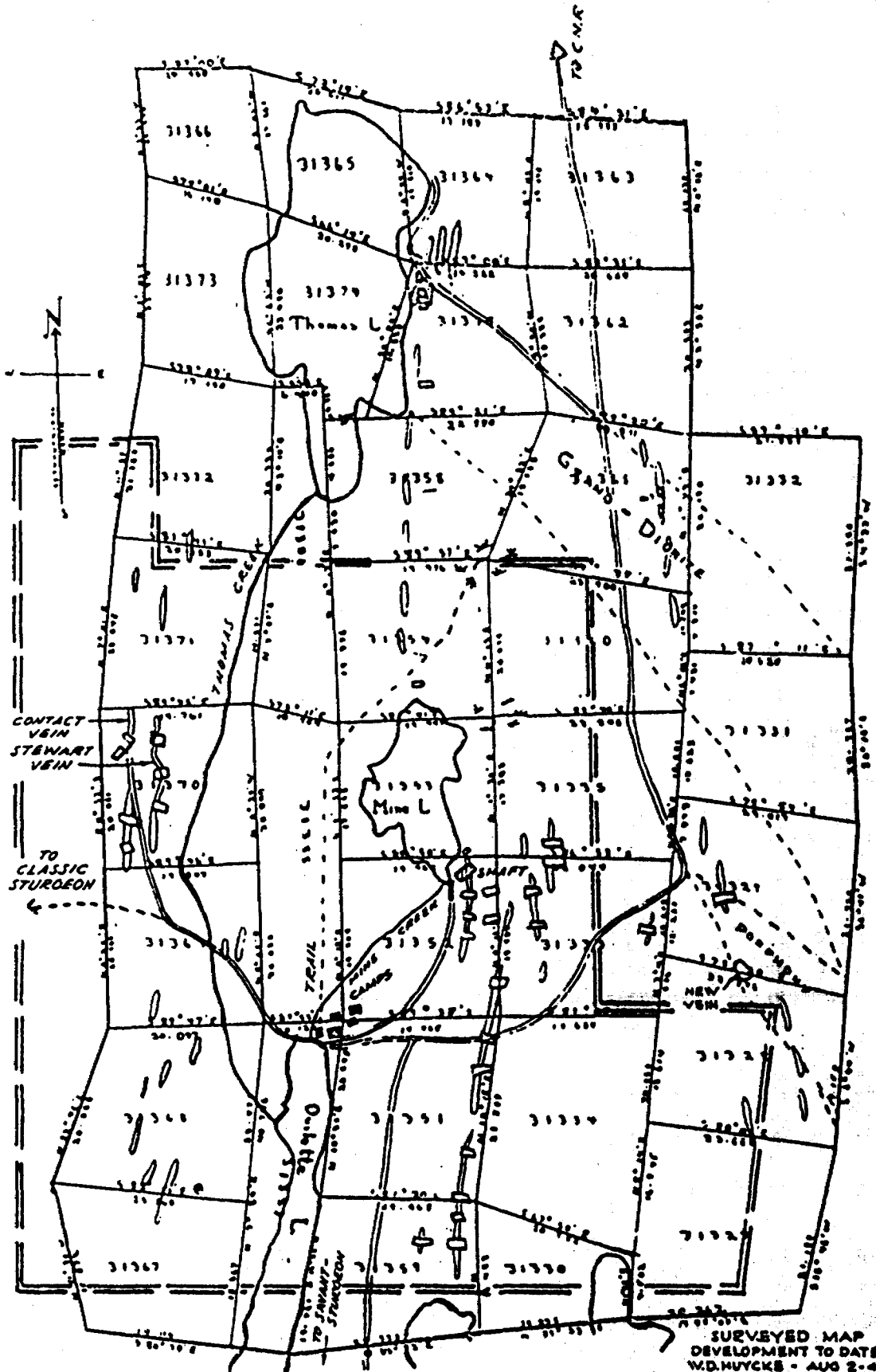
6.1 Previous development

Nothing is known of the early history of the property but " a large number of prospects in the vicinity of Ouilette Lake" were mentioned by E.S. Moore in 1911 (2). Later development in the 1930's and 1940's is known only in a rather sketchy way from a report by T.L. Gledhill (5, p.51), as well as from various press releases to the Northern Miner (8) and from what little of the previous operator's records are on file at the Resident Geologist's office in Sioux Lookout. This data suffers from a lack of precision in locating occurrences of gold mineralization on the property and so must be regarded with considerable reservation. Nevertheless the amount of surface and underground development work that was carried out strongly suggests that at least some encouraging assay results were in fact obtained.

In the period from 1934 to 1937 (?) the property was explored by Supreme Gold Mines and the trenching and shaft sinking apparently date from this period. Extensive and numerous bedrock pits and trenches opened a series of eight or nine parallel "vein" zones which strike north-south and which extend across the entire width of the original property (see fig.1). Some of these zones show a remarkable persistence along strike, the longest being in the order of 3000 ft. (900 m.). It is not known with certainty what the original designations of all of these zones may have been. The Stewart and Contact veins, both of which were explored by shallow prospect shafts, are situated in the west-central part of the present property. The Triplex vein system apparently is the one just east of Thomas Lake and so it mostly lies beyond the limits of the present property as does the #7 zone (and "new vein"?) which is to the east of the present property boundary. The 1, 2 and 4 zones are probably exposed in those groups of trenches which are situated around and to the south of the Main Shaft just east of the tip of Mine Lake.

The Stewart and Contact veins were reported to have given assays of 0.53 oz./5 ft. and 0.39 oz./3 ft. respectively (7). Porphyry on the west side of the Contact vein was said to be mineralized over a width of

Figure 1 (overpage) - Ouillette Mines claim group in 1946 showing location of development work carried out in the 1930's. The present property boundary is approximated by a double-dashed line (1).



SURVEYED MAP
DEVELOPMENT TO DATE
W.D. HUYCKE - AUG 2-44

200 ft. (60 m.) and along a strike length of 3000 ft. (900 m.) but gold values were not cited. A number of significant gold assays were also reported from unspecified localities in the trenches elsewhere but the data is too vague to be quoted here. Of particular interest is the mention of a "centre zone" consisting of a silicified shear some 80 ft. (24 m.) wide which supposedly give an average value of 0.177 oz./ton when sampled at 10 ft. intervals.

The Main Shaft is a vertical, two compartment shaft sunk to a depth of 157 ft. (48 m.). Cross-cutting on the 125 ft. (30 m.) level intersected a vein 37 ft. (11 m.) east of the shaft and this vein was followed by drifting to the north and south. The vein maintained a 4 ft. (1.2 m.) width for 30 ft. (9 m.) north of the crosscut but narrowed rapidly to the south. Extension of the drifting to the southeast again encountered the vein (or a parallel one) of comparable width. The vein material was said to be massive quartz with ribbon texture mineralized with sulphides and tourmaline. Other vein minerals included native gold, ankerite, chalcopyrite and pyrite. Gold values were localized near sheared vein contacts. No assays from the underground workings are available and no production was realized.

In 1945 Ouillette Mines Ltd. obtained the claims from the then inactive Supreme Gold Mines. Four diamond drill holes were put down in 1947 on what was thought to be a mineralized zone about 3000 ft. (900 m.) in length and passing north-southerly through the Main Shaft. Drill hole No.4 about 1200 ft. north of Mine Lake intersected mineralized zones with narrow, very low (< 0.10 oz./ton) to trace gold values; no information is available on the other drilling. Apparently no further work was done and Ouillette Mines surrendered its charter in 1958.

The area remained dormant until 1969 when Selco Exploration Co. Ltd. and others carried out magnetometer and conductivity surveys on and around the present property.* In 1970 Selco drilled 5 shallow holes, 242 D-1 to -5, with a total length of 772.5 ft. (235 m.) to test various conductive zones in the search for base metal deposits following the Sturgeon Lake

* Ont. Geol. Survey Assessment Files: 2,573, 2,626, 2,764 and 2,18
Area of Beckington Lake.

discoveries.** The exact locations of these holes has not yet been established but all appear to have been situated within the eastern part of the present property. The holes intersected a complicated assemblage of mafic volcanics, diorite, intermediate to felsic tuffs and wide silicified zones with pyrite and pyrrhotite mineralization belonging to Formation D. The results of this drilling are highly significant with regard to the presence of favourable host rocks for gold mineralization on the property. All of the holes except D-5 intersected considerable widths of intense alteration, quartz veining and/or sulphide mineralization in sheared intermediate to felsic volcanics. Drill holes D-1 and D-2 (on former PA 201062) appear to have intersected the sulphide-bearing conductive zone which extends southerly from the Main Shaft (see section 6.3.3 below). D-1 gave a continuous section of 53.6 (16.3 m.) of tuff and lapilli tuff mineralized with disseminated pyrite and pyrrhotite including a central zone of 18.9 ft. (5.8 m.) of grey quartz with minor pyrite and pyrrhotite. D-2 about 500 ft. (152 m.) to the north and on the same zone gave an intersection of 40.4 ft. (12.3 m.) of silicious tuff mineralized with 10% pyrite and a little pyrrhotite. D-3 (on former PA 201064) produced an intersection of 40.5 ft. (12.3 m.) of highly silicified tuff mineralized with pyrite and pyrrhotite. This hole was situated near the east boundary of the present property opposite the north end of Mine Lake and demonstrates the presence of more than one altered and sulphidized zone of substantial size. Apparently no gold assays were made on core from any of these holes.

It is the presence of these highly favourable lithologies over significant widths in the Selco drill holes along with the overall geological setting and past exploration history that prompted the writer to recommend an examination of the property.

** Ont. Geol. Survey Assessment Files: drill reports no.13, 14 and 18.
Area of Beckington Lake.

6.2 Property examination

From October 23 to 26 of this year the writer carried out an examination of the former Ouillette gold prospect on behalf of Mid-North Engineering Services Ltd. Mr. D. Pearl and Mr. E.M. Hall of Toronto provided very able assistance in the field at this time. General geological observations were made on and in the vicinity of the property and these showed that extensive alteration in the form of silicification, sulphidization and carbonatization commonly affect the intermediate to felsic volcanic rocks and to a lesser extent, the mafic varieties and metagabbros as well. Shearing is best developed in the felsic volcanics and varies from moderate to intense. It tends to be north-southerly in orientation and with a nearly vertical to steep easterly dip suggesting an origin in the cleavage fan of the local cross-fold structure.

Much of the time in the field was spent in locating and sampling the old pits and trenches, many of which are partly filled in and afford such poor bedrock exposure that samples taken were often far from representative. Only a few of the literally dozens of these excavations were examined and emphasis was placed on the Stewart and Contact zones on the west side of the property as well as on the zone extending south from the Main Shaft. Both locations seem to be broadly similar in character as sulphide mineralization occurs in sheared, altered felsic volcanics, porphyries and greenschists close to the contact with massive gabbros in both cases, however, geological relationships are evidently quite complex and not easily resolved by cursory studies.

At the Stewart and Contact zones sparce, disseminated pyrite and lency quartz veins occur in a sheared to massive pinkish to buff porphyry which may be a subvolcanic intrusive. Somewhat similar lithologies appear on the dumps at the Main Shaft and there are all gradations between massive porphyry and intensely altered varieties which are essentially quartz-sericite-pyrite rocks. These latter range from massive to schistose and pyrite, sometimes with pyrrhotite, is invariably present. Usually the more intensely sheared varieties have a higher sulphide content (up to 80%)

indicating that sulphide emplacement or redistribution is closely related to structural factors. Veins of white to sheared greyish quartz inhabit the sulphide zones and are, in part, of replacement origin.

From about 500 to 700 ft. (150-200 m.) south of the Main Shaft a series of three bedrock trenches discontinuously expose sheared, silicified and sulphidized felsic volcanics for 340 ft. (100 m.) across strike. The largest of these trenches cuts across a 75 ft. (23 m.) wide sulphide zone which probably is the "sulphide vein" mentioned in some of the old reports. Repeated bands of intense shearing and accompanying sulphidization can be seen across the width of the trenched interval. Original textures are largely obliterated by shear effects; some of the mineralized rocks are quite massive and possible are of intrusive origin but near the top of the section (to the east) good pyroclastic textures are preserved.

A total of 49 grab and chip samples with an average weight of 2.2 lb. each were taken during the property examination (see table 1). All were submitted to Cochenour Fire Assay in Cochenour, Ontario for gold and silver assays and a number of duplicate samples were analysed by Technical Service Laboratories for gold using the atomic absorption method. All of the samples returned trace to nil amounts of gold and the results are consistent within the limitations of the two analytical methods used. Of interest are the anomalously high silver values obtained in 25 (51%) of the samples; most occur in sulphide-rich examples. While these initial assay returns are not particularly encouraging, it should be pointed out that the sampling program was of a very preliminary nature and included only a few of the total number of pits and trenches on the property.

6.3 Geophysical surveys

During the latter part of November and early December of this year a picket line grid was cut over the Sturgeon Lake Project property and magnetometer, radiometric and V.L.F. EM surveys were carried out. The contractor was Mr. E.M. Hall of Toronto.

TABLE 1 - Samples from Sturgeon Lake Project Property

Sample No.	Location	Au * oz/t	kg * oz/t	Au ** ppm.	Sample type/Lithology
EB2 - 401	Triplex Vein ? - 700' N. Mine Lake	trace	0,28	0.04	grab - vn.qtz., 10% amph., 5% py.
- 402	Stewart Shaft	trace	nil		16" chip - qtz. vn. at shaft collar
- 403	" "	trace	nil		grab - shr. qtz., amph. ribbons 2% py.
- 404	" "	trace	0.18		grab - like 403, tr. sulph.
- 405	Contact Shaft	trace	0.22		grab typ.porph., nil sulph.
- 406	" "	trace	nil		grab - typ.porph., tr.py.
- 407	" "	trace	0.14	0.04	grab - like 405
- 408	" "	trace	0.20	0.01	grab - qtz. vn. in porph.
- 409	" "	trace	0.10		grab - like 408, tr.py.
- 410	" "	trace	0.12		grab - qtz. vn. in gns., tr. py.
- 411	trench 1+15 N. Contact Shaft	trace	nil		grab - gns. + qtz. vn.
- 412	" "	trace	0.30		grab - like 411, tr. sulph.

TABLE 1 - Samplers from Sturgeon Lake Project Property

Sample No.	Location	Au * oz/t	Ag * oz/t	Au ** ppm.	Sample type/Lithology
E82 - 413	pit 1+30 N, 6+15 E Stewart Shaft	trace	0.14		grab - qtz. vn. in gns.
- 414	pit 0+85 S, 0+75 E Stewart Shaft	trace	nil		grab - qtz. + gns.
- 415	" " "	trace	nil		grab - gns. 10% py at vn. contact
- 416	pit 1+10 S, 2+65 E Stewart Shaft	trace	nil		grab - qtz., tr. sulph.
- 417	" " "	trace	nil		grab - qtz., amph.
- 418	" " "	trace	0.14		grab - porph.
- 437	pit 6+85 S, 2+65 E Stewart Shaft	trace	0.14	0.02	grab - silic. porph., tr. sulph.
- 419	Main Shaft dump	trace	nil		grab - qtz. carb vn.
- 420	" " "	trace	nil		grab - qtz., tr. sulph.
- 421	" " "	trace	0.24		grab - ser. sch., 20% py., 10% qtz.
- 422	" " "	trace	0.50	0.04	grab - silic. porph., 50% py.

TABLE 1 - Samples from Sturgeon Lake Project Property

Sample No.	Location	Au * oz/t	Ag * oz/t	Au ** ppm.	Sample type/Lithology
E82 - 423	Main Shaft dump	trace	0.24		grab - qtz. - ser. sch., 20% py.
- 424	" " "	0.02	0.72	0.14	grab - silic. porph., 75% py.
- 425	" " "	trace	0.20		grab - shr. porph., 5% py.
- 426	" " "	trace	0.30		grab - silic. ser.sch., 20% py.
- 427	" " "	trace	nil		grab - silic. felsic volc., tr. py.
- 428	" " "	trace	nil		grab - qtz., tr.py.
- 429	" " "	trace	nil		grab - alt volc. + qtz.- carb.vn.
- 430	" " "	trace	nil		grab - qtz.
- 431	" " "	0.01	nil	0.09	grab - qtz. - ser. sch., 25% py.
- 432	" " "	trace	nil		grab - typ. gns., qtz.- carb. vn.
- 433	" " "	trace	0.64	0.02	grab - py.

TABLE 1 - Samples from Sturgeon Lake Project Property

Sample No.	Location	Au * oz/t	Ag * oz/t	Au ** ppm.	Sample type/Lithology
E82 - 434	Main Shaft dump	trace	nil		grab - qtz. tr. py.
- 435	" " "	trace	nil		grab - qtz. - ser.sch., 20% py.
- 436	pit E shore Mine Lake 1+25 N of Main Shaft	trace	nil		grab - qtz.
- 438	trench about 5+00 S of Main Shaft	trace	nil		0.90' chip - felsic sch., py.
- 439	" " "	trace	0.20	0.01	4.4' chip - shr. porpy., sulph.
- 440	" " "	trace	0.26	0.04	0.5' chip - like 438
- 441	" " "	trace	0.14		2.4' chip - like 439
- 442	" " "	trace	nil		10.3' chip - silic. porph., py.
- 443	" " "	trace	0.10	0.10	4.0' chip - qtz. -ser.-py.
- 444	" " "	trace	0.14	0.03	3.0' chip - silic. sch., py.
- 445	" " "	trace	0.06		0.3' chip - qtz.vn.
- 446	" " "	trace	nil		5.9' chip - silic. sch., py.

TABLE 1 - Samples from Sturgeon Lake Project Property

Sample No.	Location	Au * oz/t	Ag * oz/t	Au ** ppm.	Sample type/Lithology
E82 - 447	trench about 700' S of Main Shaft	trace	nil		5.0' chip - qtz. - py. - ser.sch.
- 448	" " "	trace	0.08		5.0' chip - like 447
- 449	" " "	trace	nil		6.0' chip - like 447

Abbreviations

alt. = altered	qtz. = quartz	typ. = typical
amph. = amphibole	sch. = schist	volc. = volcanic
carb. = carbonate	ser. = sericite	vn. = vein, veinlet
gns. = greenstone	shr. = sheared	
porph. = porphyry	silic. = silicified	
po. = pyrrhotite	sulph. = sulphides	
py. = pyrite	tr. = trace	

* Cochenour Fire Assay (fire assay method)

** Technical Service Laboratories (atomic absorption method)

6.3.1 Line Grid

The entire property was covered with a picket line grid having a true north-south base line and a line spacing of 100 metres. Stations along the lines were established at 50 m. intervals. The total length of the picket line grid including base and tie lines is 41.95 km.

6.3.2 Magnetometer survey

A total field magnetic survey was carried out using a Geometrics G816 proton magnetometer. Readings were taken at 10 m. intervals on each line. Data control during the survey was accomplished by running closed loop traverses through a network of control stations giving an estimated accuracy of ± 25 gammas. After correction for diurnal effects readings were reduced by a factor of 59,000 gammas, plotted and contoured as shown in plate 1.

The total field map shows an intricate array of more or less well defined, northerly trending magnetic highs and troughs which reflect the lithostratigraphic order and structural grain of the metavolcanic succession. An analysis of the implications of the magnetic map data is best deferred until a detailed geological map of the property has been prepared.

6.3.3 V.L.F. E.M. Survey

A very low frequency (V.L.F.) electromagnetic survey was also made using a Ronka EM-16 instrument tuned to broadcast station NSS (Annapolis, 21.4 kz.). The operator faced northeasterly to obtain readings in all cases and these observations were taken on 20 m. spacings on all lines. Unfiltered profiles are presented in plate 2.

In all a total of 14 conductive zones can be recognized. The majority strike more or less north-south and are probably of structural-stratigraphic significance. Two well defined colinear zones near the west boundary of the property extend from 3+00 to 5+00 N between 9+00 and 10+00 W. These coincide with an elongated magnetic high and likely signify an horizon of sulphides near the top of Formation C.

Another conductor extends southerly from the Main Shaft between 2+00 and 5+00 S. It is certainly the electromagnetic expression of the sulphide zone described previously. Other north-south trending conductors have no obvious relationship to magnetic expression and are of uncertain origin at present. Relatively straight diagonally-directed conductive zones which strike either northeasterly or northwesterly are probably faults.

Additional geophysical data in the form of a radiometric survey was also obtained and will be reported on when geological mapping has been completed.

7. Further exploration

7.1 Field surveys

The next steps in the exploration of the Sturgeon Lake Project property should be to:

- (i) carry out horizontal loop electromagnetic (H.L.E.M.) surveys over the conductive zones which have been detected by the EM-16 survey,
- (ii) map the geology of the property on a scale of 1:2500, and,
- (iii) systematically sample the numerous pits and trenches on those parts of the mineralized zones which have not yet been investigated.

H.L.E.M. data over the known conductive zones will serve to sharpen the locations of the conductor axes and help to establish which of these are attributable to the presence of sulphide mineralization. A total of 25 km. of surveyed lines will be required. A coil spacing of 100 m. should be optimum for this purpose although coil separation may be varied if circumstances warrant.

Probably the most important information which could be obtained at this stage of the project would come from detailed geological mapping. This would help to resolve the overall structure and volcanic stratigraphy on the property and show how the various mineralized zones are related to these factors. Correlation of geological and geophysical information will also work in the same direction to produce a clearer picture of the overall geological environment and give a more meaningful basis from which to assess the potential for stratiform or stratibound gold mineralization in this part of the Archean volcanic complex.

Mapping will be slow due to the presence of a thick layer of moss on all outcrop surfaces which will necessitate stripping as mapping progresses. The field geologist will require two helpers to prepare outcrops and to assist with sampling. Time requirements for this part of the work will be about 45 days.

Systematic sampling of the numerous pits and trenches on the property will serve to identify which mineralized zones may have significant gold values and whether or not a gold-sulphides relationship exists. Since the assumed target is stratiform or stratabound gold mineralization, gold values found in quartz veins are not of direct exploration significance but would serve only as an indicator of favourable stratigraphic horizons within the volcanic succession.

If the results of this stage of the project give sufficient encouragement a program of diamond drilling on geologically and geophysically defined targets can be planned.

7.2 Cost estimate

The cost of the program described above is estimated as follows:

(i)	H.L.E.M. survey; 25 km. @ \$125. per line km.....	\$ 3,125.00
(ii)	geological mapping, data analysis, reporting; 50 days @ \$350. per day.....	17,500.00
(iii)	board and lodging; 45 days at \$60 per day.....	2,700.00
(iv)	local labour; 2 men x 30 days x \$75.....	4,500.00
(v)	assaying; 200 samples x \$10.....	2,000.00
(vi)	transportation;.....	575.00
(vii)	misc. supplies, drafting, etc.....	<u>1,000.00</u>
	subtotal	\$ 31,400.00
	contingencies (11.5%)	<u>3,600.00</u>
	Total project cost	<u>\$ 35,000.00</u>

8. SUMMARY

1. The Sturgeon Lake Project property consists of a group of 23 contiguous, unpatented mining claims 6 miles (10 km.) southeast of the settlement of Savant Lake in the Patricia Mining Division of western Ontario. The property is favourably situated within a belt of Archean metavolcanic rocks known as the Handy Lake Volcanics. Numerous gold prospects and one past producer, the St. Anthony Mine, are located in the vicinity of the property. The present property covers the largest part of a former gold property developed in the 1930's and 1940's which is known as the Ouillette gold prospect. Previous development work consisted of a two compartment Main Shaft with limited drifting and crosscutting on the 125 ft. level, prospect shafts in two other areas called the Stewart and Contact zones, as well as numerous pits and trenches which expose a number of other north-south striking mineralized zones with reported gold values. No gold production has been obtained from the property. At present the property is owned by Silver Pack Resources Ltd. and is under option to Candore Explorations Ltd. of Toronto.

2. Geological research and a property examination by the writer have indicated a favourable situation for the development of stratiform or stratabound gold mineralization such as that discovered recently in the Hemlo area near Marathon, Ontario. Of particular interest are impressive widths of highly altered, silicified and sulphidized felsic pyroclastic rocks intersected in four shallow drill holes put down in 1970 by Selco Exploration. These give direct evidence of favourable host rocks for gold mineralization but no gold assays are available from the core. Gold values reported from quartz veins in the various mineralized zones on the property have not yet been substantiated by the limited amount of surface sampling which has been carried out.

3. Exploration work by Candore on the property to date includes the cutting of 41.95 km. of line grid as well as magnetometer, V.L.F. and radiometric surveys. The V.L.F. survey revealed the presence of 14 conductive zones.

4. It is recommended that the next phase of the project comprise horizontal loop E.M. surveys over the known conductors, detailed geological mapping and sampling of the numerous pits and trenches on the property.

The estimated cost of this work is \$35,000.00.

All of which is respectfully submitted by

LITHOSYSTEMS LTD.

at Mississauga, Ontario.

B.A. Edmond, P. Eng.
President

B.A. Edmond
Apr. 28/82

SELECTED REFERENCES

- (1) Huycke, W.D., 1946, Surveyed Map - Development to Date (Ouilette Mines); Ont. Geol. Surv. Assessment files.
- (2) Moore, E.S., 1911, The Sturgeon Lake Gold Field; Ont. Bureau Mines, vol.20, pt 1, p.133-157 + map 20 C.
- (3) Ont. Dept. Mines & Geol. Surv. Canada, 1961, Sturgeon Lake, Kenora and Thunder Bay Districts, Ontario; Geophysics Paper 1118, sheet 52 /2.
- (4) Palonen, P.A. & Speed, A.A., 1975, Beckington Lake Area, District of Thunder Bay; Ont. Div. Mines Prelim. Map P.1035.
- (5) Trowell, N.F., 1981, Geology of the Beckington Lake Area, District of Thunder Bay' Ont. Geol. Surv. Report 200, 62 p + map 2431.
- (6) Trowell, N.F. et.al., 1980, Preliminary geological synthesis of the Savant Lake - Crow Lake metavolcanic - metasedimentary belt, northwestern Ontario and its bearing upon mineral exploration; Ont. Geol. Surv. Misc. Paper 89, 30 p.
- (7) von Hessert, C., 1982, Report to Silver Pack Resources on the Beckington Lake Gold Prospect, Patricia Mining Division, Ontario; private rept., 20 p.

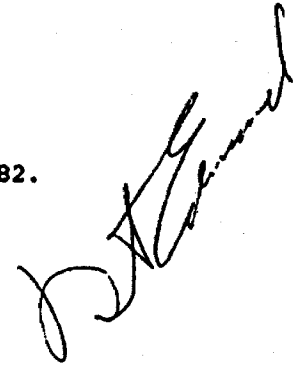
CERTIFICATE

I, Brian A. Edmond, resident at 2445 Homelands Drive in the City of Mississauga, Province of Ontario DO CERTIFY THAT:

1. I hold degrees of Bachelor of Applied Science in Mining Engineering (1960) and Master of Applied Science in Geology (1964) both degrees having been taken at the University of Toronto at Toronto, Ontario. Further I was Dana Fellow of Mineralogy at Yale University in New Haven, Connecticut, U.S.A. for the academic year 1964-65.
2. I have been a member in good standing of the Association of Professional Engineers of the Province of Ontario since 1961.
3. I have continuously practiced my profession as an Economic Geologist in the exploration for base and precious metals, uranium, oil and gas principally in Canada and the United States since 1965.
4. I carried out an examination of the Sturgeon Lake Project property (Ouilette gold prospect) and related engineering work as described in this report.

Dated at Mississauga, Ontario, this 28th day of December, 1982.

B.A. Edmond, P.Eng.





52J02NE0043 52J02NE0050 BECKINGTON LAKE

800

File _____



Ontario

Ministry of Natural Resources

GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL
TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Magnetometer, V.L.F.
 Township or Area Area of Beckington Lake M1740
 Claim Holder(s) Mid-North Engineering Services Ltd.
Suite 603, 45 Richmond St.W.
Toronto, Ont. M5H 1Z2
 Survey Company E.M. Hall, 1216 - 1 Massey Sq., Tor.
 Author of Report Brian A. Edmond, P.Eng.
 Address of Author 2445 Homelands Dr. Un. 21
Mississauga, Ont. L5K 2C6
 Covering Dates of Survey Nov. 24 - Dec. 28, 1983¹
 (linecutting to office)
 Total Miles of Line Cut 26.07

MINING CLAIMS TRAVERSED
List numerically

Pa	611973
(prefix)	(number)
Pa	611974
Pa	611975
Pa	611976
Pa	611977
Pa	611978
Pa	611979
Pa	611980
Pa	611981
Pa	611982
Pa	611983
Pa	611984
Pa	611985
Pa	611986
Pa	611987
Pa	611988
Pa	611989
Pa	611990
Pa	611993
Pa	611994
Pa	611995
Pa	611996
Pa	611997

If space insufficient, attach list

<u>SPECIAL PROVISIONS</u> <u>CREDITS REQUESTED</u>	Geophysical	DAYS per claim
ENTER 40 days (includes line cutting) for first survey.	-Electromagnetic	<u>40</u>
	-Magnetometer	<u>20</u>
	-Radiometric	_____
ENTER 20 days for each additional survey using same grid.	-Other	_____
	Geological	_____
	Geochemical	_____

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: April 29, 1983 SIGNATURE: _____
Author of Report or Agent

[Handwritten Signature]
RECEIVED

Res. Geol. _____ Qualifications Ph.D. Geol.

Previous Surveys

File No.	Type	Date	Claim Holder
			<u>APR 29 1983</u>

MINING LANDS SECTION

TOTAL CLAIMS 23

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations Mag. 3682 V.L.F. 1838 Number of Readings Mag. 3682 V.L.F. 1838
Station interval Mag. 10m. V.L.F. 20 m. Line spacing 100 m.
Profile scale Mag. N/A V.L.F. 1 cm. = 10%
Contour interval Mag. 50 gammas V.L.F. N/A

MAGNETIC

Instrument Geometrics G816
Accuracy - Scale constant + 25 gammas
Diurnal correction method closed loop traverses linking control stations
Base Station check-in interval (hours) see report of Dec.28/82 p.20
Base Station location and value see report of Dec.28/82 p.20

ELECTROMAGNETIC

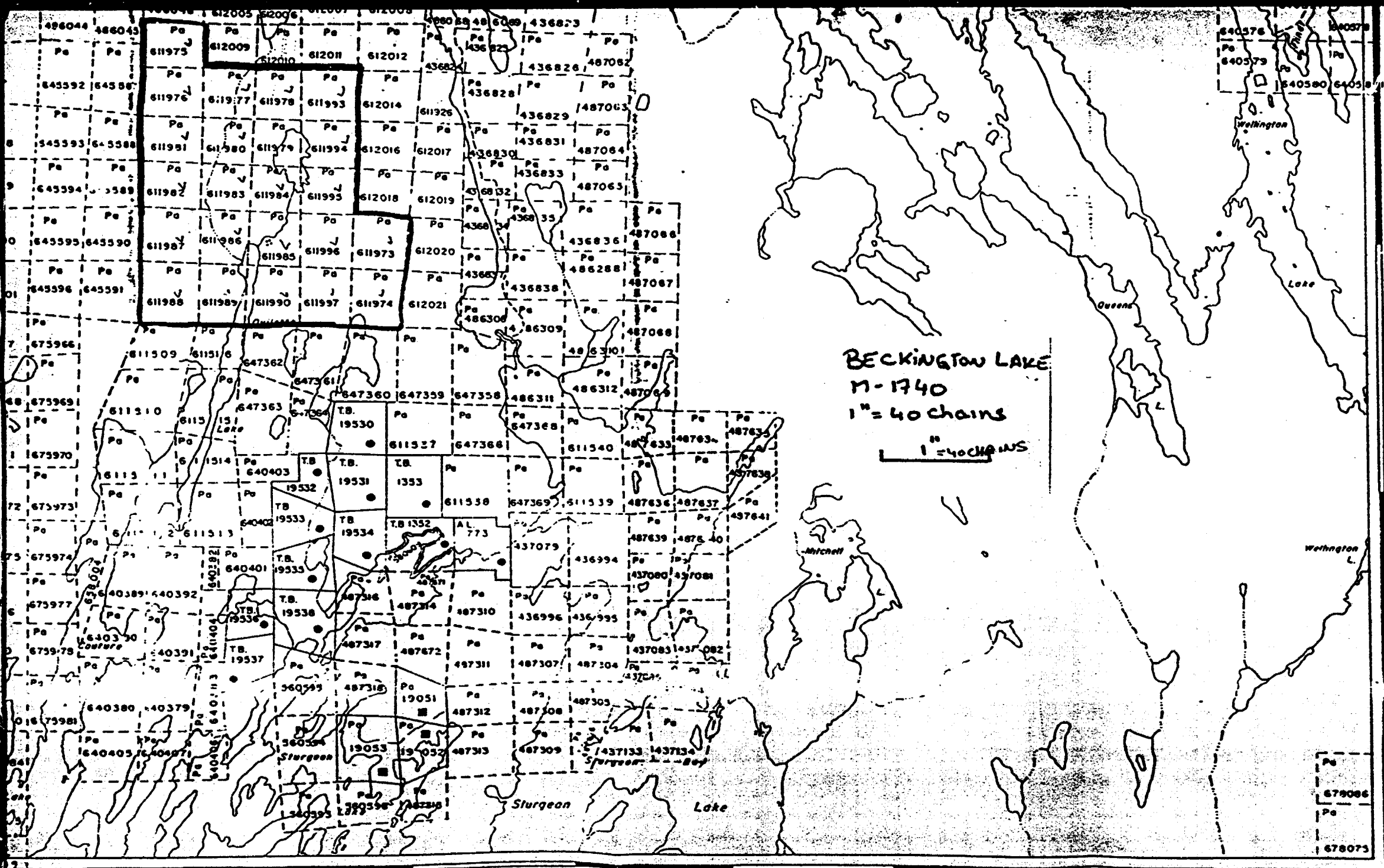
Instrument Ronka EM16
Coil configuration N/A
Coil separation N/A
Accuracy + 1%
Method: [] Fixed transmitter [] Shoot back [] In line [] Parallel line
Frequency NSS Annapolis 21.4 Kz. (facing NE-ly)
Parameters measured in-phase and quadrature.

GRAVITY

Instrument
Scale constant
Corrections made
Base station value and location
Elevation accuracy

INDUCED POLARIZATION RESISTIVITY

Instrument
Method [] Time Domain [] Frequency Domain
Parameters - On time Frequency
- Off time Range
- Delay time
- Integration time
Power
Electrode array
Electrode spacing
Type of electrode



10'
 9'
 8'
 50°07'30"

38 37 36 35 34 33 32 31
 90°30'



Report of Work
(Geophysical, Geological,
Geochemical and Expenditures)

#83-50

2.5509 S2J/2 NE(SS)

Instructions: - Please type or print.
- If number of mining claims traversed exceeds space on this form, attach a list.
Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
- Do not use shaded areas below.

The Mining Act

Type of Survey(s) Magnetometer, V.L.F.	Township or Area Area of Beckington Lake M1740
Claim Holder(s) Mid-North Engineering Services Ltd.	Prospector's Licence No. A22041
Address Suite 603, 45 Richmond St. West, Toronto, Ont. M5H 1Z2	
Survey Company E.M. Hall, 1216 - 1 Massey Sq. Toronto, Ont. M4C 5L4	Date of Survey (from & to) 03 12 82 18 12 82 Day Mo. Yr. Day Mo. Yr.
Name and Address of Author (of Geo-Technical report) Brian A. Edmond, P.Eng.; 2445 Homelands Dr., Un.21, Mississauga, Ont. L5K 2C6	
Total Miles of line Cut 26.07	

Credits Requested per Each Claim in Columns at right

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	40
	- Magnetometer	20
For each additional survey using the same grid: Enter 7() days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Man Days	Geophysical	Days per Claim
Completed surveys and enter () days	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	Geological	
	Geochemical	

Airborne Credits	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	
Electromagnetic	
Magnetometer	
Radiometric	

RECEIVED
AUG 21 1983
MINING LANDS SECTION

Mining Claims Traversed (List in numerical sequence)

Prefix	Mining Claim Number	Expend. Days Cr.	Prefix	Mining Claim Number	Expend. Days Cr.
Pa	611973				
	611974				
	611975				
	611976				
	611977				
	611978				
	611979				
	611980				
	611981				
	611982				
	611983				
	611984				
	611985				
	611986				
	611987				
	611988				
	611989				
	611990				
	611993				
	611994				
	611995				
	611996				
	611997				

RECEIVED
AUG 19 1983
RESIDENT GEOLOGIST
SIOUX LOOKOUT

RECEIVED
MAY - 9 1983
A.M. 7:30 P.M. 11:59

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures	+	15	=	Total Days Credits
\$				

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Date: **April 29, 1983**
Recorder's Name or Agent (Signature): *[Signature]*

Certification Verifying Report of Work
I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
Brian A. Edmond, P.Eng. 2445 Homelands Dr. Un.21, Mississauga, Ont. L5K 2C6

Date Certified: **April 29, 1983**
Certified by (Signature): *[Signature]*

Pa. 611973
Total number of mining claims covered by this report of work: **23**

For Office Use Only

Total Days Credits Recorded	Date Recorded	Mining Recorder
1380	May 9, 1983	<i>[Signature]</i>
Date Approved/Recorded		
83:08:12		

2.5309

	M	EM
611973	✓	✓
74	✓	✓
75	✓	✓
76	✓	✓
77	✓	✓
78	✓	✓
79	✓	✓
80	✓	✓
81	✓	✓
82	✓	✓
83	✓	✓
84	✓	✓
85	✓	✓
86	✓	✓
87	✓	✓
88	✓	✓
89	✓	✓
90	✓	✓
92	✓	✓
94	✓	✓
95	✓	✓
96	✓	✓
97	✓	✓

done



Ministry of
Natural
Resources

Geotechnical
Report
Approval

File
2.5507

June 28/83

Mining Lands Comments

To: Geophysics *Mr. Roger Barlow*

Comments

<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Wish to see again with corrections	Date <i>Aug 3/83</i>	Signature <i>[Signature]</i>
--	---	-------------------------	---------------------------------

To: Geology - Expenditures

Comments

<input type="checkbox"/> Approved	<input type="checkbox"/> Wish to see again with corrections	Date	Signature
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To: Geochemistry

Comments

<input type="checkbox"/> Approved	<input type="checkbox"/> Wish to see again with corrections	Date	Signature
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1983 05 04

2.5509

Mining Recorder
Ministry of Natural Resources
P.O. Box 669
Stouffville, Ontario
POV 2T0

Dear Sir:

We have received reports and maps for a Geophysical (Electromagnetic & Magnetometer) Survey submitted under Special Provisions (credit for Performance and Coverage) on Mining Claims PA 611973 et al in the Area of Beckington Lake.

This material will be examined and assessed and a statement of assessment work credits will be issued.

We do not have a copy of the report of work which is normally filed with you prior to the submission of this technical data. Please forward a copy as soon as possible.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1380

A. Barr:sc

cc: Mid-North Engineering Services Ltd
Toronto, Ontario

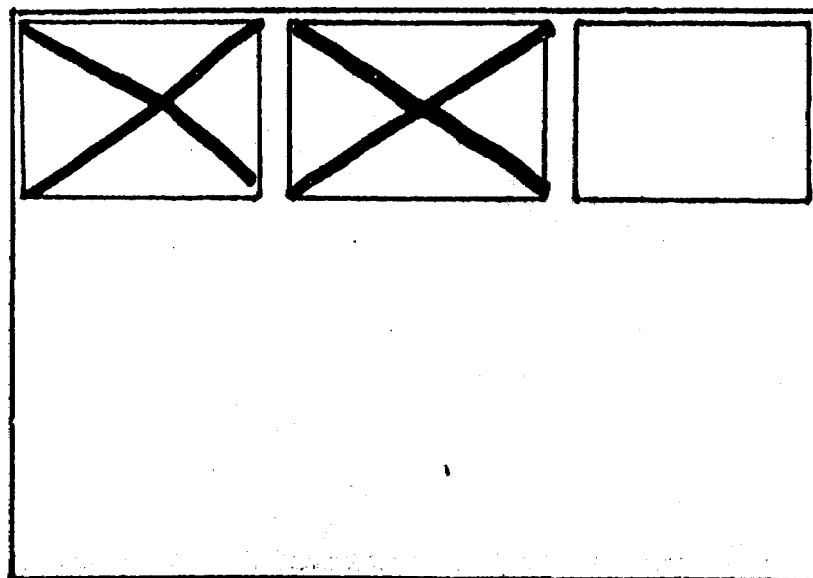
cc: Mr. Brian A. Edmond
Mississauga, Ontario

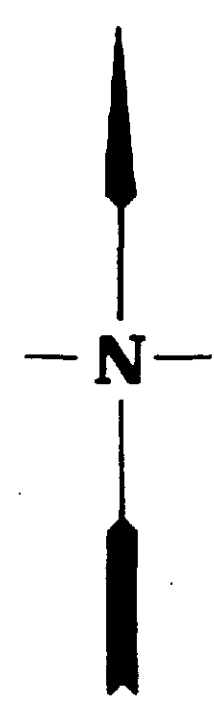
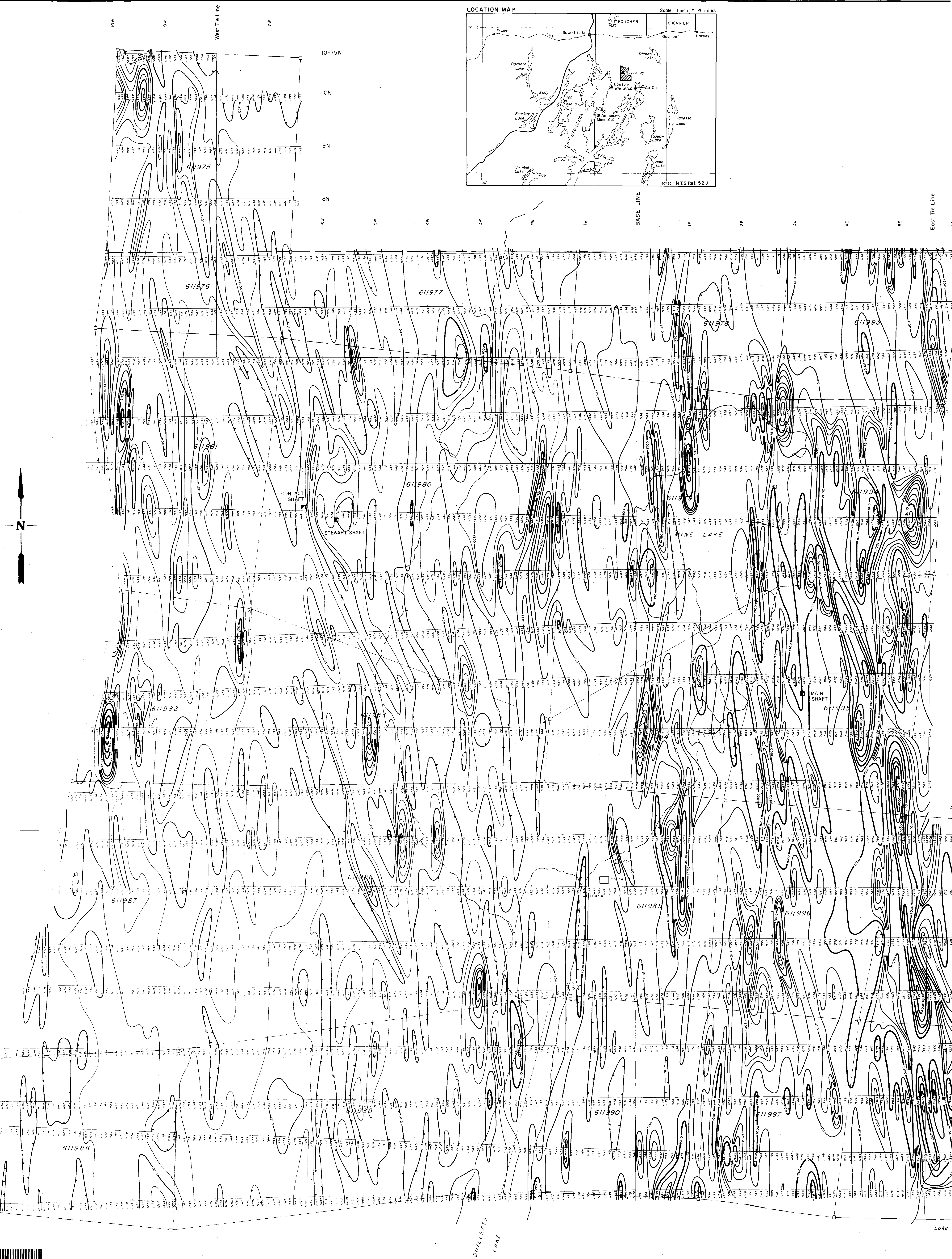
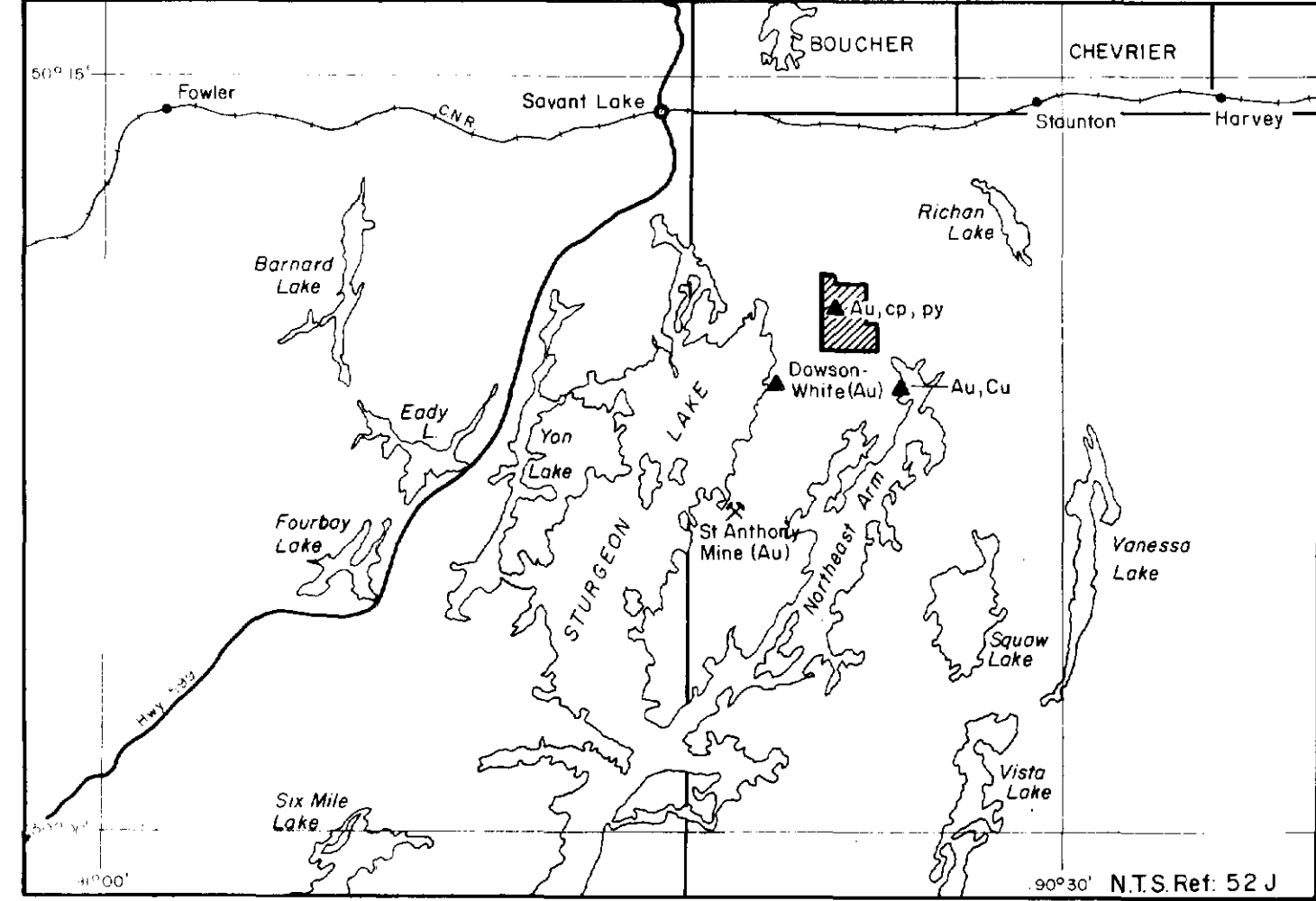
SEE ACCOMPANYING
MAP(S) IDENTIFIED AS

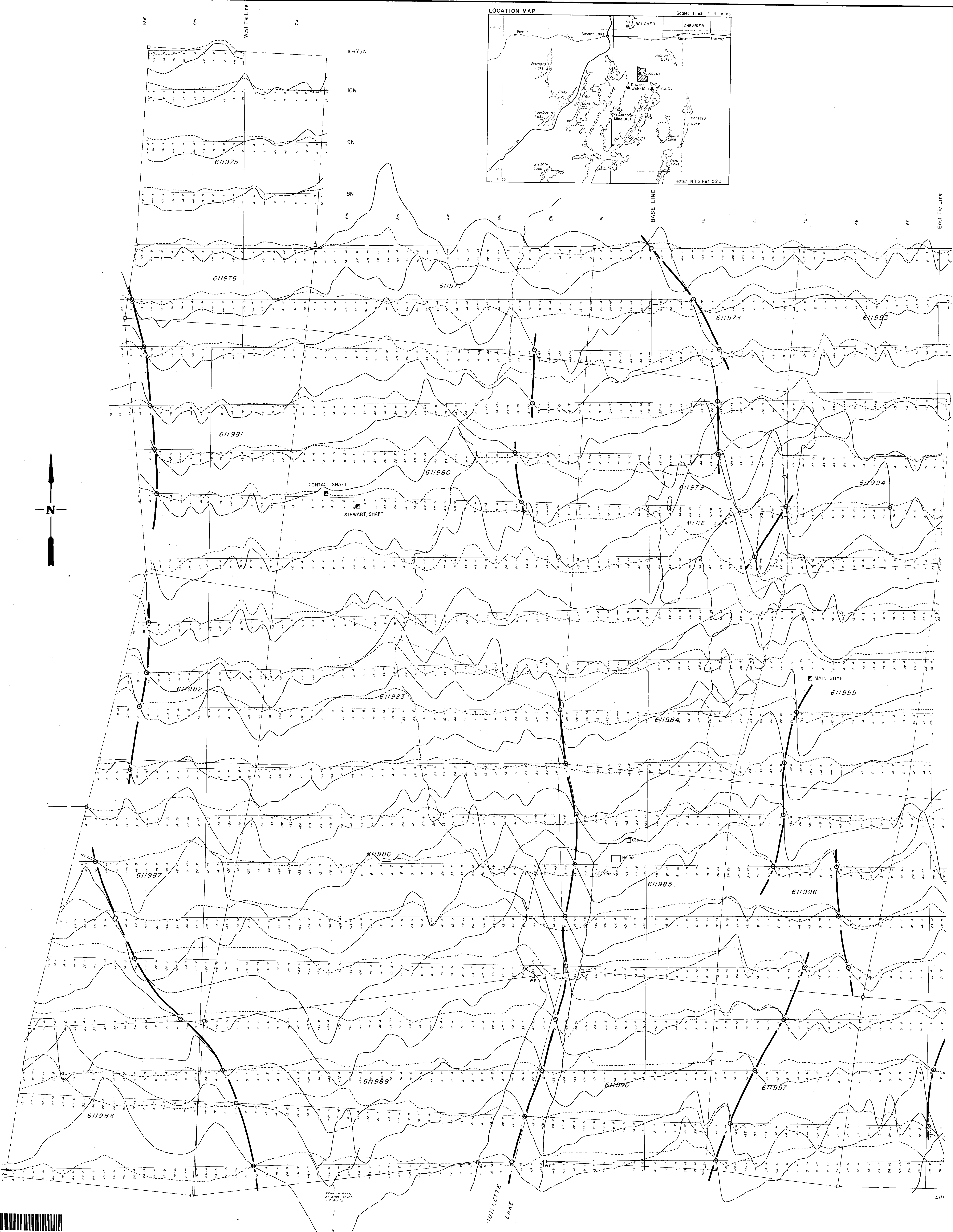
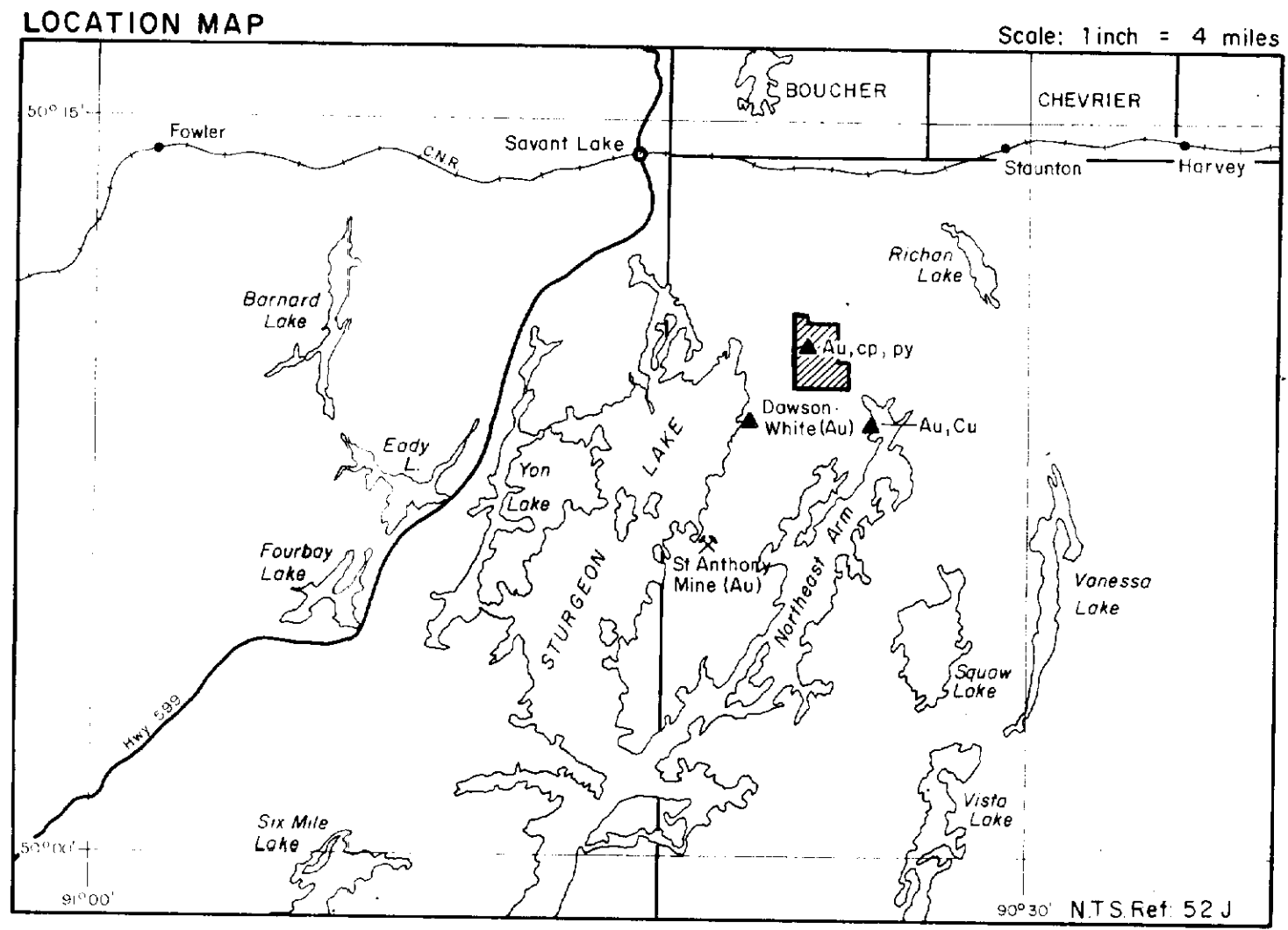
525/02NE-0050 # 1-2

LOCATED IN THE MAP
CHANNEL IN THE
FOLLOWING SEQUENCE

(X)







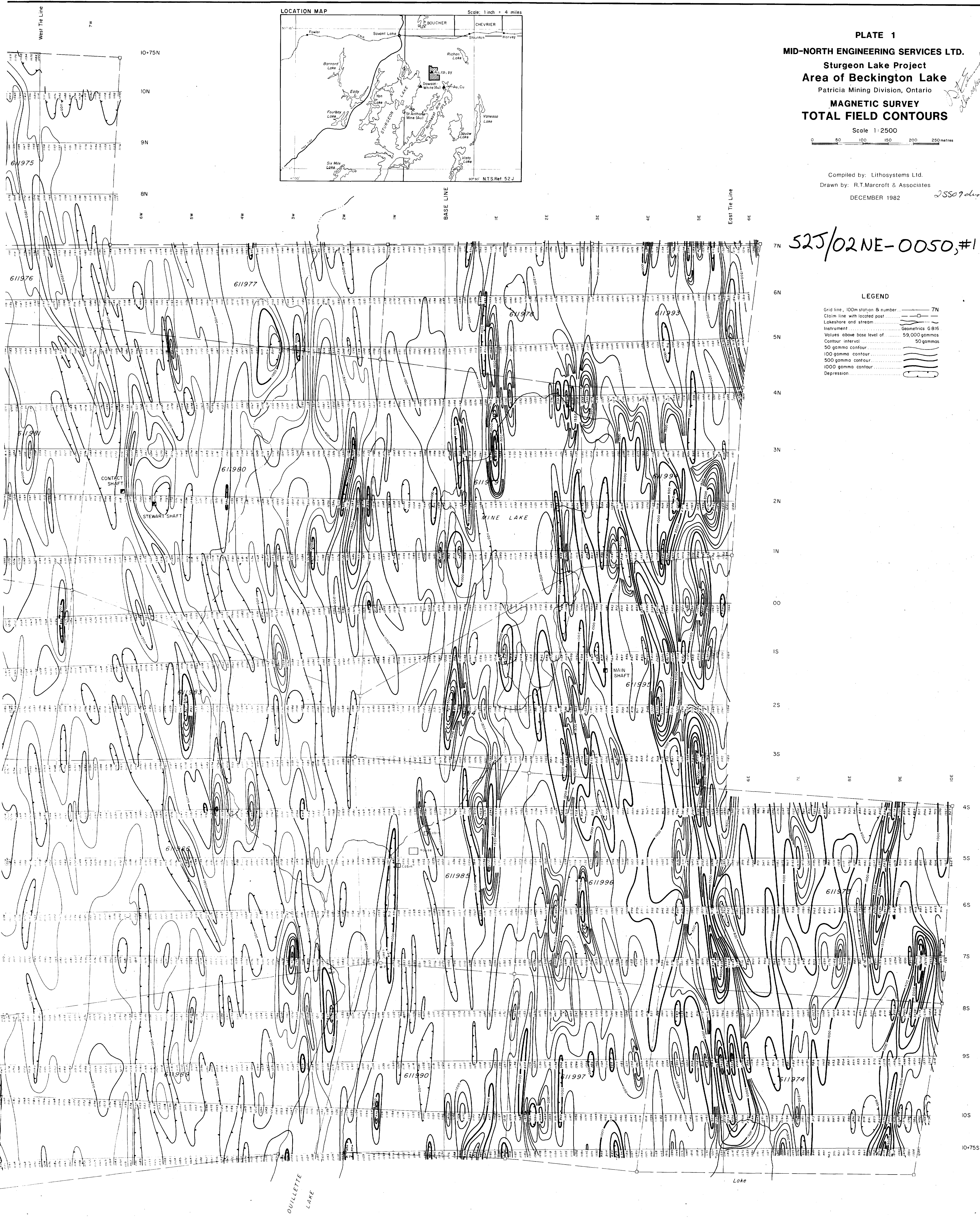
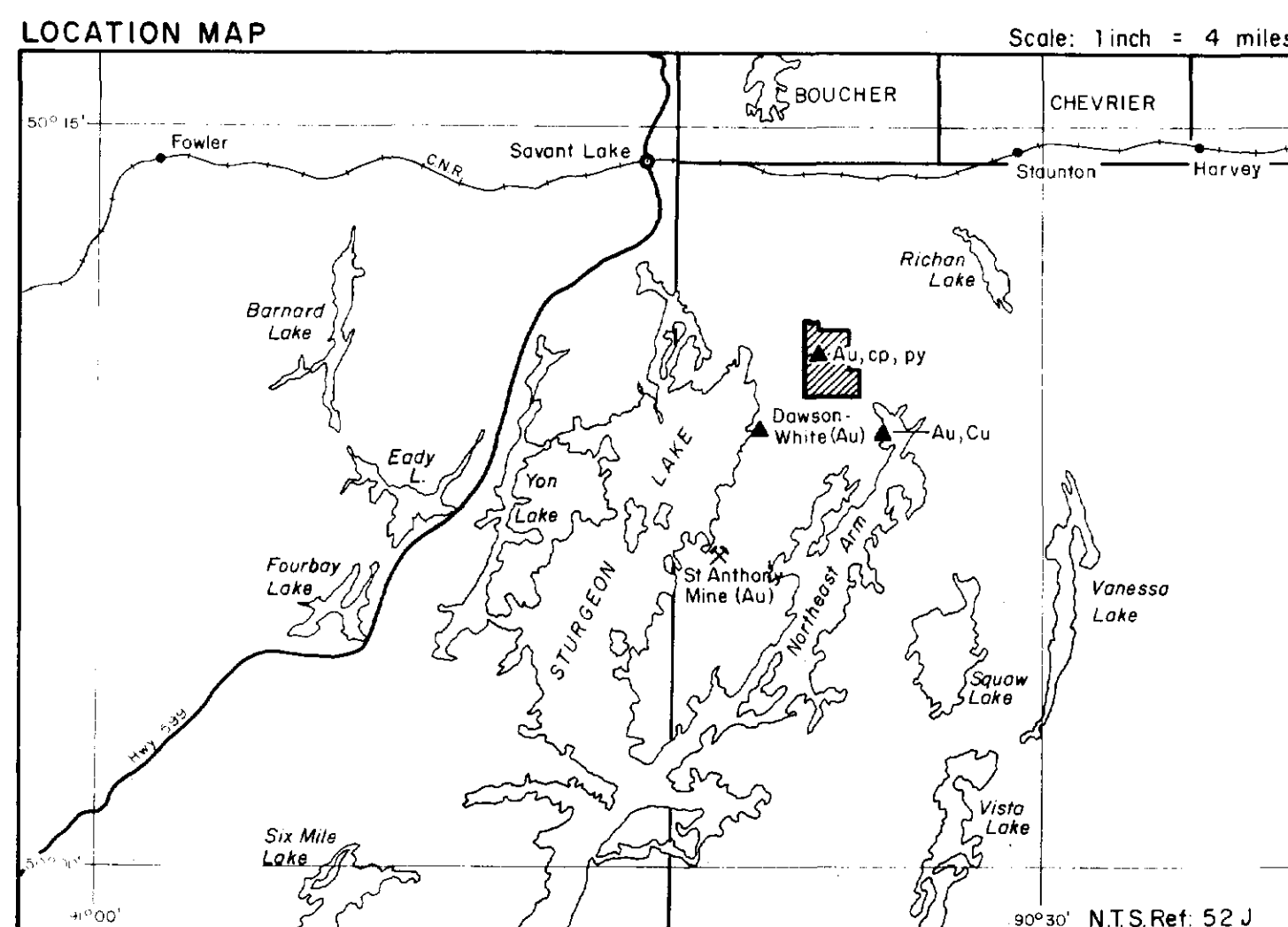


Compiled by: Lithosystems Ltd.

Drawn by: R.T. Marcroft & Associates

DECEMBER 1982

25507 dm



7N 525/02 NE-0050, #1

LEGEND

- Grid line, 100m station & number
- Claim line with located post
- Lakeshore and stream
- Instrument
- Values above base level of
- Contour interval
- 50 gamma contour
- 100 gamma contour
- 500 gamma contour
- 1000 gamma contour
- Depression

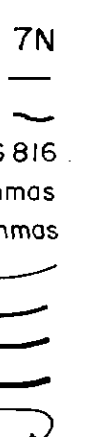


PLATE 2
 MID-NORTH ENGINEERING SERVICES LTD.
 Sturgeon Lake Project
 Area of Beckington Lake
 Patricia Mining Division, Ontario
 VLF EM SURVEY
 INPHASE & QUADRATURE PROFILES

Scale 1:2500
 0 50 100 150 200 250 metres

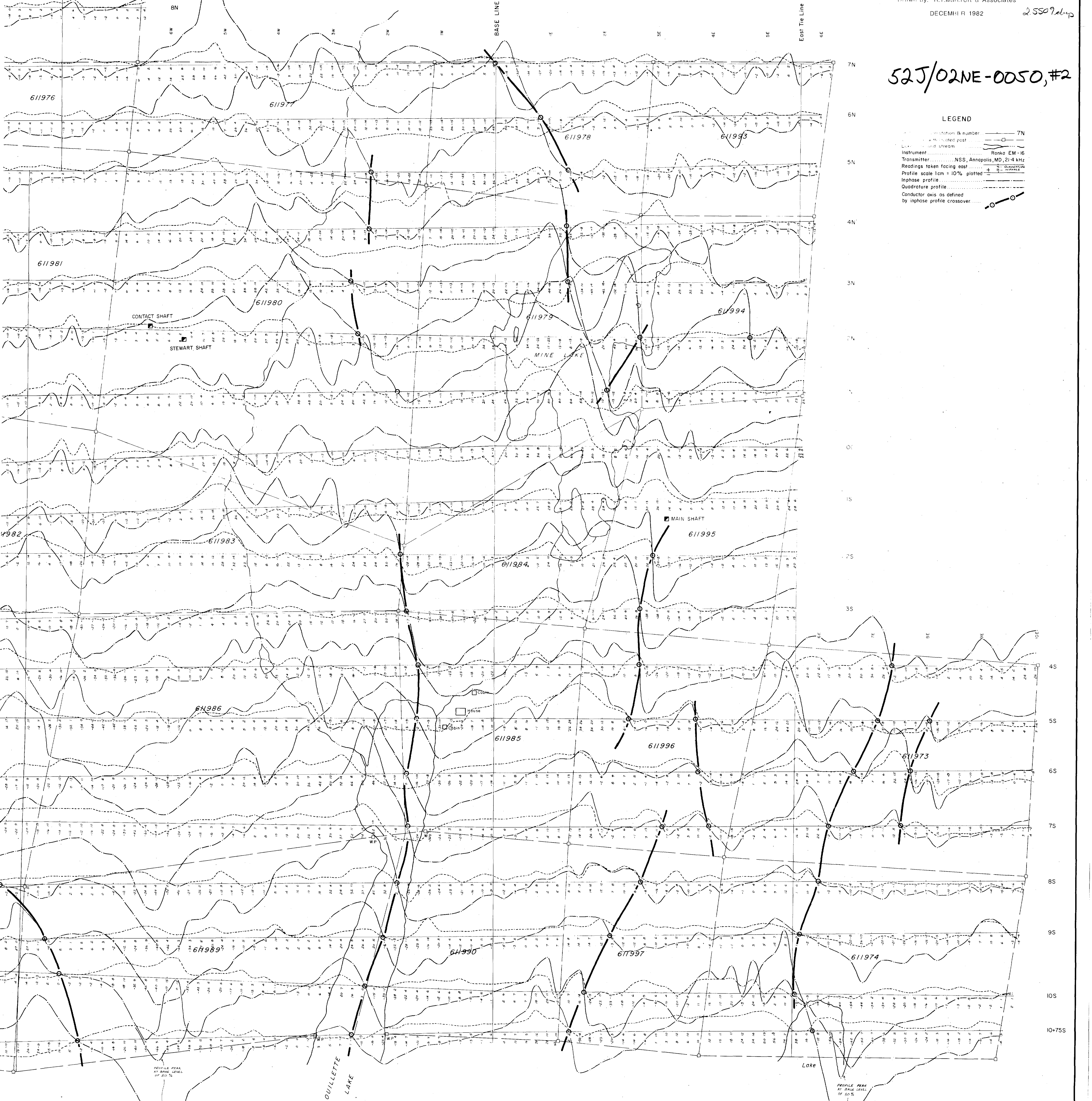
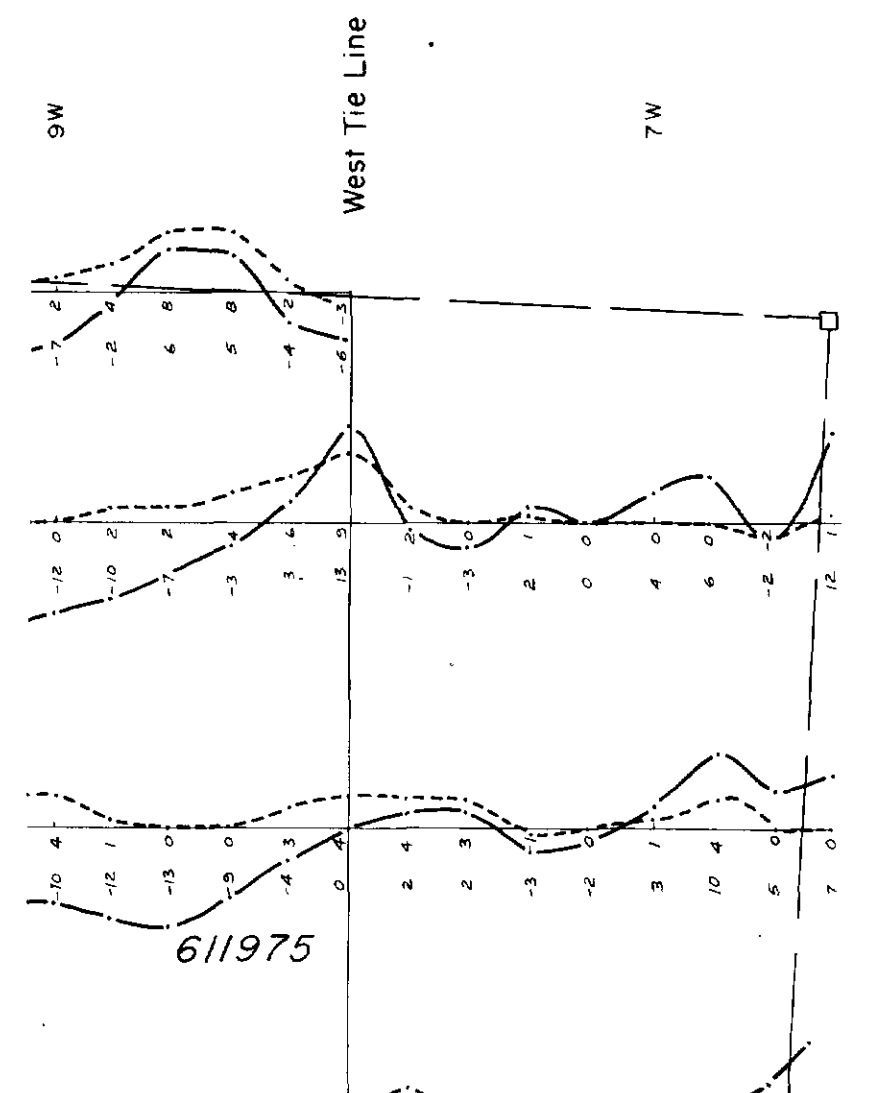
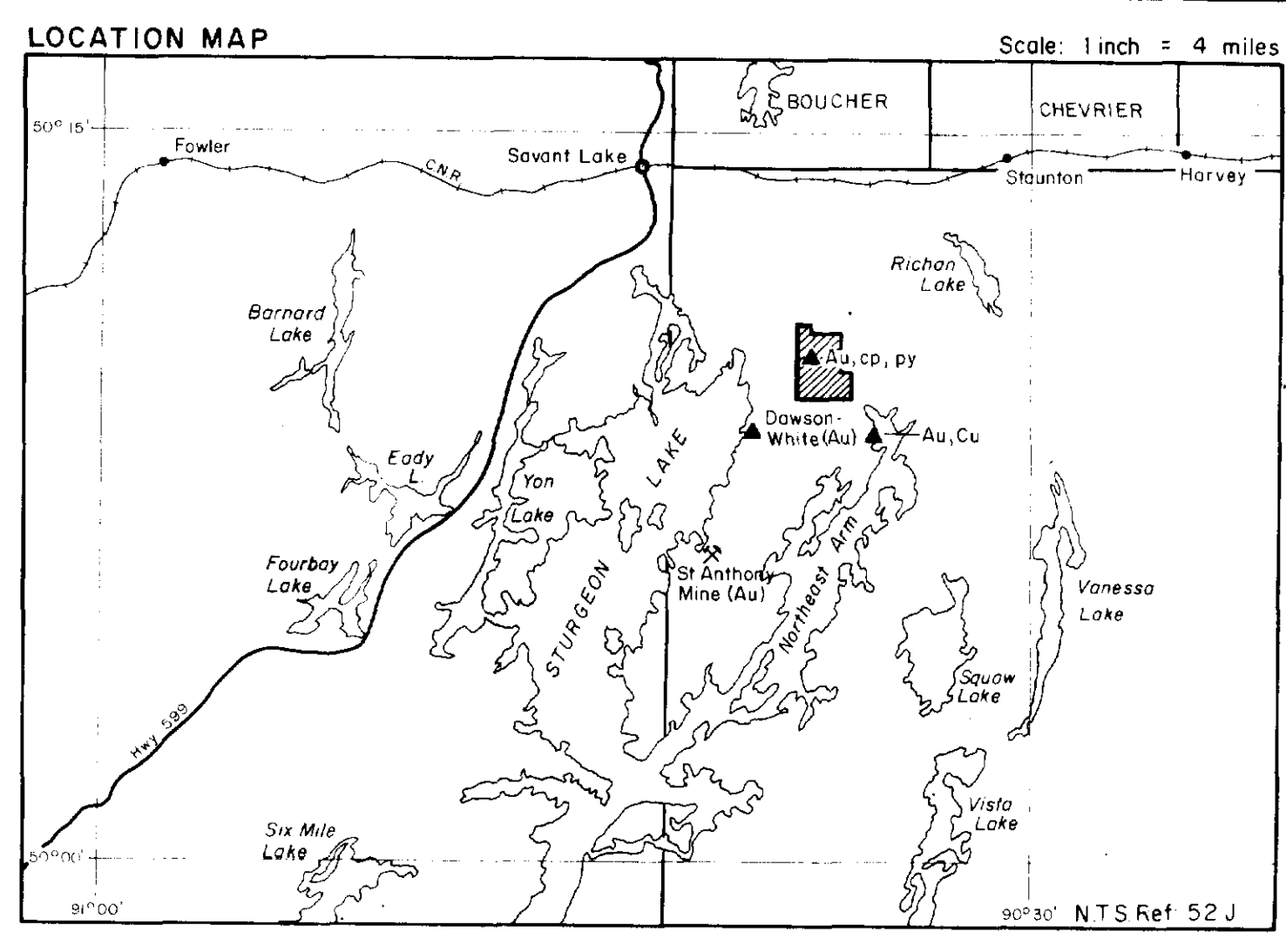
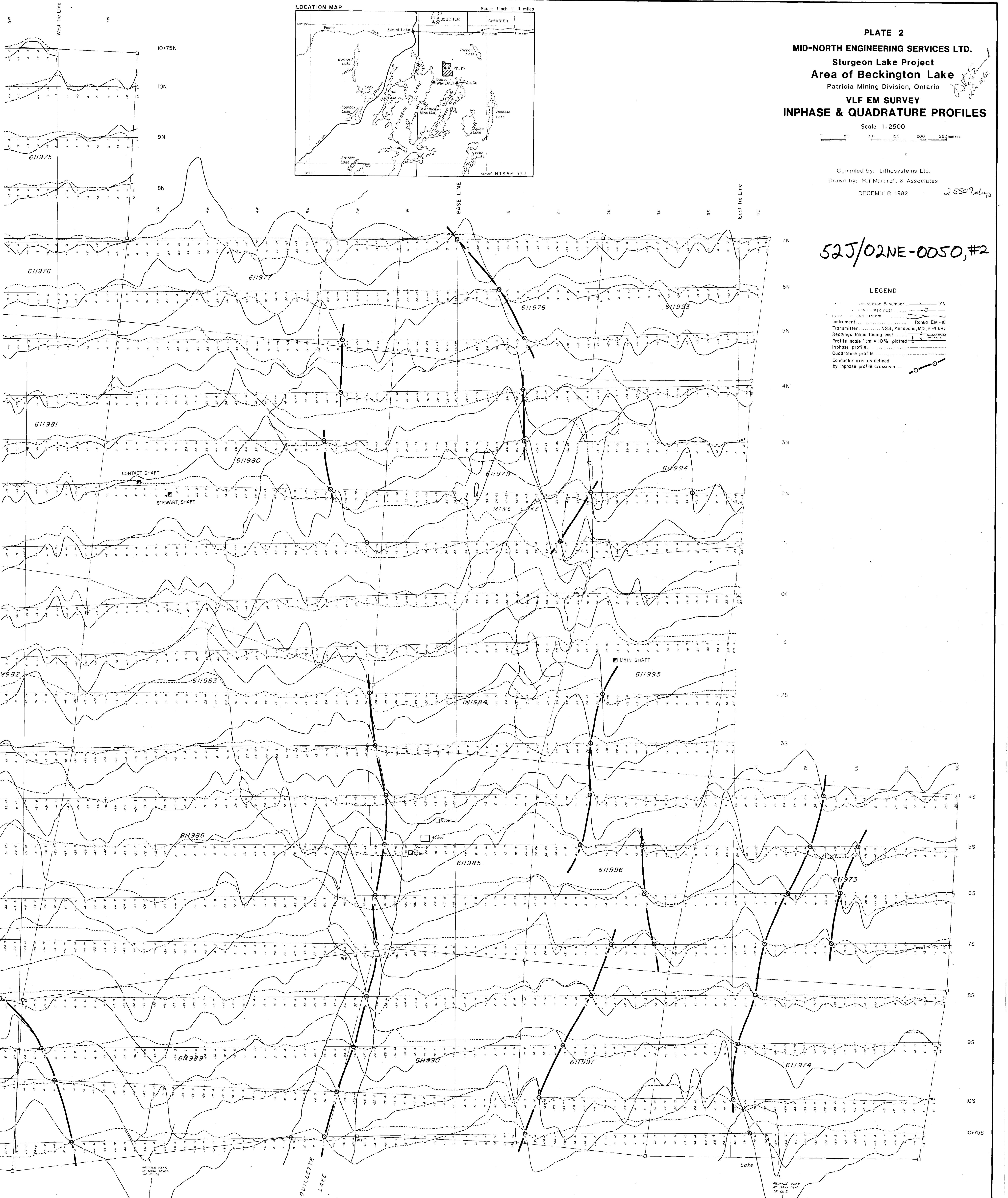
Compiled by: Lithosystems Ltd.
 Drawn by: R.T. Marcroft & Associates
 DECEMBER 1982

25509.dwg

52J/02NE-0050, #2

LEGEND

- Station B number
- Profile peak
- Profile trough
- Instrument: Ronka EM-16
- Transmitter: NSS, Annapolis, MD, 21.4 kHz
- Readings taken facing east
- Profile scale 1cm = 10% plotted
- Inphase profile
- Quadrature profile
- Conductor axis as defined by inphase profile crossover



PROFILE PEAK AT 10+75N LEVEL OF 50%

PROFILE PEAK AT 10+75S LEVEL OF 50%