86-998-15491

RECEIVED

FEB 23 1987

GOLD COMMISSIONER
PRINCE RUPERT

REPORT ON GEOLOGY AND GEOPHYSICS

ECSTALL PROJECT

SKEENA MINING DIVISION
BRITISH COLUMBIA

N.T.S. ~~104~~ 103 H/14W

Latitude	53° ~~48'~~ 47.2' N
Longitude	129° ~~29'~~ 26.2' W

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,491

FILMED

Owner/Operator: NORANDA EXPLORATION COMPANY, LIMITED
(NO PERSONAL LIABILITY)

Report by: Gordon Maxwell
Project Geologist

Lyndon Bradish
District Geophysicist

February, 1987

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF MAPS

			Scale
1	Compilation Map		1:25,000
2	Geology	Horsefly, Steelhead & Piranha Grids	1:5,000
3	SE-88 Survey	Horsefly, Steelhead & Piranha Grids	1:5,000
4	Mag Survey	Horsefly, Steelhead & Piranha Grids	1:5,000
5	Geology	Rainbow Grid	1:5,000
6	SE-88 Survey	Rainbow Grid	1:5,000
7	Mag Survey	Rainbow Grid	1:5,000
8	Geology	Walleye & Flounder-Panda Grids	1:5,000
9	SE-88 Survey	Walleye & Flounder-Panda Grids	1:5,000
10	Mag Survey	Walleye & Flounder-Panda Grids	1:5,000
11	Geology	Bear Grid	1:5,000
12	SE-88 Survey	Bear Grid	1:5,000
13	Geology	Packsack Grid	1:5,000
14	SE-88 Survey	Packsack Grid	1:5,000
15	Mag Survey	Packsack Grid	1:5,000
16	Geology	Dolly & Tyee Grid	1:5,000
17	SE-88 Survey	Dolly & Tyee Grid	1:5,000
18	Mag Survey	Dolly & Tyee Grids	1:5,000

SUMMARY

The Ecstall Project is an integrated program consisting of airborne EM and Mag, ground geophysics and geology to explore a group of 32 claims in the Ecstall River area. The project is situated approximately 80 kilometres southeast of Prince Rupert, B. C.

The target for the project is a volcanogenic massive Cu-Zn-Pb-Ag+/-Au deposit similar to the Ecstall deposit (8 million tons grading 3.1%Zn, 0.9% Cu, 0.1% Pb, 0.8 oz/T Ag and .01 oz/T Au.)

In June of 1986, an airborne EM survey was flown over the property by Dighem Surveys of Mississauga, Ontario. Airborne follow-up, consisting of ground geophysics, linecutting and geologic mapping began in late July and was completed in late September.

Several attractive conductive horizons were outlined in areas of favourable geology for hosting volcanogenic massive sulphides. Nine large grids were established: the Horsefly, Steelhead, Walleye, Flounder-Panda, Packsack, Dolly, Tyee, Piranha and Bear. The property hosts two previously known massive sulphide occurrences, the Packsack and the Horsefly.

A drill program including trenching and further follow-up is recommended for the project.

INTRODUCTION

The Ecstall Project is an integrated program designed to systematically explore a group of 32 claims, totaling 407 units in the Ecstall River area. The project involved using airborne E.M. and mag surveys and reconn follow-up to outline potential targets.

The target for the project is a volcanogenic massive sulphide Cu, Zn, Pb, Ag +/- Au deposit similar to the Westmin HW on Vancouver Island. The model to be used throughout the area is a high grade version of the Ecstall deposit, owned by Kidd Creek, (8 million tons 3.1% Zn and 0.9% Cu) which lies along an exhalative horizon. High grade massive sulphides have been intersected at the Scotia Deposit, owned by Kidd Creek (150,000 tons 13.5% Zn, 1.5% Pb and 25 gm/tonne Ag) approximately 20 kilometres north of the property. The property includes two sub-economic Cu-Zn massive sulphide showings, the Packsack and the Horsefly. The most att active areas are the volcanic unit and the thin exhalative horizons which host all of the known deposits and showings.

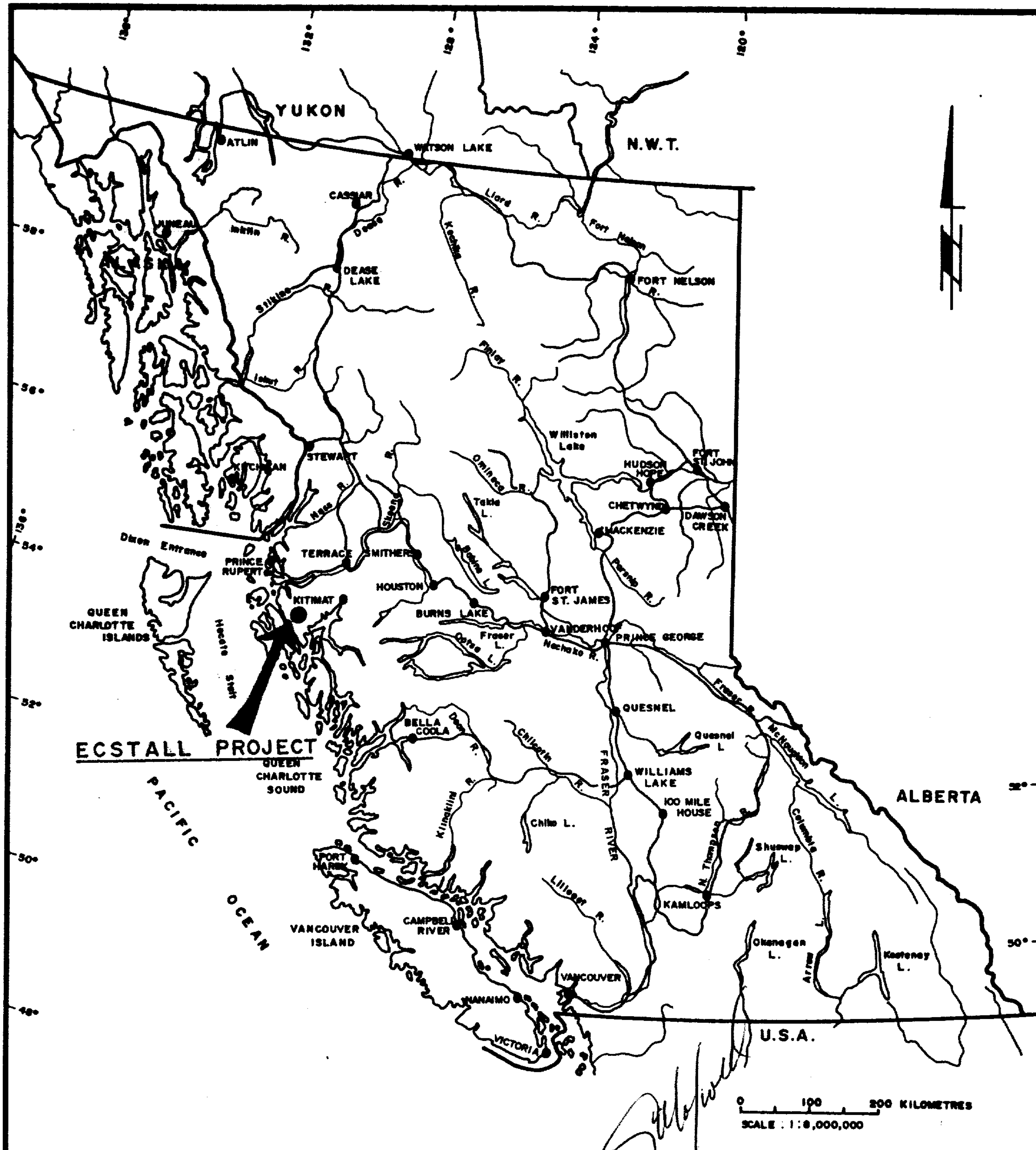
The follow-up program comprises a systematic analysis of airborne EM anomalies using geophysics, geology and geochemistry. The initial phase consists of selecting the highest priority targets on the basis of geophysical signature and geologic environment in addition to an initial geologic examination of the conductor axis. A permanent grid is then established to facilitate detailed geological and geophysical surveys. On the basis of these surveys, a decision is made as to which targets should be drill tested.

A base camp was established on Johnson Lake to facilitate exploration on Noranda's claims in the immediate area. The camp was serviced by fixed wing aircraft from Prince Rupert and helicopter from Terrace. A Bell 206 helicopter owned by Okanagan Helicopters was based in a nearby camp and was jointly used by Noranda and Falconbridge over the entire summer. The crews consisted of a four man geophysical crew, four linecutters, two geologists and a cook.

An airborne EM and Mag survey was flown by Dighem Surveys of Mississauga, Ontario during June of 1986. Follow-up programs began in late July and finished in late September. Work was performed under the supervision of Gord Maxwell.

LOCATION AND ACCESS

The property is situated in the Coast Range Mountains approximately 80 km southeast of Prince Rupert and 50 km west-southwest of Kitimat, B. C. (Figure #1) All claims are located on NTS map 103 H/14 and lie between 53° 45' N and 53° 49' N and 129° 21' W and 129° 27' W.



REVISED	
	ECSTALL PROJECT
	LOCATION MAP
PROJ.No. 275	SURVEY BY: GM DATE: FEB/87
N.T.S. 103H/14	DRAWN BY: S.K.B. SCALE: 1:8,000,000
DWG.No. 1	NORANDA EXPLORATION
	OFFICE: PRINCE GEORGE, B.C.

VANCAL 11887

Access to the area is via float plane to either Johnson Lake or Ecstall Lake and locally to grids via helicopter.

At present there are no roads in the area, but broad, flat valleys afford easy future road access to tide water 15 km to the south (Douglas Channel) and 25 km to the north (Skeena River).

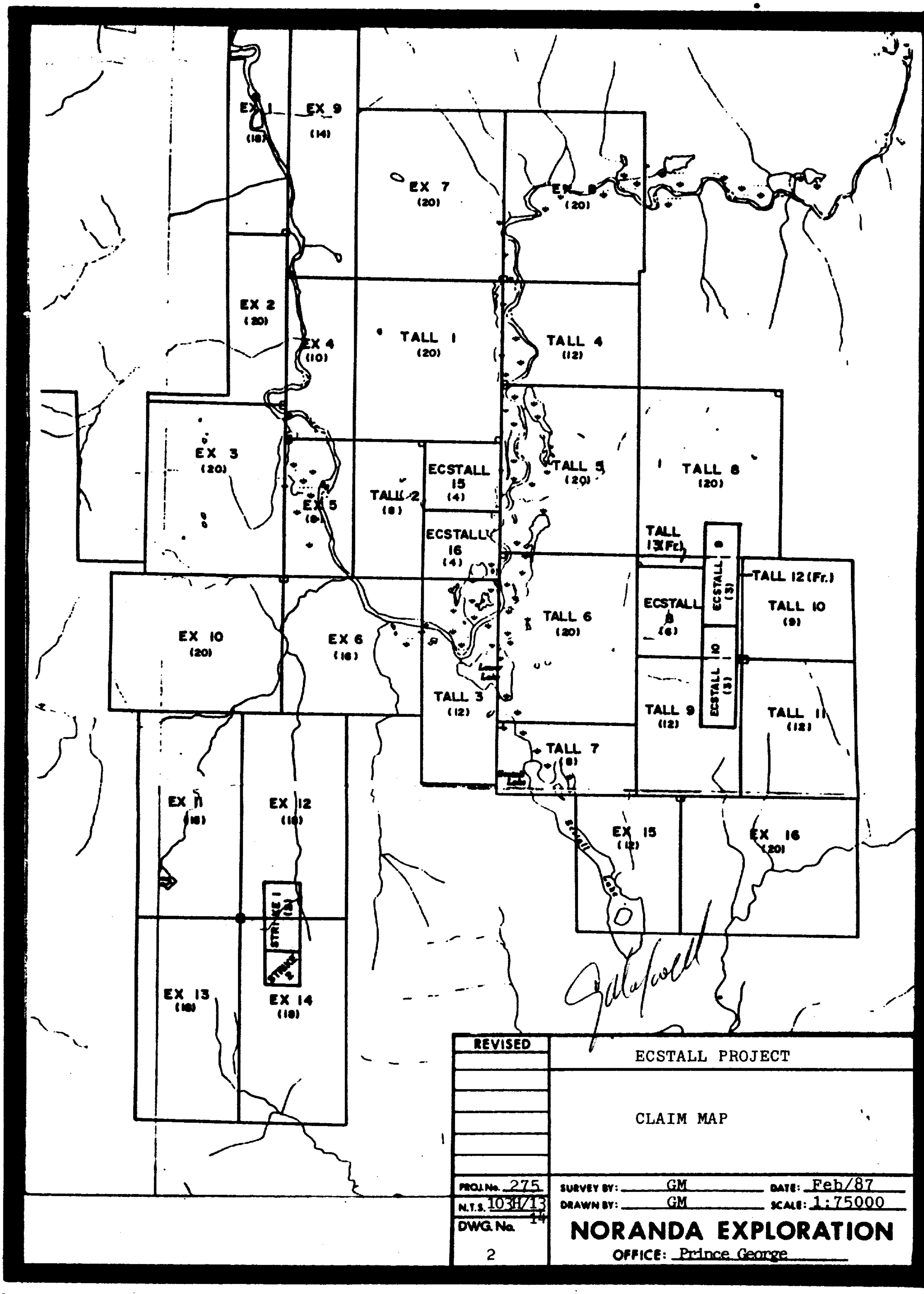
TOPOGRAPHY

The topography varies from rugged mountainous terrain to heavily wooded steep slopes to flooded broad valleys. Elevations range from 25 metres to 1500 metres above sea level and tree line occurs at approximately 850 metres. The alpine areas are mainly open meadows and rocky crags with scattered spruce thicket and buck brush. The steep slopes are usually a bench and cliff type topography, covered with spruce thicket, slide alder and mature tree cover (spruce, hemlock and cedar). The benches contain numerous ponds and swampy meadows which afford easy helicopter access. The valley bottoms are covered with typical coastal vegetation, including devils club, alder, tall skunk cabbage and grasses and mature cedar, hemlock and spruce. The Ecstall River slowly meanders through the main river valley creating numerous sand bars and back water bayous.

CLAIM STATISTICS

The project consists of 32 modified grid claims and 2 fractional claims totaling 407 units. The claims are all situated on claim map 103 H/14W and 103 H/13E. (Figure #2)

Claim Name	Units	Record #	Record Date	Owners
PACKSACK GROUP:				
Tall 1	20	5081	Dec 4	Noranda/Graf
Tall 2	8	5082	Dec 4	Noranda/Graf
Tall 3	12	5083	Dec 4	Noranda/Graf
EX 4	10	5095	Dec 4	Noranda
EX 5	8	5096	Dec 4	Noranda
EX 7	20	5098	Dec 4	Noranda
EX 9	14	5100	Dec 4	Noranda
Ecstall 15	4	3866	May 6	C. Graf
Ecstall 16	4	3867	May 6	C. Graf
TYEE GROUP:				
Tall 4	12	5084	Dec 4	Noranda/Graf
Tall 5	20	5085	Dec 4	Noranda/Graf
EX 8	20	5099	Dec 4	Noranda


EX 1
(18)
EX 9
(14)
EX 7
(20)
EX 8
(20)
EX 2
(20)
EX 4
(10)
TALL 1
(20)
TALL 4
(12)
EX 3
(20)
EX 5
(8)
TALL 2
(8)
ECSTALL
15
(4)
ECSTALL
16
(4)
TALL 5
(20)
TALL 8
(20)
TALL
13(Fr.)
ECSTALL 9
(3)
TALL 12 (Fr.)
ECSTALL
8
(6)
TALL 10
(9)
EX 10
(20)
EX 6
(16)
TALL 6
(20)
ECSTALL 10
(3)
TALL 3
(12)
TALL 9
(12)
TALL 11
(12)
TALL 7
(8)
EX 11
(18)
EX 12
(18)
EX 15
(12)
EX 16
(20)
STRIKE 1
STRIKE 2
EX 13
(18)
EX 14
(18)
REVISED
ECSTALL PROJECT
CLAIM MAP
PROJ. No. 275
N.T.S. 103H/13 14
DWG. No. 2
SURVEY BY: GM
DRAWN BY: GM
DATE: Feb/87
SCALE: 1:75000
NORANDA EXPLORATION
OFFICE: Prince George

HORSEFLY GROUP:				
Tall 6	20	5086	Dec 4	Noranda/Graf
Tall 7	8	5087	Dec 4	Noranda/Graf
Tall 8	20	5088	Dec 4	Noranda/Graf
Tall 9	12	5089	Dec 4	Noranda/Graf
Tall 10	9	5090	Dec 4	Noranda/Graf
Tall 11	12	5091	Dec 4	Noranda/Graf
Ecstall 8	6	2723	Dec 17	C. Graf
Ecstall 9	3	4910	Aug 29	C. Graf
Ecstall 10	3	4911	Aug 29	C. Graf
FLOUNDER GROUP:				
EX 6	16	5097	Dec 4	Noranda/Graf
EX 11	18	5295	Apr 9	Noranda
EX 12	18	5296	Apr 9	Noranda
EX 13	18	5297	Apr 9	Noranda
EX 14	18	5298	Apr 9	Noranda
PIRANHA GROUP:				
EX 15	12	5580	Oct 23	Noranda
EX 16	20	5581	Oct 23	Noranda
BEAR GROUP:				
EX 1	12	5092	Dec 4	Noranda
EX 2	20	5093	Dec 4	Noranda
EX 3	20	5094	Dec 4	Noranda
EX 10	20	5294	Apr 9	Noranda

GRIDS

Nine grids were established to facilitate detailed geophysical surveys over airborne EM anomalies previously outlined. The grids consisted of flagged wing lines at a 100 metre spacing with stations marked every 25 metres, controlled by a chainsaw cut baseline.

The Steelhead grid lies in an alpine to sub-alpine area at an elevation of 3,000 to 4,000 feet a.s.l. The grid consists of 11.075 kilometres of flagged line controlled by 2.0 kilometres of cut baseline established at an azimuth of 160°.

The Horsefly grid is a northern extension of the Steelhead grid. The grid was originally established to cover a known sulphide showing called the Horsefly. It consists of 4.625 kilometres of lagged line controlled by 0.55 kilometres of baseline established at an azimuth of 170°.

The Rainbow grid is situated on a low knob immediately east of the Lower Lake in a moderately forested area. The grid consists of 10.825 kilometres of flagged line controlled by 1.2 kilometres of cut baseline established at an azimuth of 180°.

The Piranha grid consists of two recon lines totalling 2.1 kilometres in an area of heavy slide alder and thick brush. The lines were run at an azimuth of 080°.

The Walleye grid is located 3 kilometres east of Lower Lake and lies in the valley bottom at an elevation of 50 to 75 metres. The grid consists of 17.2 kilometres of flagged line controlled by 1.5 kilometres of baseline and an azimuth of 170°.

The Flounder-Panda grids are situated immediately west of the Walleye grid. The conductive horizon on the Panda grid appears to be an extension of the Flounder conductor. These grids consist of 9.6 kilometres of flagged line controlled by 1.4 kilometres of cut baseline at an azimuth of 010°.

The Bear grid is a large grid tracing a series of exhalative horizons on strike from the Ecstall deposit. The grid is situated in subalpine terrain and on heavily wooded slopes at elevations ranging from 300 to 700 metres. The grid consists of 20.3 kilometres of flagged line controlled by 2.7 kilometres of baseline at an azimuth of 170°.

The Packsack grid was established to cover a previously outlined Cu-Zn massive sulphide deposit similar to the Ecstall. The grid is situated on heavily wooded slopes between elevations of 50 metres and 300 metres. The grid consists of 17.2 kilometres of flagged line controlled by 1.5 kilometres of baseline at an azimuth of 180°.

The Dolly and Tyee grids are connected by a common baseline and cover a complex series of airborne EM anomalies north of the Horsefly grid. The grid is on a west facing, heavily wooded slope at elevations ranging from 100 metres to 500 metres. The grid consists of 18.8 kilometres of flagged line controlled by 2.6 kilometres of cut baseline at an azimuth of 170°.

PREVIOUS WORK

The Ecstall deposit which is owned by Kidd Creek was discovered in the late 1890's and developed intermittently from 1900 to 1952 by a variety of companies. A regional exploration program was conducted by Texas Gulf Inc. in 1958 and subsequently the Packsack and the Horsefly showings were discovered. Eleven drill holes were completed in 1959 and 1960 outlining the sulphide zone along a strike length of 800 meters. Geologic mapping, prospecting and geophysical surveys were conducted over the Horsefly showing in 1960. The EM survey outlined a second conductive horizon over 400 meters which, apparently, has never been drill tested.

A joint venture was established in 1981 to conduct regional exploration in this area using airborne EM, regional silt geochem and prospecting. The joint venture was dissolved the following year with inconclusive results.

During June of 1986, Noranda Exploration contracted Dighem Surveys to fly a 500 line kilometre airborne EM and Mag survey in the immediate area of the property. This was followed up by three months of intense ground work, including linecutting, HLEM and Mag surveys and detail geologic mapping.

REGIONAL GEOLOGY

The property lies within the area known as the Central Gneiss Complex, which forms a broad northwest trending series of gneisses, migmatite and intrusive rocks. The rocks of the Ecstall River area have been described in detail by Roddick (1974) and Padgham (1958). This complex includes a series of meta-volcanic and meta-sedimentary belts of Paleozoic age, one of which underlies the project area. This particular group of rocks is termed the Ecstall Meta-sedimentary/Meta-volcanic Gneiss Group, which varies in width from 5 km to 20 km over a length greater than 100 kms. The group is bounded to the west by the Ecstall Pluton and to the east by a series of small plutons and scattered gneissic rocks. This group includes a series of older high grade volcanic and sedimentary gneisses, a thick sequence of turbidite type sediments, a large volcanic package and a series of thin exhalative horizons. The volcanic package and the exhalative horizons are the focus of the exploration program.

The high grade metamorphic gneisses appear to be somewhat older than the other rocks in the surrounding area. This unit appears to represent a deeper marine environment consisting of turbidite basic volcanics and mafic to ultramafic intrusives. These sediments include quartz feldspar biotite gneiss, quartz feldspar biotite garnet gneiss, pyritic quartz staurolite sericite schist and pyritic quartz sericite biotite schist. The basic volcanics consist of hornblende biotite quartz gneiss and hornblende biotite garnet gneiss. These gneisses show some relict textures such as crude bedding and possibly some pillow structures. These rocks are cut by numerous coeval gabbro and ultramafic bodies.

The most often encountered unit is a sequence of sediments which may represent a submarine fan and turbidite type environment. This unit is made up largely by massive to thickly bedded greywacke with finely laminated siliceous siltstone, quartzite and dark grey to black argillite. This unit also hosts some pyritic exhalative horizons.

The volcanic unit is made up mainly of felsic to intermediate schists which have undergone intense deformation and as a result, few volcanic textures are preserved. Several schists appear tuffaceous in nature and even some have larger fragments which are interpreted as coarse pyroclastics. No typical flows have been identified, but rather several units have been interpreted as so because of their less foliated, massive and somewhat blocky nature.

Field mapping and petrographic studies have divided the felsic rocks into those with a rhyolitic composition and those with a more dacitic composition. The rhyolite rocks are made up of sericite schist, quartz sericite schist and pyritic quartz sericite, which appear to represent mainly tuffaceous volcanics. The rocks of dacitic composition are comprised of quartz chlorite schist and chlorite sericite schist. Some of the quartz chlorite schist appear to be fairly massive and less foliated and are interpreted as dacitic flows.

The intermediate rocks consist of thick members of chlorite schist, chlorite quartz schist and weakly foliated andesites. Several chlorite quartz schist units contain lapilli sized felsic fragments; which are interpreted to be a coarse pyroclastic horizon.

These sediments have been intruded by several intrusive bodies which appear coeval to the volcanics. A series of hornblende diorite sills and stocks (Prospect Hill Intrusives) appear conformable with the sedimentary package immediately west of the Packsack showing. A number of other diorite bodies have been encountered throughout the volcanic/sedimentary package. Several small gabbro bodies also appear to be associated with this sedimentary unit. Late basic dykes which in the past have been interpreted as lamprophyres are also common throughout the area.

The structure of the Ecstall area is quite complex due to a large amount of plastic deformation as a result of emplacement of the surrounding plutonic bodies. Late faulting seems to have displaced much of the belt in the south near Hawksbury Island. The rocks in this area trend north south and are all steeply dipping and in some cases may be overturned. Large antiformal fold structures east of the Packsack may equate the Horsefly and Packsack stratigraphics on opposing limbs. It appears the foliation in the area reflects bedding planes in these gneisses and schists. Although most of the original textures have been obliterated by intense deformation and metamorphism, some bedding features can be seen in better preserved portions of the sedimentary unit. (Map #1)

SUMMARY OF GRID WORK

HORSEFLY SHOWING

Geology:

The grid was established to cover a previously known massive sulphide showing which was discovered in 1968 by Texas Gulf Inc. prospectors. The sulphides consist of narrow bands (.3 to .4 metres) of massive pyrite, sphalerite chalcopyrite and pyrrhotite. Assays as high as 1.7% Cu, 4.6% Zn, 0.13% Pb, 39 g/T Ag and 1 g/T Au were taken from the showing. The sulphides outcrop in a series of crosscutting streams over a strike length of 100 metres. The showing is hosted by chloritic schists and weakly foliated andesite flows, immediately adjacent a pyritic quartz sericite schist horizon which also contains anomalous Cu-Zn geochem. The massive sulphide showing lie at the western margin of a thick package of conductivity outline by the HLEM survey.

Geophysics:

Airborne: The Horsefly grid covers the north extension of a 2400 meter long package of bedrock conductors. The main airborne response has a maximum conductivity, within the gridded area of 30 Siemens at the south end of the grid (10240 D,D). This zone lies east of the Baseline. A weaker conductor (1 Siemen 10240B) lies to the west of the main conductor and extend for a strike length of 800 metres. The Horsefly grid just covers the north end of this anomaly. There is no outstanding magnetic response of interest.

Ground Geophysics: Six lines of SE-88 E.M. and seven lines of mag were completed over the Horsefly target. Two zones of bedrock conductivity were detected. The most visible is the wide conductive unit lying on the east side of the Baseline. This package is poorly defined despite it's high conductivity (20 Siemens). The magnetic signature along this unit has an interesting dipolar signature at the north end of the conductor. A satellitic zone west of the Baseline on L.2800N has a good profile shape but low conductivity (5 Siemens). There is no magnetic signature of note recorded over this conductor.

Discussion:

The most attractive target at present is the wide zone of conductivity which is flanked by a series of Cu-Zn rich sulphide zones to the west. This target appears to be hosted by an exhalative horizon intercalated with narrow argillite bands. This horizon should be drill tested to determine the source of conductivity. Further geophysical and geological work is warranted for the satellite zones to the west of the baseline.

STEELHEAD GRID

Geology:

The Steelhead grid was established to cover a series of strong ABEM responses immediately south of the Horsefly showing. The grid is underlain by a south-southeast trending series of intercalated felsic and intermediate volcanics and fine clastic sediments. The intermediate volcanics include weakly foliated andesite, chlorite schist, tuff and lapilli tuff. The sediments consist mainly of massive to laminated greywacke, siltstone and argillite. The felsic volcanics consist mainly of sericite schist, quartz sericite schist and pyritic quartz sericite schist. The sulphide content of the latter varies from 1% to 30% pyrite +/- sphalerite and chalcopyrite. Assays as high as 0.3% Cu, 3.8% Zn, 5.8 g/T Ag and 120 ppb Au were taken from various locations on one particular pyritic horizon. Several of the conductive horizons, outlined by the HLEM survey appear to be associated with these felsic schist units.

Geophysics:

Airborne: The Steelhead grid covers a wide package of high conductivity (1 to 26 Siemens). The profiles for 10250 C, D and E are sharp responses indicative of true bedrock conductivity. There is no appreciable mag response. The anomalies on L.10260 C, D, E, F and G also have sharp, high amplitude responses and a noticeable increase in magnetic activity. On L.10270 the profiles for responses A and B are fairly broad, however, the magnetic response is indicative of increased susceptibility.

Ground Geophysics: A large grid consisting of twelve survey lines was established over the above E.M. targets. All lines were surveyed with SE-88 E.M. and mag. The E.M. has mapped a wide package of conductivity consisting of both wide and narrow sources of varying conductivity. The overall picture is very complex and a geological "filter" to prioritize any targets would be of benefit, however, the mag survey has identified several of the conductors to have or be closely associated with a source of magnetic susceptibility. They are L.1900N/1485E to L.2100N/1560E, an attractive mag/E.m. target; L.1900N/1710E to L.2100N/1760E, a low conductivity target; L.1900N/1785E to L.2300N/1850E, a high conductivity E.M. target with a complex magnetic signature; L.2700N/1665E to L.2600N/1720E, a high conductivity zone with a low amplitude magnetic signature which links up with the first mentioned target. The last zone worthy of mention is L.2700N/1850N which has a strong monopole mag feature recorded directly over the conductor. Many of these zones are represented as narrow conductors, however, due to the spatial frequency of these responses the width cannot be determined neither can the location be pinned down with certainty.

Discussion:

Although all the targets on this grid warrant further investigation, the most attractive targets at present are L.1900N/1485E to L.2100N/1560E, L.1900N/1785E to L.2300N/1850E and L.1900N/1710E to L.2100N/1760E. These targets are fairly strong conductors with good mag signatures and appear to be related to areas of anomalous Cu-Zn rock geochem. A series of long trenches is recommended, but some targets will require drill testing. Further geophysical surveys may be required to the south and one line should be added to the north to better understand the relationship between the Horsefly and Steelhead Grids.

PIRANHA GRID

Geology:

The Piranha grid was an attempt to locate strong airborne EM responses immediately south of the Steelhead grid. The grid is located in rugged terrain with poor outcrop exposure, due to rough bush and numerous slides. The grid appears to be underlain by north-south trending series of chloritic schists and andesite buffs with minor pyritic quartz sericite schist horizons.

Geophysics:

Airborne: The Piranha grid attempts to cover a series of four airborne conductors covering a range of conductivities of 1, 21, 43 and 41 Siemens (10290 A, B, C and D). These responses have excellent characteristics and a high amplitude, narrow magnetic response.

Ground Geophysics: Due to difficult terrain, only partial coverage of the area of interest was accomplished. A low conductivity, low amplitude response was detected at L.9100N/9890E and a narrow, high amplitude (>3000 nT) mag response was recorded coincident with the E.M. source. It is clear that the airborne survey and ground survey are misplaced relative to each other, however, the response of the mag and E.M. at L.9100N/9890E suggests that the two surveys are close. Additional work should concentrate in the vicinity of this ground E.M. anomaly. A check of the fiducial photos will be made to ascertain the location of the Piranha anomalies.

Discussion:

It is believed the airborne anomaly is mis-plotted and may be located further to the east as a southern extension of the Steelhead conductive horizon. Further work should be concentrated on the southern extension of the Steelhead grid.

RAINBOW GRID

Geology:

The grid is underlain by a north-south trending series of intercalated felsic and intermediate volcanics. The felsic volcanics are comprised of moderately to strongly foliated quartz sericite schist, pyritic quartz sericite schist, quartz sericite chlorite schist, dacitic to rhyolitic flows and dacitic tuff and lapilli tuff. The pyritic quartz sericite schists typically contain 10-15% disseminated pyrite and are believed to represent an exhalative horizon.

The intermediate volcanics consist mainly of chloritic schists and weakly foliated andesitic flows, with minor amounts of chlorite quartz schist which may represent a fragmental tuff with quartz or rhyolite fragments. One narrow zone of dark grey to black argillite was observed at the western part of the grid.

Geophysics:

Airborne: Four airborne responses were targetted by the Rainbow grid. The E.M. anomalies 10221K, 10221L, 10230H and 10230K had calculated conductivities of 6, 7, 6, and 11 respectively. The E.M. profiles are poorly defined except for 10230H which has a reasonably sharp expression along with a low amplitude mag expression.

Ground Geophysics: Thirteen lines of mag and eleven lines of SE-88 E.M. were completed over the target area. The E.M. survey identified the source of the east airborne anomalies (10221L, 10230I) as a flat lying conductive unit (o/b ?). A long zone of conductivity extending between L.800N and 1600N has an attractive mag response at L.1100N/1060E and a conductivity of 20 Siemens, 100N/1020E, 900N/970E and south of 800N this conductor terminates into a small but complex and intense mag anomaly. A short zone of interest is mapped between 1000N/850E and 800N/860E where the conductivity is calculated to be 35 Siemens. This zone also terminates into the same intense mag anomaly as mentioned above. This is a high priority target.

Discussion:

Two blast trenches have been put down in the overburden to attempt to explain the source of conductivity. Trench 1 is situated on L.1100N between 1040E and 1065E and exposed a zone of pyritic quartz sericite schist with a narrow (.1m) band of argillite. Trench 2, situated on L.800N, between 800E to 850E, outlined an intercalated zone of greywacke type sediments and pyritic quartz sericite schist. Several narrow quartz and carbonate veins were exposed in the trench. Further trenching is recommended on other lines over the conductive horizons.

WALLEYE GRID

Geology:

The Walleye grid was established to cover a series of airborne anomalies in fairly flat terrain which is underlain by a intercalated sequence of greywacke, quartzite and argillite. These sediments trend north south and dip almost vertically. The conductive horizon appears to be associated with a graphitic argillite. Several outcrops of chloritic schist were found near the east end of the grid.

Geophysics:

Airborne: The Walleye grid was established over a moderate conductivity target extending across two flight lines (10221H - 5 Siemens, and 10230 B, C each 5 Siemens). There was no recorded magnetic response of interest coincident with the E.M. anomalies.

Ground Geophysics: Five lines of SE-88 E.m. and mag were completed over the central portion of this airborne anomaly package. The SE-88 survey defined a bedrock conductor 400+ metres long with a maximum conductivity of 12 Siemens. An interpreted dip of 70° grid west is derived from the profile shapes. The mag survey did not record any response of significant amplitude or shape over the conductor axis. A strong narrow mag anomaly is noted on the east side of the grid parallel to the conductor.

Discussion:

The apparent source of the conductivity is a package of graphitic argillite in the area of the conductive horizon. No further work is warranted.

FLOUNDER-PANDA GRIDS

Geology:

The grid was established to cover a series of airborne E.M. anomalies on strike with a pyritic quartz sericite schist horizon in a canyon to the south. The grid is generally overburden covered with a few scattered outcrops of argillite/greywacke and chlorite schist. The conductive horizons are interpreted to be associated with intercalated pyritic exhalative horizons and argillite sediments. The grid is bounded to the east and west by thick accumulations of greywacke/siltstone/argillite.

Geophysics:

Airborne: A 400 metre long conductor (10221G and 10230A) having conductivity variation between 23 and 1 Siemens respectively. Neither of these airborne responses suggest discrete sources as the E.M. profiles are wide, low amplitude and somewhat featureless. The Panda grid was established over a single line response (10200C) that had in interpreted conductivity of 6 Siemens. There was a recorded mag signature.

Ground Geophysics: Nine lines of SE-88 E.M. and mag were completed over this target area. The results are indicative of a wide package of complex and low conductivity sources. None of the conductor axes exhibit attractive profile shapes. The magnetic survey has identified a number of small zones of high magnetic susceptibility. A narrow linear mag high is evident on Lines 6300N-6700N in the vicinity of Station 7650E. Four lines of SE-88 and mag were completed on the Panda Grid. Three parallel trends were identified, however, the E.M. profile shapes do not clearly indicate discrete bedrock sources. Note that these three trends continue southward and are identified on the Flounder grid.

Discussion:

Although most of the targets on this grid provide poor conductive signatures, further work is warranted to attempt to outline the source of their conductivity. Overburden trenching should be attempted and failing that a short drill hole is proposed for the most attractive profile.

BEAR GRID

Geology:

The Bear grid was established to cover a series of parallel pyritic quartz sericite schist horizons which may be on strike with the Ecstall deposit. These pyritic felsic schist horizons vary in thickness from a few centimetres to 25 metres and locally contain massive to semi-massive sulphides. The grid is underlain mainly by sediments which include greywacke, laminated siltstone, banded quartzite and argillite. To the west these sediments have been intruded by large gabbroic bodies which form a very prominent cliff parallel to the grid.

Geophysics:

Airborne: The Bear grid covers a wide variety of E.M. responses with conductivities ranging from 1 Siemen to a maximum of 19 Siemens. Some of the responses, particularly 10160A are indicative of conductive overburden.

Ground Geophysics: Numerous zones of conductivity were detected by the SE-88 E.M. survey which was completed on seventeen lines of the Bear grid. Most of these conductor axes are of low conductivity and are poorly defined by the E.M. Those profiles that do have good characteristics are those anomalies between L.9400N and 8200N flanking the Baseline; between L.9900N/9750E and L.9600N/97740E; the trend between L.10400N/10440E-10465E and L.10100N/10450E (15 Siemens); and the single response at L.10300N/10090E. Geology will be required to assist in target selection.

Discussion:

The Bear grid requires further geophysics including HLEM and Mag to better define the known conductive horizons and to locate other airborne anomalies not yet tested. Prospecting of the conductors and blast trenching is proposed for the previously outlined conductors.

PACKSACK DEPOSIT

Geology:

The Packsack showing is a sub-economic volcanogenic massive sulphide occurrence which was discovered by Texas Gulf Sulphur (Kidd Creek) in 1958. The sulphide horizon has been outlined in eleven drill holes over a strike length of 500 metres. The mineralization occurs as a steeply dipping series of continuous massive pyrite, sphalerite and chalcopyrite lenses, intercalated with pyrite quartz-sericite schists. The overall grade of the sulphides is estimated at 0.5% Cu, 3% Zn, 0.01% Pb and 35 gm/tonne Ag with higher grade lenses of 1.0% Cu, 8% Zn and gold values of up to 2 gm/tonne being intersected in drill holes and sampled from the main surface showing. The Packsack sulphide zone appears to be open at both ends and apparently has not been tested below a depth of 70 metres. There is potential for an increase in grade, at depth or along strike, due to metal zoning.

A large grid consisting of 16.35 km of flagged line controlled by 1.9 km of cut baseline was established to facilitate detailed HLEM, Mag and geologic surveys. The HLEM survey outlined several conductive horizons, one which is associated with the main sulphide horizon which was defined over a length of 500 metres. The showing is hosted by a felsic pyroclastic unit which varies in thickness of up to 600 metres and appears to be mildly altered in some sections nearer the sulphide horizon. This unit is part of a larger volcanic package which includes more sericite schist, quartz sericite schist, dacitic schists and flows, chlorite schist and chlorite sericite schist. This package is bounded to the west by a thick accumulation of sediments which include massive greywacke, thinly to thickly laminated meta-siltstone, quartzite and argillite.

Geophysics:

Airborne: The Packsack grid primarily covers two separate E.M. conductors. The main conductor lies to the immediate east of the Baseline and extends for a distance of 800 metres. The conductivity peaks at 8 Siemens (10181C) over the south end and less than 5 Siemens in the centre (10170 BX) and 1 Siemen (10160 D) at the north. A second conductor of interest is 10181 B which has a conductivity of 5 Siemens and extends 400 metres south of the grid.

Ground Geophysics: Numerous zones of conductivity were mapped by the SE-88 E.M. on this 19 line grid. A broad package of poorly defined conductors is mapped east of the Baseline between Lines 7500N and 8000N with a single extension reaching L.8300N. This package occurs within an area of low magnetic susceptibility and there are no obvious magnetic responses of interest associated with these conductors. Within this package the better looking conductors are L.8200N/6960E, L.8000N/7115E and L.7900N/7140E.

A second package on the west side of the Baseline between Lines 7700N and 8100N. The conductor axes mapped on Lines 7700N, 7800N and 8000N/6730E have moderate conductivities of around 10-12 Siemens.

West of the Baseline between 7100N-6600N and 6700E-6750E a moderate conductivity (16 Siemens) bedrock conductor is mapped. This zone has no magnetic signature of interest, however, lies on the east (75 m - 100 m) flank of a high amplitude, narrow high susceptibility magnetic anomaly. Note that the bulk of this conductivity lies between L.7000N and 6800N with the horizon extending to the north and south. The zone shown at 6800N/6725E is wide (35 - 40 m), however, it appears to be of limited depth extent.

Sub-parallel to and within 100 metres of the Baseline between 6700N and 7200N a clearly defined conductor is detected. The zone truncates abruptly at 6700N/6990E with a depth to current axis of 10 metres and a conductivity of 20 Siemens. The conductivity and depth is fairly constant up to L.6900N/6955E and beyond that point the conductivity decreases and current axis depth increases. Beyond L.7300N the mineralized horizon can be traced to L.7400N/7090E, 7500N/7100E and 7600N/7060E. Note that the horizon axis locations are approximate due to the poor E.M. response. A low amplitude magnetic signature of approximately 50 to 100 nT is identified coincident with this conductor.

Discussion:

The Packsack deposit was used as a model for exploration in the immediate area. Although the deposit is uneconomic, there may be potential for an increase in grade at depth or higher grade lenses along strike. Several deeper drill holes are recommended to test the deposit at depth. The sulphide zone should also be tested further along strike, especially to the north where grades appear to increase. Several other geophysical targets have been outlined on the grid and should be tested by blast trenching.

DOLLY GRID

Geology:

The Dolly Grid is situated approximately 2 km north of the Horsefly and appears to lie in very similar stratigraphy. Outcrop in the area is very poor, but mapping on the Tyee grid to the north suggests a transition to a more sedimentary environment. The ground HLEM survey outlined a conductive horizon over a kilometre in length and appears to be hosted by pyritic quartz-sericite schist and pyritic brecciated dacite with minor chalcopyrite and sphalerite.

Geophysics:

Airborne: Five airborne E.M. responses were targetted for follow-up. They were 10190 O (5 Siemens), 10200 P (1 Siemen) and 10210 N, O, P (12, 34 and 14 Siemens). The airborne profiles indicate bedrock conductivity with only a small anomalous magnetic response.

Ground Geophysics: Eleven lines of SE-88 E.M. and mag were completed over the targetted airborne anomalies. The E.M. survey defined a narrow linear conductor axis extending across and beyond the limits of the Dolly Grid. The conductivity is maximum at 4900N/5025E with a value of 28 Siemens. A complex pattern of conductivity is emerging in Line 4300N, the southernmost grid line and represented by airborne anomalies 10210 N, O and P. A pronounced magnetic response is noted along the axis of the conductor but particularly south of L.5000N and north of L.5300N. It is apparent that both the conductivity and susceptibility vary considerably along its axis.

A second conductor was mapped at L.5000N/4575E-4635E. The profile suggests the source to be wide (60 m) but of limited depth extent.

Discussion:

Outcrop on this grid is poor, but where it occurs, the grid appears to be underlain at least in part by a pyritic exhalative horizon which is geochemically anomalous in Cu-Zn. No explanation was evident for the conductive horizon and therefore, should be trenched or drill tested. The second conductor is directly associated with a graphitic argillite.

TYEE GRID

Geology:

The Tyee Grid was established to cover a complex series of airborne E.M. anomalies immediately north of the Dolly Grid. The grid is underlain mainly by greywacke and argillitic sediments, where many of the conductive horizons appear to be associated with graphitic argillite. One narrow zone of quartz-sericite schist cut through the centre of these sediments. The sediments are bounded to the east by the high grade metamorphic gneisses and to the west by what appears to be the volcanic unit.

Geophysics:

Airborne: The Tyee Grid covers numerous airborne responses (10140 A..D, 10150 H..L) with conductivities of up to 12 Siemens and all appear to be sourced by bedrock conductivity. The magnetic data does not record any outstanding magnetic responses.

Ground Geophysics: Six lines of SE-88 E.M. and mag were completed over the above mentioned E.M. anomalies. Four E, N, trends were identified all of which vary in profile quality along their respective strike length. The western most zone has no appreciable magnetic response of interest. This zone degrades from a narrow low conductivity source at the north to a wide, poorly defined conductor of low conductivity to the south. At the middle of this zone (L.6600N/4735E) the E.M. response shows good definition of a narrow moderate conductivity (15 Siemens) target.

A low conductivity source is detected 25 m west of the 5000E Baseline. The profiles indicate the response may also be reflecting a change in the background resistivities.

Discussion:

The Tyee Grid is connected to the Dolly Grid by a common baseline, but the relationship between the two is uncertain. At present none of the geophysical targets warrant drill testing, but further ground geophysics and geologic mapping is recommended for untested airborne EM anomalies on the grid.

CONCLUSIONS & RECOMMENDATIONS

Several attractive drill targets have been outlined along favourable horizons for hosting volcanogenic massive sulphides. The model used is a high grade version of the Ecstall deposit, which is an uneconomic massive sulphide body in the order of 8 million tons. Two previously known massive occurrences lie within the project area, the Packsack and Horsefly showings. Drilling is required on both to test the showings at depth and along strike. Several other geophysical targets were outlined in favourable geologic environment, which require trenching or drill testing.

Horsefly Grid

1. One or two diamond drill holes to test the thick package of conductivity and the sulphide occurrences.

2. Further geophysical and geologic surveys to be conducted in the area of the satellite conductor.

Steelhead Grid

1. A series of long blast trenches to test as many of the parallel conductive horizons as possible in order to prioritize drilling.

2. Two or three drill holes are required to test some targets at depth and in areas of poor outcrop exposure.

3. Further geologic mapping and geophysical surveys to the north and south of the grid.

Piranha Grid

1. No further work is warranted for this grid, but work should be concentrated on the southern extension of the Steelhead Grid.

Rainbow Grid

1. Continue blast trenching in the area of the conductive horizons.

2. Drilling may be required if results of trenching are encouraging.

Walleye

No further work is recommended.

Flounder-Panda Grids

1. Blast trenching should be attempted on these targets to determine the source of conductivity.

2. If trenching fails to explain targets, a short drill hole should be proposed for the most attractive geophysical profile.

Bear Grid

1. Further HLEM and Mag surveys are required to further delineate the known conductive horizons and to locate other airborne anomalies not yet tested.

2. Prospecting of the conductors and blast trenching is recommended for previously untested zones.

Packsack

1. Two deep drill holes are recommended to test the sulphide zone at a depth of at least 150 metres.

2. Two drill holes are proposed to test the strike extent of the sulphides.

3. Blast trenching is required to test other geophysical targets on the grid.

Dolly Grid

1. One drill hole is required to test the long conductive horizon on the most attractive geophysical section.

Tyee Grid

1. Further geologic and geophysical surveys are needed to further evaluate the airborne EM anomalies in this area.

REFERENCES

Bacon, W.R., 1952: Ecstall River Property, B. C. Dept. Mines Annual Report, 1952, p. 81-84.

Graf, C., 1981: Ecstall River Joint Venture, Welcome North Mines Limited, Esperanza Explorations Limited, E & B Explorations Incorporated and Active Minerals Explorations Limited, June - July 1981, p. 31.

DeLancey, P. R., 1973: Texas Gulf Private Geological and Geochemical Report on the Packsack Claims.

Fraser, D. C., 1986: Dighem III Survey of the Ecstall River Area, British Columbia. p. 41.

Gasteiger, W. A., 1975: Texas Gulf Private Geophysical Report on the Packsack Claim.

Hutchison, W. W., 1967: Prince Rupert and Skeena Map Area, B. C. Geologic Survey of Canada, Paper 66-33, p. 27.

Padgham, W. A., 1958: Geology of the Ecstall-Quaal Rivers Area, B. C. Unpub., M.A.Sc., Thesis, University of British Columbia.

Roddick, J. A., 1970: Douglas Channel-Hecate Strait Map Area, B.C. Geologic Survey of Canada. Paper 70-41, p. 55.

APPENDIX I

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT - PACKSACK GROUP
TYPE OF REPORT - GEOLOGICAL & GEOPHYSICAL REPORT

a) **Wages:**

HLEM Survey - 20 mandays @ $125/day	$2,500.00	
Mag Survey - 5 mandays @ $125/day	$ 625.00	
Geology - 10 mandays @ $150/day	$1,500.00	
Linecutting - 25 mandays @ $100/day	$2,500.00	
Total Wages		$ 7,125.00

b) **Food and Accommodation:**

No. of Days - 60		
Rate per Day - $55.00		
Total Cost		$ 3,300.00

c) **Transportation:**

Helicopter - 18.6 hrs @ $500/hr	$9,300.00	
Otter - 5 flights @ $381/flight	$1,905.00	
Total Cost		$11,205.00

d) **Cost of Preparation of Report:**

Author	$ 350.00	
Drafting	$ 200.00	
Typing	$ 50.00	
Total Cost		$ 600.00

TOTAL COST	**$22,230.00**

COST BREAKDOWN

PACKSACK GROUP

HLEM SURVEY:	
20 mandays (2 men-Aug 7-16, 1986) @ $125/day	$ 2,500.00
Food & accommodations-20 mandays @ $55/day	1,100.00
Transportation (helicopter & fixed wing)	4,482.00
Report preparation	300.00
	$ 8,382.00
MAG SURVEY:	
5 mandays (Aug 9-13, 1986) @ $125/day	$ 625.00
Food & accommodations-5 mandays @ $55/day	275.00
Transportation (helicopter & fixed wing)	1,121.00
Report preparation	100.00
	$ 2,121.00
GEOLOGY:	
5 mandays (Aug 9-13, 1986) $150/day	$ 750.00
5 mandays (Aug 12-16, 1986) @ $150/day	750.00
Food & accommodations-10 mandays @ $55/day	550.00
Transportation (helicopter & fixed wing)	1,120.00
Report preparation	200.00
	$ 3,370.00
LINECUTTING:	
16 mandays (2 men-July 23-30, 1986) @$100/day	$ 1,600.00
9 mandays (July 23-31, 1986) @ $100/day	900.00
Food & accommodations-25 mandays @ $55/day	1,375.00
Transportation (helicopter & fixed wing)	4,482.00
	$ 8,357.00
TOTAL	**$22,230.00**

APPENDIX I

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT - TYEE GROUP
TYPE OF REPORT - GEOLOGICAL & GEOPHYSICAL REPORT

a) **Wages:**

HLEM Survey - 10 mandays @ $125/day	$1,250.00	
Mag Survey - 4 mandays @ $125/day	$ 500.00	
Geology - 2 mandays @ $150/day	$ 300.00	
Linecutting - 10 mandays @ $100/day	$1,000.00	
Total Wages		$ 3,050.00

b) **Food and Accommodation:**

No. of Days - 26		
Rate per Day - $55.00		
Total Cost		$ 1,430.00

c) **Transportation:**

Helicopter - 8.9 hrs @ $500/hr	$4,400.00	
Otter - 3 flights @ $381/flight	$1,143.00	
Total Cost		$ 5,543.00

d) **Cost of Preparation of Report:**

Author	$ 200.00	
Drafting	$ 100.00	
Typing	$ 50.00	
Total Cost		$ 350.00

TOTAL COST	**$10,373.00**

COST BREAKDOWN

TYEE GROUP

HLEM SURVEY:

10 mandays (2 men-Aug 17-21, 1986) @ $125/day	$ 1,250.00
Food & accommodations-10 mandays @ $55/day	550.00
Transportation (helicopter & fixed wing)	2,218.00
Report preparation	150.00
	$ 4,168.00

MAG SURVEY:

5 mandays (Aug 17-20, 1986) @ $125/day	$ 500.00
Food & accommodations-4 mandays @ $55/day	220.00
Transportation (helicopter & fixed wing)	555.00
Report preparation	100.00
	$ 1,375.00

GEOLOGY:

2 mandays (Aug 14-15, 1986) $150/day	$ 300.00
Food & accommodations-2 mandays @ $55/day	110.00
Transportation (helicopter & fixed wing)	554.00
Report preparation	100.00
	$ 1,064.00

LINECUTTING:

10 mandays (2 men Aug 1-5, 1986) @$100/day	$ 1,000.00
Food & accommodations-10 mandays @ $55/day	550.00
Transportation (helicopter & fixed wing)	2,216.00
	$ 3,766.00

TOTAL **$10,373.00**

APPENDIX I

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT – BEAR GROUP

a) **Wages:**

HLEM Survey – 14 mandays @ $125/day	$1,750.00	
Geology – 9 mandays @ $150/day	$1,350.00	
Linecutting – 18 mandays @ $100/day	$1,800.00	
Total Wages		$ 4,900.00

b) **Food and Accommodation:**

No. of Days – 41		
Rate per Day – $55.00		
Total Cost		$ 2,255.00

c) **Transportation:**

Helicopter – 6.8 hrs @ $500/hr	$3,400.00	
Total Cost		$ 3,400.00

d) **Cost of Preparation of Report:**

Author	$ 350.00	
Drafting	$ 100.00	
Typing	$ 100.00	
Total Cost		$ 550.00

TOTAL COST **$11,105.00**

COST BREAKDOWN

BEAR GROUP

HLEM SURVEY:

8 mandays (2 men—Aug 22-25, 1986) @ $125/day	$ 1,000.00
6 mandays (2 men-Sept 10-12, 1986) @ $125/day	750.00
Food & accommodations-14 mandays @ $55/day	770.00
Transportation (helicopter & fixed wing)	1,360.00
Report preparation	300.00
	$ 4,180.00

GEOLOGY:

4 mandays (Aug 22-25, 1986) $150/day	$ 600.00
3 mandays (Sept 10-12, 1986) @ $150/day	450.00
2 mandays (Sept 10-11, 1986) @ $150/day	300.00
Food & accommodations-9 mandays @ $55/day	495.00
Transportation (helicopter & fixed wing)	680.00
Report preparation	250.00
	$ 2,775.00

LINECUTTING:

18 mandays (2 men Aug 6-14, 1986) @$100/day	$ 1,800.00
Food & accommodations-10 mandays @ $55/day	990.00
Transportation (helicopter & fixed wing)	1,360.00
	$ 4,150.00

TOTAL	**$11,105.00**

APPENDIX I

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT - FLOUNDER GROUP
TYPE OF REPORT - GEOLOGICAL & GEOPHYSICAL REPORT

a) **Wages:**

HLEM Survey - 18 mandays @ $125/day	$2,250.00	
Mag Survey - 5 mandays @ $125/day	$ 625.00	
Geology - 6 mandays @ $150/day	$ 900.00	
Linecutting - 15 mandays @ $100/day	$1,500.00	
Total Wages		$ 5,275.00

b) **Food and Accommodation:**

No. of Days - 44		
Rate per Day - $55.00		
Total Cost		$ 2,420.00

c) **Transportation:**

Helicopter - 12.8 hrs @ $500/hr	$6,400.00	
Otter - 4 flights @ $381/flight	$1,524.00	
Total Cost		$ 7,924.00

d) **Cost of Preparation of Report:**

Author	$ 350.00	
Drafting	$ 200.00	
Typing	$ 50.00	
Total Cost		$ 600.00

TOTAL COST	$16,219.00

COST BREAKDOWN

FLOUNDER GROUP

HLEM SURVEY:

6 mandays (2 men-Aug 7-10, 1986) @ $125/day	$ 750.00
8 mandays (2 men-Sept 13-16, 1986) @ $125/day	1,000.00
4 mandays (2 men-Sept 16-17, 1986) @ $125/day	500.00
Food & accommodations-18 mandays @ $55/day	990.00
Transportation (helicopter & fixed wing)	2,774.00
Report preparation	300.00
	$ 6,314.00

MAG SURVEY:

5 mandays (Sept 13-17, 1986) @ $125/day	$ 625.00
Food & accommodations-5 mandays @ $55/day	275.00
Transportation (helicopter & fixed wing)	1,189.00
Report preparation	100.00
	$ 2,189.00

GEOLOGY:

1 manday (Aug 6, 1986) $150/day	$ 150.00
5 mandays (Sept 13-17, 1986) @ $150/day	750.00
Food & accommodations-6 mandays @ $55/day	330.00
Transportation (helicopter & fixed wing)	1,188.00
Report preparation	200.00
	$ 2,618.00

LINECUTTING:

3 mandays (3 men-Aug 7, 1986) @$100/day	$ 300.00
12 mandays (2 men-Aug 15-20, 1986) @ $100/day	1,200.00
Food & accommodations-15 mandays @ $55/day	825.00
Transportation (helicopter & fixed wing)	2,773.00
	$ 5,098.00

TOTAL	$16,219.00

APPENDIX I

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT - PIRANHA GROUP

a)	**Wages:**		
	HLEM Survey - 4 mandays @ $125/day	$ 500.00	
	Mag Survey - 2 mandays @ $125/day	$ 250.00	
	Geology - 2 mandays @ $150/day	$ 300.00	
	Linecutting - 2 mandays @ $100/day	$ 200.00	
	Total Wages		$ 1,250.00
b)	**Food and Accommodation:**		
	No. of Days - 10		
	Rate per Day - $55.00		
	Total Cost		$ 550.00
c)	**Transportation:**		
	Helicopter - 2.8 hrs @ $500/hr	$1,400.00	
	Total Cost		$ 1,400.00
d)	**Cost of Preparation of Report:**		
	Author	$ 75.00	
	Drafting	$ 50.00	
	Typing	$ 50.00	
	Total Cost		$ 175.00
TOTAL COST			**$ 3,375.00**

COST BREAKDOWN

PIRANHA GROUP

HLEM SURVEY:	
4 mandays (2 men-Sept 17-18, 1986) @ $125/day	$ 500.00
Food & accommodations-4 mandays @ $55/day	220.00
Transportation (helicopter & fixed wing)	560.00
Report preparation	75.00
	$ 1,355.00
MAG SURVEY:	
2 mandays (Sept 17-18, 1986) @ $125/day	$ 250.00
Food & accommodations-2 mandays @ $55/day	110.00
Transportation (helicopter & fixed wing)	280.00
Report preparation	50.00
	$ 690.00
GEOLOGY:	
2 mandays (Sept 17-18, 1986) $150/day	$ 300.00
Food & accommodations-2 mandays @ $55/day	110.00
Transportation (helicopter & fixed wing)	280.00
Report preparation	50.00
	$ 740.00
LINECUTTING:	
2 mandays (Sept 17-18, 1986) @$100/day	$ 200.00
Food & accommodations-2 mandays @ $55/day	110.00
Transportation (helicopter & fixed wing)	280.00
	$ 590.00
TOTAL	$ 3,375.00

APPENDIX II

STATEMENT OF QUALIFICATIONS

I, Gordon Maxwell of Prince George, Province of British Columbia, do hereby certify that:

1. I am a Geologist residing at 5905 Rideau Street, Prince George, British Columbia.

2. I am a graduate of the University of Manitoba with an Hons. B. Sc. (geology).

3. I am a member in good standing of the Canadian Institute of Mining and the Prospector's and Developer's Association.

4. I presently hold the position of Project Geologist with Noranda Exploration Company, Limited and have been in their employ since 1980.

Gordon Maxwell

G. Maxwell

APPENDIX II

STATEMENT OF QUALIFICATIONS

****

I, Lyndon Bradish of Vancouver, Province of British Columbia, do hereby certify that:

1. I am a Geophysicist residing at 1826 Trutch Street, Vancouver British Columbia.

2. I am a graduate of the University of British Columbia with a B.Sc. (geophysics).

3. I am a member in good standing of the Society of Exploration Geophysicists, Canadian Institute of Mining and the Prospector's and Developer's Association.

4. I presently hold the position of Division Geophysicist with Noranda Exploration Company, Limited and have been in their employ since 1973.

L. Bradish

L. Bradish.

APPENDIX III

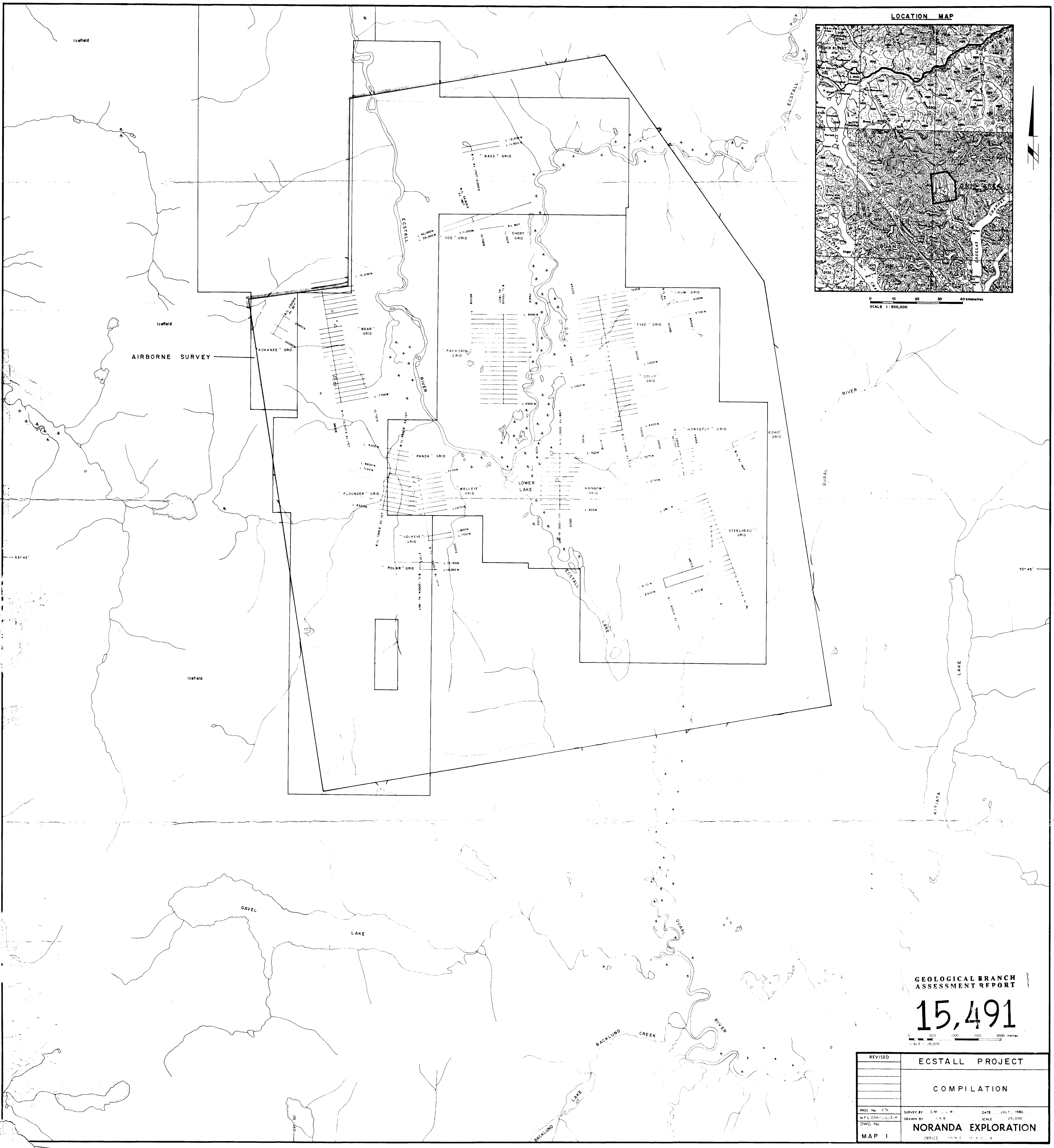
GEOPHYSICAL INSTRUMENTATION

The SE-88 unit differs from the normal HLEM systems such as the MaxMin 11 above in that it measures without regard to phase, the ratio of signal amplitude between two frequencies which are transmitted and received simultaneously. A low frequency of 112 Hz is used as a reference frequency. The signal difference is integrated or averaged over a period of time in order to improve the signal to noise ratio.

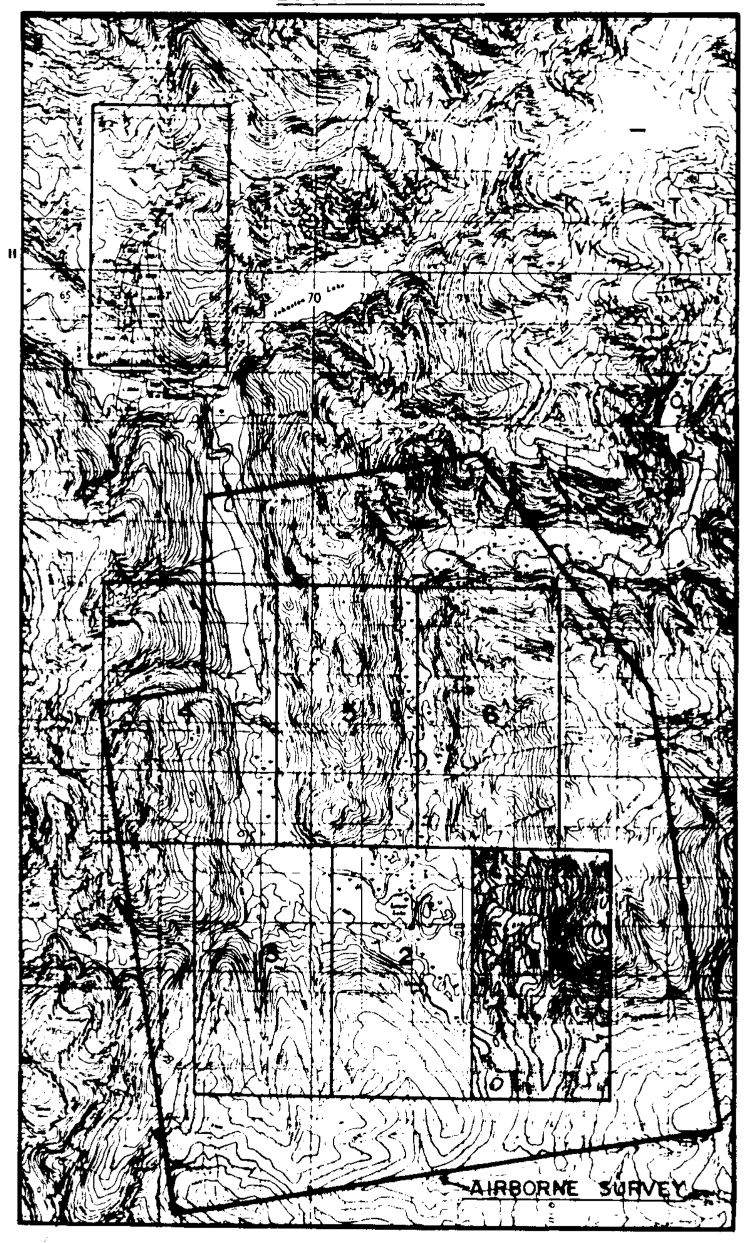
The survey parameters employed on the follow-up programme are as follows:

Coil sep ration	: 100 meters
Frequencies	: 3037, 1012, 337 Hz
Reference frequency	: 112 Hz
Integration period	: 16 or 8 seconds
Reading interval	: 25 meters
Measurement	: ratio of amplitude between reference and signal frequencies (%)

Magnetometers manufactured by Scintrex Ltd. of Concord, Ontario were employed for these surveys. The MP-3 Total Field Magnetometer System consists of one or more field units and a base station. Diurnal and day to day variations are automatically corrected at the end of the survey by the built in microprocessor giving the data a usable accuracy of 1 gamma.


LOCATION MAP
GRID AREA
SCALE 1:500,000
0 10 20 30 40 kilometres
Icefield
Icefield
Icefield
AIRBORNE SURVEY
"BASS" GRID
"COD" GRID
"SHORT" GRID
"CHUM" GRID
"TYEE" GRID
"BEAR" GRID
"KOKANEE" GRID
PACKSACK GRID
"DOLLY" GRID
"HORSEFLY" GRID
"COHO" GRID
"PANDA" GRID
"FLOUNDER" GRID
"WALLEYE" GRID
RAINBOW GRID
LOWER LAKE
"SOCKEYE" GRID
"POLAR" GRID
"STEELHEAD" GRID
ECSTALL
ECSTALL RIVER
ECSTALL LAKE
RIVER
QUAAL
LAKE
KITIATA
53°45'
GAVEL LAKE
BACKLUND CREEK
BACKLUND LAKE
QUAAL RIVER
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491
0 500 1000 1500 2000 metres
SCALE 1:25,000
REVISED
ECSTALL PROJECT
COMPILATION
PROJ. No. 276
N.T.S. 03H/11,12,13,14
DWG No
MAP 1
SURVEY BY G.M. L.W.
DRAWN BY S.K.B.
DATE: JULY 1986
SCALE: 25,000
NORANDA EXPLORATION
OFFICE

LOCATION MAP



0 1 2 3 4 Kilometres
SCALE 1 : 100,000

LEGEND

1 Basaltic Volcanics
- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) hornblende schist
- (h) hornblende biotite schist
- (i) hornblende biotite garnet schist

6a Gabbro

12a Lamprophyre Dyke

2 Andesitic Volcanics
- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) chlorite quartz schist

3 Dacitic to Rhyolitic Volcanics
- (a) flows
- (b) tuff
- (c) lapilli tuff
- (d) crystal tuff
- (e) dacitic tuff
- (f) chlorite sericite schist
- (g) sericite schist
- (h) quartz sericite schist
- (i) pyritic quartz sericite schist
- (j) quartz chlorite schist

4 Clastic Sediments
- (a) massive greywacke
- (b) laminated meta siltstone
- (c) quartzite (banded)
- (d) argillite
- (e) graphitic argillite

Chalcopyrite	Cp
Pyrrhotite	Po
Pyrite	Py
Malachite	Mal
Magnetite	Mag
Sphalerite	Sph
Graphite	Gr
Gossan	g
Epidote	epi
Calcite	cal

SYMBOLS:
- LAKE
- SWAMP
- RIVER, STREAM

X 88092
88093

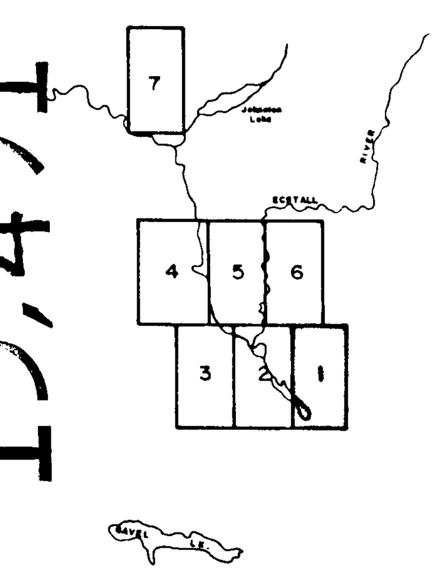
GEOLOGICAL SYMBOLS:
- AREA OF ROCK OUTCROP
- 14819 x ROCK OUTCROP OR SAMPLE LOCATION
- FLOAT
- GEOLOGICAL BOUNDARY:
  - Defined
  - Assumed
- SCHISTOSITY CLEAVAGE, FOLIATION (Vertical, inclined, dip unknown)
- FAULT (Defined, approximate, assumed)

TABLE OF ROCK SAMPLE ANALYSIS

(All samples in ppm except where noted)

SAMPLE #	TYPE	Cu	Zn	Pb	Ag	Au(ppb)
88076	Rock	2,400	172	18	2.8	20
88077	"	11,600	412	48	6.4	70
88078	"	920	262	2	1.2	10
88079	"	84	72	22	1.6	10
88080	"	3,160	40,000	1,280	18.8	1080
88081	"	62	416	274	1.2	30
88082	"	44	186	4	0.6	5
88083	"	142	2,160	560	5.6	30
88084	"	2,680	494	18	5.8	80
88085	"	700	38,000	540	4.4	40
88086	"	40	190	8	0.4	5
88087	"	112	1,780	630	4.8	50
88088	"	2,660	352	50	5.4	120
88089	"	3,000	4,500	16	4.0	80
88090	"	58	202	6	0.6	5
88091	"	92	120	2	0.6	5
88092	"	640	64	6	0.2	5
88093	"	1,640	32	2	0.8	5
88094	"	44	18	4	0.2	5
88095	"	166	368	20	2.2	5
88096	"	12	92	2	0.2	5
88097	"	46	192	6	0.6	5
88098	"	494	3,640	122	2.4	20
88118	"	298	13,000	238	3.0	20
88177	"	10,800	9,740	18	28.0	420
88178	"	340	61	3	0.8	10
88179	"	430	640	52	1.6	30
88180	"	13,700	400	18	39.0	400
88181	"	200	103	10	1.2	10
88182	"	220	320	5	1.2	5
88183	"	380	31	28	4.4	90
88192	"	1,520	515	120	4.6	30
88193	"	4,000	3.8%	800	33.0	500
88194	"	180	805	27	1.0	10
88195	"	370	4.6%	260	3.4	30
88196	"	102	480	110	1.2	55
88197	"	11,600	393	14	13.0	15
88198	"	510	440	62	7.4	15
88199	"	132	110	144	1.0	200
88200	"	24	53	380	2.8	60
14901	"	36	41	87	0.6	10
14902	"	240	10,490	13	0.2	<5
14903	"	240	3,840	330	3.3	20
14904	"	680	1,500	30	0.6	<5
14917	"	220	77	3	0.4	170
14918	"	11	10	3	0.5	5
14919	"	390	12	3	0.5	5
14920	"	51	107	10	0.7	<5
14921	"	198	64	4	0.6	5
14922	"	144	192	30	2.6	25
14976	"	1,700	36,000	3,600	21.0	10
14977	"	520	260	44	3.0	30
14978	"	36	200	1	0.2	10
14979	"	400	26,000	1	0.4	10

MAP SHEET INDEX



GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491

NOTE Topography based on photocopy enlargement of N.T.S. 1:50,000 scale map 103H/11,14

0 100 200 300 400 500 m
SCALE 1 : 5,000

REVISED

ECSTALL PROJECT

GEOLOGY
HORSEFLY, STEELHEAD AND PIRANHA GRIDS

PROJ. No. 276
N.T.S. 103H/11,14
DWG. No. MAP 2

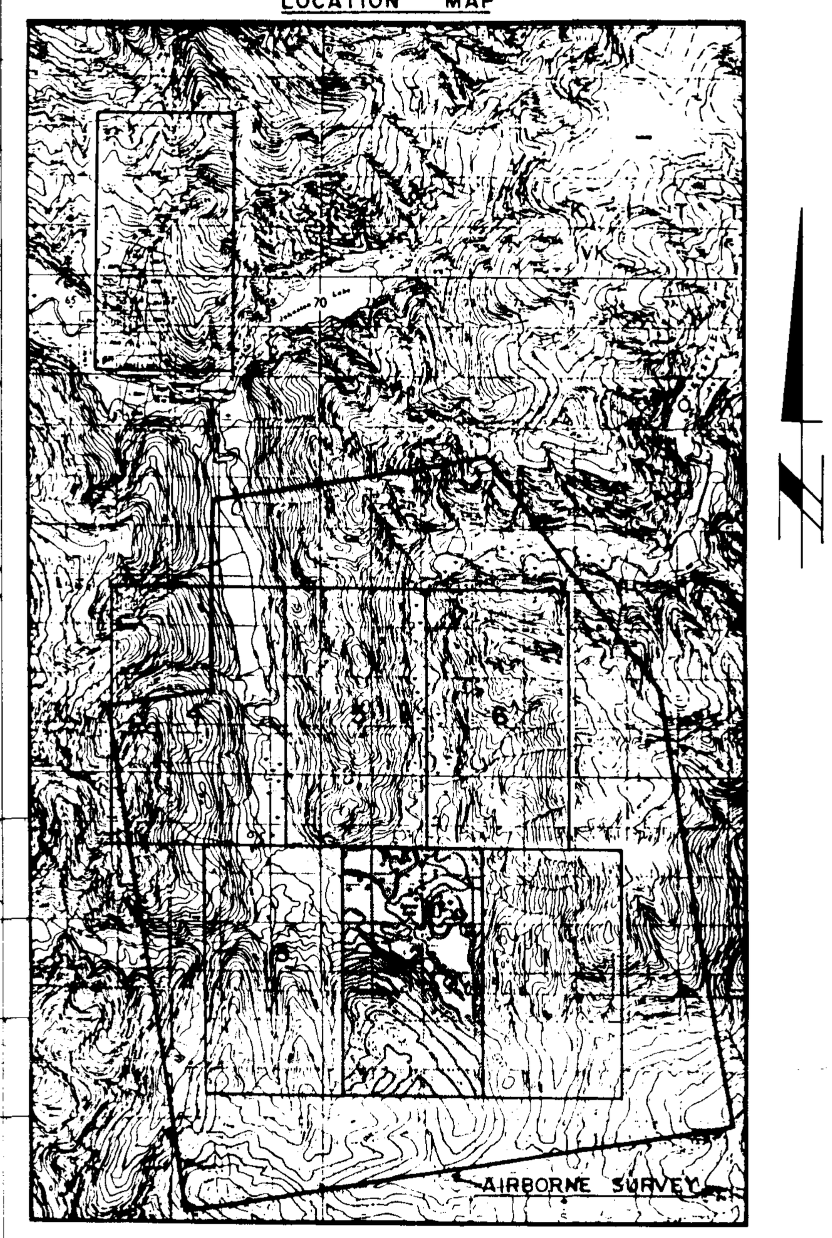
SURVEY BY: G.M., L.W. DATE: AUG., 1986
DRAWN BY: S.K.B. SCALE: 1:5,000

NORANDA EXPLORATION
OFFICE PRINCE GEORGE, B.C.


LOCATION MAP
AIRBORNE SURVEY
SCALE 1 : 100,000
" HORSEFLY GRID"
ECSTALL 9
ECSTALL 10
TALL 12 (Fr)
ECSTALL 8
TALL 9
TALL 10
TALL 11
BASELINE
" STEELHEAD GRID "
TALL 6
TALL 7
EX 15
EX 16
" PIRANHA " GRID
ECSTALL
LAKE
LEGEND
Instrument : SE88
Coil Spacing : 100m
Ref. Frequency : 112 Hz
Vertical Scale : 1 cm = 20%
Conductor Axis :
337 Hz
1012 Hz
3037 Hz
MAP SHEET INDEX
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491
NOTE Topography based on photocopy enlargement of
N.T.S 1 50,000 scale map 103H/11,14
0 100 200 300 400 500 m
SCALE 1 5,000
REVISED
ECSTALL PROJECT
SE - 88 SURVEY
HORSEFLY, STEELHEAD AND
PIRANHA GRIDS
PROJ. No. 276
N.T.S. 103H/11, 14
DWG. No.
MAP 3
SURVEY BY: T.L., T.K., T.B.
DATE: AUG., 1986
DRAWN BY: S.K.B
SCALE: 1 5,000
NORANDA EXPLORATION
OFFICE: PRINCE GEORGE, B.C.


LOCATION MAP
AIRBORNE SURVEY
SCALE 1 : 100,000
" HORSEFLY GRID"
TALL 12 (Fr.)
ECSTALL 8
TALL 9
TALL 10
TALL 11
" STEELHEAD GRID "
TALL 6
TALL 7
EX 15
EX 16
" PIRANHA " GRID
ECSTALL
LAKE
LEGEND
STEELHEAD GRID
Instrument : MP-3
Field : TOTAL
Datum : 58000.0 nT
Contour Interval : 50 nT
(1 passes through a 9 pt. Hanning Filter.)
(1 passes through a 3 pt. Hanning Filter.)
Conductor Axis :
HORSEFLY GRID
Instrument : MP-3
Field : TOTAL
Datum : 58000.0 nT
Contour Interval : 50 nT
(2 passes through a 9 pt. Hanning Filter.)
(4 passes through a 3 pt. Hanning Filter.)
Conductor Axis :
PIRAHANA GRID
Instrument : MP-3
Field : TOTAL
Datum : 56000.0 nT
Profile Amplitude : 200 nT/ Cm
Conductor Axis :
MAP SHEET INDEX
ECSTALL
RIVER
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491
NOTE Topography based on photocopy enlargement of
N T S 1 50,000 scale map 103H/11,14
0 100 200 300 400 500 m
SCALE 1 5,000
REVISED
ECSTALL PROJECT
MAGNETOMETER SURVEY
HORSEFLY, STEELHEAD AND
PIRANHA GRIDS
PROJ. No. 276
N.T.S. 103H/11, 14
DWG. No.
MAP 4
SURVEY BY: T.L., D.R.
DATE: AUG., 1986
DRAWN BY: S.K.B.
SCALE: 1 5,000
NORANDA EXPLORATION
OFFICE: PRINCE GEORGE, B.C

LOCATION MAP



SCALE 1 : 100,000 (0 1 2 3 4 Kilometres)

LEGEND

1 <u>Basaltic Volcanics</u>

- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) hornblende schist
- (h) hornblende biotite schist
- (i) hornblende biotite garnet schist

2 <u>Andesitic Volcanics</u>

- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) chlorite quartz schist

3 <u>Dacitic to Rhyolitic Volcanics</u>

- (a) flows
- (b) tuff
- (c) lapilli tuff
- (d) crystal tuff
- (e) dacitic tuff
- (f) chlorite sericite schist
- (g) sericite schist
- (h) quartz sericite schist
- (i) pyritic quartz sericite schist
- (j) quartz chlorite schist

4 <u>Clastic Sediments</u>

- (a) massive greywacke
- (b) laminated meta siltstone
- (c) quartzite (banded)
- (d) argillite
- (e) graphitic argillite

6a <u>Gabbro</u>

12a <u>Lamprophyre Dyke</u>

Chalcopyrite	Cp
Pyrrhotite	Po
Pyrite	Py
Malachite	Mal
Magnetite	Mag
Sphalerite	Sph
Graphite	Gr
Gossan	g
Epidote	epi
Calcite	cal

SYMBOLS:

- LAKE
- SWAMP
- RIVER, STREAM
- Hand trench

GEOLOGICAL SYMBOLS:

- AREA OF ROCK OUTCROP
- 14846 x ROCK OUTCROP OR SAMPLE LOCATION
- FLOAT
- GEOLOGICAL BOUNDARY:
  - Defined
  - Assumed
- SCHISTOSITY CLEAVAGE, FOLIATION
  - (Vertical, inclined, dip unknown)
- FAULT
  - (Defined, approximate, assumed)

TABLE OF ROCK SAMPLE ANALYSIS

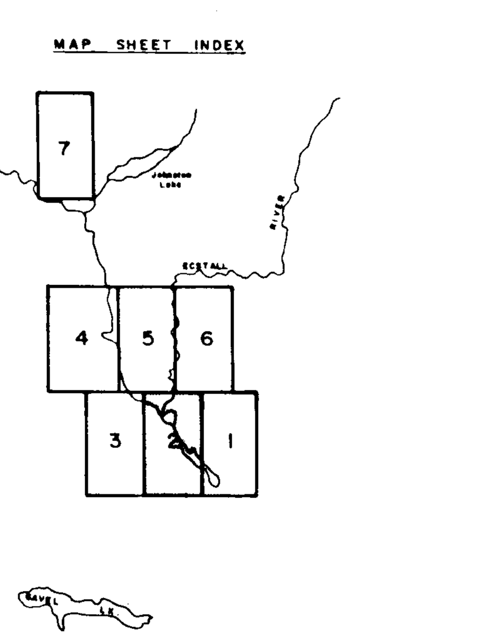
(All values in ppm except where noted)

SAMPLE #	TYPE	Cu	Pb	Zn	Ag	Au ppb
89001	grab	186	3	49	<0.2	<5
89002	grab	217	<2	239	<0.2	<5
89003	grab	400	2	980	0.4	<5
89004	grab	238	<2	1580	<0.2	<5
89005	grab	39	2	174	<0.2	<5
89006	grab	252	6	53	1.6	<5
89007	grab	48	4	45	0.3	<5
89008	grab	46	2	142	0.2	<5
89009	grab (quartz vein)	42	2	600	0.5	3900
89010	grab	57	3	142	0.4	<5
89011	grab	83	6	40	0.6	<5
89012	grab	43	8	15	0.4	<5
89013	grab	80	5	3100	0.8	10
89014	grab	45	4	106	0.4	<5
89015	grab	39	4	101	0.2	<5
89016	grab	156	10	72	1,8	<5
89017	grab	59	4	63	<0.2	<5

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,491

MAP SHEET INDEX

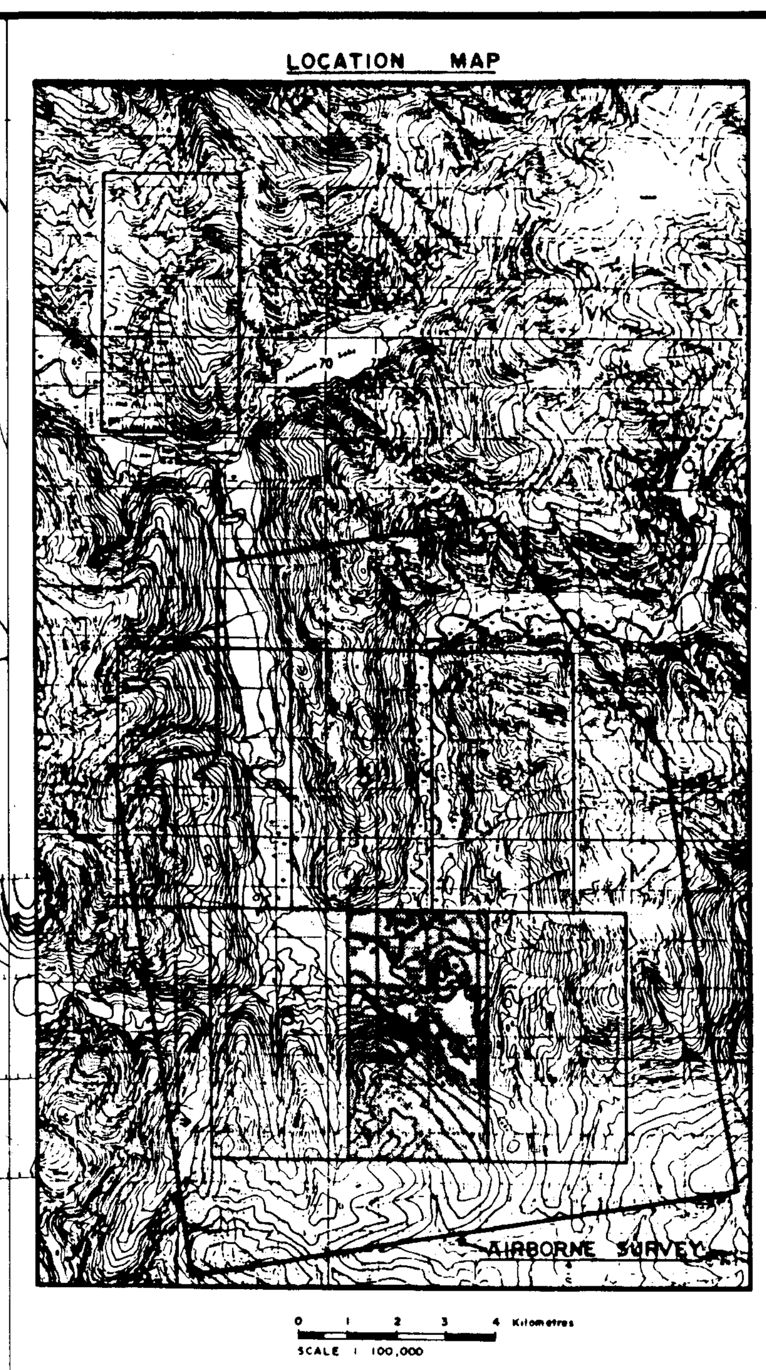


NOTE Topography based on photocopy enlargement of N.T.S 1 50,000 scale map 103H/11, 14

SCALE 1 : 5,000 (0 100 200 300 400 500 m)

REVISED	ECSTALL PROJECT
G.M. Nov., 1986	GEOLOGY RAINBOW GRID
PROJ. No. 276	SURVEY BY: L.W., G.M. DATE: JULY, 1986
N.T.S. 103H/11, 14	DRAWN BY: S.K.B SCALE: 1:5,000
DWG. No. MAP 5	NORANDA EXPLORATION OFFICE: PRINCE GEORGE, B.C.


TALL 3
TALL 6
ECSTALL
RIVER
LOWER LAKE
L1600N
L1500N
L1400N
L1300N
L1200N
L1100N
L1000N
L900N
L800N
L700N
L600N
d=10m
dt=20S
d=10m
dt=35S
"RAINBOW GRID"
EX 6
TALL 7
LCP
EX 15
ECSTALL LAKE
500
1000
1500
2000
2500
3000
LOCATION MAP
AIRBORNE SURVEY
SCALE 1:100,000
LEGEND
Instrument : SE88
Coil Spacing : 100m
Ref. Frequency : 112 Hz
Vertical Scale : 1 cm = 20%
Conductor Axis :
337 Hz
1012 Hz
3037 Hz
MAP SHEET INDEX
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491
NOTE Topography based on photocopy enlargement of
N.T.S. 1 50,000 scale map 103H/11,14
0 100 200 300 400 500 m
SCALE 1 5,000
REVISED
ECSTALL PROJECT
SE-88 SURVEY
RAINBOW GRID
PROJ. No. 276
N.T.S. 103H/11,14
DWG. No.
MAP 6
SURVEY BY: K.L., T.L.
DATE: JULY, 1986
DRAWN BY: S.K.B.
SCALE: 1:5,000
NORANDA EXPLORATION
OFFICE: PRINCE GEORGE, B.C.



LEGEND

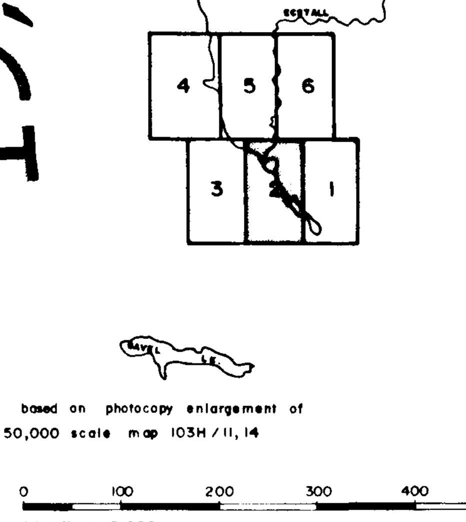
Instrument : MP-3
Field : TOTAL
Datum : 56000.0 nT

Contour Interval : 50 nT
(2 passes through a 9 pt. Hanning Filter.)
(4 passes through a 3 pt. Hanning Filter.)

Conductor Axis : ~

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,491



NOTE : Topography based on photocopy enlargement of N.T.S. 1 50,000 scale map 103H / 11, 14

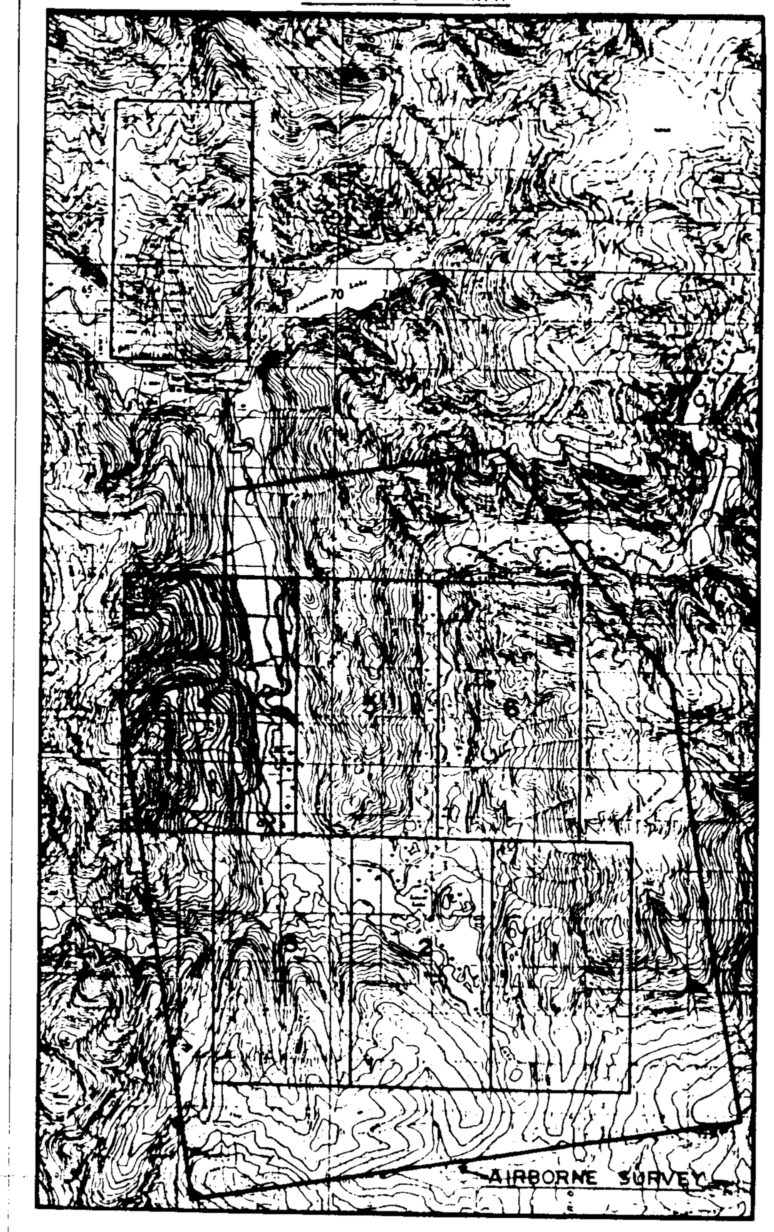
0 100 200 300 400 500 m
SCALE 1 5,000

REVISED	ECSTALL PROJECT
	MAGNETOMETER SURVEY RAINBOW GRID
PROJ. No. 276	SURVEY BY: T.K. DATE: JULY, 1986
N.T.S. 103H / 11, 14	DRAWN BY: S.K.B. SCALE: 1 : 5,000
DWG. No. MAP 7	**NORANDA EXPLORATION** OFFICE: PRINCE GEORGE, B.C.


EX 10
EX 6
ECSTALL
RIVER
LOCATION MAP
AIRBORNE SURVEY
" PANDA " GRID
" WALLEYE " GRID
" FLOUNDER " GRID
" SOCKEYE " GRID
" POLAR " GRID
dip=70° grid west
d = 20m
σt = 12S
d = 20m
σt = 10S
dip: 90°
d = 10m
σt = 30S
d = 14m
σt = 15S
d = 10m
σt = 12S
d = 20m
σt = 12S
L 12,150N
L 12,000N
EX 11
EX 12
EX 13
EX 14
LEGEND
Instrument : SE88
Coil Spacing : 100m
Ref. Frequency : 112 Hz
Vertical Scale : 1 cm = 20%
Conductor Axis :
337 Hz
1012 Hz
3037 Hz
MAP SHEET INDEX
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491
NOTE Topography based on photocopy enlargement of
N.T.S. 1:50,000 scale map 103H/11,14
SCALE 1:5,000
0 100 200 300 400 500 m
REVISED
ECSTALL PROJECT
SE-88 SURVEY
FLOUNDER, PANDA, WALLEYE,
SOCKEYE AND POLAR GRIDS
PROJ. No. 276
N.T.S. 103H/11,14
DWG. No.
MAP 9
SURVEY BY: K.L., T.L.
DATE: JULY, 1986
DRAWN BY: S.K.B.
SCALE: 1:5,000
NORANDA EXPLORATION
OFFICE: PRINCE GEORGE, B.C.

LOCATION MAP
AIRBORNE SURVEY
SCALE 1:100,000
EX 10
EX 6
ECSTALL
RIVER
" PANDA " GRID
" WALLEYE " GRID
" FLOUNDER " GRID
" SOCKEYE " GRID
" POLAR " GRID
EX 11
EX 12
EX 13
EX 14
LEGEND
Instrument : MP-3
Field : TOTAL
Datum : 56000.0 nT
Contour Interval : 50 nT
(4 passes through a 9 pt. Hanning Filter.)
(4 passes through a 3 pt. Hanning Filter.)
Conductor Axis :
MAP SHEET INDEX
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491
NOTE Topography based on photocopy enlargement of
N.T.S. 1:50,000 scale map 103H/11,14
SCALE 1:5,000
REVISED
ECSTALL PROJECT
MAGNETOMETER SURVEY
FLOUNDER, PANDA, WALLEYE,
SOCKEYE AND POLAR GRIDS
PROJ. No. 276
N.T.S. 103H/11,14
DWG. No.
MAP 10
SURVEY BY: B.K., L.B., T.L., T.K., B.E.
DATE: AUG., 1986
DRAWN BY: S.K.B.
SCALE: 1:5,000
NORANDA EXPLORATION
OFFICE PRINCE GEORGE, B.C.

LOCATION MAP



0 1 2 3 4 Kilometres
SCALE 1 : 100,000

LEGEND

1 Basaltic Volcanics
- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) hornblende schist
- (h) hornblende biotite schist
- (i) hornblende biotite garnet schist

2 Andesitic Volcanics
- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) chlorite quartz schist

3 Dacitic to Rhyolitic Volcanics
- (a) flows
- (b) tuff
- (c) lapilli tuff
- (d) crystal tuff
- (e) dacitic tuff
- (f) chlorite sericite schist
- (g) sericite schist
- (h) quartz sericite schist
- (i) pyritic quartz sericite schist
- (j) quartz chlorite schist

4 Clastic Sediments
- (a) massive greywacke
- (b) laminated meta siltstone
- (c) quartzite (banded)
- (d) argillite
- (e) graphitic argillite

6a Gabbro

12a Lamprophyre Dyke

Chalcopyrite	Cp
Pyrrhotite	Po
Pyrite	Py
Malachite	Mal
Magnetite	Mag
Sphalerite	Sph
Graphite	Gr
Gossan	g
Epidote	epi
Calcite	cal

SYMBOLS:
- LAKE
- SWAMP
- RIVER, STREAM

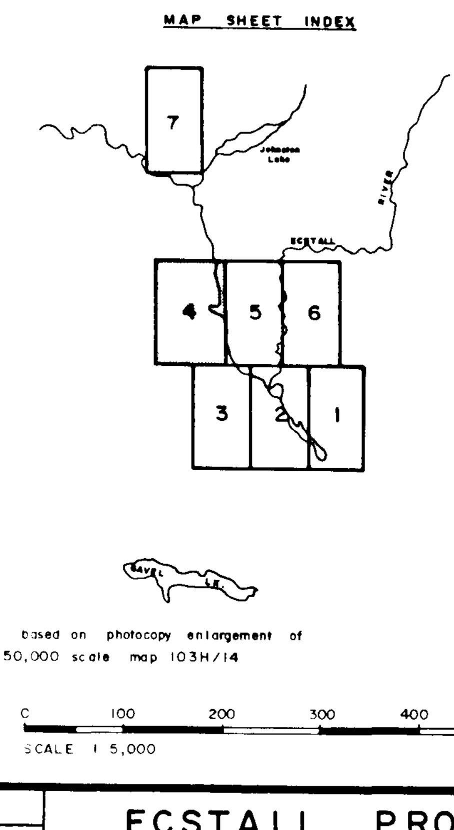
GEOLOGICAL SYMBOLS:
- AREA OF ROCK OUTCROP
- 14367 x ROCK OUTCROP OR SAMPLE LOCATION
- FLOAT
- GEOLOGICAL BOUNDARY:
  - Defined
  - Assumed
- SCHISTOSITY CLEAVAGE, FOLIATION (Vertical, inclined, dip unknown)
- FAULT (Defined, approximate, assumed)

TABLE OF ROCK SAMPLE ANALYSIS

(All samples in ppm except where noted)

SAMPLE #	TYPE	Cu	Zn	Pb	Ag	Au(ppb)
88111	Rock	28	240	1	0.2	10
88112	"	130	84	26	1.6	10
88113	"	390	160	1	1.0	20
88114	"	20	50	2	0.2	10
88115	"	710	64	1	0.6	20
88116	"	50	20	14	2.2	10
88117	"	10	50	1	2.4	50
88164	"	5,400	257	17	6.2	25
88165	"	5,100	61	14	4.8	30
88166	"	105	18	6	1.6	5
88167	"	570	56	2	0.6	<5
88168	"	860	48	4	1.4	<5
88169	"	490	108	4	1.6	<5
88170	"	54	27	8	0.2	<5
88171	"	67	39	5	<0.2	<5
88172	"	200	415	16	1.6	5
88173	"	4,400	201	20	5.0	20
88174	"	500	2,990	13	3.5	<5
88175	"	82	75	6	<0.2	<5
88176	"	1,240	6,840	96	12.0	5

MAP SHEET INDEX

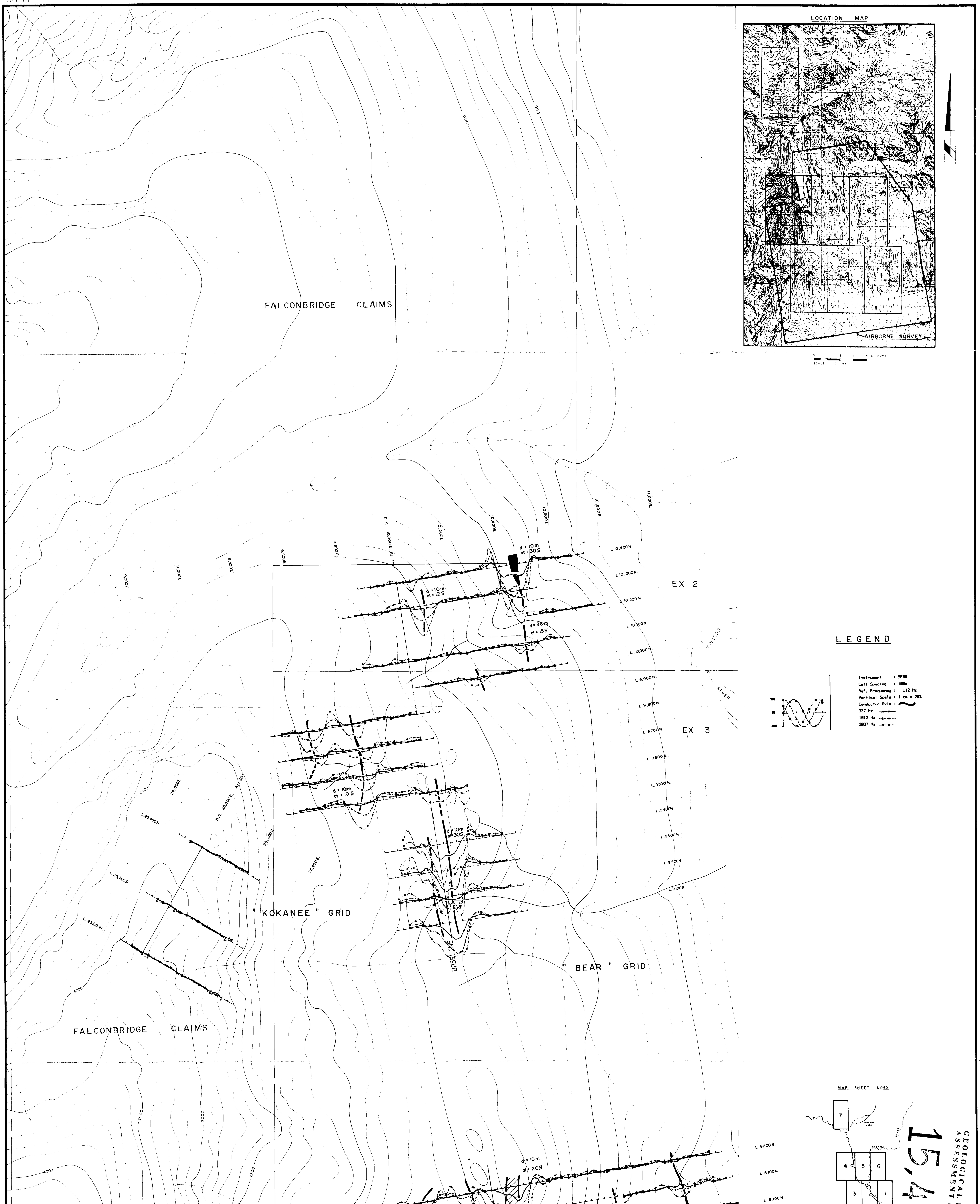


GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491

NOTE Topography based on photocopy enlargement of N.T.S. 1:50,000 scale map 103H/14

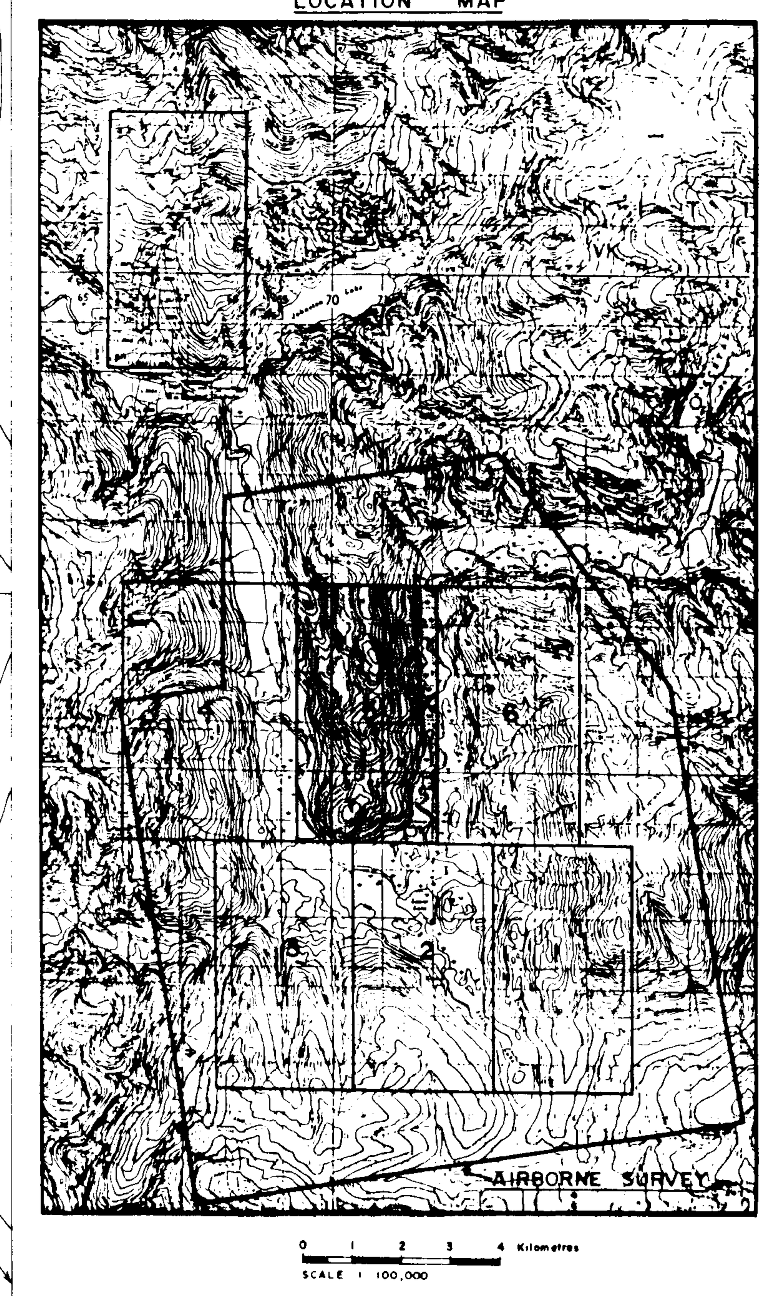
0 100 200 300 400 500 m
SCALE 1:5,000

REVISED	ECSTALL PROJECT
G.M. Feb., 1987	GEOLOGY KOKANEE AND BEAR GRIDS
PROJ. No. 276	SURVEY BY: G.M., L.W. — DATE: JULY, 1986
N.T.S. 103H/14	DRAWN BY: S.K.B. — SCALE: 1:5,000
DWG. No. MAP 11	NORANDA EXPLORATION — OFFICE: PRINCE GEORGE, B.C.



REVISED	ECSTALL PROJECT	
	SE-88 SURVEY KOKANEE AND BEAR GRIDS	
PROJ. No. 276	SURVEY BY: K.L., T.L.	DATE: JULY, 1986
N.T.S. 103H/14	DRAWN BY: S.K.B.	SCALE: 1:5,000
DWG. No. MAP 12	NORANDA EXPLORATION OFFICE PRINCE GEORGE, B.C.	

LOCATION MAP



LEGEND

1 Basaltic Volcanics

(a) flows
(b) pillowed flows
(c) tuff
(d) lapilli tuff
(e) crystal tuff
(f) chlorite schist
(g) hornblende schist
(h) hornblende biotite schist
(i) hornblende biotite garnet schist

2 Andesitic Volcanics

(a) flows
(b) pillowed flows
(c) tuff
(d) lapilli tuff
(e) crystal tuff
(f) chlorite schist
(g) chlorite quartz schist

3 Dacitic to Rhyolitic Volcanics

(a) flows
(b) tuff
(c) lapilli tuff
(d) crystal tuff
(e) dacitic tuff
(f) chlorite sericite schist
(g) sericite schist
(h) quartz sericite schist
(i) pyritic quartz sericite schist
(j) quartz chlorite schist

4 Clastic Sediments

(a) massive greywacke
(b) laminated meta siltstone
(c) quartzite (banded)
(d) argillite
(e) graphitic argillite

6a Gabbro

12a Lamprophyre Dyke

Chalcopyrite	Cp
Pyrrhotite	Po
Pyrite	Py
Malachite	Mal
Magnetite	Mag
Sphalerite	Sph
Graphite	Gr
Gossan	g
Epidote	epi
Calcite	cal

SYMBOLS:

LAKE
SWAMP
RIVER, STREAM
PROPOSED 1987 D.D.H.'s

GEOLOGICAL SYMBOLS:

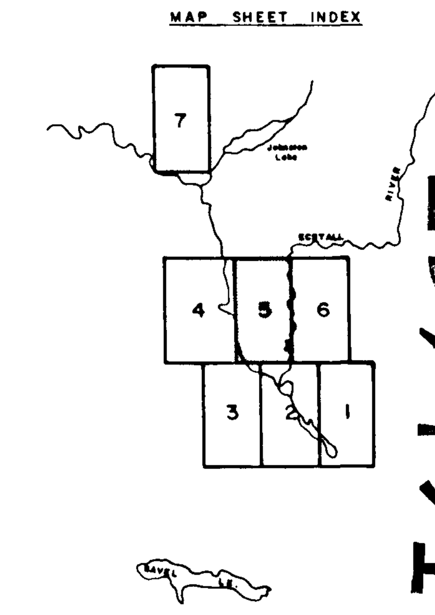
AREA OF ROCK OUTCROP
14367 x ROCK OUTCROP OR SAMPLE LOCATION
FLOAT
GEOLOGICAL BOUNDARY:
Defined
Assumed
SCHISTOSITY CLEAVAGE, FOLIATION
(Vertical, inclined, dip unknown)
FAULT
(Defined, approximate, assumed)

TABLE OF ROCK SAMPLE ANALYSIS

(All samples in ppm except where noted)

SAMPLE #	TYPE	Cu	Zn	Pb	Ag	Au(ppb)
88119	Rock	3,740	4,300	82	7.8	130
88120	"	220	>40,000	10,800	8.0	340
88121	"	160	396	12	1.0	10
88122	"	68	830	5	0.4	<5
88123	"	106	251	3	0.4	<5
88124	"	92	220	6	0.2	<5
88125	"	32	98	4	0.4	<5
88126	"	96	106	5	0.5	<5
88127	"	10	68	2	<0.2	<5
88128	"	46	166	4	<0.2	5
88129	"	56	133	11	<0.2	<5
88130	"	36	30	14	<0.2	<5
88131	"	410	93	8	1.1	20
88132	"	100	171	12	0.4	5
88133	"	3,700	319	9	5.0	120
88134	"	102	207	3	0.3	5
88135	"	51	116	9	0.4	5
88136	"	840	227	9	0.7	30
88137	"	59	52	2	0.3	<5
88138	"	37	79	6	<0.2	<5
88139	"	14	19	6	<0.2	<5
88140	"	15	66	8	0.2	10
88141	"	30	55	2	<0.2	<5
88142	"	21	68	3	<0.2	320
88143	"	22	34	7	<0.2	<5
88144	"	16	121	3	<0.2	<5
88145	"	70	105	4	0.6	<5
88146	"	50	178	2	<0.2	<5
99028	"	381	107	–	1.2	35
99029	"	5,190	3,160	–	17.0	940
99030	"	925	7.7%	–	3.1	2000
99031	"	135	505	–	1.7	320
99032	"	1,330	415	–	0.4	15
99033	"	3,370	7.95%	–	16.0	190
99034	"	755	3,090	–	0.8	15

MAP SHEET INDEX



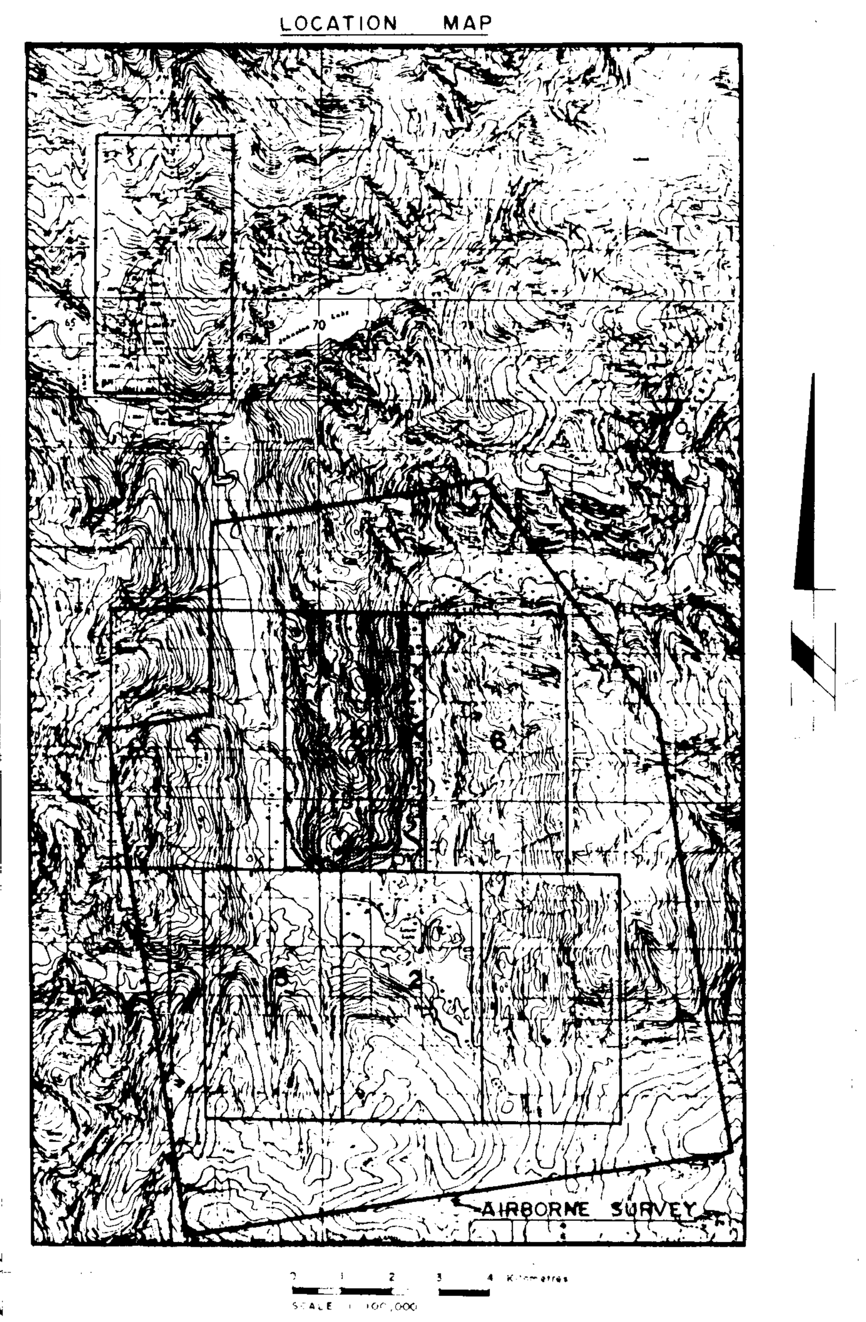
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491

NOTE Topography based on photocopy enlargement of N.T.S. 1 : 50,000 scale map 103 H / 14

0 100 200 300 400 500 m
SCALE 1 : 5,000

REVISED	ECSTALL PROJECT
	PACKSACK GEOLOGY
PROJ. No. 276	SURVEY BY: G.M., L.W. DATE: JULY, 1986
N.T.S. 103H/14	DRAWN BY: S.K.B. SCALE: 1:5000
DWG. No. MAP 13	NORANDA EXPLORATION OFFICE PRINCE GEORGE, B.C.

LOCATION MAP
AIRBORNE SURVEY
SCALE 1:100,000
EX 9
EX 7
EX 8
"COD" GRID
"SHORT" GRID
BASELINE
"PACKSACK" GRID
EX 4
EX 5
TALL 1
TALL 2
TALL 3
TALL 4
TALL 5
TALL 6
ECSTALL 15
ECSTALL 16
EX 6
RIVER
ECSTALL
LEGEND
Instrument : SE88
Coil Spacing : 100m
Ref. Frequency : 112 Hz
Vertical Scale : 1 cm = 20%
Conductor Axis :
337 Hz
1012 Hz
3037 Hz
MAP SHEET INDEX
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,491
NOTE Topography based on photocopy enlargement of NTS 1:50,000 scale map 103H/14
0 100 200 300 400 500 m
SCALE 1:5,000
REVISED
ECSTALL PROJECT
PACKSACK, COD AND SHORT GRIDS
SE-88 SURVEY
PROJ. No. 276
N.T.S. 103H/14
DWG. No.
MAP 14
SURVEY BY: K.L., T.L.
DATE: JULY, 1986
DRAWN BY: S.K.B.
SCALE: 1:5000
NORANDA EXPLORATION
OFFICE: PRINCE GEORGE, B.C.



L E G E N D

Instrument : MP-3
Field : TOTAL
Datum : 58000.0 nT

Contour Interval : 50 nT
(6 passes through a 9 pt. Hanning Filter.)
(4 passes through a 3 pt. Hanning Filter.)

Conductor Axis :

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,491

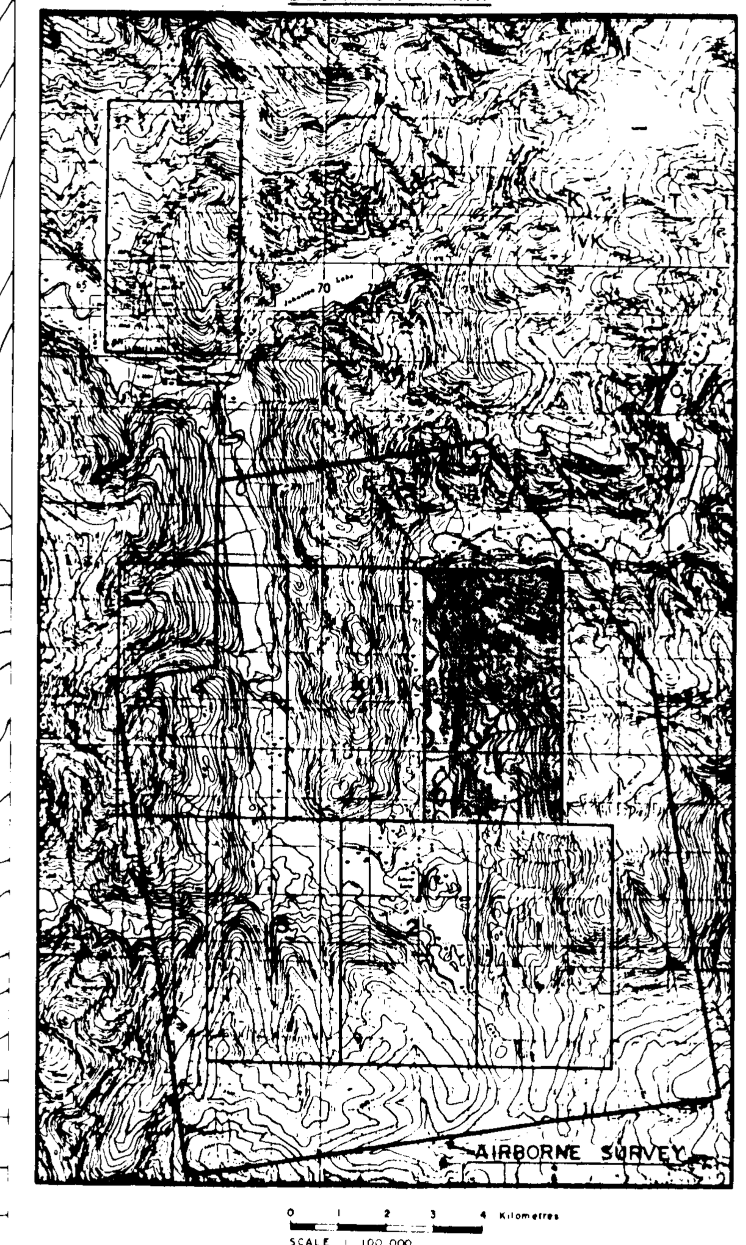
NOTE Topography based on photocopy enlargement of N.T.S 1 50,000 scale map 103 H / 14

0 100 200 300 400 500 m

SCALE 1 : 5,000

REVISED	ECSTALL PROJECT
	MAGNETOMETER SURVEY PACKSACK, AND COD GRIDS
PROJ. No. 276	SURVEY BY: T. K. DATE: JULY, 1986
N.T.S. 103H/14	DRAWN BY: S. K. B. SCALE: 1 5000
DWG. No. MAP 15	**NORANDA EXPLORATION** OFFICE: PRINCE GEORGE, B.C.

LOCATION MAP



LEGEND

1 Basaltic Volcanics
- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) hornblende schist
- (h) hornblende biotite schist
- (i) hornblende biotite garnet schist

2 Andesitic Volcanics
- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) chlorite quartz schist

3 Dacitic to Rhyolitic Volcanics
- (a) flows
- (b) tuff
- (c) lapilli tuff
- (d) crystal tuff
- (e) dacitic tuff
- (f) chlorite sericite schist
- (g) sericite schist
- (h) quartz sericite schist
- (i) pyritic quartz sericite schist
- (j) quartz chlorite schist

4 Clastic Sediments
- (a) massive greywacke
- (b) laminated meta siltstone
- (c) quartzite (banded)
- (d) argillite
- (e) graphitic argillite

6a Gabbro

12a Lamprophyre Dyke

Chalcopyrite	Cp
Pyrrhotite	Po
Pyrite	Py
Malachite	Mal
Magnetite	Mag
Sphalerite	Sph
Graphite	Gr
Gossan	g
Epidote	epi
Calcite	cal

SYMBOLS:
- LAKE
- SWAMP
- RIVER, STREAM

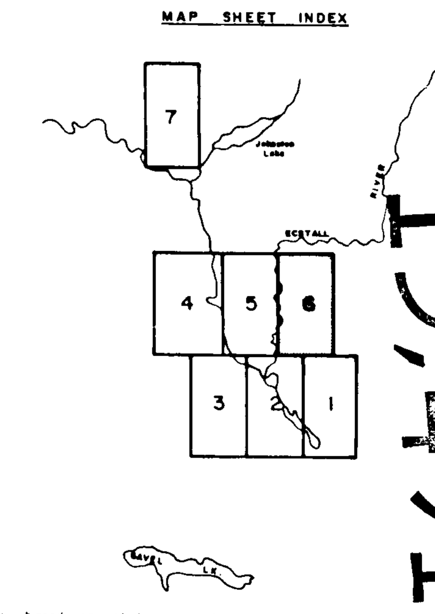
GEOLOGICAL SYMBOLS:
- AREA OF ROCK OUTCROP
- 14881 x ROCK OUTCROP OR SAMPLE LOCATION
- FLOAT
- GEOLOGICAL BOUNDARY:
  - Defined
  - Assumed
- SCHISTOSITY CLEAVAGE, FOLIATION (Vertical, inclined, dip unknown)
- FAULT (Defined, approximate, assumed)

TABLE OF ROCK SAMPLE ANALYSIS

(All samples in ppm except where noted)

SAMPLE #	TYPE	Cu	Zn	Pb	Ag	Au (ppb)
88099	Rock	148	64	8	0.4	5
88100	"	1100	122	6	1.8	10
88101	"					
88102	"	392	156	4	1.4	10
88103	"	32	66	8	0.2	5
14907	"	40	112	6	0.4	< 5
88104	"	124	242	4	0.8	5
88105	"	128	258	10	0.2	5

MAP SHEET INDEX



GEOLOGICAL BRANCH ASSESSMENT REPORT

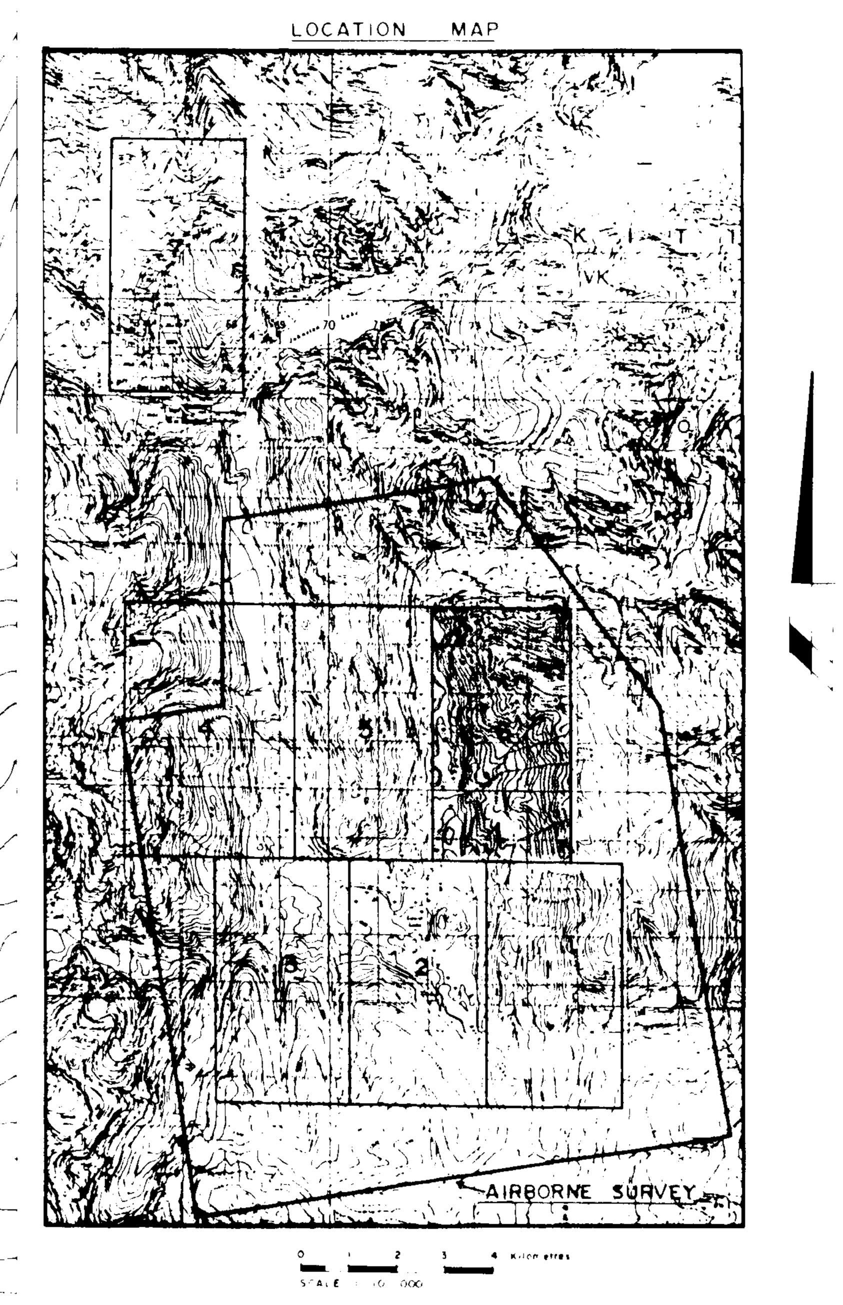
15,491

NOTE Topography based on photocopy enlargement of N.T.S. 1:50,000 scale map 103H/14

0 100 200 300 400 500 m

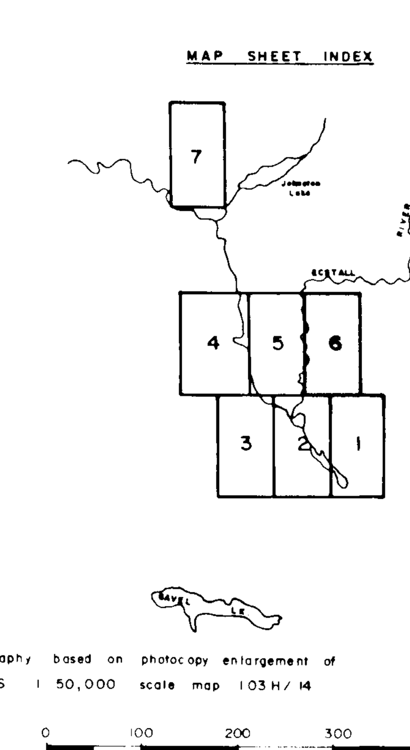
SCALE 1:5,000

REVISED	ECSTALL PROJECT	
	DOLLY / TYEE GEOLOGY	
PROJ. No. 276	SURVEY BY: L.W., G.M.	DATE: JULY, 1986
N.T.S. 103H/14	DRAWN BY: S.K.B.	SCALE: 1:5000
DWG. No. MAP 16	NORANDA EXPLORATION	OFFICE: PRINCE GEORGE, B.C.



LEGEND

Instrument : SE88
Coil Spacing : 100m
Ref. Frequency : 112 Hz
Vertical Scale : 1 cm = 20%
Conductor Axis :
337 Hz
1012 Hz
3037 Hz



GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,491

NOTE Topography based on photocopy enlargement of N.T.S. 1:50,000 scale map 103H/14

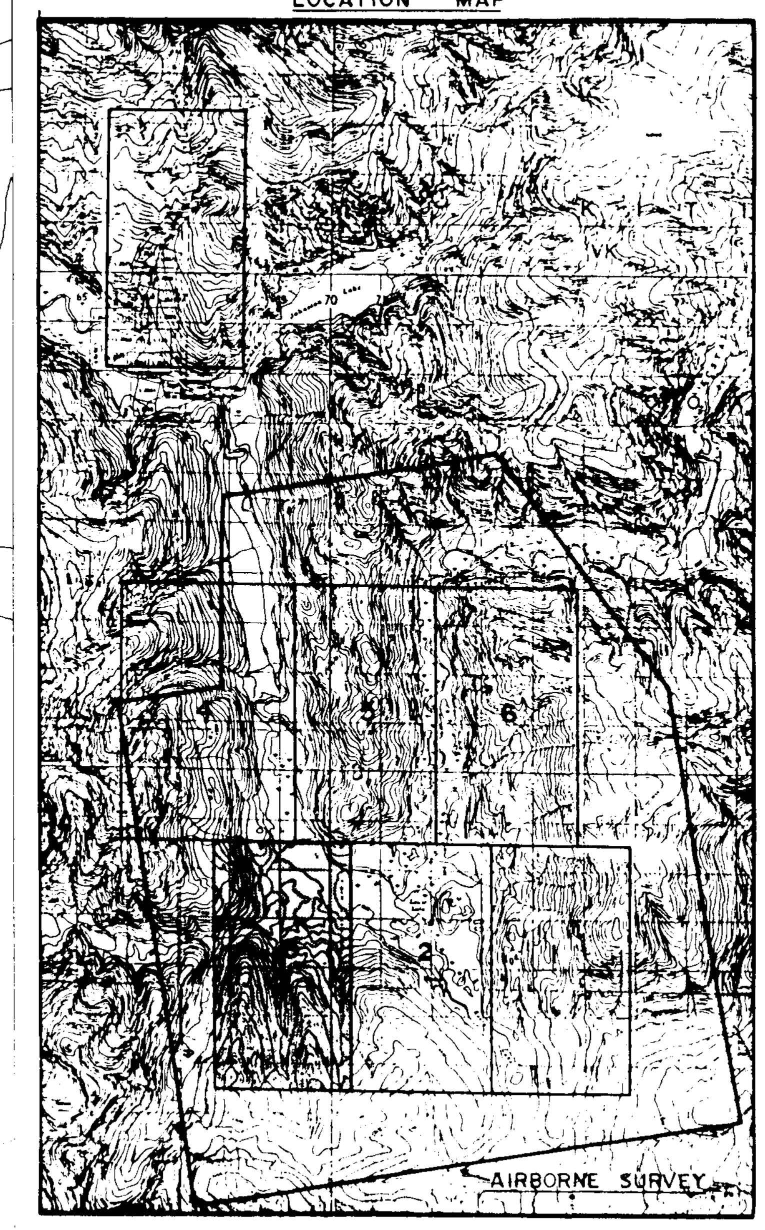
0 100 200 300 400 500 m
SCALE 1:5,000

REVISED	
	ECSTALL PROJECT
	SE-88 SURVEY DOLLY / TYEE GRID
PROJ. No. 276	SURVEY BY: K.L., T.K. DATE: JULY, 1986
N.T.S. 103H/14	DRAWN BY: S.K.B. SCALE: 1:5000
DWG. No. MAP 17	NORANDA EXPLORATION OFFICE: PRINCE GEORGE, B.C.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,491

LOCATION MAP



SCALE 1 100,000 (0 1 2 3 4 Kilometres)

LEGEND

1 Basaltic Volcanics

- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) hornblende schist
- (h) hornblende biotite schist
- (i) hornblende biotite garnet schist

2 Andesitic Volcanics

- (a) flows
- (b) pillowed flows
- (c) tuff
- (d) lapilli tuff
- (e) crystal tuff
- (f) chlorite schist
- (g) chlorite quartz schist

3 Dacitic to Rhyolitic Volcanics

- (a) flows
- (b) tuff
- (c) lapilli tuff
- (d) crystal tuff
- (e) dacitic tuff
- (f) chlorite sericite schist
- (g) sericite schist
- (h) quartz sericite schist
- (i) pyritic quartz sericite schist
- (j) quartz chlorite schist

4 Clastic Sediments

- (a) massive greywacke
- (b) laminated meta siltstone
- (c) quartzite (banded)
- (d) argillite
- (e) graphitic argillite

6a Gabbro

12a Lamprophyre Dyke

Chalcopyrite	Cp
Pyrrhotite	Po
Pyrite	Py
Malachite	Mal
Magnetite	Mag
Sphalerite	Sph
Graphite	Gr
Gossan	g
Epidote	epi
Calcite	cal

SYMBOLS:

LAKE
SWAMP
RIVER, STREAM

GEOLOGICAL SYMBOLS:

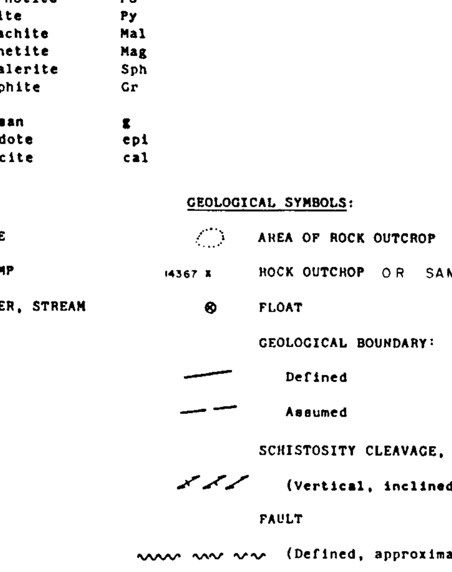
AREA OF ROCK OUTCROP
14367 x ROCK OUTCROP OR SAMPLE LOCATION
FLOAT
GEOLOGICAL BOUNDARY:
Defined
Assumed
SCHISTOSITY CLEAVAGE, FOLIATION
(Vertical, inclined, dip unknown)
FAULT
(Defined, approximate, assumed)

TABLE OF ROCK SAMPLE ANALYSIS

(All samples in ppm except where noted)

SAMPLE #	TYPE	Cu	Zn	Pb	Ag	Au(ppb)
88184	Rock	66	111	12	0.6	<5
88185	"	74	136	6	0.4	<5
88186	"	80	60	4	0.2	<5
88187	"	18	67	2	0.2	<5
88188	"	56	22	12	0.7	<5
88189	"	340	1,150	6	3.4	10
88190	"	210	278	16	2.4	<5
88191	"	110	28	2	0.5	140

MAP SHEET INDEX



GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,491

NOTE Topography based on photocopy enlargement of N.T.S. 1 50,000 scale map 103H/11,14

SCALE 1 5,000 (0 100 200 300 400 500 m)

REVISED	ECSTALL PROJECT
	GEOLOGY FLOUNDER, PANDA, WALLEYE, SOCKEYE AND POLAR GRIDS
PROJ. No. 276	SURVEY BY: G.M., L.W. DATE: JULY, 1986
N.T.S. 103H/11,14	DRAWN BY: S.K.B. SCALE: 1:5,000
DWG. No. MAP 8	NORANDA EXPLORATION OFFICE PRINCE GEORGE, B.C.