Geological, Geochemical and Geophysical Report

on the

4 J's PROPERTY

Owner: Teuton Resources Corp.

Operator: Noranda Exploration Company, Limited

Skeena Mining Division, B.C.

[redacted]

Latitude 56 deg. 19 min.
Longitude 130 deg. 065 min.

by: Robert Baerg, Geologist
Lyndon Bradish, Geophysicist

January 1986

N.T.S. 104 B/8E

TABLE OF CONTENTS

LIST OF FIGURES

SUMMARY:

The 4 Jaya property is a Pb-Zn-Ag-Sb-Au prospect located north of Stewart in the north coast region of British Columbia.

The property is underlain by Triassic-Jurassic andesitic tuffs and volcaniclastics and intercalated siltstones and coarser epiclastic rocks which are intruded by similar age feldspar porphyry dykes and younger hornblende-feldspar porphyry dykes.

The work completed by Noranda Exploration Company, Limited consisted of geological mapping, rock sampling, and HLEM, PEM and Magnetometer surveys. This program sought to evaluate the mineral occurrences as well as several VLF-EM conductors located by a Canadian-United Minerals Inc. survey.

The geological program outlined two types of mineralization of interest, Zn-Pb-Ag-Sb mineralization which occurs in local areas of carbonate-quartz-sericite-pyrite-limonite alteration and large vuggy quartz vein boulders heavily mineralized with galena and bournonite (Cu, Pb, Sb, S3).

The Zn-Pb-Ag-Sb mineralization appears to be of very limited extent and the Ag values are generally low (<3.5 oz/t). The quartz vein boulders, while having high Ag values, up to 35.5 oz/t, and Au values to .076 oz/t are coming from beneath a large sheet of glacial ice. Attempts to locate the source of the quartz boulders with geophysical surveys was unsuccessful. The geophysical surveys also did not confirm the presence of 3 of the 4 VLF conductors from the previous survey. Since all the potential targets appear to have been eliminated, no further work has been recommended.

INTRODUCTION:

Noranda Exploration Company, Limited holds an option on the 4 J's property from Canadian United Minerals Inc. The property is comprised of five mineral claims and is situated north of Stewart, British Columbia. During 1985, Noranda Exploration conducted a program of mapping, sampling and ground geophysics to evaluate several base-precious metal occurrences and several VLF-EM conductors.

LOCATION AND ACCESS:

The 4 J's property is situated 50 km north of Stewart in northwestern British Columbia (Figure 1).

Access to the area is via Highway 37 from Kitwanga on Highway 16 or by scheduled air service from Terrace.

Access to the claim is currently via helicopter, however, the road linking the former Granduc millsite and airstrip with Stewart terminates several km south of the property.

PHYSIOGRAPHY:

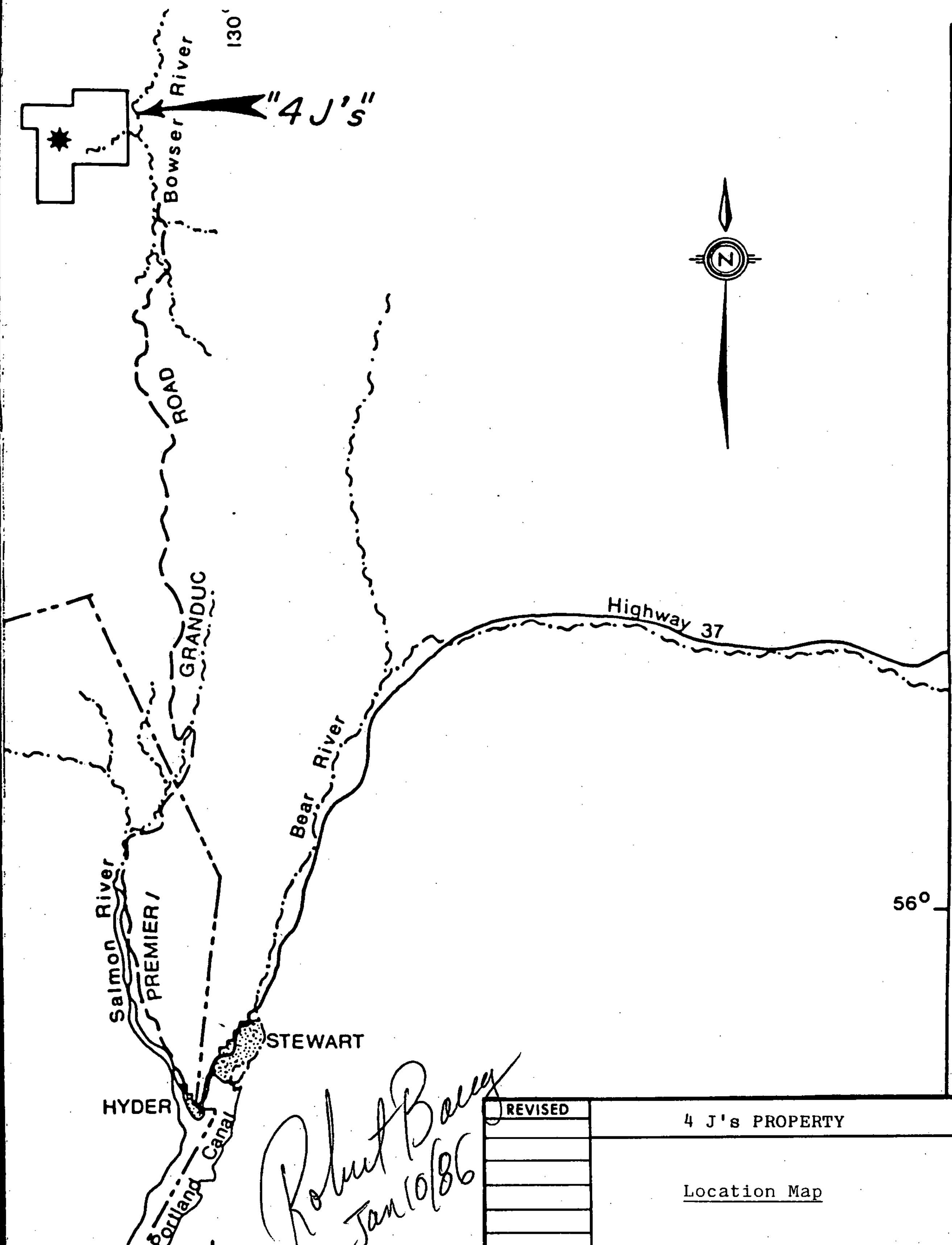
The area of the claims is typical of the northern Coast Mountains area of British Columbia. Valley glaciers, including the Frank Mackie Glacier, extend outward from a central glacier area several km west of the Summit Lake-Bowser River valley.

Elevations rise abruptly from the broad valley floor of the Bowser River (Figure 3) at an elevation of 600 meters to more than 2000 meters near the west boundary of the claims. The claims are immediately south of Frank Mackie Glacier and only sparse alpine vegetation exists between 750 and 1000 meters elevation. The higher areas of the claims are occupied by a small icefield which shows evidence of recent recession.

Bedrock exposures are plentiful and virtually continuous exposure exists in higher areas where ice has receded.

HISTORY:

The earliest prospecting in the Stewart area took place around 1898 when precious metal occurrences were discovered in the Bear River Valley. This led to approximately 35 years of active exploration in the Stewart area and the discovery of the Premier, Big Missouri and Indian Mines. However, due to its inaccessibility, much of the 4 J's area was not prospected until the late 1920's and early 1930's. In 1926 the East Gold showing was discovered and in 1934 the Portland (Haida) showing was discovered. Both these showings occur several km to the south of the 4 J's property and have been worked intermittently since their discovery. Assays from the East Gold showing are reported to be



Robert Bourg(?) Jan 10/86

REVISED	4 J's PROPERTY
	Location Map

PROJ. No. 566 SURVEY BY: R.B. DATE: Jan. 85

N.T.S. 104B/8 DRAWN BY: R.B. SCALE: 1:250,000

DWG. No. 1

NORANDA EXPLORATION

OFFICE: Prince George

as high as 8.72 oz/t Au and 8.72 oz/t Ag while at the Portland (Haida), values up to 2.288 oz/t Au and 3.2 oz/t Ag are reported.

Little if any work had been conducted within the area of the present 4 J's property until 1983 when Billiken Resources Inc. conducted a program of geological mapping, rock and stream sediment geochemistry, prospecting and trenching of mineralized showings. This was followed in 1984, under the direction off Canadian United Minerals Inc., by helicopter VLF electromagnetic surveys, ground Max-Min and VLF surveys and limited geological mapping and sampling.

CLAIM STATISTICS:

The 4 J's property consists of 5 mineral claims comprising a total of 70 modified grid units in the Skeena Mining Division (Figure 2) as listed below:

Claim Name	Units	Record #	Expiry Date
Jim	12	3623	Nov. 1, 1987
John	18	3624	Nov. 1, 1988
Jonas	8	3625	Nov. 1, 1988
Jack	12	3626	Nov. 1, 1987
Catspaw	16	2004A	Jan. 9, 1987

On October 31, 1985 the above claims were grouped as the JC group.

REGIONAL GEOLOGY:

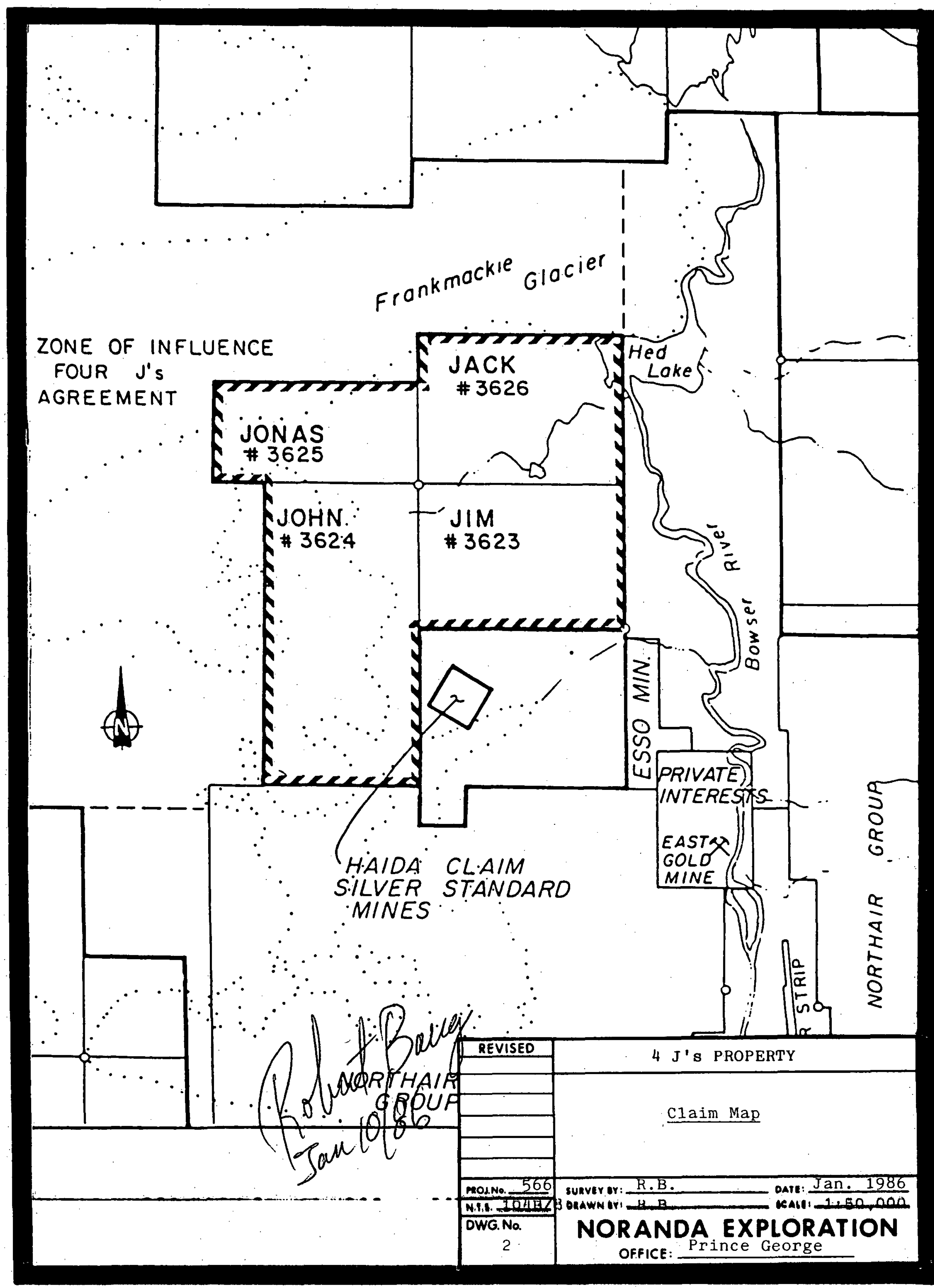
The geology of the Stewart area has been described in great detail by Grove (1983) and Alldrick (1984, 1985).

The Stewart area lies in the transition zone between the Bowser Basin to the east and the Coast Crystalline complex to the west. Much of the area is underlain by Lower Jurassic Hazelton Group volcanic and sedimentary rocks which are unconformably overlain by Middle Jurassic Betty Creek and Salmon River formations. These rocks are intruded by dykes, sills and small plutons of diorite, syenodiorite and feldspar porphyry.

Mapping by Alldrick (1984, 1985) has further subdivided the Jurassic formations into an Andesitic Sequence, Epiclastic Sequence, Felsic Volcanic Sequence and Sedimentary Sequence. The 4 J's property is underlain by the Andesitic Sequence which consists of andesitic tuffs and minor flows with two distinct siltstone marker horizons and minor interbedded epiclastic rocks.

LOCAL GEOLOGY:

An area of approximately 0.6 square km in the northern half of the John claim was mapped at a scale of 1:1000 (Figures 4-5).


Frankmackie Glacier
ZONE OF INFLUENCE
FOUR J's
AGREEMENT
JACK
3626
Hed
Lake
JONAS
3625
JOHN
3624
JIM
3623
Bowser River
ESSO MIN.
PRIVATE
INTERESTS
EAST
GOLD
MINE
NORTHAIR GROUP
STRIP
HAIDA CLAIM
SILVER STANDARD
MINES
NORTHAIR
GROUP
N
REVISED
4 J's PROPERTY
Claim Map
PROJ. No. 566
N.T.S. 104B/8
SURVEY BY: R.B.
DRAWN BY: R.B.
DATE: Jan. 1986
SCALE: 1:50,000
DWG. No.
2
NORANDA EXPLORATION
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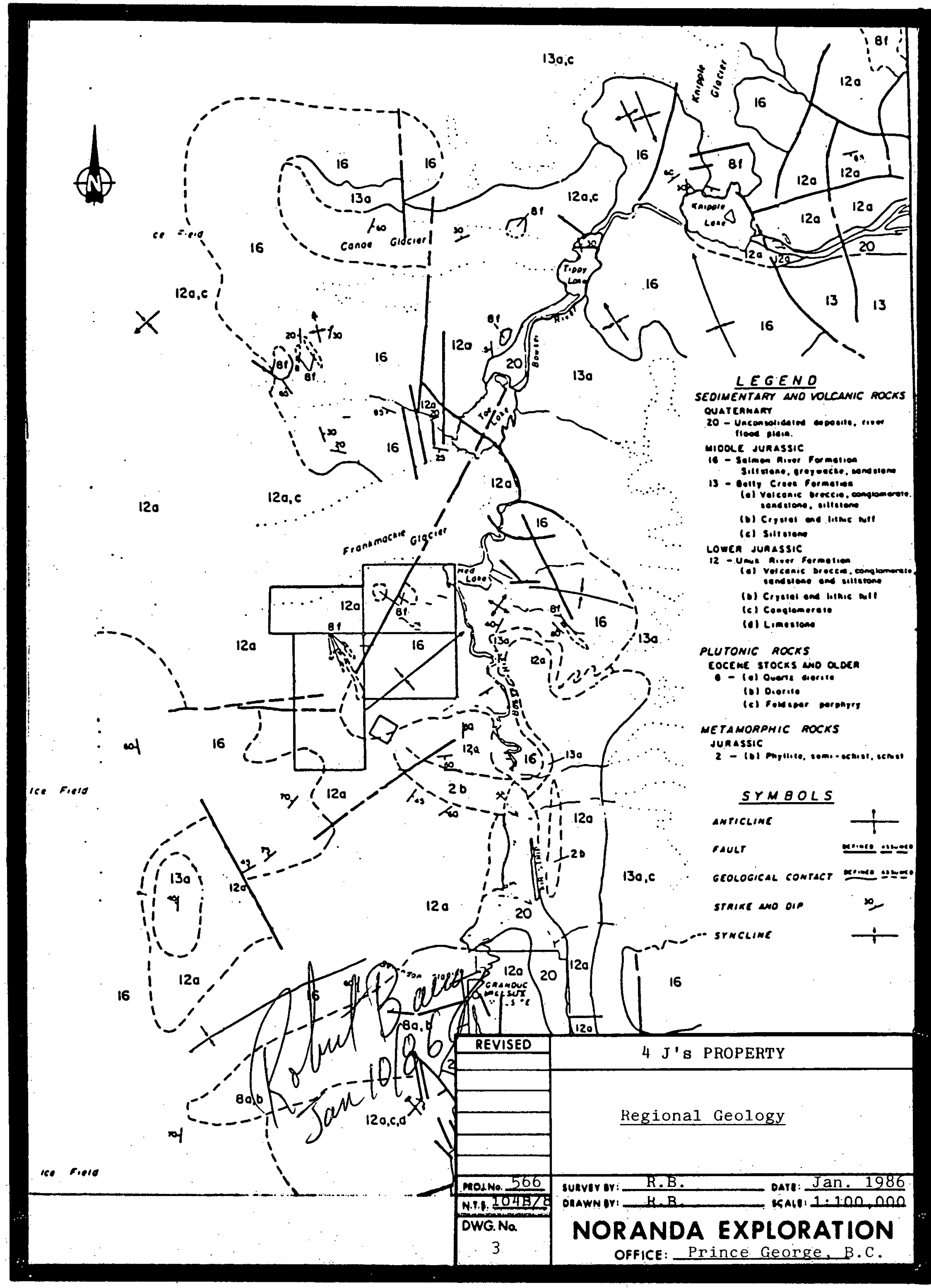

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4 J's PROPERTY

Regional Geology

PROJ.No. 566
N.T.S. 104B/8
DWG.No. 3

SURVEY BY: R.B. DATE: Jan. 1986
DRAWN BY: R.B. SCALE: 1:100,000

NORANDA EXPLORATION
OFFICE: Prince George, B.C.

The mapped area is largely underlain by black argillite, conglomerate, greywacke, andesitic tuffs and volcaniclastics of Alldricks Andesite Sequence of late Triassic-early Jurassic age. Bedding attitudes generally vary from NNW to NE with steep to moderate westerly dips. The northeastern part of the grid is largely underlain by fine to coarse grained epiclastic sediments consisting of black argillite, greywacke and chert-quartz pebble conglomerate. To the north and west there is an increase in the amount of volcanic rocks to where the volcanic rocks predominate. The volcanic assemblage consists of pale green siliceous bedded tuffs and dark green, fine to coarse, chloritic andesitic volcaniclastics. Little if any structure was observed within the volcaniclastics.

Both the sediments and volcanics are in turn intruded by two distinct phases of intrusive rocks. The older intrusive, a dark green coarse, chlorite altered, feldspar porphyry occurs as very irregular plugs and sills generally in contact with the volcanic rocks. The younger intrusives, light green, 1-3 m wide fine grained hornblende-feldspar porphyry dykes, cut all the other rock types and exhibit a very consistent NW to NNW trend. The dykes, which appear quite fresh, appear to have been emplaced after most of the regional deformation took place, whereas the feldspar porphyry appears to be of relatively similar age as the volcanics.

ALTERATION:

Locally the volcaniclastics, argillite and feldspar porphyry have been altered. In the volcaniclastics and feldspar porphyry the alteration assemblage consists of carbonate-quartz-sericite-pyrite with the rock taking on a pale grey-white bleached appearance on a fresh surface and a rusty brown color on the weathered surface. In the argillite the alteration is represented by abundant hairline limonite-quartz-carbonate veins and abundant limonite on fractures.

Much of the alteration on the property is related to N-NE trending fractures which have been filled by narrow quartz-calcite veins. Two exceptions to this are the altered areas on the north ends of Lines 9200 and 9300 E and the area along the 10000N baseline between L9550E and 9400E. In these two areas there is a higher concentration of veining and the veins tend to have a more random orientation. Subsequently, these areas of alteration are larger.

It is unclear at present what the source of the hydrothermal fluids was but the following observations can be made:

1. The alteration occurs only in the argillites, volcaniclastics and feldspar porphyry. Therefore, the alteration must be the same age or younger than the feldspar porphyry.

2. The hornblende-feldspar porphyry dykes generally are not located proximal to areas of alteration and where they do

contact altered rock the dykes appear to crosscut the alteration. Therefore the dykes appear to be a post-alteration feature.

MINERALIZATION:

Mineralization on the property consists of:

1) narrow, 1-10 cm wide quartz veins with minor amounts of sphalerite, galena and bournonite,
2) narrow, 10-50 cm wide, pyrite +/- arsenopyrite +/- sphalerite veins and shears,
3) disseminated pyrite in felsic tuffs and/or argillite,
4) vuggy quartz vein boulders with
   (a) abundant galena and bournonite,
   (b) bournonite and sphalerite,
5) altered argillite cobbles with
   (a) sphalerite, bournonite and antimony,
   (b) banded sphalerite and galena,
   (c) native antimony and
6) massive sphalerite-pyrite cobbles.

Of these only types 1-3 and 5a were actually observed "in place". Types 4a and 4b were found only as float boulders. These boulders form a distinct boulder train which extends from the edge of the ice between lines 9400E and 9600E to the northern end of line 9700E and possibly further. Boulders in this train range in size from 10 cm X 20 cm to 50 cm X 100 cm.

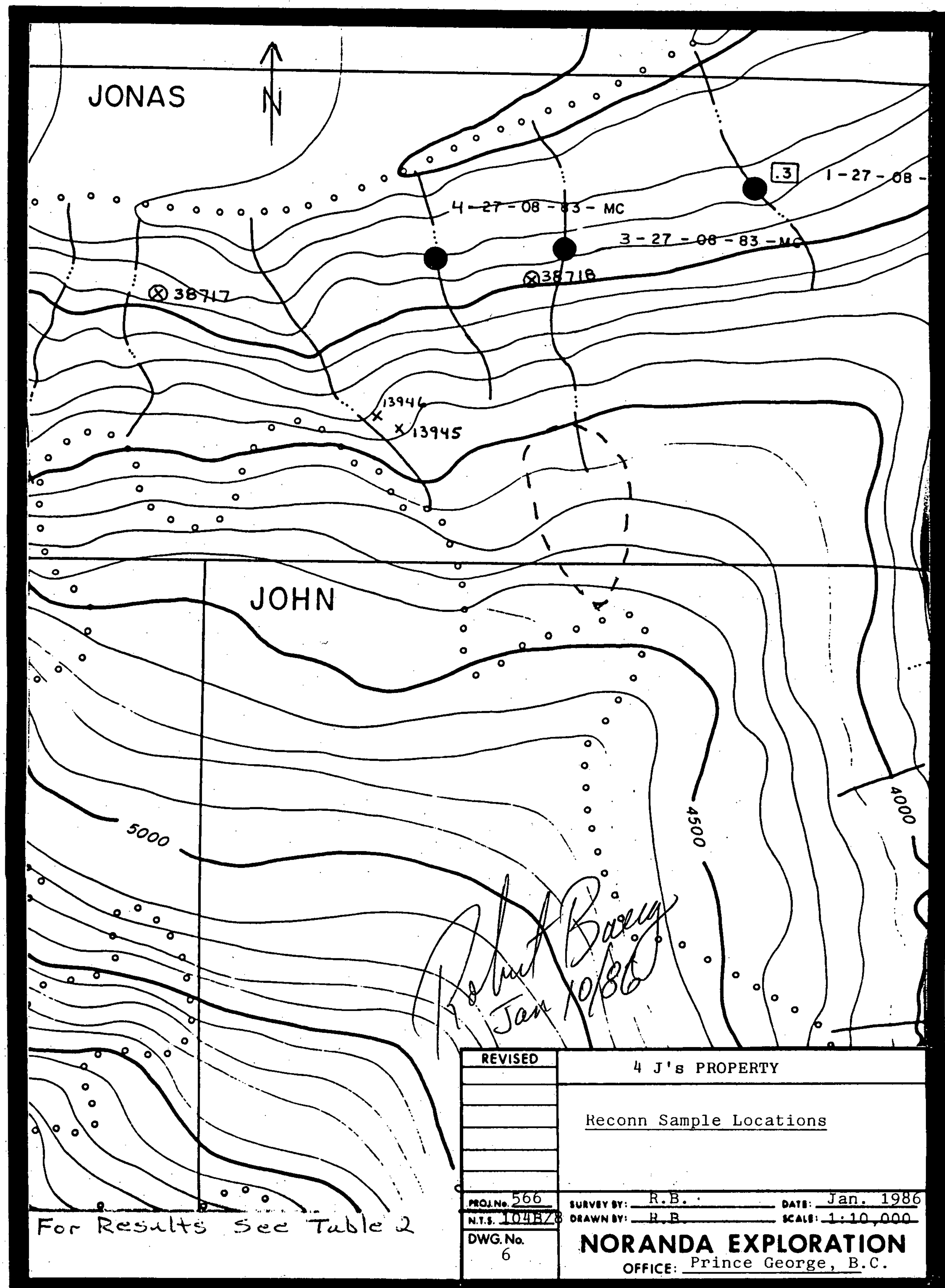
As well, a new area of mineralized float was found further to the north on the northern ends of lines 9300E and 9200E. The mineralized float, which is coincident with an area of alteration, consists of sphalerite, bournonite, antimony +/- galena (Type 5a). Two creeks which directly drain the area of mineralized float were silt samples in 1983 by Kruchkowski and were anomalous in Pb, Zn Cu, Ag, As and Au (Figure 6, Table 2).

TABLE 2

(_) Area of Mineralized float
● 1983 Silt Samples (corrected locations)
X,⊗ 1985 Rock/float samples

Sample #	Cu	Pb	Zn	Ag	As	Au	Sb
3-27-08-83-MC	628	134	330	4.0	175	264	--
4-27-08-83-MC	105	164	177	1.1	245	35	--
13945	--	42	62	0.6	2480	130	42
13946	--	52	58	3.0	13200	500	92
38717	--	610	150	23.8	>40000	2640	212
38718	--	740	4600	5.2	1400	170	92

Type 5b mineralization was not observed in the field due to a thick snow cover which had covered the trenches where this mineralization occurred. However, sampling by Kruchkowski (1983)



REVISED	4 J's PROPERTY
	Reconn Sample Locations

PROJ. No. 566
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DWG. No. 6

SURVEY BY: R.B.
DRAWN BY: R.B.
DATE: Jan. 1986
SCALE: 1:10,000

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reportedly returned values of 9% Zn, 5% Pb, and 2 oz/t Ag.

Table 3 shows the relationship between mineralization type and metal values.

TABLE 3 (all values in ppm except where noted)

Sample #	Min. Type	Cu	Pb	Zn	Ag	As	Sb	Au (ppb)
82026	4b	--	1800	1820	4.0	5300	410	690
82027	2	--	48	90	1.2	122	22	40
82028	1	--	840	12200	7.4	380	436	20
82029	1	--	630	700	0.6	58	26	10
82030	1	--	3720	8600	6.8	1920	1800	440
82031	3	--	48	198	0.2	10	6	10
82032	3	--	48	138	0.2	6	10	10
82033	4a	--	>4%	496	580	1040	12400	670
82034	3	--	720	62	1.8	6	62	10
82035	3	--	72	158	0.2	2	12	10
82036	3	--	74	86	0.2	6	8	10
82037	3	--	50	98	0.2	4	2	10
82038	2	--	8	98	0.8	130	32	10
82039	3	--	290	300	2.0	68	30	10
82040	2	--	6	108	0.4	94	56	10
82041	2	--	14200	3260	6.4	34	54	10
82042	2	--	66	80	0.2	14	6	10
82043	5a	--	31200	>4%	40.0	280	>2%	140
82044	1	--	7400	6000	14.6	86	318	90
82045	2	--	134	206	7.2	22	106	80
82046	2	--	40	232	4.4	74	112	130
82047	1	--	34	100	6.2	84	62	120
82048	2	--	20	38	5.6	42	68	210
82049	2	--	52	104	1.2	26000	102	680
82050	1	--	266	7200	0.6	82	210	10
13944	3	--	74	80	2.8	200	12	100
13945	2	--	42	62	0.6	2480	42	130
13946	2	--	52	58	3.0	13200	92	500
13947	6	--	24	>4%	6.2	356	6	2300
13948	3	--	22	38	2.0	62	74	30
13949	2	--	96	416	3.6	10000	122	210
13950	4b	--	2620	4300	16.4	1520	4080	700

(TABLE 3 - continued)

		Cu	Pb	Zn	Ag	As	Sb	Au
		%	%	%	oz/t	%	%	oz/t
82051	5c		.06	.04	.016	.02	12.4	.001
82052	4a		48.2	.02	35.5	.04	3.54	.062
82053	4b	.05	3.28	1.08	1.44	--	.88	.032
82054	4b	.66	7.32	10.88	1.88	--	3.26	.001
82055	4b	.01	0.78	1.56	0.52	--	.04	.008
82056	4a	.01	23.60	.08	19.8	--	.10	.036
82057	4b	.06	6.76	.46	1.42	--	2.62	.072
82058	4a	.56	41.00	.08	32.40	--	1.50	.038
82059	4a	.10	17.30	3.08	13.20	--	1.68	.050
82060	4a	.04	34.20	.20	27.80	--	.62	.076
82061	5a	.38	8.00	4.84	3.26	--	2.50	.001
82064	5a	1.42	5.76	1.06	2.76	--	2.38	.001
82067	5a	1.02	3.32	17.10	3.64	--	1.60	.001
82068	5a	.50	1.62	31.60	2.18	--	0.82	.001
82069	5a	.06	0.74	0.98	0.34	--	0.12	.001
82071	5a	.02	0.74	1.08	0.62	--	.04	.001
		(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppb)
82063	3	48	88	110	2.4	--	58	10
82065	3	76	8	22	6.2	--	50	1660
82066	3	34	20	48	10.0	--	26	170
82070	3	108	30	284	1.8	--	42	10
38713	3	--	54	480	0.6	18.0	20	10
38714	5c	--	40	212	0.4	30.0	>2%	10
38715	4b	--	86	940	0.8	28400	118	720
38716	4b	--	31400	>4%	33.2	2200	>2%	2760

From Table 3 the following observations are made:

1. Mineralization types 1, 2 and 3 generally do not carry appreciable amounts of precious and/or base metals.
2. The highest Ag values (>10 oz/t) occur in quartz veins (type 4a) which contain predominantly Pb minerals (>10%), trace to 3% Zn, trace to minor As, minor to 3.5% Sb and .02 to .076 oz/t Au.
3. Higher Au values (> or equal to 500 ppb) correlate with high As values, high Pb-Ag +/- Sb values and locally with high Zn values.
4. The argillite hosted mineralization, type 5a, while carrying significant base metals, contains only minor Ag (<4 oz/t) and only trace Au.

It is clear from the previous data and observations that only types 4a, 4b, 5a and 5b represent potentially economic mineralization. The average values for these mineralization types are listed in Table 4.

TABLE 4

Mineral. Type	Cu %	Pb %	Zn %	Ag (oz/t)	Au (oz/t)	Sb %	# of samples
4a	0.18	28.05	0.59	24.54	.047	1.45	6
4b	0.20	2.72	2.33	0.86	.034	1.16	8
5a	0.57	3.33	8.67	2.01	.001	1.35	6
5b	--	5.0	9.0	2.0	--	--	--
5c	tr	tr	tr	0.10	.001	7.20	2
6	tr	tr	>4%	0.20	.073	tr	1

It should be noted that the samples which make up the above averages were "high grade" samples, selected vein material with little or no wallrock dilution.

GEOPHYSICS:

Pulse EM system

The Pulse E.M. system was manufactured by Crone Geophysics of Ontario. This transient time domain E.M. system measures at eight discrete time intervals the time derivative of the secondary magnetic field which is generated by the induced current flow following the application of a strong primary E.M. pulse. The survey parameters were:

Loop size	: 13 meters
Coil separation	: 100 meters
Timebase	: 10 ms
Synchronization	: radio
Reading interval	: 25 meters.

SE-88 EM System

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 separation	: 100 and 50 meters
Frequencies	: 3037, 1012, 337 Hz
Reference frequency	: 112 Hz
Integration period	: 16 seconds
Reading interval	: 25 meters
Measurement	: ratio of amplitude between reference and signal frequencies (%).

MP-3 Magnetometer System

Magnetometers manufactured by Scintrex Ltd. of Concord, Ontario were employed for these surveys. The MP-3 Total Field Magnetometer System consists 1of 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.

Discussion of Results

Geophysical surveys consisting of SE-88 E.M., inline Pulse E.M. and magnetometer surveys were completed within the property grid. The SE-88 E.M. survey was completed on the main grid employing a 100 meter coil separation and three lines were detailed employing a 50 meter coil separation. (Figures 7 & 8) A weak E.M. response was recorded in the (grid) southwest corner as indicated on the E.M. map. The location of this axis is not considered accurate due to the low amplitude of the E.M. response. No dip, depth or conductivity values can be extracted from this data.

The Pulse E.M. survey employed a 100 meter coil separation and was completed on Lines 9400E and 9500E. (Figures 9 & 10) A low conductivity (2 channel response) conductor response was recorded on both lines. This zone is the same as recorded by the SE-88 survey, however, the definition of the target is superior with the PEM data, however, insufficient to determine the conductivity or dip.

The magnetometer survey recorded values between 439 nT and 557 nT on a 57,000 nT datum. A north south (true) trend is evident, however, in the area of the conductor an east-west (true) trend is evident. (Figure 11)

CONCLUSIONS:

The 4 Jays property is underlain by Triassic-Jurassic epiclastic and volcanic sediments which have been intruded by feldspar porphyry and hornblende-feldspar porphyry dykes. Locally the feldspar porphyry, volcanics and sediments have been hydrothermally altered to carbonate-quartz-sericite-pyrite-limonite. Sphalerite, bournonite, antimony and galena occur as veins and disseminations within two of these altered areas. The areal extent of this mineralization is small, the largest visible area being approximately 25 m X 50 m. The other area, in the North Zone, is still largely covered by ice but the size of the boulders and the boulder train appear to indicate a small source. This type of mineralization carries low precious metal values, Ag to 3.26 oz. and trace Au.

Quartz vein boulders which contain coarse galena and bournonite appear to offer the best potential for economic grade mineralization. Selected samples of this material returned an average of 28.05% Pb, 24.5 oz/t Ag, .047 oz/t Au and 1.45% Sb.

The source (or sources) of these boulders appears to be located under the glacial ice in the western part of the grid area. Assuming the grade of mineralization found in the boulder trains to be representative of mineralized bodies under the ice then substantial tonnages would be required to be economic. Since the HLEM and PEM surveys indicated only a weak conductor of limited size, it seems unlikely that the source of this conductor would be large enough to represent an economic deposit.

Two reasonable possibilities remain untested. First the conductor indicated on Figure 7 is not well closed off to the west (due to the ice conditions in that area it was unsafe to extend the surveys any further west). The possibility exists that the conductor indicated may strengthen and increase in width etc. along strike to the west.

Second, a strong possibility exists that the source of the mineralized boulders may be a very poor conductor and can only be located by drilling.

It is felt that the high costs involved in pursuing these possibilities in this terrain outweighs the limited potential and no further work is recommended at this time.

RECOMMENDATIONS:

No further work is recommended.

REFERENCES:

Alldrick, D.J. (1985): Stratigraphy and Petrology of the Stewart Mining Camp, B.C. Ministry of Energy, Mines and Petroleum Resources Geological Fieldwork, 1984, Paper 1985-1, pp. 316-342.

Carter, N.C. (1985): Geological Report on the 4 J's Property, Skeena Mining Division, British Columbia, N.T.S. 104B/8E. Private report for Canadian-United Minerals Inc.

Grove, E.W. (1983): Geology of the Unuk River-Salmon River-Anyox May-area, B.C. Ministry of Energy, Mines and Petroleum Resources, Miscellaneous map series (coloured maps to accompany Bull. 63, in progress)

Hanson, G. (1935): Portland Canal Area, British Columbia, Geological Survey of Canada, Memoir 175

Kruchkowski, E.R. (1983): Report on 4-J Property, Bowser River Area, Stewart District, British Columbia, N.T.S. 104 B/8E, Private report for Billiken Resources Inc.

APPENDIX I

STATEMENT OF QUALIFICATIONS

I, Robert J. Baerg of the City of Prince George, Province of British Columbia, do certify that:

1. I have been employed as a geologist by Noranda Exploration Company, Limited since May, 1984.

2. I am a graduate of the University of British Columbia with a Bachelor of Science (Honors) in Geology (1984).

3. I supervised and assisted with the work described in this report.

Robert J. Baerg
Geologist
Noranda Exploration Company, Limited
(No Personal Liability)

APPENDIX II

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

DATE: October 1985

PROJECT - 4 Jays
TYPE OF REPORT - Geology, Geochem, Geophysics & Linecutting

a) **Wages:**

No. of Days -	67 mandays	
Rate per Day -	$107.67	
Dates From -	July - September 1985	
Total Wages -	67 X $107.67	$ 7,213.89

b) **Food and Accommodation:**

No. of Days -	67	
Rate per Day -	$40.32	
Dates From -	July - September 1985	
Total Cost -	67 X $40.32	$ 2,701.44

c) **Transportation:**

No. of Days -	67	
Rate per Day -	$111.02	
Dates From -	July - September 1985	
Total Cost -	67 X $111.02	$ 7,438.34

d) **Analysis:** $ 1,330.50

e) **Cost of Preparation of Report:**

Author	$ 275.00
Drafting	275.00
Typing	275.00

TOTAL COST: $ 19,509.17

UNIT COSTS

Unit Costs for Geophysics

No. of Days -	40	
No. of Units -	11.48 L Km	
Unit Costs -	$770.41/L Km	
Total Cost -	11.48 X 770.41	$ 8,844.34

Unit Costs for Geology

No. of Days -	27	
No. of Units -	27 mandays	
Unit Costs -	$323.49	
Total Cost -	27 X 323.49	$ 8,734.33

Unit Costs for Geochem

No. of Units -	59 Samples	
Unit Costs -	$32.72/Sample	
Total Cost -	59 X 32.72	$ 1,930.50

TOTAL COST **$19,509.17**

DETAILS OF ANALYSES COSTS:

Element	# of Determination	Cost/Determination	TOTAL
Cu	21	$ 2.25	$ 47.25
Zn	59	2.25	132.75
Pb	59	2.25	132.75
Ag	59	2.25	132.75
Au	59	7.50	442.50
As	59	7.50	442.50
		TOTAL:	$ 1330.50

APPENDIX III

ANALYTICAL METHOD DESCRIPTIONS FOR GEOCHEMICAL ASSESSMENT REPORTS

The methods listed are presently applied to analyse geological materials by the Noranda Geochemical Laboratory at Vancouver.

Preparation of Samples

Sediments and soils are dried at approximately 80°C and sieved with a 80 mesh nylon screen. The -80 mesh (0.18 mm) fraction is used for geochemical analysis.

Rock specimens are pulverized to -120 mesh (0.13 mm). Heavy mineral fractions (panned samples * from constant volume), are analysed in its entirety, when it is to be determined for gold without further sample preparation.

Analysis of Samples

Decomposition of a 0.200 g sample is done with concentrated perchloric and nitric acid (3:1), digested for 5 hours at reflux temperature. Pulps of rock or core are weighed out at 0.4 g and chemical quantities are doubled relative to the above noted method for digestion.

The concentrations of Ag, Cd, Co, Cu, Fe, Mn, Mo, Ni, Pb, V and Zn can be determined directly from the digest (dissolution) with a conventional atomic absorption spectrometric procedure. A Varian-Techtron, Model AA-5 or Model AA-475 is used to measure elemental concentrations.

Elements Requiring Specific Decomposition Method:

Antimony - Sb: 0.2 g sample is attacked with 3.3 ml of 6% tartaric acid, 1.5 ml conc. hydrochloric acid and 0.5 ml of conc. nitric acid, then heated in a water bath for 3 hours at 95°C. Sb is determined directly from the dissolution with an AA-475 equipped with electrodeless discharge lamp (EDL).

Arsenic - As: 0.2 - 0.3 g sample is digested with 1.5 ml of perchloric 70% and 0.5 ml of conc. nitric acid. A Varian AA-475 equipped with an As-EDL is used to measure arsenic content in the digest.

Barium - Ba: 0.1 g sample digested overnight with conc. perchloric, nitric and hydrofluoric acid; Potassium chloride added to prevent ionization. Atomic absorption using a nitrous oxide-acetylene flame determines Ba from the aqueous solution.

Bismuth - Bi: 0.2 g - 0.3 g is digested with 2.0 ml of perchloric 70% and 1.0 ml of conc. nitric acid. Bismuth is determined directly from the digest with an AA-475 complete with EDL.

Gold - Au: 10.0 g sample is digested with aqua regia(1 part nitric and 3 parts hydrochloric acid). Gold is extracted with MIBK from the aqueous solution. AA is used to determine Au.

Magnesium - Mg: 0.05 - 0.10 g sample is digested with 4 ml perchloric/nitric acid (3:1). An aliquot is taken to reduce the concentration to within the range of atomic absorption. The AA-475 with the use of a nitrous oxide flame determines Mg from the aqueous solution.

Tungsten - W: 1.0 g sample sintered with a carbonate flux and thereafter leached with water. The leachate is treated with potassium thiocyanate. The yellow tungsten thiocyanate is extracted into tri-n-butyl phosphate. This permits colourimetric comparison with standards to measure tungsten concentration.

Uranium - U: An aliquot from a perchloric-nitric decomposition, usually from the multi-element digestion, is buffered. The aqueous solution is exposed to laser light, and the luminescence of the uranyl ion is quantitatively measured on the UA-3 (Scintrex).

* N.B. If additional elemental determinations are required on panned samples, state this at the time of sample submission. Requests after gold determinations would be futile.

LOWEST VALUES REPORTED IN PPM

Ag - 0.2	Mn - 20	Zn - 1	Au - 0.01
Cd - 0.2	Mo - 1	Sb - 1	W - 2
Co - 1	Ni - 1	As - 1	U - 0.1
Cu - 1	Pb - 1	Ba - 10	
Fe - 100	V - 10	Bi - 1	

EJvL/ie
March 14, 1984

GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,386

Robert Baerg
Jan 10/86

TABLE OF GEOCHEM ANALYSES

SAMPLE #	Ag (ppm)	Zn (ppm)	Pb (ppm)	As (ppm)	Sb (ppm)	Au (ppb)
82026	4.0	1820	1880	5300	410	690
82027	1.2	90	48	122	22	40
82028	7.4	12200	840	380	436	20
82029	0.6	700	630	58	26	10
82030	6.8	8600	3720	1920	1800	440
82031	0.2	198	48	10	6	10
82032	0.2	138	48	6	10	10
82033	580.0	496	>40000	1040	12400	670
82034	1.8	62	720	6	- 62	10
82035	0.2	158	72	2	12	10
82036	0.2	88	74	6	8	10
82037	0.2	98	50	4	2	10
82038	0.8	98	8	130	32	10
82039	2.0	300	290	68	30	10
82040	0.4	108	6	94	56	10
82041	6.4	3260	14200	34	54	10
82042	0.2	80	66	14	6	10
13947	6.2	>40000	24	356	6	2300
13948	2.0	38	22	62	74	30
13949	3.6	416	96	10000	122	210
13950	16.4	4300	2620	1520	4080	700
38713	0.6	480	54	18	20	10
38714	0.4	212	40	30	>20000	10
38716	33.2	>40000	31400	2200	>20000	2760

REVISED
S.K.B. Sept., 1985

FOUR JAY'S OPTION

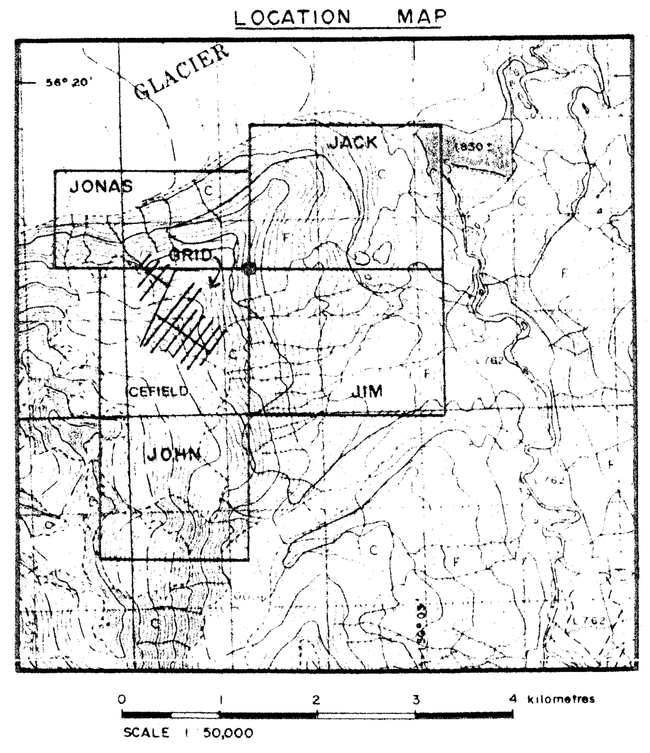
GEOLOGY MAP
(SOUTH ZONE)

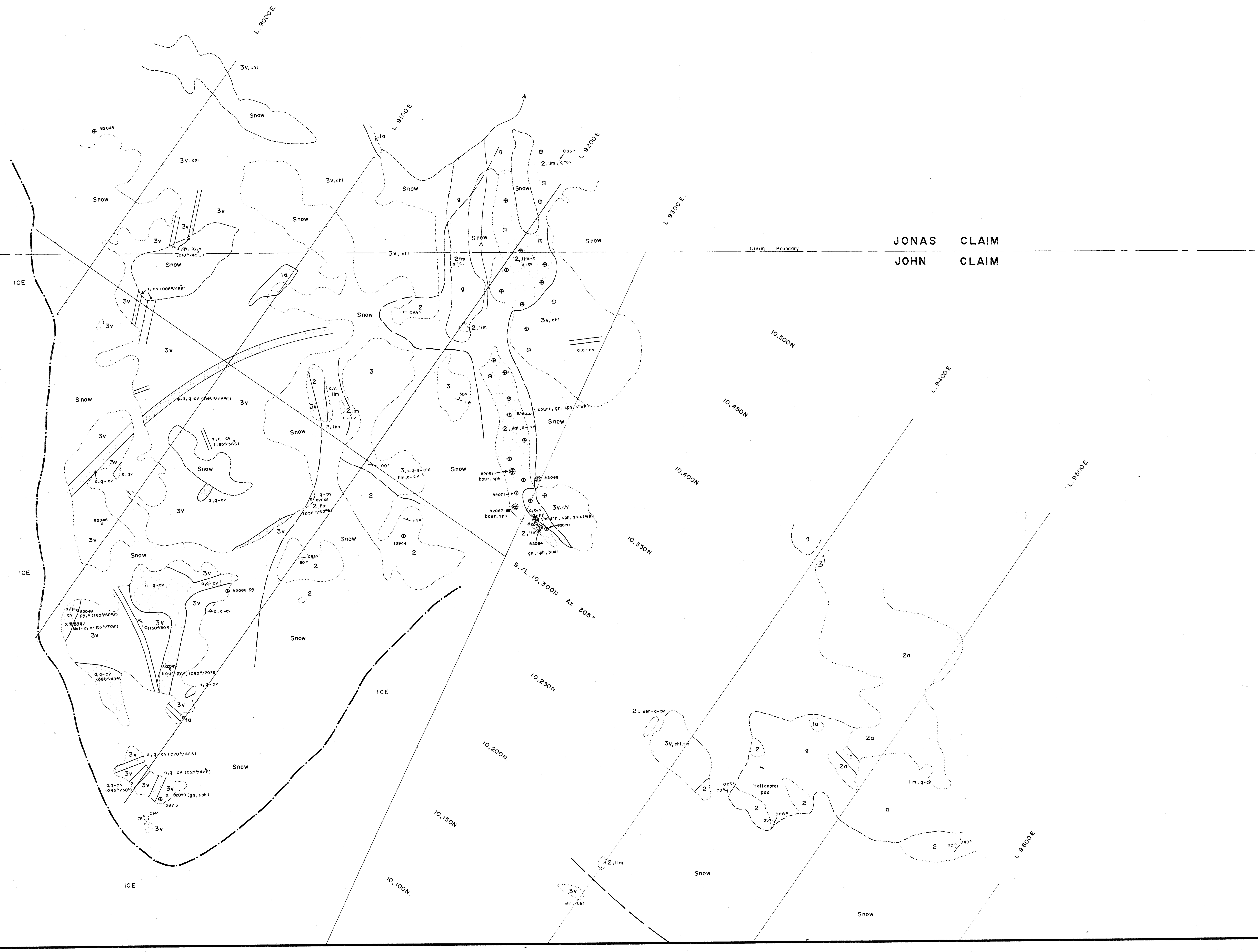
PROJ. No. 266
N.T.S. 104B/8
DWG. No. FIG. 4

SURVEY BY: R. Baerg DATE: AUG. 1, 1985
DRAWN BY: S.K.B. SCALE: 1:1000

NORANDA EXPLORATION

OFFICE: PRINCE GEORGE, B.C.





LEGEND

ROCK TYPES

1a	Hornblende Feldspar Porphyry Dykes and Sills (younger than 1)
1	Feldspar Porphyry Intrusive
2	Bedded Black Argillite, minor interbedded tuff ; 2a - quartz - chert-argillite pebble conglomerate, sandstone, greywacke.
3	Andesitic - Dacitic Tuff, minor interbedded black argillite 3v; undifferentiated Andesitic volcaniclastics (breccia, tuff, greywacke) and hornblende - feldspar andesite flows, minor thin bedded black argillite

a	alteration	lim	limonite
q	quartz alteration	Az	Azurite
q.v.	quartz veining	mal	Malachite
c	carbonate alteration	bour	Bournonite
c.v.	carbonate veining	hf	hornfels
chl	chlorite alteration	cpy	chalcopyrite
ser, s	sericite alteration	gn	galena
py	pyrite or pyritic	sph	sphalerite
g	glacial debris	v	vein
		stwk	stockwork

SYMBOLS

- area of outcrop or glacial float
- Alteration boundary
- 210° 45° bedding (strike/dip)
- high grade / Low grade — Mineralized float (Galena, sphalerite, Bournonite, Tetrahedrite)
- jointing (strike/dip)
- x 82026 Rock Sample location
- foliation (strike/dip)
- Stream
- fault defined
- Trench
- Inferred fault
- Fold Axis (strike / plunge)
- Geologic contact (defined, inferred)
- Glacial debris cover
- Area of snow cover

TABLE OF GEOCHEM ANALYSES

SAMPLE #	Ag (ppm)	Zn (ppm)	Pb (ppm)	As (ppm)	Sb (ppm)	Au (ppb)
82043	40.0	>40000	31200	280	>20000	140
82044	14.6	6000	7400	86	318	90
82045	7.2	206	134	22	106	80
82046	4.4	232	40	74	112	130
82047	6.2	100	34	84	62	120
82048	5.6	38	20	42	68	210
82049	1.2	104	52	26000	102	680
82050	0.6	7200	266	82	210	10
13944	2.8	80	74	200	12	100
38715	0.8	940	86	28400	118	720

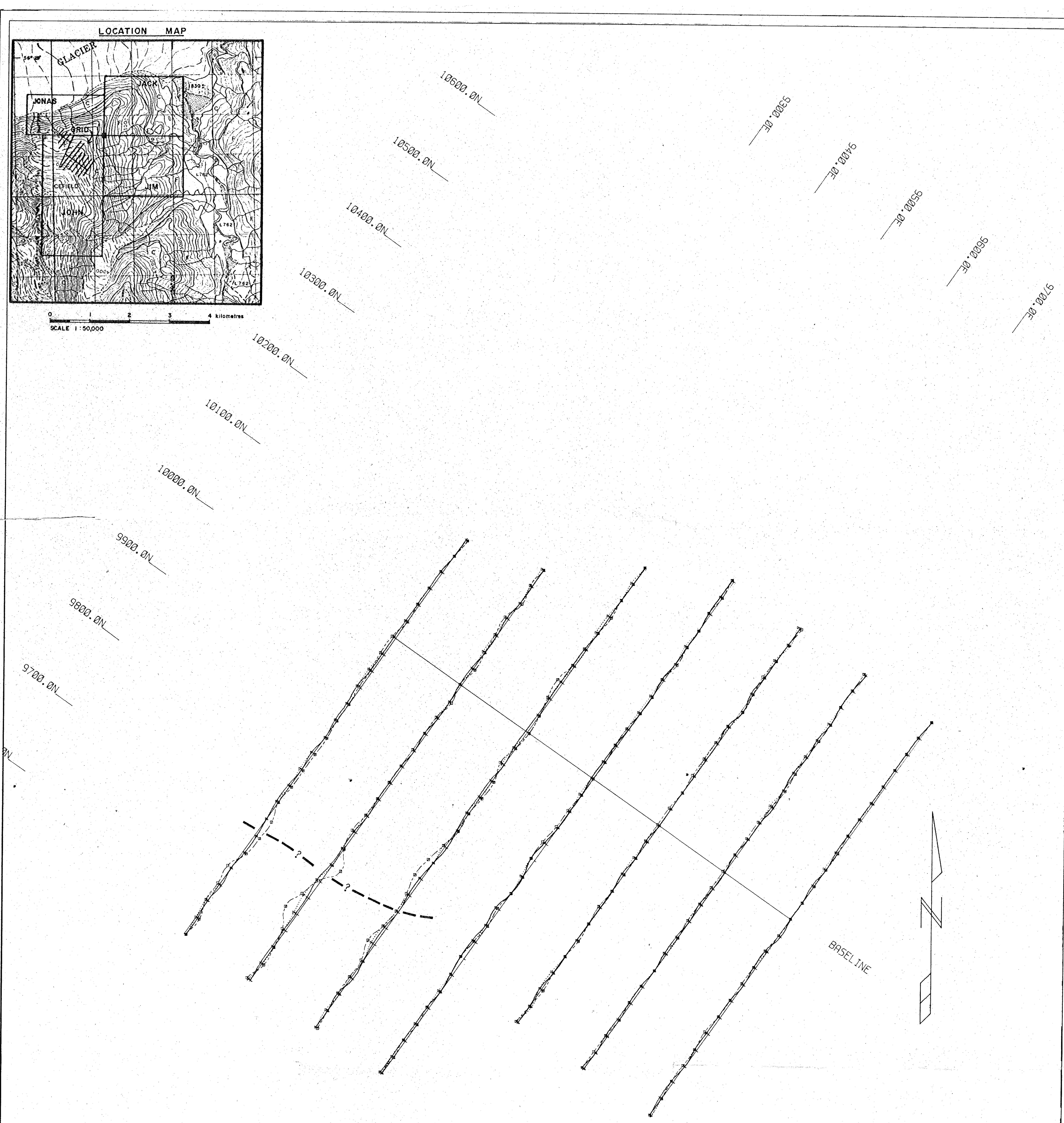
GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,386

Robert Baerg
Jan 10/86

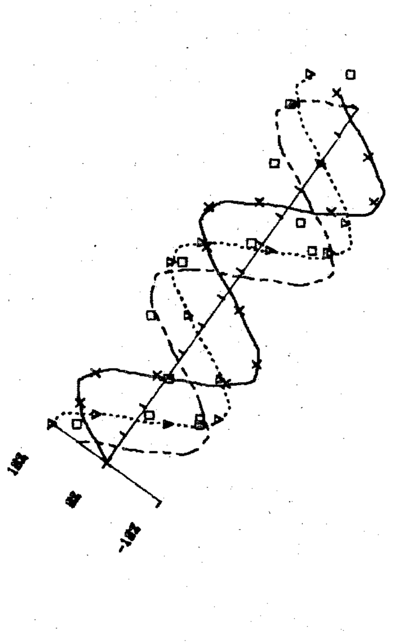
0 10 20 30 40 50 60 70 metres
SCALE 1 : 1,000

REVISED	FOUR JAY'S OPTION
S.K.B. Sept. 1985	GEOLOGY MAP (NORTH ZONE)
PROJ. No. 266	SURVEY BY: R. Baerg DATE: AUG. 1, 1985
N.T.S. 104 B/8	DRAWN BY: S.K.B SCALE: 1:1000
DWG. No. FIG. 5	NORANDA EXPLORATION OFFICE: PRINCE GEORGE, B.C.



GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,386



Instrument	: SE88
Coil Spacing	: 100m
Ref. Frequency	: 112Hz
Conductor Axis	— — —
337 Hz	
1012 Hz	
3037 Hz	

50m 25m 0m 50m 100m

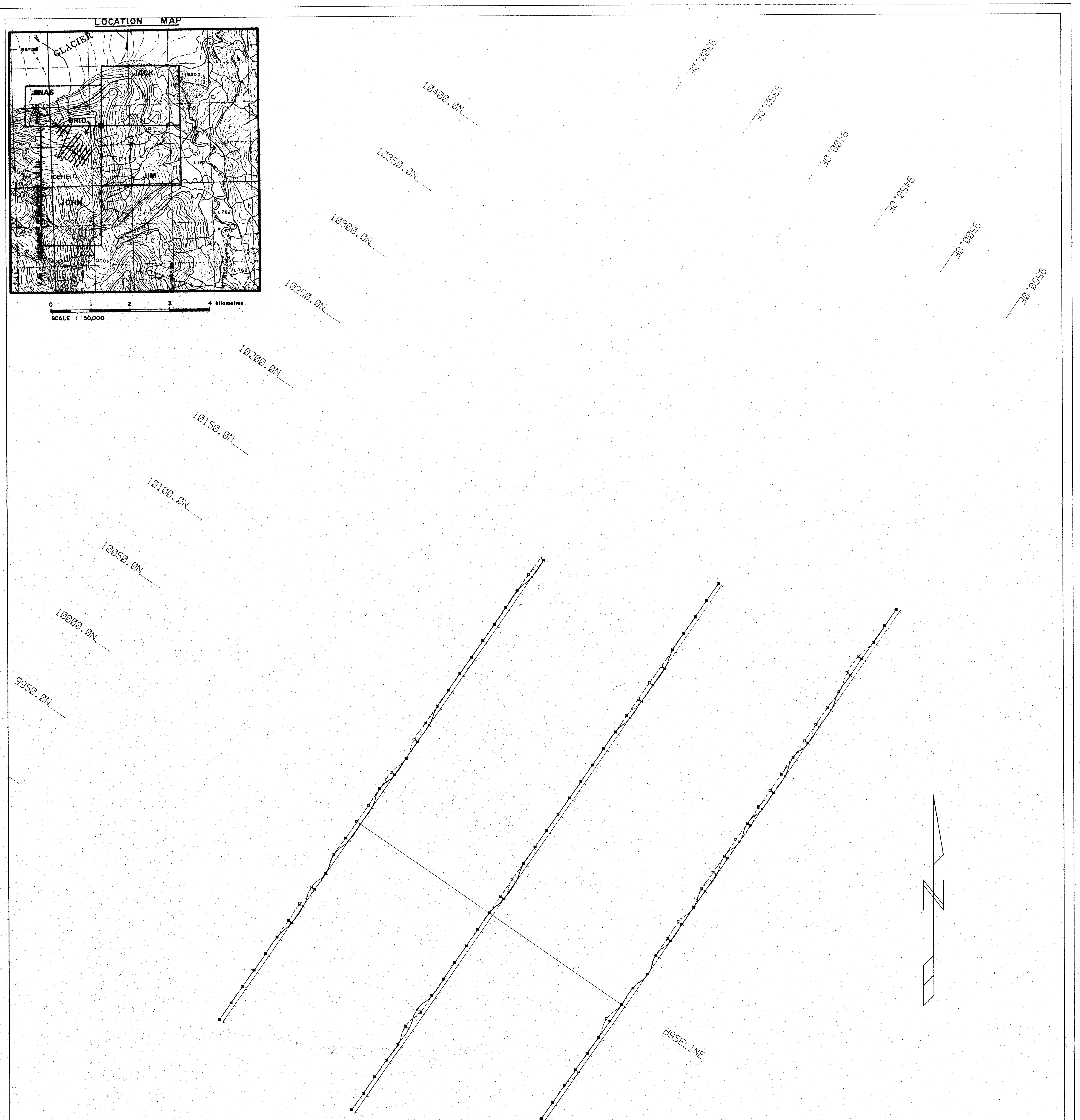
4-J`S

SE-88 SURVEY

PROJECT: STEWART PROJECT # : 266
BASELINE AZIMUTH : 305 Deg.

SCALE = 1: 2500 DATE : 7/27/85
SURVEY BY: K.L. NTS :
FILE: SM2664-J.Zat

FIG. 7 NORANDA EXPLORATION



GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,386

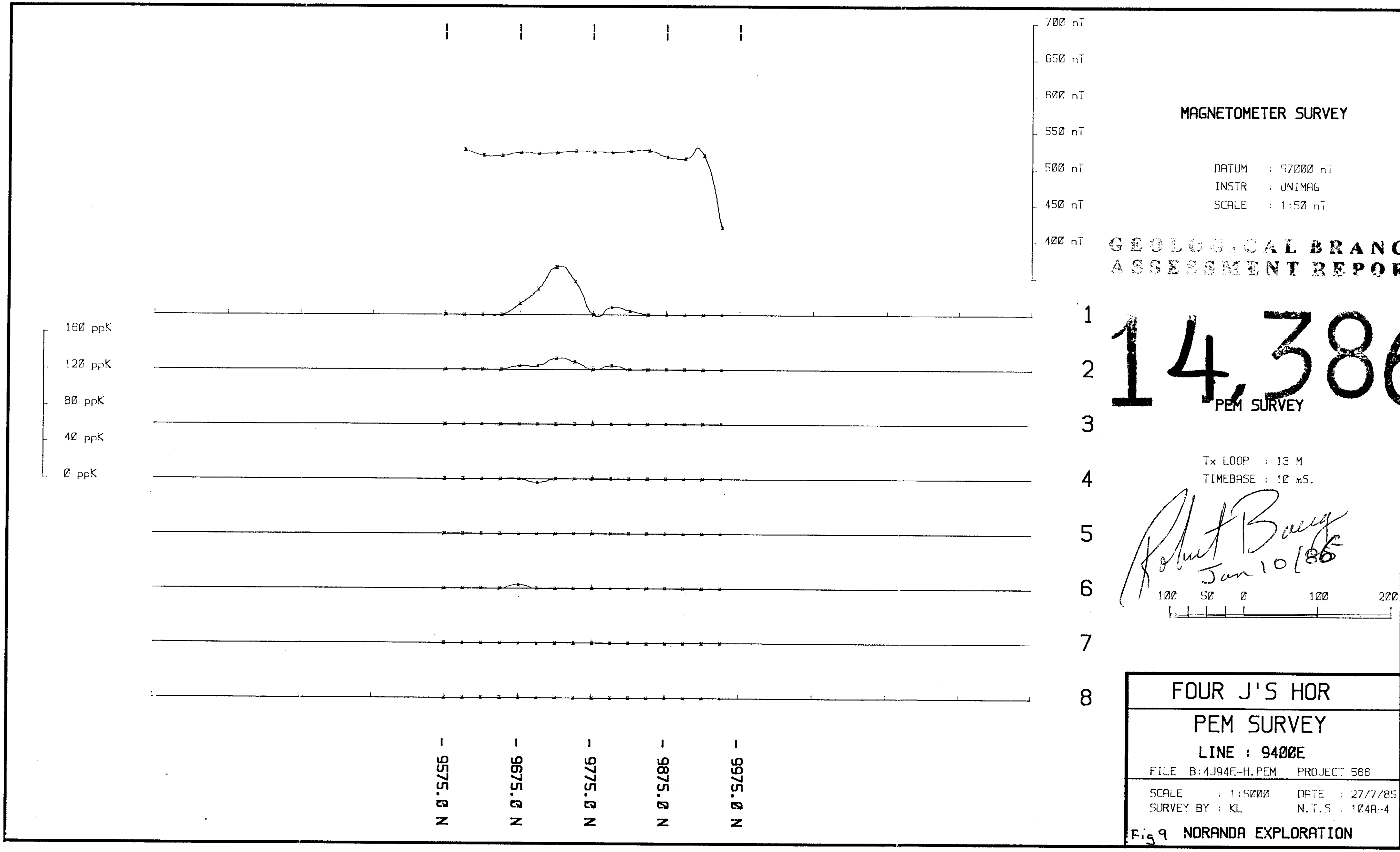
DETAIL

SE-88 SURVEY

PROJECT: STEWART PROJ.(4-J) PROJECT # : 266
BASELINE AZIMUTH : 305 Deg.

SCALE = 1: 1250 DATE : 0/ 7/85
SURVEY BY: KL NTS :
FILE: SM266DET.Zot

FIG. 8 NORANDA EXPLORATION



GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,386

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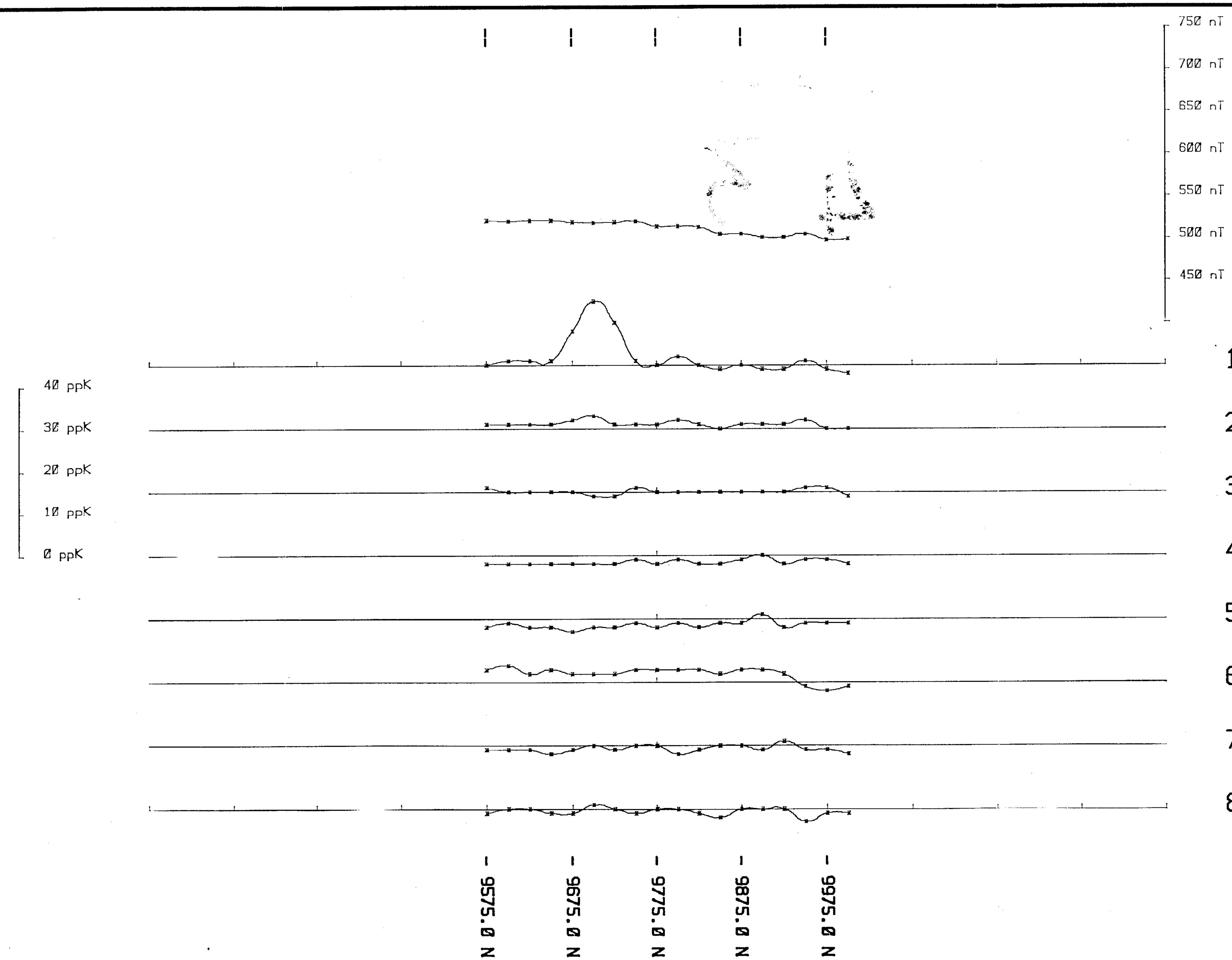

MAGNETOMETER SURVEY

DATUM : 57000 nT
INSTR : UNIMAG
SCALE : 1:50 nT

PEM SURVEY

Tx LOOP : 13 M
TIMEBASE : 10 mS.

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Jan 10/86

100 50 0 100 200

14,386

FOUR J'S-HOR

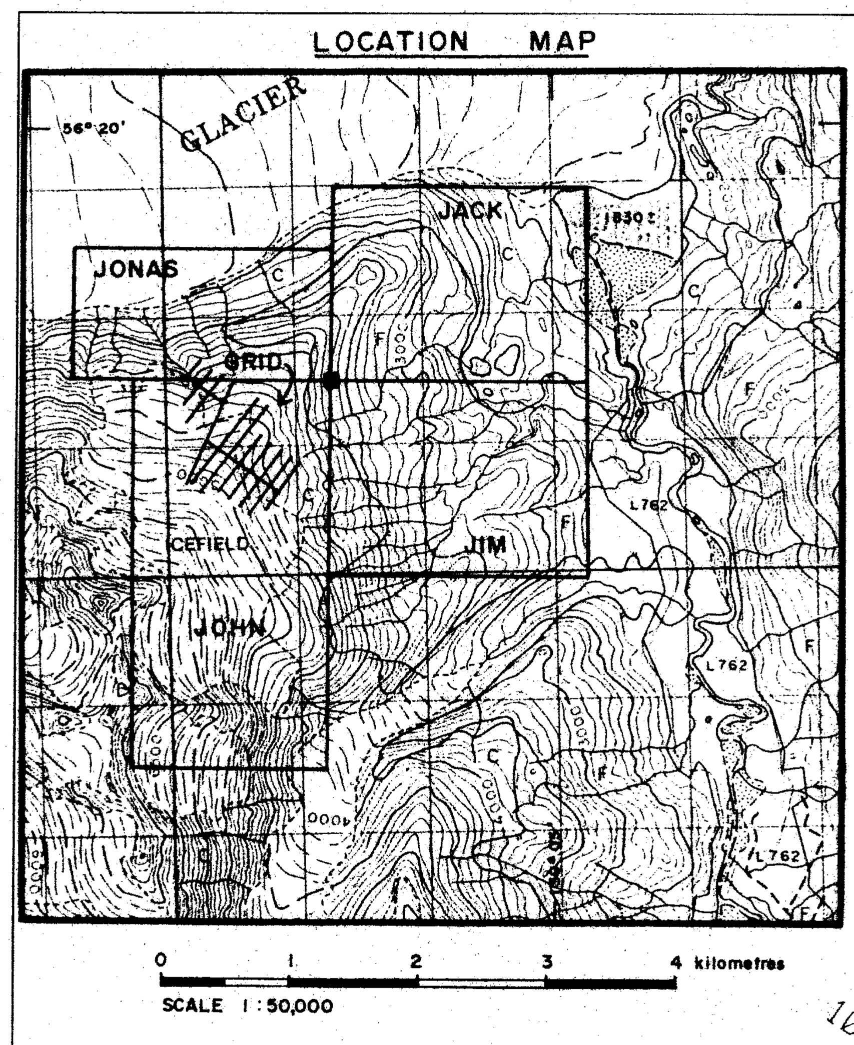
PEM SURVEY

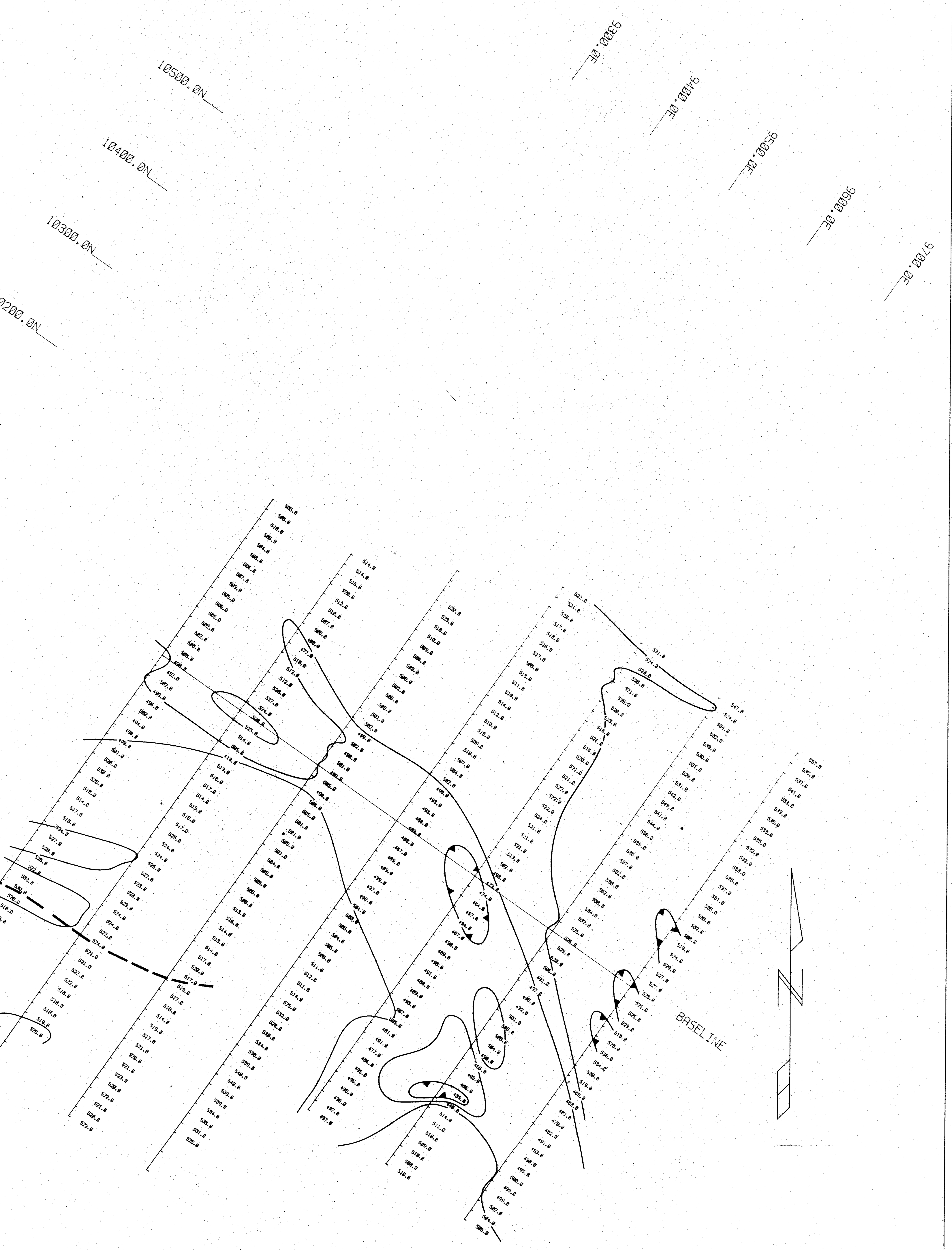
LINE : 9500E

FILE B:4J95E-H.PEM PROJECT 566

SCALE : 1:5000 DATE : 27/7/85
SURVEY BY : KL N.T.S : 104A-4

Fig 10 NORANDA EXPLORATION





GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,386

Instrument : UNIMAG

Datum Plane : 57000.0

Contour Interval : 50nT

Conductor Axis — — —

50m 25m 0m 50m 100m

Robert Baig
Jan 10/86

4-J'S
MAGNETOMETER SURVEY
PROJECT: STEWART PROJECT # : 266 BASELINE AZIMUTH : 305 Deg.
SCALE = 1: 2500 DATE : 7/28/85 SURVEY BY: K.L. NTS : FILE: MG2664-J.Zat

FIG. 11 NORANDA EXPLORATION