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REPORT

on 93 N/6E

MAGNETIC SURVEY of

HEATH COPPER PROPERTY

SENATE MINING & EXPLORATION LTD.

Egil Livgard, P. Eng

August, 1971

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INTRODUCTION

The writer was asked by SENATE MINING & EXPLORATION LTD. to carry out geological mapping and magnetic surveying on parts of its Heath Copper property in accordance with recommendations by the company's consulting geologist, Dr. R. H. Seraphim. The survey and mapping was conducted during July, 1971 and the costs were applied as assessment work.

The following is a report on the procedures and results of that magnetic survey.

SUMMARY

The property consists of 83 claims near Nation Mountain in the Omenica Mining Division. A magnetic survey was carried out on all or part of 24 of these claims.

The surveyed area lies on the south slope of Nation Mountain and is underlain by diorite, some syenite and quartz-feldspar dykes. The rocks have been lightly to extremely heavily altered primarily by feldspathization. In the centre of the claims a topographic "low" area has few outcrops, most of which show strongly shattered altered and oxidized rocks which contain copper stain and lenses, stringers and disseminated chalcopyrite.

A grid system was established over the claims with the baseline running north and south. Stations were established along the baseline every 400 feet and crosslines turned off at right angles. The crosslines were run out east and west and stations established every 200 feet. Magnetic readings were taken every 100 feet along all lines. 112,000 feet was surveyed.

The readings were adjusted, converted to gammas and plotted on a map and contoured every 1,000 gammas.

The survey confirmed a northwest striking zone 2,000 to 2,400 wide, running through the centre of the claims and

revealed a magnetic low area in the centre of this zone at its intersection with a fracture zone outlined on the areal photographs. This low magnetic intensity area coincides with a topographic "low" area in which the rocks are particularly heavily altered and contain copper mineralization.

The magnetic survey has narrowed down the primary exploration target from a sprawling soil geochemical anomaly covering 16 claims to an area approximately 3,600 feet by 2,400 feet.

CONCLUSIONS

The magnetic survey has extensively outlined the geology as mapped on the ground and outlined on aerial photos. The primary exploration target on the property has been narrowed down from a sprawling geochemical anomaly covering 16 claims to an area on the central zone (1) extending approximately from line 0 to line 3,600 north and being about 2,400 feet wide. This zone is an area of magnetic low at the intersection of several magnetic trends. It is considered a very favourable target and an induced polarization survey of about 6 to 8 line miles should be conducted to attempt to outline sulphide mineralization.

COST OF SURVEY

WAGES:

Benito D'Andrea

June 29th to July 20th, 1971 22 days @ $ 20 per day (+$ 10)		$ 450.00

Ian Heyes

June 29th to July 20th, 1971 22 days @ $ 20 per day (+$ 10)		450.00

Egil Livgard

June 29th to July 20th, 1971 22 days @ $ 100 per day	$ 2,200.00	
July 20th to 30th, 1971 10 days - reports and maps @ $ 100 per day	1,000.00	
	3,200.00	
3/4 of $ 3,200 allotted to mag survey (1/4 of $ 3,200 allotted to geology)		2,400.00
food and camp supplies	300.00	
helicopter to and from property	500.00	
travel	200.00	
	1,000.00	
5/6 of $ 1,000 allotted to mag survey (1/6 of $ 1,000 allotted to geology)		830.00
		$ 4,230.00

of which $ 3,600 is claimed
as assessment work

PROPERTY

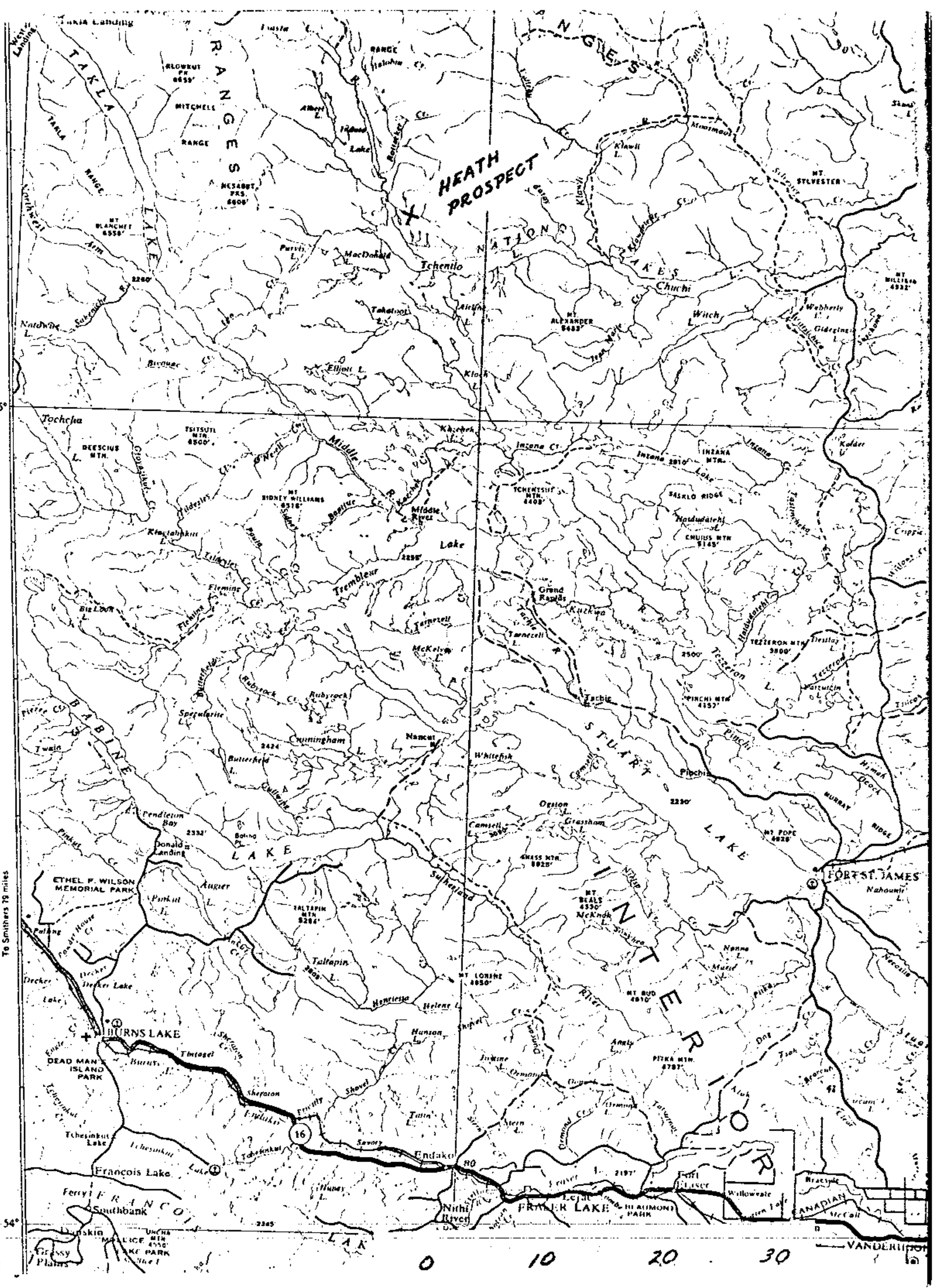
The property consists of 83 contiguous claims partly under option to and partly owned by the company.

The survey was carried out on Heath M.C.# 1, 2, 4-11 and N.S. M.C.# 18, 19, 36, 37, 44-47 and to a smaller extent on Heath M.C.# 20, N.S. # 1, 20, 21, 38 and 39.

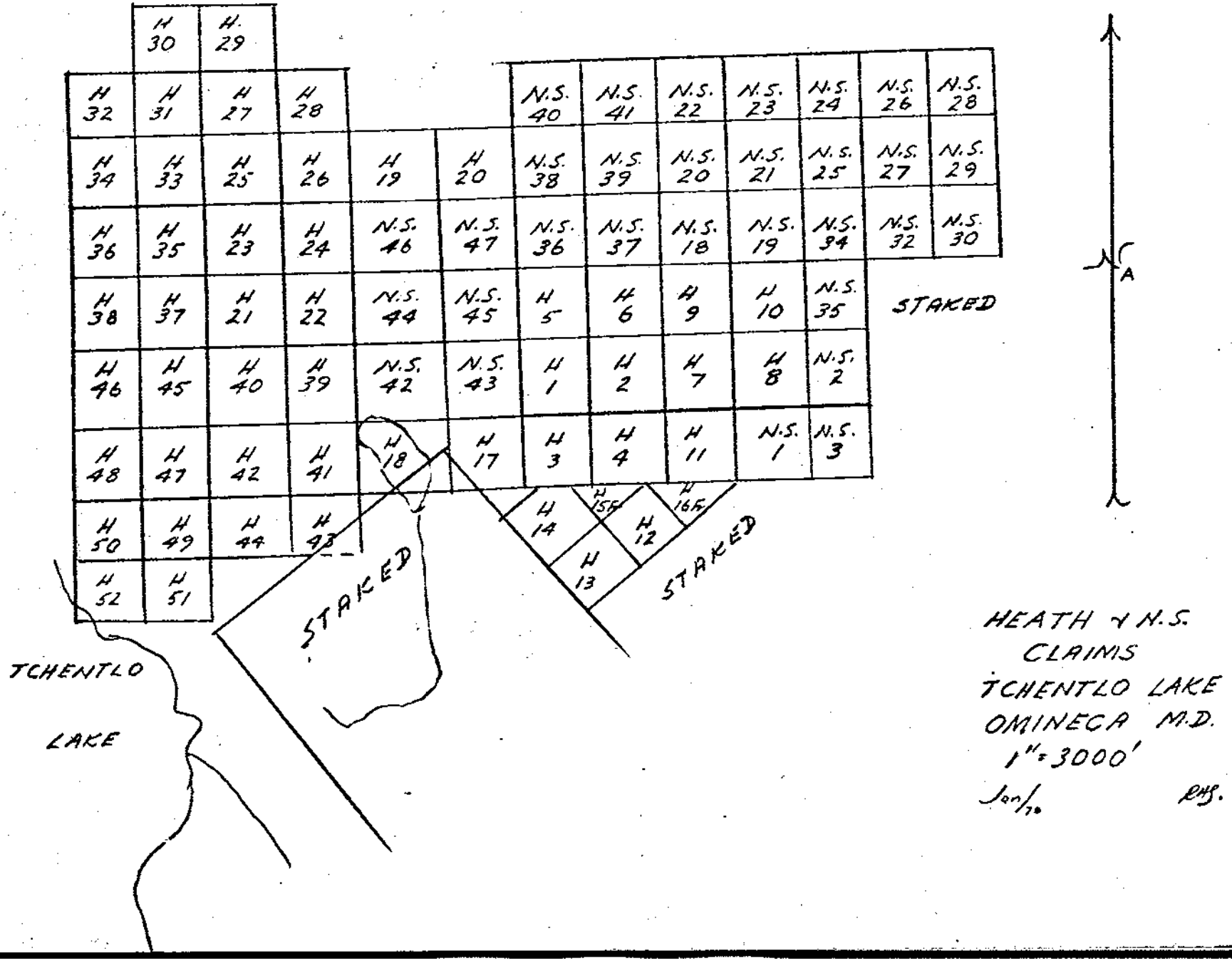
8 claimposts being the # 1 posts of 15 of the above claims were located in the field and tied in to the grid-system. The claims appear to be well and correctly staked and no open fractions were located.

LOCATION AND ACCESS

The property is located on the south slopes of Nation Mountain near Tchentlo Lake, 65 air miles northwest of Fort St. James, B.C. in the Omenica Mining Division. The property can be reached by fixed wing aircraft or helicopter from Fort St. James, 65 miles away or from Germansen Landing, 40 miles away which is connected to Fort St. James by road. The nearest road is 40 miles away and the nearest railway, when the P.G.E. extention is completed to Takla Lake this year, will be 20 miles away.



HEATH PROSPECT
TAKLA LAKE
TAKLA RANGE
MITCHELL RANGE
NATION LAKES
Tchentlo
Chuchi
Witch L.
MT. ALEXANDER 5483'
MT. SYLVESTER
Middle River
Trembleur Lake
Grand Rapids
Tachie
INZANA MTN.
Inzana Lake
SASKLO RIDGE
TEZZERON MTN 5800'
Tezzeron L.
PINCHI MTN 4357'
Pinchi L.
STUART LAKE
MT. POPE 4826'
MURRAY RIDGE
FORT ST. JAMES
Cunningham L.
Nancut
Whitefish
Tochcha
BABINE LAKE
Pendleton Bay
Donald Landing
ETHEL F. WILSON MEMORIAL PARK
TALTAPIN MTN. 5284'
Taltapin L.
MT. LORENZ 4850'
MT. BUD 4810'
PITKA MTN. 4787'
BURNS LAKE
DEAD MAN'S ISLAND PARK
Tchesinkut Lake
Francois Lake
Southbank
Endako
Nithi River
FRASER LAKE
Fort Fraser
INTERIOR
16
80
55°
54°
To Smithers 79 miles
0
10
20
30


H 30
H. 29
H 32
H 31
H 27
H 28
H 34
H 33
H 25
H 26
H 19
H 20
H 36
H 35
H 23
H 24
N.S. 46
N.S. 47
H 38
H 37
H 21
H 22
N.S. 44
N.S. 45
H 46
H 45
H 40
H 39
N.S. 42
N.S. 43
H 48
H 47
H 42
H 41
H 18
H 17
H 50
H 49
H 44
H 43
H 52
H 51
N.S. 40
N.S. 41
N.S. 22
N.S. 23
N.S. 24
N.S. 26
N.S. 28
N.S. 38
N.S. 39
N.S. 20
N.S. 21
N.S. 25
N.S. 27
N.S. 29
N.S. 36
N.S. 37
N.S. 18
N.S. 19
N.S. 34
N.S. 32
N.S. 30
H 5
H 6
H 9
H 10
N.S. 35
STAKED
H 1
H 2
H 7
H 8
N.S. 2
H 3
H 4
H 11
N.S. 1
N.S. 3
H 15E
H 16E
H 14
H 12
H 13
STAKED
STAKED
TCHENTLO
LAKE
A
HEATH & N.S.
CLAIMS
TCHENTLO LAKE
OMINECA M.D.
1" = 3000'
Jan/70
RHS.

TOPOGRAPHY

The property stretches from Tchentlo Lake at 2,800 foot elevation to Nation Mountain at about 5,000 foot elevation. Half the claims cover relatively flat ground and the other half are on the south slope of Nation Mountain. The slopes are forest covered. The primary exploration area lies in a topographic "low" on the hillside and has a relatively gentle relief with little outcrop.

HISTORY

The property was first located by the prospector, Colin Campbell, by use of stream silt sampling. Geochemical soil surveys have subsequently outlined anomalous copper content in the soil over an area of more than 800 acres. Geological mapping and trenching has located and exposed wide spread chalcopyrite mineralization. The present geological mapping and magnetic survey has been carried out on and around the above soil anomaly and copper mineralization.

GEOLOGY AND PHOTOINTERPRETATION

The property covers rocks of the Hogem Batholith. In the claim area mapped, these consist largely of diorite and its altered varieties and of a syenite plug or plugs and feldspar and quartz-feldspar porphyry dykes as well as some granite and possible granodiorite on the periphery.

On the basis of photointerpretation, geological mapping and the present magnetic survey, the structure has been interpreted as consisting of a northwest striking zone 2,000 to 2,400 feet wide. This zone is either bound by two faults or it is a wide fault or shear zone. The primary exploration target lies within this zone at a point where a 3,200 wide fracture zone crosses it in a WNW direction. This fracture zone is evident on air photographs but less evident on the ground. Faults or fractures striking E-W also crossing this zone, have been located on air photographs and are represented on the ground by topographically low areas generally occupied by creeks.

The primary exploration target has relatively few outcrops and these outcrops consist of diorite which has been very heavily altered primarily by feldspathization, and of syenite and some feldspar and quartz-feldspar dykes. The rocks are generally heavily oxidized and shattered, frequently showing copper stain, lenses, stringers

and specks of chalcopyrite. Surrounding the primary exploration target the rocks -- diorite -- show a very extensive and intense alteration to K-feldspar and also epidote.

MAGNETIC SURVEY

Instrument

The instrument used for the survey was a sharp magnetometer PMF-3 serial no. 41018.

The instrument has a central zero point so both positive and negative readings can be read directly. The instrument has five scales: the 3k scale which allows readings to 3,000 gamma; the 10k scale with readings to 10,000 gamma; the 30k scale with readings to 30,000 gamma; the 100 k scale with readings to 100,000 gamma, and the 300 k scale which permits readings to 300,000 gamma. With practise, the instrument can be read to the nearest 10 gamma on the 3k scale and correspondingly to 1,000 gamma on the 300k scale.

Gridsystem

An old gridsystem extending for a total of 18,300 feet was used as the basis for the present gridsystem. The baseline running north-south was extended to the north, remeasured and re-cut. The line was marked by blazes and flagging. Stations were established along the baseline at

intervals of 400 feet by use of tape. Old crosslines at 400 foot intervals were re-measured, re-cut and extended. New crosslines were turned off at right angles at each 400 foot station by the use of a prism. The cross lines, going east-west, were run by compass, cut out and marked by blazes and flagging. Stations were established at 200 foot intervals on the crosslines by the use of tape. A total of 96,400 feet of new gridsystem lines were thus established. Of this, 72,600 feet was on the Mountain group of claims and 13,800 feet on the Heath group of claims. The old re-measured and re-cut lines consist of 17,000 feet on the Heath group of claims and 1,300 feet on the Mountain group of claims.

Procedure

Latitude adjustment was made at an arbitrary point near camp. The instrument was adjusted to read zero gamma at this point. This point plus station 00 on the baseline were read three times daily during the survey to check diurnal variations. The baseline was surveyed first and the survey lines were then checked back to the baseline as they were done. Readings were taken at 100 foot intervals along the baseline, along all new and old crosslines and along some north-south lines on the western extremity of the gridsystem. The readings were taken at each station and at 100 foot intermediate stations, established by pacing. Readings were taken at waistheight facing east at all times and recorded.

The arbitrarily chosen point zero latitude control turned out to be at a point of relatively high magnetic intensity and the majority of readings were therefore negative. The readings recorded were later adjusted by +10,000 gamma plus the diurnal adjustment to give generally positive values and plotted on a map of the gridsystem and claims as gammas. The scale of the map is 400 feet to the inch. The readings were contoured at each 1,000 gammas based on known geology and geological photointerpretation.

Interpretation

The survey revealed features which correspond very well to the mapped geology and to the air photo interpretation.

A general northwesterly trend can be noted through the centre of the area and to the west.

1. The central northwest trend is about 2,000 to 2,400 feet wide and conforms to a zone outlined on the photographs and mapped on the ground as a zone of shearing or faulting. It is bounded by highly altered and fractured rocks with scattered copper mineralization. The primary exploration target lies within this zone. It is topographically of gentler relief and contains few outcrops. The zone lies between 400 East and 2800 East on line 1200 South and between 1600 West and 400 East on 4400 North. The magnetic

intensity within the zone particularly between lines 0 and 3400 North is generally lower but with some scattered high readings. The contouring shows greater complexity in the magnetic intensity within the zone than without. The rocks within the zone consist generally of highly altered and oxidized diorite and some syenite. Chalcopyrite occurs in some of these outcrops either disseminated or as lenses or stringers on fractures. The central magnetic low may be interpreted as possibly being an effect of the introduction of hydrothermal fluids or mineralizing agents altering or moving or removing the basic magnetite in the diorite. The diorite in this area frequently contains strongly oxidized material believed to be from pyrite changed from the original disseminated magnetite. A tendency to a rim like effect of higher intensity is apparent. The higher intensity on the edge of the zone coincides, where there is outcrop, with chloretized diorite high in magnetite content. These rocks also contain some lenses of chalcopyrite.

2. The northwest trending feature to the west located approximately at 3000 West on line 800 North and at 4200 West on line 4400 North is probably caused by faulting and accompanying changes in rock type on each side of the fault. Rocks immediately to the east are mapped as lightly altered diorite while rocks immediately to the west are mapped as strongly altered diorite with very heavy feldspathization and syenitic rocks. These latter rocks show

a lower magnetic intensity than the lighter altered diorite.

3. Between the two northwest trending zones the magnetic variations are quite large possibly corresponding to wide variations in the mapped alteration in the diorite. A northwest trend occurs here also.

4. East of the central zone the magnetic variations are more gradual corresponding to less alteration of the diorite. High magnetic readings on the northeast edge appear to coincide with a change in rock type to a fine to medium grained granite.

5. Possible structural trends can also be noted striking N65°W through line 1200 South 2600 East to 2400 North 4000 West and through 1200 North 4200 East to 4400 North 600 West. These two lines and the area between them has been interpreted on the aerial photos as a zone of strong fracturing. This zone also encompasses the primary central exploration target.

6. Two other trends striking north of east may be of significance, one extending from line 3600 North on the east to line 2600 North on the west and the other from line 2600 North on the east to 1400 North on the west. These lines correspond to occasional topographic low areas and traverse the central area.

Respectfully submitted,

Egil Livgard, P. Eng.

Vancouver, Canada

APPENDIX

BASELINE

Station	Reading	Adjusted Value (adjustment: +99.8 x 100 gamma)	Station	Reading	Adjusted Value (adjustment: +99.8 x 100 gamma)
00	-11.5	8,830	36N	-50.5	4,930
1N	-14.5	8,530	37N	-55.0	4,480
2N	-11.6	8,820	38N	-48.5	5,130
3N	-25.6	7,420	39N	-50.0	4,980
4N	-15.0	8,480	40N	-54.0	4,580
5N	-43.0	5,680	41N	-53.0	4,680
6N	-24.8	7,500	42N	-47.0	5,280
7N	-20.4	7,940	43N	-57.5	4,230
8N	-55.0	4,480	44N	-50.5	4,930
9N	-62.5	3,730	45N	-52.0	4,780
10N	-68.5	3,130	46N	-54.0	4,580
11N	-57.0	4,280	47N	-55.0	4,480
12N	-57.5	4,230	48N	-54.5	4,530
13N	-13.5	8,630	49N	-54.5	4,530
14N	-37.2	6,260	50N	-48.5	5,130
15N	-82.0	1,780	51N	-48.0	5,180
16N	-33.0	7,680	52N	-43.0	5,680
17N	-13.5	8,630	53N	-42.0	5,780
18N	-65.5	3,430	54N	-47.5	5,280
19N	-65.0	3,480			
20N	-59.0	4,080			
21N	-62.0	3,780	00	-10.5	8,930
22N	-64.5	3,530	1S	- 1.4	9,840
23N	-55.0	4,480	2S	+10.5	11,030
24N	-60.0	3,980	3S	- 6.2	9,360
25N	-55.5	4,430	4S	-17.0	8,280
26N	-56.0	4,380	5S	- 4.8	9,500
27N	-56.5	4,330	6S	-14.5	8,530
28N	-49.5	5,030	7S	-16.0	8,380
29N	-62.0	3,780	8S	-38.0	6,180
30N	-48.5	5,130	9S	-29.7	7,010
31N	-48.0	5,180	10S	-21.7	7,810
32N	-40.0	5,980	11S	-52.7	4,710
33N	-56.5	4,330	12S	-74.0	2,580
34N	-49.5	5,030	13S	-66.5	3,330
35N	-45.5	5,430	14S	-70.5	2,930

LINE 12 SOUTH

Station	Reading	Adjusted Value Adjustment: (+101.2 X 100 gamma)
00	-75.4	2,580
1E	-75.0	2,620
2E	-76.1	2,510
3E	-43.6	5,760
4E	-40.4	6,080
5E	-20.3	8,090
6E	-66.0	3,520
7E	-62.5	3,870
8E	-63.7	3,750
9E	-58.0	4,320
10E	-58.0	4,320
11E	-61.5	3,970
12E	-59.8	4,140
13E	-60.6	4,060
14E	-58.3	4,290
15E	-55.4	4,580
16E	-60.2	4,100
17E	-56.5	4,470
18E	-65.1	3,610
19E	-65.9	3,530
20E	-63.5	3,770
21E	-55.0	4,670
22E	-55.5	4,570
23E	-82.0	1,920
24E	-44.7	5,650
25E	-46.5	5,470

LINE 8 SOUTH

Station	Reading	Adjusted Value Adjustment (+101.2 X 100 gamma)
00	-39.4	6,180
1E	-17.5	8,370
2E	-16.0	8,520
3E	-36.5	6,470
4E	-29.2	7,200
5E	-72.8	2,840
6E	-62.0	3,920
7E	-63.0	3,820
8E	-57.4	4,380
9E	-56.5	4,470
10E	-55.8	4,540
11E	-55.0	4,620
12E	-44.8	5,640
13E	-47.0	5,420
14E	-53.2	4,800
15E	-49.9	5,130
16E	-55.2	4,600
17E	-58.0	4,320
18E	-57.4	4,380
19E	-57.5	4,370
20E	-55.4	4,580
21E	-47.5	5,370
22E	-57.0	4,420
23E	-57.0	4,420
24E	-39.9	6,130
25E	-54.2	4,700
26E	-39.6	6,160
27E	-48.2	5,300
28E	-66.0	3,520
29E	-70.1	3,110
30E	-45.0	5,620

LINE 4 SOUTH

Station	Reading	Adjusted Value Adjustment (+99.8 X 100 gamma)
00	-19	8,220
1E	+34.5	13,430
2E	-46.0	5,380
3E	-63.0	3,680
4E	-74.2	2,560
5E	-41	5,880
6E	-21.5	7,830
7E	-44.0	5,580
8E	-47.7	5,210
9E	-46.0	5,380
10E	-55.4	4,440
11E	-64.8	3,500
12E	-53.0	4,680
13E	-50.8	4,900
14E	-51.5	4,830
15E	-52.0	4,720
16E	-53.0	4,680
17E	-54.0	4,580
18E	-49.5	5,030
19E	-55.0	4,480
20E	-50.4	4,940
21E	-55.0	4,480
22E	-52.0	4,780
23E	-49.5	4,030
24E	-34.5	6,530
25E	-43.0	6,680
26E	-48.0	6,180
27E	-51.5	4,830
28E	-50.1	4,970
29E	-53.7	4,610
30E	-52.0	4,780
31E	-46.0	5,380
32E	-43.0	5,680

LINE 0

Station	Reading	Adjusted Value Adjustment: (+98.8 X 100 gamma)
00	-10.0	8,880
1E	-24.0	7,580
2E	-29.0	7,080
3E	-17.0	8,280
4E	-34.5	6,530
5E	-30.0	6,980
6E	-39.9	5,990
7E	-39.0	6,080
8E	-36.0	6,380
9E	-36.0	6,380
10E	-57.8	4,200
11E	-56.0	4,380
12E	-55.0	4,480
13E	-55.7	4,410
14E	-48.8	5,100
15E	-42.5	5,730
16E	-52.8	4,680
		Adjustment: (+101.1 X 100 gamma)
17E	-55.0	4,610
18E	-55.4	4,370
19E	-47.2	4,390
20E	-44.8	5,630
21E	-55.0	4,610
22E	-53.5	4,760
23E	-52.5	4,860
24E	-52.0	4,910
25E	-54.8	4,630
26E	-40.0	6,110
27E	-58.0	4,310
28E	-50.	5,110
29E	-49.0	5,210
30E	-52.0	4,910
31E	-55	4,610
32E	-56	4,510
33E	-57.2	4,390
34E	-62.0	3,910
35E	-65	3,610
36E	-69	3,210
37E	-68.5	3,260
38E	-65	3,610
		Adjustment: (+100.0 X 100 gamma)
00	-11.7	8,300
1W	0	10,000
2W	-32.3	6,770
3W	-32.7	6,730
4W	-56.9	4,310
5W	-28.5	7,150
6W	-12.2	8,780

LINE 4 NORTH

Station	Reading	Adjusted Value Adjustment (+99.8 X 100 gamma)
00	-16.2	8,360
1E	-22.1	7,770
2E	-7.3	9,250
3E	-56.0	4,380
4E	-54.0	4,580
5E	-42.0	5,780
6E	-49.5	5,030
7E	-46.0	5,380
8E	-44.5	5,530
9E	-65.0	3,480
10E	-51.8	4,800
11E	-57.7	4,210
12E	-53.2	4,660
13E	-52.0	4,780
14E	-59.5	4,030
15E	-62.1	3,770
16E	-59.0	4,080
17E	-50.0	4,980
18E	-59	4,080
19E	-53.5	4,630
20E	-19.8	8,000

Station	Reading	Adjusted Value Adjustment (+100.0 X gamma)
00	-15.8	8,420
1W	-64.5	3,550
2W	-35.1	6,490
3W	-25.5	7,450
4W	-16.5	8,350
5W	-35.4	6,460
6W	-44.8	5,520
7W	-34.6	6,540
8W	-2.7	9,730
9W	-13.9	8,610
10W	-20.1	7,990

LINE 8 NORTH

Station	Reading	Adjusted Value Adjustment: (+100.6 X 100 gamma)
00	-55.8	4,480
1E	-57.1	4,350
2E	-72.4	2,820
3E	-34.0	6,660
4E	-25.5	7,510
5E	-57.0	4,360
6E	-60.0	4,060
7E	-27.8	3,280
8E	-64.5	3,610
9E	-65.7	3,490
10E	-64.9	3,470
11E	-67.2	3,340
12E	-59.7	4,090
13E	-62.0	3,860
14E	-62.5	3,810
15E	-66.9	3,370
16E	-52.5	4,810
17E	-67.0	4,360
18E	-47.6	5,300
19E	-49.8	5,100
20E	-41.8	5,080
21E	-55.5	5,880
22E	-60.0	4,510
23E	-57.9	4,060
24E	-59.7	4,270
25E	-60.6	4,090
26E	-46.0	4,000
27E	-47.0	5,460
28E	-42.9	5,360
29E	-42.9	5,770
30E	-31.0	6,960
31E	-33.3	6,730
32E	-48.5	5,210
33E	-46.5	5,410
34E	-44.9	5,570

Station	Reading	Adjusted Value Adjustment: (+99.7 X 100 gamma
00	-53.5	4,620
1W	-49.9	4,980
2W	-49.3	5,040
3W	-70.2	2,950
4W	-50.5	4,920
5W	-59.6	4,010
6W	-26.9	7,280
7W	-35.1	6,460
8W	-38.1	6,160
9W	?	-
10W	-35.0	6,470
11W	-35.0	6,470
12W	-35.4	6,430
13W	-78.2	2,150
14W	-47.1	5,260
15W	-72.2	2,750
16W	-71.0	2,870
17W	-112.0	-1,170
18W	-68.4	3,130
19W	-58.6	4,110
20W	-61.1	3,860
21W	-58.7	4,100
22W	-45.0	5,470
23W	-48.2	5,150
24W	-49.5	5,020
25W	-44.0	5,570
26W	-50.1	4,960
27W	-60.2	3,950
28W	-59.6	4,010
29W	-60.2	3,950
30W	-59.9	3,980
31W	-55.4	4,430
32W	-52.3	4,740
33W	-47.1	5,260
34W	-54.1	4,560
35W	-55.0	4,470
36W	-56.4	4,330
37W	-59.6	4,010
38W	-51.0	4,870
39W	-57.2	4,250
40W	-62.8	3,690
41W	-64.9	3,480
42W	-70.4	2,930
43W	-65.5	3,420
44W	-63.1	3,660
45W	-59.6	4,010

LINE 12N

Station	Reading	Adjusted Value Adjustment: +100.6 x 100 gamma	Station	Reading	Adjusted Value Adjustment: +99.7 x 100 gamma
0	-56.4	4,420	0	-57.4	4,230
1E	-51.9	4,270	1W	-68.4	3,130
2E	-41.2	5,940	2W	-43.0	5,670
3E	-42.0	5,860	3W	-59.4	4,030
4E	-62.0	3,860	4W	-72.0	2,770
5E	-48.0	5,260	5W	-82.5	1,720
6E	-55.0	4,560	6W	+16.6	11,630
7E	-60.2	4,040	7W	-70.5	2,920
8E	-64.7	3,590	8W	+86.5	18,620
9E	-70.0	3,060	9W	-45.1	5,460
10E	-65.9	3,470			
11E	-62.5	3,810			
12E	-63.0	3,760			
13E	-56.1	4,450			
14E	-56.8	4,980			
15E	-53.9	4,670			
16E	-51.1	4,950			
17E	-44.0	5,660			
18E	-47.6	5,300			
19E	-49.4	5,120			
20E	-57.6	4,300			
21E	-57.4	4,320			
22E	-57.7	4,290			
23E	-28.2	7,240			
24E	-35.5	6,510			
25E	-43.1	5,750			
26E	-51.0	4,960			
27E	-34.7	6,590			
28E	-44.2	5,640			
29E	-32.4	6,820			
30E	-24.6	7,600			
31E	-35.0	6,560			
32E	-44.6	5,600			
33E	-28.9	7,170			
34E	-27.7	7,290			
35E	-20.5	8,010			

LINE 16 NORTH

Station	Reading	Adjusted Value Adjustment: (+100.6 X 100 gamma)
00	-33.8	7,680
1E	-43.6	5,700
2E	-49.9	5,070
3E	-55.1	5,440
4E	-54.6	4,600
5E	-74.5	2,610
6E	-63.8	3,680
7E	-55.1	4,550
8E	-61.9	3,870
9E	-68.5	3,610
10E	-66.7	3,390
11E	-67.0	3,360
12E	-65.2	3,540
13E	-65.4	3,520
14E	-72.2	2,840
15E	-61.9	3,870
16E	-60.3	4,030
17E	-46.7	5,390
18E	-50.1	5,050
19E	-46.8	5,380
20E	-41.0	5,960
21E	-47.5	5,310
22E	-37.5	6,310
23E	-37.3	6,330
24E	-29.1	7,150
25E	-33.0	6,760
26E		-
27E	-36.2	6,440
28E	-36.0	6,460
29E	-34.9	6,370
30E	-44.2	5,640
31E	-45.4	5,520
32E	-42.5	5,810
33E	-26.9	7,370
34E	-34.8	6,580
35E	-32.2	6,664
36E	+9.3	10,990

Station	Reading	Adjusted Value Adjustment: (+99.7 X 100 gamma
00	-33.8	7,680
1W	-67.1	3,260
2W	-58.3	4,090
3W	-67.3	3,250
4W	-28.1	7,160
5W	-75.7	2,400
6W	-72.5	2,720
7W	-67.0	3,270
8W	-81.9	1,780
9W	-110.5	-1,020
10W	-63.2	3,650
11W	-58.5	4,120
12W	-36.5	6,320
13W	-36.6	6,320
14W	-36.9	6,290
15W	-57.3	4,240
16W	-54.6	4,510
17W	-62.3	3,740
18W	-70.3	2,940
19W	-73.8	2,590
20W	-51.5	4,820
21W	-43.7	5,600
22W	-38.0	6,170
23W	-66.8	6,290
24W	-39.6	6,010
25W	-41.1	5,860
26W	-48.4	5,130
27W	-43.0	5,670
28W	-59.4	4,030
29W	-62.0	3,770
30W	-65.1	3,460
31W	-63.3	3,620
32W	-50.5	4,920
33W	-53.4	4,630
34W	-62.5	3,760
35W	-62.0	3m770
36W	-68.6	3,110
37W	-63.5	3,620
38W	-69.7	3,000
39W	-54.6	4,510
40W	-59.6	4,010
41W	-54.8	4,490
42W	-53.6	4,610
43W	-50.6	4,910
44W	-54.1	4,560
45W	-50.8	4,890

LINE 20 NORTH

Station	Reading	Adjusted Value Adjustment: (+101.1 X 100 gamma)
00	-60.0	4,110
1E	-55.0	4,610
2E	-56.0	4,510
3E	-51.0	6,010
4E	-36.2	6,490
5E	-45.0	5,610
6E	-52.0	4,910
7E	-55.0	4,610
8E	-55.5	4,560
9E	-62.2	3,890
10E	-54.0	4,710
11E	-50.8	5,030
12E	-54.9	4,620
13E	-47.0	5,410
14E	-62.0	3,910
15E	-49.7	5,140
16E	-49.0	5,210
17E	-47.0	5,410
18E	-42.5	5,860
19E	-34.5	6,660
[illegible]E	-42.3	5,880
[illegible]E	-34.5	6,660
22E	-45.0	5,610
23E	-39.5	6,160
24E	-46.1	5,500
25E	-49.8	5,130
26E	-48.0	5,310
27E	-45.0	5,610
28E	-30.5	7,060
29E	-30.7	7,040
30E	-36.0	6,510
31E	-39.6	6,150

Station	Reading	Adjusted Value Adjustment: (+99.7 X 100 gamma)
00	-59.9	3,980
1W	-60.3	4,000
2W	-67.7	3,260
3W	-66.0	3,370
4W	-75.8	2,390
5W	-63.0	3,670
6W	-71.8	2,850
7W	-64.3	3,540
8W	-59.1	4,060
9W	-60.4	3,930
10W	-62.0	3,770
11W	-24.7	7,500
12W	-37.3	6,240
13W	-20.2	7,950
14W	-37.3	6,240
15W	-65.0	3,470
16W	-85.2	1,450
17W	-73.8	2,590
18W	-90.1	960
19W	-50.0	4,970
20W	-9.9	7,980
21W	-73.8	2,590
22W	-42.7	5,700
23W	-46.0	5,370
24W	-24.7	7,500
25W	-17.2	8,250
26W	-50.4	4,930
27W	-62.3	3,740
28W	-61.7	3,800
29W	-49.7	5,000
30W	-76.2	2,350
31W	-66.1	3,360
32W	-55.8	4,390
33W	-52.4	4,730
34W	-43.5	5,620
35W	-62.7	3,700
36W	-51.5	4,820
37W	-57.0	4,270
38W	-58.2	4,150
39W	-58.9	4,080
40W	-50.0	4,970
41W	-49.9	4,980
42W	-48.2	5,150
43W	-50.2	4,950
44W	-50.3	4,940
45W	-42.0	5,770

LINE 24 NORTH

Station	Reading	Adjusted Value Adjustment: (+101.1 X 100 gamma)
00	-61.3	3,980
1E	-60	4,110
2E	-57.2	4,390
3E	-51.2	4,990
4E	-55.1	4,600
5E	-60.2	4,010
6E	-59.2	4,190
7E	-55.6	4,550
8E	-54.5	4,660
9E	-39.5	6,160
10E	-56.5	4,460
11E	-50.4	5,070
12E	-52.5	4,860
13E	-58.0	4,310
14E	-45.0	5,610
15E	-50.2	5,090
16E	-49.8	5,130
17E	-44.0	5,710
18E	-27.5	7,360
19E	-43.5	5,760
20E	-47.0	5,410
21E	-48.4	5,270
22E	-53.9	4,720
23E	-39.8	6,130
24E	-41.2	5,990
25E	-48.5	5,260
26E	-49.0	5,210
27E	-45.4	5,560
28E	-42.0	5,910
29E	-37.8	6,330
30E	-31.8	6,930
31E	-31.5	6,960
32E	-28.2	7,290
33E	-20.9	8,020
34E	-22.1	7,900
35E	-29.0	7,210
36E	-39.5	6,160
37E	-31.0	7,010
38E	-37.7	6,340
39E	-32.0	6,910
40E	-3.5	9,760
41E	-23.5	7,760

Station	Reading	Adjusted Value Adjustment: (+100.6 X 100 gamma)
00	-58.5	4,210
1W	-58.1	4,250
2W	-59.5	4,110
3W	-46.1	5,440
4W	-51.9	4,870
5W	-64.7	3,590
6W	-70.2	3,040
7W	-62.8	3,780
8W	-69.4	3.120
9W	-66.2	3,440
10W	-67.2	3,340
11W	-64.4	3,620
12W	-48.8	5,180
13W	-33.2	6,740
14W	-34.2	6,640
15W	-38.5	6,210
16W	-64.5	3,710
17W	-65.9	3,470
18W	-67.9	3,270
19W	-38.8	6,180
20W	-42.2	5,840
21W	-52.2	4,840
22W	-53.5	4,730
23W	-44.5	5,620
24W	-45.8	5,480
25W	-50.4	5,030
26W	-36.3	6,430
27W	-45.9	5,470
28W	-57.9	4,270
29W	-61.2	3,940
30W	-62.0	3,860
31W	-72.0	2,860
32W	-68.1	3,250
33W	-56.1	4,450
34W	-45.0	5,560
35W	-50.2	5,040
36W	-64.7	3,590
37W	-59.0	4,160
38W	-34.9	6,570
39W	-31.5	6,910
40W	-34.0	6,660
41W	-40.1	5,450
42W	-40.8	5,980
43W	-41.1	5,940
44W	-44.0	5,660
45W	-47.6	5,300

LINE 28 NORTH

Station	Reading	Adjusted Value Adjustment: (+100.8 X 100 gamma)
00	-47.5	5,330
1E	-57.2	5,380
2E	-41.8	5,900
3E	-44.5	5,630
4E	-37.2	6,360
5E	-55.1	4,570
6E	-55.3	4,550
7E	-55.1	4,570
8E	-41.0	5,980
9E	-52.5	4,830
10E	-53.0	4,780
11E		
12E		
13E	-45.2	5,560
14E	-48.5	5,230
15E	-51.5	5,930
16E	-44.7	5,610
17E	-44.6	5,620
18E	-44.8	5,600
19E	-46.7	5,410
20E	-48.0	5,280
21E	-47.8	5,300
22E	-43.8	5,700
23E	-40.1	6,010
24E	-43.2	5,760
25E	-45.2	5,560
26E	-40.7	6,010
27E	-45.0	5,580
28E	-34.9	6,590
29E	-44.9	5,590
30E	-44	5,680
31E	-45.3	5,550
32E	-42.8	5,800
33E	-41.5	5,930
34E	-47.9	5,290
35E	-48.0	5,280
36E	-48.1	5,270
37E	-35.6	6,520
38E	-43.8	5,700
39E	-36.8	6,400
40E	-44.8	5,600
41E	-41.5	5,930
42E	-30.1	7,070
43E	-24.2	7,660

Station	Reading	Adjusted Value Adjustment: (+100.6 X 100 gamma
00	-47.8	5,280
1W	-57.4	4,320
2W	-52.0	4,860
3W	-54.7	4,590
4W	-64.0	3,660
5W	-61.1	3,950
6W	-67.7	3,290
7W	-61.7	3,890
8W	-61.8	3,880
9W	-70.2	3,040
10W	-69.2	3,140
11W	-72.5	2,610
12W	-43.0	5,760
13W	-44.9	5,570
14W	-33.2	6,740
15W	-48.2	5,240
16W	-52.1	4,850
17W	-63.0	3,760
18W	-29.8	7,080
19W	-44.8	5,580
20W	-54.7	4,590
21W	+28.7	12,930
22W	-52.2	4,840
23W	-60.2	4,040
24W	-56.9	4,370
25W	-42.5	5,810
26W	-57.0	4,360
27W	-46.7	5,390
28W	-40.0	6,060
29W	-61.5	3,910
30W	-67.6	3,300
31W	-79.6	2,100
32W	-69.7	3,090
33W	-57.6	4,300
34W	-25.0	7,560
35W	-41.8	5,880
36W	-15.5	8,510
37W	-70.2	3,040
38W	-37.8	6,280
39W	-39.6	6,100
40W	-46.1	5,450
41W	-67.1	3,350
42W	-52.7	4,790
43W	-31.0	6,960
44W	-32.6	6,800
45W	-29.5	7,110

LINE 32 NORTH

Station	Reading	Adjusted Value Adjustment: (+100.8 X 100 gamma)
00	-41.0	5,980
1E	-65.0	3,580
2E	-60.8	4,000
3E	-62.8	3,800
4E	-58.0	4,280
5E	-51.9	4,890
6E	-60.2	4,060
7E		
8E	-60.0	4,080
9E	-57.4	4,340
10E	-51.0	4,980
11E	-48.6	5,220
12E	-47.5	5,330
13E	-46.5	5,430
14E	-48.0	5,280
15E	-47.0	5,380
16E	-41.8	5,900
17E	-42.6	5,820
18E	-25.8	7,500
19E	-40.0	6,080
20E	+17.2	11,800
21E	-49.5	5,130
22E	-46.0	5,480
23E	-37.6	6,320
24E	-40.2	6,060
25E	046.1	5,470
26E	-45.7	5,510
27E	-43.1	5,770
28E	-39.9	6,090
29E	-36.2	6,460
30E	-47.0	5,380
31E	-44.5	5,630
32E	-44.5	5,630
33E	-35.5	6,530
34E	-44.9	5,590
35E	-41.0	5,980
36E	-28.5	7,230
37E	-37.0	6,380
38E	-37.9	6,470
39E	-40.8	6,000
40E	-52.0	4,880
41E	-28.2	7,260
42E	-6.1	9,470
43E	-27.3	7,330
44E	-45.7	5,510

Station	Reading	Adjusted Value Adjustment: (+100.6 X 100gamma)
00	-40.0	6,060
1W	-56.5	4,410
2W	-51.0	4,960
3W	-45.3	5,530
4W	-47.6	3,690
5W	-52.0	4,860
6W	-49.5	5,110
7W	-58.1	4,260
8W	-64.2	3,650
9W	-68.3	3,240
10W	-59.9	4,080
11W	-59.5	4,120
12W	-48.5	5,220
13W	-44.0	5,670
14W	-39.0	6,170
15W	-52.5	4,820
16W	-53.4	4,730
17W	-40.8	5,990
18W	-33.3	6,740
19W	-34.0	6,670
20W	-34.5	6,620
21W	-48.9	5,180
22W	-46.3	5,440
23W	-53.4	4,730
24W	-56.0	4,470
25W	-55.6	4,510
26W	-58.9	4,180
27W	-54.5	4,620
28W	-46.6	5,410
29W	-42.0	5,870
30W	-20.1	3.060
31W	-69.3	3.140
32W	-71.3	2,940
33W	-72.9	2,780
34W	-70.3	3.040
35W	-53.7	4,700
36W	-49.7	5,100
37W	-51.5	4,960
38W	-61.6	3,910
39W	-58.5	4,220
40W	-51.1	4,960
41W	-51.0	4,970
42W	-50.9	4,980
43W	-54.8	4,590
44W	-60.4	4,030
45W	-37.0	6,370

LINE 36 NORTH

Station	Reading	Adjusted Value Adjustment: (+99.8 X 100 gamma)	Station	Reading	Adjusted Value Adjustment: (+100.6 X 100gamma
00	-50.1	4,970	00	-50.1	5,050
1E	-46.1	5,370	1W	-37.7	6,290
2E	-37.2	6,250	2W	-60.0	4,060
3E	-46.5	5,320	3W	-58.2	4,240
4E	-51.4	4,830	4W	-70.0	3,060
5E	-42.8	5,690	5W	-55.1	4,550
6E	-36.8	6,290	6W	-56.8	4,380
7E	-45.2	5,460	7W	-39.9	6,070
8E	-45.2	5,460	8W	-44.8	5,580
9E	-46.6	5,320	9W	-29.7	7,150
10E	-45.3	5,450	10W	-21.2	7,940
11E		-	11W	-19.7	8,090
12E		-	12W	-9.3	9,130
13E	-42.1	5,770	13W	-44.6	5,600
14E	-45.4	5,440	14W	-46.8	5,380
15E	-37.7	6,210	15W	-65.1	3,550
16E	-44.5	5,330	16W	-48.3	5,230
17E	-46.1	5,370	17W	-35.2	6,540
18E	-57.1	4,270	18W	-27.6	7,300
19E	-36.2	6,360	19W	-24.4	7,620
20E	-59.5	4,030	20W	-39.8	6,080
21E		-	21W	-29.7	7,090
22E		-	22W	-45.0	5,560
23E	-52.0	4,780	23W	-44.9	5,570
24E	-55.2	4,460	24W	-29.9	7.070
25E	-46.0	5,380	25W	-59.9	4,070
26E	-35.3	6,450	26W	-45.1	5,550
27E	-43.6	5,620	27W	-41.0	5,960
28E	-44.4	5,540	28W	-44.0	5,660
29E	-47.2	5,250	29W	-96.0	460
30E	-21.1	7,870	30W	-48.1	5,250
31E	-22.3	7,750	31W	-69.3	3,130
32E	-11.7	8,890	32W	-131.0	-3,040
33E	-27.4	7,240	33W	-55.4	4,520
34E	-37.4	6,240	34W	-75.1	2,550
35E	-34.1	6,570	35W	-66.1	3,450
36E	-20.8	7,900	36W	-67.6	3,330
37E	-35.8	6,400	37W	-60.3	4,030
38E	-29.4	7.040	38W	-63.0	3,760
39E	-45.8	5,400	39W	-56.9	4,370
40E	-22.9	7,690	40W	-62.8	3,780
41E	-26.3	6,350	41W	-56.8	4,380
42E	-60.0	3,980	42W	-56.2	4,440
43E	-54.1	4,570	43W	-50.7	4,990
44E	-58.9	4,090	44W	-63.8	3,680
45E	-57.1	4,270	45W	-61.4	3,920
46E	-55.4	4,440			

LINE 40 NORTH

Station	Reading	Adjusted Value Adjustment: (+99.7 X 100 gamma)	Station	Reading	Adjusted Value Adjustment: (+100.3 X 100gamma)
00	-52.5	4,720	00	-55.0	4,530
1E	-50.0	4,970	1W	-51.5	4,880
2E	-45.5	5,420	2W	-51.8	4,850
3E	-53.0	4,680	3W	-50.6	4,970
4E	-50.0	4,970	4W	-51.1	4,920
5E	-39.8	5,990	5W	-36.5	6,380
6E	-30.8	6,890	6W	-51.0	4,930
7E	-52.2	4,750	7W	-54.9	4.540
8E	-54.0	4,570	8W	-58.8	4,150
9E	-47.5	5,220	9W	-40.0	6,030
10E	-44.9	5,480	10W	-36.1	6,420
11E	-44.0	5,570	11W	-46.0	5,430
12E	-8.7	9,100	12W	-33.5	6,680
13E	-10.0	8,970	13W	-50.9	4,940
14E	-25.1	7,460	14W	-48.1	5,220
15E	-32.9	6,680	15W	-33.0	6,730
16E	-29.5	7,020	16W	-18.8	8,150
17E	-27.2	7,250	17W	-25.8	7,450
18E	-51.0	4,870	18W	-12.5	8,780
19E	-37.3	6,240	19W	-51.0	4,930
20E	-42.5	5,720	20W	-65.7	3,460
21E	-42.5	5,720	21W	-45.1	5,520
22E	-43.1	5,660	22W	-51.4	4,890
23E	-54.6	4,510	23W	-26.5	7,380
24E	-49.5	5,020	24W	-44.8	5,550
25E	-27.5	7,220	25W	-38.5	6,180
26E	-43.0	5,670	26W	-36.0	6,430
27E	-53.6	4,610	27W	-33.8	6,650
28E	-27.5	7,220	28W	-52.2	4,810
29E	-43.0	5,670	29W	-47.2	5,310
30E	-53.6	4,610	30W	-35.5	6,480
31E	-56.4	4,330	31W	-34.1	6,620
32E	-57.1	5,260	32W	-12.8	8,750
33E	-56.6	4,310	33W	-35.6	6,470
34E	-53.9	4,580	34W	-29.5	7,080
35E	-42.7	5,300	35W	-49.9	5,040
36E	-40.5	5,920	36W	-62.0	3,830
37E	-45.4	5,430	37W	-59.9	4,040
38E	-36.7	6,300	38W	-50.9	4,980
39E	-33.3	6,640	39W	-71.9	2,840
40E	-13.7	8,600	40W	-70.0	3.030
41E	-5.7	9,400	41W	-72.4	2,790
42E	-25.0	7,470	42W	-68.5	3,380
43E	creek	-	43W	-68.5	3.180
44E	-64.8	3,490	44W	-69.8	3,050
45E	-35.4	6,430	45W	-70.3	3,000
46E	-46.0	5,370			

LINE 44 NORTH

Station	Reading	Adjusted Value Adjustment: (+100.3 X 100 gamma)	Station	Reading	Adjsusted Value Adjustment: (+100.3 X 100gamma
00	-49.9	5,040	00	-51.9	4,930
1E	-57.3	4,300	1W	-45.1	5,520
2E	-49.0	5,130	2W	-41.8	5,850
3E	-45.7	5,460	3W	-47.2	5,310
4E	-39.2	6,110	4W	-49.9	5,040
5E	-42.4	5,790	5W	-56.0	4,430
6E	-47.0	5,330	6W	-56.7	4,360
7E	-51.4	4,890	7W	-54.8	4,560
8E	-44.5	5,580	8W	-55.5	4,480
9E	-41.7	5,860	9W	-49.9	5,040
10E	-44.7	5,560	10W	-67.0	3,330
11E	-39.8	6,050	11W	-55.4	4,490
12E	-32.0	6,830	12W	-50.5	4,980
13E	-31.0	6,930	13W	-55.1	4,520
14E	-41.2	5,910	14W	-40.4	5,990
15E	-18.1	8,220	15W	-51.0	4,930
16E	-28.5	7,180	16W	-34.9	6,540
17E	-46.0	5,430	17W	-32.5	6,780
18E	-39.8	6,050	18W	-27.2	7,310
19E	-40.1	6,020	19W	-17.8	8,250
20E	-40.2	6,010	20W	40.0	6,030
21E	-47.0	5,330	21W	-39.8	6,040
22E	-46.5	5,380	22W	-46.1	5,420
23E	-31.3	6,900	23W	-48.5	5,180
24E	-31.0	6,930	24W	-49.3	5,100
25E	-36.7	6,360	25W	-40.7	5,960
26E	-34.6	6,570	26W	-47.2	5,310
27E	-24.8	7,550	27W	-44.9	5,540
28E	-22.5	7,780	28W	-39.9	6,040
29E	-20.5	7,980	29W	-26.5	7,380
30E	-22.0	7,830	30W	-40.0	6,030
31E	-34.7	6,560	31W	-48.1	5,220
32E	-44.2	5,610	32W	-40.8	5,950
33E	-44.1	5,620	33W	-24.9	7,540
34E	-46.2	5,410	34W	-9.5	9,080
35E	-51.5	5,880	35W	-18.1	8,220
36E	-44.7	5,560	36W	-19.0	8,130
37E	-37.3	6,300	37W	-42.0	5,830
38E	-39.4	6,090	38W	-24.5	7,580
39E	-29.3	7,100	39W	-17.1	8,320
40E	-21.2	7,910	40W	-26.0	7,430
41E	-14.7	8,560	41W	-54.4	4,590
42E	-22.7	7,760	42W	-74.0	2,730
43E	-24.5	7,580	43W	-65.4	3,490
44E	-31.9	6,840	44W	-54.8	4,550
45E	-69.9	3,040	45W	-70.0	4,060
			46W	-74.2	2,610

LINE 44 WEST

Station	Reading	Adjusted Value Adjustment:
43N	-69.9	3,040
42N	-66.0	3,460
41N	-65.0	3,530
40N	-69.8	3,050

LINE 44 WEST

35N	-65.4	3,520
34N	-64.5	3,610
33N	-25.0	7,560
32N	-60.1	4,030
31N	-52.6	4,790
30N	-37.1	6,350
29N	-52.2	4,840
28N	-32.6	6,800

LINE 42 WEST

19N	-54.0	4,570
18N	-59.2	4,050
17N	-59.1	4,060
16N	-57.4	4,230
15N	-60.2	3,950
14N	-66.5	3,320
13N	-66.0	3,370
12N	-70.4	2,930

PHONE: 684-7313

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1331 MARINE BUILDING
VANCOUVER 1, B.C.

EGIL LIVGARD, B.Sc., P.Eng.

CERTIFICATE

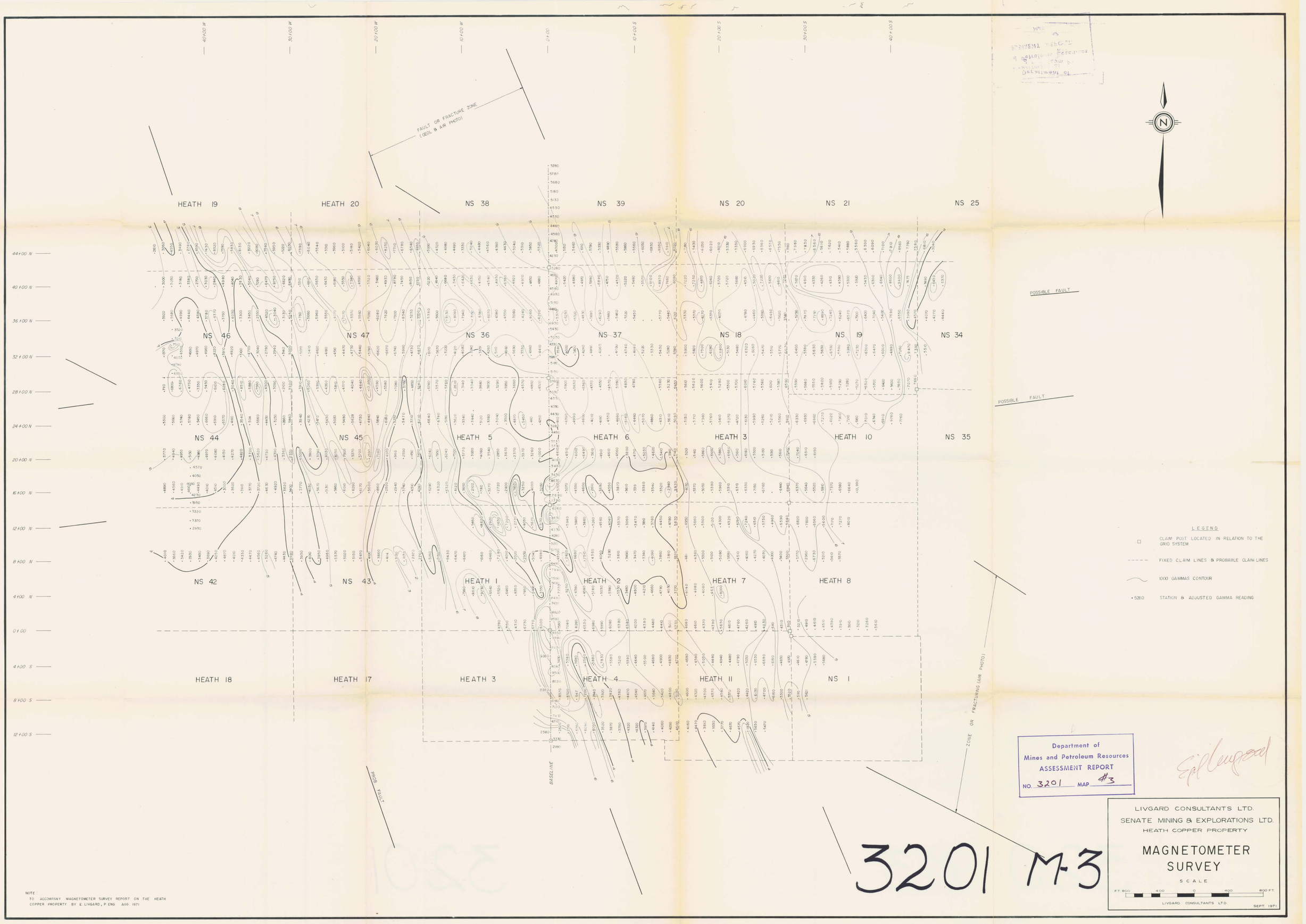
I, EGIL LIVGARD, with business and residential addresses in Vancouver, British Columbia, do hereby certify that:

1. I am a consulting geological engineer.
2. I am a graduate of the University of British Columbia, B. Sc., 1960, Geological Sciences.
3. I am a Member of the Association of Professional Engineers of the Province of British Columbia.
4. From 1960 to 1970 I was engaged in mining and exploration geology in Canada and Norway.
5. I am a director of and hold a large share position in the Company.

DATED at Vancouver, British Columbia, this 30th day of August, 1971.

Egil Livgard

Egil Livgard, B. Sc., P. Eng.
Vancouver, British Columbia.



E. Livgard

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