GEOLOGICAL, GEOCHEMICAL REPORT

on the

HALO 1 MINERAL CLAIM

OMINECA MINING DIVISION
N.T.S. 93N/6E
55°26' North latitude 125°09'West

Owner: J.C. Stephen
Operator: Dome Exploration (Canada) Ltd.

by

BRYAN M. FRASER, B.Sc. (geol.)

December 11, 1980
North Vancouver, B.C.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

INTRODUCTION

The HALO 1 Mineral Claim is situated in the Omineca Mining District and is covered by N.T.S. 1:50,000 map sheet 93N/6E. It is located near the headwaters of Halobia Creek, approximately 10 km east of Indata Lake (see Figures 1,2).

Although sub-alpine the claim has moderate relief with valleys at 1350 to 1500 meters elevation and the rounded hill which dominates the east half of the property reaching 1657 meters.

Originally staked as the NOBLE claim group, a soil geochemical survey done by UMEX in 1971 indicated large areas of high molybdenum and copper geochemistry. (see Assessment Report 3611) Subsequently, 6.8 line-miles of I.P. and 12.5 line-miles of magnetometer were done as well as surface diamond drilling of 5 holes totalling 1139 feet (see G.E.M. 1972, page 447). The results of work done after 1971, were not made public as far as is known.

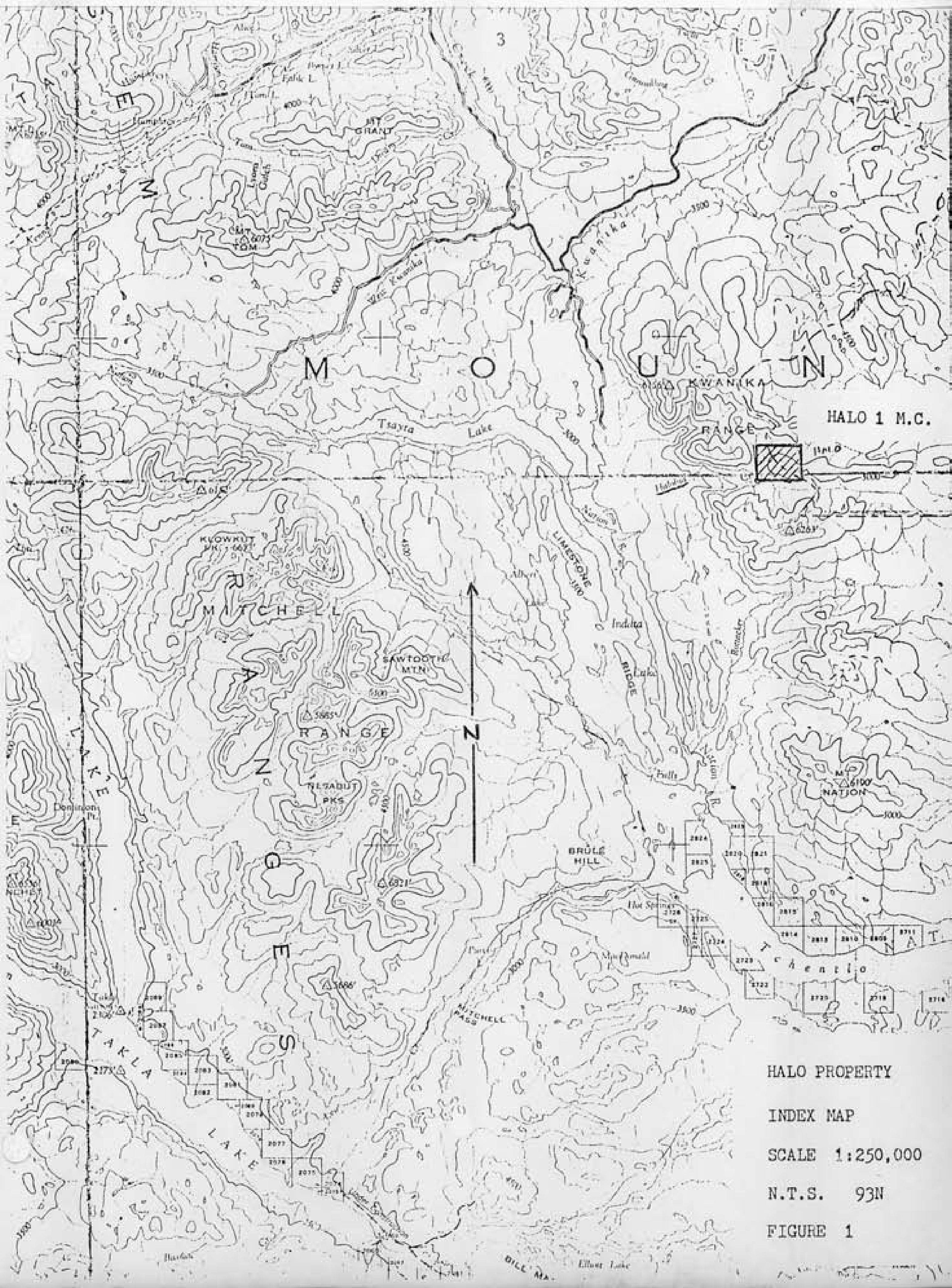
The property is presently owned by J.C. Stephen who initiated the present work under agreement with the operator Dome Exploration (Canada) Ltd.

From July 24 to August 11, 1980 a two man crew conducted an MF 1 fluxgate magnetometer survey totalling 52.5 line-kilometers on this HALO Mineral Claim, tested previous geochemical anomalies and mapped reconnaissance geology of the claim and immediate area over roughly 10 square kilometers at a scale of 1:10,000. In total the following number of samples were collected and analyzed:

34 soil samples run for Au, Mo, W.
16 rock samples run for Mo, W, (Au in a few cases).
25 silt samples run for Au, Mo, W.

Claim Registration

Name	Owner	Record No.	No. of Units	Record Date
HALO 1	J.C. Stephen	2651	20	March 21, 1980



HALO PROPERTY

INDEX MAP

SCALE 1:250,000

N.T.S. 93N

FIGURE 1

HALO PROPERTY

INDEX MAP

SCALE 1:50,000

N.T.S. 93N/6

FIGURE 2

GEOLOGY

Procedure

From August 5 to August 11, 1980, B. Fraser assisted by D. Guglielmin conducted reconnaissance geology at a scale of 1:10,000 on the HALO 1 Mineral Claim. As outcrop was scarce over a large part of the claim (probably less than 10% of the total area), the adjacent ground was mapped, as well, for a total coverage of roughly 10 square kilometers by this survey.

Regional Geology

The HALO 1 Mineral Claim is centrally located in the Hogem Batholith, a composite pluton of Lower Jurassic to Lower Cretaceous age. Regional geology at a scale of 1:125,000 is well described by Department of Mines Bulletin 70. In this work, J.A. Garnett breaks the batholith into three main phases:

Phase I. Lower Jurassic to Upper Triassic age basic composition. Rock types very from diorite to monzodiorite to monzonite to granodiorite. This dominant phase of the batholith is believed to exhibit zonation from a basic diorite border inward toward a leucocratic granodiorite core.

Phase II Middle Jurassic to Lower Jurassic age. Subdivided into two widely separated bodies: one at Duckling Creek and the other near Chuchi Lake. Syenitic composition. Economically significant as these intrusions are spatially associated with important copper deposits: chalcopyrite, bornite, chalcocite, malachite mineralization.

Phase III Lower Cretaceous age. Leucocratic to holofelsic granite rocks. Chalcopyrite and molybdenite are associated with this phase in silicified zones and as fracture fillings in older more mafic intruded phases of this batholith.

Local Geology

1. Rock Types

Rock exposures indicate HALO 1 Mineral Claim to be underlain by two main phases of the Hogem Batholith. (refer to Map I).

Unit 4 is part of the Phase I Intrusions or Hogem Basic Suite and consists dominantly of rocks of monzonite composition. Generally foliated these rocks varied from medium grained hornblende to biotite monzonite. Although hornblende was the dominant mafic mineral and at times made up to 40% of hand specimens, patchy biotite was quite common. No definite pattern was recognized but pervasive biotite alteration is believed to be important, as it may indicate the presence of porphyry type intrusions. Included with the monzonite phase were outcrops of foliated hornblendite. Associated with k-spar pegmatite at the locality of rock BF 80-8-5-3, this extremely basic rock is believed to be responsible for the highest magnetometer readings on the property. It is interesting to note that Garnett states in reference to the Duckling Creek Syenite Complex - "Biotite pyroxenites occur as irregular pods and lenses within the basic rocks. There is no similar occurrence of pyroxenite known elsewhere within the southern Hogem Batholith." - (Page 43; Department of Mines, Bulletin 70). The hornblendite pods noted on the HALO 1 Mineral Claim within basic foliated rocks appear to bear a striking similarity to the basic phase observed at Duckling Creek, an important sub-economic copper deposit.

Unit 9 represents Phase I intrusions of the Hogem Batholith. It was subdivided into:

1) an extensive coarse grained phase of granitic composition which was commonly porphyritic with euhedral k-spar phenocrysts reaching 1.5 cm in length,a generally equigranular matrix of 20% to 30% quartz, 40% to 60% alkali feldspar and the remainder plagioclase.
2) a narrow band of fine to medium grained equigranular leucocratic to holofelsic granitic rock (or alaskite).

Minor widely isolated outcrops were noted of light grey tuff. Limited outcrop exposures indicate it is probably a valley fill deposit, at least in the northern part of the map sheet. Its position here indicates it was laid down following the Phase I intrusions. Its relation to Phase III intrusions is unknown. This unit is grouped together with one exposure in the entreme southeast of the claim of light grey feldspar porphyry, BF 80-8-11-2.

A summary of rock specimens collected makes up Table 1.

TABLE 1

Rock Specimens from HALO 1 Mineral Claim

Sample No.	Field Description
BF 80-8-5-1	25W-4N (UMEX), sub-angular, cobble float, medium grained hornblende biotite monzonite, trace chalcopyrite, trace molybdenite.
BF 80-8-5-2	24+20W-4N (UMEX), sub outcrop, fresh looking granodiorite, poikilitic k-spar enclosing biotite.
BF 80-8-5-3	23W-4N (UMEX), sub angular boulder float, foliated hornblendite intruded by k-spar pegmatite.
BF 80-8-5-4	23W-4+30N(UMEX), sub angular, boulder of biotite monzonite.
BF 80-8-5-5	23W-00N (UMEX), medium grained hornblende biotite monzonite.
BF 80-8-5-6-	15+60W-00N (UMEX), silicified weakly pyritic epidote veined, medium grained hornblend monzonite.
BF 80-8-6-2	medium grained biotite quartz monzonite.
BF 80-8-7-2	equigranular medium grained biotite granite.
BF 80-8-7-3	1 cm pyrite quartz vein in medium grained biotite granite.
BF 80-8-7-4	chloritic medium grained biotite monzonite.
BF 80-8-7-5	k-spar porphyritic coarse grained granite.
BF 80-8-7-6	fine grained equigranular alaskitic granite.
BF 80-8-8-1	medium grained highly chloritic, epidotized biotite monzonite.
BF 80-8-8-2	medium grained hornblende monzonite with numerous amber phenocrysts 1 mm of sphene, angular float.
BF 80-8-11-1	25+50E/2+33N (J.C.S.), rubble of light grey tuff.
BF 80-8-11-2	25+50E/3+00N (J.C.S.), rubble of biotite feldspar porphyry.
BF 80-8-11-3	20E/4N (J.C.S.), foliated medium grained chloritic hornblende biotite monzonite.
DG 80-8-81	melanocratic biotite hornblende monzonite.
DG 80-8-10-1	light grey tuff
DG 80-8-10-2	medium grained biotite monzonite.
DG 80-8-11-1	medium grained foliated meta volcanic.
DG 80-8-11-2	rusty biotite hornblende monzonite.
DG 80-8-11-3	00E-9N (J.C.S.), medium grained biotite hornblende monzonite.
DG 80-8-11-4	00E-15N (J.C.S., melanocratic hornblende monzonite.

2. Structure

Structural data is limited. In general the intrusive phases appear to have been emplaced along north west trending faults. Quartz veining was observed at the margins of unit 9b with unit 4a but it lacked a preferred orientation.

3. Mineralization

The best mineralization observed on the property was moderate disseminated molybdenite in medium grained quartz monzonite, rock sample #80790. Rock geochemical analysis returned <250 ppm molybdenite. However, the sample was from boulder float. Weak molybdenite was found in place at two localities, samples 73801 and 73802. In both cases the rock type was fine grained alaskitic granite. Rock geochemical analysis returned 70 ppm molybdenite and 62 ppm molybdenite respectively.

Trace chaclopyrite was frequently found associated with unit 4. However, significant copper mineralization was not encountered.

GEOPHYSICS

Purpose

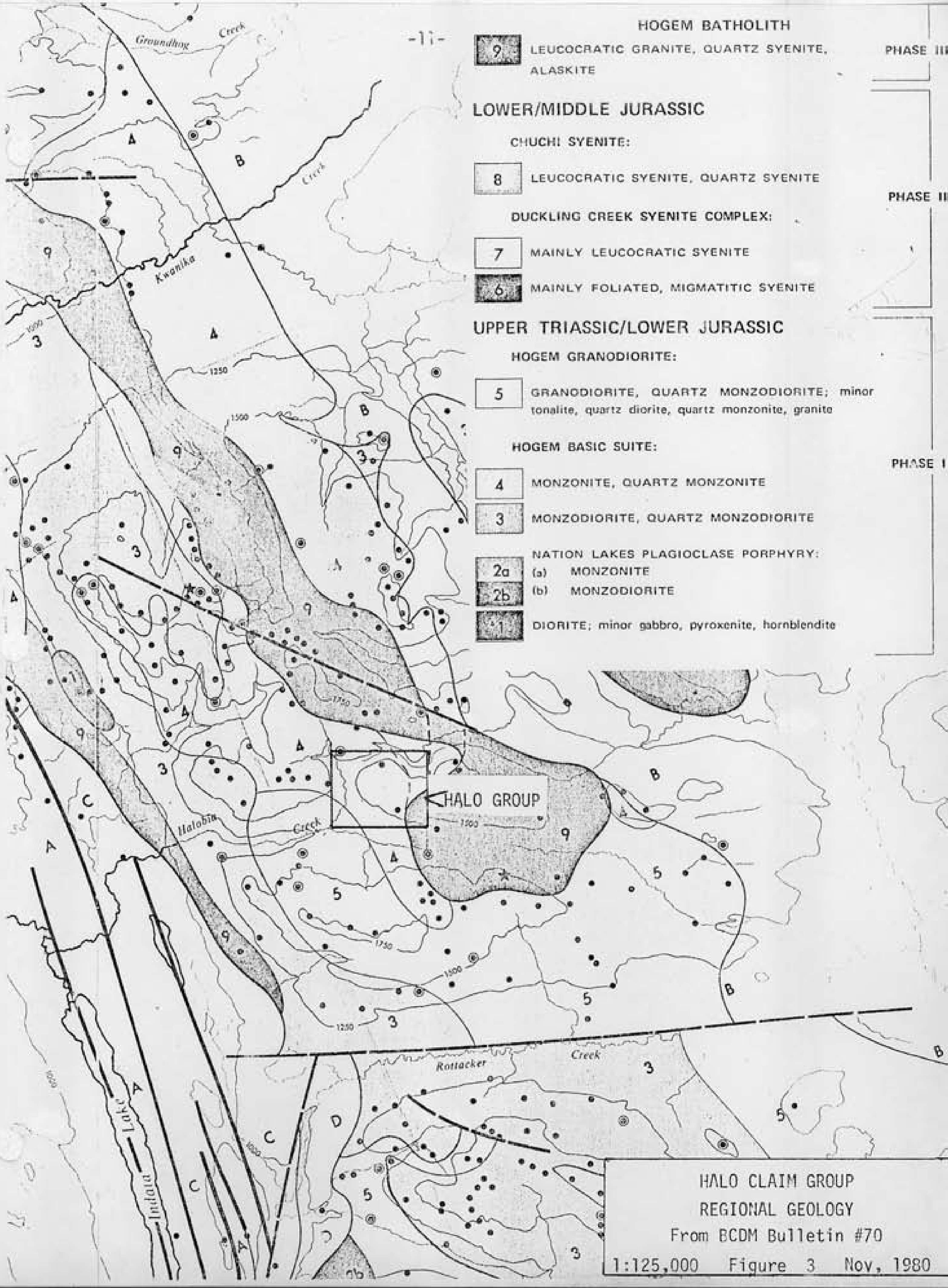
A comparison of regional 1:125,000 scale geology (Department of Mines Bulletin 70 - J.A. Garnett, 1978) with regional aero-magnetic maps for the area indicated a strong contrast in the different phases of the Hogem Batholith (see Figures 3,4). It was felt a ground magnetometer survey would help in mapping the geology.

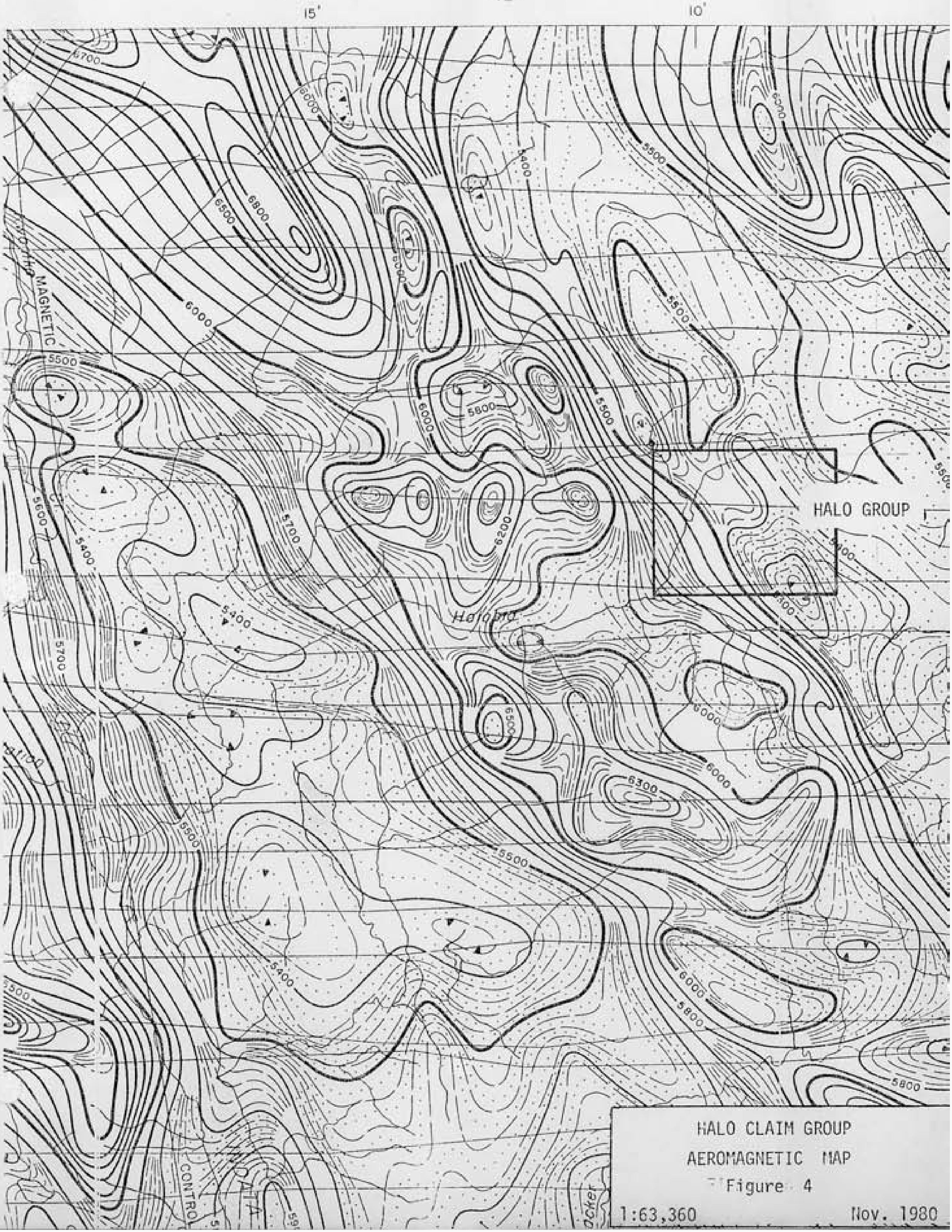
Procedure

A ground magnetometer survey of the entire HALO 1 Mineral Claim was made using a Scintrex MF1 fluxgate magnetometer (for further description of instrument see Appendix I).

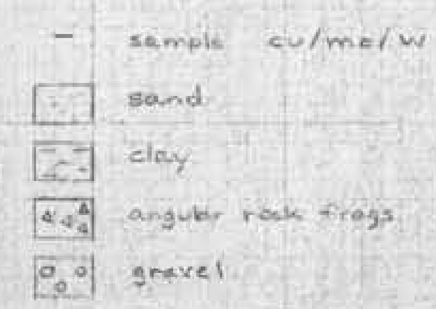
The legal corner post of HALO 1 Mineral Claim was set as grid reference point 00N-00E and north south claim lines were used as base lines. Lines were run east west with a separation of 100 meters. Control was by hip chain and compass. Location of the grid relative to topography was determined using air photo B.C. 2055: 103-104 and a 1:10,000 scale map enlarged from N.T.S. 1:50,000 map sheet 93N/6.

In total 52.5 line-kilometers of readings were accomplished Correction was made once daily for diurnal vairation. The measured change in magnetic field strength (measured at a convenient base station) was proportioned to each station reading by comparing the time elapsed from initial base reading to each station reading with the total time elapsed between base readings.


HOGEM BATHOLITH
9 LEUCOCRATIC GRANITE, QUARTZ SYENITE, ALASKITE
PHASE III
LOWER/MIDDLE JURASSIC
CHUCHI SYENITE:
8 LEUCOCRATIC SYENITE, QUARTZ SYENITE
PHASE II
DUCKLING CREEK SYENITE COMPLEX:
7 MAINLY LEUCOCRATIC SYENITE
6 MAINLY FOLIATED, MIGMATITIC SYENITE
UPPER TRIASSIC/LOWER JURASSIC
HOGEM GRANODIORITE:
5 GRANODIORITE, QUARTZ MONZODIORITE; minor tonalite, quartz diorite, quartz monzonite, granite
HOGEM BASIC SUITE:
PHASE I
4 MONZONITE, QUARTZ MONZONITE
3 MONZODIORITE, QUARTZ MONZODIORITE
NATION LAKES PLAGIOCLASE PORPHYRY:
2a (a) MONZONITE
2b (b) MONZODIORITE
1 DIORITE; minor gabbro, pyroxenite, hornblendite
Groundhog Creek
Creek
Kwanika
Halobia Creek
Rottacker Creek
Lake
Indata
HALO GROUP
1000
1250
1500
1750
A
B
C
D
HALO CLAIM GROUP
REGIONAL GEOLOGY
From BCDM Bulletin #70
1:125,000 Figure 3 Nov, 1980


15'
10'
HALO GROUP
MAGNETIC
6800
6500
6000
5500
5800
6200
5700
5600
5400
6300
Halo
CONTRO
HALO CLAIM GROUP
AEROMAGNETIC MAP
Figure 4
1:63,360
Nov. 1980

LINE 16N (J.C.S. GRID)



J.C. STEPHEN EXPLORATIONS LTD
TARGET PROJECT

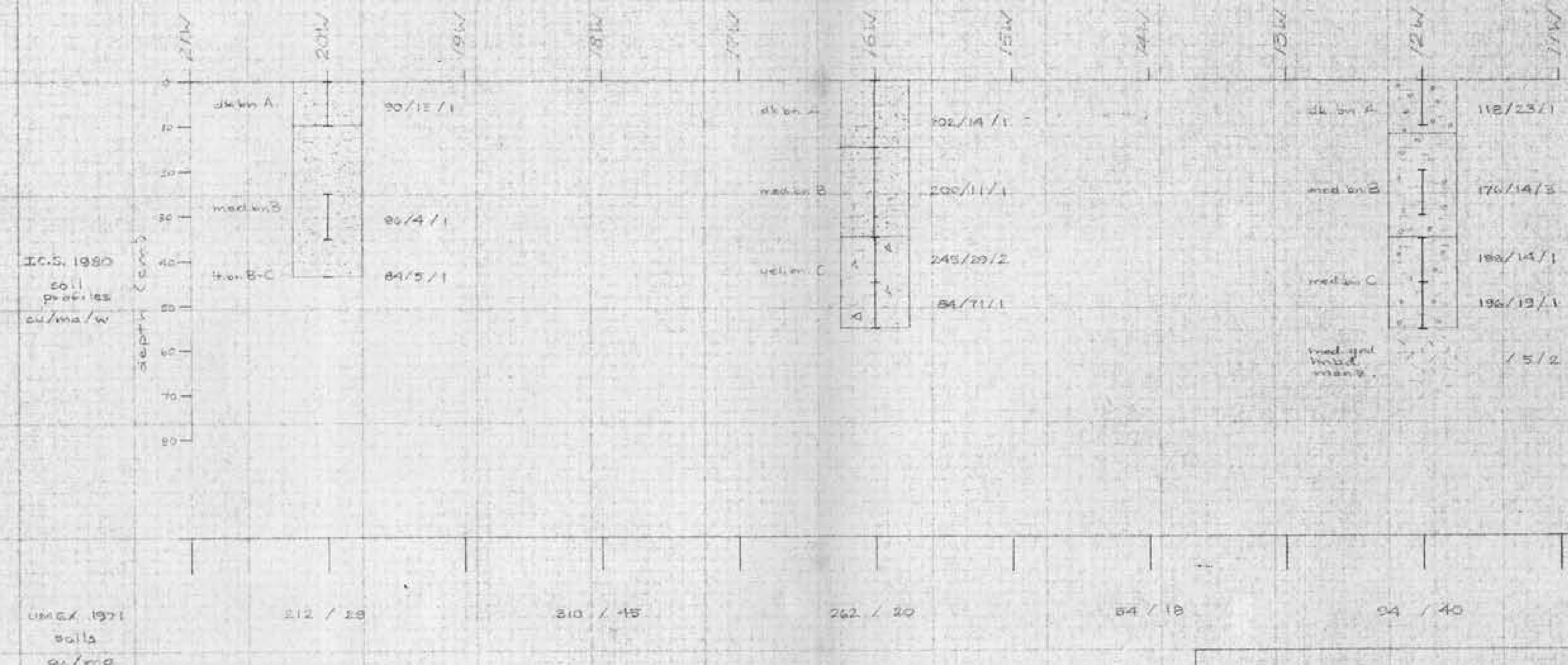
HALO PROPERTY

SOIL PROFILES

horizontal scale	1:5000
vertical scale	1:10
WORK BY: D.G.	AUG. 1980
DRAWN BY: BMF	OCT. 1980

FIGURE 5

LINE 4S (UMEX GRID)



sand
clay
angular rock frags
gravel

J.C. STEPHEN EXPLORATIONS LTD.
TARGET PROJECT
HALO PROPERTY
SOIL PROFILES

horizontal scale	1:1000
vertical scale	1:10
WORK BY: B.M.F., D.G.	AUG, 1980
DRAWN BY: B.M.F.	OCT, 1980

FIGURE 6

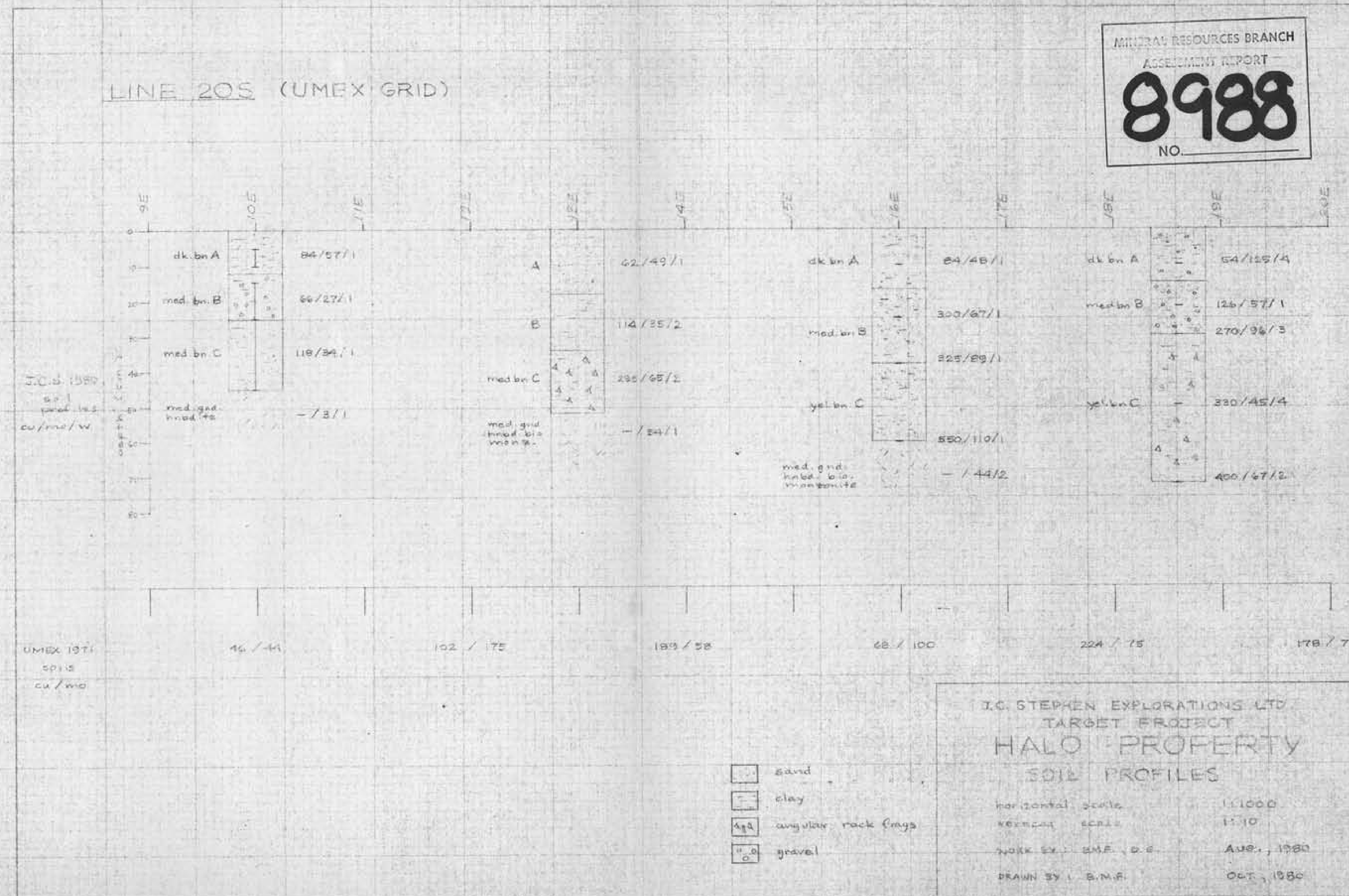

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8988
NO.
LINE 20S (UMEX GRID)
9E
10E
11E
12E
13E
14E
15E
16E
17E
18E
19E
20E
J.C.S. 1980
soil profiles
cu/mo/w
dk. bn A
med. bn. B
med. bn. C
med. grd. hnbd. ito
84/57/1
66/27/1
118/34/1
— / 3/1
A
B
med bn C
med. grd hnbd. bio mon ite
62/49/1
114/35/2
295/65/2
— / 24/1
dk bn A
med. bn B
yel. bn C
med. grd. hnbd. bio. monzonite
84/48/1
300/67/1
225/89/1
550/110/1
— / 44/2
dk bn A
med bn B
yel. bn C
54/125/4
126/57/1
270/96/3
330/45/4
400/67/2
UMEX 1971
soils
cu/mo
46/41
102/175
189/58
68/100
224/75
178/7
sand
clay
angular rock frags
gravel
J.C. STEPHEN EXPLORATIONS LTD.
TARGET PROJECT
HALO PROPERTY
SOIL PROFILES
horizontal scale 1:1000
vertical scale 1:10
work by: B.M.F., D.S. Aug., 1980
drawn by: B.M.F. Oct., 1980

FIGURE 7

Results

Magnetometer readings obtained represent the vertical component of the earth's magnetic field in gammas and are relative rather than absolute. The corrected values are plotted as Map II. Contouring of these values using a 200 gamma contour interval was used to produce Map III.

Interpretation

The contour plan (MapIII)indicates a northwest - southeast trending break in regime between 17N-1E and 00N-14 E. To the west values are generally higher and the contour pattern is tighter and more contorted. This seems to indicate that west of the break lies a more basic inhomogeneous phase of the Hogem Batholith. A comparison with the reconnaissance geology indicated occurrences of melanocratic monzonite and foliated basic segregations of the intrusive complex which are believed responsible for the higher contorted pattern in this area.

Within the eastern regime the following mag lows may be significant as they appear to allign with 40 ppm molybdenum soil anomalies:

1) 16N - 7E to 11N - 10E
2) 3N -20E to 3N - 22E
3) 18N -11E.

It is possible these magnetic lows may represent zones of alteration associated with molybdenite mineralization.

It is interesting to note that there is no strong magnetic expression between rock units 4a and 9. This might indicate unit 4a is simply a thin skin overlying a core of unit 9.

GEOCHEMISTRY

Purpose

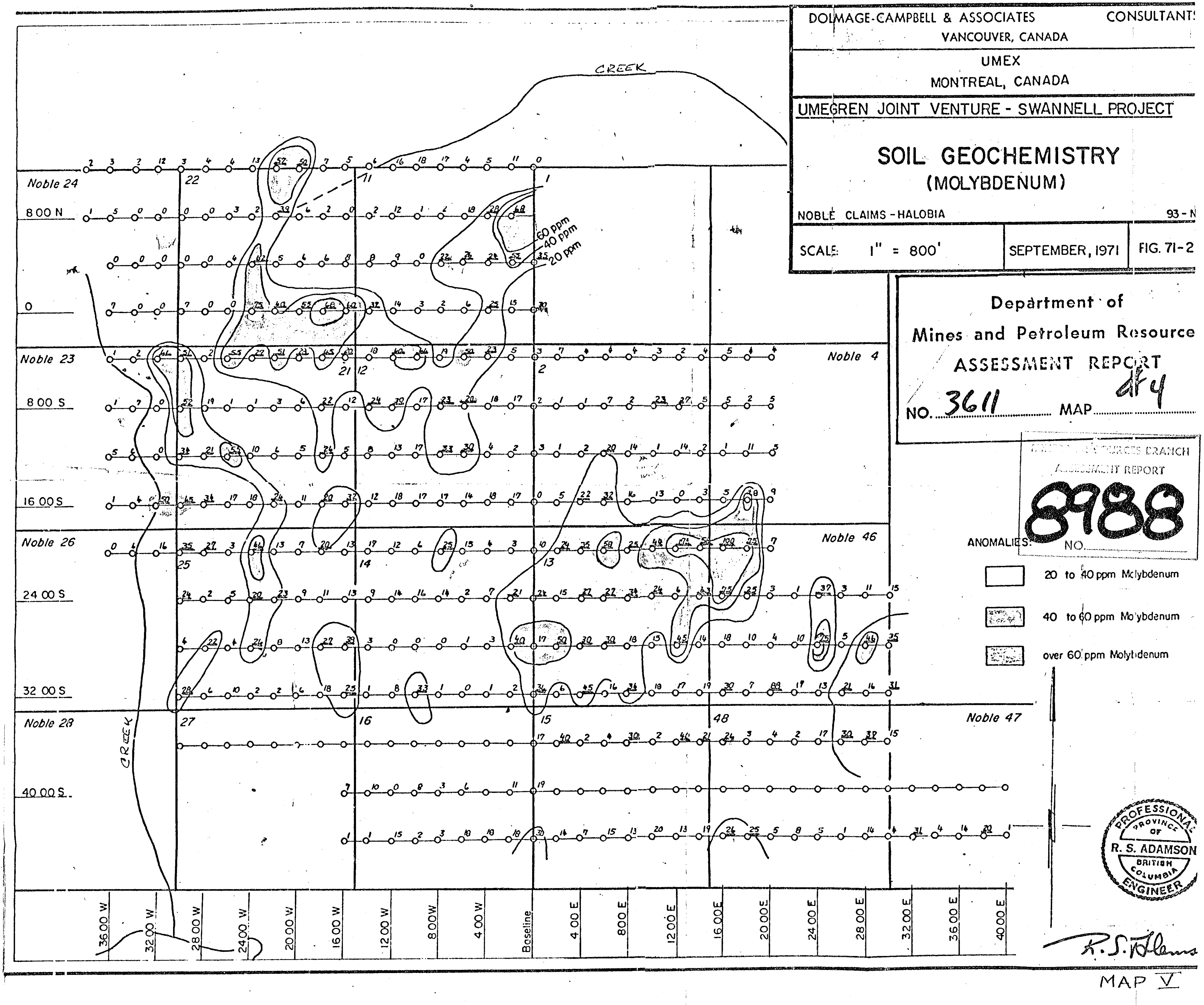
Significant copper and molybdenum anomalies were indicated in surveys done by UMEX in 1971 (see Appendix II). Soil profile holes were dug to test whether these anomalies were residual or transported. Interesting outcrops were sampled as potential sources for high soil geochemistry. Silt samples were collected to test for regional source mineralization.

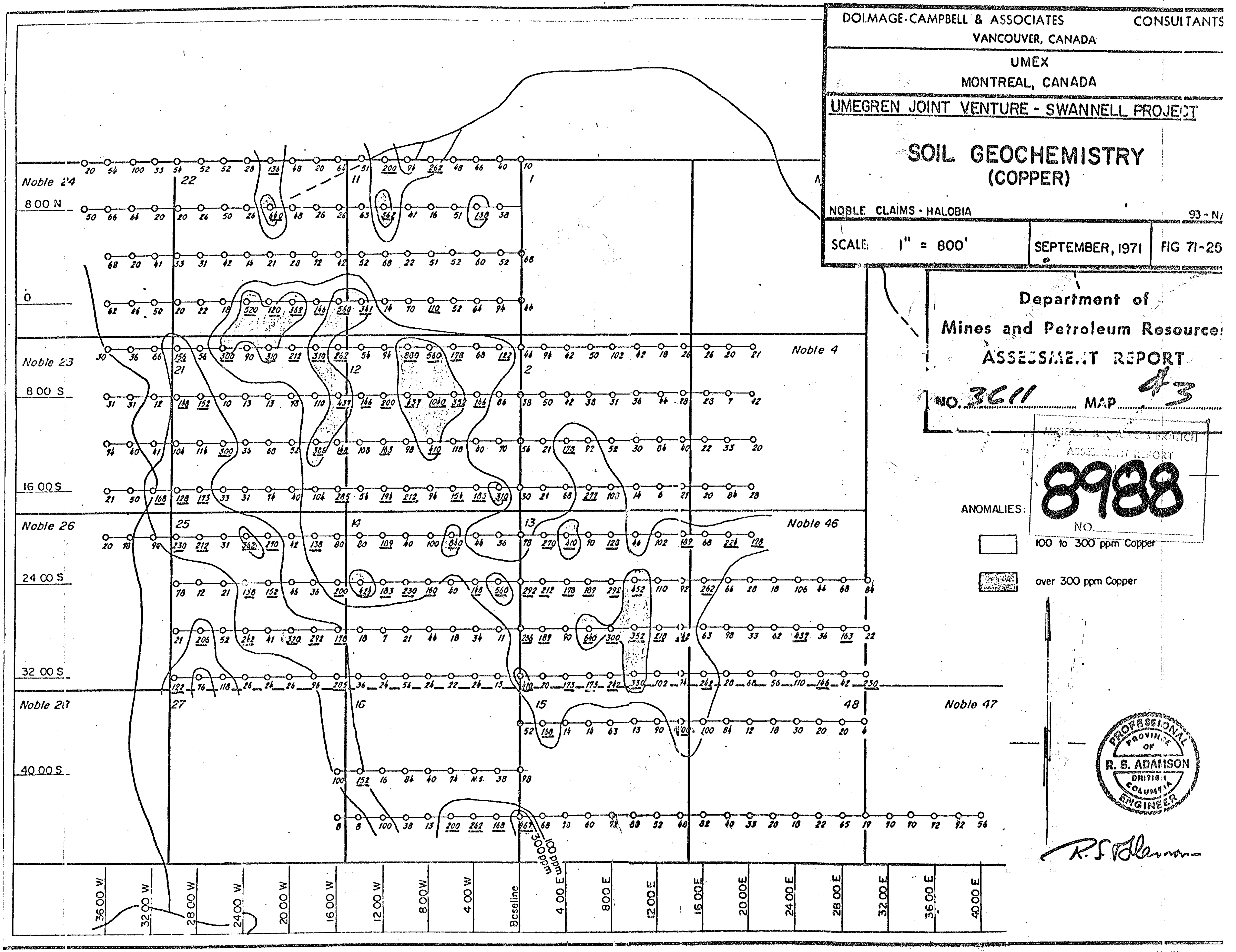
Procedure

UMEX grid lines were located and tied into flag lines emplaced during the magnetometer survey. This was relatively easy as several of the old lines were cut for an IP survey and station flags were still readable. Soil pits of 40 to 70 cm depth were then dug in reportedly anomalous areas. Profile soil samples were collected. If bedrock was reached, it was sampled as well. In total 34 soil samples and 4 rock samples were collected from 10 pits. 12 grab samples were collected of mineralized outcrop in addition to that in soil holes. Creeks draining the western margin of the property were silted at a maximum 300 meter interval.

Soil and silt samples of roughly 0.4 kg were collected in wet strength kraft paper envelopes. Rock samples of from 2 to 3 kg were collected in plastic bags.

These samples were shipped via parcel post from Takla Landing to Chemex Labs Ltd., 212 Brooksbank Avenue, North Vancouver, B.C., V7J 2C1. Soil and silt samples were analyzed for copper, molybdenum and tungsten. Rock samples with a few exceptions were analyzed for molybdenum


DOLMAGE-CAMPBELL & ASSOCIATES CONSULTANTS
VANCOUVER, CANADA
UMEX
MONTREAL, CANADA
UMEGREN JOINT VENTURE - SWANNELL PROJECT
SOIL GEOCHEMISTRY
(MOLYBDENUM)
NOBLE CLAIMS - HALOBIA
93-N
SCALE: 1" = 800'
SEPTEMBER, 1971
FIG. 71-2
Department of
Mines and Petroleum Resource
ASSESSMENT REPORT
NO. 3611 MAP #4
ASSESSMENT REPORT
8988
NO.
ANOMALIES:
20 to 40 ppm Molybdenum
40 to 60 ppm Molybdenum
over 60 ppm Molybdenum
60 ppm
40 ppm
20 ppm
CREEK
Noble 24
Noble 23
Noble 26
Noble 28
Noble 4
Noble 46
Noble 47
800 N
0
800 S
16 00 S
24 00 S
32 00 S
40 00 S
36 00 W
32 00 W
28 00 W
24 00 W
20 00 W
16 00 W
12 00 W
8 00 W
4 00 W
Baseline
4 00 E
8 00 E
12 00 E
16 00 E
20 00 E
24 00 E
28 00 E
32 00 E
36 00 E
40 00 E
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. S. ADAMSON
MAP V


DOLMAGE-CAMPBELL & ASSOCIATES CONSULTANTS
VANCOUVER, CANADA
UMEX
MONTREAL, CANADA
UMEGREN JOINT VENTURE - SWANNELL PROJECT
SOIL GEOCHEMISTRY
(COPPER)
NOBLE CLAIMS - HALOBIA
93 - N/
SCALE: 1" = 800'
SEPTEMBER, 1971
FIG 71-25
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3611 MAP #3
8988
ANOMALIES:
100 to 300 ppm Copper
over 300 ppm Copper
Noble 24
Noble 23
Noble 26
Noble 28
Noble 4
Noble 46
Noble 47
800 N
0
800 S
16 00 S
24 00 S
32 00 S
40 00 S
36 00 W
32 00 W
28 00 W
24 00 W
20 00 W
16 00 W
12 00 W
8 00W
4 00 W
Baseline
4 00 E
8 00 E
12 00 E
16 00 E
20 00 E
24 00 E
28 00 E
32 00 E
36 00 E
40 00 E
100 ppm
300 ppm
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. S. ADAMSON

MAP IV

and tungsten. Detail of sample preparation and procedure are outlined in Appendix III.

Results and Interpretation

1. Soil Profile Holes

Results are summarized in Figure 5 to 7. For location within property see Map I.

2. Rock Samples

Results are summarized in Table 2. For location within property see Map I.

3. Silt Samples

See Map I.

1. Soil Profile Holes.

Molybdenum soil concentration increases significantly with depth at 16N - 16E (J.C.S.), 4S - 16W (UMEX) and at 20S - 16E (UMEX). Copper soil concentration increases significantly with depth at 4S - 12W (UMEX) and 20S - 13E, 20S - 16E, 20S - 19E (UMEX). These increases seem to indicate soil anomalies in these areas are from a local bedrock source.

Molybdenum and copper concentration increases do not coincide except at 20S - 16E (UMEX). This indicates that the source for each element is probably from separately mineralized basement rocks.

TABLE 2

Chemical Analysis of Rock Samples from HALO 1 Mineral Claim

Sample No.	Field Description	Unit	Cu.	Mo.	W.
73801	equigranular alaskitic fine grained with trace molybdenite	9b		70	1
73802	equigranular weakly pyritic alaskitic fine granite, trace molybdenite	9b		62	1
73803	moderate pyritic equigranular grained granite, 2-6 mm quartz veinlets.	9b		6	1
73804	moderate pyritic equigranular fine grained granite	9b		2	2
73805	leached rusty moderate pyritic coarse grained moscovite granite	9a		4	15
80785	aphanitic foliated basic segregation possibly metavolcanic	4c	300	10	2
80786	pyritic medium grained hornblende monzonite	4a			
80787	pyritic biotite quartz monzonite	4b	16	3	1
80788	pyritic biotite quartz monzonite	4b	14	12	5
80789	fine grained alaskitic granite	9b	4	1	1
80790	boulder float, medium grained bleached biotite quartz monzonite, disseminated moderate molybdenite weak pyrite	9b hybrid		250	8
80791	soil pit 20S - 16E (UMEX).,medium grained hornblende biotite monzonite	4a		44	2
80792	soil pit 20S - 13E, medium grained inter-biotite monzonite, trace pyrite, trace epidote	4a		54	1
80793	soil pit 19+80S-10E, medium grained horn-blendite, trace pyrite	4c		3	1
80794	soil pit 4S-12W, medium grained hornblende monzonite	4a		5	2
80795	rusty pyritic hornblende biotite monzonite			3	1

Bedrock sampled from 20S - 16E (UMEX) ran 44 ppm molybdenite whereas soil immediately above ran 110 ppm. The rock type was hornblende-biotite monzonite in which no disseminated molybdenite was recognized in the field. It is felt molybdenum in this location most likely occurs as fracture controlled molybdenite which is being leached into the overlying sediments.

2. Rock Samples

Sample 73801, 73802 indicate unit 9b can attain high background molybdenum concentration through weakly disseminated molybdenite. Samples 73803, 73804 of pyrritic 9b indicate this background concentration is not uniform throughout the area of HALO 1 Mineral Claim. The best mineralized rock sample was 80790 which ran greater than 250 ppm molybdenite.. Although taken from boulder float this sample appeared to be an altered variation of unit 9b and could very likely be from the immediate area.

Few samples were analyzed for copper as significant mineral was lacking. Sample 80785 which had very fine weakly disseminated chalcopyrite ran 300 ppm copper and indicates basic inclusion in unit 4 would provide an excellent source for copper mineralization.

Only one tungsten kick occurs on the property at location 73805. Coarse grained muscovite granite of this type was only observed at this one location so the likelihood of tungsten mineralization on HALO 1 Mineral Claim is slight.

3. Silt Samples

Silts were dead for all elements except for two spot copper kicks of 138 ppm and 118 ppm near the north west corner of the property. This was rather surprising and it was expected the high molybdenum and copper soil concentrations would show up in the creek. Two possibilities can be considered:

1) soil concentrations are too weak relative to the volume of water flowing in the creek to change the silt geochemistry.
2) elements are relatively immobile in the anomalous soil locations.

Given the extent of the anomalies, it is felt the latter is more likely.

Respectfully submitted

J.C. Stephen Explorations Ltd.

Bryan Fraser

Bryan M. Fraser, B.Sc. (Geol)

ITEMIZED COST STATEMENT FOR 1980 ASSESSMENT WORK

on

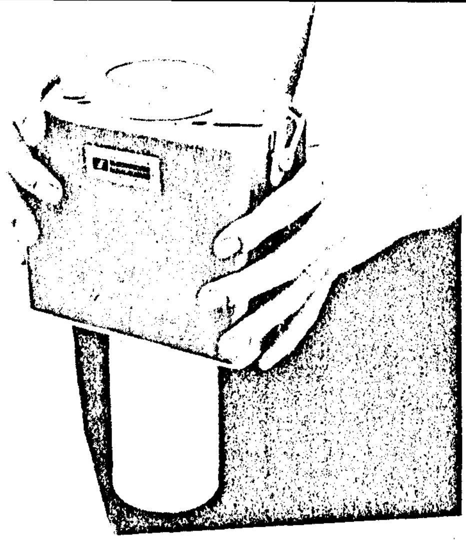
HALO 1 MINERAL CLAIM

(a)	Wages July 24 - August 12			
	B.Fraser 20 days @ $53.35 per day	$1,067.00		
	D. Guglielmin 20 days @ $44.40 per day	888.00		
				$1,955.00
(b)	Food and Accomodations			
	July 21 Overwaitea Fort St. James	139.34		
	July 23 Takla Trading Post	11.65		
				150.99
(c)	Transportation			
	1. Helicopter July 24 - August 12			1,602.00
	2. Truck			
	Rental 20 days @ $752.00 per month	501.33		
	Tires	247.10		
				748.43
(d)	Rental of MF 1 Magnetometer			
	July 24 - August 12 20 days @ $8.00 per day			160.00
(e)	Chemical Analyses			
	16 rocks 1) 5 analyzed for Cu,Mo @ $2.35	11.75		
	2) 11 analyzed for Mo @ 1.65	18.15		
	3) 2 analyzed for Au (AA) @ 3.75	7.50		
	4) 16 prepared for $2.00	60.00		
	5) 16 analyzed for W. @ 3.75	32.00		
		129.40		
	Less 15%	19.41		
	per Invoice No. 38742			109.99
	59 (25 silts, 34 soils) analyzed for Cu, Mo, W @ 6.10		359.90	
	prepared @ 1.00		59.00	
			418.90	
	Less 15%		62.83	
				356.07
	Total			5,082.48

APPENDIX I

MF - 1 DESCRIPTION

SCINTREX

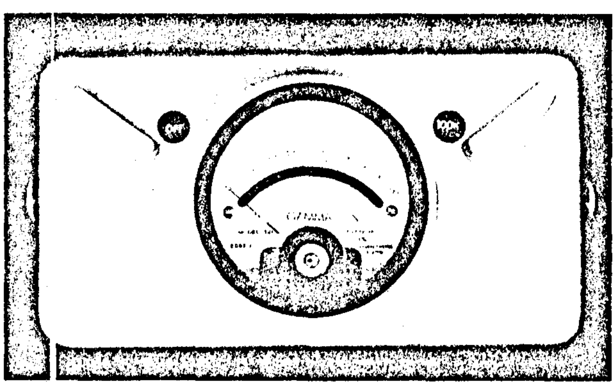


MF-1 FLUXGATE MAGNETOMETER

The MF-1 Fluxgate Magnetometers and their extended sensitivity series, the MF-1-100's are designed primarily for the oil and mineral exploration industries. They incorporate advanced transistorized circuitry and extensive temperature compensation with light weight and a self-levelling mechanism. Although the basic MF-1 and MF-1-100 are intended primarily for accurate ground surveys in the mining industry, modifications are available for base station recording, for vertical gradient measurements, for measuring susceptibilities, determining remanence of rock samples and for storm monitoring on aeromagnetic surveys.

(a) MF-1

The MF-1 Fluxgate Magnetometer is a vertical component magnetometer designed for accurate ground surveys in the mining industry. Advanced transistorized circuitry and extensive temperature compensation is the core of its accuracy, comparable to precision tripod mounted Schmidt type magnetometers. It is a hand held instrument and needs only coarse levelling and no orientation. Features such as direct reading of gamma values and the possibility of accurate zero settings at base stations ensure simplicity of operation and high field economy. The readability is 5 gammas on the 1000 gamma range.



(b) MF-1-G

The MF-1-G Fluxgate Magnetometer has the same electronics and specifications as the MF-1. The difference lies in that the sensor is detached and enclosed in a small cylindrical tube thus permitting the sensor (geoprobe) to be oriented and tilted in any desired direction. Since a 25 foot connecting cable joins the sensor to the instrument housing, the geoprobe may be placed away from local spurious magnetic disturbances in the vicinity of the electronics housing. Thus this magnetometer may be used for the study of the magnetic properties of rocks, remanence etc.

(c) MF-1-GS

The MF-1-GS Magnetometer again has the same electronics and specifications as the MF-1 but has two sensors, the attached self-levelling sensor of the MF-1 as well as the detached geoprobe of the MF-1-G. Thus this magnetometer may be employed on rapid ground magnetometer surveys and also used for vertical gradient measurements and to measure the magnetic properties of rocks.

SPECIFICATIONS
FLUXGATE MAGNETOMETER
MODEL MF-1

Ranges:	Plus or minus — 1,000 gammas f. sc. 3,000 " 10,000 " 30,000 " 100,000 " Sensitivity 20 gammas/div. 50 " 200 " 500 " 2,000 "
Meter:	Taut-band suspension 1000 gammas scale 1⅞" long — 50 div. 3000 gammas scale 1 11/16" long — 60 div.
Accuracy:	1000 to 10,000 gamma ranges ± 0.5% of full scale 30,000 and 100,0000 gamma ranges ± 1% of full scale
Operating Temperature:	—40°C to +40°C —40°F to +100°F
Temperature Stability:	Less than 2 gammas per °C (1 gamma /°F)
Noise Level:	Total 1 gamma P-P
Long Term Stability:	± 1 gamma for 24 hours at constant temperature
Bucking Adjustments: (Latitude)	10,000 to 75,000 gammas by 9 steps of approximately 8,000 gammas and fine control by 10 turn potentiometer. Convertible for southern hemisphere or ± 30,000 gammas equatorial.
Recording Output:	1.7 ma per oersted for 1000 to 100,000 gamma ranges with maximum termination of 15,000 ohms.
Response:	DC to 5 cps (3db down)
Connector:	Amphenol 91-MC3F1
Batteries:	12 x 1.5V-flashlight batteries "C" cell type) (AC Power supply available)
Consumption:	50 milliamperes
Dimensions:	Instrument — 6½" x 3½" x 12½" 165 x 90 x 320 mm Battery pack — 4" x 2" x 7" 100 x 50 x 180 mm Shipping Container — 10" dia x 16" 254 mm dia. x 410 mm
Weights:	Instrument — 5 lbs. 12 oz. 2.6 kg. Battery Pack — 2 lbs. 4 oz. 1.0 kg. Shipping — 13 lbs. 6.0 kg.

SCINTREX LIMITED
79 Martin Ross Avenue. Downsview, Ontario, Canada

PLEASE NOTE OUR NEW ADDRESS
222 Snidercroft Rd., Concord, Ontario.

APPENDIX II

UMEX SURVEYS

APPENDIX III

SAMPLE PROCEDURES

GEOCHEMICAL PREPARATION
AND
ANALYTICAL PROCEDURES

1. Geochemical samples (soils, silts) are dried at 50°C for a period of 12 to 24 hours. The dried sample is sieved to -80 mesh fraction through a nylon and stainless steel sieve. Rock geochemical materials are crushed, dried and pulverized to -100 mesh.

2. A 1.00 gram portion of the sample is weighed into a calibrated test tube. The sample is digested using hot 70% $HClO_4$ and concentrated HNO_3. Digestion time = 2 hours.

3. Sample volume is adjusted to 25 mls. using demineralized water. Sample solutions are homogenized and allowed to settle before being analyzed by atomic absorption procedures.

4. Detection limits using Techtron A.A.5 atomic absorption unit.

   Copper - 1 ppm
   Molybdenum - 1 ppm
   Zinc - 1 ppm
   *Silver - 0.2 ppm
   *Lead - 1 ppm
   *Nickel - 1 ppm
   Chromium - 5 ppm

   *Ag, Pb & Ni are corrected for background absorption.

5. Elements present in concentrations below the detection limits are reported as one half the detection limit, ie. Ag - 0.1 ppm

APPENDIX IV

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, Bryan M. Fraser, of 201 - 8625 Osler Street, Vancouver B.C. do certify that:

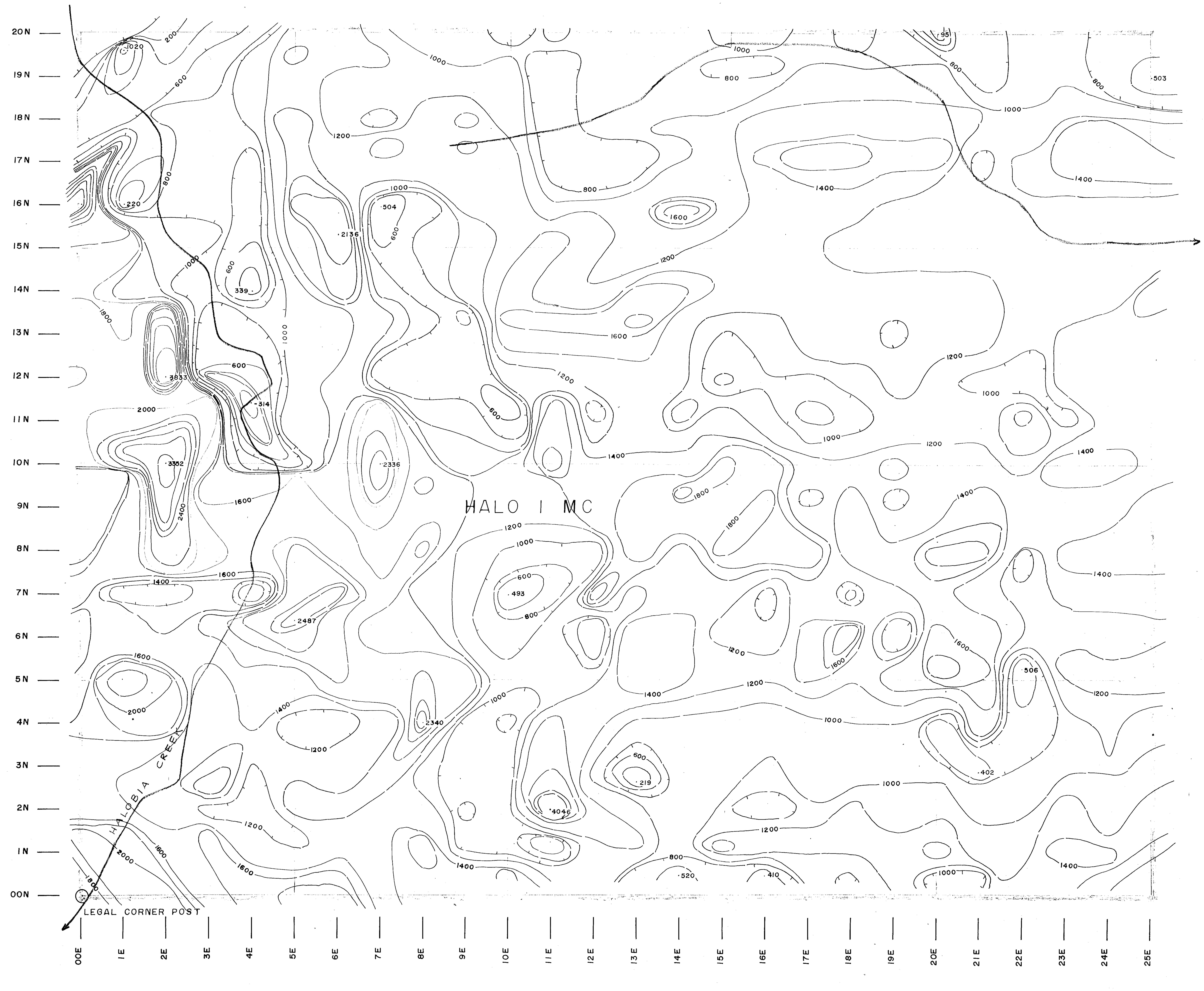
1) I am a graduate geologist of the University of B.C. with a Bachelor of Science degree in geology obtained in 1976.

2) I have actively been involved in mineral exploration in British Columbia since graduation.

3) I do hold a prospector's interest in the HALO 1 Mineral Claim.


LEGEND
10 LIGHT GREY BIOTITE TUFF OF UNCERTAIN AGE
HOGEM BATHOLITH
LOWER CRETACEOUS
9 LEUCOCRATIC GRANITE, ALASKITE, PHASE III INTRUSIONS
9a COARSE GRAINED TO K-SPAR PORPHYRITIC
9b FINE GRAINED
LOWER JURASSIC
4 FOLIATED MONZONITE, QTZ. MONZONITE, PHASE I INTRUSIONS, HOGEM BASIC SUITE
4a HORNBLENDE MONZONITE, HORNBLENDE BIOTITE MONZONITE
4b BIOTITE MONZONITE
4c HORNBLENDITE
SILT ppm Cu / ppm Mo / ppm W
SOIL PROFILE HOLE (SEE PROFILE SKETCHES)
ROCK SPECIMEN BF 80-8-7-1
ROCK SAMPLE ppm Cu / ppm Mo / ppm W 80864
UMEX DRILL HOLE
UMEX SOIL ANOMALY (SEE ASS'T REP'T 3611) 40 ppm Mo
0 200 400 600 800 1000
meters
HALO I M.C.
HALOBIA CREEK
LEGAL CORNER POST
N
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8988
NO.
J.C STEPHEN EXPLORATIONS LTD
TARGET PROJECT
HALO PROPERTY
RECONNAISSANCE
GEOLOGY
WORK BY — B.F., D.G.
DRAWN BY — B.F.
OCT., 1980

MAP NO ___



N

0 200 400 600 800
meters

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 8988

J C STEPHEN EXPLORATIONS LTD
TARGET PROJECT

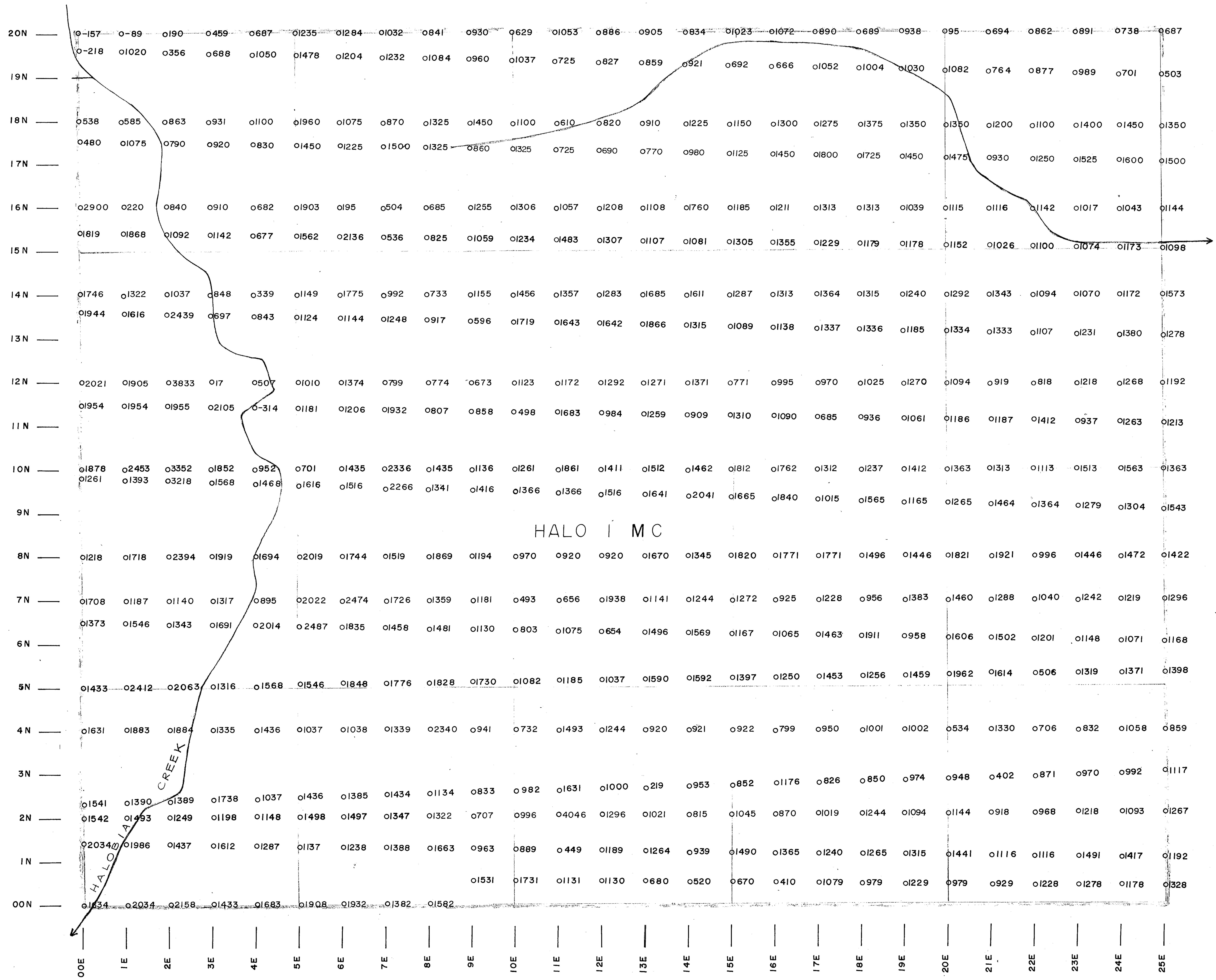
HALO PROPERTY

MF I FLUXGATE MAGNETOMETER SURVEY
CONTOUR PLAN
NTS 93N/6E

SCALE 1 5000 AUGUST 1980
WORK BY BF DG DRAWN BY BF
REFERENCE DWGS

SURVEY CONTROL BY HIP-CHAIN AND COMPASS

MAP NO. ____



N

0 100 200 300 400 500
meters

o1130 CORRECTED READING IN GAMMAS

NOTE: 00N/00E LOCATION IS L.C.P. FOR HALO I M.C.

J C STEPHEN EXPLORATIONS LTD
TARGET PROJECT.

HALO PROPERTY

MF I FLUXGATE MAGNETOMETER SURVEY

NTS 93N/6E

SCALE-1:5000 AUGUST, 1980

WORK BY—B.F., D.G. DRAWN BY—B.F.

REFERENCE DWGS—

SURVEY CONTROL BY HIP-CHAIN AND COMPASS

MAP NO.