

MAP NO.:  
115 II 7,8  
9,10

ASSESSMENT REPORT X  
PROSPECTUS  
CONFIDENTIAL X  
OPEN FILE

DOCUMENT NO: 092959  
MINING DISTRICT: Whitehorse  
TYPE OF WORK: geophysical, geochemical  
geological

REPORT FILED UNDER: Seamus Young

DATE PERFORMED: MAY, AUG-OCT, 1990

DATE FILED: MARCH 7, 1991

LOCATION: LAT.: 61°30'N

AREA: AISHIHIK LAKE

LONG.: 136°30'W

VALUE \$: 161,100

CLAIM NAME & NO.: FOX 1-25, ST 1-42, KEN 1-32  
NICK 1-55, 57, 61-73, 87-96, 104, 106-660, 697-720

WORK DONE BY: G.S. DAVIDSON

WORK DONE FOR: GOLDEN HEMLOCK EXPLORATION LTD.

DATE TO GOOD STANDING:

REMARKS: A Digem III survey was flown in may, 1990 revealing VLF, EM and Resistivity anomalies in areas with anomalous gold values in stream sediments. Those areas were explored from august to october with geological mapping, ground VLF, mag and soil sampling surveys. Geology discovered argillic alteration zones in felsic volcanics.



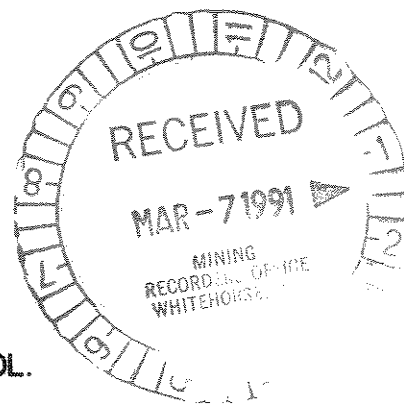


092959

**EXPLORATION REPORT  
ON THE  
KIRKLAND CREEK PROPERTY**

*Whitehorse Mining District  
Lat. 61 30'N, Long. 136 30'W  
NTS 115 H-7,8,9,10*

**FOR: GOLDEN HEMLOCK EXPLORATION LTD.  
1022-470 Granville Street  
Vancouver, B.C.  
V6C 1V5**



**BY: G.S. DAVIDSON, P.GEOL.**

**FEBRUARY, 1991**

## SUMMARY

The Kirkland Creek property consists of 805 claims located in the Aishihik Lake area of the south-central Yukon Territory. The property is accessed by float plane or helicopter charter from Whitehorse, 120 kilometers to the south.

The property consists of three claim groups, NICK I, II & III which lie in a broad upland area, characterized by wide plateaus and valleys, rounded hills, and old lake bottom flats and terraces.

The claims overlie rocks of the Yukon Crystalline Terrane, consisting of basement schist and gneiss, amphibolite and volcanics intruded by granitic rocks of the Aishihik batholith. Tertiary and Eocene felsic to basic volcanics unconformably overlie the granitic bodies. Structurally, the Kirkland Creek fault, a major northwest orientated fault traverse the area.

Fine-grained placer gold was discovered in tributaries of Kirkland Creek, draining east from a large area underlain by felsic volcanic rocks. This target is staked as the NICK I group (770 claims). The NICK II (36 claims) and the NICK III (34 claims) groups cover porphyry copper targets initially discovered in the 1970's.

Reconnaissance level exploration in 1989 identified highly anomalous gold values in heavy mineral concentrates collected from stream sediments on the NICK I claims. In 1990, airborne geophysical surveys over three sections of the NICK I claims located EM, resistivity and VLF anomalies coinciding with anomalous gold values in stream sediments. These areas were targeted for surface work.

From August to October, 1990, grid development, soil sampling, VLF and magnetometer surveys, and geological mapping were performed in the southeast (Area A) and the west-central (Area B) sections of the NICK I group. These areas are low-lying with only a few scattered outcrops.

Prominent geophysical anomalies have been outlined in three locations in Area A and in two locations in Area B. Gold-silver geochemical anomalies in Area B partially coincide with the geophysical responses. Also, a reinterpretation of the airborne data has isolated twenty-four linear EM conductors.

Geological traverses on ridge crests located argillic alteration zones containing banded jasper and drusy quartz veinlets along linear trends in the felsic volcanics. These zones formed as a result of hydrothermal activity in faults and breccia pipes during volcanism. They represent a potential source for the fine-grained gold in the stream sediments, however rock samples collected from several alteration zones returned background precious metal values.

Future exploration on the NICK I claims should target grid geophysical and geochemical anomalies, argillic alteration zones, and airborne EM anomalies. Potential mineralized structures include breccia pipes, splays and cross-faults from the Kirkland Creek fault and stockworks.

Limited stream sediment sampling on the NICK II & III groups in 1990 did not locate any significant anomalies.

A three stage exploration program of surface work and drilling is proposed for the NICK I claims. Stage 1 consists of EM surveys on the five grid anomalies in Areas A & B, and on significant airborne EM responses; and general exploration on the rest of the claims. Stages 2 & 3 consist of diamond and/or percussion drilling of significant zones. The proposed budget for Stages 1, 2 & 3 is \$985,000.

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## INTRODUCTION

The NICK I, II and III properties consist of 805 claims located west of Kirkland Creek and east of Aishihik Lake in the south-central Yukon, Whitehorse Mining District (NTS 115 H-7,8,9,10). The area is accessible by float plane or helicopter charter from Whitehorse, 120 kilometers to the south.

Historically the region has been explored for placer gold, uranium, porphyry copper-molybdenum and copper-gold deposits. The Nick II and III properties were staked over copper-gold occurrences and the Nick I property was staked over a large area of Tertiary volcanic rocks that has anomalous gold geochemistry in stream sediment samples.

The properties are owned by Golden Quail Exploration Ltd.; Golden Hemlock Explorations Ltd. holds an option to earn a majority interest.

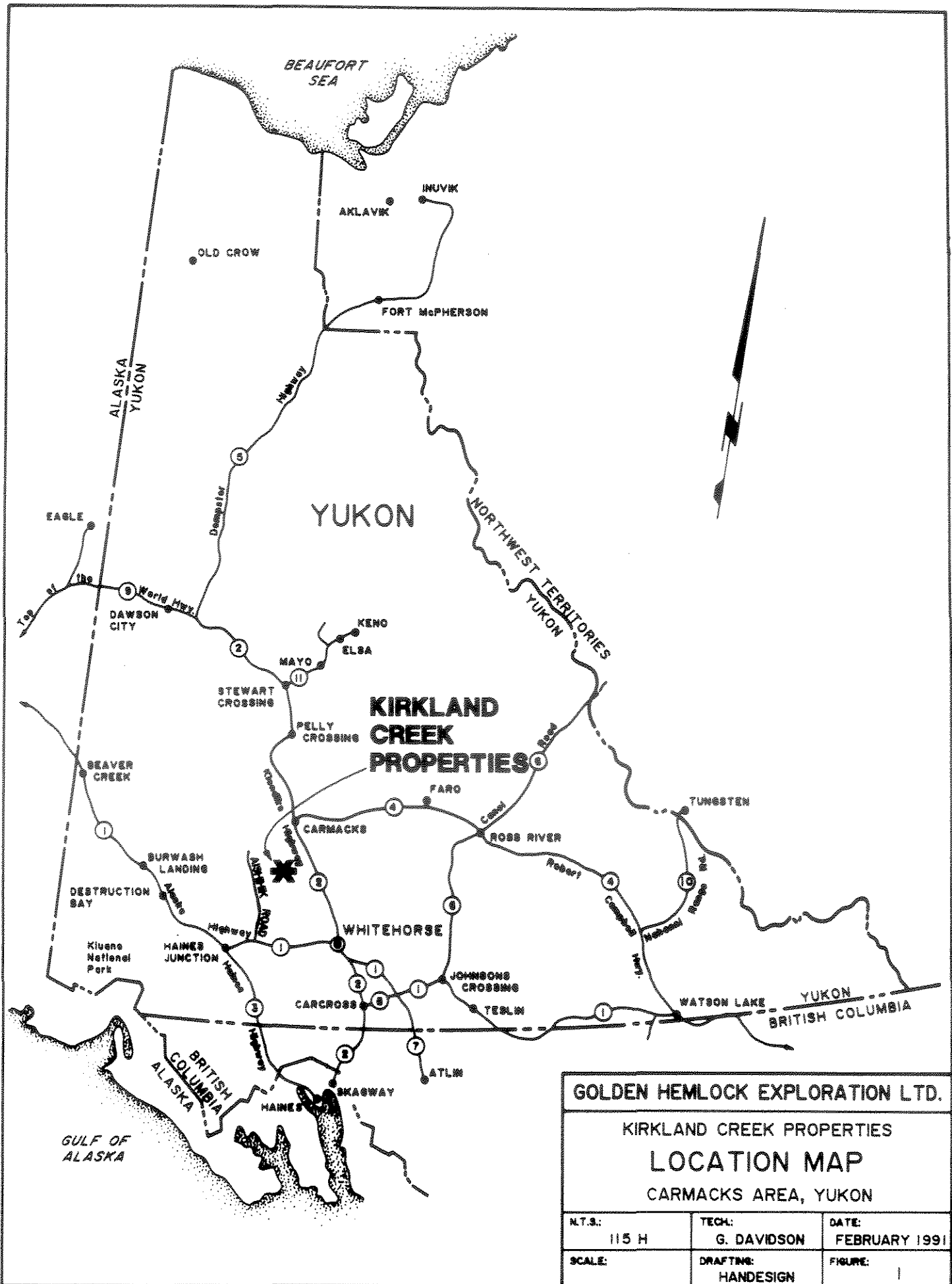
In 1989, prospecting and detailed silt geochemistry identified anomalous gold values in three locations on the main Nick I claim block. Airborne geophysical surveys performed in March 1990 targeted these three areas. In the summer and fall of 1990 coincident airborne geophysical and stream geochemical anomalies were explored by grid development, soil geochemistry, VLF-EM and magnetometer surveys. Two grids designated "A" and "B" were the focus of the 1990 activity.

This report reviews the 1990 exploration programs on the Nick properties. The writer was on the claims from September 8 to October 5, 1990. Mr. S Young, president of Golden Hemlock Exploration Ltd. supervised the 1990 work program.

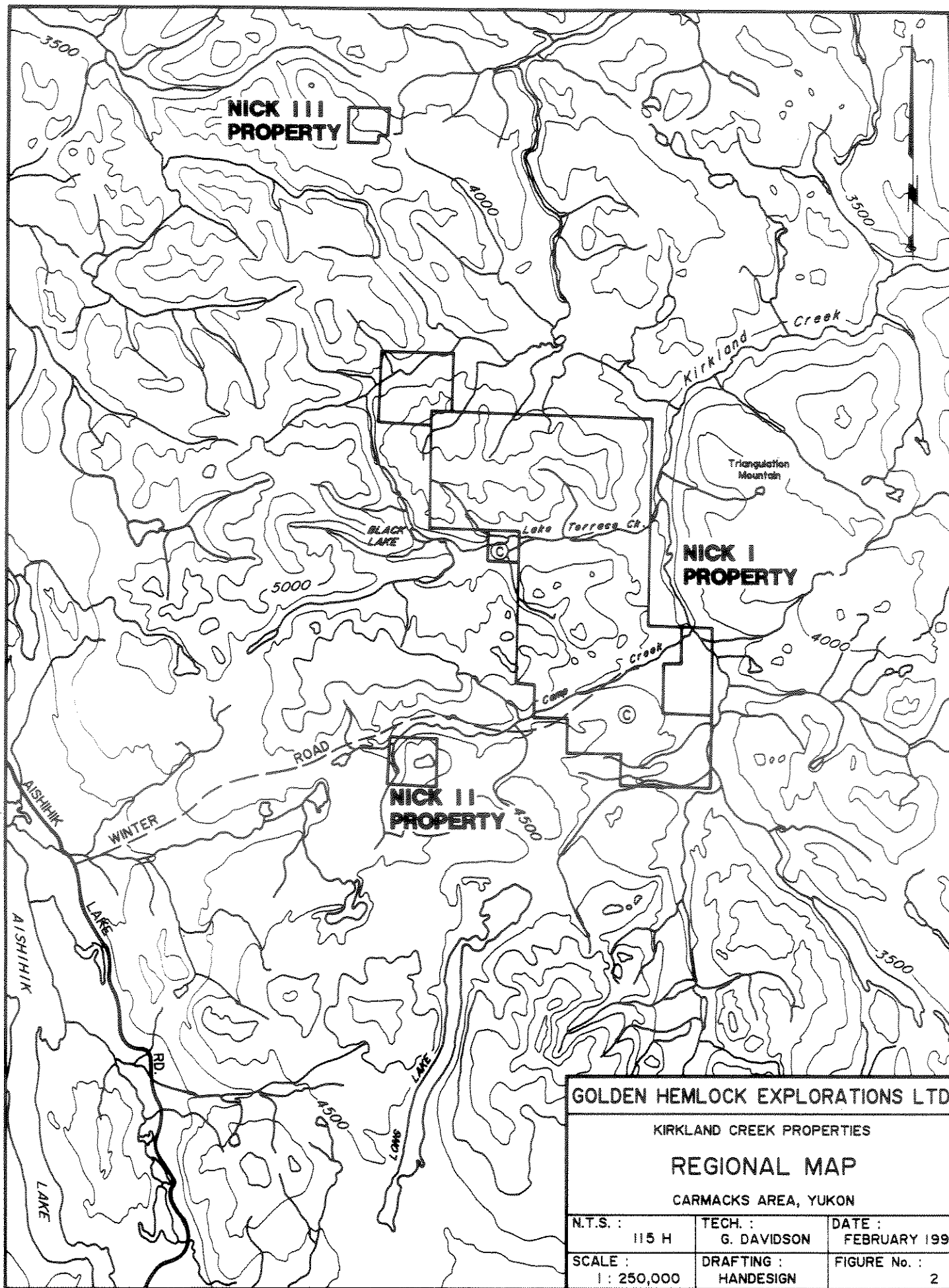
## LOCATION AND ACCESS

The claims are located east of Aishihik Lake and 30 km west of the Klondike Highway near Kirkland Creek in the south-central Yukon on NTS Map Sheets 115 H-7,8,9,10; geographical co-ordinates 61 30'N and 136 30'W. Whitehorse, the capital of the Yukon Territory is 120 kilometers southeast of the properties. Figures 1 and 2 show the property location.

Helicopter and fixed-wing aircraft provide the primary means of access to the area. Charters are available from Whitehorse, Haines Junction and Carmacks. Small lakes located in the west-centre and southern sections of the property are adequate for float or ski equipped aircraft. In the centre of the property a long flat gravel bench would make an excellent airstrip.



GOLDEN HEMLOCK EXPLORATION LTD.		
KIRKLAND CREEK PROPERTIES		
LOCATION MAP		
CARMACKS AREA, YUKON		
N.T.S.	TECH:	DATE:
1:5 H	G. DAVIDSON	FEBRUARY 1991
SCALE:	DRAFTING:	FIGURE:
	HANDESIGN	1



GOLDEN HEMLOCK EXPLORATIONS LTD.

KIRKLAND CREEK PROPERTIES

REGIONAL MAP

CARMACKS AREA, YUKON

N.T.S. :	TECH. :	DATE :
115 H	G. DAVIDSON	FEBRUARY 1991
SCALE :	DRAFTING :	FIGURE No. :
1 : 250,000	HANDESIGN	2

Winter access is possible via a tote trail that links the Aishihik Lake road to Camp Creek at the south end of the Nick 1 property. A land use permit has been approved for the transportation of equipment and fuel over the winter road. The permit remains in effect until 31 March, 1992.

## PHYSIOGRAPHY

The properties lie in a broad upland area, characterized by wide plateaus and valleys, rounded hills, old lake-bottom flats and terraces. Kirkland Creek on the east edge of the property at 975 metres elevation occupies a wide north-south trending valley marked by terraces and clay scarps.

The central and northern portion of the Nick 1 property is primarily above treeline, consisting of long interconnected ridges and spurs rising to 1,525 metres; separated by wide flat-bottomed valleys. The ridge tops are broad and grassy with only a few rocky sections. Ridge walls are fairly steep, southerly and westerly facing slopes are grassy with patches of alder and rock talus, while other slopes are covered in grass hummocks. Spruce and pine forest is limited to lower slopes and valley bottoms which are swampy with thick buckbrush along stream channels. Lake Terrace Creek flows to the east through the central section of the claim block. A tent camp is located on the south side of Lake Terrace Creek near the B grid.

The southern portion of the Nick 1 claims is relatively flat and low-lying, containing numerous small lakes and fields of wet hummocky ground interspersed with spruce forest. The Camp Creek valley orientated east-west is the dividing line between lower ground to the south and upland areas to the north. A tent camp is located on a small lake two kilometers south of Camp Creek near Grid A.

This region has a central interior climate, characterized by long cold winters and fairly dry warm summers. Strong winds are common in upland areas. Temperatures average 15 degrees Celsius in summer and range from 0 to -50 degrees Celsius in winter. Annual precipitation averages 30 centimeters and snow packs of 50 centimeters are normal.

## PROPERTY

The Kirkland Creek property consists of three separate groups of claims: NICK I, NICK II, and NICK III. The NICK I group contains 770 claims (approximately 38,500 acres). The NICK II & III groups consist of 36 claims and 34 claims, respectively. Table 1 lists the claim data and Figure 3 shows the claim plan.

The writer has examined many of the claim posts on the NICK I property; to date approximately 70% of the claims have been tagged. The claim posts and lines are well marked in most areas, however above treeline much of the flagging has been destroyed by strong winds.

**TABLE 1  
CLAIM DATA**

Claim Name	Grant Number	Current Expiry Date
<b>NICK I GROUP</b>		
Nick 1-55	YB24674-728	05 January 1993
Nick 57	YB24729	05 January 1993
Nick 61-73	YB24730-742	05 January 1993
Nick 87-96	YB24743-752	05 January 1993
Nick 104	YB24753	05 January 1993
Nick 106-660	YB24754-5308	05 January 1993
Nick 697-720	YB25345-25368	05 January 1993
Fox 1-25	YB26824-848	13 October 1993
ST 1-42	YB27411-452	28 May 1993
Ken 1-32	YB27453-484	28 May 1993
Land 1-12	YB35444-455	16 October 1991
<b>NICK II GROUP</b>		
Nick 661-696	YB25309-344	05 January 1992
<b>NICK III GROUP</b>		
Nick 725-758	YB25369-402	05 January 1992

NICK 725-758  
YB25369-402

725	727	729	731	733	735
726	728	730	732	734	736
727	729	731	733	735	737
728	730	732	734	736	738
729	731	733	735	737	739
730	732	734	736	738	740

NICK III

136°30'

61°45'

ST 1-42  
YB27411-452

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36
37	38	39	40	41	42

NICK 1-55  
YB24674-728

FOX 1-25  
YB26824-848

NICK 61-73  
YB24730-742

NICK 87-96  
YB24743-752

NICK 697-720  
YB25345-368

NICK 57  
YB24729

NICK 104  
YB24753

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
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141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200

NICK  
A FOX 11 12

LAND 1-12  
YB35444-455

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
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91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
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331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360
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421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
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481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
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631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750

KEN 1-32  
YB27453-484

NICK 661-696  
YB25309-344

671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720

NICK II

NICK 106-660  
YB24754-5308

531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580

GOLDEN HEMLOCK EXPLORATIONS LTD.

KIRKLAND CREEK PROPERTIES

# CLAIM MAP

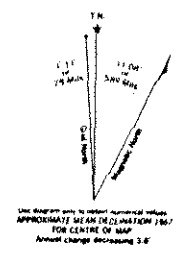
CARMACKS AREA, YUKON

N.T.S. 115H-7, 8, 9, 10, 15

SCALE 1:100,000

JULY 1990

FIG. 3



## REGIONAL GEOLOGY

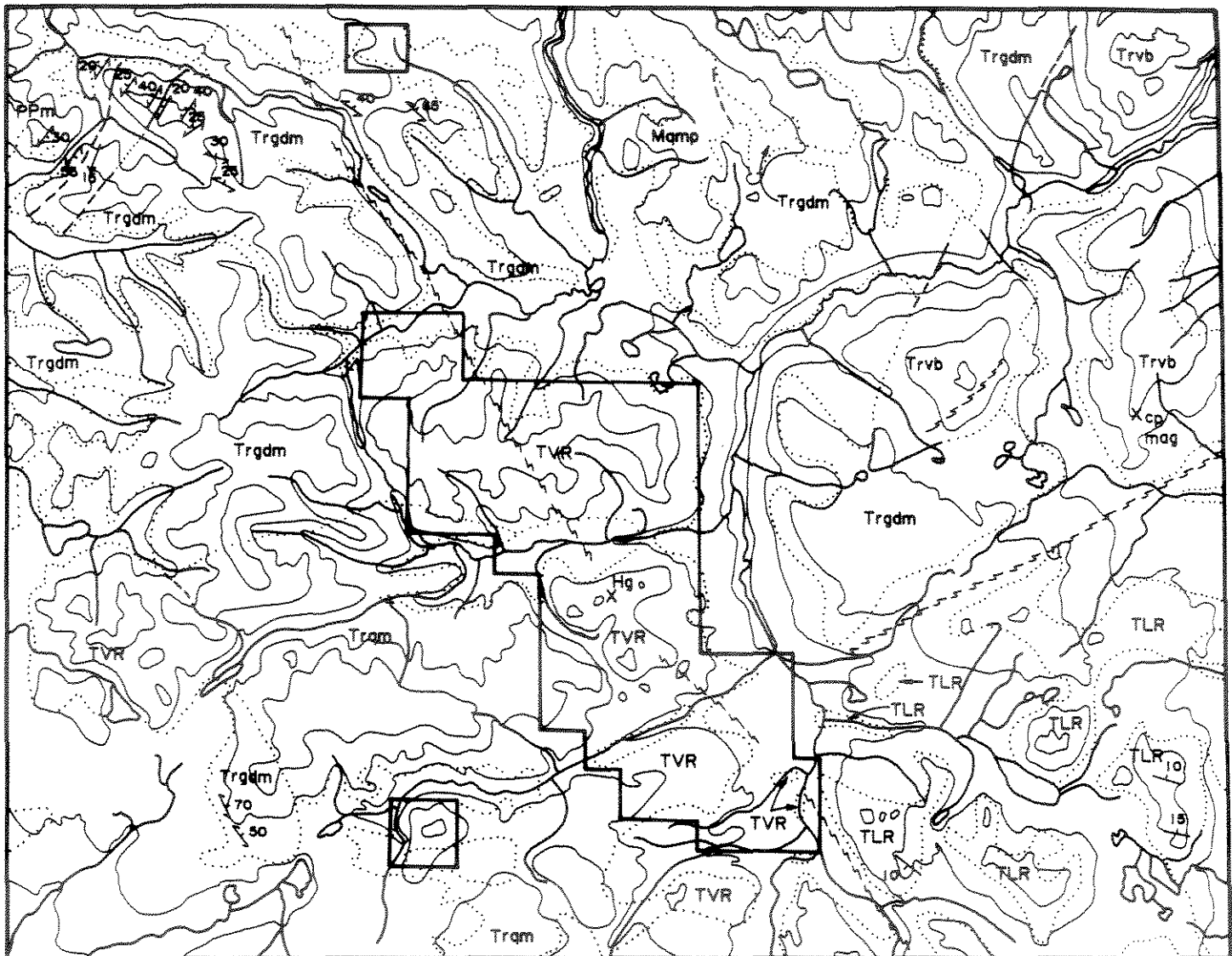
The Kirkland Creek area lies in the Yukon Crystalline Terrane, an assemblage of Yukon Group schist, gneiss, and amphibolite; Triassic andesite to basalt flows and tuff breccia; intruded by granitic batholiths. Eocene volcanic rocks unconformably overlie the basement units. The regional geology was published by the GSC as Map 17-1973 (D. Templeman-Kluit). Figure 4 presents the regional geology and the Table of Formations is listed in Table 2.

The Aishihik Batholith underlies much of the district. Triassic to Lower Jurassic (?) in age, the intrusive body ranges in composition from dark grey granodiorite to pink quartz monzonite and porphyritic quartz monzonite.

Tertiary and Eocene volcanic rocks unconformably overlie the granitic bodies. On the Nick I & II claims these volcanics consist primarily of felsic tuffs, flows and breccias which weather white, yellow or red in colour. Dark green mafic volcanic plugs and dykes cut the felsic units.

Structurally a major northwest trending fault traverses the Nick I property. Other prominent features include east-west faults along Camp and Lake Terrace Creeks, and northwesterly trending faults along the Black Lake valley. A remote sensing image, prepared from satellite data revealed numerous linears and several circular patterns, possibly indicating ring fractures around volcanic centres.

Cretaceous to Tertiary volcanic rocks host lode gold deposits in the Dawson Range north of the property and in the Wheaton District south of the Aishihik area. Lode mineralization consists of epithermal to mesothermal gold bearing quartz-chalcedony vein systems in fault and fracture zones associated with felsic intrusives. In the Wheaton Valley ring dykes and fault zones developed during caldera collapse. In the Dawson Range gold mineralization occurs in quartz veins and fractures formed during intrusion of quartz feldspar porphyry and breccia bodies. Alteration zones vary from narrow seams of clay gouge along the margins of individual quartz veins to wide areas of propylitic and argillic alteration around intrusive breccias. Sericite and pyrite are common accessory minerals. Deposit types include low tonnage high grade quartz veins such as the Cirque Zone at Mt. Skookum, and bulk tonnage low grade ore bodies such as Antoniuk at Freegold Mountain.



### LEGEND

#### EOCENE or YOUNGER

TLR Dark green and brown basalt flows and breccias

#### EOCENE

TVR Andesitic to rhyolitic acid tuff, breccia, flows, dykes and sills

#### TRIASSIC

Trqm Porphyritic pinkish quartz monzonite

Mamp Porphyritic medium-grained hornblende biotite quartz monzonite

Trgdm Grey, coarse-grained biotite hornblende granodiorite

#### LOWER TRIASSIC (?)

Trvb Massive dark green or grey andesite to basalt flows and tuff breccia

#### CAMBRIAN (?)

PPm Dark green to black amphibolite

PPsbq Brown-grey quartz biotite schist

### SYMBOLS

- Strike and dip  
 Foliation and dip  
 Fault  
 Mineral occurrence,  
 cp - copper  
 Hg - mercury

### GOLDEN HEMLOCK EXPLORATIONS LTD.

KIRKLAND CREEK PROPERTIES

## REGIONAL GEOLOGY MAP

CARMACKS AREA, YUKON

N.T.S. :	TECH. :	DATE :
115 H	G. DAVIDSON	FEBRUARY 1991
SCALE :	DRAFTING :	FIGURE No. :
1 : 250,000	HANDESIGN	4

TABLE 2  
TABLE OF FORMATIONS

QUATERNARY

Qs Alluvium and surficial deposits

EOCENE OR YOUNGER

TLR Dark green and brown basaltic flows and breccias

EOCENE

TVR Andesitic to rhyolitic acid tuff, tuff breccia, lapilli tuff, welded tuff; flows volcanoclastic sediments; plugs, dykes and sills which are feeders to the extrusive rocks.

LOWER CRETACEOUS

LKT Chert-pebble conglomerate and sandstone

TRIASSIC

Mqmp Porphyritic medium-grained hornblende biotite quartz monzonite.

Trqpm Porphyritic pinkish quartz monzonite

Trgdm Grey, coarse-grained equigranular biotite hornblende granodiorite; often foliated or layered.

LOWER TRIASSIC (?)

Trvb Massive dark green or grey andesitic to basaltic flows and tuff breccias.

CAMBRIAN (?)

PPm Dark green to black fine to medium grained amphibolite.

PPsbq Brown-grey quartz biotite schist and gneiss.

## HISTORY

The Aishihik Lake area was initially explored in the late 1800's by prospectors en route to the Klondike gold fields. The Dalton Trail from coastal Alaska to the Klondike passed along Kirkland Creek. Placer gold was first noted in the tributaries of Kirkland Creek at this time.

Modern exploration began in the 1970's, when porphyry copper-molybdenum and uranium deposits were the prime targets for junior and major resource companies. In the area of the Nick claims a number of prospects were staked (KL or SATO, TAH or BUFFALO, TOSH, LION). The KL (now the NICK II Group) and the TAH (now the NICK III Group) were drilled by Mitsubishi Metal Mining and Noranda Exploration Co., respectively.

Gold exploration in the 1980's focused on Cretaceous to Tertiary volcanic events in the south-central Yukon. Several prospects were staked in the Kirkland Creek area but no significant results were reported. Placer gold testing was performed on three creeks draining easterly into Kirkland Creek. Fine-grained gold was recovered in sub-economic amounts from the test pits.

In 1987-1988 a regional stream sediment geochemical survey was performed over the Aishihik Lake map sheet funded by Yukon Territorial Government and the Department of Energy, Mines and Resources. A large area underlain by Tertiary volcanic rocks produced anomalous gold, arsenic, antimony and mercury values. This target was staked as the NICK I claims.

## RECENT EXPLORATION

Reconnaissance level exploration work in August and September, 1989 consisted of rock, soil and stream sediment sampling on the NICK I property. Heavy mineral concentrates collected from tributaries of Camp and Lake Terrace Creeks recorded gold values from 327 to 24,300ppb. The presence of very fine grained gold was noted during the sampling program.

## 1990 EXPLORATION PROGRAM

### INTRODUCTION

In May, 1990, airborne geophysical surveys were performed by Dighem Surveys and Processing Inc. over three sections (Blocks A, B & C, see Figure 6) of the NICK I claims. A total of 417 line-kilometers of electromagnetic, magnetic and VLF surveys were performed. Airborne anomalies coinciding with high gold values in stream sediment samples were targeted for surface work.

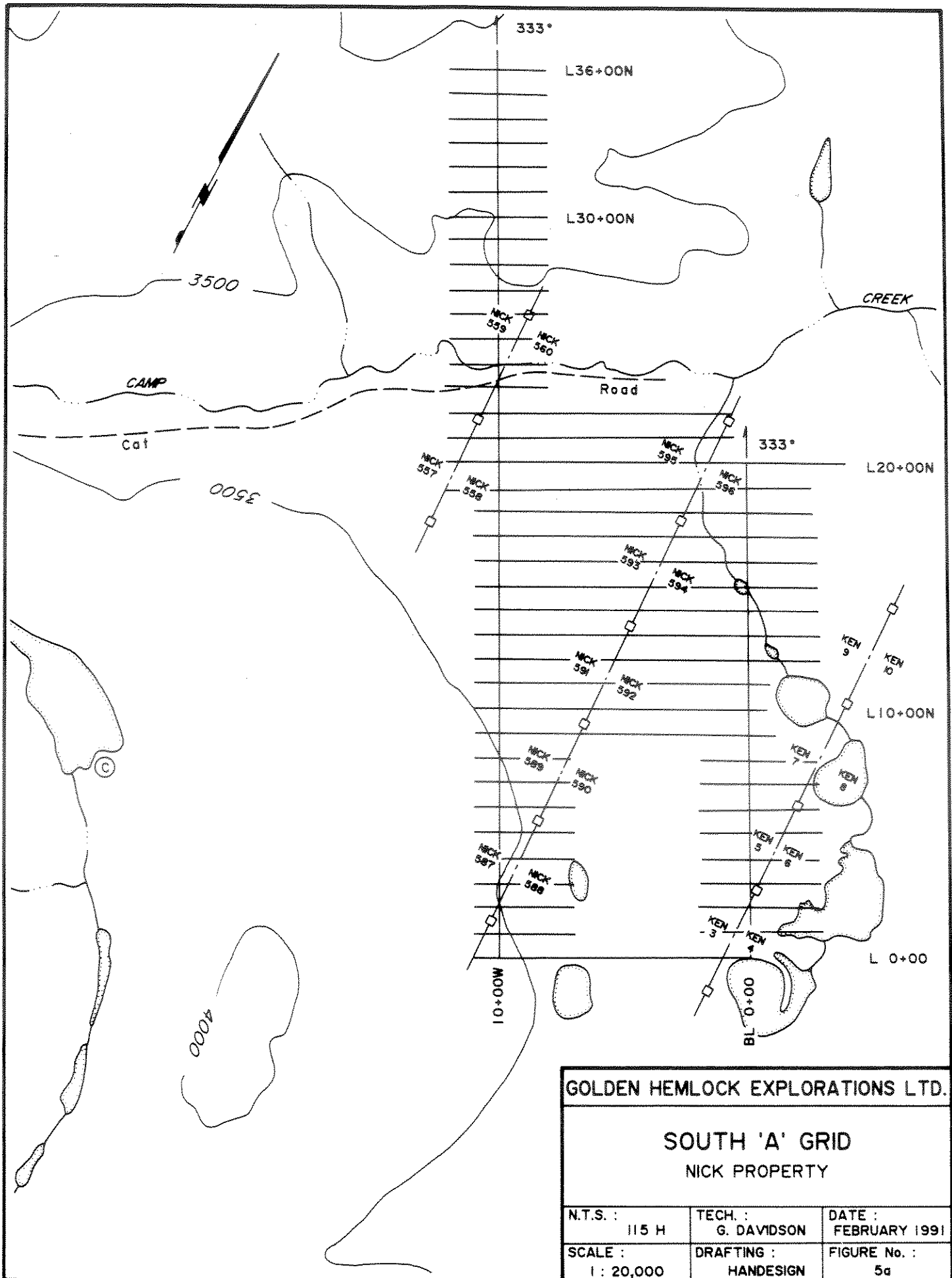
In August, 1990 a four man field crew mobilised to a small lake at the south end of the NICK I claim block. Three 14' by 16' framed in wall tents were erected at the southeast end of the lake. Supplies and equipment were flown to the site by a single engine Otter floatplane chartered from Aerokon Aviation of Whitehorse. The "A" Grid was established 2 kilometers east of the camp in a flat marshy area. The grid consists of two parallel baselines, 1 kilometre apart, trending 155 deg. Crosslines run from 100 metre centres and flag stations were marked at 25 metre intervals. A total of 26 kilometers of grid and base line compose Grid "A" (see Figure 5a).

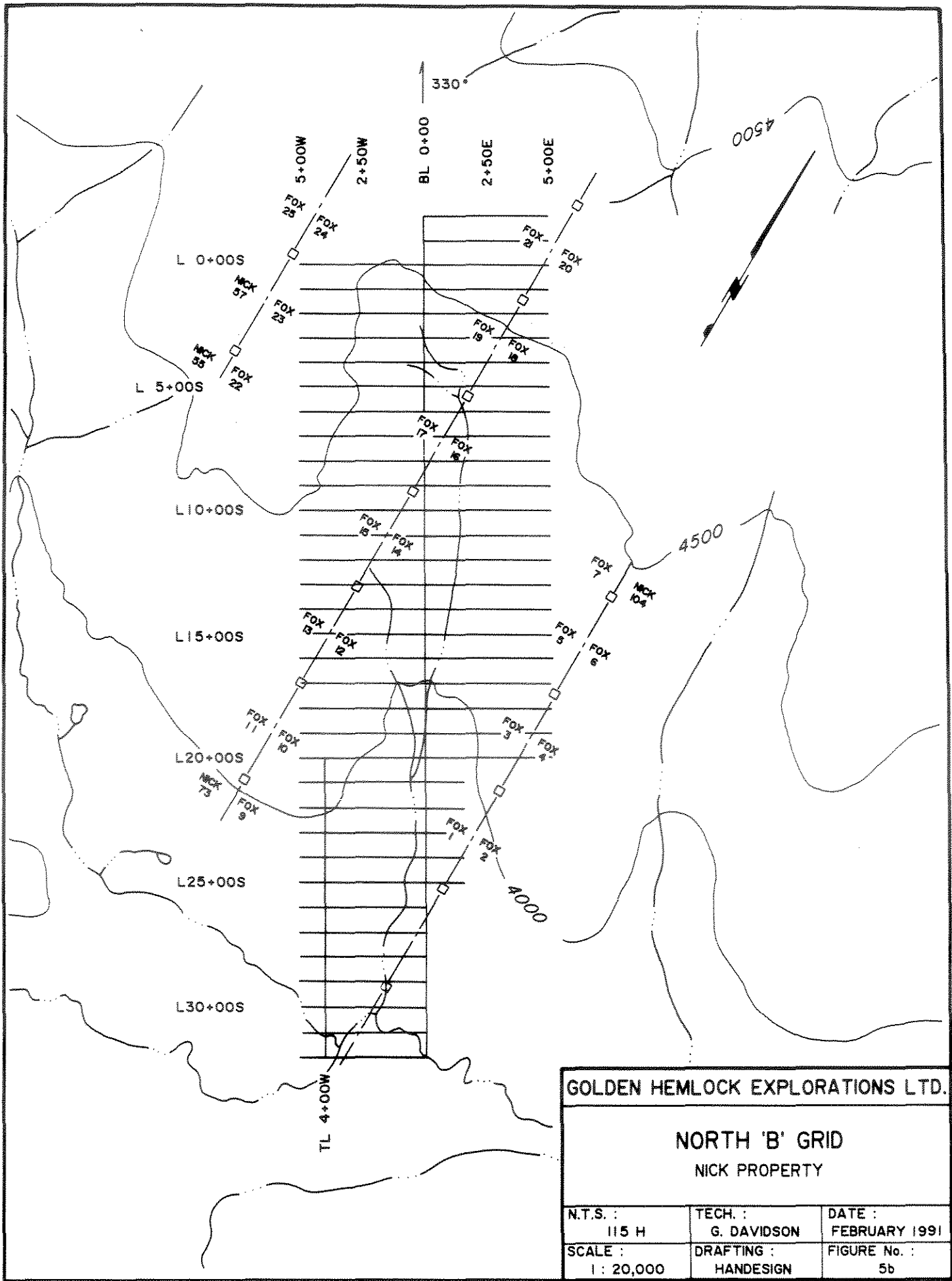
In early September the focus shifted to the west-central area of the property where a new camp was constructed on the south bank of Lake Terrace Creek approximately 4 kilometers downstream of Black Lake. Supplies and equipment were flown by Otter to Black Lake and then ferried by helicopter or ATV to the camp. Two tent frames were erected at this site.

Grid "B" is located north of the camp in a north-south orientated valley formed by a tributary of Lake Terrace Creek. A 3 kilometre baseline was cut at a bearing of 155 deg.; crosslines were extended from 100 metre centres and stations were flagged at 25 metre intervals. Grid "B" consists of 28 kilometers of line (see Figure 5b).

Soil sampling, VLF and magnetometer surveys, and geological mapping was performed in the grid areas.

The NICK II & III claim groups were silt sampled from a helicopter in early October. The results are described in a separate section of this report entitled 1990 EXPLORATION-NICK II & III CLAIM GROUPS. The following sections describe the NICK I property.





GOLDEN HEMLOCK EXPLORATIONS LTD.

NORTH 'B' GRID  
NICK PROPERTY

N.T.S. : 1:5 H	TECH. : G. DAVIDSON	DATE : FEBRUARY 1991
SCALE : 1 : 20,000	DRAFTING : HANDSIGN	FIGURE No. : 5b

## PROPERTY GEOLOGY

The property is mainly underlain by felsic Tertiary volcanic units of the Selkirk Volcanics. A few dykes and sills of basic volcanic rock intrude the sequence. The volcanics are flat-lying. No granitic or older volcanic rocks were observed, but intrusives of the Aishihik Batholith probably underlie the western margin of claim block. Outcrop is limited to a few steep slopes and high ridges. Prominent bedrock usually consists of red to light brown highly silicified felsic breccia. Recessive areas contain talus of white to yellow crystal tuff and breccia. The volcanics are rhyolitic to dacitic in composition, containing yellow feldspar phenocrysts. Andesite porphyry dykes and mafic volcanic dykes and sills intrude the felsic volcanics.

Argillic alteration zones containing banded coliform texture jasper occur along linear depressions trending 040-065 deg. The alteration zones were formed by hydrothermal circulation through faults and breccia pipes in the volcanic pile. They occasionally contain drusy quartz-chalcedony veinlets but no sulphide minerals were evident. Several zones of quartz-chalcedony veinlets were sampled but analyses returned background metal values. Jasperoidal rock samples also produced low to background metal values. Sample locations and values are shown in Figure 6.

## GEOPHYSICAL SURVEYS

Mr. M. Power (Amerok Geophysics) evaluated the airborne and surface geophysical surveys in a memorandum presented in Appendix II of this report. The airborne data was compared to responses encountered over precious metal occurrences in similar rocks and structures as found on the NICK I property.

Mr. Power reports, "Using precious metal occurrences in similar rocks as a guide, structures hosting precious metal mineralization will probably be poor conductors with no magnetic signature. Such structures will probably be tabular, steeply dipping or vertical bodies with conductances in the range of 0.5 to 10 S depending on the extent of alteration and the width of the structure. Extensive alteration of country rock to clay near such structures may widen the apparent response but the conductance will remain approximately the same.

The conductivity of a vein will be largely controlled by permeability; sulphide mineralization will not be a factor unless sulphide mineral concentrations exceed 10%. The top of such structures may be recessive and filled with overburden. This can cause an EM response which appears to be solely due to a flat-lying layer of overburden.

The conductance of bedrock and surficial conductors will be approximately the same and unless the EM system senses the steeply dipping sides of a bedrock conductor, the responses can be identical. In exploring for targets with these properties, no anomaly can be discarded out of hand. All anomalies should be evaluated on the basis of strike, anomaly shape (ie. straight, curved or sinuous) and their association with geological features and anomalous geochemical samples.

Since there are no magnetic minerals found in the vein assemblage and since the accompanying hydrothermal alteration oxidizes magnetic minerals in the country rock, the veins would be in a zone of low magnetic susceptibility. If localized along faults, veins may be indirectly indicated by displacement of magnetic highs or other lows.

In the airborne survey of the NICK I group, most of the EM anomalies consisted of positive coaxial and coplanar responses of varying widths. They were consistently attributed to surficial sources but may indicate the presence of bedrock conductors. Twenty four Dighem anomalies (labelled A-Y) were screened from the data, that show the location of potential geological structures favourable for precious metal mineralization. The anomalies are shown on the Compilation Maps, Figures 6a & 6b.

## RESULTS-GROUND GEOPHYSICAL SURVEYS

The South or A grid is centred between airborne anomalies I and G. The magnetic field map is characterized by a series of strong magnetic lows in the centre of the grid. These are relatively high amplitude and do not have associated subsidiary highs on the magnetic S side of the anomaly (ie. the west side). The background magnetic field is not elevated with respect to the earth's field and a magnetic low in this environment may be caused by a reverse magnetized feature.

Two VLF conductors parallel the east side of the magnetic low from 19+00N 7+00W to 11+00N 5+00W. The conductors are close together and the responses interfere with one another along their length. The conductor axes appear to be 100 m east of the axis of the magnetic low and they are probably not related to it.

Airborne anomalies G and I do not appear as distinct features on the ground VLF map. This, together with their lack of any associated magnetic field anomalies suggests that they are caused by surficial conductors.

The North or B grid contains a very broad VLF anomaly and a series of strong magnetic lows. The VLF anomaly is in the centre of the grid from 7+00S to 27+00S. It is coincident with a region of low magnetic relief and is either a conductive, nonmagnetic rock unit or conductive overburden. A short VLF anomaly west of the nonmagnetic unit runs from 16+00S 3+50W to 22+00S 3+00W; this may be worth further investigation since it appears to follow a magnetic break. The strong magnetic lows may be reverse magnetized features given their amplitude. Outcrop beside a strong magnetic low at grid L0+00 2+50E consists of a black fine-grained diabase sill.

## GEOCHEMISTRY

Approximately 1,900 samples were collected on the NICK I property. Most of the A grid is underlain by a thick layer of clay probably deposited on the floor of a recent glacial lake. Selective soil samples from the A grid were run for arsenic and gold. On the B grid soil development is limited to the valley walls, while the valley floor has a thick humus layer and is swampy for several hundred metres either side of the creek. B grid samples were analyzed for gold + Ag-Cu-Pb-Zn-Sb-As; Northern Analytical Laboratories Ltd. in Whitehorse provided the analytical services. Soil sample results are shown in contour plots, Figures 13-19. Statistically, the distribution of soil results are shown in the histograms presented in Appendix 3 and summarized in Table 3.

The geochemical response is fairly poor on both grids. On the B grid gold values of 30 ppb or higher are outlined on the compilation map, Figure 6b. Some of these anomalies are coincidental with VLF conductors. The peak response for gold is a point anomaly at 281ppb. This sample was collected from sandy soil beside the creek and should be considered a silt sample. A broad anomaly from L4+00S 2+00W to 9+00S 0+50W peaks at 112ppb. This anomaly lies along strike of an argillic alteration zone. Spot anomalies in silver, lead and copper correlate somewhat with the gold anomalies. Arsenic and antimony anomalies are suspect, apparently caused by irregularities in the analytical process.

The geochemical sampling on both grids was performed in very swampy ground with thick organic and clay layers. Gold geochemical anomalies are located in higher well drained areas, where B horizon soils have developed. Future soil geochemical sampling should target hillsides and ridge crests, and avoid low-lying wet ground.

Locations and values for silt samples collected in the northwest section of the claims are shown in Figure 6b. One creek has recorded anomalous gold values of 1,500ppb and 375ppb in samples collected in 1989 and 1990, respectively.

TABLE 3  
GEOCHEMICAL STATISTICS

	AU PPB	AG PPM	CU PPM	PB PPM	ZN PPM	AS PPM	SB PPM
No. of SAMPLES	597	597	597	597	597	597	597
HIGH VALUE	281	2.0	127	587	159	225	31
LOW VALUE	<10	<0.1	<1	<1	<1	<1	<1
STANDARD DEVIATION	38.76	0.21	8.17	25.92	14.74	31.35	7.67
MEAN	18.72	0.08	8.20	7.00	25.64	51.19	6.90

## DISCUSSION

Airborne EM anomalies, grid anomalies and argillic alteration zones are the primary targets for future surface exploration on the NICK I property. The source of fine grained gold recovered from the tributaries of Kirkland Creek is thought to be from hydrothermal mineralization localised in faults, breccia pipes or lenticular stockworks.

Geophysical and geochemical programs on Grids A & B have outlined targets for detailed geophysical surveys, followed by diamond drilling. The targets are as follows:

### BLOCK A

- 1) Magnetometer low with associated VLF conductor, airborne EM anomaly G and resistivity low centred at L19+50N 8+00W. High gold values in heavy mineral and silt samples are located on Camp Creek just downstream of these geophysical anomalies.
- 2) Magnetometer low with associated VLF and airborne geophysical anomalies located at L11+00N 6+50W.
- 3) Magnetic lows and VLF conductors partially coincidental with airborne EM anomaly H from L23+00N to L26+00N.

### BLOCK B

- 1) Coincidental gold-silver soil anomaly and VLF conductor centred at L19+00S 4+50W.
- 2) A broad gold-silver geochem anomaly from L9+00S to L4+00S, west of the baseline.

Splays and cross-faults from the Kirkland Creek Fault are potential mineralized structures; airborne EM anomalies may trace these linear features. The airborne EM responses should be assessed according to physiological and geological parameters. Mr. Power concludes "If the Kirkland Creek fault can be taken as a guide to structure in the area, major faults will probably strike roughly north-south and splays and tensional fractures will strike approximately northeast-southwest or northwest-southeast. EM anomalies which parallel magnetic field highs, which displace highs or lows, or which start and end in cross-cutting magnetic features may indicate faults.

Anomalies which are sinuous or located in boggy ground or drainages may be caused by surficial conductors. These in turn may be controlled by bedrock features however the geophysical response is due to surficial conductivity. EM anomalies associated with magnetic responses are most likely to be caused by bedrock conductors." Mr. Power has categorized the EM anomalies according to strike and magnetic association in Appendix II. He recommends utilizing a Maxmin I-9 or I-11 system to evaluate the EM conductors.

Large sections of the Nick I property have not been examined in the 1989-1990 exploration programs. Prospecting, geological mapping and ridge top soil geochemistry should be performed over these areas. Geochemical follow-up should be limited to well drained regions.

In conclusion the NICK I property merits continued exploration for hydrothermal stockwork and vein deposits.

## 1990 EXPLORATION-NICK II & III CLAIM GROUPS

The NICK II & III properties are former porphyry copper prospects, previously owned by Mitsubishi Metal Mining Co. and Noranda Exploration Co. respectively.

Mineralization consists of disseminated chalcopyrite and pyrite with minor molybdenite occurring in fractures and shears in granitic intrusive rocks.

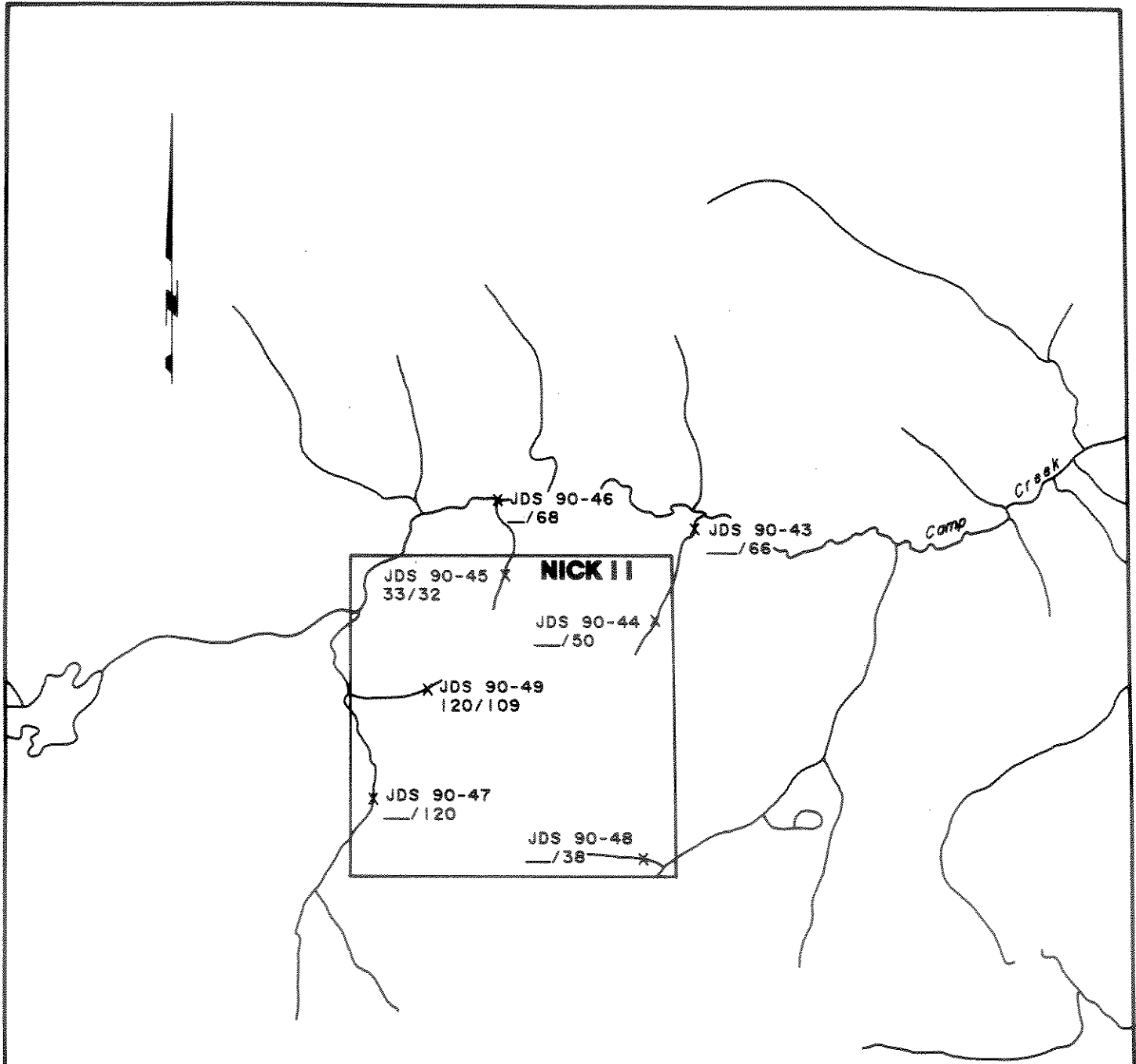
On the NICK II, in 1971, seven diamond drill holes (789m) penetrated a zone of brecciated diorite. Assay results indicated an average copper content of 0.1-0.2%. Gold assays were not performed.

Exploration on the NICK III was carried out from 1977-1981 on a weakly to moderately altered quartz feldspar porphyry plug. Drilling (269m), in 1981 produced background to low copper and precious metal values; the highest gold value in one five-foot split sample was 0.028 ounces per ton.

In 1989, heavy mineral samples from the NICK II & III produced peak values of 1,050ppb and 139ppb, respectively.

In 1990, drainages on the two claim blocks were silt sampled and prospected. Results are shown in Figures 7 & 8.

The NICK II warrants a limited follow-up program of soil sampling and mapping over the mineralized breccia zone. The NICK III does not merit further exploration at this time.



X JDS 90-49  
120/109

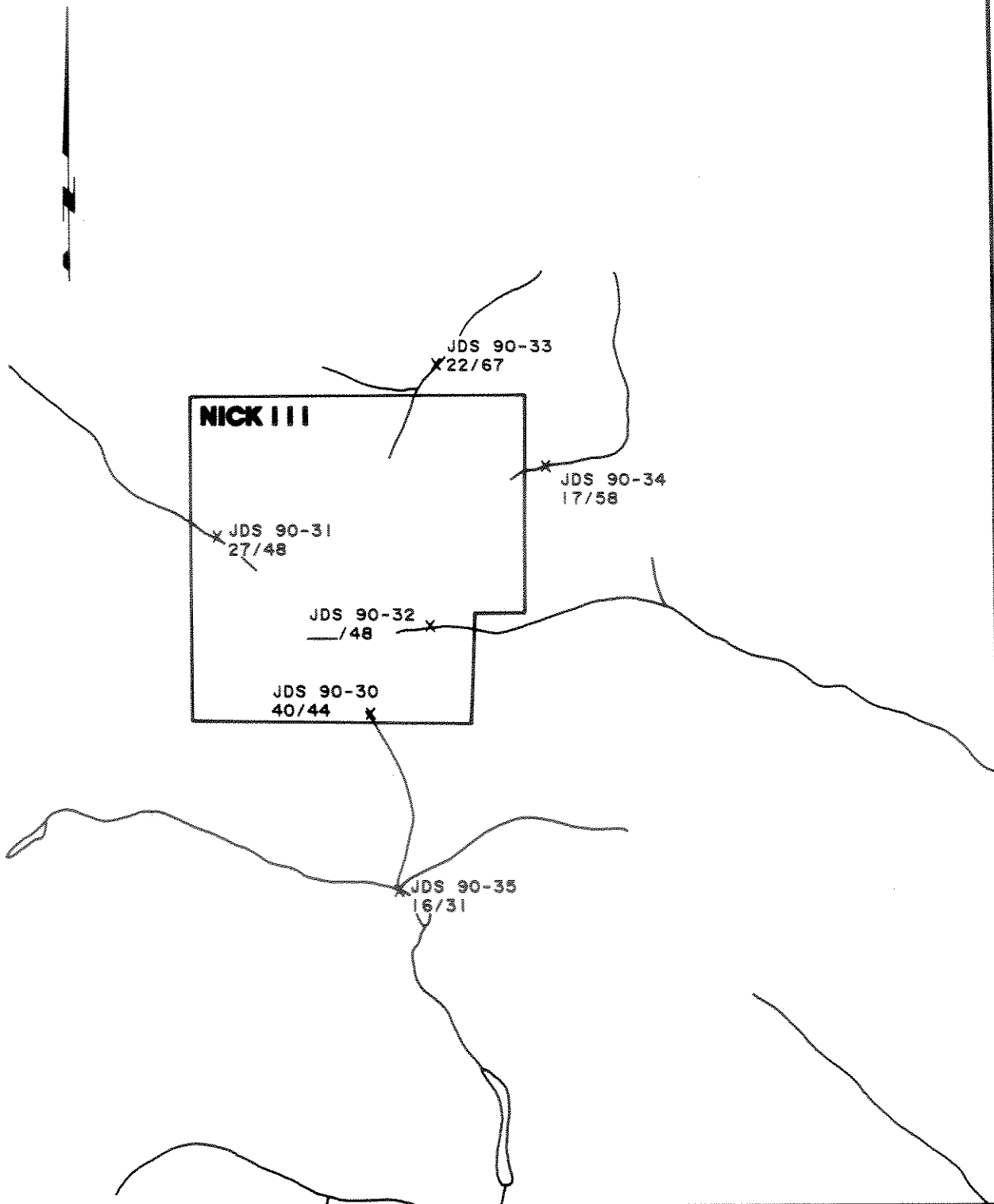
SILT LOCATION NUMBER  
ppb Au/ppm As  
—/ less than 10 ppb Au

**GOLDEN HEMLOCK EXPLORATIONS LTD.**

KIRKLAND CREEK PROPERTIES  
**1990 SILT SAMPLE LOCATIONS  
NICK II**

CARMACKS AREA, YUKON

N.T.S. : 115 H	TECH. : G. DAVIDSON	DATE : FEBRUARY 1991
SCALE : 1 : 50,000	DRAFTING : HANDSIGN	FIGURE No. : 7



X JDS 90-30  
40/44

SILT LOCATION NUMBER  
ppb Au/ppm As  
\_\_\_/ less than 10 ppb Au

GOLDEN HEMLOCK EXPLORATIONS LTD.		
KIRKLAND CREEK PROPERTIES		
1990 SILT SAMPLE LOCATIONS		
NICK III		
CARMACKS AREA, YUKON		
N.T.S. :	TECH. :	DATE :
115 H	G. DAVIDSON	FEBRUARY 1991
SCALE :	DRAFTING :	FIGURE No.
1 : 50,000	HANDESIGN	8

## RECOMMENDATIONS

A three phase exploration program is recommended to evaluate the NICK I property. Stage I consists of detailed EM surveys (maxmin system) on grid targets and airborne anomalies, geological and geochemical examination of airborne anomalies, and general exploration on the rest of the claim block. Stages II & III, contingent on the results of Stage I, consists of diamond and/or percussion drilling of the most promising targets. The following programs are proposed:

### STAGE I

Grid development (50 km)	\$ 10,000
Geophysics, Maxmin (50km)	17,750
Geochemistry, 500 samples	8,500
Prospecting, 75 mandays	18,750
Geology and supervision, 75 mandays	22,500
Assistant, 75 mandays	15,000
Camp:	
mob. & demob.	8,000
equip. & supplies, 340 mandays @ \$50/day	17,000
Transportation:	
helicopter, 30 hrs. @ \$750/hr.	22,500
float plane	15,000
Consulting and Management	15,000
Contingency	15,000
<b>TOTAL COST, STAGE I</b>	<b>\$ 185,000</b>

**STAGE II**

Diamond and\or Percussion Drilling	150,000
Geological services, mapping, prospecting, geochemical and geophysical follow-up to Stage I	50,000
Assaying	10,000
Field Support	25,000
Transportation	25,000
Consulting & Management	10,000
Contingency	30,000
<b>TOTAL ESTIMATED COST, STAGE II</b>	<b>\$ 300,000</b>

**STAGE III**

Diamond and\or Percussion Drilling	\$ 500,000
<b>TOTAL COST, STAGES I, II &amp; III</b>	<b>\$ 985,000</b>

## CERTIFICATE

I, GRAHAM DAVIDSON, of the City of Whitehorse, in the Yukon Territory, HEREBY CERTIFY:

1. That I am a consulting geologist and that I worked on the subject property in 1990.
2. That I am a graduate of the University of Western Ontario (H. BSc., Geology, 1981).
3. That I am registered as a Professional Geologist by the Association of Professional Engineers, Geologists & Geophysicists of Alberta (No. 42038).
4. That I have been engaged in mineral exploration on a full time basis for nine years in the Yukon and Northwest Territories, and British Columbia.
5. I have not received, nor do I expect to receive, any interest in the properties or securities of Golden Hemlock Exploration Ltd.
6. I hereby grant my permission for Golden Hemlock Exploration Ltd. to utilize this report in the normal course of business.

SIGNED at Whitehorse, Yukon this 15th day of February, 1991.

G.S. DAVIDSON, P.Geol.



# **GOLDEN HEMLOCK** *Explorations Ltd.*

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470 Granville Street

Vancouver, B.C.

V6C 1V5

Telephone:

(604) 689-0299

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(604) 689-0288

## **STATEMENT OF COSTS NICK CLAIMS**

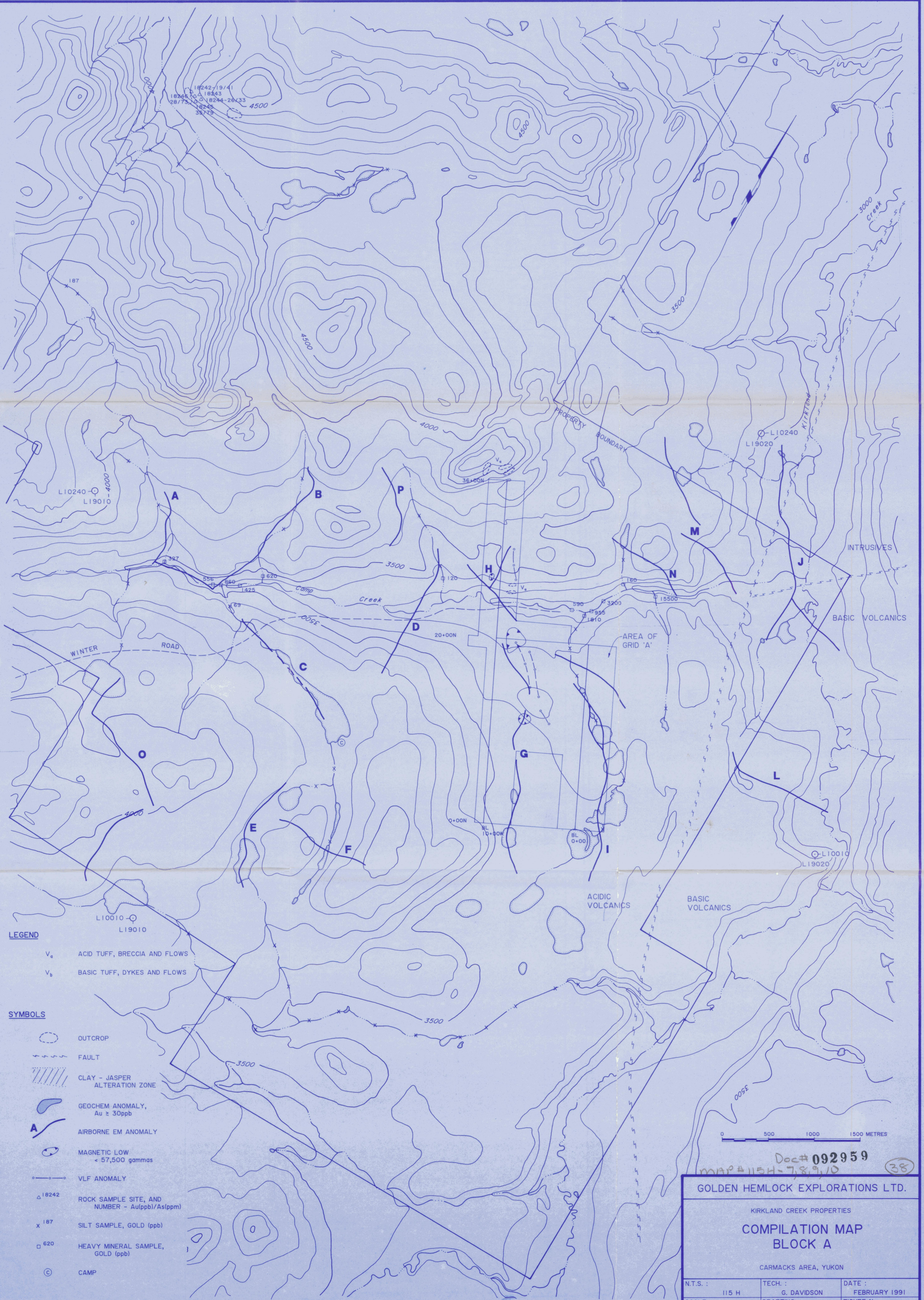
**1990 Field Season**

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<b>Wages:</b>		
Consultants and Field Crews		\$ 67,654.83
<b>Rentals:</b>		
Truck and Bike rental		7,320.00
<b>Expenses:</b>		
Travel, Accommodation, Board	16,002.54	
Vehicle	1,937.00	
Field Supplies	24,393.97	
Assays	12,172.25	
Air Charters	27,197.77	
Drafting	628.00	
Airborne Surveys	<u>60,700.73</u>	<u>143,022.26</u>
	<b>Total costs</b>	<b>217,997.09</b>
	<b>Contingencies @ 10%</b>	<u><b>21,799.71</b></u>
	<b>TOTAL EXPENDITURES</b>	<u><b>\$ 239,796.80</b></u>

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- LEGEND**
- V<sub>a</sub> ACID TUFF, BRECCIA AND FLOWS
  - V<sub>b</sub> BASIC TUFF, DYKES AND FLOWS
- SYMBOLS**
- OUTCROP
  - FAULT
  - ▨ CLAY - JASPER ALTERATION ZONE
  - GEOCHEM ANOMALY, Au ≥ 30ppb
  - A AIRBORNE EM ANOMALY
  - MAGNETIC LOW < 57,500 gammas
  - VLF ANOMALY
  - △ 18242 ROCK SAMPLE SITE, AND NUMBER - Au(ppb)/As(ppm)
  - x 187 SILT SAMPLE, GOLD (ppb)
  - 620 HEAVY MINERAL SAMPLE, GOLD (ppb)
  - ⊙ CAMP



Doc# 092959  
MAP# 115H-7,8,9,10 (38)

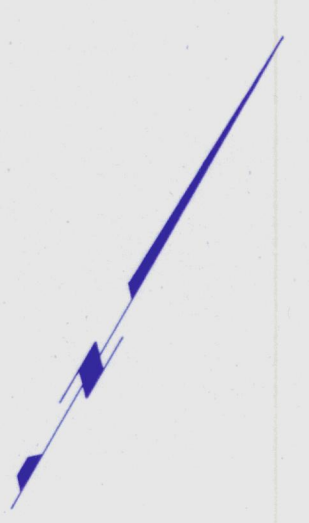
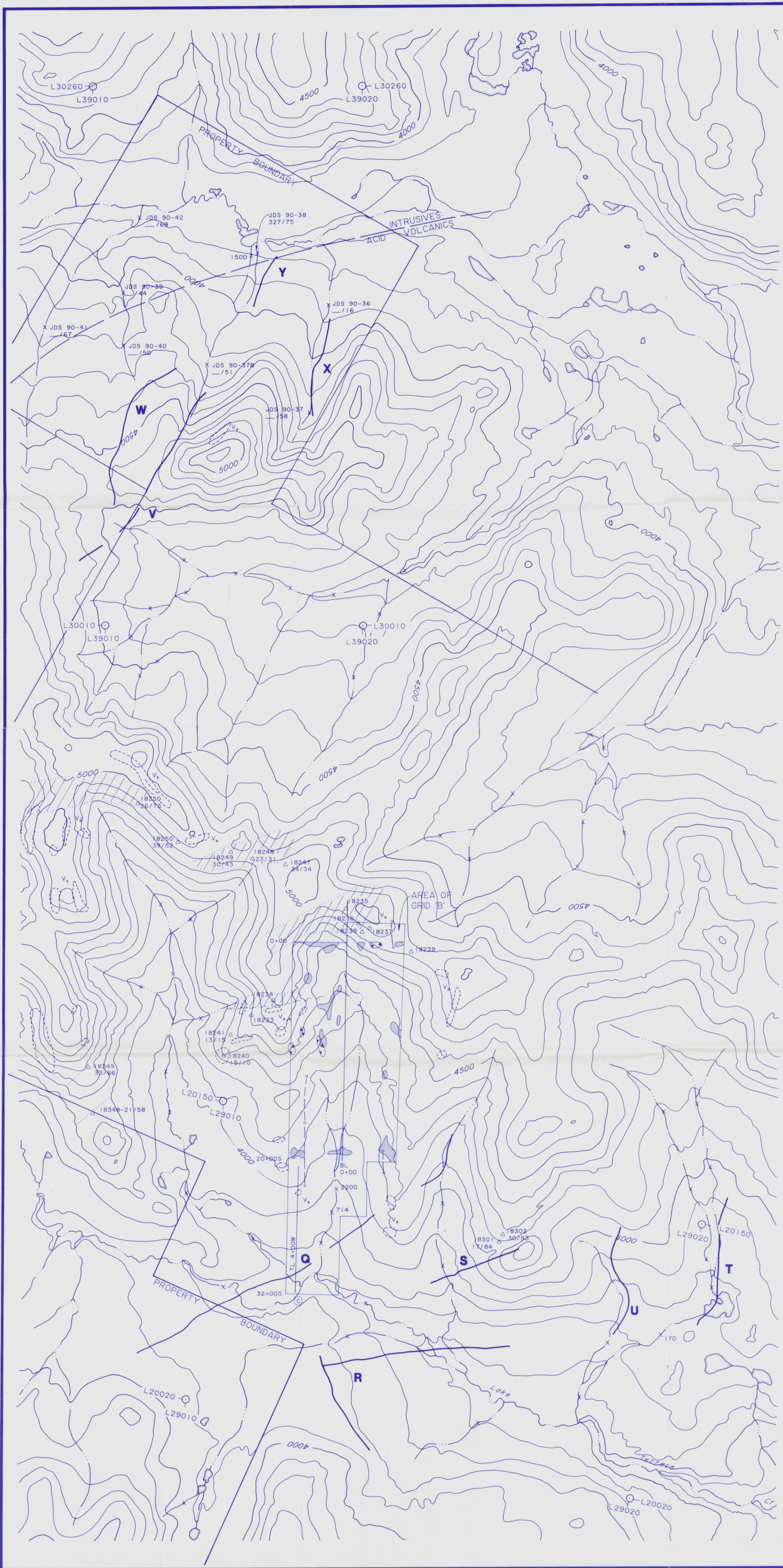
**GOLDEN HEMLOCK EXPLORATIONS LTD.**

KIRKLAND CREEK PROPERTIES

**COMPILATION MAP  
BLOCK A**

CARMACKS AREA, YUKON

N.T.S. :	TECH. :	DATE :
115 H	G. DAVIDSON	FEBRUARY 1991
SCALE :	DRAFTING :	FIGURE No. :
1 : 20,000	HANDESIGN	6a

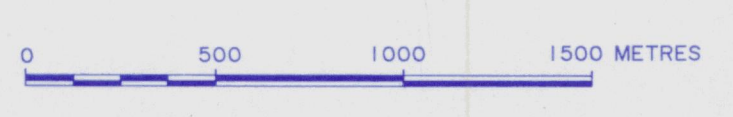


**LEGEND**

- V<sub>a</sub> ACID TUFF, BRECCIA AND FLOWS
- V<sub>b</sub> BASIC TUFF, DYKES AND FLOWS

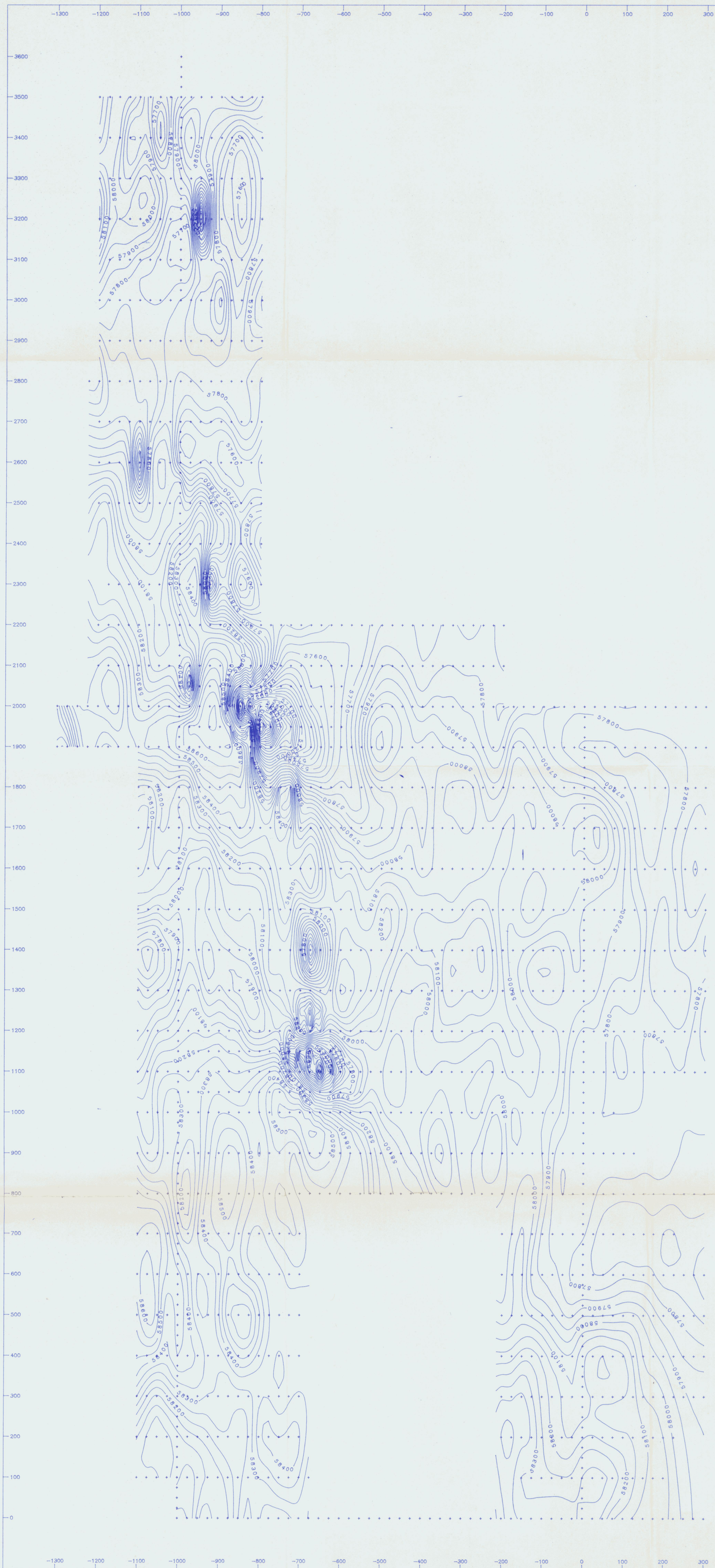
**SYMBOLS**

- OUTCROP
- FAULT
- CLAY - JASPER ALTERATION ZONE
- GEOCHEM ANOMALY, Au ≥ 30ppb
- AIRBORNE EM ANOMALY
- MAGNETIC LOW < 57,500 gammas
- VLF ANOMALY
- ROCK SAMPLE SITE, AND NUMBER - Au(ppb)/As(ppm)
- SILT SAMPLE, GOLD (ppb)/ ARSENIC (ppm)
- HEAVY MINERAL SAMPLE, GOLD (ppb)
- CAMP



Doc # **092959**  
 map# 115H-7,8,9,10 (37)

GOLDEN HEMLOCK EXPLORATIONS LTD.		
KIRKLAND CREEK PROPERTIES		
<b>COMPILATION MAP</b>		
<b>BLOCKS B and C</b>		
CARMACKS AREA, YUKON		
N.T.S. :	TECH. :	DATE :
115 H	G. DAVIDSON	FEBRUARY 1991
SCALE :	DRAFTING :	FIGURE No. :
1 : 20,000	HANDESIGN	6b



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**092959**

MAP# 116H-7,8,9,10 Dec# 092959 (39)

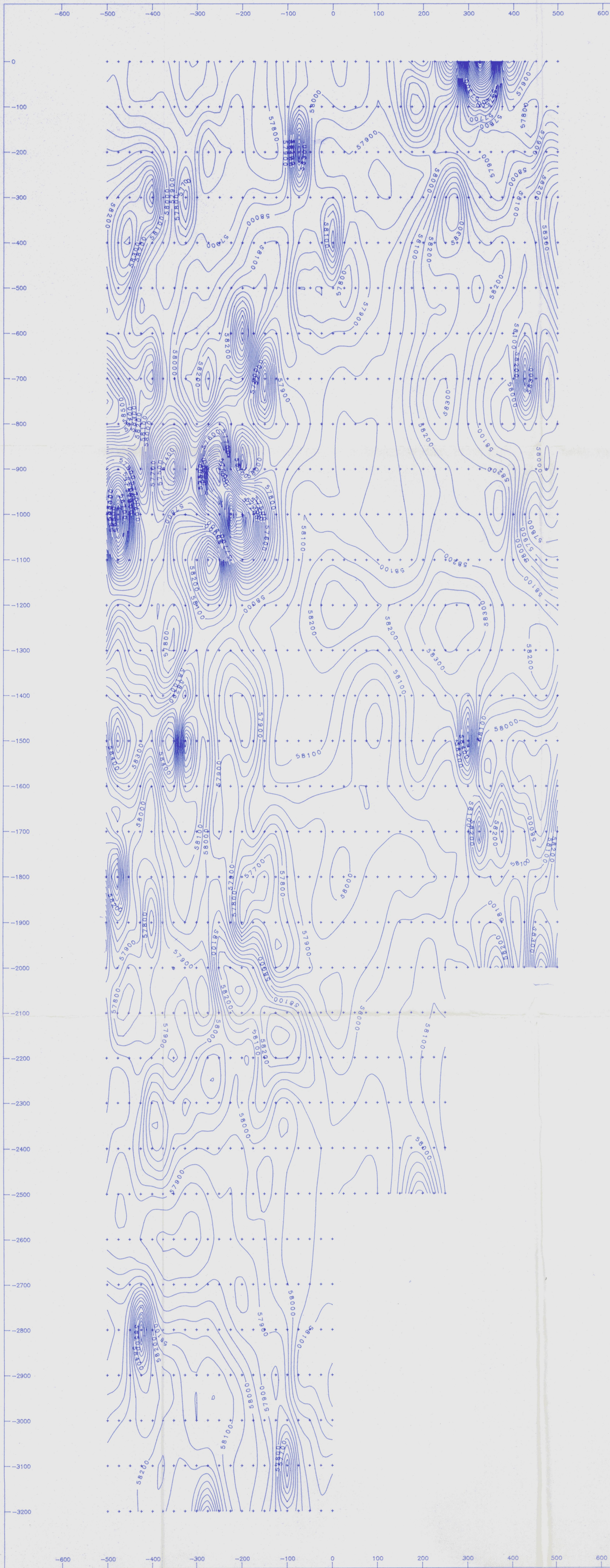
SOUTH "A" GRID  
NICK CLAIMS  
KIRKLAND CREEK PROJECT, Y.T.  
GOLDEN HEMLOCK EXPLORATIONS LTD.  
TOTAL FIELD MAGNETIC CONTOUR MAP

*F16. 9a*

NTS Ref.:	INSTRUMENTATION
Data Unit:	Gamma
Scale:	1:5,000
Date:	October 1990
	Manufacturer:
<small>compiled by R. F. SHELDRAKE &amp; ASSOCIATES LTD.</small>	

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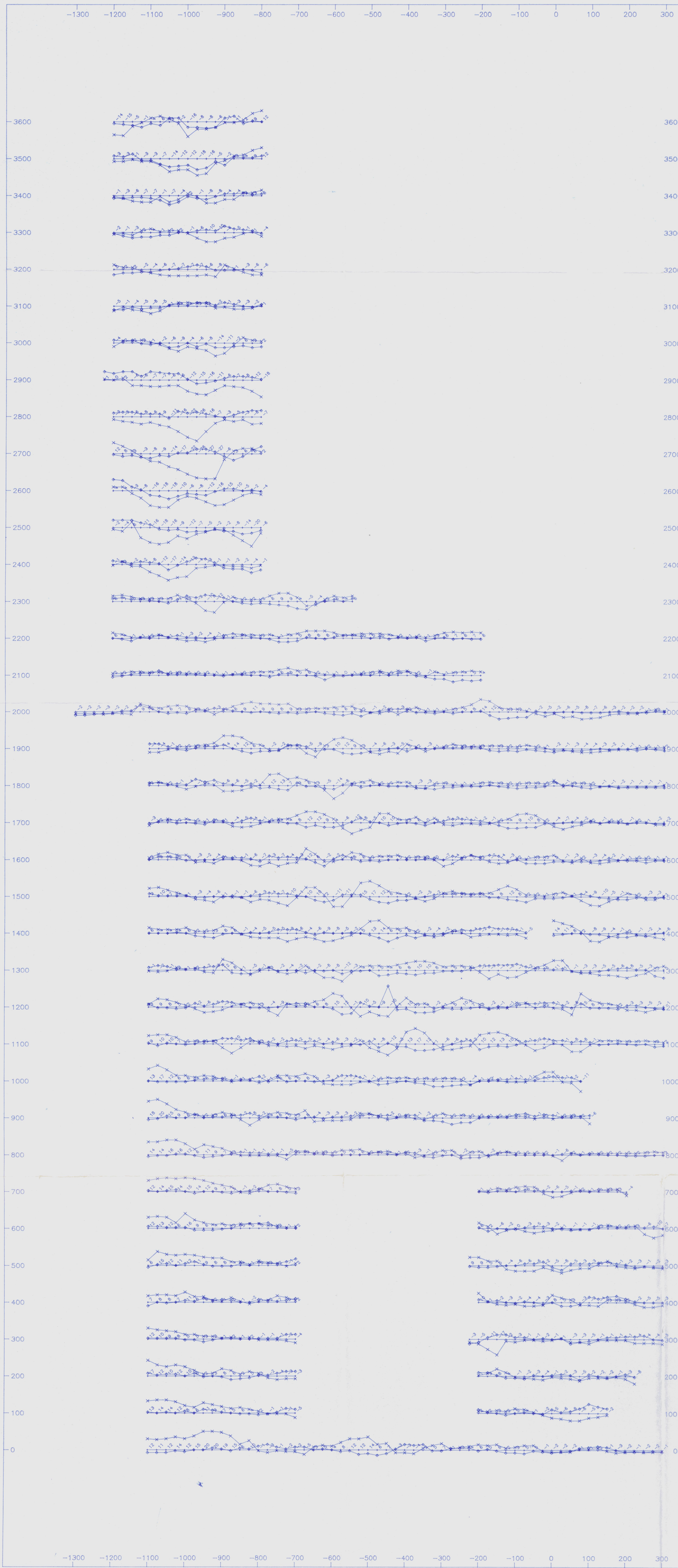
NTS# 1154-7,8,9,10 Doc# 090959 (40)

**NORTH "B" GRID**  
 NICK CLAIMS  
 KIRKLAND CREEK PROJECT, Y.T.  
 GOLDEN HEMLOCK EXPLORATIONS LTD.

TOTAL FIELD MAGNETIC CONTOUR MAP

Fig. 96

NTS Ref.:	INSTRUMENTATION	
Data Units:	Gamma	Model :
Scale:	1:5,000	Resolution : 1.0 Gamma
Date :	October 1990	Manufacturer :
<small>compiled by R. F. SHELDRAKE &amp; ASSOCIATES LTD.</small>		



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VLF TILT ANGLE  
 VLF QUADRATURE

**092959**

MAP# 1154-7,8,9,10 Doc# 092959 (41)

**SOUTH "A" GRID**

NICK CLAIMS - KIRKLAND CREEK PROJECT  
GOLDEN HEMLOCK EXPLORATIONS LTD.

VLF TILT ANGLE AND QUADRATURE PROFILE MAP

20 Percent/Cm - Base Value 0.0 Percent  
(Tilt Angle value is posted)

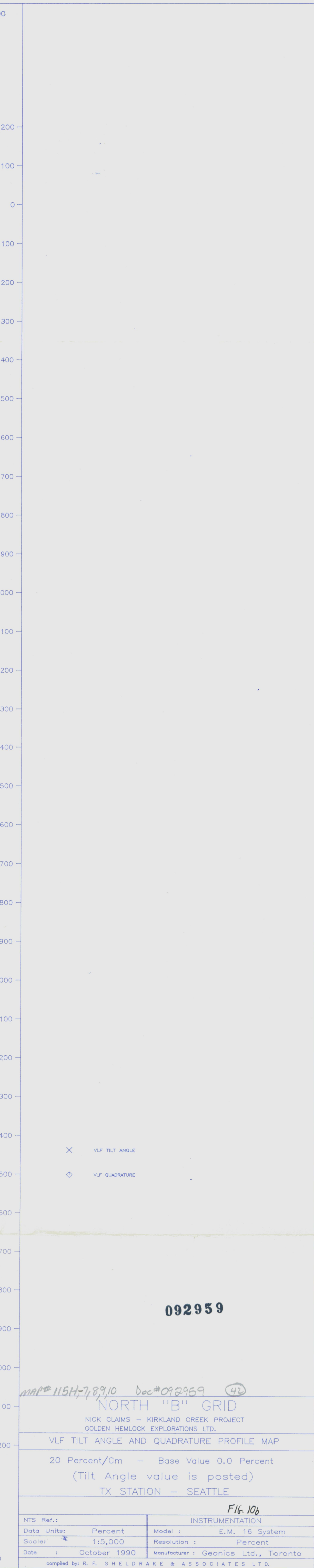
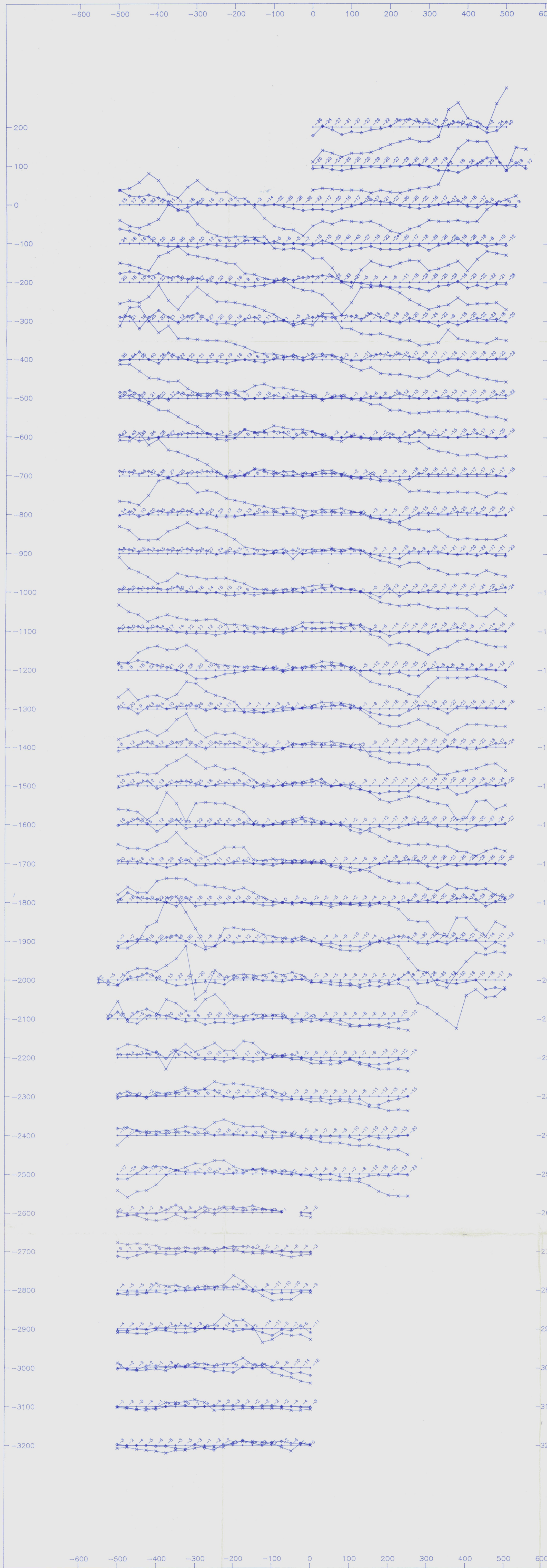
TX STATION - SEATTLE

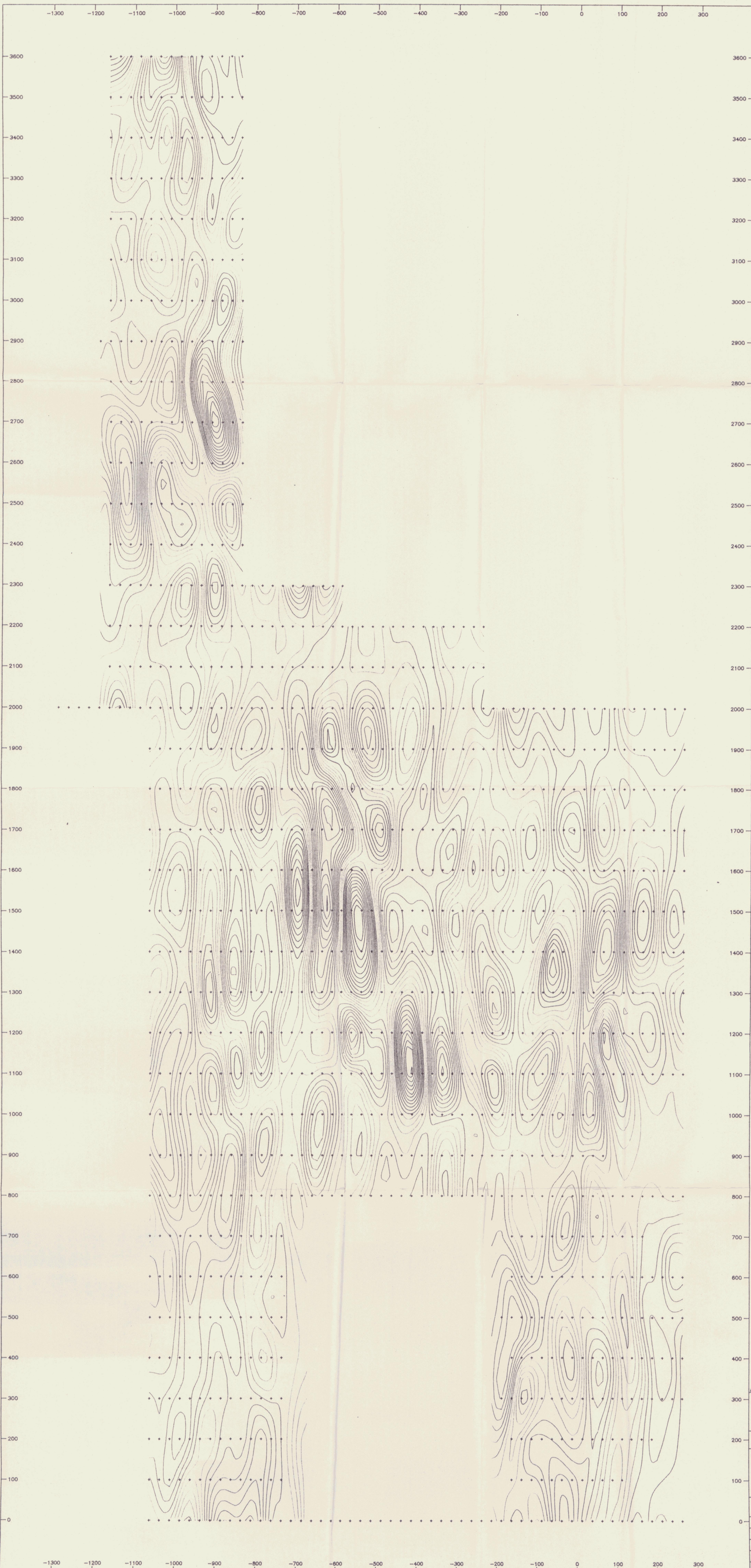
*Fig. 10a*

NTS Ref.:		INSTRUMENTATION	
Data Units:	Percent	Model:	E.M. 16 System
Scale:	1:5,000	Resolution:	Percent
Date:	October 1990	Manufacturer:	Geonics Ltd., Toronto
compiled by: R. F. SHELDRAKE & ASSOCIATES LTD.			

-1300 -1200 -1100 -1000 -900 -800 -700 -600 -500 -400 -300 -200 -100 0 100 200 300

-1300 -1200 -1100 -1000 -900 -800 -700 -600 -500 -400 -300 -200 -100 0 100 200 300





3600  
3500  
3400  
3300  
3200  
3100  
3000  
2900  
2800  
2700  
2600  
2500  
2400  
2300  
2200  
2100  
2000  
1900  
1800  
1700  
1600  
1500  
1400  
1300  
1200  
1100  
1000  
900  
800  
700  
600  
500  
400  
300  
200  
100  
0

- Red : > 60
- Orange : 48 to 58
- Yellow : 36 to 44
- Brown : 26 to 34
- L/Green : 16 to 24
- Green : 8 to 14
- Blue : 0 to 6
- Purple : < -2

Doc # **092959**

MAP# 115H-7,8,9,10 (43)

**SOUTH "A" GRID**

NICK CLAIMS  
KIRKLAND CREEK PROJECT, Y.T.

GOLDEN HEMLOCK EXPLORATIONS LTD.

VLF-EM FRASER FILTER CONTOUR MAP  
Contour Interval 2 Percent  
Seattle, Washington Transmitter

Fig. 11a

NTS Ref.:	INSTRUMENTATION
Data Units: Percent	Model: E.M. 16
Scale: 1:5000	Resolution: 1.0 Percent
Date: October 1990	Manufacturer: Geonics Ltd.



200  
100  
0  
-100  
-200  
-300  
-400  
-500  
-600  
-700  
-800  
-900  
-1000  
-1100  
-1200  
-1300  
-1400  
-1500  
-1600  
-1700  
-1800  
-1900  
-2000  
-2100  
-2200  
-2300  
-2400  
-2500  
-2600  
-2700  
-2800  
-2900  
-3000  
-3100  
-3200

Red : > 60  
Orange : 48 to 58  
Yellow : 36 to 44  
Brown : 26 to 34  
L/Green : 16 to 24  
Green : 8 to 14  
Blue : 0 to 6  
Purple : < -2

Doc# **092959**

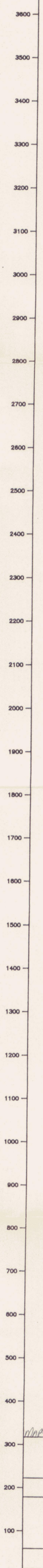
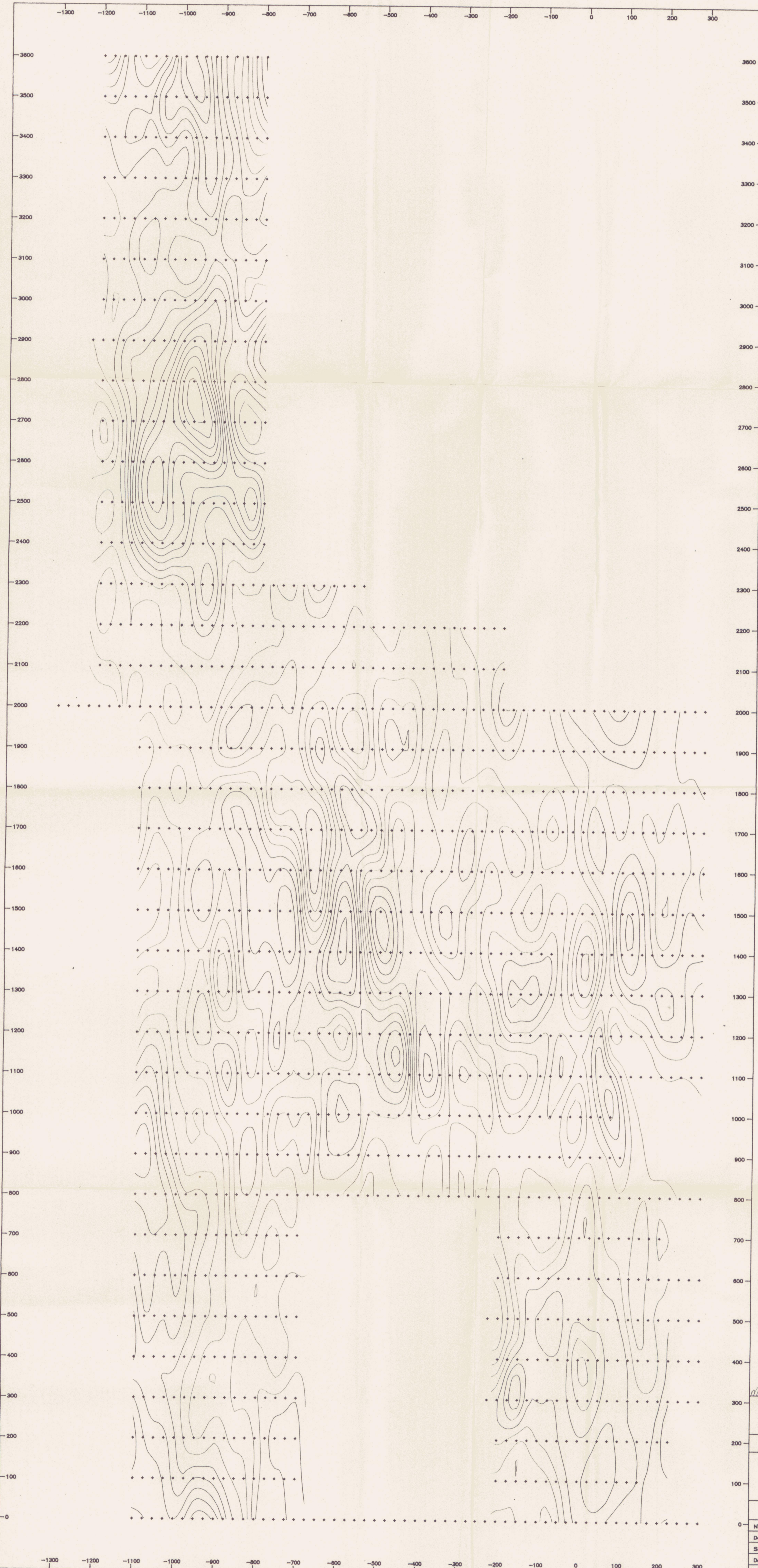
MAP# 115H-7,8,9,10 (44)  
NORTH "B" GRID  
NICK CLAIMS  
KIRKLAND CREEK PROJECT, Y.T.  
GOLDEN HEMLOCK EXPLORATIONS LTD.

VLF-EM FRASER FILTER CONTOUR MAP  
Contour Interval 2 Percent  
Seattle, Washington Transmitter

Fig. 116

NTS Ref.:	INSTRUMENTATION	
Data Units: Percent	Model :	E.M. 16
Scale: 1:5,000	Resolution :	1.0 Percent
Date : October 1990	Manufacturer :	Geonics Ltd.

compiled by R. F. SHELDRAKE & ASSOCIATES LTD.



- Red : > 60
- Orange : 48 to 58
- Yellow : 36 to 44
- Brown : 26 to 34
- L/Green : 16 to 24
- Green : 8 to 14
- Blue : 0 to 6
- Purple : < -2

**092959**

Map# 1154-7,8,9,10 Doc# 092959 45

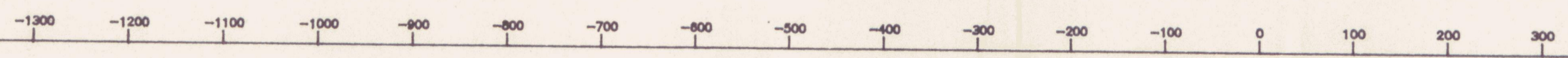
**SOUTH "A" GRID**  
 NICK CLAIMS  
 KIRKLAND CREEK PROJECT, Y.T.  
 GOLDEN HEMLOCK EXPLORATIONS LTD.

VLF-EM TILT ANGLE CONTOUR MAP  
 Contour Interval 2 Percent  
 Seattle, Washington Transmitter

Fig. No. 12a

NTS Ref.:		INSTRUMENTATION	
Date	Units	Model	Resolution
: October 1990	Percent	: E.M. 16	: 1.0 Percent
		Scale:	Manufacturer
		: 1:5000	: Geonics Ltd.

compiled by R. F. BELDRAKE & ASSOCIATES LTD.





200  
100  
0  
-100  
-200  
-300  
-400  
-500  
-600  
-700  
-800  
-900  
-1000  
-1100  
-1200  
-1300  
-1400  
-1500  
-1600  
-1700  
-1800  
-1900  
-2000  
-2100  
-2200  
-2300  
-2400  
-2500  
-2600  
-2700  
-2800  
-2900  
-3000  
-3100  
-3200

Red : > 60  
Orange : 48 to 58  
Yellow : 36 to 44  
Brown : 26 to 34  
L/Green : 16 to 24  
Green : 8 to 14  
Blue : 0 to 6  
Purple : < -2

Doc# 092959

MAP# 1154-78910 (46)

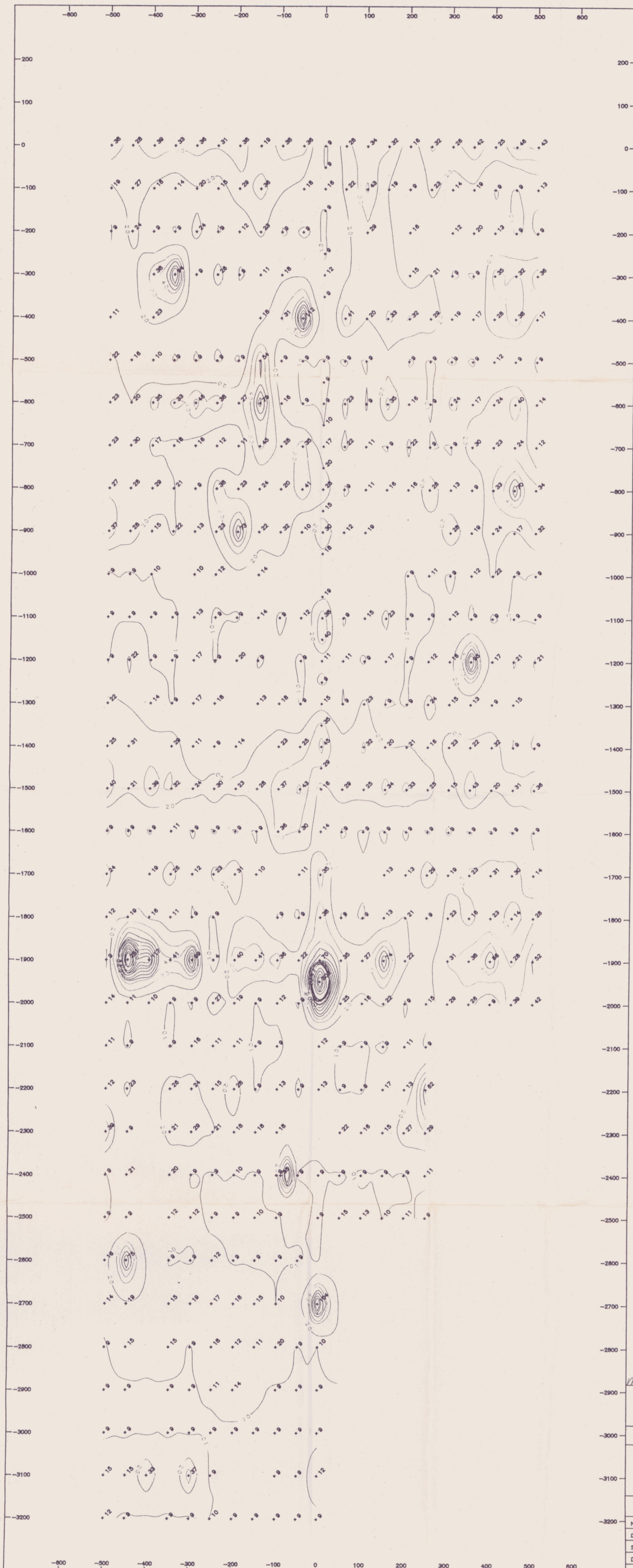
NORTH "B" GRID  
NICK CLAIMS  
KIRKLAND CREEK PROJECT, Y.T.  
GOLDEN HEMLOCK EXPLORATIONS LTD.

VLF-EM TILT ANGLE CONTOUR MAP  
Contour Interval 2 Percent  
Seattle, Washington Transmitter

FIG. 126

NTS Ref.:	INSTRUMENTATION	
Data Units: Percent	Model: E.M. 16	
Scale: 1:5,000	Resolution: 1.0 Percent	
Date: October 1990	Manufacturer: Geonics Ltd.	

compiled by R. F. SHELDRAKE & ASSOCIATES LTD.

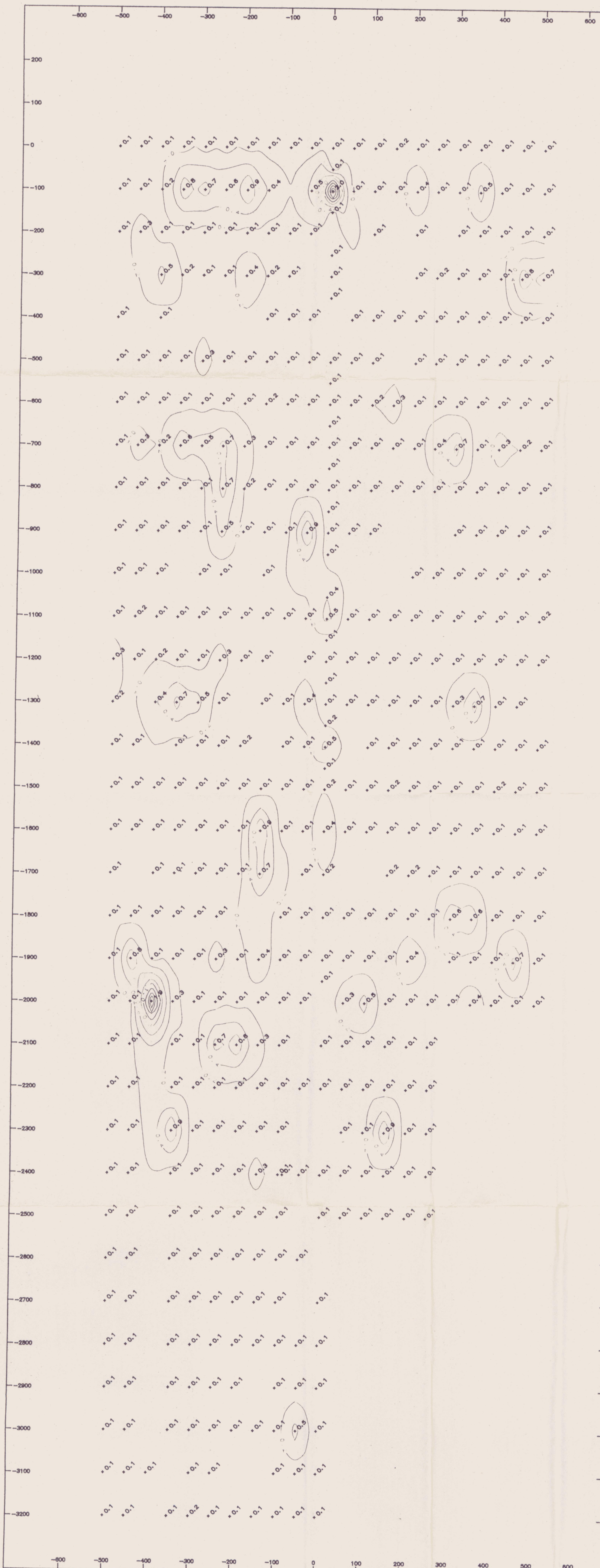


- Red : > 200
- Orange : 160 to 180
- Yellow : 120 to 140
- Brown : 90 to 100
- L/Green : 70 to 80
- Green : 50 to 60
- Blue : 30 to 40
- Purple : < 20

Doc# 092959

MAP# 115H-7,8,9,10 (47)

NORTH "B" GRID	
NICK CLAIMS KIRKLAND CREEK PROJECT, Y.T.	
GOLDEN HEMLOCK EXPLORATIONS LTD.	
GEOCHEMISTRY CONTOUR MAP - GOLD (Au - ppm)	
FIG. 13	
NTS Ref.:	INSTRUMENTATION
Data Units:	Model:
Scale: 1:5,000	Resolution:
Date: October 1990	Manufacturer:
<small>compiled by R. F. SHELDRAKE &amp; ASSOCIATES LTD.</small>	



200

100

0

-100

-200

-300

-400

-500

-600

-700

-800

-900

-1000

-1100

-1200

-1300

-1400

-1500

-1600

-1700

-1800

-1900

-2000

-2100

-2200

-2300

-2400

-2500

-2600

-2700

-2800

-2900

-3000

-3100

-3200

200

100

0

-100

-200

-300

-400

-500

-600

-700

-800

-900

-1000

-1100

-1200

-1300

-1400

-1500

-1600

-1700

-1800

-1900

-2000

-2100

-2200

-2300

-2400

-2500

-2600

-2700

-2800

-2900

-3000

-3100

-3200

Red : > 3.0

Orange : 2.6 to 2.8

Yellow : 2.2 to 2.4

Brown : 1.8 to 2.0

L/Green : 1.4 to 1.6

Green : 1.0 to 1.2

Blue : 0.6 to 0.8

Purple : < .4

Doc # 092959

MAP# 115H-7,8,9,10 (48)

**NORTH "B" GRID**

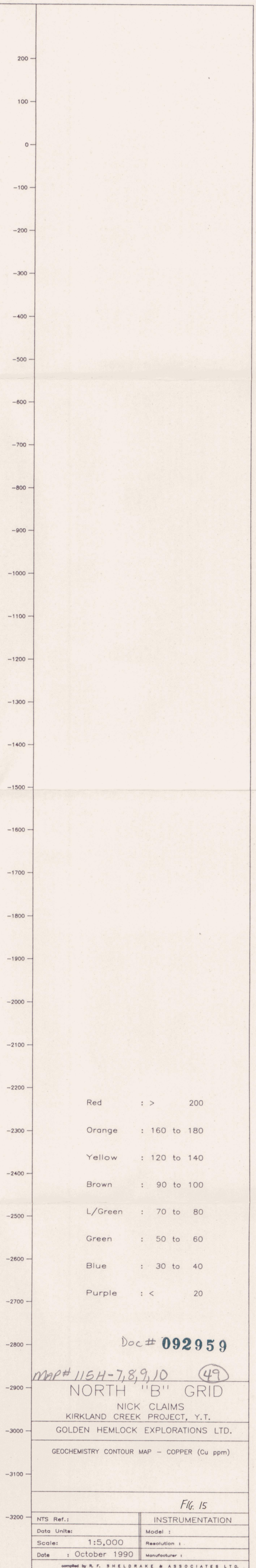
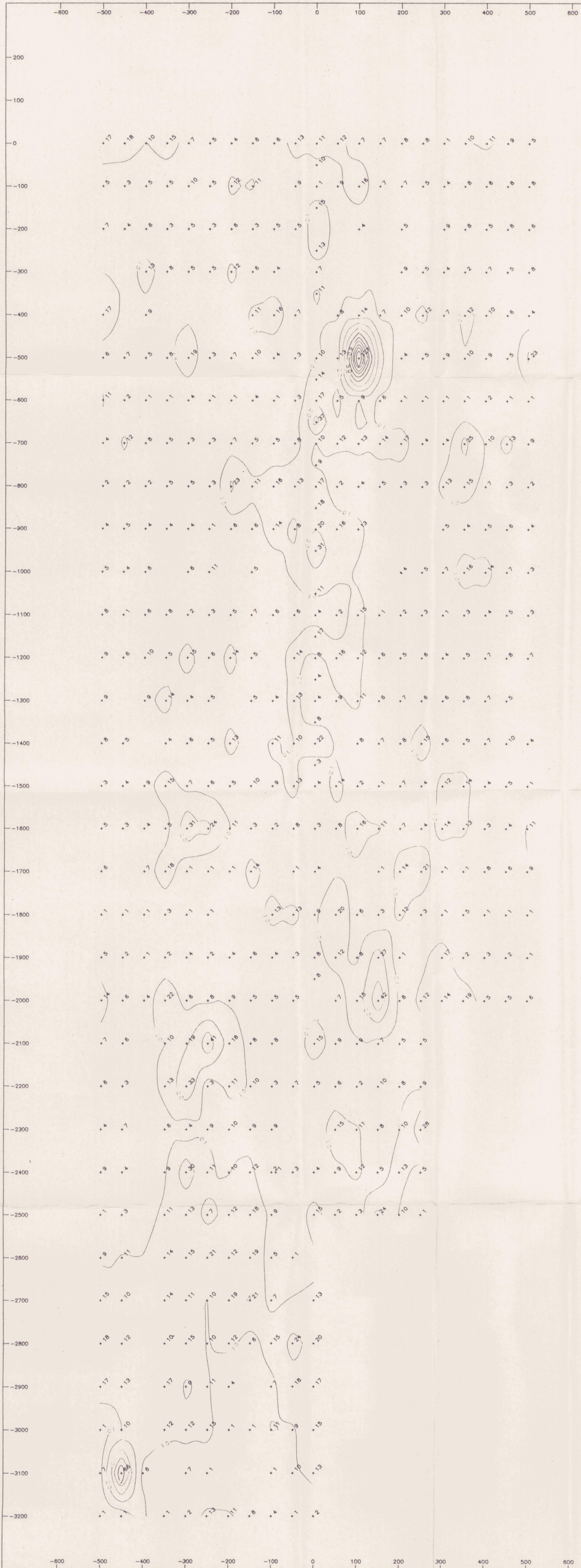
NICK CLAIMS  
KIRKLAND CREEK PROJECT, Y.T.  
GOLDEN HEMLOCK EXPLORATIONS LTD.

GEOCHEMISTRY CONTOUR MAP - SILVER (Ag - ppm)

Fig. 14

NTS Ref.:	INSTRUMENTATION
Date Units:	Model :
Scale: 1:5,000	Resolution :
Date : October 1990	Manufacturer :

compiled by R.F. SHELDRAKE & ASSOCIATES LTD.



- Red : > 200
- Orange : 160 to 180
- Yellow : 120 to 140
- Brown : 90 to 100
- L/Green : 70 to 80
- Green : 50 to 60
- Blue : 30 to 40
- Purple : < 20

Doc # 092959

MAP# 115H-7,8,9,10 (49)

NORTH "B" GRID

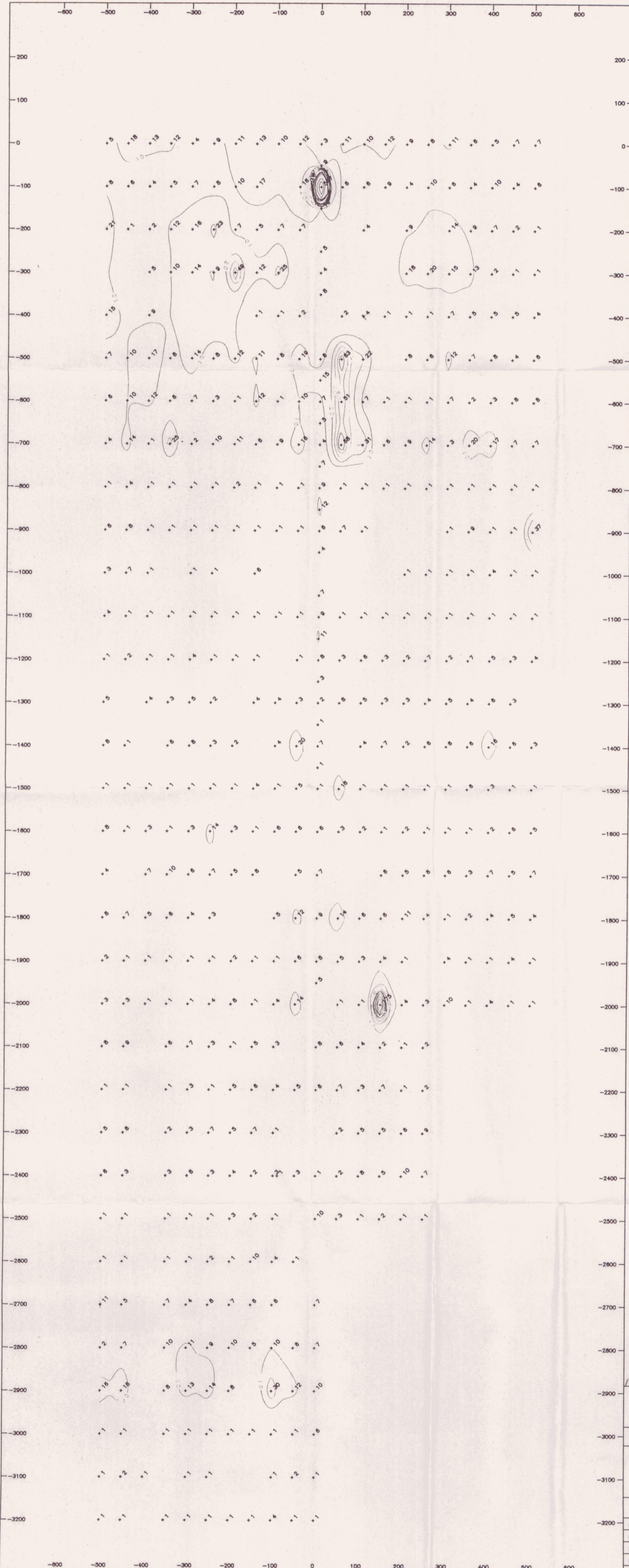
NICK CLAIMS  
KIRKLAND CREEK PROJECT, Y.T.

GOLDEN HEMLOCK EXPLORATIONS LTD.

GEOCHEMISTRY CONTOUR MAP - COPPER (Cu ppm)

Fig. 15

NTS Ref.:		INSTRUMENTATION	
Data Units:		Model:	
Scale:	1:5,000	Resolution:	
Date:	October 1990	Manufacturer:	



- Red : > 200
- Orange : 160 to 180
- Yellow : 120 to 140
- Brown : 90 to 100
- L/Green : 70 to 80
- Green : 50 to 60
- Blue : 30 to 40
- Purple : < 20

Doc#092959

MAP#115H-7,8,9,10 (50)

**NORTH "B" GRID**

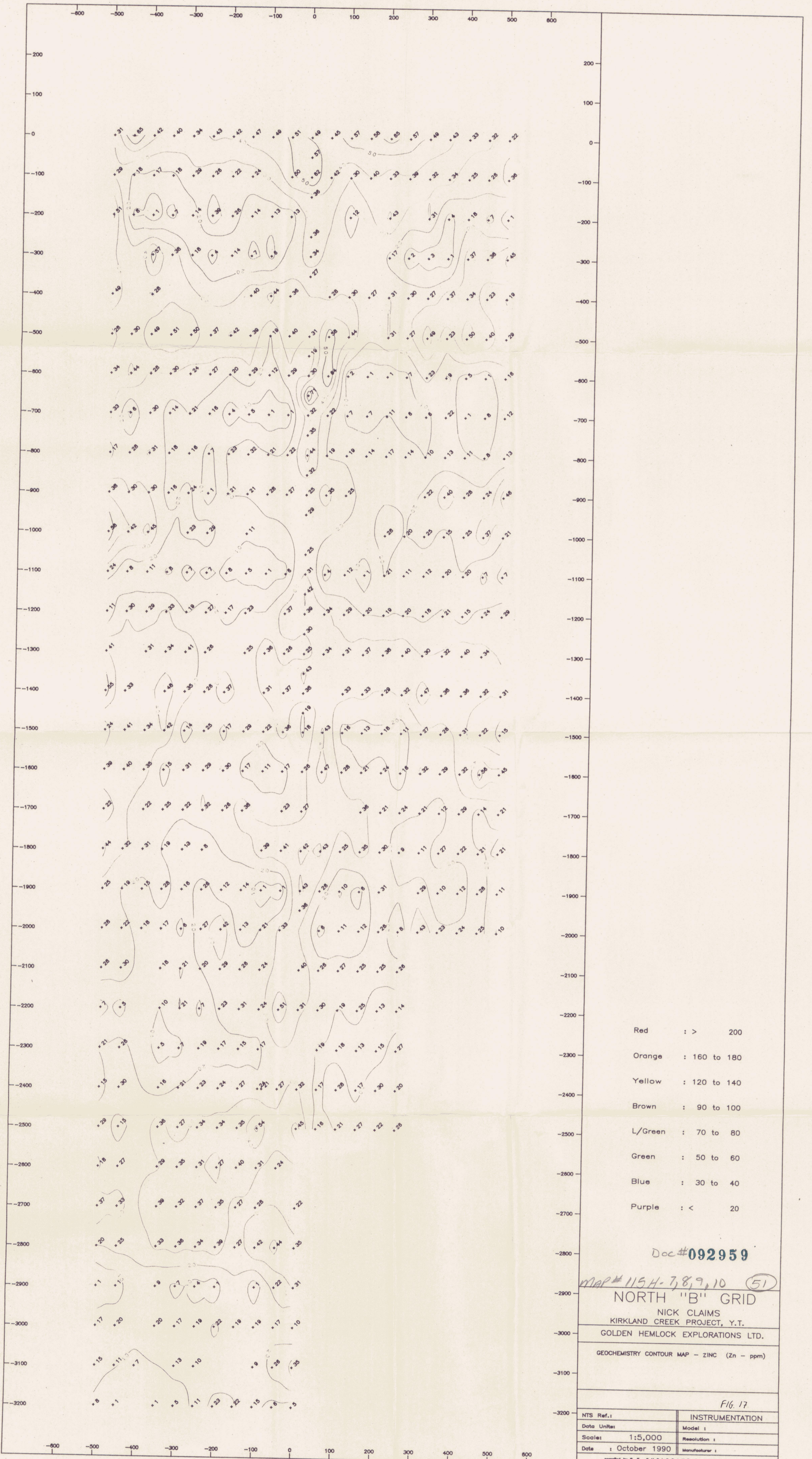
NICK CLAIMS  
KIRKLAND CREEK PROJECT, Y.T.  
GOLDEN HEMLOCK EXPLORATIONS LTD.

GEOCHEMISTRY CONTOUR MAP - LEAD ( Pb - ppm)

FIG. 16

NTS Ref.:	INSTRUMENTATION
Data Units:	Model :
Scale: 1:5,000	Resolution :
Date : October 1990	Manufacturer :

compiled by R. F. SHELDRAKE & ASSOCIATES LTD.



- Red : > 200
- Orange : 160 to 180
- Yellow : 120 to 140
- Brown : 90 to 100
- L/Green : 70 to 80
- Green : 50 to 60
- Blue : 30 to 40
- Purple : < 20

Doc#092959

MAP# 115H-7,8,9,10 (51)

**NORTH "B" GRID**

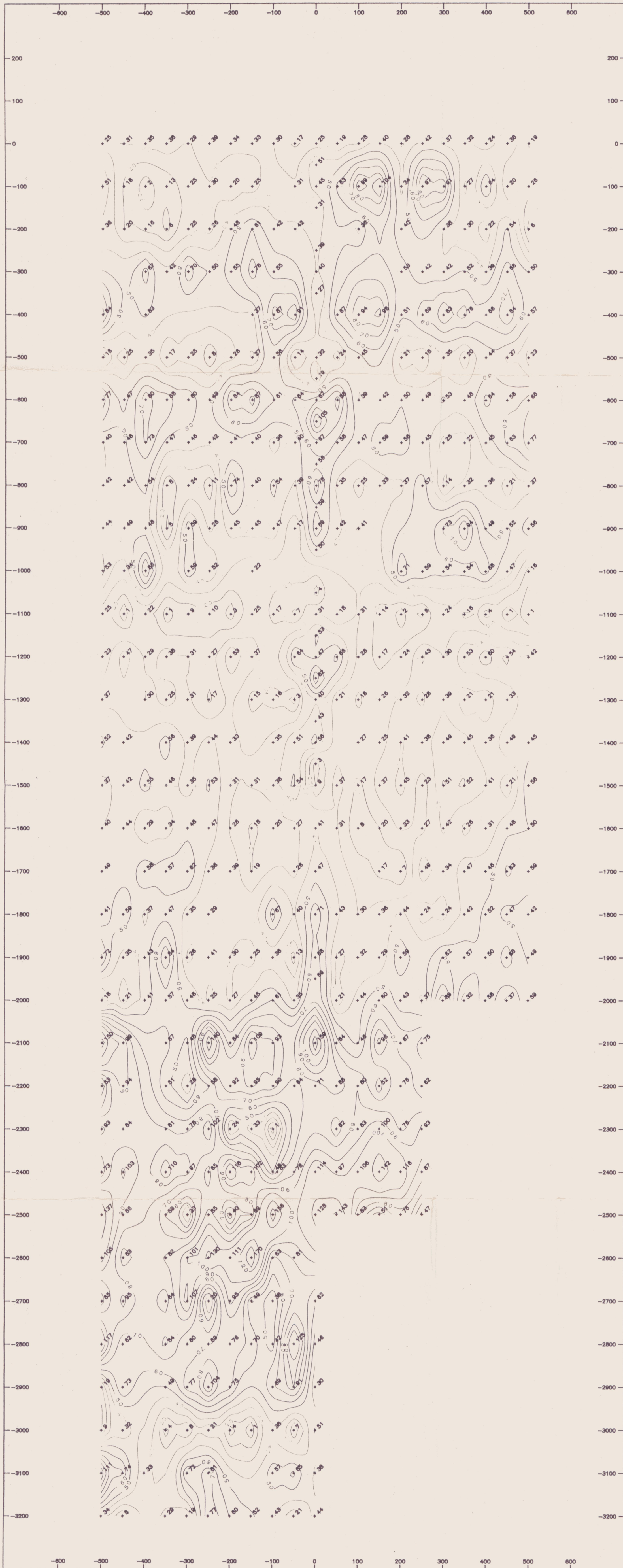
NICK CLAIMS  
KIRKLAND CREEK PROJECT, Y.T.

GOLDEN HEMLOCK EXPLORATIONS LTD.

GEOCHEMISTRY CONTOUR MAP - ZINC (Zn - ppm)

FIG. 17

NTS Ref.:		INSTRUMENTATION	
Data Units:		Model:	
Scale:	1:5,000	Resolution:	
Date:	October 1990	Manufacturer:	
<small>compiled by R. F. SHELDRAKE &amp; ASSOCIATES LTD.</small>			



- Red : > 200
- Orange : 160 to 180
- Yellow : 120 to 140
- Brown : 90 to 100
- L/Green : 70 to 80
- Green : 50 to 60
- Blue : 30 to 40
- Purple : < 20

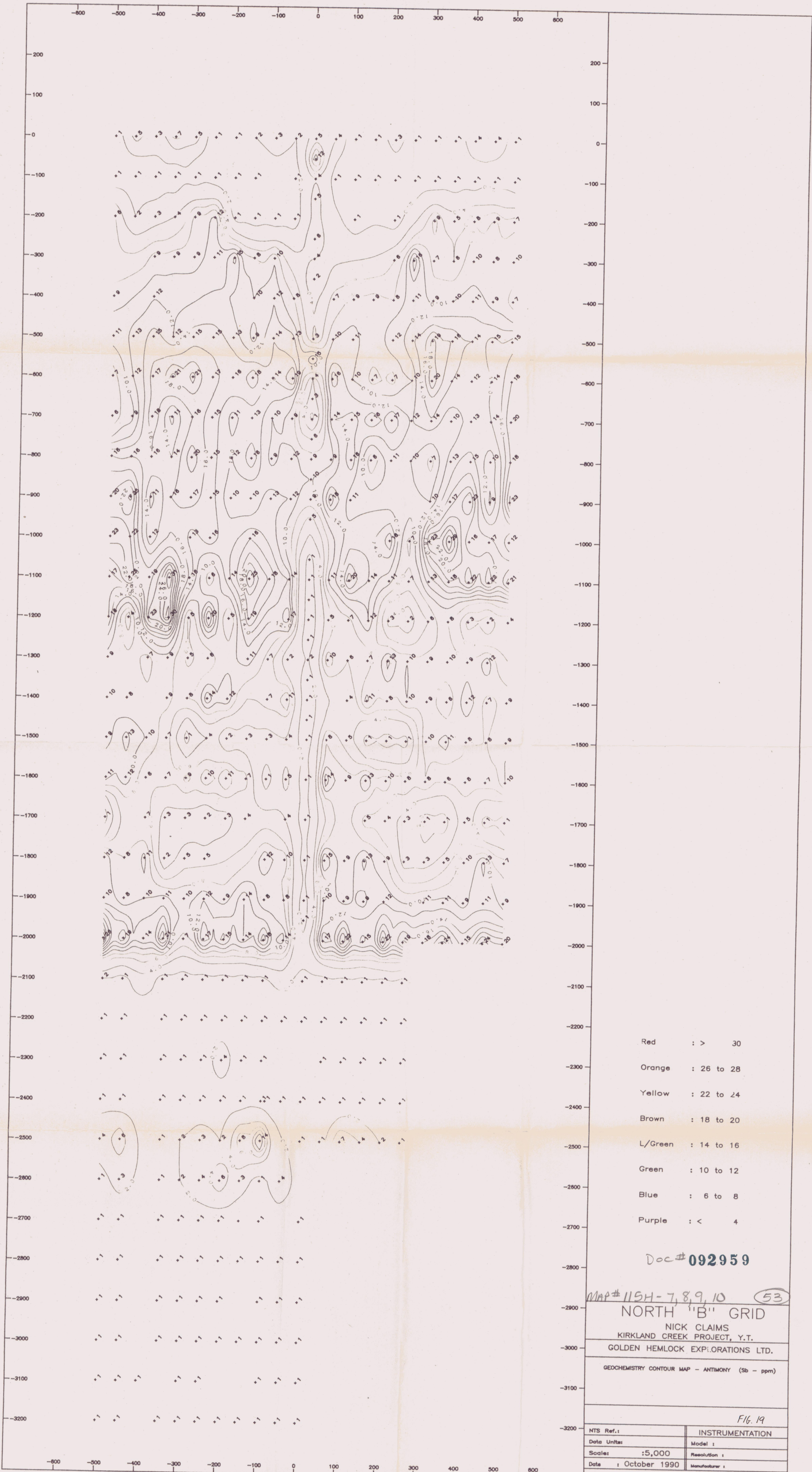
Doc# 092959

MAP# 115H-7,8,9,10 (52)

NORTH "B" GRID  
 NICK CLAIMS  
 KIRKLAND CREEK PROJECT, Y.T.  
 GOLDEN HEMLOCK EXPLORATIONS LTD.  
 GEOCHEMISTRY CONTOUR MAP - ARSENIC (As ppm)

FIG. 18

NTS Ref.:	INSTRUMENTATION
Date Units:	Model :
Scale:	Resolution :
Date :	Manufacturer :
compiled by R. F. SHEDRAKE & ASSOCIATES LTD.	



- Red : > 30
- Orange : 26 to 28
- Yellow : 22 to 24
- Brown : 18 to 20
- L/Green : 14 to 16
- Green : 10 to 12
- Blue : 6 to 8
- Purple : < 4

Doc # 092959

MAP # 115H-7, 8, 9, 10 (53)

**NORTH "B" GRID**

NICK CLAIMS  
KIRKLAND CREEK PROJECT, Y.T.  
GOLDEN HEMLOCK EXPLORATIONS LTD.

GEOCHEMISTRY CONTOUR MAP - ANTIMONY (Sb - ppm)

FIG. 19

NTS Ref.:	INSTRUMENTATION
Data Units:	Model :
Scale:	Resolution :
Date :	Manufacturer :
<small>compiled by R. F. SHELDRAKE &amp; ASSOCIATES LTD.</small>	

APPENDIX 1-LIST OF PERSONNEL

**LIST OF PERSONNEL**

**MANAGER:**

Seamus Young

August 8 - October 12, 1990

**GEOLOGISTS:**

Jim Donaldson

August 8 - October 12, 1990

Mark Terry

August 8 - October 12, 1990

Graham Davidson

September 5 - October 5, 1990

**CONSULTANT:**

Gerry Delane

August 11 - September 1, 1990

**LINECUTTER:**

Andy MacDonald

August 15 - August 29

September 6 - October 5, 1990

**FIELD WORKERS:**

Tim Young

August 8 - August 29, 1990

Brad McNeil

August 8 - August 29, 1990

Hudson MacDonald

August 14 - October 5, 1990

**COOK:**

Jacqueline Shorty

August 15 - August 29, 1990

APPENDIX II-EXAMINATION OF GEOPHYSICAL DATA, NICK I CLAIM  
GROUP

MEMORANDUM

AMEROK GEOPHYSICS  
Box 5709  
Whitehorse, Yukon  
Y1A 5L5  
(403) 668-7672

January 31, 1991

To: Graham Davidson  
From: Mike Power  
Re: Examination of geophysical data - NICK I Claim group

---

This memorandum contains an analysis of Dighem III and ground geophysical survey results from the NICK I claim group. Expected responses from geological targets and a series of 24 anomalies are described.

1. Geology

The NICK I claim group is underlain by Tertiary (Eocene ?) andesitic tuffs and intrusive felsic volcanics. There are no known bedrock occurrences of precious metal mineralization although the rocks are favourable for gold deposits. Gold and silver deposits are found in the Late Cretaceous Carmacks and Nansen Volcanics N of the property (Carlson 1987) and to the S in Eocene volcanics of the Skukum Group (McDonald 1990). Occurrences in both these areas are similar; epithermal to mesothermal gold bearing quartz/chalcedony veins are localized in faults and fractures and are often near felsic volcanic rocks intruded along these structures. In the Mt. Skukum camp, fractures and faults developed in response to both regional stresses and to local caldera bulging and subsequent collapse. Near Mt. Nansen, deposits seem to have developed in fractures related to intrusive activity and they are associated with intrusive breccias and quartz feldspar porphyries. Typical precious metals occurrences in both camps are in quartz veins 0.5 to 20 m wide with quartz, chalcedony, pyrite (<10%) and local sericite. Wide zones of propylitic chlorite surrounding some veins. The more favourable veins seem to splay from larger controlling faults or major fractures as in the Cirque Zone at Mt. Skukum or at Mt. Nansen (Webber and Heustis veins).

## 2. Expected geophysical signatures

Using precious metal occurrences in similar rocks as a guide, structures hosting precious metal mineralization on the NICK I claim group will probably be poor conductors with no magnetic signature. Such structures will probably be tabular, steeply dipping or vertical bodies with conductances in the range of 0.5 to perhaps 10 S depending upon the extent of alteration and the width of the structure. Extensive alteration of country rock to clay near such structures may widen the apparent response but the conductance will remain approximately the same. A broad zone of low apparent half-space resistivity could be an indicator of alteration but caution must be used because the resistivity calculation does not weed out discrete conductor responses and high amplitude responses from discrete conductors can also appear in the resistivity map as an associated low. The conductivity of the vein itself will be largely controlled by permeability and sulphide mineralization will not be a significant factor unless sulphide concentrations exceed 10%. Frequently the top of such structures may be recessive and filled with overburden. The depression in bedrock at the top of a vein or fracture can be much wider than the vein itself and, if filled with overburden, can cause an EM system response which appears to be solely due to a flat-lying layer of overburden. The conductance of bedrock and surficial conductors will be approximately the same and unless the EM system senses the steeply dipping sides of a bedrock conductor, the responses can be identical. In exploring for targets with these properties, no anomaly can be discarded out of hand. All anomalies should be evaluated on the basis of strike, anomaly shape (ie. straight, curved or sinuous) and their association with geological features and anomalous geochemical samples.

Since there are no magnetic minerals found in the vein assemblage and since the accompanying hydrothermal alteration oxidizes magnetic minerals in the country rock, the veins would be a zone of low magnetic susceptibility. If localized along faults, their presence may be indirectly indicated by displacement of magnetic highs or other lows. To illustrate the possible range of responses from targets of interest on the NICK I group, simple modelling of three likely structures was performed. All models consist of vertical tabular bodies - the most likely geometry for any faults, feeders or dikes - and all are assumed to have tops 50 m below ground level. The earth's field is assumed to be 57000 nT and dipping at 75° - the International Geomagnetic Reference Field (1980) background for this area. Two materials are considered. The tuff is assumed to be andesitic in bulk composition and a slightly lower than average relative susceptibility for andesite of  $10000 \times 10^6$  emu is assigned to it. Fault zones and/or intrusive rhyolite dikes are assumed to have an average relative susceptibility of  $1000 \times$

10<sup>6</sup> emu. In Figure 1, the expected response of an E-W striking thin fault or rhyolite dike, 20 m wide and centred at 10 N is shown. The enclosing rock has the higher susceptibility. The response consists of a small (200 nT) depression in the overall gradient. The response for a N-S striking fault or dike is shown in Figure 2 and is essentially the same. Note that no positive deflections are associated with either response. The response of isolated magnetic dikes is shown in Figures 3 and 4 for E-W and N-S striking dikes respectively. Dikes striking E-W produce a peak over the S side of the dike and a trough on the N side. The edges of the dike lie beneath the steepest portions of the responses. If a magnetic feature were fault bounded, the likely location of the fault would therefore be in the region of steepest gradient on the side of the high. This observation is valid regardless of the strike of the dike as shown in Figure 4. Finally, we consider the case of a dike with remnant magnetization which produces an anomaly similar to that of a fault or rhyolite dike. If a tabular body were to acquire a reverse magnetization during cooling through the Curie point, a pronounced magnetic low can develop as shown in Figures 5 and 6. The intensity of the low could vary depending upon the intensity of the remnant magnetization and in the case of a N-S structure, the response could be nearly identical to that of a zone of low susceptibility. If the body strikes E-W, a small positive response will be recorded on the N side of the body and this might lead an interpreter to suspect that the anomaly is due to a reversed magnetized feature if no other magnetic material occurs N of the reverse magnetized body. Normally remnant magnetism is only a problem in very alkalic rocks (eg. syenites), but it has been recorded in other igneous rocks.

A comprehensive discussion of the early version of the Dighem system is found in Fraser (1978) and this was summarized in Pritchard (1990). Their remarks are largely confined to the general performance of the system in a range of environments and principally on the Canadian Shield. The Dighem system is designed and tuned for detection of massive sulphides and modifications made to permit its use in the investigation of surficial features and other poor conductors are secondary to its central function and design. Dighem III and all current airborne systems experience difficulties discriminating between poor bedrock conductors and overburden conductors, particularly in areas where overburden is thick and/or conductive. The system records responses from vertical coaxial and horizontal coplanar transmitter and receiver coils. Over a thin, steeply dipping bedrock conductor, the coaxial response consists of a quadrature and in-phase peak centred over the top of the conductor as shown in Figure 7a. The coplanar response consists of positive peaks on either side of the conductor, separated by 1.6 times the height of the bird above the conductor top. If the conductor is more than 8 m thick - and the system may be sensing only the top and not the true thickness at depth in some cases - the response

is identical to that of the coaxial pair (Figure 7b). Fraser (1978) suggests that current gathering within conductive overburden above a thin steeply dipping bedrock conductor may cause the quadrature component to lose its cusp and appear to originate within a thick conductor as well. Unfortunately, a centre peaked coplanar response is also the response expected from a surficial conductor. As a surficial conductor widens, the top of the response will begin to flatten indicating substantial width. In the survey of the NICK I group, most of the anomalies consisted of positive coaxial and coplanar responses of varying widths. They were consistently attributed to surficial sources but may indicate the presence of bedrock conductors.

### 3. Results - Dighem Survey

The Dighem data was screened to locate anomalies which might merit ground follow-up. The following criteria were used in selecting the anomalies:

1. The anomalous response must have been intersected on at least 3 survey lines.
2. The general character of anomalous responses must correlate from line to line.

The first of these is the most significant criteria because most of the detected responses are similar in character. The traces of the anomalies are shown on the dylar overlay accompanying this memo. They are described below:

#### Block A

Anomaly A is intersected at the following points (Line/fiducial): L10240/4444, L10230/3980, L10220/3949, L10210/3383, L10200/3156. The anomaly strikes  $160^\circ$ , meanders along strike and is close to a small intermittent drainage. The response is consistently positive in the 7200 Hz coplanar in-phase and quadrature channels and has a weak coax response on lines 10200 and 10210. This suggests a wide ( $> 5m$ ) source. Since the coaxial coils are oriented for maximum coupling with flat lying conductors, the absence of a coax response suggests a steeply dipping bedrock source rather than an overburden source. The response at L10240/4444 has a large apparent depth (vertical dike) and may be an off-line response from the main conductor to the south. Indicated vertical tabular conductor (VTC) conductances range from 0.5 to 1.0 S; none of these are reliable estimates because of the low in-phase responses. There anomaly location does not shift with flight line direction and is thus probably not attributable to bird noise. The anomaly is on the east flank of

a north striking positive magnetic field anomaly.

Anomaly B is intersected at the following points: L10240/4398, L10230/4017, L10220/3809, L10210/3413, L10200/3122, L10190/2709, L10180/2382. The response consists of positive in-phase and quadrature inflections on coplanar 7200 Hz channels and occasional similar responses on the coplanar 900 Hz channel. A coaxial response occurs only on Lines 10220 and 10210. Responses on lines 10200 and 10230 are very weak and perhaps are off-line responses. The response width is in the order of 100 m but the anomaly is oblique to the flight line and this will increase the width of any response. The EM anomaly is close to but not coincident with drainages. The EM anomaly occurs on the NW side of a NE striking magnetic high and terminates in a mag high on line 10180. The EM anomaly follows the general line of a zone of low resistivity (average resistivity - 250 ohm-m). The kink in the EM anomaly at the N end occurs on the SW side of a strong, wide, VLF anomaly on lines 10240 and 10230. The anomaly is fairly straight and this together with its position on the flank of a magnetic high suggests it may be a fault or stratabound zone of alteration.

Anomaly C occurs in two segments and is intersected at the following points: L10160/1710, L10150/1321, L10120/5195 and L10110/5389. The anomalous response consists of positive inflections in the coplanar 7200 Hz in-phase and quadrature channels and very slight positive inflections in the coaxial and coplanar channels. The anomaly is straight, striking  $112^\circ$  for 1400 m. VTC conductances are estimated at 0.5 to 0.8 S. Although none of these are strictly reliable given the poor 900 Hz coplanar response, they are probably close to true values. Anomaly width is in the order of 200 m but the anomaly strikes only  $30^\circ$  to the survey line direction and this will increase the response width. The EM anomaly occurs on the S side of a magnetic field high and a VLF high. The anomaly follows the S side of a small lake and a small stream which drains the lake. The anomaly cuts across resistivity trends. The relation between the EM anomaly and magnetic field high suggests that the anomaly is due to a conductor following a contact or fault. The association between the anomaly and the VLF field and topography and the general response shape on the other hand suggests that the source may be in overburden.

Anomaly D is intersected at the following points: L10190/2762, L10180/2313, L10170/1922, L10150/1356, L10140/1137 and L10130/4067. The anomalous response consists of slight positive quadrature coplanar 7200 Hz inflections with very slight 7200 Hz in-phase responses. The response along line 10130 is a striking exception; the anomaly consists of positive coplanar quadrature 7200 Hz and 900 Hz responses, and negative coplanar and coaxial in-phase responses at 900 Hz. This response is unusual and suggests that the high frequency quadrature response is sourced

in overburden and the low frequency response is sourced in bedrock or an off-line conductor. Response width ranges from 100 to 200 m and has probably been thickened by the oblique strike of the anomaly with respect to the survey lines ( $60^\circ$ ). VTC conductances range from 0.5 to 0.7 S and these are probably a good rough estimate. The anomaly is linear, strikes  $360^\circ$  and has a length of approximately 1500 m. It cuts across the topography and shows no relation to the local drainages. The EM anomaly follows a weak second order resistivity low which cross cuts a larger low running along with Camp Creek. The EM anomaly parallels the W side of a magnetic high and is truncated by highs at either end. The S end of the anomaly is in an embayment within a large VLF anomaly. Given that the anomaly is linear, cross cuts topography and runs along the flank of a magnetic high, the source may be a conductor following a fault or alteration zone. The wide response and the resistivity low which is coincident with the anomaly could be construed as indications that the conductor is wide but this may have been exaggerated by the oblique strike of the anomaly with respect to the survey lines.

Anomaly E is intersected at the following points: L10070/6568, L10060/1031, L10050/1178, L10040/1584 and L10030/1848. The anomalous response consists of positive inflections in all quadrature channels and in the coplanar 7200 Hz in-phase channel. The inflection in the coaxial channel is very small and the response on line 10050 is obscured by a 36 m change in bird elevation. VTC conductance estimates range from 1.2 to 3.6 S; the best estimate is 3.6 S on line 10040. Inferred depths to the top of a VTC are 0 to 8 m. A reliable estimate of width can also be made on line 10040 and here it appears that the conductor could be up to 70 m wide. Unfortunately, the conductor is coincident with a lake at this point and this width may reflect the presence of surficial deposits. The anomaly strikes roughly  $360^\circ$  and has a curved trace extending 1300 m. The anomaly is in a topographic saddle but topography affects the response only along line 10050. The EM anomaly shows no correlation with VLF anomalies but follows the W flank of a N striking magnetic high for part of its length. There is a very strong correlation between the EM anomaly and a resistivity low. The resistivity low is strongest in the vicinity of two lakes and this suggests that it is due to lake bottom sediments. Given that the anomaly appears to cut across topography and follows the flank of a magnetic high, the source conductor may follow a fault or altered contact. The close association between the conductor, the resistivity low and the small lakes suggests that actual source is in overburden.

Anomaly F is intersected at L10050/1195, L10040/1559 and L10030/1885. The anomalous response consists of very weak positive quadrature and in-phase responses on the 7200 Hz coplanar channels. VTC conductances range from 1.2 to 2.8 S;

none are strictly reliable but they probably reflect the low conductance indicated by lack of response at 900 Hz. VTC depth estimates range from 0 to 16 m but are probably also invalid. The anomaly strikes  $270^\circ$  over a length of 950 m. The anomaly runs across a small saddle but is not related to drainage. The anomaly shows no relation to magnetic, VLF or resistivity anomalies but much of this is probably due to the oblique strike of the anomaly with respect to the survey lines ( $35^\circ$ ). Width estimates are invalid for the same reason.

Anomaly G is intersected at L10140/1104, L10130/4901, L10120/5120, L10100/5655, L10090/5950, L10070/6635, L10060/941, L10050/1259, L10040/1483, L10030/1931 and L10021/2417. The anomalous response consists of positive quadrature inflections on all channels and of positive in-phase deflections on the 7200 Hz coplanar channel and, rarely, on the 900 Hz coplanar channel. Response width is generally 100 to 150 m except on lines 10100 (300 m) and line 10040 (50-75 m). The anomaly shows no strong correlation with topography nor with the grain of the magnetic field. The EM anomaly follows a broad VLF high and broad resistivity low. The width and the intensity of the resistivity low together with the apparent width of the source conductor suggested by the broad positive responses suggests that the conductor may be a wide zone of alteration capped by conductive surficial sediments or a thick sequence of surficial sediments filling a depression in the bedrock topography.

Anomaly H consists of two small segments intersecting at a fairly high angle at L10190/2782, L10180/2300, L10180/2292, L10170/1940 and L10160/1626. The anomalous response consists of positive deflections in the coplanar in-phase and quadrature 7200 Hz channels on all lines. The strongest response occurs on line 10190 where all quadrature channels and the 7200 Hz coplanar in-phase channel are positive. VTC conductance estimates are from 0.5 to 3.1 S. None of these are reliable given the low 900 Hz response but the conductance is probably low. Depths to top range from 0 to 5 m but these may be affected by the oblique strike of the anomaly with respect to the survey lines ( $60^\circ$ ). The anomaly strikes  $290^\circ$  and  $360^\circ$  over 700 and 500 m respectively. The anomaly shows no strong correlation with topography nor with resistivity features. The N striking section is roughly coincident with a section of the large VLF anomaly associated with anomaly G and the W striking section parallels a zone of strong magnetic field gradient. These latter features suggest that the anomaly is controlled by bedrock structure.

Anomaly I is intersected at L10110/5462, L10100/5635, L10090/5970, L10080/6304, L10070/6640, L10060/913, L10050/1280, L10040/1453, L10030/1955, L10020/2183 and L1010/2768. The anomalous response consists of positive inflections on all quadrature channels and on the 7200 Hz coplanar in-phase channel.

On lines 10110 and 10100, the response may be from definite bedrock conductors; cusps develop at the peaks in both the in-phase and quadrature coplanar channels suggesting that the target is steeply dipping and apparently wide. The width is only apparent because current channelling from conductive overburden may widen the response. The response on line 10040 could be an edge effect anomaly and the anomaly on line 10070 could be bird noise over conductive ground. VTC conductances range from 2.3 to 11.2 S and apparent depths are from 0 to 7 m. The anomaly strikes  $295^\circ$ , is sinuous and 2100 m long. The conductor is coincident with a chain of lakes and boggy ground and with a resistivity low. Apparent resistivities in the low are less than 100 ohm-m and could be caused by lacustrine clays or clay alteration within bedrock. If the overburden is more than 60 m thick, it is unlikely that any anomalous responses are due to bedrock conductors given the low resistivity. There is no correlation between the EM anomaly and VLF anomalies except on lines 10090 and 10020 where lake bottom sediments appear to be responding to the VLF EM field. There is no strong correlation between magnetic field anomalies and the EM anomaly. This anomaly could be ascribed to either thick, conductive overburden or to a thick bedrock conductor. Given that there is little correlation between the EM anomaly and the grain of the magnetic field and given the intensity and width of the resistivity low, the former seems more likely. Of all the intersections, only those along lines 10110 and 10100 resemble those from a bedrock conductor.

Anomaly J is intersected at L10230/4164, L10220/3626, L10210/3575, L10200/2955, L10190/2876, L10180/2183, L10170/2027, L10160/1539, L10150/1461, L10140/1001 and 1011, L10130/4989 and 4976, and L10120/5014. The response from lines 10230 to 10180 is a wide positive quadrature response on the 7200 Hz and 900 Hz coplanar channels and a weak positive in-phase response on the 7200 Hz in-phase channel. Response width is up to 300 m in this area and the response resembles that from a flat conductor (ie. probably overburden). The response on line 10170 is probably an off-line response to a segment of the conductor on strike but off to the side of the survey line. S of line 10170, the response is narrower and on line 1011 resembles from a thick, tabular steeply dipping conductor. VTC conductances range from 0.5 to 0.7 S along the N section and from 1.7 to 3.7 S along the S section while apparent depth ranges from 0 to 3 m in the N to 6 to 16 m in the S. None of these estimates are reliable given the low amplitude of the in-phase responses but it seems nonetheless that there is a change in the conductance and shape of the source from N to S and that the source conductor consists of two segments split at line 10170. The N end of the anomaly follows the W side of Kirkland Creek and the anomaly branches to follow a small drainage in the S. The anomaly follows a discontinuous VLF anomaly along its length, although the VLF anomaly disappears near line 10170. The EM anomaly follows a weak discontinuous

magnetic field low and a broad resistivity low. Given that there is a relation between the anomaly location and drainages in the S and that the response in the N resembles that expected from overburden, the conductor may be a surficial feature, perhaps an older channel. Since Kirkland Creek may be controlled by bedrock structure, overburden features associated with it may indicate the location of deep seated structures.

Anomaly L is intersected at L10070/6695, L10060/867, L10050/1327 and L10040/1382. The anomalous response consists of positive in-phase coplanar responses at 7200 Hz. Response width varies from less than 75 m to 200 m. VTC conductances range from 1.6 to 4.3 S and depths to the top range from 0 to 26 m. Depth estimates may be in error because of the radar altimeter triggering on tree cover near Kirkland Creek. The anomaly strikes  $265^\circ$  and is 1400 m long. The oblique strike of the anomaly with respect to the survey lines ( $30^\circ$ ) will widen responses and change their character. The anomaly cuts across topography and shows no relation to features in the VLF or magnetic field data. There is some correlation between the EM anomaly and a zone of low resistivity in the vicinity of two small lakes at the W end of the anomaly. The lack of any correlation with the VLF field is not surprising; the data is from NLK and the field from this transmitter is not coupled with conductors striking E-W. Similarly, the magnetic field has been sampled along the strike of this anomaly and any subtle features associated with it would not be apparent in the contour maps.

Anomaly M is intersected at L10240/4267, L10230/4130, L10220/3673, L10210/3549, L10200/2988, L10190/2843, L10180/2211, L10170/2006 and L10160/1559. The anomalous response consists of positive responses on both coplanar 7200 Hz channels on all lines and variable positive quadrature responses on the other channels on some lines. Response width varies from 75 m to over 150 m. VTC conductances range from 0.6 to 2.8 S and apparent depths vary from 0 to 19 m. The apparent depth of 19 m on line 10190 may be due to a response from an off-line conductor but the response is quite strong and definite on this line in contrast to adjacent lines, suggesting the anomaly is beneath the bird rather than off to the side. The consists of two segments, anomaly strikes  $125^\circ$  and is 1800 m long. The anomaly strikes approximately  $20^\circ$  to the survey lines and this will increase the apparent width of the response and change its character. The anomaly occurs on a small plateau and follows a spur off to the SE. The N end of the anomaly is in a boggy area near a small lake. The anomaly follows the NE side of a magnetic field high for all lines except 10240. The N segment of the anomaly follows the west side of a VLF anomaly and both segments follow a broad resistivity low with resistivities less than 250 ohm-m in places. The magnetic and VLF association suggest that the source conductor may be a bedrock structure.

Anomaly N is intersected at L10190/2818, L10180/2245, L10170/1988 and L10160/1577. The anomalous response consists of positive coplanar quadrature 7200 Hz responses on all lines and positive coplanar in-phase 7200 Hz and both coaxial and coplanar 900 Hz quadrature responses on some lines. Response width decreases from 200 m to 100 m from S to N, perhaps indicating decreasing depth to source in this direction. VTC conductances range from 0.5 to 1.6 S but none of these estimates are valid given the poor in-phase responses. The anomaly strikes  $100^\circ$  and has a length of 1000 m. The anomaly cuts across the topography and across a N-S striking VLF high. The anomaly follows the SW side of a magnetic field high and resistivity high. This suggests that the source conductor may be a fault or alteration zone along this trend.

Anomaly O is intersected at L10120/5269, L10110/5328, L10100/5576, L10090/5841, L10080/6449 and L10070/6533. The anomalous response consists of a positive quadrature coplanar 7200 Hz response on all lines and coplanar 7200 Hz in-phase responses on some lines. Response width varies from about 150 to 300 m. VTC conductances range from 0.5 to 2.0 S but none of these are reliable and they are probably high given the lack of in-phase responses. The anomaly strikes  $115^\circ$  and is 1200 m long, striking across the slope of a small hill. The EM anomaly is not coincident with either VLF or resistivity anomalies but does parallel a magnetic high SW of the anomaly. The wide response and very poor indicated conductance suggests that the source conductor is weakly conductive overburden but the association between the EM anomaly and the magnetic high could suggest that the overburden anomaly is in turn controlled by bedrock structure.

Anomaly P is intersected at L10240/4373, L10230/4038, L10220/3772, L10210/3458 and L10200/3084. The anomalous response consists of positive quadrature coplanar 7200 Hz deflections on all lines and weaker positive in-phase 7200 Hz coplanar and 900 Hz quadrature coplanar deflections on some lines. The response on line 10210 may be a bedrock response from a deep conductor; cusps are apparent in both the in-phase and quadrature coplanar 7200 Hz components. VTC conductances range from 0.6 to 1.0 S but none of these are valid due to the absence of any in-phase response at 900 Hz and these estimates are probably high. Response width varies from 75 to over 200 m. The anomaly strikes  $140^\circ$  and meanders over 700 m. No VLF, resistivity or magnetic feature is associated with the anomaly and it is probably a surficial conductor.

#### Block B

Anomaly Q is intersected at L20110/4030, L20100/2429, L20070/1320, L20080/1750, L20060/2796, L20050/2298 and L20040/2238. The anomalous response consists of a strong positive deflection in the 7200 Hz coplanar quadrature channel

and a weak coplanar 7200 Hz in-phase deflection on all lines. On some lines, deflections also occur in the 900 Hz coplanar and coaxial quadrature channels. VTC conductance estimates range from 1.6 to 3.4 S and depth estimates are from 3 to 17 m. These are probably inaccurate given the oblique strike of the anomaly with respect to the survey lines ( $40^\circ$ ). Response widths range from 150 m to 250 m and are increased by the oblique intersection with the anomaly. The anomaly has a strike of  $30^\circ$  and extends 2500 m, cutting across all topographic features. It shows no strong correlation with the magnetic field but this may be partially caused by the oblique intersection between the anomaly and survey lines. On the data profiles, the EM anomaly occurs with a magnetic field high on lines 20110 to 20070 but the association and the overall amplitude of both anomalies weakens to the S, perhaps as a result of thickening overburden. This association is not as evident in the contour map where debiasing and other contouring artifacts seem to have obscured it. The EM anomaly shows no correlation with any VLF anomalies and is coincident with a weak, broad resistivity low. The magnetic field association suggests that the source conductor may follow a fault or contact in bedrock but the overall shape of the responses suggests that the actual source is in overburden or possibly a wide bedrock conductor.

Anomaly R consists of two segments and is intersected at L20080/1810, L20060/2743, L20050/2334, L20040/2184, L20030/1816 and L20020/1651. The anomalous response consists of a definite positive quadrature deflection on the 7200 Hz coplanar channel on all lines and of quadrature responses on both 900 Hz channels and of a weak broad in-phase deflection on the 7200 Hz coplanar in-phase channel on some lines. Anomaly width varies from 75 m to 200 m and is 300 m wide on line 20040 where the response is that of a flat lying (surficial) conductor. VTC conductances range from 0.6 to 4.1 but these are probably inaccurate because of the absence of any in-phase response and the inapplicability of the model, at least along line 20040. The anomaly strikes  $55^\circ$  and  $120^\circ$  for 1700 and 1000 m respectively. It cross cuts topography, resistivity and magnetic field trends. There is no associated VLF response but this is not surprising given its strike; the anomaly is not coupled with the NLK transmitter. With the exception of line 20040 where the source appears to be definitely in overburden, the source conductor may be either a wide bedrock or surficial conductor. The response on line 20020 most resembles that of a narrow bedrock conductor of poor conductance.

Anomaly S is intersected at L20110/4069, L20100/2388 and 20090/2217. The anomalous response is best developed on line 20100 where it consists of positive deflections on both 7200 Hz coplanar channels and on the 900 Hz coaxial and coplanar quadrature channels. The response width is approximately 75 m here and the response resembles that expected from a thick

tabular bedrock conductor. VTC conductances range from 1.0 to 2.6 S but are inaccurate given the oblique strike of the anomaly to the survey lines and the lack of any in-phase coplanar response at 900 Hz. The anomaly strikes  $40^\circ$  for 800 m and cuts across topography for most of its length. There is a slight correlation between the anomaly and a magnetic field high at the NE end of the anomaly. The EM anomaly forms the NW boundary of part of a larger VLF anomaly but has no response of its own because it is not coupled with NLK. There is no correlation between the anomaly and any features in the resistivity map. The anomaly may be caused by a bedrock conductor as suggested by the general shape of the response and by the slight magnetic field association.

Anomaly T is intersected at L20160/3272, L20150/3384, L20120/3744, L20100/2320 and L20090/2272. The anomalous response consists of wide, weak positive quadrature deflections in the 7200 Hz coplanar channel; the response is that expected from conductive overburden. The response on line 20100 is a striking exception; here it consists of moderate to strong positive deflections on all channels save the 900 Hz coaxial in-phase channel. The anomaly is coincident with a magnetic high at this point and follows the general trend of a magnetic high along its length. Along lines 20100 and 20090 the EM anomaly is coincident with a VLF high which continues off to the S. The EM anomaly is also roughly coincident with a broad resistivity low. While probably caused by conductive overburden for much of its length, the response on line 20100 and the magnetic field association suggests that at least part of the conductor is in bedrock.

Anomaly U is intersected at L2130/3689, L20120/3771, L20110/4089, L20100/2343, L20090/2257 and L20081/1965. The anomalous response consists of positive quadrature deflections in the 7200 Hz coplanar channel on all lines. The strongest response occurs on line 20100 where positive responses are recorded on all quadrature channels and on the 7200 Hz coplanar in-phase response. Response width varies from 150 to 200 m and VTC conductances vary from 0.5 to 1.2 S. None of the conductance estimates are valid given the lack of an in-phase coplanar response at 900 Hz. The anomaly strike is  $330^\circ$  and it meanders over a strike length of 1000 m. The anomaly follows a magnetic field high and, at the N end, a VLF anomaly. Along its length, the EM anomaly follows a resistivity low. The anomaly follows a small creek for much of its length and could be attributed to a surficial source.

#### Block C

Anomaly V is intersected at L30100/5047, L30090/5168, L30080/2468, L30060/2765, L39010/4308 and L30040/3125. The anomalous response consists of positive deflections in both the in-phase and quadrature 7200 Hz coplanar channels. On line

30060, coaxial and coplanar 900 Hz quadrature channels also respond. Response width is from 100 to 200 m and VTC conductances range from 0.5 to 2.1 S; none of these are strictly accurate given the lack of a coplanar in-phase response at 900 Hz. Conductance is probably quite low nonetheless. The anomaly strikes  $5^\circ$  and extends 2000 m. The anomaly strikes  $60^\circ$  to the survey lines and this probably has increased response widths. The anomaly trends across the flank of a small hill but the anomaly is not caused by changes in bird altitude. The EM anomaly cross cuts the magnetic trend and follows a weak resistivity low near lines 30121 to 30080. The EM anomaly cross cuts a large VLF high at the S end of the VLF anomaly.

Anomaly W is intersected at L30130/3841, L30121/4476, L30110/4664, L30100/5060, L30090/5156, L30080/2477 and L30070/2545. The anomalous response consists of positive responses on the 7200 Hz coplanar in-phase and quadrature channels on all lines with positive quadrature coplanar 900 Hz deflections on some lines. VTC conductance estimates range from 0.7 to 3.3 S and while not strictly accurate due to absent in-phase responses at 900 Hz, they reflect the low conductance suggested by this phenomenon. The anomaly is curved and strikes roughly  $360^\circ$  for 1500 m. The anomaly runs along the flank of a hill and shows no correlation with any topographic features. The anomaly occurs on the W side of a N striking positive magnetic anomaly. Most of the EM anomaly occurs within two resistivity lows. The anomaly is coincident with a VLF anomaly at its S end and cuts into a VLF high at the N end of the anomaly where the EM anomaly forms the boundary of a small bulge in the VLF high. VLF highs on the Dighem maps have been filtered so as to suppress short wavelength features and consequently the remaining VLF anomalies are probably conductive bedrock units or overburden. Consequently, the relationship between the EM anomaly and features in the magnetic and VLF fields suggests that the anomaly might be caused by a fault.

Anomaly X is intersected at L30150/3557, L30140/3691, L30130/3875, L30120/4222 and L30110/4730. The anomalous response consists of positive deflections in the coplanar 7200 Hz in-phase and quadrature channels on all lines and positive quadrature 900 Hz coplanar and coaxial responses on all lines except 30150. The response wavelength is 100 to 200 m and VTC conductances are estimated at 0.5 to 0.7 S. None of the estimates are valid given the absence of 900 Hz in-phase responses but are generally indicative of low conductance. The anomaly strikes  $345^\circ$  and extends 1000 m. It is coincident with a small (50 nT) magnetic high and a slight resistivity low. There is no coincident VLF response. The magnetic association suggests that the anomaly may be caused by a bedrock conductor.

Anomaly Y is intersected at L30180/2977, L30170/3181 and L30160/3389. The anomalous response consists of positive

quadrature and in-phase 7200 Hz coplanar deflections on all lines except line 30160 where the in-phase response is muted. Response width is approximately 200 m and VTC conductance estimates range from 0.3 to 0.9 S. None of these are strictly accurate but they do indicate that the conductance is quite low. The anomaly strikes  $360^\circ$  for 400 m and is close to but not coincident with a small intermittent drainage. The anomaly is coincident with a small (50 nT) magnetic high which appears as a small ridge and saddle on the contour map. The EM anomaly is roughly coincident with a resistivity low and a VLF high. The magnetic field association suggests that the source conductor may be in bedrock.

#### 4. Results - ground geophysical survey

The South or A grid is centred between airborne anomalies I and G. The magnetic field map is characterized by a series of strong magnetic lows in the centre of the grid. These are relatively high amplitude and do not have associated subsidiary highs on the magnetic S side of the anomaly (ie. the W side). The background magnetic field is not elevated with respect to the earth's field and a magnetic low in this environment may be caused by a reverse magnetized feature. Two VLF conductors parallel the west side of the low from 1900N 700W to 1100N 500W. The conductors are close together and the responses interfere with one another along their length. The conductor axes appear to be 100 m E of the axis of the magnetic low and they probably are not related to it. Airborne anomalies G and I do not appear as distinct features on the map. This, together with their lack of any associated magnetic field anomalies suggests that they are caused by surficial conductors.

The North or B grid contains a very broad VLF anomaly and a series of strong magnetic lows. The VLF anomaly is in the centre of the grid from 700S to 2700S (-700 to -2700). It is coincident with a region of low magnetic relief. This is probably a conductive, nonmagnetic rock unit. The strong magnetic lows may be reverse magnetized features given their amplitude. A short VLF anomaly west of the nonmagnetic unit runs from -1600, -350 to -2200 -300 and this may be worth further investigation since it appears to follow a magnetic break.

#### 5. Conclusions

Twenty four Dighem anomalies were screened from the data and these may indicate the location of geological structures favourable for precious metal mineralization. The responses in and of themselves cannot be used to determine which of these should be followed up. An assessment of the likely direction of favourable structures and the pattern of stream silt and soil geochemical anomalies is probably the best guide for future work. If the Kirkland Creek fault can be taken as a guide to structure

in the area, major structures will probably strike roughly N-S and splays and tensional fractures will probably strike NE-SW or NW-SE. EM anomalies which parallel magnetic field highs, which displace highs or lows or which start and end in cross-cutting magnetic features may be of interest because these phenomenon suggest that they could be faults. Anomalies which are sinuous or which are associated with boggy ground or drainages may be caused by surficial conductors. These in turn may be controlled by bedrock features but the geophysical response may be entirely due to surficial conductivity. A listing of the anomalies, categorized according to strike and magnetic association is shown below:

a. Anomalies with magnetic association parallel to the Kirkland Creek Fault ( $335^{\circ} - 5^{\circ}$ )

Anomalies A, D, T, W, X, Y

b. Anomalies with magnetic association oblique to the Kirkland Creek Fault.

Anomalies B, C, H (west part), J, M, N, O, U, Q

c. Anomalies with no magnetic association parallel to the Kirkland Creek Fault ( $335^{\circ} - 5^{\circ}$ )

Anomalies H (north part), V

d. Anomalies with no magnetic association oblique to the Kirkland Creek Fault

Anomalies E, F, G, I, L, P, R, S

## 6. Recommendations

I recommend that:

(a) the anomalies described in this memorandum be examined in conjunction with the geochemical and geological data. From a geophysical perspective, those EM anomalies associated with magnetic responses are the most likely to be caused by bedrock conductors. Geochemical data may indicate that apparently insignificant EM conductors should be given higher priority in a follow-up program.

(b) EM anomalies be surveyed with a high frequency EM system such as a Maxmin I-9 or I-11 at two different coil spacings along one or two profile lines. Once the locations of the conductors are fixed, geochemical sampling could be conducted on the profile lines.

## 7. References cited

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Line: .0E

— Actual total field  
- - - Modelled total field

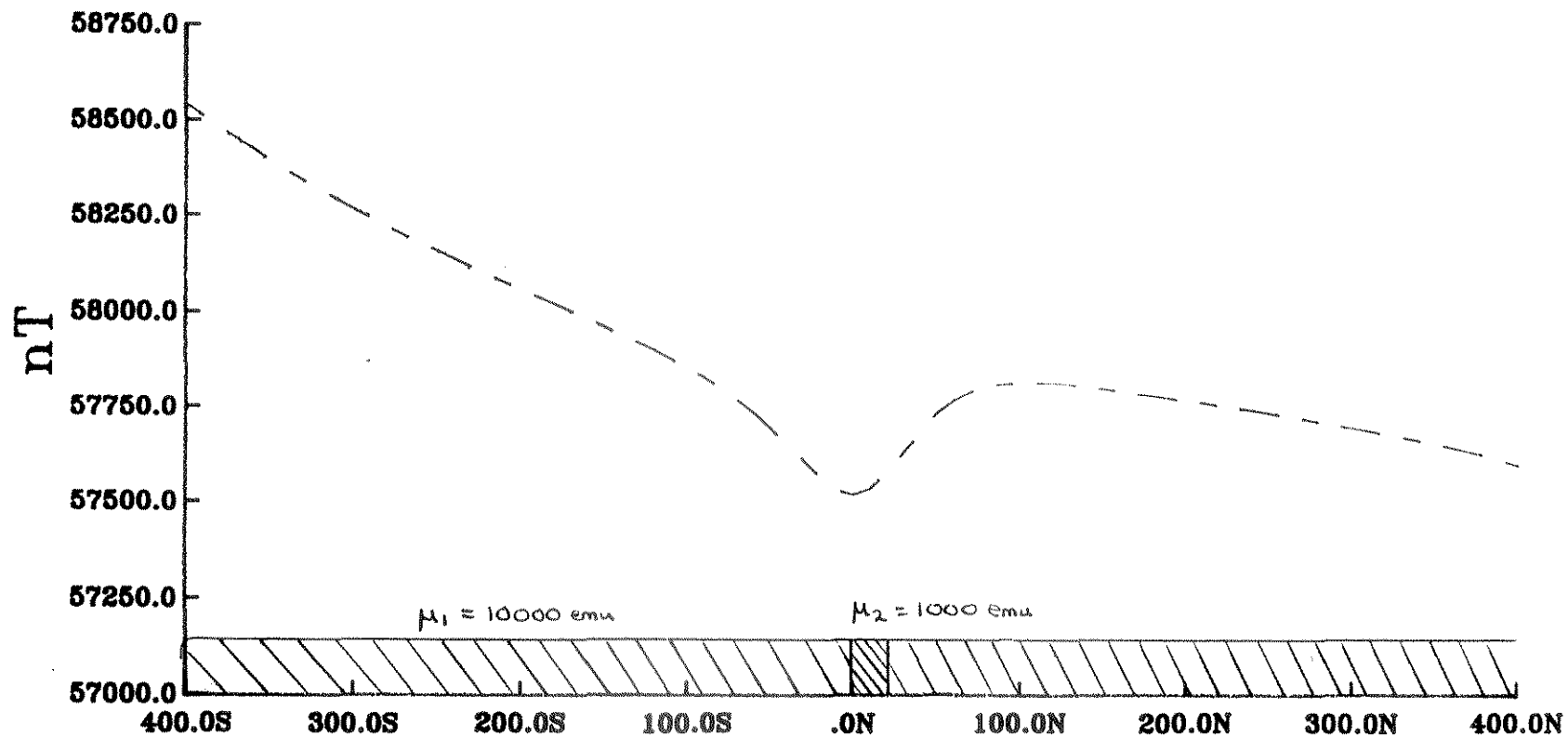


Figure 1. Response of a thin E-W striking rhyolite dike in andesite.

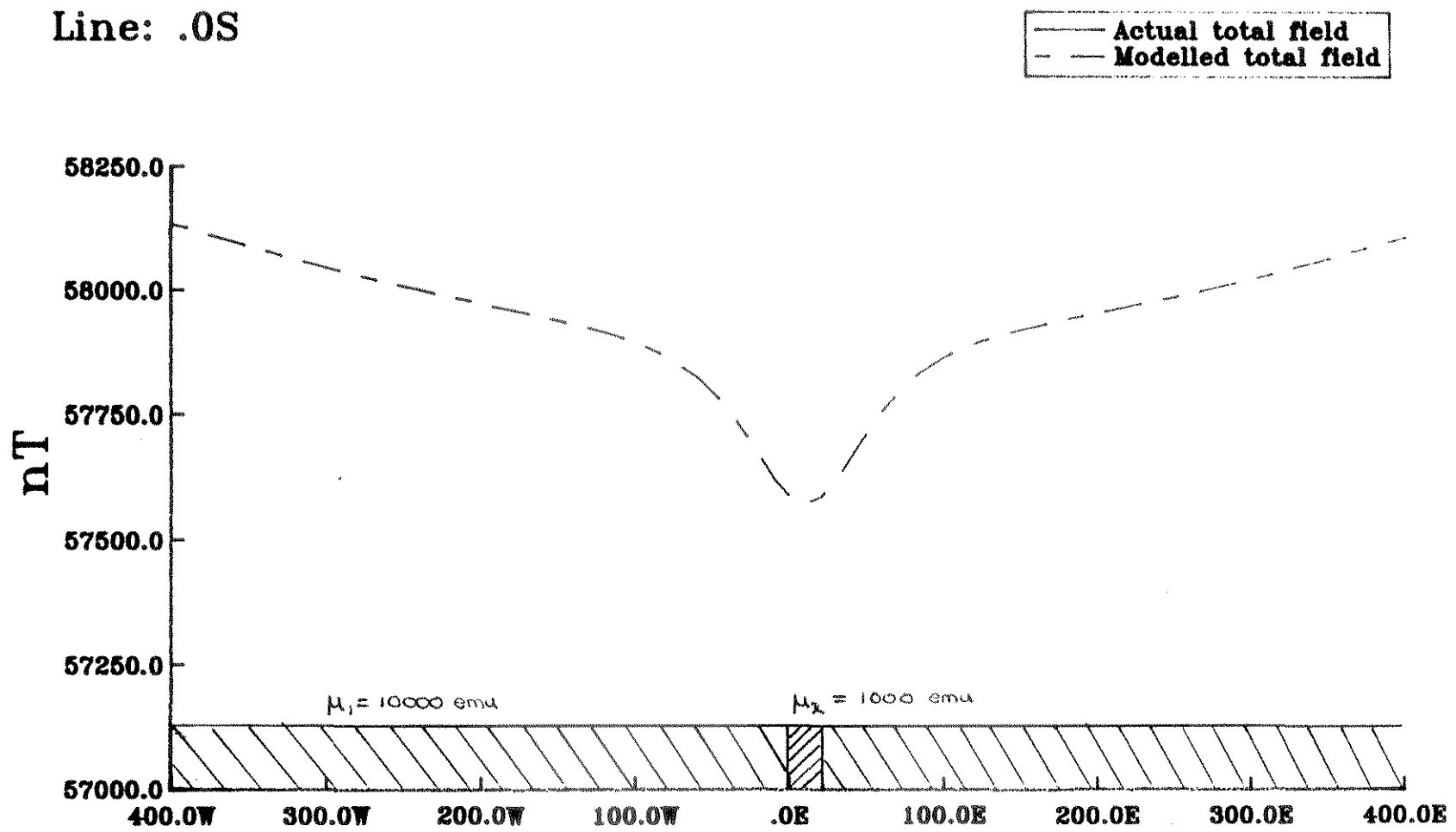


Figure 2. Response of a thin N-S striking rhyolite dike in andesite.

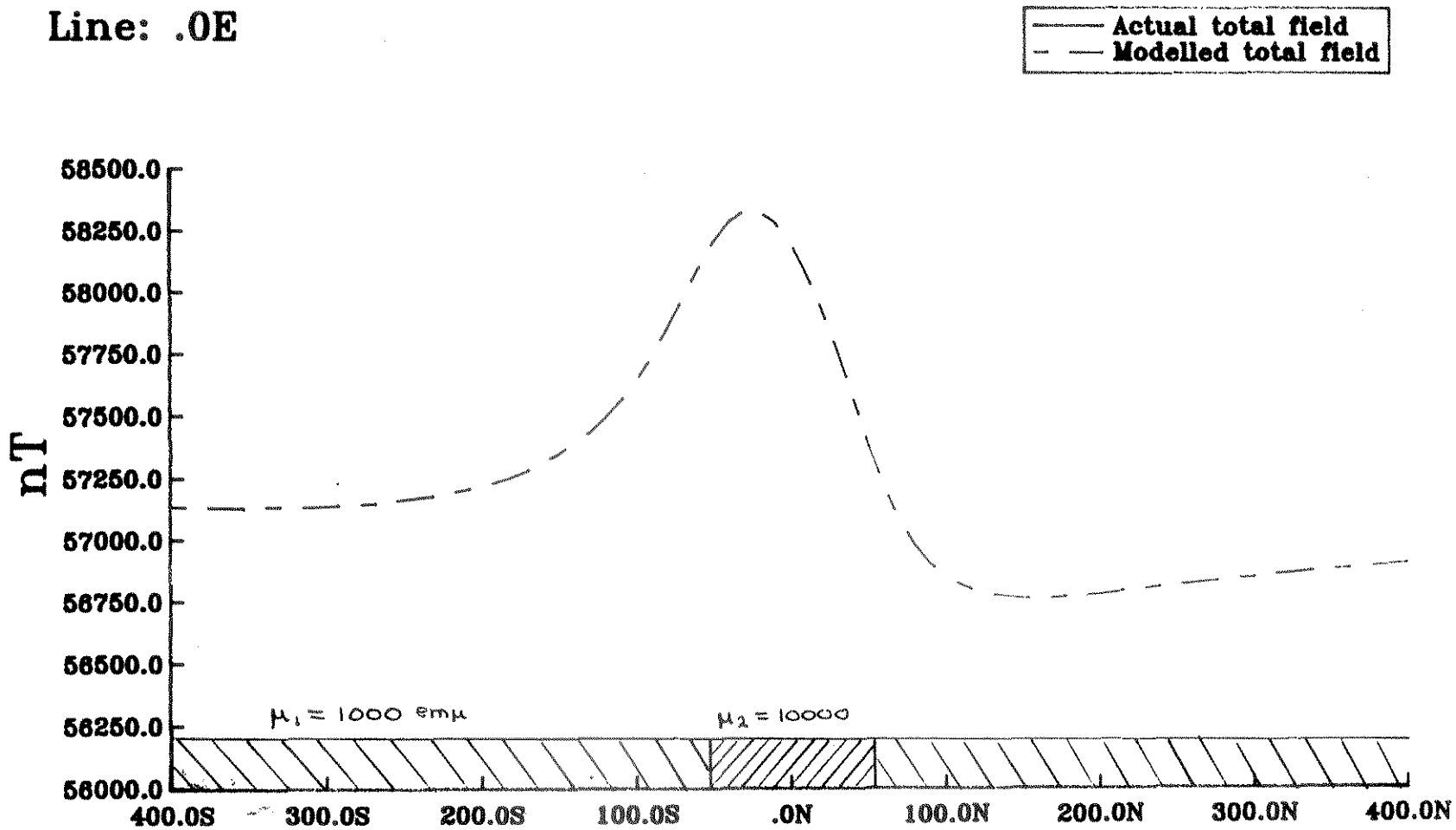


Figure 3. Magnetic response of an E-W striking andesite dike in rhyolite.

Line: .0S

— Actual total field  
- - - Modelled total field

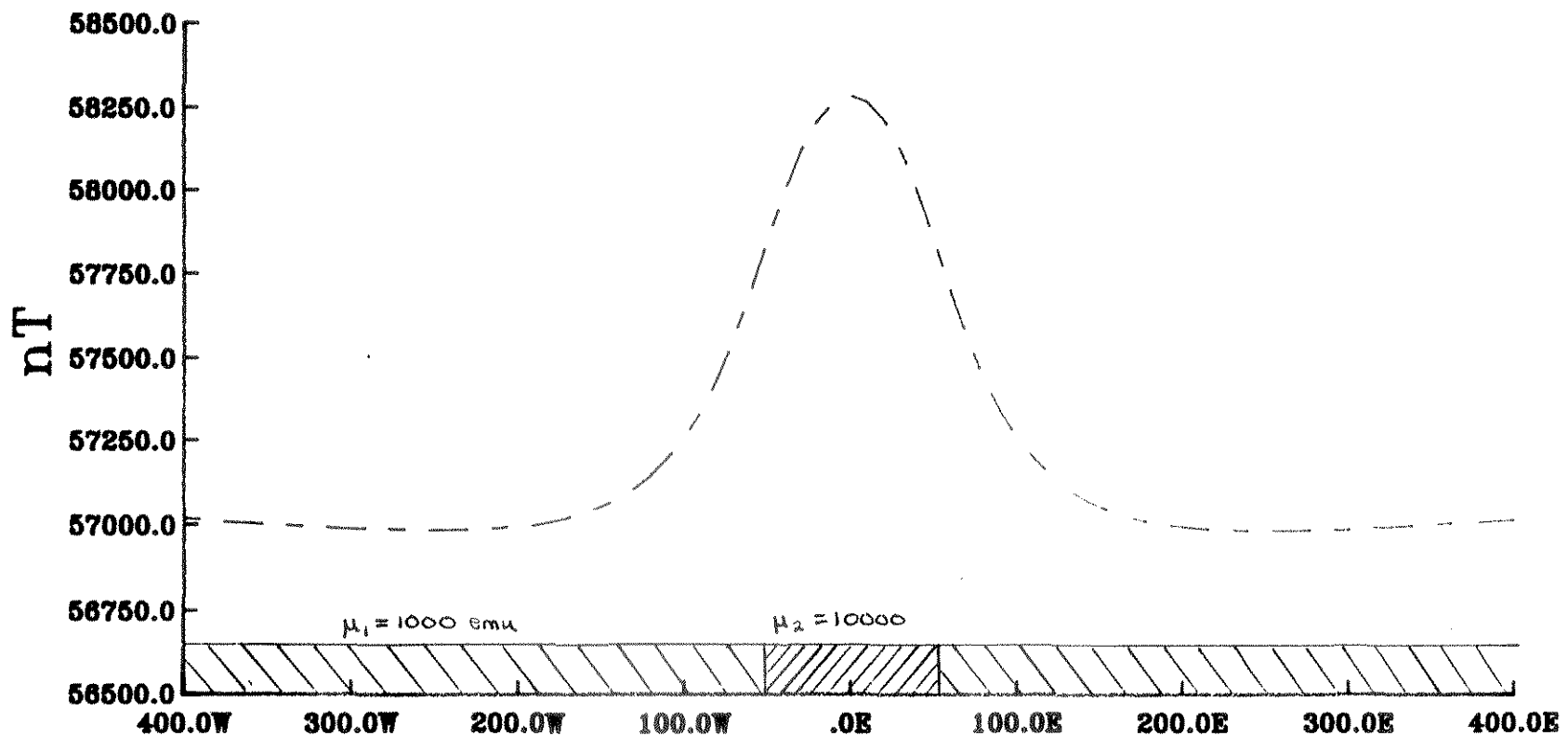


Figure 4. Magnetic response of an N-S striking andesite dike in rhyolite.

Line: .0S

— Actual total field  
- - - Modelled total field

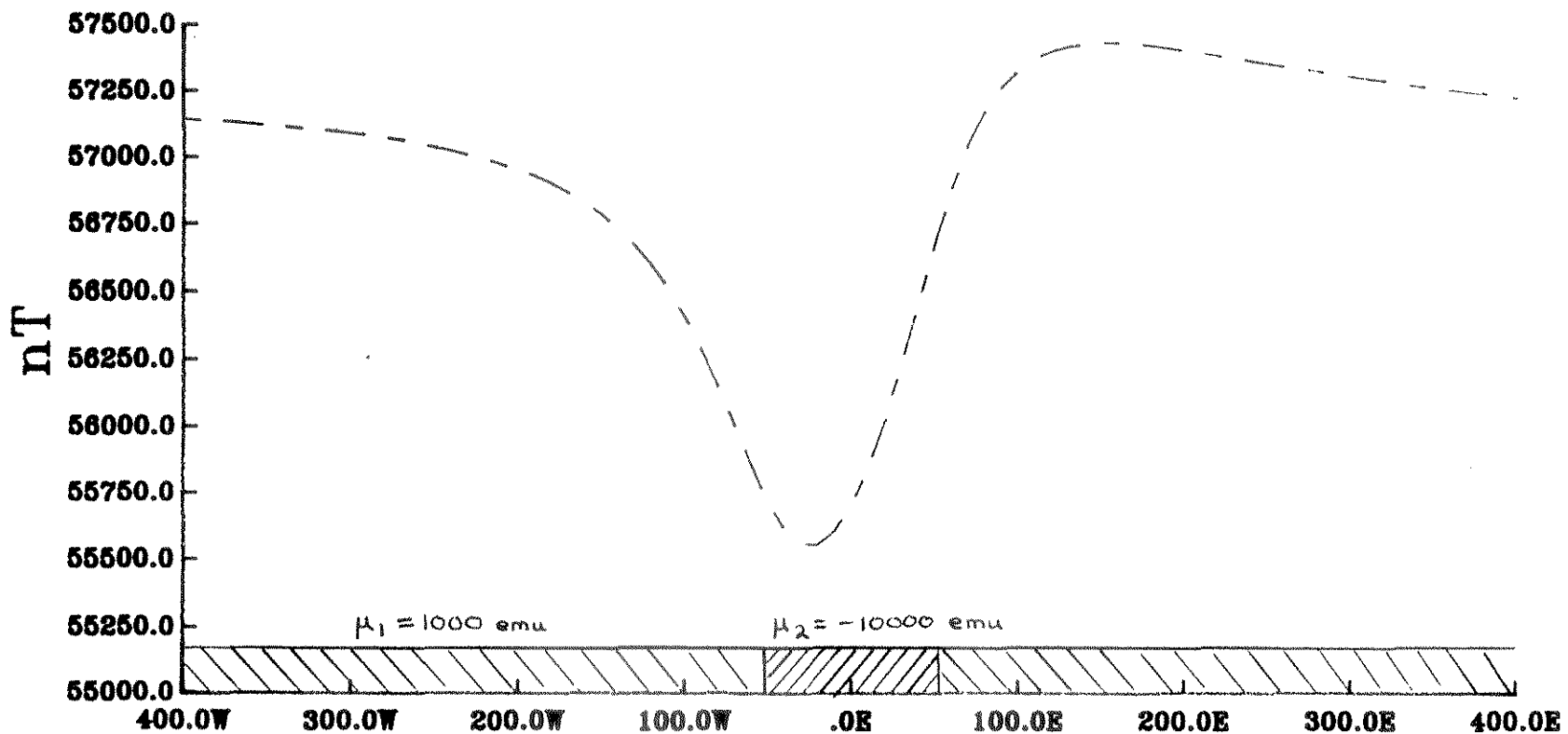


Figure 5. Response of an E-W striking reverse magnetized andesite dike in rhyolite.

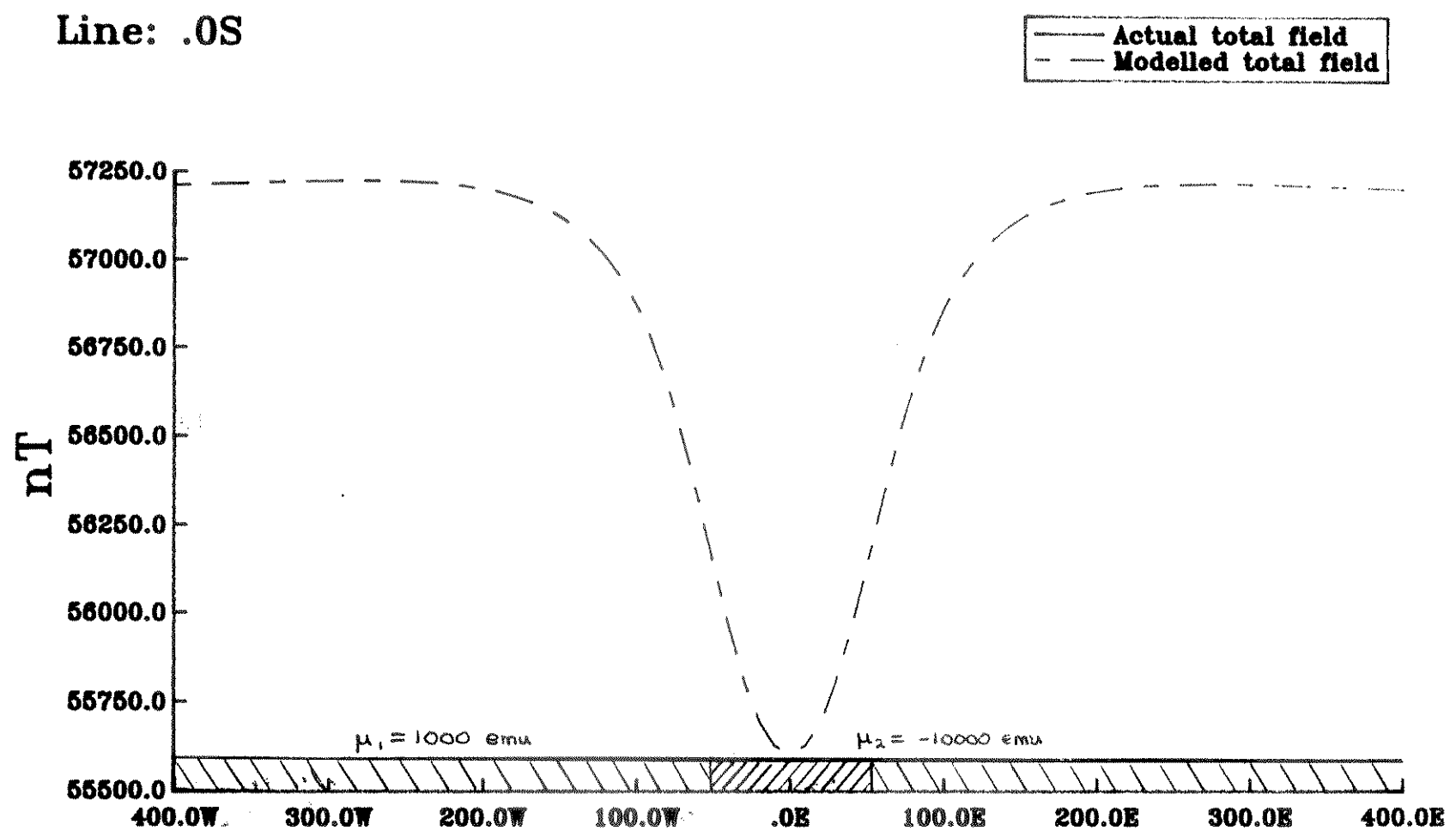
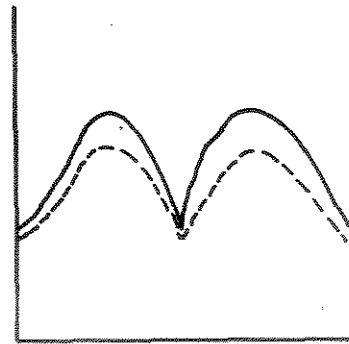
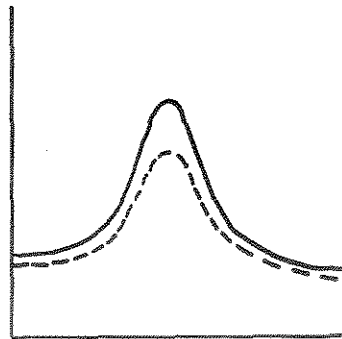


Figure 6. Response of an N-S striking reverse magnetized andesite dike in rhyolite.

Tx  
0  
Rx  
0  
coaxial coils

Tx  
○  
Rx  
○  
coplanar coils

a.



b.

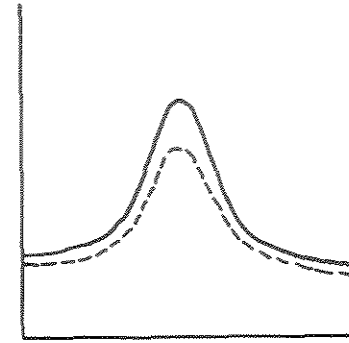
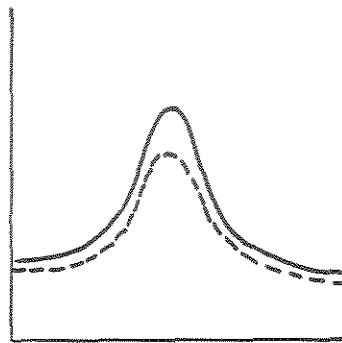
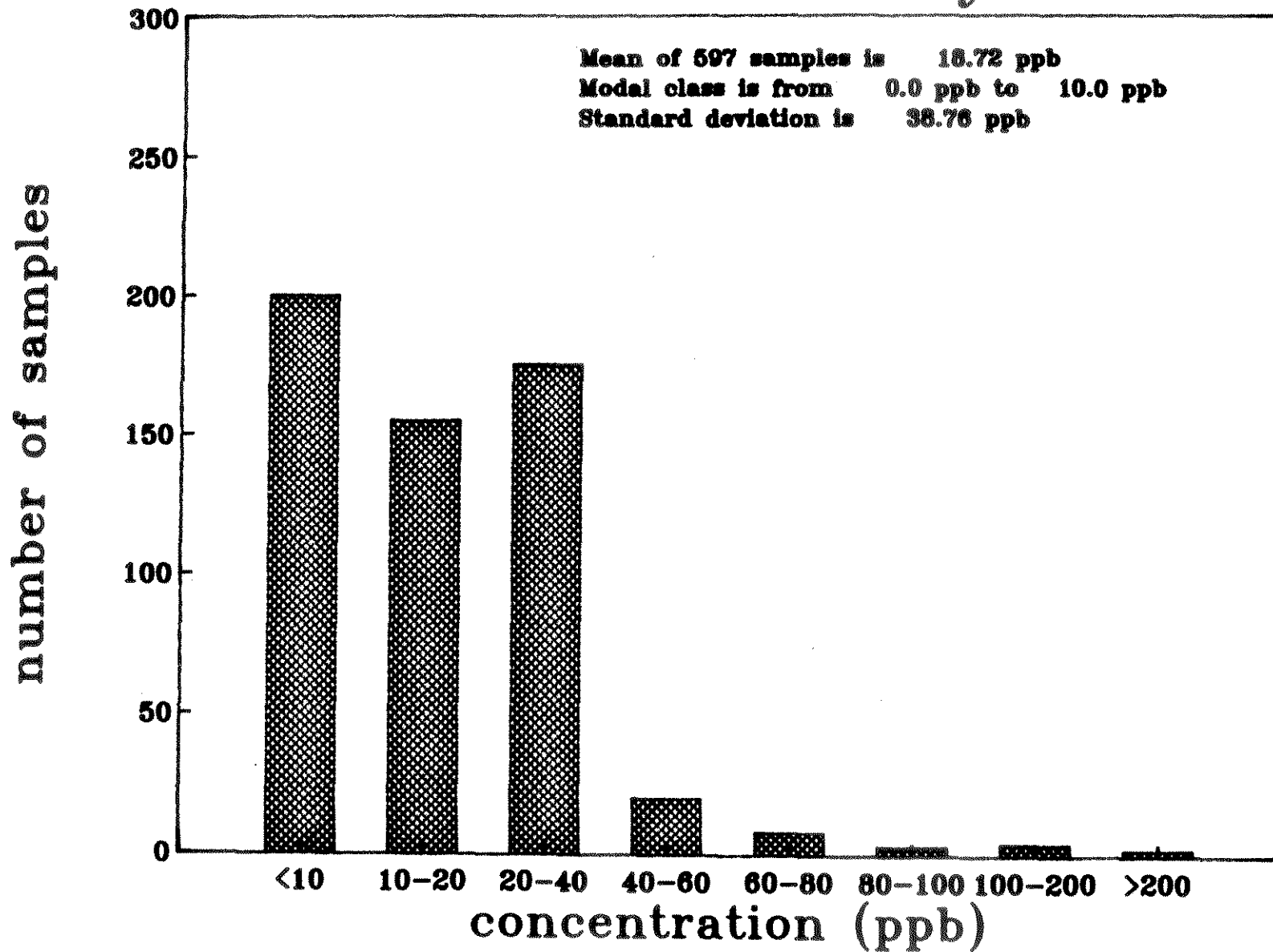


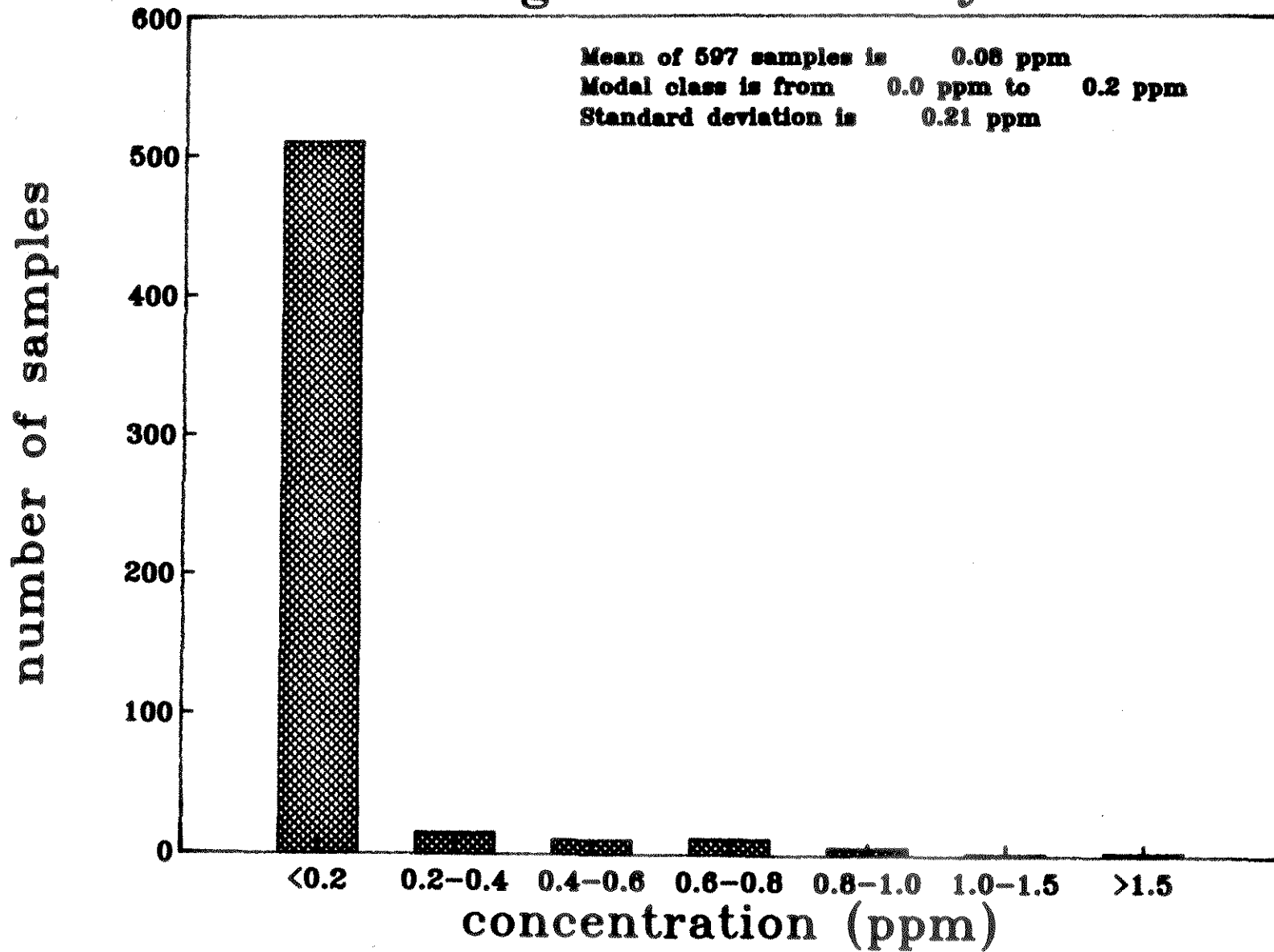
Figure 7. Dighem III responses

APPENDIX III-GEOCHEMISTRY-HISTOGRAMS AU-AG-AS-CU-PB-ZN-SB

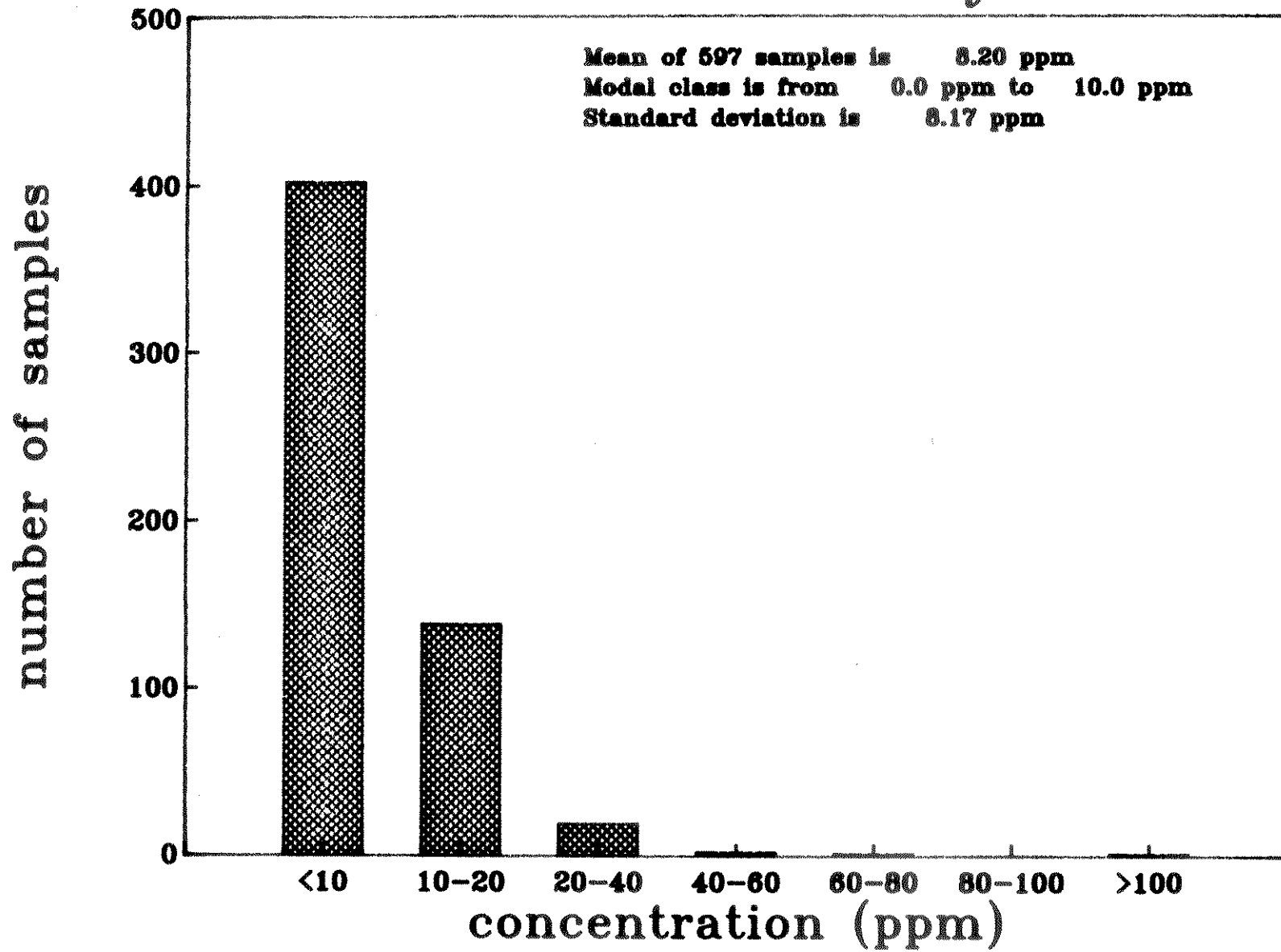
# Au Geochemistry



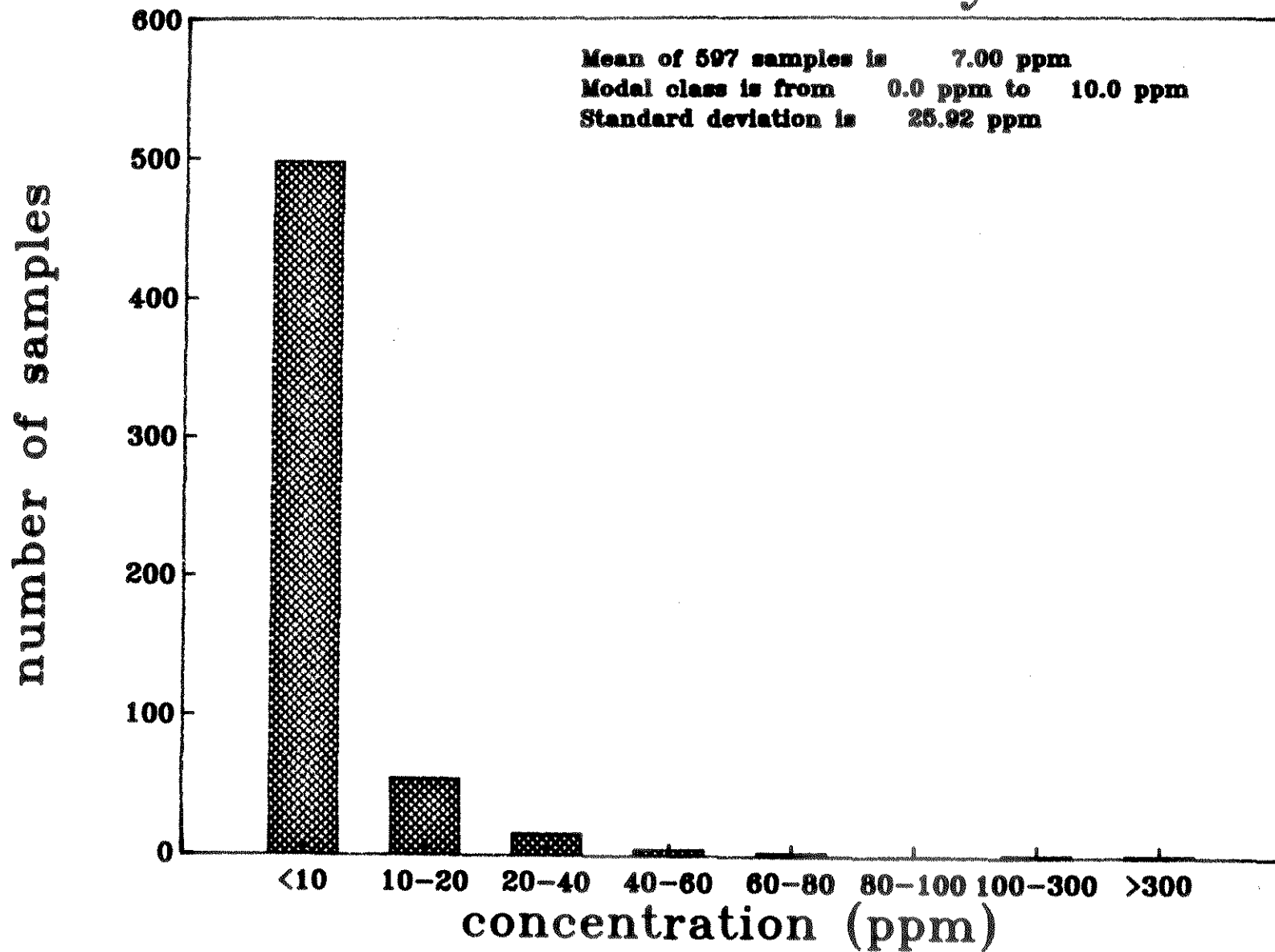
# Ag Geochemistry



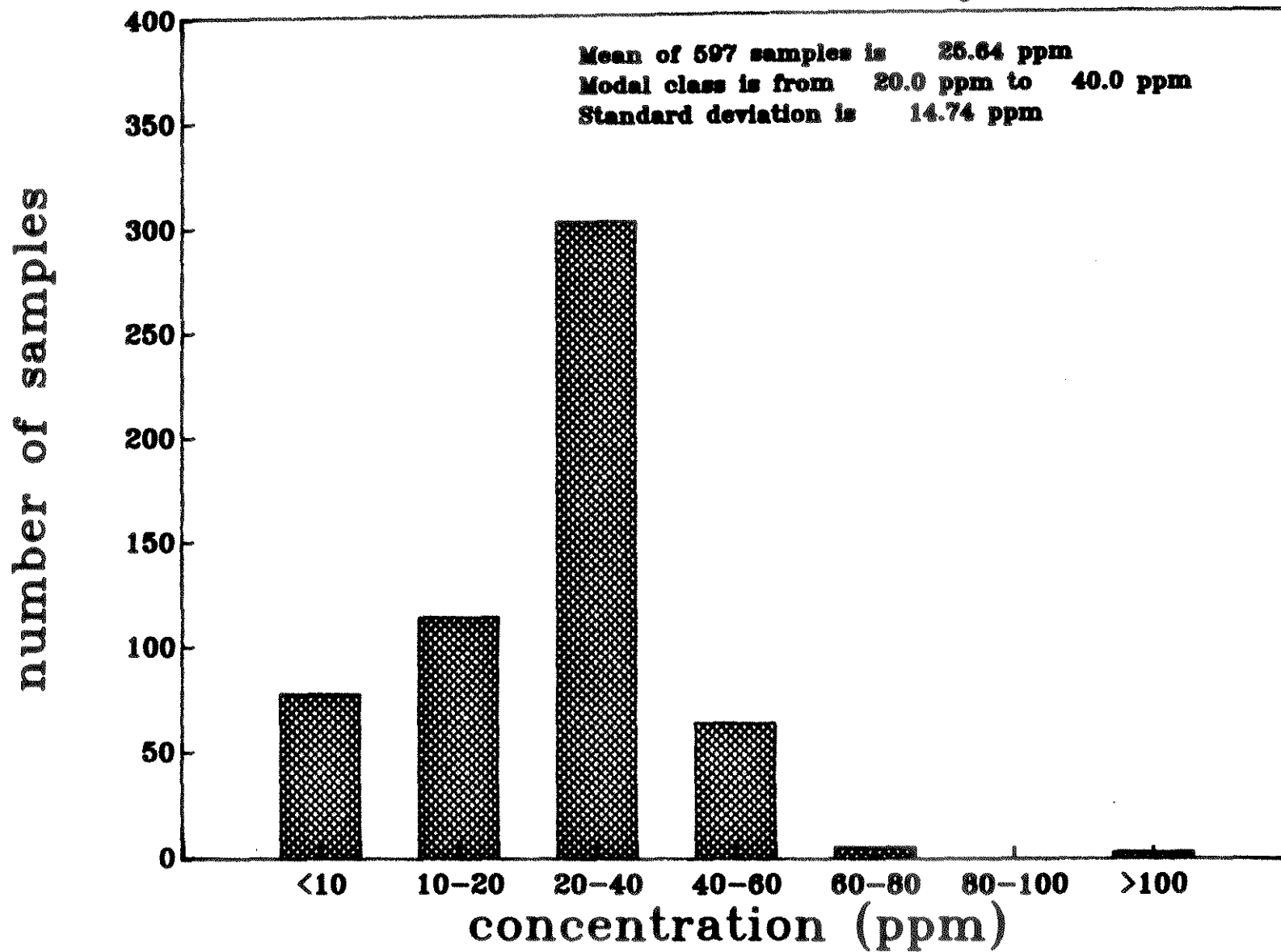
# Cu Geochemistry



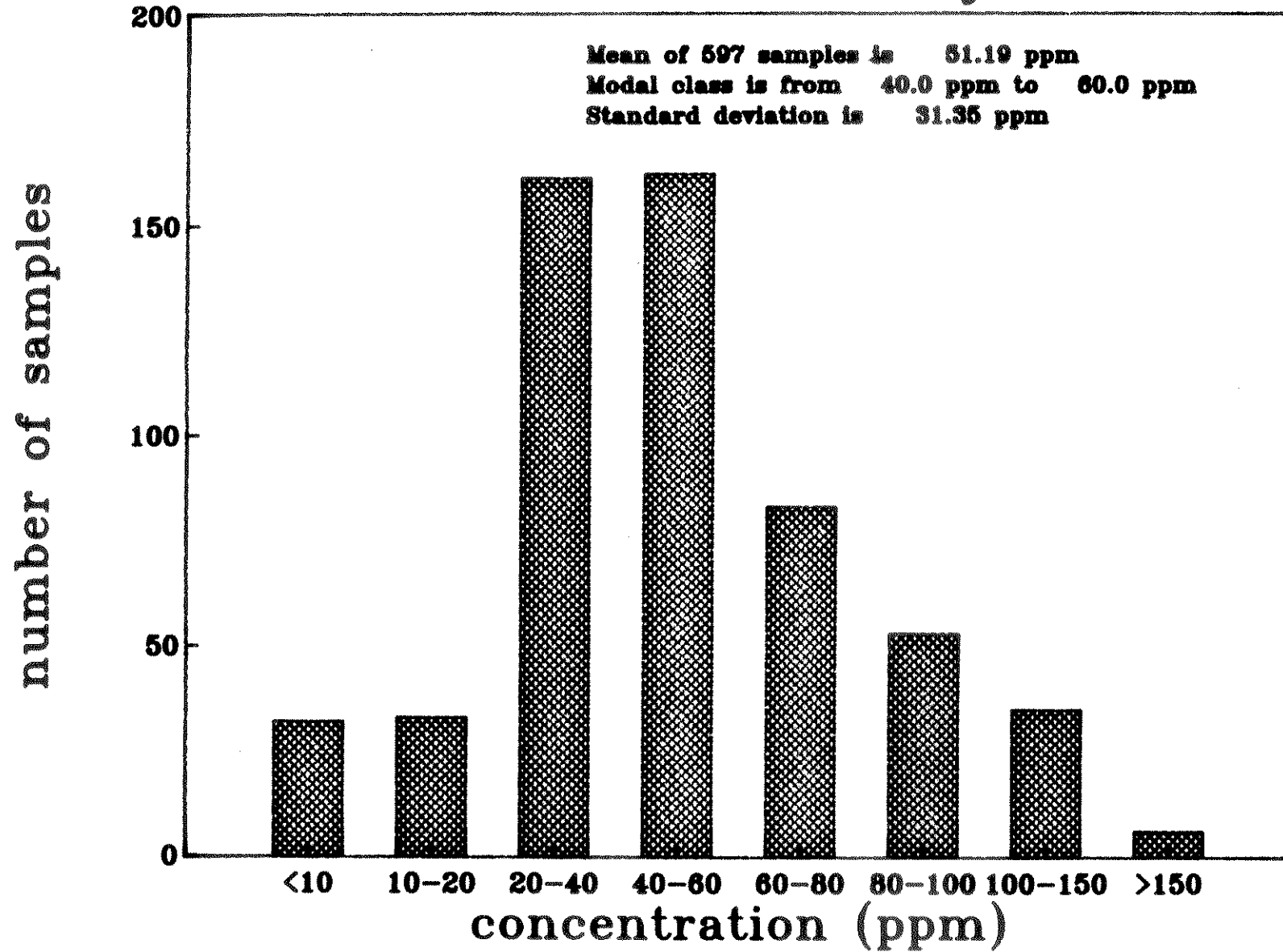
# Pb Geochemistry



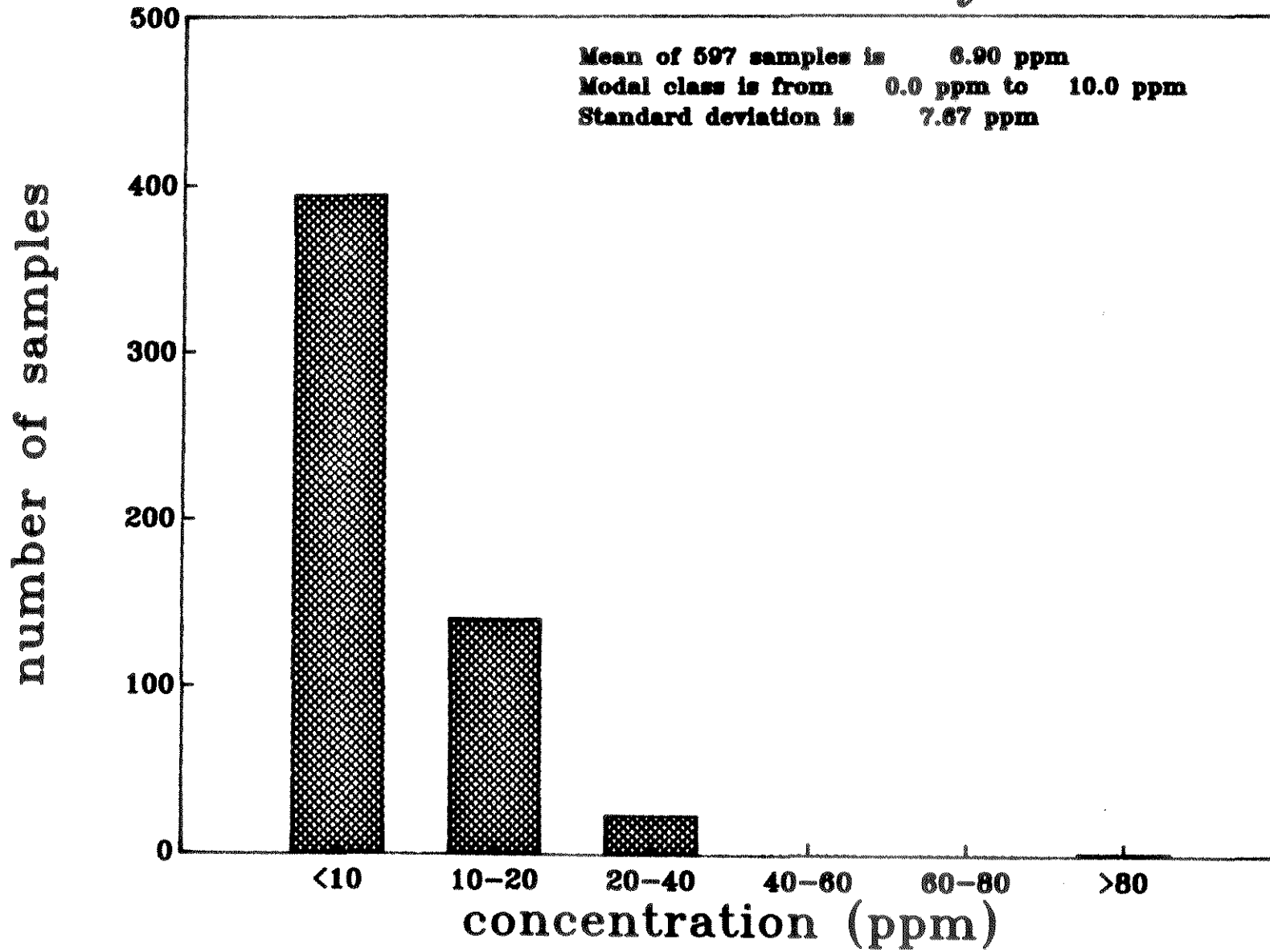
# Zn Geochemistry



# As Geochemistry



# Sb Geochemistry



October 16, 1990

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File # 08458a

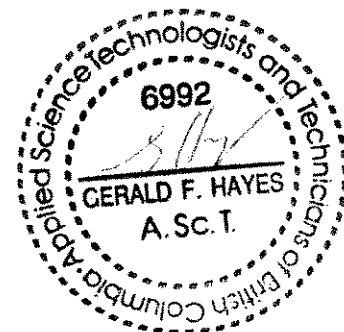
Sample: Rock

Assay Certificate for Samples Provided

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
18240	15	0.4	<1	35	19	10	<1
18241	13	0.1	<1	38	39	15	<1
18242	19	<0.1	<1	36	27	41	<1
18243	51	<0.1	<1	49	136	225	11
18244	26	<0.1	<1	22	44	23	2
18245	35	<0.1	<1	54	126	79	3
18246	28	<0.1	<1	16	35	73	5
18247	34	<0.1	1	34	101	34	<1
18248	23	<0.1	1	19	35	31	<1
18249	30	<0.1	1	9	12	43	<1
18250	39	<0.1	66	16	9	52	<1
18301	17	<0.1	<1	13	6	84	5
18302	30	<0.1	2	4	12	93	3
18348	21	<0.1	<1	5	8	58	<1
18349	33	<0.1	<1	5	23	66	<1
18350	26	<0.1	<1	4	17	73	<1
76059	28	<0.1	<1	23	15	53	<1
76060	31	<0.1	<1	6	37	60	<1
76061	35	<0.1	<1	4	32	70	<1

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 24, 1990

Work Order # 08458

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File # 08458b

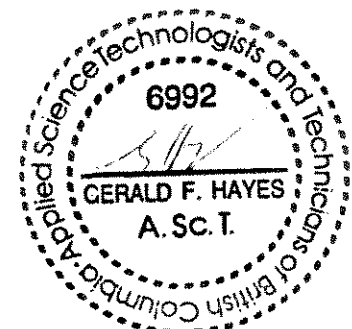
Sample: Soil

Assay Certificate for Samples Provided

Line: BL 4+00W

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
20+50S	34	<0.1	5	24	34	74	<1
21+00S	10	<0.1	12	7	37	78	<1
21+50S	10	<0.1	10	8	34	103	<1
22+00S	<10	<0.1	8	5	21	137	<1
22+50S	15	<0.1	10	7	36	88	<1
23+00S	<10	<0.1	11	5	24	91	<1
23+50S	<10	<0.1	5	4	18	79	<1
24+00S	<10	<0.1	11	1	25	84	<1
24+50S	12	<0.1	6	1	24	119	<1
25+00S	<10	<0.1	4	<1	20	137	<1
25+50S	11	<0.1	21	2	46	161	<1
26+00S	<10	<0.1	12	<1	20	82	<1
26+50S	<10	<0.1	19	2	24	70	2
27+00S	<10	<0.1	16	1	29	106	<1
27+50S	<10	0.1	17	4	26	115	<1
28+00S	<10	<0.1	20	2	31	124	<1
28+50S	12	<0.1	25	1	34	107	<1
29+00S	<10	<0.1	14	<1	32	85	<1
29+50S	30	<0.1	18	<1	35	118	<1
30+00S	<10	<0.1	8	8	19	122	<1
30+50S	<10	<0.1	11	6	28	96	<1
31+00S	<10	<0.1	8	4	41	33	<1
31+50S	<10	<0.1	7	5	27	<1	<1
32+00S	<10	<0.1	5	6	27	18	<1

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



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File # 08458c

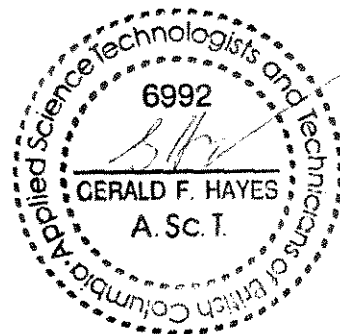
Sample: Soil

Assay Certificate for Samples Provided

Line: 21+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	11	<0.1	7	8	28	150	2
4+50W	<10	<0.1	6	9	30	99	<1
3+50W	<10	<0.1	10	6	18	67	<1
3+00W	16	<0.1	19	7	21	48	<1
2+50W	11	0.7	41	3	20	140	<1
2+00W	11	0.8	18	1	29	64	<1
1+50W	<10	0.3	8	5	26	109	<1
1+00W	<10	<0.1	8	3	24	93	<1
0+50W							
0+00	12	<0.1	15	8	40	159	<1
0+50E	<10	<0.1	9	6	26	64	<1
1+00E	<10	<0.1	9	4	27	46	<1
1+50E	<10	1.1	7	2	25	96	<1
2+00E	11	0.1	5	1	25	67	<1
2+50E	<10	0.1	5	2	26	75	<1

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 24, 1990

Work Order # 08458

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File # 08458d

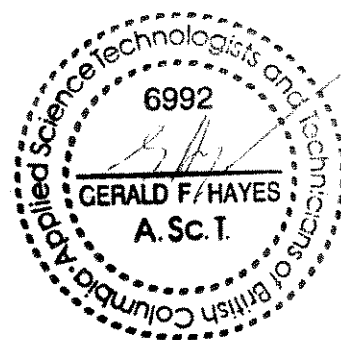
Sample: Soil

Assay Certificate for Samples Provided

Line: 22+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	12	<0.1	6	<1	7	53	<1
4+50W	23	<0.1	3	<1	5	94	1
3+50W	26	<0.1	13	1	10	51	<1
3+00W	24	0.1	33	3	21	28	1
2+50W	15	<0.1	3	<1	7	58	<1
2+00W	28	<0.1	11	5	23	92	<1
1+50W	<10	<0.1	10	6	31	95	<1
1+00W	13	<0.1	3	4	24	90	<1
0+50W	<10	<0.1	7	5	51	64	<1
0+00	13	<0.1	5	6	31	71	<1
0+50E	<10	<0.1	6	7	30	86	<1
1+00E	<10	<0.1	2	3	19	80	<1
1+50E	17	<0.1	10	7	25	52	<1
2+00E	13	<0.1	8	1	13	76	<1
2+50E	62	<0.1	9	2	14	62	<1

Au -- 15g Fire Assay/AAS  
Metals -- Aqua Regia Digestion/AAS Geochem



October 24, 1990

Work Order # 08458

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File # 08458e

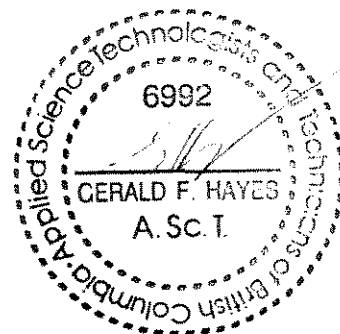
Sample: Soil

Assay Certificate for Samples Provided

Line: 23+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	39	0.1	4	5	21	93	<1
4+50W	<10	<0.1	7	8	26	84	<1
3+50W	21	0.9	6	2	5	81	<1
3+00W	29	0.1	4	3	7	78	<1
2+50W	21	<0.1	9	7	19	102	1
2+00W	18	<0.1	10	5	17	24	4
1+50W	18	<0.1	9	7	15	33	<1
1+00W	18	<0.1	9	<1	17	<1	<1
0+50W							
0+00							
0+50E	22	<0.1	15	2	19	62	<1
1+00E	16	<0.1	11	5	18	83	<1
1+50E	15	0.9	8	5	13	100	<1
2+00E	27	<0.1	10	6	15	76	<1
2+50E	29	0.1	28	9	27	93	<1

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 24, 1990

Work Order # 08458

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File # 08458f

Sample: Soil

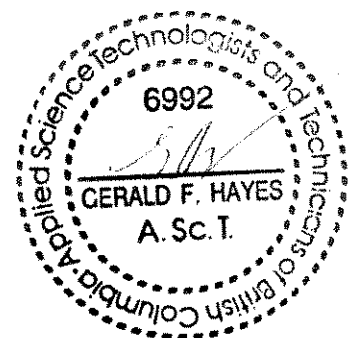
Assay Certificate for Samples Provided

Line: 24+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	<0.1	9	6	15	73	1
4+50W	21	<0.1	4	3	30	103	<1
3+50W	20	0.1	9	3	16	110	<1
3+00W	<10	<0.1	30	8	21	97	<1
2+50W	<10	<0.1	11	3	23	65	<1
2+00W	10	<0.1	10	4	24	118	<1
1+50W	<10	0.3	12	2	27	102	<1
1+00W	<10	0.1	2	3	24	48	<1
0+90W	55	<0.1	<1	1	21	63	<1
0+50W	<10	<0.1	3	3	27	78	<1
0+00	<10	<0.1	4	1	32	114	<1
0+50E	<10	<0.1	9	2	17	97	<1
1+00E	<10	<0.1	12	8	28	106	<1
1+50E	<10	<0.1	5	5	17	142	<1
2+00E	<10	<0.1	13	10	30	116	<1
2+50E	11	<0.1	5	7	20	87	<1

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 24, 1990

Work Order # 08458

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File # 08458g

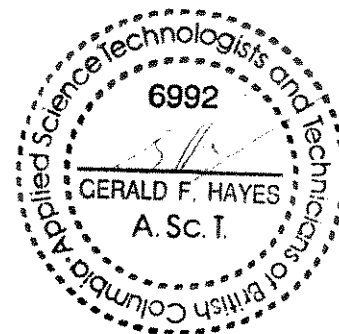
Sample: Soil

Assay Certificate for Samples Provided

Line: 25+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	<0.1	1	<1	29	137	4
4+50W	<10	<0.1	3	<1	15	86	6
3+50W	12	<0.1	11	<1	36	59	<1
3+00W	12	<0.1	13	<1	27	23	2
2+50W	<10	<0.1	7	<1	34	85	3
2+00W	<10	<0.1	12	3	34	40	2
1+50W	10	<0.1	18	2	35	69	8
1+00W	<10	<0.1	9	1	54	156	14
0+50W							
0+00	<10	<0.1	15	10	45	128	<1
0+50E	15	<0.1	2	3	16	143	<1
1+00E	13	<0.1	3	<1	21	83	7
1+50E	10	<0.1	24	2	27	51	4
2+00E	11	<0.1	10	1	22	76	2
2+50E	<10	<0.1	1	<1	26	47	<1

Au -- 15g Fire Assay/AAS  
Metals -- Aqua Regia Digestion/AAS Geochem



October 24, 1990

Work Order # 08458

Golden Hemlock Explorations Ltd.  
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File # 08458h

Sample: Soil

Assay Certificate for Samples Provided

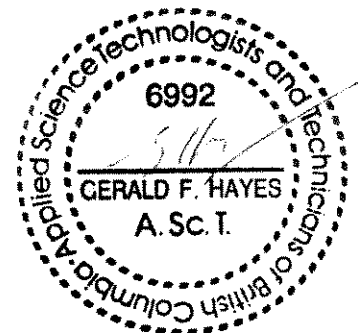
Line: 26+005

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	16	<0.1	9	1	18	105	<1
4+50W	75	<0.1	11	<1	27	63	3
3+50W	<10	<0.1	14	<1	29	82	<1
3+00W	<10	<0.1	15	<1	35	101	2
2+50W	12	<0.1	21	2	31	130	4
2+00W	<10	<0.1	12	<1	27	111	6
1+50W	<10	<0.1	19	10	40	170	3
1+00W	<10	<0.1	5	4	31	63	<1
0+50W	<10	<0.1	1	<1	24	81	4
0+00							

Line: 27+005

5+00W	14	<0.1	15	11	37	65	<1
4+50W	19	<0.1	10	5	33	95	<1
3+50W	15	<0.1	14	7	39	64	<1
3+00W	19	<0.1	11	4	32	107	<1
2+50W	17	<0.1	10	8	37	20	<1
2+00W	18	<0.1	19	7	35	95	<1
1+50W	15	<0.1	21	6	27	49	<1
1+00W	10	<0.1	7	6	28	38	<1
0+50W							
0+00	104	<0.1	13	7	22	82	<1

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 24, 1990

Work Order # 08458

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File # 08458i

Sample: Soil

Assay Certificate for Samples Provided

Line: 28+00S

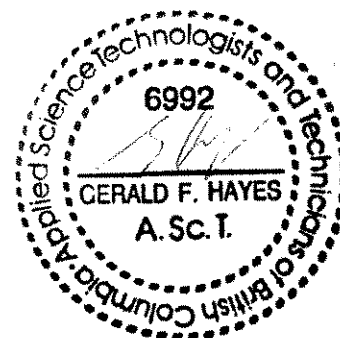
Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	<0.1	18	2	20	117	1
4+50W	15	<0.1	12	7	25	62	<1
3+50W	15	<0.1	10	10	33	84	<1
3+00W	<10	<0.1	15	11	36	60	<1
2+50W	18	<0.1	10	9	34	69	<1
2+00W	12	<0.1	12	10	39	76	<1
1+50W	11	<0.1	6	5	27	70	<1
1+00W	20	<0.1	15	10	42	42	<1
0+50W	<10	<0.1	24	6	44	125	<1
0+00	10	<0.1	20	7	35	46	<1

Line: 29+00s

5+00W	<10	<0.1	17	16	1	19	<1
4+50W	<10	<0.1	13	18	<1	73	<1
3+50W	<10	<0.1	17	8	9	49	<1
3+00W	<10	<0.1	9	13	7	77	<1
2+50W	11	<0.1	11	14	4	104	<1
2+00W	14	<0.1	4	8	<1	75	<1
1+50W							
1+00W	<10	<0.1	7	30	1	69	<1
0+50W	<10	<0.1	18	12	22	91	<1
0+00	<10	<0.1	17	10	31	30	<1

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 24, 1990

Work Order # 08458

Golden Hemlock Explorations Ltd.  
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Vancouver, B.C.  
V6C 1V5

File # 08458j

Sample: Soil

Assay Certificate for Samples Provided

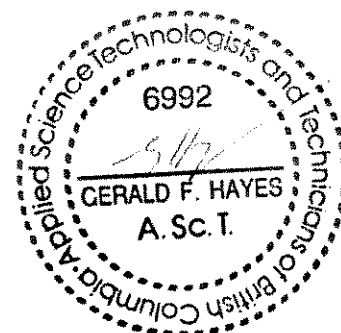
Line: 30+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	<0.1	<1	<1	17	9	<1
4+50W	<10	<0.1	10	1	20	32	<1
3+50W	<10	<0.1	12	<1	20	4	<1
3+00W	<10	<0.1	12	<1	17	8	<1
2+50W	<10	<0.1	15	<1	19	21	<1
2+00W	<10	<0.1	<1	<1	22	4	<1
1+50W	<10	<0.1	<1	1	19	<1	<1
1+00W	<10	<0.1	11	<1	19	38	<1
0+50W	<10	0.5	9	<1	17	7	<1
0+00	<10	<0.1	15	6	10	51	<1

Line: 31+00S

5+00W	15	<0.1	7	1	15	111	<1
4+50W	15	<0.1	6	2	11	74	<1
3+50W	33	<0.1	6	<1	7	33	<1
3+00W							
2+50W	37	<0.1	7	<1	13	72	<1
2+00W	<10	<0.1	<1	<1	10	81	<1
1+50W							
1+00W	<10	<0.1	<1	<1	9	57	<1
0+50W	<10	<0.1	10	2	26	65	<1
0+00	12	0.7	13	<1	35	38	1

Au -- 15g Fire Assay/AAS  
Metals -- Aqua Regia Digestion/AAS Geochem



October 24, 1990

Work Order # 08458

Golden Hemlock Explorations Ltd.  
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 Vancouver, B.C.  
 V6C 1V5

File # 08458k

Sample: Soil

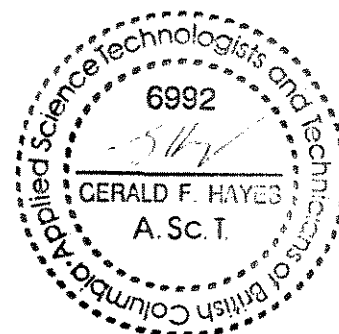
Assay Certificate for Samples Provided

Line: 32+003

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	12	<0.1	<1	<1	8	34	<1
4+50W	<10	<0.1	<1	<1	<1	8	<1
3+50W	<10	<0.1	<1	<1	1	29	<1
3+00W	<10	0.2	2	<1	5	19	<1
2+50W	10	<0.1	13	<1	11	77	<1
2+00W	<10	<0.1	11	1	23	60	<1
1+50W	<10	<0.1	8	<1	22	52	<1
1+00W	<10	<0.1	4	4	25	43	<1
0+50W	<10	<0.1	<1	<1	6	21	1
0+00	<10	<0.1	2	<1	5	44	<1

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



December 5, 1990

Work Order # 13025

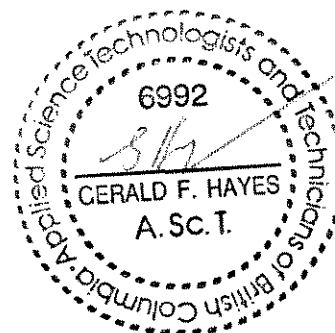
Golden Hemlock Explorations Ltd.  
Suite 1022 - 470 Granville St.  
Vancouver, B.C.  
V6C 1V5

File # 13025a

Assay Certificate for Samples Provided

Sample	ppb Au
JDS-90-25	<10
JDS-90-26	33
JDS-90-30	40
JDS-90-31	27
JDS-90-32	<10
JDS-90-33	22
JDS-90-34	17
JDS-90-35	16
JDS-90-36	<10
JDS-90-37	<10
JDS-90-37b	<10
JDS-90-38	327
JDS-90-39	<10
JDS-90-40	<10
JDS-90-41	<10
JDS-90-42	<10
JDS-90-43	<10
JDS-90-44	<10
JDS-90-45	33
JDS-90-46	<10
JDS-90-47	<10
JDS-90-48	<10
JDS-90-49	120
JDS-90-50	<10

Au -- 15g Fire Assay/AAS



December 5, 1990

Work Order # 13025

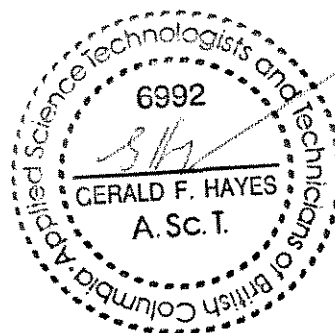
Golden Hemlock Explorations Ltd.  
Suite 1022 - 470 Granville St.  
Vancouver, B.C.  
V6C 1V5

File # 13025a

Assay Certificate for Samples Provided

Sample	ppb Au
JDS-90-25	<10
JDS-90-26	33
JDS-90-30	40
JDS-90-31	27
JDS-90-32	<10
JDS-90-33	22
JDS-90-34	17
JDS-90-35	16
JDS-90-36	<10
JDS-90-37	<10
JDS-90-37b	<10
JDS-90-38	327
JDS-90-39	<10
JDS-90-40	<10
JDS-90-41	<10
JDS-90-42	<10
JDS-90-43	<10
JDS-90-44	<10
JDS-90-45	33
JDS-90-46	<10
JDS-90-47	<10
JDS-90-48	<10
JDS-90-49	120
JDS-90-50	<10

Au -- 15g Fire Assay/AAS



October 31, 1990

Work Order # 08994

Golden Hemlock Explorations Ltd.  
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File # 08994a

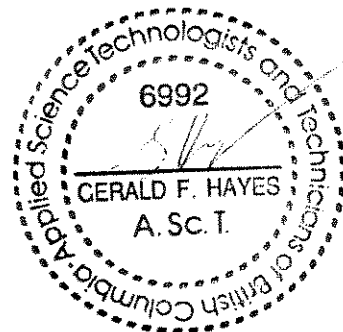
Sample: Soil

Assay Certificate for Samples Provided

Sample ppm As

HM-1	69
HM-2	73
HM-3	53
HM-5	68
HM-6	65
HM-7	46
HM-9	91
HM-10	54
HM-11	67
HM-13	80
HM-14	6
HM-15	8
HM-17	60
HM-18	8
HM-19	39
HM-21	83
HM-22	49
HM-23	51
HM-26	27
HM-27	33
HM-28	34
HM-29	29
HM-30	54
HM-31	47
HM-32	53
HM-33	60
HM-34	36
HM-35	41
HM-36	39
HM-37	50

As -- Aqua Regia Digestion/AAS



October 31, 1990

Work Order # 08994

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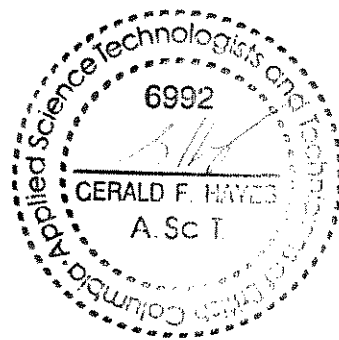
File # 08994b

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-38	46
HM-39	51
HM-40	40
HM-41	47
HM-42	50
HM-43	62
HM-44	48
HM-45	43
HM-46	38
HM-47	58
HM-49	79
HM-50	68
HM-51	73
HM-52	80
HM-53	64
HM-54	71
HM-55	63
HM-56	58
HM-58	33
HM-59	37
HM-60	59
HM-61	52
HM-62	45
HM-63	47
HM-34	38
HM-65	50
HM-66	19
HM-67	11
HM-68	30
HM-69	38

As -- Aqua Regia Digestion/AAS Geochem



October 31, 1990

Work Order # 08994

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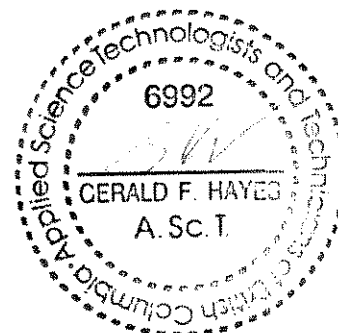
File # 08994c

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-70	43
HM-71	29
HM-72	43
HM-74	33
HM-75	42
HM-76	45
HM-77	31
HM-78	50
HM-79	44
HM-80	45
HM-81	32
HM-82	43
HM-83	46
HM-84	57
HM-85	47
HM-86	42
HM-87	49
HM-88	38
HM-90	51
HM-91	57
HM-92	80
HM-93	68
HM-94	75
HM-95	83
HM-96	69
HM-97	59
HM-98	65
HM-99	34
HM-100	56
HM-101	43

As -- Aqua Regia Digestion/AA3 Geochem



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Work Order # 08994

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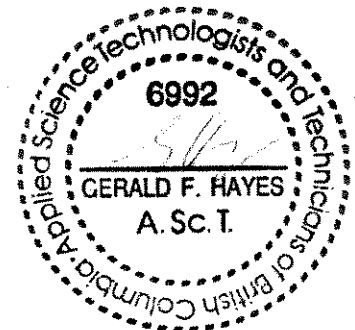
File # 08994d

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-102	39
HM-103	54
HM-104	44
HM-105	67
HM-106	55
HM-107	57
HM-108	62
HM-109	19
HM-111	48
HM-112	7
HM-114	16
HM-115	24
HM-116	35
HM-117	30
HM-118	32
HM-119	41
HM-120	36
HM-121	12
HM-122	47
HM-123	40
HM-124	37
HM-125	29
HM-126	49
HM-127	50
HM-128	38
HM-132	46
HM-133	35
HM-134	14
HM-135	18
HM-136	23

As -- Aqua Regia Digestion/AAS Geochem



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Work Order # 08994

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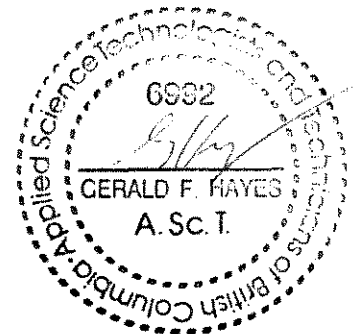
File # 08994e

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-137	47
HM-138	32
HM-139	57
HM-140	51
HM-141	73
HM-142	50
HM-143	40
HM-144	38
HM-145	49
HM-146	29
HM-147	45
HM-148	42
HM-149	40
HM-150	37
HM-151	42
HM-152	43
HM-153	62
HM-154	42
HM-155	48
HM-156	55
HM-157	49
HM-158	45
HM-159	48
HM-160	51
HM-161	46
HM-162	57
HM-163	45
HM-164	22
HM-165	43
HM-166	58

As -- Aqua Regia Digestion/AAS Geochem



October 31, 1990

Work Order # 08994

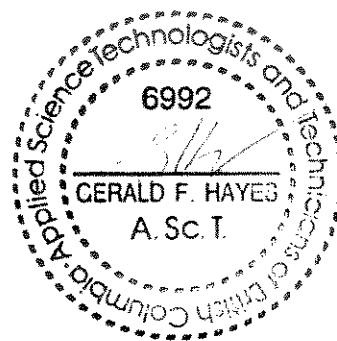
Golden Hemlock Explorations Ltd.  
Suite 1022 - 470 Granville St.  
Vancouver, B.C.  
V6C 1V5

File # 08994f

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-167	49
HM-168	59
HM-169	64
HM-170	62
HM-171	66
HM-172	41
HM-173	34
HM-174	42
HM-175	33
HM-176	29
HM-177	33
HM-178	25
HM-179	38
HM-180	46
HM-181	21
HM-182	24
HM-183	47
HM-184	35
HM-185	53
HM-186	40
HM-187	67
HM-188	48
HM-189	51
HM-190	55
HM-191	67
HM-192	15
HM-193	34
HM-194	28
HM-195	39
HM-196	27



As -- Aqua Regia Digestion/AAS Geochem



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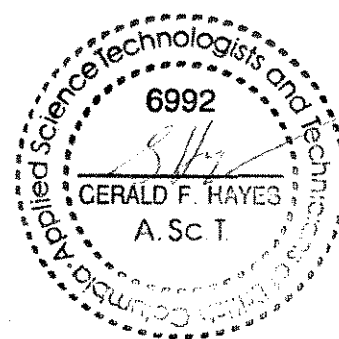
File # 08994g

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-197	66
HM-198	113
HM-200	54
HM-201	48
HM-202	56
HM-203	72
HM-204	65
HM-205	58
HM-206	51
HM-207	61
HM-208	84
HM-209	80
HM-210	65
HM-211	79
HM-212	64
HM-213	41
HM-214	35
HM-215	39
HM-216	31
HM-217	61
HM-218	21
HM-219	50
HM-220	16
HM-221	36
HM-222	55
HM-223	34
HM-224	47
HM-225	10
HM-226	81
HM-227	42

As -- Aqua Regia Digestion/AAS Geochem



October 31, 1990

Work Order # 08994

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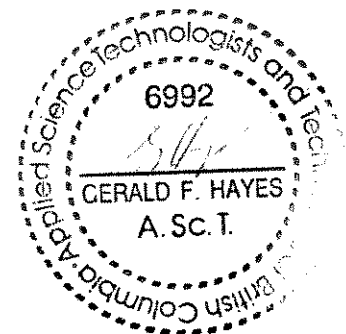
File # 08994b

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-228	37
HM-229	34
HM-230	75
HM-231	63
HM-232	66
HM-233	32
HM-234	38
HM-235	51
HM-236	49
HM-237	45
HM-238	38
HM-239	44
HM-240	31
HM-241	67
HM-242	82
HM-243	75
HM-244	31
HM-245	128
HM-246	97
HM-247	129
HM-248	86
HM-249	87
HM-250	92
HM-251	66
HM-252	93
HM-253	116
HM-254	91
HM-255	47
HM-256	43
HM-257	73

As -- Aqua Regia Digestion/AAS Geochem



October 31, 1990

Work Order # 08994

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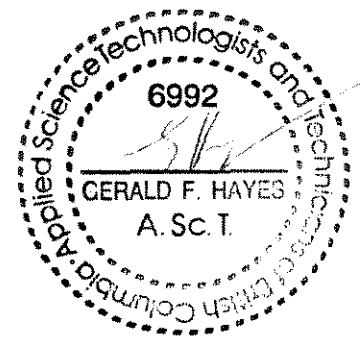
File # 08994i

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-258	49
HM-259	55
HM-260	86
HM-261	87
HM-262	74
HM-263	92
HM-264	87
HM-265	81
HM-266	57
HM-267	45
HM-268	49
HM-269	58
HM-270	64
HM-271	37
HM-272	77
HM-273	69
HM-275	48
HM-276	41
HM-277	20
HM-278	42
HM-279	89
HM-280	28
HM-281	38
HM-282	43
HM-283	48
HM-284	34
HM-285	62
HM-286	69
HM-287	38
HM-288	67

As -- Aqua Regia Digestion/AAS Geochem



November 1, 1990

Work Order # 08994

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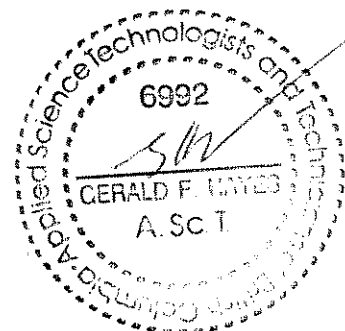
File # 08994j

Sample: Soil

### Assay Certificate for Samples Provided

Sample	ppm As
HM-289	90
HM-291	90
HM-292	86
HM-293	97
HM-294	82
HM-295	116
HM-296	45
HM-297	50
HM-298	144
HM-299	57
HM-300	81
HM-301	44
HM-302	41
HM-303	46
HM-304	45
HM-305	16
HM-306	4
HM-307	9
HM-308	19
HM-309	7
HM-310	<1
HM-311	9
HM-312	7
HM-313	12
HM-314	25
HM-315	13
HM-316	30
HM-317	<1
HM-318	26
HM-319	44

Metals -- Aqua Regia Digestion/AAS Geochem



November 7, 1990

Work Order # 08994

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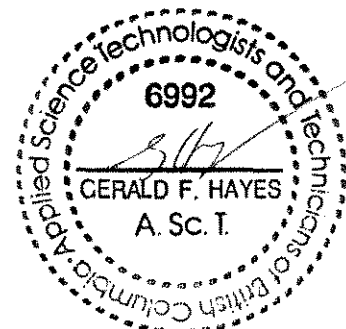
File # 08994k

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-320	53
HM-321	26
HM-322	30
HM-323	35
HM-324	31
HM-325	18
HM-326	29
HM-327	64
HM-328	31
HM-329	79
HM-330	51
HM-331	81
HM-332	55
HM-333	74
HM-334	53
HM-335	27
HM-336	93
HM-337	76
HM-338	52
HM-339	67
HM-340	11
HM-341	54
HM-342	61
HM-343	66
HM-344	73
HM-345	65
HM-346	78
HM-347	32
HM-348	51
HM-349	97

As -- Aqua Regia Digestion/AAS Geochem



November 7, 1990

Work Order # 08994

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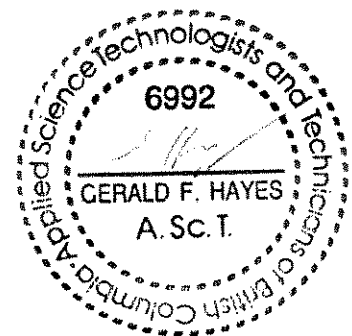
File # 089941

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
HM-350	57
HM-351	31
HM-352	34
HM-353	48
HM-354	43
HM-355	40
HM-356	57
HM-357	66
HM-358	47
HM-359	69
HM-360	49
HM-361	37
HM-362	51
HM-363	52
HM-364	57
HM-365	35
HM-366	56
HM-367	49
HM-368	63
HM-369	78
HM-370	44
HM-371	63
HM-372	60
HM-373	77
HM-374	106
HM-375	57
HM-376	73
HM-377	44
HM-378	40
HM-379	46
HM-380	54

As -- Aqua Regia Digestion/AAS Geochem



November 7, 1990

Work Order # 08994

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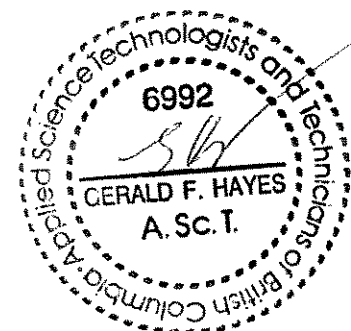
File # 08994m

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-11	9
JD-13	<1
JD-15	14
JD-19	11
JD-21	<1
JD-23	<1
JD-27	<1
JD-29	<1
JD-31	<1
JD-35	<1
JD-37	48
JD-39	19
JD-43	17
JD-45	9
JD-47	19
JD-53	18
JD-55	14
JD-59	22
JD-61	20
JD-63	14
JD-67	21
JD-69	16
JD-71	<1
JD-75	15
JD-77	28
JD-79	10
JD-83	33
JD-85	<1
JD-87	<1
JD-91	8

As -- Aqua Regia Digestion/AAS Geochem



November 7, 1990

Work Order # 08994

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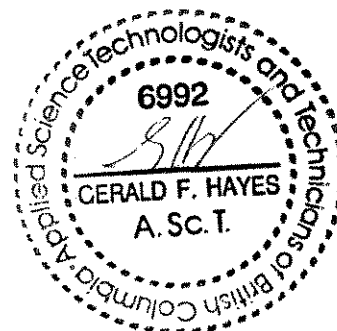
File # 08994n

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-93	13
JD-95	7
JD-99	12
JD-101	47
JD-103	25
JD-107	13
JD-109	29
JD-111	43
JD-117	75
JD-119	49
JD-123	61
JD-127	66
JD-131	63
JD-135	50
JD-139	62
JD-149	61
JD-153	63
JD-165	46
JD-167	57
JD-169	59
JD-171	61
JD-175	46
JD-177	59
JD-179	57
JD-181	55
JD-183	61
JD-185	77
JD-187	50
JD-189	69
JD-191	63

As -- Aqua Regia Digestion/AAS



November 7, 1990

Work Order # 08994

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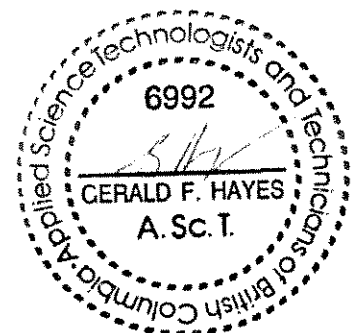
File # 08994o

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-193	37
JD-197	76
JD-199	77
JD-201	17
JD-203	41
JD-207	89
JD-209	104
JD-211	70
JD-217	87
JD-221	32
JD-225	168
JD-227	70
JD-235	28
JD-237	137
JD-239	56
JD-241	34
JD-243	121
JD-245	70
JD-246	49
JD-248	56
JD-250	51
JD-251	35
JD-253	39
JD-255	43
JD-256	64
JD-258	47
JD-260	40
JD-261	56
JD-263	37
JD-265	45

As -- Aqua Regia Digestion/AAS



November 7, 1990

Work Order # 08994

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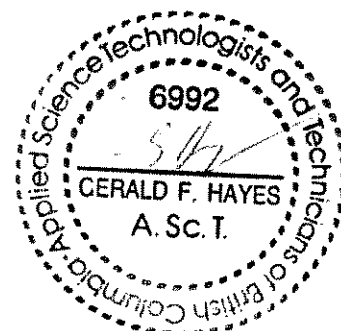
File # 08994p

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-266	61
JD-268	49
JD-270	46
JD-271	57
JD-273	43
JD-275	38
JD-276	47
JD-277	36
JD-280	68
JD-281	86
JD-283	170
JD-285	143
JD-286	163
JD-288	149
JD-290	147
JD-291	141
JD-293	88
JD-295	68
JD-296	70
JD-298	61
JD-300	82
JD-301	75
JD-303	64
JD-305	60
JD-306	74
JD-308	59
JD-310	53
JD-311	67
JD-313	52
JD-315	72

As -- Aqua Regia Digestion/AAS



November 7, 1990

Work Order # 08994

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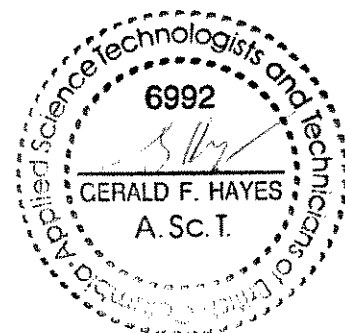
File # 08994q

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-316	63
JD-318	28
JD-320	54
JD-321	60
JD-323	50
JD-325	57
JD-326	60
JD-328	58
JD-330	55
JD-331	27
JD-333	52
JD-335	58
JD-336	58
JD-338	41
JD-340	52
JD-341	46
JD-343	53
JD-345	73
JD-346	86
JD-348	67
JD-350	52
JD-351	47
JD-353	54
JD-355	57
JD-356	61
JD-358	54
JD-360	62
JD-361	64
JD-365	72

As -- Aqua Regia Digestion/AAS



November 7, 1990

Work Order # 08994

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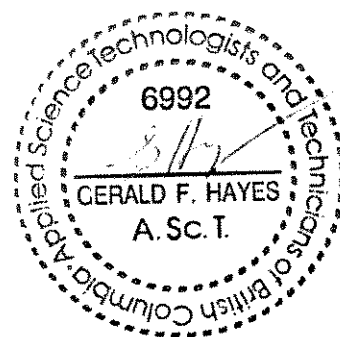
File # 08994r

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-366	46
JD-368	63
JD-370	71
JD-371	86
JD-373	51
JD-375	59
JD-376	75
JD-378	64
JD-380	49
JD-381	54
JD-383	18
JD-385	42
JD-386	49
JD-388	36
JD-390	16
JD-391	41
JD-393	34
JD-395	60
JD-396	34
JD-398	30
JD-400	38
JD-401	40
JD-403	39
JD-405	70
JD-406	41
JD-408	27
JD-410	30
JD-411	24
JD-413	27
JD-415	21

As -- Aqua Regia Digestion/AAS



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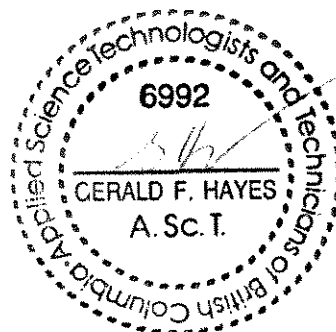
File # 08994s

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-416	56
JD-418	35
JD-420	47
JD-421	52
JD-423	46
JD-425	42
JD-426	43
JD-428	32
JD-430	36
JD-431	37
JD-433	40
JD-435	50
JD-437	41
JD-439	36
JD-440	50
JD-442	61
JD-444	63
JD-445	59
JD-447	32
JD-449	86
JD-450	81
JD-452	62
JD-454	56
JD-455	86
JD-457	48
JD-459	40
JD-460	69
JD-462	47
JD-464	79
JD-465	93

As -- Aqua Regia Digestion/AAS



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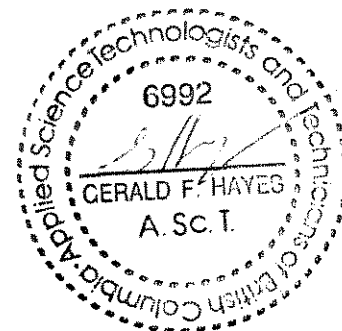
File # 08994t

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-467	42
JD-469	60
JD-470	69
JD-472	87
JD-474	84
JD-476	91
JD-477	89
JD-479	74
JD-480	58
JD-482	53
JD-484	40
JD-485	58
JD-487	49
JD-489	43
JD-490	68
JD-492	53
JD-494	62
JD-495	46
JD-497	67
JD-499	52
JD-500	53
JD-502	59
JD-505	98
JD-506	82
JD-508	68
JD-510	66
JD-511	69
JD-513	51
JD-515	73
JD-518	78

As -- Aqua Regia Digestion/AAS



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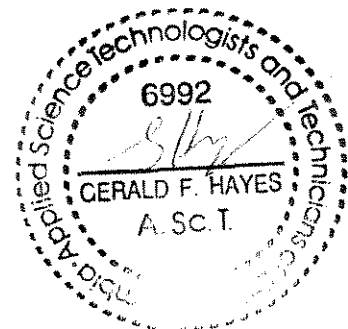
File # 08994u

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-521	106
JD-524	83
JD-527	101
JD-529	49
JD-530	110
JD-531	36
JD-532	136
JD-533	45
JD-534	35
JD-353	50
JD-536	44
JD-537	40
JD-539	47
JD-540	30
JD-541	41
JD-542	36
JD-543	58
JD-544	37
JD-545	69
JD-546	50
JD-547	55
JD-548	50
JD-549	45
JD-550	57
JD-551	49
JD-552	22
JD-553	34
JD-554	41

As -- Aqua Regia Digestion/AAS



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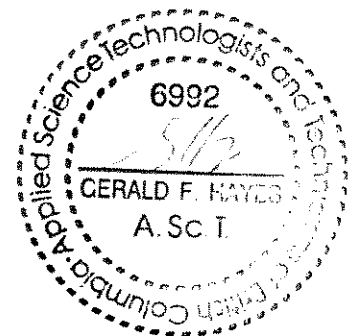
File # 08994v

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-555	36
JD-556	39
JD-557	38
JD-558	25
JD-559	43
JD-560	56
JD-561	38
JD-562	37
JD-563	29
JD-564	24
JD-565	30
JD-566	67
JD-567	32
JD-568	14
JD-569	58
JD-570	45
JD-571	48
JD-572	38
JD-573	63
JD-574	49
JD-575	42
JD-576	45
JD-577	76
JD-578	42
JD-579	43
JD-580	47
JD-581	64
JD-582	56
JD-583	51
JD-584	93

As -- Aqua Regia Digestion/AAS



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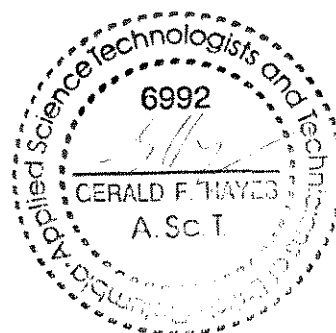
File # 08994w

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-585	57
JD-586	87
JD-587	80
JD-588	65
JD-589	44
JD-590	68
JD-591	79
JD-592	56
JD-593	67
JD-594	56
JD-595	60
JD-596	59
JD-597	43
JD-598	64
JD-599	55
JD-600	53
JD-601	57
JD-602	60
JD-603	49
JD-604	46
JD-605	44
JD-606	46
JD-607	42
JD-608	21
JD-609	39
JD-610	20
JD-611	38
JD-612	40
JD-613	38
JD-614	36

As -- Aqua Regia Digestion/AAS



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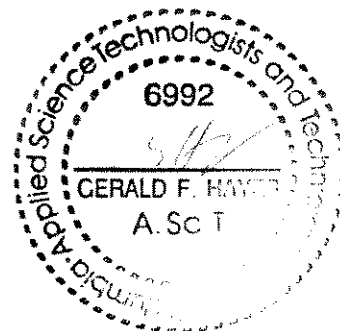
File # 08994x

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
JD-615	38
JD-616	27
JD-617	41
JD-618	32
JDS-90-25	45
JDS-90-26	37
JDS-90-30	44
JDS-90-31	48
JDS-90-32	48
JDS-90-33	67
JDS-90-34	58
JDS-90-35	31
JDS-90-36	16
JDS-90-37	58
JDS-90-37b	51
JDS-90-38	75
JDS-90-39	44
JDS-90-40	50
JDS-90-41	67
JDS-90-42	69
JDS-90-43	66
JDS-90-44	50
JDS-90-45	32
JDS-90-46	69
JDS-90-47	120
JDS-90-48	110
JDS-90-49	109
JDS-90-50	83

As -- Aqua Regia Digestion/AAS



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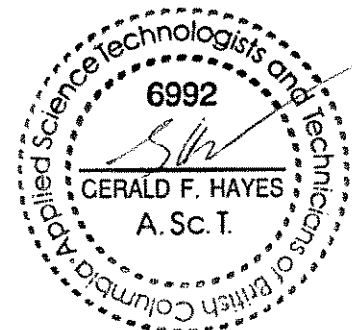
File # 08994y

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
MT-3	36
MT-5	68
MT-8	57
MT-10	7
MT-13	18
MT-15	15
MT-18	3
MT-20	12
MT-23	31
MT-24	4
MT-25	9
MT-28	10
MT-30	25
MT-33	8
MT-35	2
MT-38	10
MT-40	24
MT-43	17
MT-45	9
MT-48	14
MT-50	40
MT-51	12
MT-53	10
MT-55	9
MT-58	21
MT-59	18
MT-60	5
MT-63	22
MT-65	24
MT-68	14

As -- Aqua Regia Digestion/AAS Geochem



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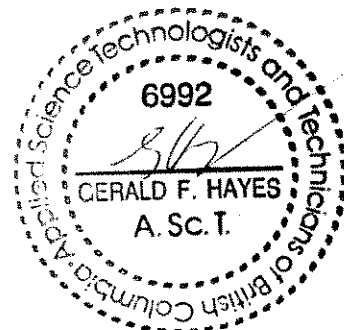
File # 08994z

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
MT-70	26
MT-73	25
MT-75	31
MT-78	22
MT-80	30
MT-83	26
MT-84	21
MT-85	29
MT-88	27
MT-90	32
MT-93	25
MT-94	32
MT-95	27
MT-98	33
MT-99	24
MT-100	23
MT-102	11
MT-103	18
MT-104	17
MT-105	20
MT-108	14
MT-109	11
MT-112	18
MT-113	<1
MT-114	3
MT-117	1
MT-118	6
MT-119	1
MT-122	14
MT-123	16

As -- Aqua Regia Digestion/AAS Geochem



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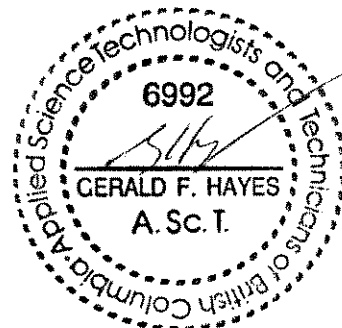
File # 08994aa

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
MT-124	8
MT-127	66
MT-128	15
MT-129	32
MT-132	<1
MT-135	7
MT-136	32
MT-137	14
MT-138	13
MT-139	5
MT-140	28
MT-141	17
MT-142	28
MT-143	2
MT-144	10
MT-145	16
MT-146	7
MT-147	12
MT-148	<1
MT-149	<1
MT-150	4
MT-152	19
MT-153	6
MT-154	4
MT-155	12
MT-156	13
MT-158	15
MT-159	4
MT-160	<1
MT-162	26

As -- Aqua Regia Digestion/AAS Geochem



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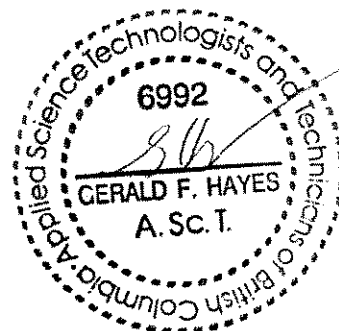
File # 08994bb

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
MT-163	20
MT-164	19
MT-165	9
MT-166	8
MT-167	34
MT-168	7
MT-169	14
MT-170	17
MT-171	<1
MT-172	16
MT-173	2
MT-174	<1
MT-175	14
MT-177	2
MT-178	7
MT-179	8
MT-180	13
MT-182	<1
MT-183	4
MT-184	<1
MT-185	<1
MT-186	<1
MT-187	<1
MT-188	<1
MT-191	5
MT-192	20
MT-193	23
MT-195	<1
MT-196	11
MT-197	17

As -- Aqua Regia Digestion/AAS Geochem



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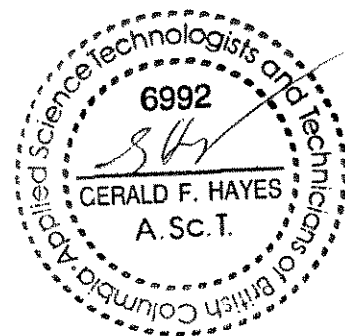
Golden Hemlock Explorations Ltd.  
Suite 1022 - 470 Granville St.  
Vancouver, B.C.  
V6C 1V5

File # 08994cc

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
MT-198	18
MT-201	118
MT-202	98
MT-203	69
MT-204	93
MT-205	33
MT-206	36
MT-207	33
MT-208	29
MT-211	15
MT-212	20
MT-215	28
MT-216	36
MT-217	31
MT-219	42
MT-220	45
MT-221	46
MT-222	39
MT-223	64
MT-224	60
MT-225	57
MT-227	39
MT-228	79
MT-230	77
MT-231	90
MT-232	57
MT-233	49
MT-234	64
MT-235	47
MT-236	38



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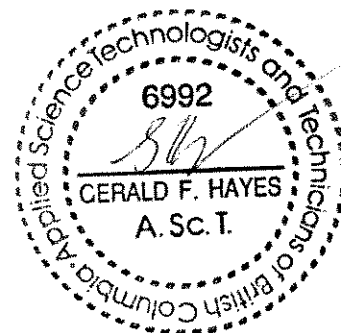
File # 08994dd

Sample: Soil

Assay Certificate for Samples Provided

Sample	ppm As
MT-237	43
MT-238	41
MT-239	67
MT-240	69
MT-241	53
MT-242	32
MT-243	50
MT-244	55
MT-245	22
MT-246	57
MT-247	63
MT-248	21
MT-249	35
MT-250	19
MT-251	33
MT-252	5
MT-253	<1
MT-254	10
MT-255	1
MT-256	<1
MT-257	<1
MT-258	3
MT-259	<1
MT-260	<1
MT-261	<1
MT-262	<1
MT-263	<1

As -- Aqua Regia Digestion/AAS Geochem



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Work Order # 08442

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File #08442a

Sample: Soil

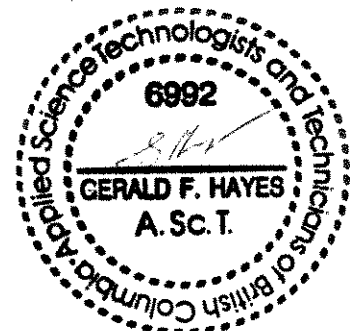
## Assay Certificate for Samples Provided

Line: 0+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	38	<0.1	17	5	31	25	<1
4+50W	28	<0.1	18	18	65	31	5
4+00W	39	<0.1	10	13	42	35	3
3+50W	33	<0.1	15	12	40	38	7
3+00W	36	<0.1	7	4	34	29	5
2+50W	31	<0.1	5	9	43	39	<1
2+00W	38	<0.1	4	11	42	34	<1
1+50W	19	<0.1	6	13	47	33	2
1+00W	38	<0.1	6	10	49	30	3
0+50W	36	<0.1	13	12	51	17	2
0+50E	28	<0.1	12	11	45	19	4
1+00E	34	<0.1	7	10	57	28	<1
1+50E	32	0.2	7	12	58	40	<1
2+00E	16	<0.1	8	9	65	28	3
2+50E	32	<0.1	8	8	57	42	<1
3+00E	26	<0.1	<1	11	49	37	<1
3+50E	42	0.1	10	6	43	32	<1
4+00E	25	<0.1	11	5	33	24	4
4+50E	46	<0.1	9	7	32	38	4
5+00E	43	<0.1	5	7	22	19	1

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

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File # 08442b

Sample: Soil

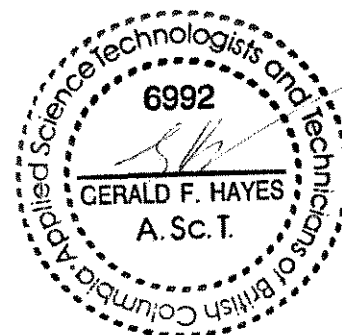
Assay Certificate for Samples Provided

Line: 1+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	19	<0.1	5	8	29	51	<1
4+50W	27	<0.1	3	6	18	18	<1
4+00W	18	0.2	5	4	17	2	<1
3+50W	14	0.8	5	5	18	13	<1
3+00W	20	0.7	10	7	29	25	<1
2+50W	15	0.6	5	8	26	30	<1
2+00W	29	0.9	12	10	22	20	<1
1+50W	36	0.4	11	17	24	25	<1
1+00W							
0+50W	18	0.5	9	16	50	31	<1
0+50E	22	<0.1	9	6	42	63	<1
1+00E	43	0.1	16	6	30	99	<1
1+50E	19	<0.1	7	9	40	104	<1
2+00E	<10	0.4	7	4	33	34	<1
2+50E	23	0.1	5	10	39	97	<1
3+00E	14	<0.1	4	6	32	91	<1
3+50E	19	0.5	8	4	34	27	<1
4+00E	<10	<0.1	6	10	25	64	<1
4+50E	<10	<0.1	8	4	26	20	<1
5+00E	13	<0.1	8	6	36	26	<1

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



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Work Order # 08442

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 V6C 1V5

File # 08442c

Sample: Soil

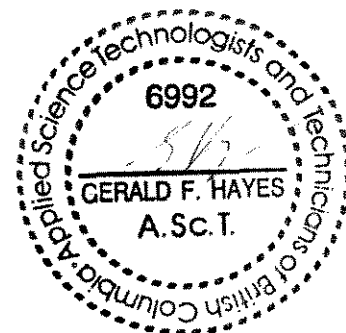
Assay Certificate for Samples Provided

Line: 2+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	<0.1	7	21	51	36	6
4+50W	24	0.3	4	<1	8	20	2
4+00W	<10	<0.1	6	2	<1	16	3
3+50W	<10	<0.1	3	12	7	6	4
3+00W	24	<0.1	5	16	14	25	9
2+50W	<10	<0.1	3	23	39	26	12
2+00W	12	<0.1	6	7	26	48	<1
1+50W	23	0.1	3	5	14	61	<1
1+00W	<10	<0.1	5	7	13	42	<1
0+50W	<10	<0.1	5	7	13	42	<1
0+50E							
1+00E	29	<0.1	4	4	12	36	<1
1+50E							
2+00E	16	<0.1	5	9	43	40	<1
2+50E							
3+00E	12	0.1	9	14	31	38	9
3+50E	20	<0.1	8	9	4	30	5
4+00E	13	<0.1	5	7	18	22	8
4+50E	<10	0.3	8	2	7	54	9
5+00E	<10	<0.1	6	<1	1	6	7

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



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Work Order # 08442

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File # 08442d

Sample: Soil

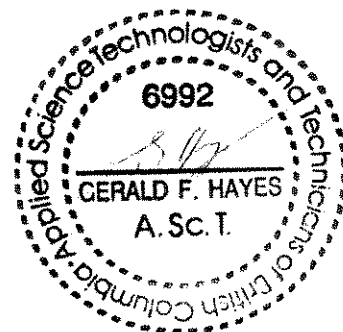
Assay Certificate for Samples Provided

Line: 3+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W							
4+50W							
4+00W	38	0.5	13	5	57	67	9
3+50W	94	0.2	8	10	38	42	9
3+00W	<10	<0.1	5	14	18	70	9
2+50W	26	0.1	5	9	4	50	11
2+00W	<10	0.4	12	49	14	55	15
1+50W	11	0.2	6	12	7	78	8
1+00W	18	<0.1	4	25	6	55	10
0+50W							
0+50E							
1+00E							
1+50E							
2+00E	15	<0.1	9	18	17	53	6
2+50E	21	0.2	5	20	2	42	16
3+00E	<10	<0.1	4	15	3	42	7
3+50E	<10	<0.1	2	13	<1	52	6
4+00E	35	0.1	7	2	37	39	10
4+50E	32	0.8	5	<1	38	68	8
5+00E	36	0.7	8	<1	45	50	10

Au --- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



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Work Order # 08442

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File # 08442e

Sample: Soil

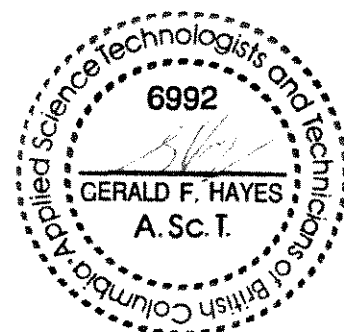
Assay Certificate for Samples Provided

Line: 5+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	11	<0.1	17	15	49	84	9
4+50W							
4+00W	23	<0.1	9	9	28	53	12
3+50W							
3+00W							
2+50W							
2+00W							
1+50W	18	<0.1	11	<1	40	37	10
1+00W	31	<0.1	16	<1	44	87	12
0+50W	112	<0.1	7	2	36	91	8
0+50E	41	<0.1	8	2	28	67	7
1+00E	20	<0.1	14	4	30	94	9
1+50E	33	<0.1	7	<1	27	96	9
2+00E	32	<0.1	10	<1	31	51	8
2+50E	29	<0.1	12	<1	30	69	11
3+00E	19	<0.1	7	7	27	83	9
3+50E	17	<0.1	12	5	37	76	10
4+00E	28	<0.1	10	5	34	66	11
4+50E	38	<0.1	6	5	23	84	9
5+00E	17	<0.1	4	4	19	57	7

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



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Work Order # 08442

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File # 08442f

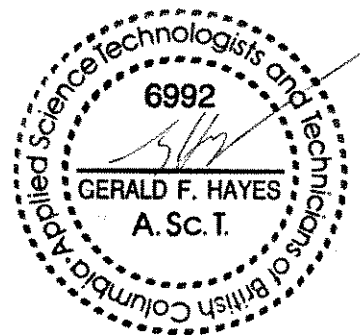
Sample: Soil

Assay Certificate for Samples Provided

Line: 5+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	22	<0.1	6	7	28	1	11
4+50W	16	0.1	7	10	30	25	13
4+00W	10	<0.1	5	17	49	35	15
3+50W	<10	0.1	8	8	51	17	12
3+00W	<10	0.3	19	14	50	25	15
2+50W	<10	0.1	3	8	37	8	15
2+00W	<10	<0.1	7	12	42	26	13
1+50W	54	<0.1	10	11	39	27	9
1+00W	<10	<0.1	4	8	19	56	14
0+50W	<10	<0.1	3	19	40	14	13
0+50E	<10	<0.1	13	63	58	24	10
1+00E	<10	<0.1	127	22	44	45	11
1+50E							
2+00E	<10	<0.1	4	8	31	21	12
2+50E	<10	<0.1	5	6	27	18	14
3+00E	<10	0.1	9	12	49	35	19
3+50E	<10	<0.1	10	7	23	20	16
4+00E	12	<0.1	9	8	50	44	14
4+50E	<10	<0.1	5	4	40	37	15
5+00E	<10	<0.1	23	6	29	23	15

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
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Vancouver, B.C.  
V6C 1V5

File # 08442g

Sample: Soil

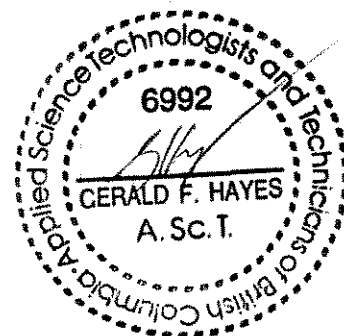
## Assay Certificate for Samples Provided

Line: 6+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	23	<0.1	11	6	34	77	7
4+50W	20	<0.1	2	10	44	47	12
4+00W	35	<0.1	<1	12	28	80	17
3+50W	33	<0.1	<1	6	30	68	21
3+00W	46	<0.1	4	7	24	60	21
2+50W	38	<0.1	1	3	27	49	17
2+00W	27	<0.1	1	<1	20	84	16
1+50W	79	0.2	4	12	29	87	18
1+00W	16	0.1	<1	<1	12	61	14
0+50W	<10	<0.1	3	10	29	64	19
0+50E	23	<0.1	5	51	64	88	16
1+00E	<10	0.2	9	7	2	39	10
1+50E	35	0.3	6	<1	1	42	7
2+00E	16	<0.1	<1	<1	1	50	7
2+50E	<10	<0.1	<1	<1	7	49	10
3+00E	24	<0.1	<1	7	23	53	20
3+50E	17	<0.1	1	2	9	48	14
4+00E	24	<0.1	2	3	5	64	12
4+50E	40	<0.1	<1	8	<1	58	14
5+00E	14	<0.1	<1	8	16	66	18

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

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File # 08442h

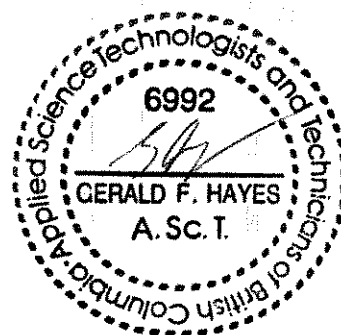
Sample: Soil

### Assay Certificate for Samples Provided

Line: '7+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	23	0.1	4	4	33	40	6
4+50W	30	0.3	12	14	6	48	9
4+00W	17	0.2	8	<1	30	73	18
3+50W	18	0.6	5	25	14	47	11
3+00W	16	0.5	3	2	21	46	16
2+50W	12	0.7	3	10	16	42	15
2+00W	11	0.3	7	11	4	41	11
1+50W	45	<0.1	5	6	5	40	13
1+00W	28	<0.1	5	9	<1	36	10
0+50W	35	<0.1	8	16	<1	40	9
0+50E	22	<0.1	12	68	22	58	14
1+00E	11	<0.1	13	31	7	47	15
1+50E	<10	<0.1	14	6	7	59	16
2+00E	22	<0.1	17	9	11	56	17
2+50E	<10	0.4	4	14	6	45	12
3+00E	<10	0.7	4	3	6	25	14
3+50E	30	<0.1	25	20	22	22	10
4+00E	23	0.3	10	17	<1	45	13
4+50E	24	0.2	13	7	8	63	14
5+00E	12	<0.1	9	7	12	77	20

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

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File # 08442i

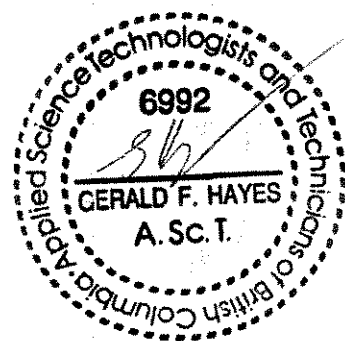
Sample: Soil

### Assay Certificate for Samples Provided

Line: 8+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	27	<0.1	2	<1	17	42	16
4+50W	28	<0.1	2	4	28	42	16
4+00W	29	<0.1	2	<1	31	54	16
3+50W	21	<0.1	5	<1	18	8	14
3+00W	<10	<0.1	5	<1	16	24	20
2+50W	38	0.7	3	<1	7	11	15
2+00W	23	0.2	23	2	23	74	12
1+50W	24	<0.1	11	<1	32	40	16
1+00W	20	<0.1	16	1	21	54	9
0+50W	41	<0.1	13	<1	22	39	12
0+50E	<10	<0.1	2	<1	19	35	9
1+00E	11	<0.1	4	<1	19	25	16
1+50E	16	0.1	5	<1	14	33	6
2+00E	16	<0.1	3	<1	17	37	11
2+50E	28	<0.1	3	<1	14	57	10
3+00E	13	<0.1	13	<1	10	14	7
3+50E	<10	<0.1	15	<1	13	32	13
4+00E	33	<0.1	7	<1	11	36	15
4+50E	70	<0.1	3	<1	8	21	10
5+00E	34	<0.1	2	<1	13	37	18

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
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File # 08442j

Sample: Soil

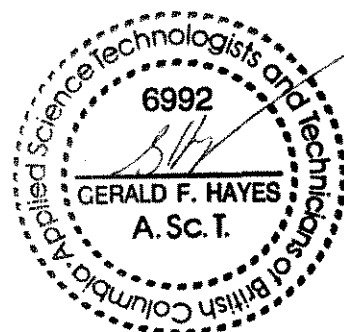
### Assay Certificate for Samples Provided

Line: 9+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	37	<0.1	4	6	38	44	20
4+50W	28	<0.1	5	8	30	49	25
4+00W	15	<0.1	4	<1	30	46	11
3+50W	22	<0.1	4	<1	16	5	16
3+00W	13	<0.1	4	<1	24	59	17
2+50W	23	0.5	1	<1	<1	26	15
2+00W	73	<0.1	6	<1	21	45	10
1+50W	22	<0.1	6	<1	21	45	10
1+00W	32	<0.1	14	<1	28	47	13
0+50W	10	0.9	8	1	27	17	12
0+50E	12	<0.1	16	7	35	42	18
1+00E	19	<0.1	13	1	25	41	11
1+50E							
2+00E							
2+50E							
3+00E	28	<0.1	5	1	22	73	10
3+50E	19	<0.1	4	9	40	94	17
4+00E	24	<0.1	5	<1	28	49	23
4+50E	17	0.1	6	<1	24	52	9
5+00E	32	<0.1	4	37	46	56	23

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

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File # 08442k

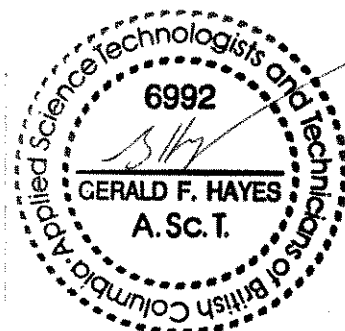
Sample: Soil

Assay Certificate for Samples Provided

Line: 10+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	<0.1	5	3	58	53	23
4+50W	<10	<0.1	4	7	42	34	22
4+00W	10	<0.1	6	<1	45	86	12
3+50W							
3+00W	10	<0.1	6	<1	23	59	13
2+50W	12	<0.1	11	<1	29	52	16
2+00W							
1+50W	14	<0.1	5	6	11	22	16
1+00W							
0+50W							
0+50E							
1+00E							
1+50E							
2+00E	<10	<0.1	4	<1	28	71	18
2+50E	11	<0.1	5	<1	20	59	7
3+00E	<10	<0.1	7	<1	25	54	23
3+50E	12	<0.1	16	<1	15	54	29
4+00E	22	<0.1	14	4	25	68	16
4+50E	<10	<0.1	7	1	37	47	17
5+00E	<10	0.1	3	<1	21	16	12

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 18, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
 Suite 1022 - 470 Granville St.  
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File # 084421

Sample: Soil

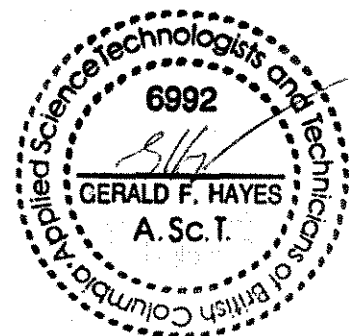
Assay Certificate for Samples Provided

Line: 11+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	<0.1	8	4	24	25	17
4+50W	<10	0.2	1	<1	8	<1	25
4+00W	<10	<0.1	6	<1	11	22	19
3+50W	<10	<0.1	8	<1	8	<1	31
3+00W	13	<0.1	2	<1	7	9	16
2+50W	<10	<0.1	3	<1	7	10	6
2+00W	<10	<0.1	5	<1	8	3	14
1+50W	14	<0.1	7	<1	5	25	25
1+00W	<10	<0.1	6	<1	<1	17	18
0+50W	12	<0.1	6	<1	6	7	14
0+50E	<10	<0.1	2	<1	4	18	11
1+00E	15	<0.1	15	<1	12	31	20
1+50E	23	<0.1	<1	<1	1	14	14
2+00E	<10	<0.1	2	<1	21	2	11
2+50E	<10	<0.1	3	<1	11	6	7
3+00E	12	<0.1	1	<1	12	24	13
3+50E	<10	<0.1	3	<1	20	16	18
4+00E	<10	<0.1	4	<1	20	4	22
4+50E	<10	<0.1	5	<1	7	<1	22
5+00E	<10	0.2	3	<1	7	<1	21

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

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File # 08442m

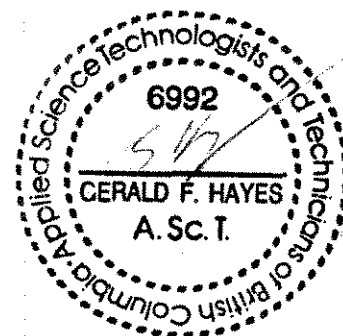
Sample: Soil

Assay Certificate for Samples Provided

Line: 12+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	0.3	9	<1	11	23	16
4+50W	22	<0.1	6	2	30	47	4
4+00W	<10	0.2	10	<1	29	29	23
3+50W	<10	<0.1	5	<1	33	38	30
3+00W	17	<0.1	15	4	19	31	5
2+50W	<10	0.3	6	<1	27	27	20
2+00W	20	<0.1	14	1	17	53	5
1+50W	<10	<0.1	5	<1	23	37	19
1+00W							
0+50W	<10	<0.1	14	<1	37	64	17
0+50E	11	<0.1	16	3	34	66	5
1+00E	<10	<0.1	12	6	29	28	7
1+50E	17	<0.1	6	3	20	17	12
2+00E	<10	<0.1	5	2	19	24	3
2+50E	12	<0.1	6	7	20	43	2
3+00E	16	<0.1	4	2	18	30	6
3+50E	95	<0.1	5	7	21	53	8
4+00E	17	<0.1	7	5	15	60	3
4+50E	21	<0.1	8	3	24	54	2
5+00E	21	<0.1	7	4	29	42	4

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
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File # 08442n

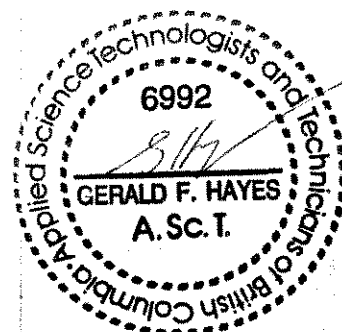
Sample: Soil

Assay Certificate for Samples Provided

Line: 13+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	22	0.2	9	5	41	37	9
4+50W							
4+00W	14	0.4	9	4	31	30	7
3+50W	<10	0.7	14	3	34	25	9
3+00W	17	0.5	4	5	41	31	5
2+50W	18	<0.1	5	2	26	17	6
2+00W							
1+50W	13	<0.1	5	4	25	15	11
1+00W	18	<0.1	4	4	36	16	7
0+50W	<10	0.4	13	3	26	3	2
0+50E	<10	0.1	9	8	34	21	10
1+00E	23	<0.1	11	5	31	18	6
1+50E	<10	<0.1	6	3	37	26	7
2+00E	<10	<0.1	7	3	38	32	13
2+50E	24	<0.1	6	4	40	28	10
3+00E	15	0.3	6	5	30	39	9
3+50E	13	0.7	8	4	32	21	10
4+00E	<10	0.1	7	6	40	21	9
4+50E	15	0.1	5	3	34	33	12
5+00E							

Au -- 15g Fire Assay/AAS  
Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

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File # 084420

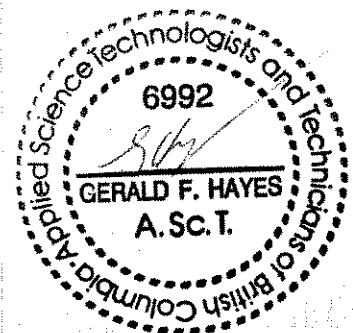
Sample: Soil

Assay Certificate for Samples Provided

Line: 14+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	25	<0.1	8	8	55	52	10
4+50W	31	<0.1	5	1	33	42	8
4+00W	12	<0.1	3	3	23	217	<1
3+50W	29	<0.1	4	6	48	56	9
3+00W	11	<0.1	6	8	35	39	8
2+50W	<10	<0.1	5	3	26	44	14
2+00W	14	0.2	13	2	37	33	12
1+50W							
1+00W	23	<0.1	11	4	31	35	7
0+50W	25	<0.1	10	20	37	51	11
0+50E							
1+00E	32	<0.1	8	4	33	27	4
1+50E	20	<0.1	7	7	33	25	11
2+00E	21	<0.1	8	2	29	41	8
2+50E	16	<0.1	15	6	32	38	10
3+00E	23	<0.1	6	6	47	49	9
3+50E	22	<0.1	5	6	38	45	6
4+00E	32	<0.1	7	16	36	36	12
4+50E	<10	<0.1	10	6	32	49	7
5+00E	<10	<0.1	4	3	31	45	9

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

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File # 08442p

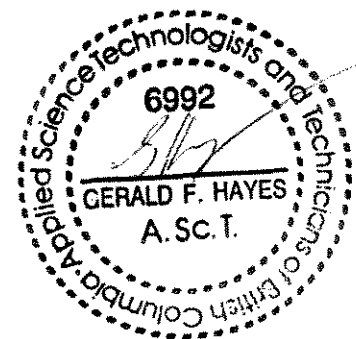
Sample: Soil

Assay Certificate for Samples Provided

Line: 15+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	40	<0.1	3	<1	24	37	9
4+50W	21	<0.1	4	<1	41	42	13
4+01W	39	<0.1	9	<1	34	55	10
3+50W	32	<0.1	15	<1	42	46	7
3+00W	24	<0.1	7	<1	14	35	<1
2+50W	30	<0.1	6	<1	25	53	4
2+00W	23	<0.1	5	<1	17	31	2
1+50W	28	<0.1	10	4	29	31	3
1+00W	37	<0.1	9	1	22	38	3
0+50W	43	<0.1	13	5	36	54	4
0+50E	29	<0.1	14	18	43	37	8
1+00E	25	<0.1	2	<1	16	17	5
1+50E	34	0.2	1	<1	13	37	<1
2+00E	33	<0.1	7	<1	18	45	1
2+50E	25	<0.1	4	<1	11	23	<1
3+00E	15	<0.1	12	1	27	51	10
3+50E	43	<0.1	14	6	26	52	11
4+00E	20	0.2	4	3	31	41	8
4+50E	31	<0.1	5	<1	22	21	8
5+00E	36	<0.1	1	<1	15	58	9

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

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File # 08442q

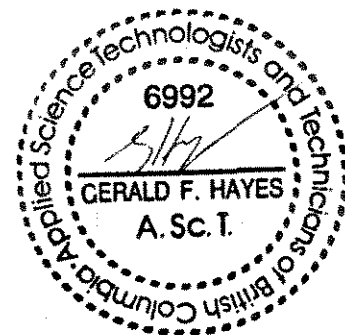
Sample: Soil

Assay Certificate for Samples Provided

Line: 16+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	<0.1	5	8	39	40	11
4+50W	<10	<0.1	3	1	40	44	12
4+00W	<10	<0.1	4	3	35	29	6
3+50W	11	<0.1	5	<1	15	34	7
3+00W	<10	<0.1	31	3	31	48	9
2+50W	<10	<0.1	24	14	29	47	10
2+00W	<10	<0.1	11	3	30	28	11
1+50W	<10	0.9	3	<1	17	18	7
1+00W	36	<0.1	2	6	11	20	<1
0+50W	30	<0.1	8	6	17	27	5
0+50E	<10	<0.1	8	3	47	31	14
1+00E	<10	<0.1	16	2	28	8	9
1+50E	<10	<0.1	11	<1	21	20	13
2+00E	<10	<0.1	7	2	24	33	10
2+50E	<10	<0.1	4	<1	16	27	8
3+00E	<10	<0.1	14	1	32	42	8
3+50E	<10	<0.1	13	<1	29	26	6
4+00E	<10	<0.1	3	2	32	31	8
4+50E	<10	<0.1	4	6	56	48	7
5+00E	<10	<0.1	11	5	45	50	10

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
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 V6C 1V5

File # 08442r

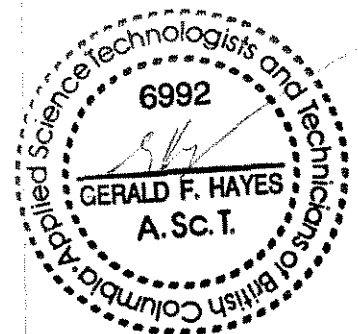
Sample: Soil

Assay Certificate for Samples Provided

Line: '17+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	24	<0.1	6	4	22	49	<1
4+50W							
4+00W	19	<0.1	7	7	22	58	7
3+50W	26	<0.1	18	10	25	57	3
3+00W	12	0.1	<1	6	22	62	3
2+50W	23	<0.1	<1	7	32	36	2
2+00W	31	<0.1	<1	5	26	39	3
1+50W	10	0.7	14	8	38	19	4
1+00W							
0+50W	11	<0.1	<1	5	23	26	4
0+50E							
1+00E							
1+50E	13	0.2	<1	6	36	17	5
2+00E	13	0.2	14	5	21	7	4
2+50E	29	<0.1	21	8	24	49	3
3+00E	19	0.1	<1	6	21	34	1
3+50E	23	<0.1	<1	3	12	47	<1
4+00E	31	<0.1	8	7	29	46	5
4+50E	30	<0.1	6	5	14	63	<1
5+00E	14	<0.1	9	7	21	59	<1

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
Suite 1022 - 470 Granville St.  
Vancouver, B.C.  
V6C 1V5

File # 08442s

Sample: Soil

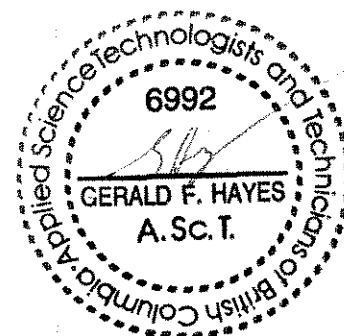
Assay Certificate for Samples Provided

Line: J18+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	12	<0.1	<1	8	44	41	12
4+50W	19	<0.1	<1	7	32	59	8
4+00W	16	<0.1	<1	5	31	37	11
3+50W	11	<0.1	3	6	19	47	2
3+00W	<10	<0.1	<1	4	13	35	5
2+50W	<10	<0.1	<1	3	8	29	5
2+00W							
1+50W							
1+00W	<10	<0.1	13	5	39	67	12
0+50W	<10	<0.1	13	12	41	40	10
0+50E	<10	<0.1	20	14	43	43	15
1+00E	<10	<0.1	6	6	25	30	9
1+50E	13	<0.1	3	6	35	36	13
2+00E	21	<0.1	12	11	30	44	9
2+50E	<10	<0.1	3	4	9	24	3
3+00E	23	0.6	1	1	11	24	3
3+50E	16	0.6	5	2	27	42	5
4+00E	23	<0.1	<1	4	22	52	10
4+50E	14	<0.1	<1	5	21	47	13
5+00E	28	<0.1	<1	4	21	42	7

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
Suite 1022 - 470 Granville St.  
Vancouver, B.C  
V6C 1V5

File # 08442t

Sample: Soil

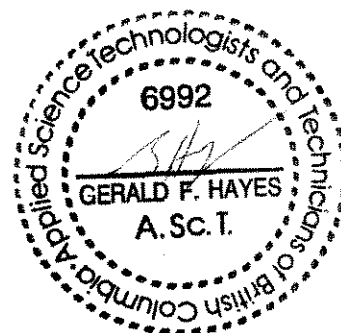
### Assay Certificate for Samples Provided

Line: 19+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	<10	<0.1	5	2	25	72	10
4+50W	281	0.8	2	1	19	35	8
4+00W	117	<0.1	<1	<1	15	43	10
3+50W	41	<0.1	2	<1	28	84	11
3+00W	99	<0.1	4	1	16	26	10
2+50W	44	0.3	2	1	26	41	12
2+00W	40	<0.1	4	2	12	30	9
1+50W	41	0.4	6	1	14	25	14
1+00W	36	<0.1	4	<1	<1	36	8
0+50W	22	<0.1	3	6	<1	13	8
0+50E	35	<0.1	12	5	26	27	10
1+00E	27	<0.1	8	3	10	32	9
1+50E	74	<0.1	27	4	6	29	9
2+00E	22	0.4	1	1	31	59	12
2+50E							
3+00E	31	<0.1	17	4	29	62	11
3+50E	38	<0.1	2	<1	10	57	11
4+00E	66	<0.1	3	1	12	50	9
4+50E	28	0.7	2	4	28	68	11
5+00E	52	<0.1	1	<1	11	49	9

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
 Suite 1022 - 470 Granville St.  
 Vancouver, B.C.  
 V6C 1V5

File # 08442u

Sample: Soil

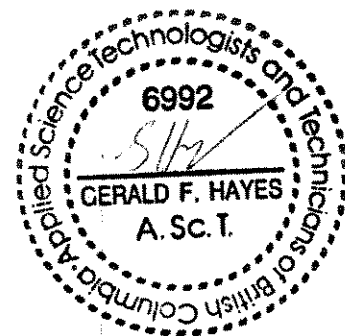
Assay Certificate for Samples Provided

Line: 20+00S

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
5+00W	14	<0.1	14	3	28	18	26
4+50W	11	<0.1	6	3	22	21	19
4+00W	10	1.9	4	<1	18	41	14
3+50W	<10	0.3	22	1	17	57	21
3+00W	<10	<0.1	6	<1	6	48	7
2+50W	27	<0.1	8	4	27	25	17
2+00W	19	<0.1	9	8	42	27	15
1+50W	<10	<0.1	5	<1	13	45	14
1+00W	12	<0.1	5	4	21	61	18
0+50W	<10	<0.1	5	14	33	35	14
0+50E	25	0.3	7	<1	6	21	17
1+00E	16	0.5	15	1	11	44	22
1+50E	22	<0.1	42	175	12	60	15
2+00E	<10	<0.1	8	4	26	43	22
2+50E	15	0.1	12	3	8	37	19
3+00E	29	<0.1	14	10	43	89	18
3+50E	26	0.4	19	1	23	32	24
4+00E	<10	<0.1	5	4	24	58	15
4+50E	39	<0.1	5	<1	25	37	24
5+00E	42	<0.1	6	<1	10	59	20

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
Suite 1022 - 470 Granville St.  
Vancouver, B.C.  
V6C 1V5

File # 08442v

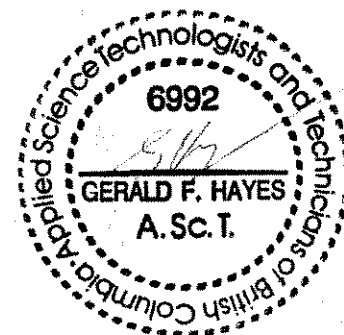
Sample: Soil

### Assay Certificate for Samples Provided

Line: Base Line

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
0+00S	<10	0.1	11	3	49	25	5
0+50S	<10	<0.1	10	9	57	51	12
1+00S	16	2.0	1	587	62	45	4
1+50S	<10	<0.1	15	10	36	31	5
2+00S							
2+50S	<10	<0.1	13	5	36	39	6
3+00S	12	<0.1	7	4	34	40	4
3+50S	<10	<0.1	11	8	27	27	2
4+00S							
4+50S							
5+00S	<10	<0.1	10	6	31	32	3
5+50S	<10	<0.1	14	15	19	19	15
6+00S	<10	<0.1	17	7	30	67	4
6+50S	10	<0.1	37	5	71	105	3
7+00S	17	<0.1	10	4	32	67	<1
7+50S	20	<0.1	9	7	35	56	6
8+00S	28	<0.1	17	9	44	78	9
8+50S	15	<0.1	18	12	32	59	10
9+00S	30	<0.1	20	6	25	69	9
9+50S	18	<0.1	31	4	29	50	5

Au -- 15g Fire Assay/AAS  
Metals -- Aqua Regia Digestion/AAS Geochem



October 12, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
 Suite 1022 - 470 Granville St.  
 Vancouver, B.C.  
 V6C 1V5

File # 08442w

Sample: Soil

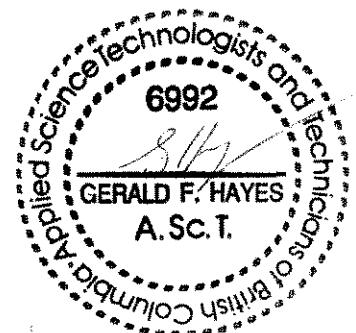
Assay Certificate for Samples Provided

Line: Base Line

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
10+50S	19	0.4	11	7	25	4	<1
11+00S	38	0.5	4	9	31	31	<1
11+50S	40	<0.1	17	11	42	53	<1
12+00S	11	<0.1	8	8	39	47	<1
12+50S	<10	<0.1	4	3	30	82	<1
13+00S	15	<0.1	4	2	25	40	2
13+50S	35	0.2	8	<1	43	43	<1
14+00S	45	0.5	22	7	38	56	1
14+50S	29	0.1	3	1	19	3	<1
15+00S	16	0.2	4	<1	18	9	<1
15+50S							
16+00S	14	0.4	3	6	26	41	<1
16+50S							
17+00S	35	0.2	4	7	27	47	<1
17+50S							
18+00S	38	0.1	9	9	42	71	<1
18+50S							
19+00S	70	0.1	8	4	43	68	1
19+50S	808	0.1	8	5	36	69	1

Au -- 15g Fire Assay/AAS

Metals -- Aqua Regia Digestion/AAS Geochem



October 15, 1990

Work Order # 08442

Golden Hemlock Explorations Ltd.  
 Suite 1022 - 470 Granville St.  
 Vancouver, B.C.  
 V6C 1V5

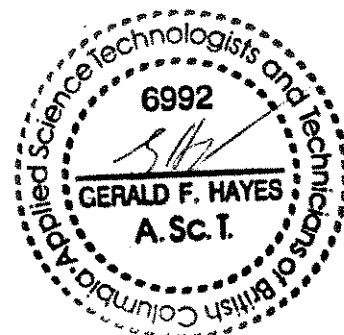
File # 08442x

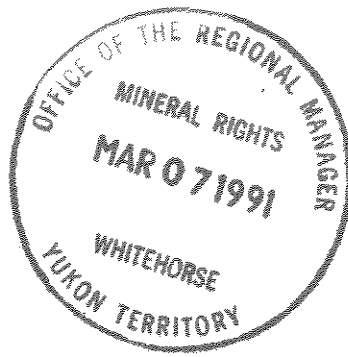
Sample: Rock

Assay Certificate for Samples Provided

Sample	ppb Au	ppm Ag	ppm Cu	ppm Pb	ppm Zn	ppm As	ppm Sb
18233	43	<0.1	2	52	75	57	1
18235	25	<0.1	2	100	159	132	24
18236	<10	0.1	<1	7	24	36	<1
18237	37	<0.1	<1	<1	13	42	<1
18238	54	<0.1	<1	<1	<1	10	<1
18239	178	<0.1	<1	<1	<1	20	<1

Au -- 15g Fire Assay/AAS  
 Metals -- Aqua Regia Digestion/AAS Geochem





Report #1086

DIGHEM<sup>III</sup> SURVEY  
FOR  
GOLDEN QUAIL RESOURCES LTD.  
CARMACKS, YUKON

NTS 115H/7,8,9,10

092959

DIGHEM SURVEYS & PROCESSING INC.  
MISSISSAUGA, ONTARIO  
May 22, 1990

Ruth A. Pritchard  
Geophysicist

A1086MAY.91R

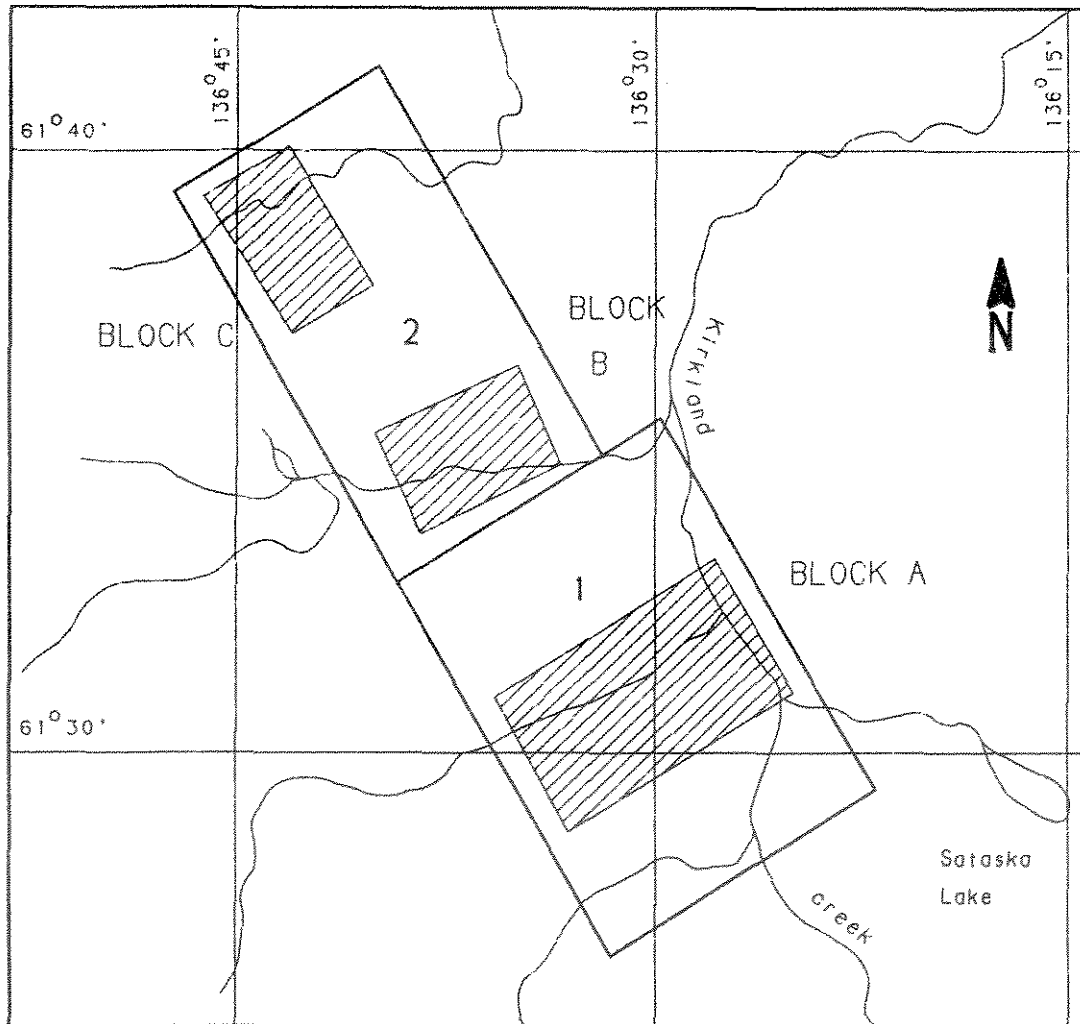
## SUMMARY

This report describes the logistics and results of a DIGHEM<sup>III</sup> airborne geophysical survey carried out for Golden Quail Resources Ltd., over three properties in the Carmacks area, Yukon.

The purpose of the survey was to detect zones of conductive mineralization and to provide information that could be used to map the geology and structure of the survey areas. This was accomplished by using a DIGHEM<sup>III</sup> multi-coil, multi-frequency electromagnetic system, supplemented by a high sensitivity Cesium magnetometer and a two-channel VLF receiver. The information from these sensors was processed to produce maps which display the magnetic and conductive properties of the survey areas. An electronic navigation system, operating in the UHF band, ensured accurate positioning of the geophysical data with respect to the base maps.

The EM survey detected several anomalies of possible bedrock origin. Most of the inferred bedrock conductors appear to warrant further investigation using appropriate surface exploration techniques. Areas of interest may be assigned priorities on the basis of supporting geophysical, geochemical and/or geological information. After initial investigations have been carried out, it may be necessary to

re-evaluate the remaining anomalies based on information  
acquired from the follow-up program.



115H/7-10

Scale 1:250,000

FIGURE 1  
THE SURVEY AREA

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INTRODUCTION

A DIGHEM<sup>III</sup> electromagnetic/resistivity/magnetic/VLF survey was flown for Golden Quail Resources Ltd. from April 3 to April 6, 1990, over three survey blocks in the Carmacks area, Yukon. They are located on NTS map sheets 115H/7,8,9,10. (See Figure 1).

Survey coverage consisted of approximately 213 line-km in Area A, 95 line-km in Area B, and 109 line-km in Area C. Traverse lines were flown in an azimuthal direction of 56°/236° for the 10000 series lines (Area A), 70°/250° for the 20000 series lines (Area B), and 60°/240° for the 30000 series lines (Area C). The line separation was 200 m for all areas. Tie lines were flown for all areas perpendicular to the traverse line direction.

The survey employed the DIGHEM<sup>III</sup> electromagnetic system. Ancillary equipment consisted of a magnetometer, radar altimeter, video camera, analog and digital recorders, a VLF receiver and an electronic navigation system. Details on the survey equipment are given in Section 2.

The instrumentation was installed in a Bell 205A-1 turbine helicopter which was provided by Frontier Helicopters

Limited. The helicopter flew at an average airspeed of 125 km/hr with an EM bird height of approximately 30 m.

Section 2 also provides details on the data channels, their respective sensitivities, and the navigation/flight path recovery procedure. Noise levels of less than 2 ppm are generally maintained for wind speeds up to 35 km/h. Higher winds may cause the system to be grounded because excessive bird swinging produces difficulties in flying the helicopter. The swinging results from the 5 m<sup>2</sup> of area which is presented by the bird to broadside gusts.

SURVEY EQUIPMENT

This section provides a brief description of the geophysical instruments used to acquire the survey data:

Electromagnetic System

Model: DIGHEM<sup>III</sup>

Type: Towed bird, symmetric dipole configuration operated at a nominal survey altitude of 30 metres. Coil separation is 8 metres for the 900 Hz and 7200 Hz coil pairs.

Coil orientations/frequencies: coaxial / 900 Hz  
coplanar / 900 Hz  
coplanar / 7200 Hz

Channels recorded: 3 inphase channels  
3 quadrature channels  
4 monitor channels

Sensitivity: 0.2 ppm at 900 Hz  
0.4 ppm at 7200 Hz

Sample rate: 10 per second

The electromagnetic system utilizes a multi-coil coaxial/coplanar technique to energize conductors in different directions. The coaxial transmitter coil is vertical with its axis in the flight direction. The coplanar coils are horizontal. The secondary fields are sensed simultaneously by means of receiver coils which are maximum

coupled to their respective transmitter coils. The system yields an inphase and a quadrature channel from each transmitter-receiver coil-pair.

Magnetometer

Model: Picodas PMAG 3340  
Type: Optically pumped Cesium vapour  
Sensitivity: 0.01 nT  
Sample rate: 10 per second

The magnetometer sensor is towed in a bird 15 m below the helicopter.

Base Station Magnetometer

Model: Geometrics G826A  
Type: Digital recording proton precession  
Sensitivity: 0.5 nT  
Sample rate: 0.2 per second

Both digital and analog recorders are operated in conjunction with the base station magnetometer to record the diurnal variations of the earth's magnetic field. The clock of the base station is synchronized with that of the airborne system to permit subsequent removal of diurnal drift.

VLF System

Manufacturer: Herz Industries Ltd.

Type: Totem-2A

Sensitivity: 0.1%

Stations: Seattle, Washington; NLK, 24.8 kHz  
Cutler, Maine; NAA, 24.0 kHz

The VLF receiver measures the total field and vertical quadrature components of the secondary VLF field. Signals from two separate transmitters can be measured simultaneously. The VLF sensor is towed in a bird 10 m below the helicopter.

Radar Altimeter

Manufacturer: Honeywell/Sperry

Type: AA 220

Sensitivity: 1 ft

The radar altimeter measures the vertical distance between the helicopter and the ground. This information is used in the processing algorithm which determines conductor depth.

Digital Data Acquisition System/Analog Recorder

Manufacturer: RMS Instruments

Type: DGR33

Tape Deck: RMS TCR-12, 6400 bpi, tape cartridge recorder

The analog profiles were recorded on chart paper in the aircraft during the survey. Table 2-1 lists the geophysical data channels and the vertical scale of each profile.

The digital data were used to generate several computed parameters. Both measured and computed parameters were plotted as "digital profiles" during data processing. These parameters are shown in Table 2-2.

In Table 2-2, the log resistivity scale of 0.06 decade/mm means that the resistivity changes by an order of magnitude in 16.5 mm. The resistivities at 0, 33 and 67 mm up from the bottom of the digital profile are respectively 1, 100 and 10,000 ohm-m.

Table 2-1. The Analog Profiles

Channel Name	Parameter	Scale units/mm	Designation on digital profile
1X9I	coaxial inphase ( 900 Hz)	2.5 ppm	CXI ( 900 Hz)
1X9Q	coaxial quad ( 900 Hz)	2.5 ppm	CXQ ( 900 Hz)
2P9I	coplanar inphase ( 900 Hz)	2.5 ppm	CPI ( 900 Hz)
2P9Q	coplanar quad ( 900 Hz)	2.5 ppm	CPQ ( 900 Hz)
4P7I	coplanar inphase (7200 Hz)	5 ppm	CPI (7200 Hz)
4P7Q	coplanar quad (7200 Hz)	5 ppm	CPQ (7200 Hz)
ALTR	altimeter	3 m	ALT
VF1T	VLF-total: primary stn.	5%	
VF1Q	VLF-quad: primary stn.	5%	
VF2T	VLF-total: secondary stn.	5%	
VF2Q	VLF-quad: secondary stn.	5%	
CMGC	magnetics, coarse	20 nT	MAG
CMGF	magnetics, fine	2.0 nT	
CXSP	coaxial spherics monitor		CXS
CXPL	coaxial powerline monitor		

Table 2-2. The Digital Profiles

Channel Name (Freq)	Observed parameters	Scale units/mm
MAG	magnetics	10 nT
ALT	bird height	6 m
CXI ( 900 Hz)	vertical coaxial coil-pair inphase	2 ppm
CXQ ( 900 Hz)	vertical coaxial coil-pair quadrature	2 ppm
CXS	ambient noise monitor (coaxial receiver)	
CPI ( 900 Hz)	horizontal coplanar coil-pair inphase	2 ppm
CPQ ( 900 Hz)	horizontal coplanar coil-pair quadrature	2 ppm
CPI ( 7200 Hz)	horizontal coplanar coil-pair inphase	4 ppm
CPQ ( 7200 Hz)	horizontal coplanar coil-pair quadrature	4 ppm
CPS	ambient noise monitor (coplanar receiver)	
<u>Computed Parameters</u>		
DFI (900 Hz)	difference function inphase from CXI and CPI	2 ppm
DFQ (900 Hz)	difference function quadrature from CXQ and CPQ	2 ppm
CDT	conductance	1 grade
RES ( 900 Hz)	log resistivity	.06 decade
RES (7200 Hz)	log resistivity	.06 decade
DP ( 900 Hz)	apparent depth	6 m
DP (7200 Hz)	apparent depth	6 m

Tracking Camera

Type: Panasonic Video  
Model: AG 2400

Fiducial numbers are recorded continuously and are displayed on the margin of each image. This procedure ensures accurate correlation of analog and digital data with respect to visible features on the ground.

Navigation System

Model: Del Norte 547  
Type: UHF electronic positioning system  
Sensitivity: 1 m  
Sample rate: 0.5 per second

The navigation system uses ground based transponder stations which transmit distance information back to the helicopter. The ground stations are set up away from the survey area and are positioned such that the signals cross the survey block at an angle between  $30^\circ$  and  $150^\circ$ . After site selection, a traverse line is flown at right angles to a base line drawn through the transmitter sites to establish an arbitrary coordinate system for the survey area. The onboard Central Processing Unit takes any two transponder distances and determines the helicopter position relative to these two ground stations in cartesian coordinates.

The cartesian coordinates are transformed to UTM coordinates during data processing. This is accomplished by correlating a number of prominent topographical locations with the navigational data points. The use of numerous visual tie points serves two purposes: to accurately relate the navigation data to the map sheet and to minimize location errors which might result from distortions in uncontrolled photomosaic base maps.

## PRODUCTS AND PROCESSING TECHNIQUES

The following products are available from the survey data. Those which are not part of the survey contract may be acquired later. Refer to Table 3-1 for a summary of the maps which accompany this report, some of which may be sent under separate cover. Most parameters can be displayed as contours, profiles, or in colour.

### Base Maps

Base maps of the survey areas have been prepared from published topographic maps although photomosaics can also be used. Topographic maps provide an accurate, distortion-free base which facilitates correlation of the navigation data to the UTM grid. Photomosaics are useful for visual reference and for subsequent flight path recovery, but usually contain scale distortions. Orthophotos are ideal, but their cost and the time required to produce them, usually precludes their use as base maps.

### Electromagnetic Anomalies

Anomalous electromagnetic responses are selected and analysed by computer to provide a preliminary electromagnetic anomaly map. This preliminary EM map is used, by the

Table 3-1 Products Available from the Survey

MAP	NO. OF SHEETS	ANOMALY MAP	PROFILES ON MAP	CONTOURS		SHADOW MAP
				INK	COLOUR	
Electromagnetic Anomalies	2	20,000	N/A	N/A	N/A	N/A
Probable Bedrock Conductors	-	-	N/A	N/A	N/A	N/A
Resistivity ( 900 Hz)	-	N/A	-	-	-	-
Resistivity (7200 Hz)	2	N/A	-	20,000	20,000	-
EM Magnetite	-	N/A	-	-	-	-
Total Field Magnetics	2	N/A	-	20,000	20,000	-
Enhanced Magnetics	-	N/A	-	-	-	-
Vertical Gradient Magnetics	2	N/A	-	20,000	20,000	-
2nd Vertical Derivative Magnetics	-	N/A	-	-	-	-
Magnetic Susceptibility	-	N/A	-	-	-	-
Filtered Total Field VLF	2	N/A	-	20,000	20,000	-
EM Profiles ( 900 Hz)	-	N/A	-	N/A	N/A	N/A
EM Profiles (7200 Hz)	-	N/A	-	N/A	N/A	N/A
Overburden Thickness	-	N/A	-	-	-	N/A
Digital Profiles	Worksheet profiles					-
	Interpreted profiles					10,000

- N/A Not available
- \*\*\* Highly recommended due to its overall information content
- \*\* Recommended
- \* Qualified recommendation, as it may be useful in local areas
- No recommendation
- 10,000 Scale of delivered map, i.e, 1:10,000

geophysicist, in conjunction with the computer-generated digital profiles, to produce the final interpreted EM anomaly map. This map includes bedrock, surficial and cultural conductors. A map containing only bedrock conductors can be generated, if desired.

### Resistivity

The apparent resistivity in ohm-m may be generated from the inphase and quadrature EM components for any of the frequencies, using a pseudo-layer halfspace model. A resistivity map portrays all the EM information for that frequency over the entire survey area. This contrasts with the electromagnetic anomaly map which provides information only over interpreted conductors. The large dynamic range makes the resistivity parameter an excellent mapping tool.

### EM Magnetite

The apparent percent magnetite by weight is computed wherever magnetite produces a negative inphase EM response.

### Total Field Magnetics

The aeromagnetic data are corrected for diurnal variation using the magnetic base station data. The regional

IGRF gradient is removed from the data, if required under the terms of the contract.

#### Enhanced Magnetism

The total field magnetic data are subjected to a processing algorithm. This algorithm enhances the response of magnetic bodies in the upper 500 m and attenuates the response of deeper bodies. The resulting enhanced magnetic map provides better definition and resolution of near-surface magnetic units. It also identifies weak magnetic features which may not be evident on the total field magnetic map. However, regional magnetic variations, and magnetic lows caused by remanence, are better defined on the total field magnetic map. The technique is described in more detail in Section 5.

#### Magnetic Derivatives

The total field magnetic data may be subjected to a variety of filtering techniques to yield maps of the following:

vertical gradient

second vertical derivative

magnetic susceptibility with reduction to the pole

upward/downward continuations

All of these filtering techniques improve the recognition of near-surface magnetic bodies, with the exception of upward continuation. Any of these parameters can be produced on request. Dighem's proprietary enhanced magnetic technique is designed to provide a general "all-purpose" map, combining the more useful features of the above parameters.

#### VLF

The VLF data are digitally filtered to remove long wavelengths such as those caused by variations in the transmitted field strength.

#### Digital Profiles

Distance-based profiles of the digitally recorded geophysical data are generated and plotted by computer. These profiles also contain the calculated parameters which are used in the interpretation process. These are produced as worksheets prior to interpretation, and can also be presented in the final corrected form after interpretation. The profiles display electromagnetic anomalies with their respective interpretive symbols. The differences between the worksheets and the final corrected form occur only with respect to the EM anomaly identifier.

Contour, Colour and Shadow Map Displays

The geophysical data are interpolated onto a regular grid using a cubic spline technique. The resulting grid is suitable for generating contour maps of excellent quality.

Colour maps are produced by interpolating the grid down to the pixel size. The parameter is then incremented with respect to specific amplitude ranges to provide colour "contour" maps.

Monochromatic shadow maps are generated by employing an artificial sun to cast shadows on a surface defined by the geophysical grid. There are many variations in the shadowing technique which may be applied to total field or enhanced magnetic data, magnetic derivatives, VLF, resistivity, etc. Of the various magnetic products, the shadow of the enhanced magnetic parameter is particularly suited for defining geological structures with crisper images and improved resolution.

SURVEY RESULTS

GENERAL DISCUSSION

The survey results are presented on separate map sheets for each parameter at a scale of 1:20,000. Tables 4-1, 4-2 and 4-3 summarize the EM responses in the survey areas, with respect to conductance grade and interpretation.

The anomalies shown on the electromagnetic anomaly maps are based on a near-vertical, half plane model. This model best reflects "discrete" bedrock conductors. Wide bedrock conductors or flat-lying conductive units, whether from surficial or bedrock sources, may give rise to very broad anomalous responses on the EM profiles. These may not appear on the electromagnetic anomaly maps if they have a regional character rather than a locally anomalous character. These broad conductors, which more closely approximate a half space model, will be maximum coupled to the horizontal (coplanar) coil-pair and should be more evident on the resistivity parameter. Resistivity maps, therefore, may be more valuable than the electromagnetic anomaly maps, in areas where broad or flat-lying conductors are considered to be of importance. Contoured resistivity maps, based on the 7200 Hz coplanar data, are included with this report.

TABLE 4-1

EM ANOMALY STATISTICS  
AREA A, CARMACKS, YUKON

CONDUCTOR GRADE	CONDUCTANCE RANGE SIEMENS (MHOS)	NUMBER OF RESPONSES
7	> 100	0
6	50 - 100	0
5	20 - 50	0
4	10 - 20	3
3	5 - 10	9
2	1 - 5	76
1	< 1	66
*	INDETERMINATE	43
TOTAL		197

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
B	DISCRETE BEDROCK CONDUCTOR	8
S	CONDUCTIVE COVER	174
H	ROCK UNIT OR THICK COVER	15
TOTAL		197

(SEE EM MAP LEGEND FOR EXPLANATIONS)

TABLE 4-2

EM ANOMALY STATISTICS  
AREA B, CARMACKS, YUKON

CONDUCTOR GRADE	CONDUCTANCE RANGE SIEMENS (MHOS)	NUMBER OF RESPONSES
7	> 100	0
6	50 - 100	0
5	20 - 50	0
4	10 - 20	0
3	5 - 10	0
2	1 - 5	41
1	< 1	16
*	INDETERMINATE	17
TOTAL		74

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
S	CONDUCTIVE COVER	71
H	ROCK UNIT OR THICK COVER	3
TOTAL		74

(SEE EM MAP LEGEND FOR EXPLANATIONS)

TABLE 4-3

EM ANOMALY STATISTICS  
AREA C, CARMACKS, YUKON

CONDUCTOR GRADE	CONDUCTANCE RANGE SIEMENS (MHOS)	NUMBER OF RESPONSES
7	> 100	0
6	50 - 100	0
5	20 - 50	0
4	10 - 20	0
3	5 - 10	0
2	1 - 5	20
1	< 1	40
*	INDETERMINATE	16
TOTAL		76

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
S	CONDUCTIVE COVER	72
H	ROCK UNIT OR THICK COVER	4
TOTAL		76

(SEE EM MAP LEGEND FOR EXPLANATIONS)

Excellent resolution and discrimination of conductors was accomplished by using a fast sampling rate of 0.1 sec and by employing a common frequency (900 Hz) on two orthogonal coil-pairs (coaxial and coplanar). The resulting "difference channel" parameters often permit differentiation of bedrock and surficial conductors, even though they may exhibit similar conductance values.

Anomalies which occur near the ends of the survey lines (i.e., outside the survey areas), should be viewed with caution. Some of the weaker anomalies could be due to aerodynamic noise, i.e., bird bending, which is created by abnormal stresses to which the bird is subjected during the climb and turn of the aircraft between lines. Such aerodynamic noise is usually manifested by an anomaly on the coaxial inphase channel only, although severe stresses can affect the coplanar inphase channels as well.

A Geometrics G826A proton precession magnetometer was operated at the survey base to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronized with that of the airborne system to permit subsequent removal of diurnal drift.

The background magnetic levels have been adjusted to the mean IGRF value for the survey areas. However, the IGRF gradient across the survey blocks has not been removed.

The total field magnetic data have been presented as contours on the base maps using a contour interval of 5 nT where gradients permit. The maps show the magnetic properties of the rock units underlying the survey areas.

#### AREA A

##### Magnetics

The magnetic data suggest that this area is structurally complex. These structural complexities are evident on the contour maps as variations in magnetic intensity, irregular patterns, and as offsets or changes in strike direction. There is evidence on the magnetic contour maps that suggests that the area has been subjected to moderately strong deformation and/or alteration. Several possible linear structural features, inferred from the magnetic data, are evident as discontinuities in the magnetic contour patterns.

The magnetic results, in conjunction with the other geophysical parameters, should provide valuable information

which can be used to map the geology and structure of the survey area.

### Resistivity

A resistivity map, which displays the conductive properties of the survey area, was produced from the 7200 Hz coplanar data.

In general, the resistivity patterns show limited agreement with magnetic trends.

Several highly magnetic features in the northern corner of the block, extending from fiducial 5508 on line 10110 to fiducial 4294 on line 10240, from fiducial 3562 on line 10210 to fiducial 4234 on line 10240, and over the north ends of lines 10170 through 10240, all show direct correlation with resistivity highs.

A resistivity low, extending from fiducial 2766 on line 10010 to fiducial 5466 on line 10110, exhibits some association with a magnetic low. Several possible bedrock anomalies are situated within this resistivity low. The resistivity patterns may also be related to topography.

Several resistivity lows are associated with rivers within the survey area.

VLF

The VLF method is quite sensitive to the angle of coupling between the conductor and the propagated EM field. Consequently, conductors which strike towards the VLF station will usually yield a stronger response than conductors which are nearly orthogonal to it.

The VLF parameter does not normally provide the same degree of resolution available from the EM data. Closely-spaced conductors, conductors of short strike length or conductors which are poorly coupled to the VLF field, may escape detection with this method. Erratic signals from the VLF transmitters can also give rise to strong, isolated anomalies which should be viewed with caution. The filtered total field VLF contours are presented on the base maps with a contour interval of one percent.

VLF results were obtained from the transmitting stations at Seattle, Washington (NLK - 24.8 kHz) and Cutler, Maine (NAA - 24.0 kHz). The VLF map shows the contoured results of the filtered total field from Seattle for all survey lines.

In general, the VLF trends over this survey block are weak, and poorly defined. Most VLF anomalies trend northwest/southeast.

### Electromagnetics

The EM anomalies resulting from this survey appear to fall within two general categories.

The first class consists of moderately well-defined quadrature responses which coincide with low amplitude or poorly defined inphase responses. In these areas, where EM responses are evident primarily on the quadrature components, zones of poor conductivity are indicated. Where these responses are coincident with magnetic anomalies, it is possible that the inphase component amplitudes have been suppressed by the effects of magnetite. In areas where magnetite causes the inphase components to become negative, the apparent conductance and depth of EM anomalies may be unreliable.

Depending on the strength and definition of the quadrature responses, anomalies in this category may be given interpretive symbols varying from "B?" to "S?".

The second class of anomalies comprises broad responses which exhibit the characteristics of a half space and do not yield well-defined inflections on the difference channels. Anomalies in this category are usually given an "S" or "H" interpretive symbol. The lack of a difference channel response usually implies a broad or flat-lying conductive source such as overburden.

The effects of conductive overburden are evident over parts of the survey area. Although the difference channels (DIFI and DIFQ) are extremely valuable in detecting bedrock conductors which are partially masked by conductive overburden, sharp undulations in the bedrock/overburden interface can yield anomalies in the difference channels which may be interpreted as possible bedrock conductors. Such anomalies usually fall into the "S?" or "B?" classification but may also be given an "E" interpretive symbol, denoting a resistivity contrast at the edge of a conductive unit.

It is recommended that an attempt be made to compile a suite of geophysical "signatures" over areas of interest. Anomaly characteristics are clearly defined on the computer-processed geophysical data profiles which are supplied as one of the survey products.

Even weak conductors may be of economic significance in the survey area. A complete assessment and evaluation of the survey data should be carried out by one or more qualified professionals who have access to, and can provide a meaningful compilation of, all available geophysical, geological and geochemical data.

#### CONDUCTORS IN AREA A

The electromagnetic anomaly maps show the anomaly locations with the interpreted conductor type, dip, conductance and depth being indicated by symbols. Direct magnetic correlation is also shown if it exists. The strike direction and length of the conductors are indicated when anomalies can be correlated from line to line. When studying the map sheets, consult the anomaly listings appended to this report.

Most of the interpreted anomalies in Block A are probably indicative of conductive surficial sources, although there are several weak anomalies which may be possible bedrock responses.

Zone A

The approximate limit of Zone A is the 100 ohm-metre contour on the 7200 Hz resistivity map. Several weak, single line responses of possible bedrock origin are situated in this zone. Other anomalies within this zone have been given an "H" anomaly identifier. These anomalies are indicative of broad zones of conductivity at depth.

The resistivity low which is associated with this zone may be adversely affected by conductive overburden as it is also associated with several lakes.

This zone displays some association with a magnetic low.

Zone B

The approximate limit of Zone B is the 250 ohm-metre contour on the 7200 Hz resistivity map. The resistivity low associated with this zone possibly results from a combination of bedrock and surficial sources. Several single-line responses reflect possible weak bedrock sources. Anomaly 10230E is coincident with a moderately strong, isolated magnetic peak.

AREA B

Magnetics

The magnetic map for this survey block is characterized by high magnetic gradients. Offsets and discontinuities in the magnetic contour patterns suggest that this area is structurally complex. The digital profiles suggest that some magnetic units contain magnetite.

Resistivity

A resistivity map, which displays the conductive properties of the survey area, was produced from the 7200 Hz coplanar data.

In general, the resistivity patterns show little agreement with magnetic trends. The resistivity patterns seem to be adversely affected by conductive surficial material as many resistivity lows are associated with the lakes and rivers of the survey area.

VLF

VLF results were obtained from the transmitting stations at Seattle, Washington (NLK - 24.8 kHz) and Cutler, Maine

(NAA - 24.0 kHz). The VLF map displays the contoured results of the filtered total field from Seattle for all survey lines.

In general, the VLF anomalies in this survey area are weak but moderately well-defined. Several moderately strong north-northwest/south-southeast trending anomalies are situated in the northwestern half of the survey area.

#### CONDUCTORS IN AREA B

The EM anomalies in this survey area appear to fall within the two categories described for Area A.

All of the anomalies interpreted from the survey data are weak. None of the anomalies have a conductance value greater than grade 2.

Although most anomalies appear to be of surficial origin, several which have been given an "S?" interpretation may have a possible bedrock component.

Further investigation may help to determine the causative sources of the anomalies in this survey block.

AREA C

Magnetics

The magnetic data suggest that this area is structurally complex. Magnetic values vary from a low of less than 57,500 nT to over 57,900 nT.

A strong, circular magnetic low, centered at fiducial 3415 on line 30160, contains magnetic values of less than 57,500 nT.

Resistivity

A resistivity map, which displays the conductive properties of the survey area, was produced from the 7200 Hz coplanar data.

The resistivity trends show little agreement with magnetic features. The resistivity patterns seem to be generally associated with topographical features. Higher resistivity values seem to be associated with areas of elevation, whereas areas of low topography exhibit lower resistivities. There is some agreement between resistivity lows and the trend of rivers within the survey block.

VLF

VLF results were obtained from transmitting stations at Seattle, Washington (NLK - 24.8 kHz) and Cutler, Maine (NAA - 24.0 kHz). The VLF map shows the contoured results of the total field from Seattle for all survey lines.

The VLF trends within the survey area are generally moderately strong and well-defined.

Most anomalies strike approximately north-northwest/south-southeast.

CONDUCTORS IN AREA C

Most of the anomalies defined by the survey seem to fall into the second category defined for Area A. Most appear to reflect weak, conductive surficial sources.

Several anomalies in the southeast corner of the block, 30020B, 30030C and 30040D, seem to define a broad conductor whose source may be at depth.

Other anomalies, which have been given an "S?" interpretive symbol, such as anomalies 30080A and 30120A, may

require further investigation to determine their causative sources.

### BACKGROUND INFORMATION

This section provides background information on parameters which are available from the survey data. Those which have not been supplied as survey products may be generated later from raw data on the digital archive tape.

### ELECTROMAGNETICS

DIGHEM electromagnetic responses fall into two general classes, discrete and broad. The discrete class consists of sharp, well-defined anomalies from discrete conductors such as sulfide lenses and steeply dipping sheets of graphite and sulfides. The broad class consists of wide anomalies from conductors having a large horizontal surface such as flatly dipping graphite or sulfide sheets, saline water-saturated sedimentary formations, conductive overburden and rock, and geothermal zones. A vertical conductive slab with a width of 200 m would straddle these two classes.

The vertical sheet (half plane) is the most common model used for the analysis of discrete conductors. All anomalies plotted on the electromagnetic map are analyzed according to this model. The following section entitled **Discrete Conductor Analysis** describes this model in detail, including

the effect of using it on anomalies caused by broad conductors such as conductive overburden.

The conductive earth (half space) model is suitable for broad conductors. Resistivity contour maps result from the use of this model. A later section entitled **Resistivity Mapping** describes the method further, including the effect of using it on anomalies caused by discrete conductors such as sulfide bodies.

#### Geometric interpretation

The geophysical interpreter attempts to determine the geometric shape and dip of the conductor. Figure 5-1 shows typical DIGHEM anomaly shapes which are used to guide the geometric interpretation.

#### Discrete conductor analysis

The EM anomalies appearing on the electromagnetic map are analyzed by computer to give the conductance (i.e., conductivity-thickness product) in siemens (mhos) of a vertical sheet model. This is done regardless of the interpreted geometric shape of the conductor. This is not an unreasonable procedure, because the computed conductance increases as the electrical quality of the conductor increases, regardless of its true shape. DIGHEM anomalies

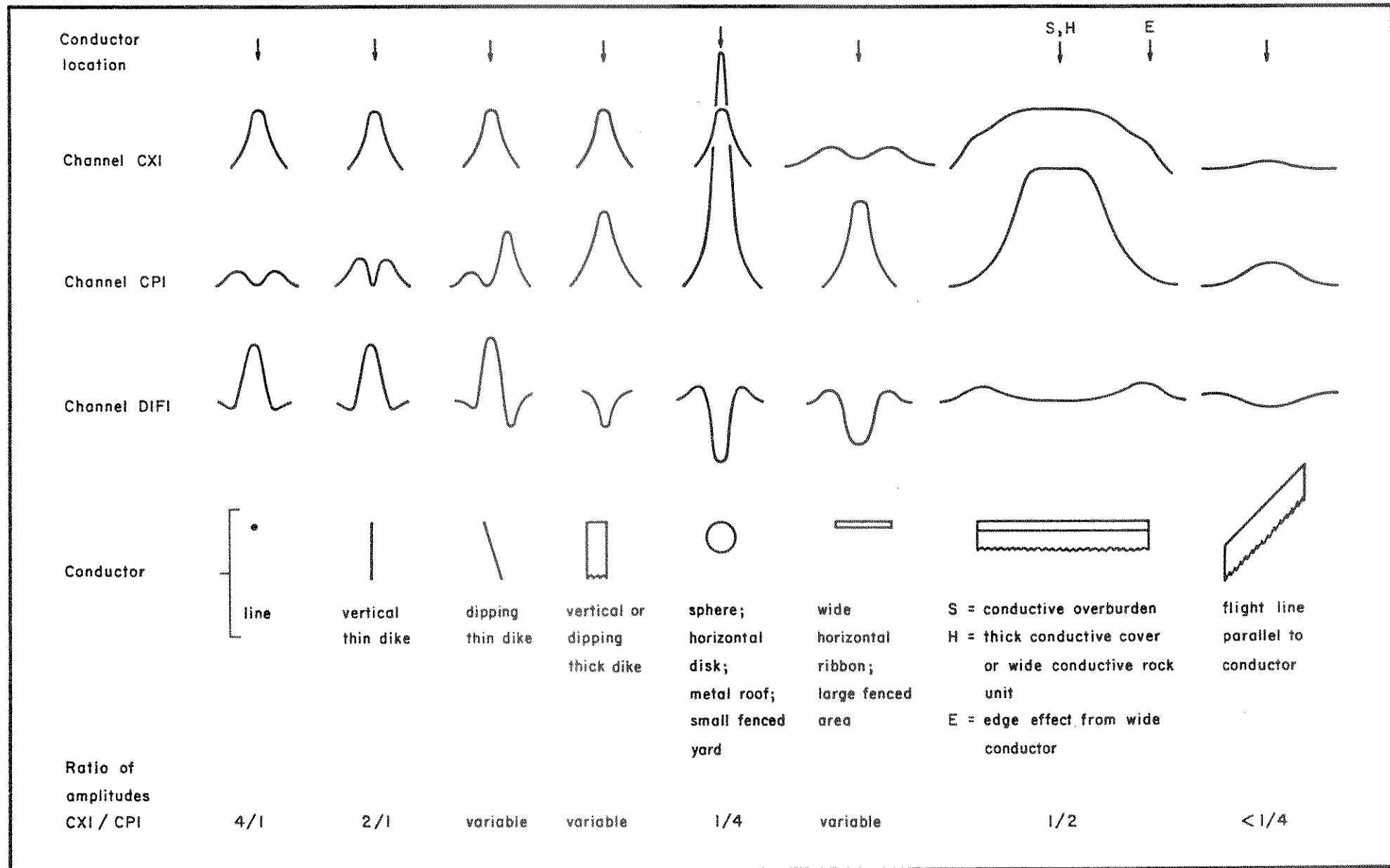


Fig. 5-1 Typical DIGHEM anomaly shapes

are divided into seven grades of conductance, as shown in Table 5-1 below. The conductance in siemens (mhos) is the reciprocal of resistance in ohms.

Table 5-1. EM Anomaly Grades

<u>Anomaly Grade</u>	<u>siemens</u>
7	> 100
6	50 - 100
5	20 - 50
4	10 - 20
3	5 - 10
2	1 - 5
1	< 1

The conductance value is a geological parameter because it is a characteristic of the conductor alone. It generally is independent of frequency, flying height or depth of burial, apart from the averaging over a greater portion of the conductor as height increases. Small anomalies from deeply buried strong conductors are not confused with small anomalies from shallow weak conductors because the former will have larger conductance values.

Conductive overburden generally produces broad EM responses which may not be shown as anomalies on the EM maps. However, patchy conductive overburden in otherwise resistive areas can yield discrete anomalies with a conductance grade (cf. Table 5-1) of 1, 2 or even 3 for conducting clays which

have resistivities as low as 50 ohm-m. In areas where ground resistivities are below 10 ohm-m, anomalies caused by weathering variations and similar causes can have any conductance grade. The anomaly shapes from the multiple coils often allow such conductors to be recognized, and these are indicated by the letters S, H, and sometimes E on the electromagnetic anomaly map (see EM map legend).

For bedrock conductors, the higher anomaly grades indicate increasingly higher conductances. Examples: DIGHEM's New InscO copper discovery (Noranda, Canada) yielded a grade 5 anomaly, as did the neighbouring copper-zinc Magusi River ore body; Mattabi (copper-zinc, Sturgeon Lake, Canada) and Whistle (nickel, Sudbury, Canada) gave grade 6; and DIGHEM's Montcalm nickel-copper discovery (Timmins, Canada) yielded a grade 7 anomaly. Graphite and sulfides can span all grades but, in any particular survey area, field work may show that the different grades indicate different types of conductors.

Strong conductors (i.e., grades 6 and 7) are characteristic of massive sulfides or graphite. Moderate conductors (grades 4 and 5) typically reflect graphite or sulfides of a less massive character, while weak bedrock conductors (grades 1 to 3) can signify poorly connected graphite or heavily disseminated sulfides. Grades 1 and 2

conductors may not respond to ground EM equipment using frequencies less than 2000 Hz.

The presence of sphalerite or gangue can result in ore deposits having weak to moderate conductances. As an example, the three million ton lead-zinc deposit of Restigouche Mining Corporation near Bathurst, Canada, yielded a well-defined grade 2 conductor. The 10 percent by volume of sphalerite occurs as a coating around the fine grained massive pyrite, thereby inhibiting electrical conduction.

Faults, fractures and shear zones may produce anomalies which typically have low conductances (e.g., grades 1 to 3). Conductive rock formations can yield anomalies of any conductance grade. The conductive materials in such rock formations can be salt water, weathered products such as clays, original depositional clays, and carbonaceous material.

On the interpreted electromagnetic map, a letter identifier and an interpretive symbol are plotted beside the EM grade symbol. The horizontal rows of dots, under the interpretive symbol, indicate the anomaly amplitude on the flight record. The vertical column of dots, under the anomaly letter, gives the estimated depth. In areas where anomalies are crowded, the letter identifiers, interpretive

symbols and dots may be obliterated. The EM grade symbols, however, will always be discernible, and the obliterated information can be obtained from the anomaly listing appended to this report.

The purpose of indicating the anomaly amplitude by dots is to provide an estimate of the reliability of the conductance calculation. Thus, a conductance value obtained from a large ppm anomaly (3 or 4 dots) will tend to be accurate whereas one obtained from a small ppm anomaly (no dots) could be quite inaccurate. The absence of amplitude dots indicates that the anomaly from the coaxial coil-pair is 5 ppm or less on both the inphase and quadrature channels. Such small anomalies could reflect a weak conductor at the surface or a stronger conductor at depth. The conductance grade and depth estimate illustrates which of these possibilities fits the recorded data best.

Flight line deviations occasionally yield cases where two anomalies, having similar conductance values but dramatically different depth estimates, occur close together on the same conductor. Such examples illustrate the reliability of the conductance measurement while showing that the depth estimate can be unreliable. There are a number of factors which can produce an error in the depth estimate, including the averaging of topographic variations by the

altimeter, overlying conductive overburden, and the location and attitude of the conductor relative to the flight line. Conductor location and attitude can provide an erroneous depth estimate because the stronger part of the conductor may be deeper or to one side of the flight line, or because it has a shallow dip. A heavy tree cover can also produce errors in depth estimates. This is because the depth estimate is computed as the distance of bird from conductor, minus the altimeter reading. The altimeter can lock onto the top of a dense forest canopy. This situation yields an erroneously large depth estimate but does not affect the conductance estimate.

Dip symbols are used to indicate the direction of dip of conductors. These symbols are used only when the anomaly shapes are unambiguous, which usually requires a fairly resistive environment.

A further interpretation is presented on the EM map by means of the line-to-line correlation of anomalies, which is based on a comparison of anomaly shapes on adjacent lines. This provides conductor axes which may define the geological structure over portions of the survey area. The absence of conductor axes in an area implies that anomalies could not be correlated from line to line with reasonable confidence.

DIGHEM electromagnetic maps are designed to provide a correct impression of conductor quality by means of the conductance grade symbols. The symbols can stand alone with geology when planning a follow-up program. The actual conductance values are printed in the attached anomaly list for those who wish quantitative data. The anomaly ppm and depth are indicated by inconspicuous dots which should not distract from the conductor patterns, while being helpful to those who wish this information. The map provides an interpretation of conductors in terms of length, strike and dip, geometric shape, conductance, depth, and thickness. The accuracy is comparable to an interpretation from a high quality ground EM survey having the same line spacing.

The attached EM anomaly list provides a tabulation of anomalies in ppm, conductance, and depth for the vertical sheet model. The EM anomaly list also shows the conductance and depth for a thin horizontal sheet (whole plane) model, but only the vertical sheet parameters appear on the EM map. The horizontal sheet model is suitable for a flatly dipping thin bedrock conductor such as a sulfide sheet having a thickness less than 10 m. The list also shows the resistivity and depth for a conductive earth (half space) model, which is suitable for thicker slabs such as thick conductive overburden. In the EM anomaly list, a depth value of zero for the conductive earth model, in an area of thick

cover, warns that the anomaly may be caused by conductive overburden.

Since discrete bodies normally are the targets of EM surveys, local base (or zero) levels are used to compute local anomaly amplitudes. This contrasts with the use of true zero levels which are used to compute true EM amplitudes. Local anomaly amplitudes are shown in the EM anomaly list and these are used to compute the vertical sheet parameters of conductance and depth. Not shown in the EM anomaly list are the true amplitudes which are used to compute the horizontal sheet and conductive earth parameters.

#### Questionable Anomalies

DIGHEM maps may contain EM responses which are displayed as asterisks (\*). These responses denote weak anomalies of indeterminate conductance, which may reflect one of the following: a weak conductor near the surface, a strong conductor at depth (e.g., 100 to 120 m below surface) or to one side of the flight line, or aerodynamic noise. Those responses that have the appearance of valid bedrock anomalies on the flight profiles are indicated by appropriate interpretive symbols (see EM map legend). The others probably do not warrant further investigation unless their locations are of considerable geological interest.

### The thickness parameter

DIGHEM can provide an indication of the thickness of a steeply dipping conductor. The amplitude of the coplanar anomaly (e.g., CPI channel on the digital profile) increases relative to the coaxial anomaly (e.g., CXI) as the apparent thickness increases, i.e., the thickness in the horizontal plane. (The thickness is equal to the conductor width if the conductor dips at 90 degrees and strikes at right angles to the flight line.) This report refers to a conductor as thin when the thickness is likely to be less than 3 m, and thick when in excess of 10 m. Thick conductors are indicated on the EM map by parentheses "( )". For base metal exploration in steeply dipping geology, thick conductors can be high priority targets because many massive sulfide ore bodies are thick, whereas non-economic bedrock conductors are often thin. The system cannot sense the thickness when the strike of the conductor is subparallel to the flight line, when the conductor has a shallow dip, when the anomaly amplitudes are small, or when the resistivity of the environment is below 100 ohm-m.

### Resistivity mapping

Areas of widespread conductivity are commonly

encountered during surveys. In such areas, anomalies can be generated by decreases of only 5 m in survey altitude as well as by increases in conductivity. The typical flight record in conductive areas is characterized by inphase and quadrature channels which are continuously active. Local EM peaks reflect either increases in conductivity of the earth or decreases in survey altitude. For such conductive areas, apparent resistivity profiles and contour maps are necessary for the correct interpretation of the airborne data. The advantage of the resistivity parameter is that anomalies caused by altitude changes are virtually eliminated, so the resistivity data reflect only those anomalies caused by conductivity changes. The resistivity analysis also helps the interpreter to differentiate between conductive trends in the bedrock and those patterns typical of conductive overburden. For example, discrete conductors will generally appear as narrow lows on the contour map and broad conductors (e.g., overburden) will appear as wide lows.

The resistivity profiles and the resistivity contour maps present the apparent resistivity using the so-called pseudo-layer (or buried) half space model defined by Fraser (1978)<sup>1</sup>. This model consists of a resistive layer overlying

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<sup>1</sup> Resistivity mapping with an airborne multicoil electromagnetic system: Geophysics, v. 43, p.144-172

a conductive half space. The depth channels give the apparent depth below surface of the conductive material. The apparent depth is simply the apparent thickness of the overlying resistive layer. The apparent depth (or thickness) parameter will be positive when the upper layer is more resistive than the underlying material, in which case the apparent depth may be quite close to the true depth.

The apparent depth will be negative when the upper layer is more conductive than the underlying material, and will be zero when a homogeneous half space exists. The apparent depth parameter must be interpreted cautiously because it will contain any errors which may exist in the measured altitude of the EM bird (e.g., as caused by a dense tree cover). The inputs to the resistivity algorithm are the inphase and quadrature components of the coplanar coil-pair. The outputs are the apparent resistivity of the conductive half space (the source) and the sensor-source distance. The flying height is not an input variable, and the output resistivity and sensor-source distance are independent of the flying height. The apparent depth, discussed above, is simply the sensor-source distance minus the measured altitude or flying height. Consequently, errors in the measured altitude will affect the apparent depth parameter but not the apparent resistivity parameter.

The apparent depth parameter is a useful indicator of simple layering in areas lacking a heavy tree cover. The DIGHEM system has been flown for purposes of permafrost mapping, where positive apparent depths were used as a measure of permafrost thickness. However, little quantitative use has been made of negative apparent depths because the absolute value of the negative depth is not a measure of the thickness of the conductive upper layer and, therefore, is not meaningful physically. Qualitatively, a negative apparent depth estimate usually shows that the EM anomaly is caused by conductive overburden. Consequently, the apparent depth channel can be of significant help in distinguishing between overburden and bedrock conductors.

The resistivity map often yields more useful information on conductivity distributions than the EM map. In comparing the EM and resistivity maps, keep in mind the following:

- (a) The resistivity map portrays the absolute value of the earth's resistivity, where resistivity =  $1/\text{conductivity}$ .
- (b) The EM map portrays anomalies in the earth's resistivity. An anomaly by definition is a change from the norm and so the EM map displays anomalies, (i) over narrow, conductive bodies

and (ii) over the boundary zone between two wide formations of differing conductivity.

The resistivity map might be likened to a total field map and the EM map to a horizontal gradient in the direction of flight<sup>2</sup>. Because gradient maps are usually more sensitive than total field maps, the EM map therefore is to be preferred in resistive areas. However, in conductive areas, the absolute character of the resistivity map usually causes it to be more useful than the EM map.

#### Interpretation in conductive environments

Environments having background resistivities below 30 ohm-m cause all airborne EM systems to yield very large responses from the conductive ground. This usually prohibits the recognition of discrete bedrock conductors. However, DIGHEM data processing techniques produce three parameters which contribute significantly to the recognition of bedrock conductors. These are the inphase and quadrature difference channels (DIFI and DIFQ), and the resistivity and depth channels (RES and DP) for each coplanar frequency.

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<sup>2</sup> The gradient analogy is only valid with regard to the identification of anomalous locations.

The EM difference channels (DIFI and DIFQ) eliminate most of the responses from conductive ground, leaving responses from bedrock conductors, cultural features (e.g., telephone lines, fences, etc.) and edge effects. Edge effects often occur near the perimeter of broad conductive zones. This can be a source of geologic noise. While edge effects yield anomalies on the EM difference channels, they do not produce resistivity anomalies. Consequently, the resistivity channel aids in eliminating anomalies due to edge effects. On the other hand, resistivity anomalies will coincide with the most highly conductive sections of conductive ground, and this is another source of geologic noise. The recognition of a bedrock conductor in a conductive environment therefore is based on the anomalous responses of the two difference channels (DIFI and DIFQ) and the resistivity channels (RES). The most favourable situation is where anomalies coincide on all channels.

The DP channels, which give the apparent depth to the conductive material, also help to determine whether a conductive response arises from surficial material or from a conductive zone in the bedrock. When these channels ride above the zero level on the digital profiles (i.e., depth is negative), it implies that the EM and resistivity profiles are responding primarily to a conductive upper layer, i.e., conductive overburden. If the DP channels are below the

zero level, it indicates that a resistive upper layer exists, and this usually implies the existence of a bedrock conductor. If the low frequency DP channel is below the zero level and the high frequency DP is above, this suggests that a bedrock conductor occurs beneath conductive cover.

The conductance channel CDT identifies discrete conductors which have been selected by computer for appraisal by the geophysicist. Some of these automatically selected anomalies on channel CDT are discarded by the geophysicist. The automatic selection algorithm is intentionally oversensitive to assure that no meaningful responses are missed. The interpreter then classifies the anomalies according to their source and eliminates those that are not substantiated by the data, such as those arising from geologic or aerodynamic noise.

#### Reduction of geologic noise

Geologic noise refers to unwanted geophysical responses. For purposes of airborne EM surveying, geologic noise refers to EM responses caused by conductive overburden and magnetic permeability. It was mentioned previously that the EM difference channels (i.e., channel DIFI for inphase and DIFQ for quadrature) tend to eliminate the response of conductive overburden. This marked a unique development in airborne EM

technology, as DIGHEM is the only EM system which yields channels having an exceptionally high degree of immunity to conductive overburden.

Magnetite produces a form of geological noise on the inphase channels of all EM systems. Rocks containing less than 1% magnetite can yield negative inphase anomalies caused by magnetic permeability. When magnetite is widely distributed throughout a survey area, the inphase EM channels may continuously rise and fall, reflecting variations in the magnetite percentage, flying height, and overburden thickness. This can lead to difficulties in recognizing deeply buried bedrock conductors, particularly if conductive overburden also exists. However, the response of broadly distributed magnetite generally vanishes on the inphase difference channel DIFI. This feature can be a significant aid in the recognition of conductors which occur in rocks containing accessory magnetite.

#### EM magnetite mapping

The information content of DIGHEM data consists of a combination of conductive eddy current responses and magnetic permeability responses. The secondary field resulting from conductive eddy current flow is frequency-dependent and consists of both inphase and quadrature components, which are

positive in sign. On the other hand, the secondary field resulting from magnetic permeability is independent of frequency and consists of only an inphase component which is negative in sign. When magnetic permeability manifests itself by decreasing the measured amount of positive inphase, its presence may be difficult to recognize. However, when it manifests itself by yielding a negative inphase anomaly (e.g., in the absence of eddy current flow), its presence is assured. In this latter case, the negative component can be used to estimate the percent magnetite content.

A magnetite mapping technique was developed for the coplanar coil-pair of DIGHEM. The technique yields a channel (designated FEO) which displays apparent weight percent magnetite according to a homogeneous half space model.<sup>3</sup> The method can be complementary to magnetometer mapping in certain cases. Compared to magnetometry, it is far less sensitive but is more able to resolve closely spaced magnetite zones, as well as providing an estimate of the amount of magnetite in the rock. The method is sensitive to 1/4% magnetite by weight when the EM sensor is at a height of 30 m above a magnetitic half space. It can individually resolve steep dipping narrow magnetite-rich bands which are

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<sup>3</sup> Refer to Fraser, 1981, Magnetite mapping with a multi-coil airborne electromagnetic system: Geophysics, v. 46, p. 1579-1594.

separated by 60 m. Unlike magnetometry, the EM magnetite method is unaffected by remanent magnetism or magnetic latitude.

The EM magnetite mapping technique provides estimates of magnetite content which are usually correct within a factor of 2 when the magnetite is fairly uniformly distributed. EM magnetite maps can be generated when magnetic permeability is evident as negative inphase responses on the data profiles.

Like magnetometry, the EM magnetite method maps only bedrock features, provided that the overburden is characterized by a general lack of magnetite. This contrasts with resistivity mapping which portrays the combined effect of bedrock and overburden.

#### Recognition of culture

Cultural responses include all EM anomalies caused by man-made metallic objects. Such anomalies may be caused by inductive coupling or current gathering. The concern of the interpreter is to recognize when an EM response is due to culture. Points of consideration used by the interpreter, when coaxial and coplanar coil-pairs are operated at a common frequency, are as follows:

1. Channel CPS monitors 60 Hz radiation. An anomaly on this channel shows that the conductor is radiating power. Such an indication is normally a guarantee that the conductor is cultural. However, care must be taken to ensure that the conductor is not a geologic body which strikes across a power line, carrying leakage currents.
  
2. A flight which crosses a "line" (e.g., fence, telephone line, etc.) yields a center-peaked coaxial anomaly and an m-shaped coplanar anomaly.<sup>4</sup> When the flight crosses the cultural line at a high angle of intersection, the amplitude ratio of coaxial/coplanar response is 4. Such an EM anomaly can only be caused by a line. The geologic body which yields anomalies most closely resembling a line is the vertically dipping thin dike. Such a body, however, yields an amplitude ratio of 2 rather than 4. Consequently, an m-shaped coplanar anomaly with a CXI/CPI amplitude ratio of 4 is virtually a guarantee that the source is a cultural line.
  
3. A flight which crosses a sphere or horizontal disk yields center-peaked coaxial and coplanar anomalies with a CXI/CPI amplitude ratio (i.e., coaxial/coplanar) of

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<sup>4</sup> See Figure 5-1 presented earlier.

1/4. In the absence of geologic bodies of this geometry, the most likely conductor is a metal roof or small fenced yard.<sup>5</sup> Anomalies of this type are virtually certain to be cultural if they occur in an area of culture.

4. A flight which crosses a horizontal rectangular body or wide ribbon yields an m-shaped coaxial anomaly and a center-peaked coplanar anomaly. In the absence of geologic bodies of this geometry, the most likely conductor is a large fenced area.<sup>5</sup> Anomalies of this type are virtually certain to be cultural if they occur in an area of culture.
5. EM anomalies which coincide with culture, as seen on the camera film or video display, are usually caused by culture. However, care is taken with such coincidences because a geologic conductor could occur beneath a fence, for example. In this example, the fence would be expected to yield an m-shaped coplanar anomaly as in case #2 above. If, instead, a center-peaked coplanar anomaly occurred, there would be concern that a thick

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<sup>5</sup> It is a characteristic of EM that geometrically similar anomalies are obtained from: (1) a planar conductor, and (2) a wire which forms a loop having dimensions identical to the perimeter of the equivalent planar conductor.

geologic conductor coincided with the cultural line.

6. The above description of anomaly shapes is valid when the culture is not conductively coupled to the environment. In this case, the anomalies arise from inductive coupling to the EM transmitter. However, when the environment is quite conductive (e.g., less than 100 ohm-m at 900 Hz), the cultural conductor may be conductively coupled to the environment. In this latter case, the anomaly shapes tend to be governed by current gathering. Current gathering can completely distort the anomaly shapes, thereby complicating the identification of cultural anomalies. In such circumstances, the interpreter can only rely on the radiation channel CPS and on the camera film or video records.

#### MAGNETICS

The existence of a magnetic correlation with an EM anomaly is indicated directly on the EM map. In some geological environments, an EM anomaly with magnetic correlation has a greater likelihood of being produced by sulfides than one that is non-magnetic. However, sulfide ore bodies may be non-magnetic (e.g., the Kidd Creek deposit near Timmins, Canada) as well as magnetic (e.g., the Mattabi deposit near Sturgeon Lake, Canada).

The magnetometer data are digitally recorded in the aircraft to an accuracy of one nT (i.e., one gamma) for proton magnetometers, and 0.01 nT for cesium magnetometers. The digital tape is processed by computer to yield a total field magnetic contour map. When warranted, the magnetic data may also be treated mathematically to enhance the magnetic response of the near-surface geology, and an enhanced magnetic contour map is then produced. The response of the enhancement operator in the frequency domain is illustrated in Figure 5-2. This figure shows that the passband components of the airborne data are amplified 20 times by the enhancement operator. This means, for example, that a 100 nT anomaly on the enhanced map reflects a 5 nT anomaly for the passband components of the airborne data.

The enhanced map, which bears a resemblance to a downward continuation map, is produced by the digital bandpass filtering of the total field data. The enhancement is equivalent to continuing the field downward to a level (above the source) which is 1/20th of the actual sensor-source distance.

Because the enhanced magnetic map bears a resemblance to a ground magnetic map, it simplifies the recognition of trends in the rock strata and the interpretation of geological structure. It defines the near-surface local

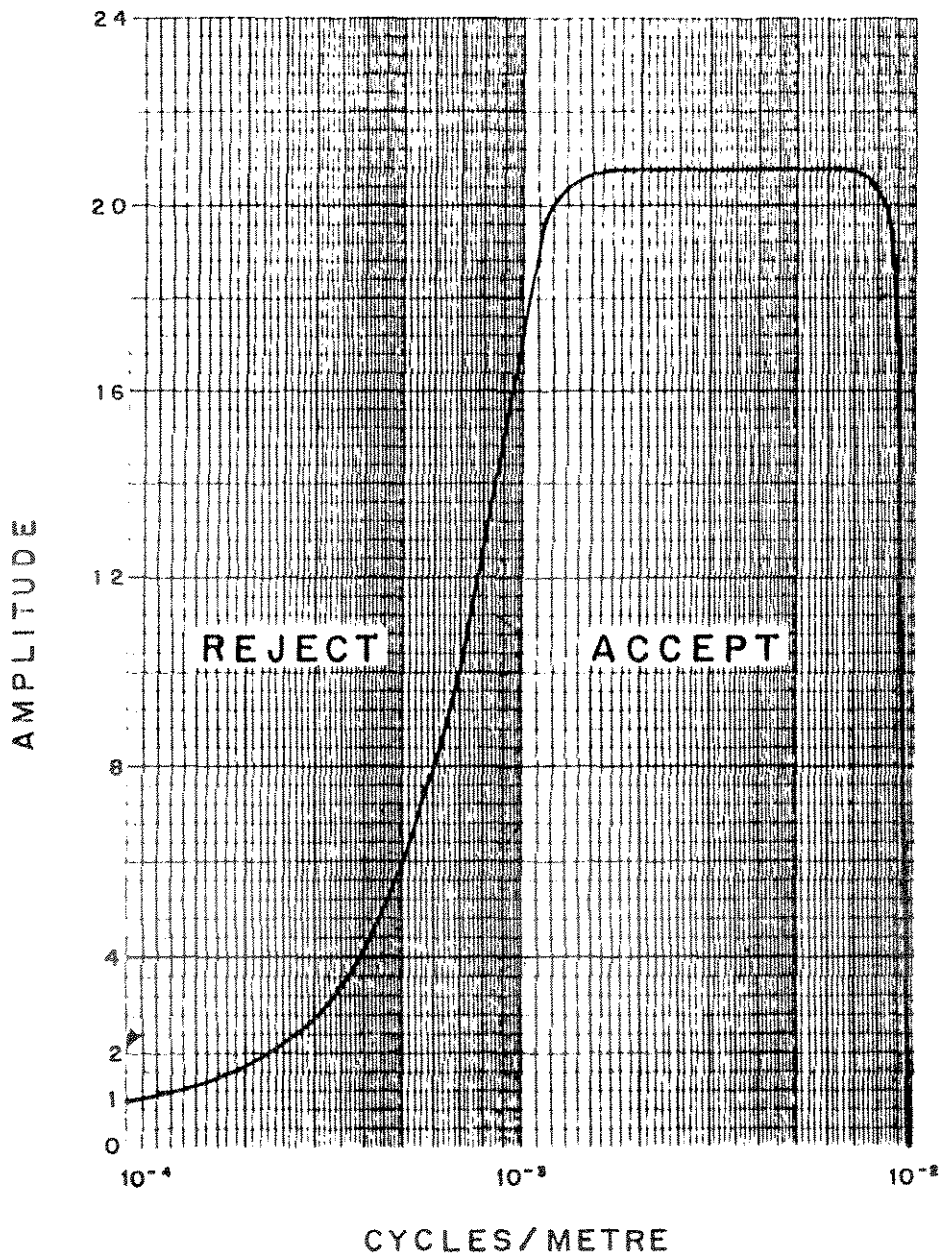


Fig. 5-2 Frequency response of magnetic enhancement operator for a sample interval of 50 m.

geology while de-emphasizing deep-seated regional features. It primarily has application when the magnetic rock units are steeply dipping and the earth's field dips in excess of 60 degrees.

Any of a number of filter operators may be applied to the magnetic data, to yield vertical derivatives, continuations, magnetic susceptibility, etc. These may be displayed in contour, colour or shadow.

#### VLF

VLF transmitters produce high frequency uniform electromagnetic fields. However, VLF anomalies are not EM anomalies in the conventional sense. EM anomalies primarily reflect eddy currents flowing in conductors which have been energized inductively by the primary field. In contrast, VLF anomalies primarily reflect current gathering, which is a non-inductive phenomenon. The primary field sets up currents which flow weakly in rock and overburden, and these tend to collect in low resistivity zones. Such zones may be due to massive sulfides, shears, river valleys and even unconformities.

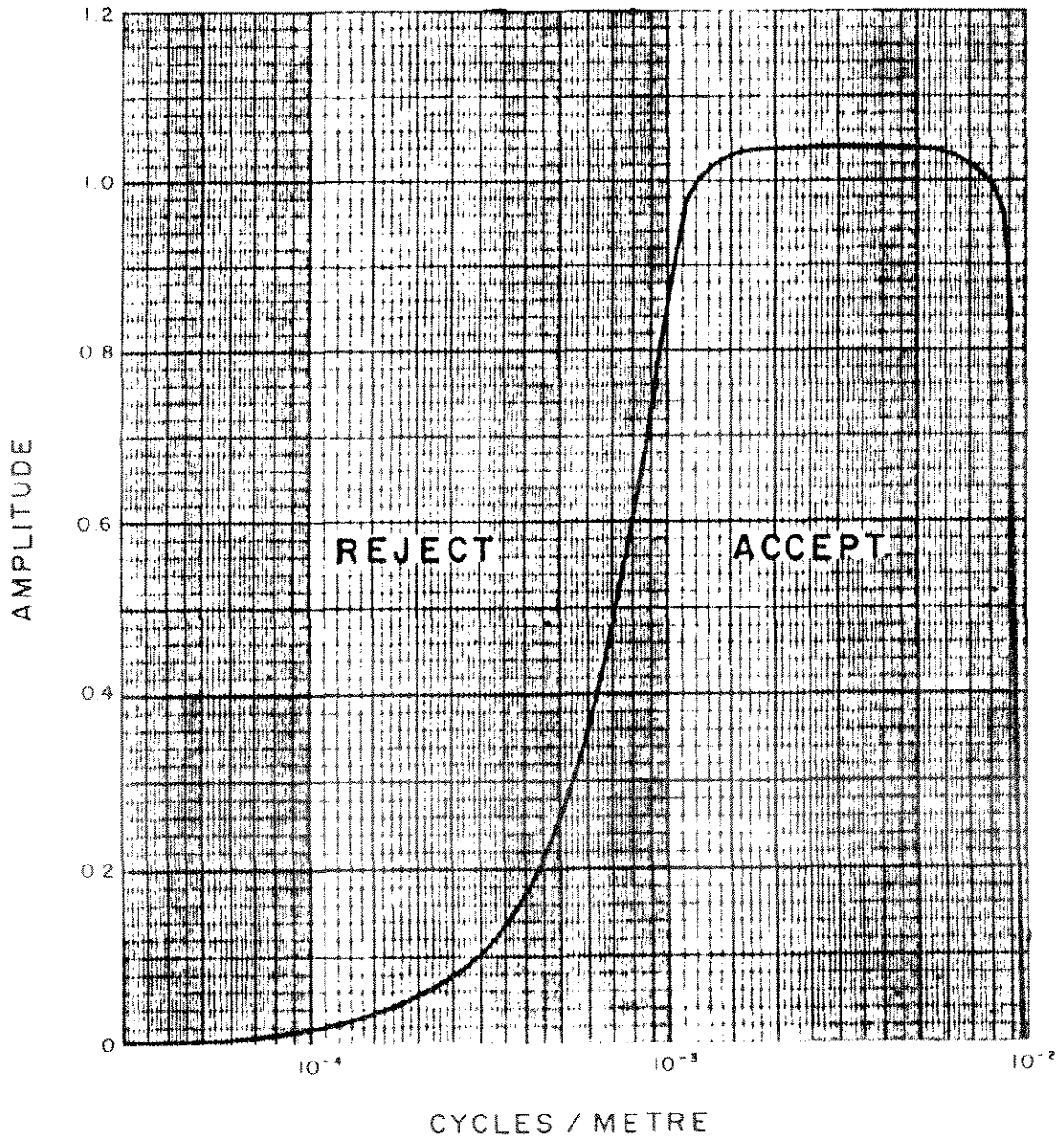


Fig. 5-3 Frequency response of VLF operator.

The VLF field is horizontal. Because of this, the method is quite sensitive to the angle of coupling between the conductor and the transmitted VLF field. Conductors which strike towards the VLF station will usually yield a stronger response than conductors which are nearly orthogonal to it.

The Herz Industries Ltd. Totem VLF-electromagnetometer measures the total field and vertical quadrature components. Both of these components are digitally recorded in the aircraft with a sensitivity of 0.1 percent. The total field yields peaks over VLF current concentrations whereas the quadrature component tends to yield crossovers. Both appear as traces on the profile records. The total field data are filtered digitally and displayed as contours to facilitate the recognition of trends in the rock strata and the interpretation of geologic structure.

The response of the VLF total field filter operator in the frequency domain (Figure 5-3) is basically similar to that used to produce the enhanced magnetic map (Figure 5-2). The two filters are identical along the abscissa but different along the ordinant. The VLF filter removes long wavelengths such as those which reflect regional and wave transmission variations. The filter sharpens short wavelength responses such as those which reflect local geological variations.

### CONCLUSIONS AND RECOMMENDATIONS

This report provides a very brief description of the survey results and describes the equipment, procedures and logistics of the survey.

The various maps included with this report display the magnetic and conductive properties of the survey areas. It is recommended that the survey results be reviewed in detail, in conjunction with all available geophysical, geological and geochemical information. Particular reference should be made to the computer generated data profiles which clearly define the characteristics of the individual anomalies.

The anomalies defined by the survey should be subjected to further investigation, using appropriate surface exploration techniques. Anomalies which are currently considered to be of moderately low priority may require upgrading if follow-up results are favourable.

Colour maps have been prepared from the survey data. These maps result from additional processing of the geophysical data which was carried out in order to extract the maximum amount of information from the survey results. These maps provide valuable information on structure and

lithology, which may not be clearly evident on the contour maps. Current processing techniques can yield images which define subtle, but significant, structural details.

Respectfully submitted,

**DIGHEM SURVEYS & PROCESSING INC.**



Ruth A. Pritchard  
Geophysicist

RAP/sdp

A1086MAY.91R

APPENDIX A

LIST OF PERSONNEL

The following personnel were involved in the acquisition, processing, interpretation and presentation of data, relating to a DIGHEM<sup>III</sup> airborne geophysical survey carried out for Golden Quail Resources Ltd., over three properties in the Carmacks area, Yukon.

Steve Kilty	Vice President, Operations
David E. Pritchard	Survey Operations Supervisor/ Operator
Robert Gordon	Geophysical Operator
Ben Rook	Pilot (Frontier Helicopters Limited)
Gordon Smith	Computer Processing Supervisor
Ruth A. Pritchard	Geophysicist/Interpreter
Reinhard Zimmermann	Draftsperson
Susan Pothiah	Word Processing Operator

The survey consisted of 417 km of coverage, flown from April 3 to April 6, 1990.

All personnel are employees of Dighem Surveys & Processing Inc., except for the pilot who is an employee of Frontier Helicopters Limited.

DIGHEM SURVEYS & PROCESSING INC.



Ruth A. Pritchard  
Geophysicist

RAP/sdp

Ref: Report #1086

A1086MAY.91R

APPENDIX B  
STATEMENT OF COST

Date: May 22, 1990

IN ACCOUNT WITH  
DIGHEM SURVEYS & PROCESSING INC.

To: Dighem flying of Agreement dated  
March 2, 1990, pertaining to an  
Airborne Geophysical Survey in the  
Carmacks area, Yukon.

Survey Charges

Mobilization	\$ 8,000.00
400 km of data	\$ <u>52,000.00</u>
	\$ <u>60,000.00</u>

Allocation of Costs

- Data Acquisition	(60%)
- Data Processing	(20%)
- Interpretation, Report and Maps	(20%)

DIGHEM SURVEYS & PROCESSING INC.



Ruth A. Pritchard  
Geophysicist

RAP/sdp

A1086MAY.91R

APPENDIX C

STATEMENT OF QUALIFICATIONS

I, Ruth A. Pritchard of the City of Brampton, Province of Ontario, do hereby certify that:

1. I am a geophysicist, residing at 31 Barrington Crescent, Brampton, Ontario, L6Z 1N2.
2. I am a graduate of York University, Downsview, Ontario, with a Specialized Honours B.Sc. Earth Sciences - Geophysics (1986).
3. I have been actively engaged in geophysical exploration since 1986.
4. The statements made in this report represent my best opinion and judgement.



Ruth A. Pritchard  
Geophysicist

A1086MAY.91R

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A P P E N D I X D

EM ANOMALY LIST

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	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* SIEMEN	COND DEPTH M	RESIS OHM-M	DEPTH M	NT				
LINE 10010	(FLIGHT	2)											
A 2636 S	0	6	3	1	30	47	0.9	0	1	14	194	0	100
B 2692 S?	1	2	1	2	2	4	-	-	-	-	-	-	0
C 2726 S	0	6	0	7	33	52	1.1	2	1	15	579	0	0
D 2738 S	1	2	1	2	2	4	-	-	-	-	-	-	0
E 2768 S	2	9	7	22	62	89	2.3	2	1	30	179	0	0
F 2783 S	0	10	3	17	46	123	1.2	4	1	11	434	0	0
G 2824 S	0	7	6	18	18	207	0.8	5	1	27	418	0	0
H 2831 H	1	1	1	2	2	4	-	-	-	-	-	-	140
LINE 10020	(FLIGHT	2)											
A 2183 S	5	14	11	20	85	67	3.6	2	1	29	117	0	0
B 2172 S	0	2	0	6	20	58	1.0	14	1	22	620	0	0
LINE 10021	(FLIGHT	2)											
A 2554 S?	1	2	1	2	2	4	-	-	-	-	-	-	0
B 2545 S	3	13	9	15	69	140	2.7	10	1	26	155	0	0
C 2515 S	3	5	3	12	31	66	2.2	10	1	39	178	3	0
D 2505 S?	2	9	4	10	43	102	2.1	3	1	32	209	0	0
E 2443 S?	0	2	0	2	2	4	-	-	-	-	-	-	0
F 2432 S?	5	8	7	7	50	37	5.5	19	1	18	281	0	0
G 2423 S	1	11	2	25	53	125	0.6	0	1	22	205	0	7
H 2398 S	7	14	12	17	75	19	5.3	9	1	36	94	5	0
LINE 10030	(FLIGHT	2)											
A 1807 S	2	7	4	17	47	85	1.5	0	1	23	256	0	0
B 1819 S?	2	8	4	10	27	70	1.6	0	1	37	142	2	0
C 1843 S?	1	2	1	2	2	4	-	-	-	-	-	-	0
D 1848 S	3	13	7	24	76	156	1.9	0	1	26	109	0	0
E 1885 S	1	2	0	7	18	75	1.2	10	1	18	636	0	0
F 1907 S	0	6	0	12	20	39	0.7	0	1	10	543	0	0
G 1931 S	5	5	11	22	62	111	5.1	14	1	33	109	2	0
H 1948 S	3	15	10	8	59	114	3.0	3	1	15	214	0	0
I 1955 S	5	16	12	18	64	92	3.8	6	1	28	110	0	0
J 1972 S	0	2	0	2	2	4	-	-	-	-	-	-	0
K 2013 H	7	19	14	6	87	24	5.7	16	1	43	56	16	160
LINE 10040	(FLIGHT	2)											
A 1632 S	1	9	2	22	89	77	0.6	0	1	11	414	0	140
B 1584 S	5	15	11	14	57	155	3.8	8	1	34	110	3	5
C 1559 S?	2	4	3	6	30	44	2.8	16	1	20	395	0	0
D 1483 S?	7	23	9	37	118	262	2.4	0	1	15	225	0	0

\* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART .  
 . OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT .  
 . LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS. .

	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* SIEMEN	COND DEPTH M	COND DEPTH SIEMEN	RESIS OHM-M	DEPTH M	NT	
LINE 10040	(FLIGHT 2)												
E 1453 H	10	4	24	61	191	279	6.6	12	1	31	60	6	7
F 1417 H	1	2	1	2	2	4	-	-	-	-	-	-	0
G 1382 H	9	20	15	35	76	138	4.3	7	2	47	45	21	0 <sup>↑</sup>
LINE 10050	(FLIGHT 2)												
A 1137 S	5	6	2	14	48	193	3.3	15	1	13	506	0	0
B 1178 S	4	9	6	21	58	124	2.5	6	1	39	141	5	0 <sup>↔</sup>
C 1195 S?	2	6	1	13	21	86	1.3	1	1	25	581	0	0 <sup>↔</sup>
D 1217 S	1	2	0	2	2	4	-	-	-	-	-	-	0
E 1243 S	4	13	1	26	46	238	1.2	2	1	14	436	0	30
F 1259 S	12	11	12	25	83	123	7.3	7	1	27	121	0	0 <sup>↔</sup>
G 1268 S?	1	6	3	10	36	103	1.5	0	1	30	172	0	0
H 1280 B?	8	28	17	44	164	205	3.4	0	1	25	84	0	0
I 1300 S	3	7	1	17	48	92	1.5	1	1	17	545	0	0
J 1327 H	2	3	3	14	27	65	1.7	13	1	53	189	14	0 <sup>↑</sup>
K 1345 H	1	2	1	2	2	4	-	-	-	-	-	-	11
LINE 10060	(FLIGHT 2)												
A 1075 S	3	4	0	17	57	122	1.6	6	1	23	622	0	0
B 1031 S	1	6	3	10	27	56	1.2	0	1	44	176	5	17 <sup>↔</sup>
C 1008 S?	1	2	1	2	2	4	-	-	-	-	-	-	0
D 941 S?	9	11	11	12	35	65	7.8	9	1	44	80	12	0 <sup>↔</sup>
E 913 B?	7	23	16	25	119	169	3.8	4	1	35	88	6	0 <sup>↔</sup>
F 867 H	1	8	4	9	28	46	1.6	0	1	66	123	25	0 <sup>↑</sup>
LINE 10070	(FLIGHT 1)												
A 6533 S	3	9	3	11	40	64	1.9	6	1	27	202	0	9 <sup>↔</sup>
B 6553 S	2	1	4	3	30	40	1.0	0	1	11	197	0	0
C 6568 S	2	9	4	14	52	93	1.6	0	1	17	282	0	0 <sup>↔</sup>
D 6608 S?	0	2	0	2	2	4	-	-	-	-	-	-	0
E 6635 S	6	12	8	23	59	85	3.4	3	1	17	167	0	0
F 6660 H	10	33	38	69	205	232	5.1	0	2	27	37	5	0 <sup>↔</sup>
G 6672 S?	0	8	0	11	47	106	0.5	1	1	14	474	0	0
H 6695 H	3	5	5	5	20	25	4.4	26	1	48	199	8	0 <sup>↑</sup>
LINE 10080	(FLIGHT 1)												
A 6464 S	0	5	1	8	31	74	0.5	0	1	30	605	0	0
B 6449 S	2	9	7	16	45	72	2.0	0	1	39	147	3	0
C 6421 S	1	6	4	11	32	76	1.7	8	1	18	406	0	0
D 6388 S	0	4	1	6	17	47	0.5	0	1	25	627	0	0
E 6365 S	0	7	0	17	51	117	0.5	0	1	5	458	0	0

\* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART  
 OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT  
 LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* M	COND DEPTH M	RESIS OHM-M	DEPTH M	NT		
LINE 10080	(FLIGHT	1)											
F 6304 H	14	21	32	21	48	27	11.2	13	2	42	34	19	4
G 6301 B?	14	20	32	20	46	37	11.5	11	2	42	49	15	0
H 6292 S?	1	2	1	2	2	4	-	-	-	-	-	-	0
LINE 10090	(FLIGHT	1)											
A 5826 S	0	5	0	7	17	75	0.7	6	1	46	738	0	0
B 5841 S	0	7	2	3	41	75	0.8	0	1	14	193	0	0
C 5847 S	0	7	3	13	29	110	0.7	3	1	22	497	0	0
D 5883 S	0	5	3	12	24	51	0.9	0	1	37	232	0	0
E 5950 S	0	3	0	13	38	61	0.5	0	1	12	528	0	150
F 5970 B?	17	41	41	88	245	239	5.7	0	1	34	69	7	0
G 5973 H	1	2	1	2	2	4	-	-	-	-	-	-	0
LINE 10100	(FLIGHT	1)											
A 5655 S?	2	12	4	20	64	65	1.1	0	1	9	298	0	0
B 5635 H	6	13	13	18	52	36	4.9	6	1	40	80	9	0
C 5632 S?	6	0	13	18	39	60	13.3	30	1	34	126	3	0
D 5627 S?	1	2	1	2	2	4	-	-	-	-	-	-	0
E 5578 S	0	4	0	8	16	56	0.5	0	1	36	722	0	0
F 5562 S	1	8	1	5	28	94	0.4	0	1	14	232	0	0
LINE 10110	(FLIGHT	1)											
A 5329 S	0	2	0	2	2	4	-	-	-	-	-	-	0
B 5345 S	2	8	3	18	61	120	1.5	6	1	15	382	0	0
C 5363 S	0	2	0	2	2	4	-	-	-	-	-	-	0
D 5389 S	2	11	2	17	67	179	0.8	0	1	10	444	0	0
E 5462 S?	3	13	8	17	68	105	2.5	7	1	17	317	0	0
F 5465 S?	1	2	1	2	2	4	-	-	-	-	-	-	0
G 5472 S?	2	8	3	10	38	74	1.8	13	1	17	465	0	0
H 5481 S	0	2	1	2	2	4	-	-	-	-	-	-	11
LINE 10120	(FLIGHT	1)											
A 5269 S	0	4	0	5	24	59	0.5	0	1	46	785	0	0
B 5223 S	3	4	0	7	25	56	2.0	12	1	23	673	0	0
C 5209 S	2	4	2	10	27	56	1.5	3	1	23	571	0	0
D 5195 S	0	8	0	12	37	118	0.5	0	1	24	675	0	0
E 5131 S	1	4	0	9	29	53	0.5	0	1	21	670	0	0
F 5120 S	2	7	2	18	45	90	1.2	0	1	4	476	0	100
G 5099 S	2	6	2	11	30	56	1.5	9	1	22	526	0	0
H 5075 S?	5	6	0	7	18	47	3.1	11	1	28	725	0	0
I 5014 S?	1	2	1	2	2	4	-	-	-	-	-	-	0

\* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART  
OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT  
LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* M	COND DEPTH M	RESIS OHM-M	DEPTH M	NT		
LINE 10130	(FLIGHT	1)											
A 4785 S	1	6	0	7	42	57	0.6	0	1	27	663	0	0
B 4797 S	3	13	3	28	81	235	1.2	2	1	11	395	0	40
C 4822 S	1	2	1	2	2	4	-	-	-	-	-	-	0
D 4868 S?	0	4	0	11	13	119	0.5	5	1	57	777	0	0 0
E 4885 S	0	7	0	10	23	81	0.5	0	1	30	691	0	0
F 4901 S	3	8	0	15	46	88	0.9	0	1	11	496	0	150
G 4916 S	2	6	1	11	34	98	0.9	0	1	13	529	0	0
H 4976 S	0	11	0	16	38	178	0.5	6	1	21	491	0	70
I 4989 S	3	9	2	12	41	70	1.7	6	1	18	461	0	0
LINE 10140	(FLIGHT	1)											
A 1137 S	1	2	0	2	2	4	-	-	-	-	-	-	0 0
B 1104 S?	3	10	4	14	46	62	2.0	1	1	10	515	0	290 0
C 1011 S	2	9	2	14	35	166	0.9	1	1	10	433	0	0
D 1001 H	4	6	3	13	37	91	2.7	16	1	37	239	1	0
LINE 10150	(FLIGHT	1)											
A 1274 S	4	5	0	13	52	144	2.2	11	1	23	618	0	0
B 1321 S	0	4	1	11	28	97	0.5	0	1	34	678	0	0 0
C 1336 S	1	2	0	2	2	4	-	-	-	-	-	-	0
D 1356 S	1	2	0	2	2	4	-	-	-	-	-	-	0 0
E 1396 S	1	3	2	8	22	51	1.0	9	1	53	244	11	0
F 1461 S	7	11	5	20	45	77	3.7	14	1	19	507	0	0 0
LINE 10160	(FLIGHT	1)											
A 1710 S?	1	2	0	2	2	4	-	-	-	-	-	-	0 0
B 1682 S	1	2	1	2	2	4	-	-	-	-	-	-	0
C 1626 S	3	4	3	10	26	31	3.1	26	1	42	306	3	0 0
D 1577 S?	1	4	0	3	14	42	0.5	0	1	101	1006	0	0 0
E 1559 S	0	7	3	13	28	38	0.6	0	1	39	319	0	4 0
F 1539 S	2	3	4	13	37	52	2.6	19	1	45	247	5	0 0
LINE 10170	(FLIGHT	1)											
A 1922 S	1	2	0	2	2	4	-	-	-	-	-	-	0 0
B 1940 S?	4	10	2	14	51	116	2.2	5	1	16	461	0	0
C 1988 S	0	2	0	2	2	4	-	-	-	-	-	-	0
D 2006 S	2	10	4	20	57	137	1.4	0	1	27	295	0	0 0
E 2027 S	3	3	3	10	32	54	2.9	15	1	29	375	0	0
LINE 10180	(FLIGHT	1)											
A 2382 S	0	5	0	9	28	35	0.6	0	1	27	678	0	0 0

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	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* SIEMEN	COND DEPTH M	COND DEPTH SIEMEN	COND DEPTH M	RESIS OHM-M	DEPTH M	NT
LINE 10180	(FLIGHT	1)											
B 2366 S	0	5	1	8	27	49	0.5	0	1	28	580	0	0
C 2313 S	0	4	0	10	29	66	0.7	4	1	29	668	0	0
D 2300 S?	0	5	0	5	19	31	1.1	8	1	47	761	0	0
E 2292 S?	0	9	2	13	17	121	0.5	0	1	20	597	0	0
F 2285 S?	0	6	3	10	43	35	0.9	0	1	17	351	0	0
G 2269 S	0	5	0	8	27	75	0.5	0	1	31	693	0	0
H 2248 S	0	7	1	10	44	41	0.5	0	1	21	601	0	0
I 2246 S?	0	2	1	2	2	4	-	-	-	-	-	-	0
J 2211 B?	3	9	0	8	33	22	1.4	0	1	26	702	0	0
K 2202 B?	1	2	0	2	2	4	-	-	-	-	-	-	0
L 2183 S	0	5	0	5	34	9	0.7	1	1	31	703	0	0
LINE 10190	(FLIGHT	1)											
A 2693 S	0	6	2	4	26	66	0.5	0	1	12	268	0	0
B 2709 S	0	4	2	5	14	42	0.4	0	1	13	377	0	0
C 2728 S	1	2	1	2	2	4	-	-	-	-	-	-	0
D 2762 S	1	2	1	2	2	4	-	-	-	-	-	-	0
E 2782 S	6	16	9	32	118	204	2.7	0	1	26	144	0	0
F 2783 S?	1	2	1	2	2	4	-	-	-	-	-	-	0
G 2818 S?	2	10	4	14	53	89	1.6	0	1	29	280	0	0
H 2843 S?	3	9	9	13	53	43	3.6	19	1	56	166	18	0
I 2845 H	1	2	1	2	2	4	-	-	-	-	-	-	0
J 2876 S	0	10	0	17	51	37	0.5	3	1	28	591	0	0
LINE 10200	(FLIGHT	1)											
A 3156 S	0	6	1	10	31	83	0.5	0	1	23	595	0	0
B 3122 S	0	2	1	2	2	4	-	-	-	-	-	-	0
C 3084 S	0	2	1	2	2	4	-	-	-	-	-	-	0
D 2988 S	1	8	7	15	39	58	2.1	6	1	60	127	22	20
E 2955 S	0	4	0	10	31	94	0.5	0	1	38	728	0	0
LINE 10210	(FLIGHT	1)											
A 3383 S	0	6	2	5	13	48	0.7	3	1	55	575	0	0
B 3400 S	0	7	1	9	20	94	0.5	2	1	50	686	0	0
C 3413 S	1	6	2	5	28	67	0.6	0	1	13	226	0	30
D 3458 S	1	10	4	15	1	84	1.0	0	1	26	433	0	0
E 3491 S	2	8	2	13	54	129	1.2	7	1	19	519	0	0
F 3526 S?	0	7	0	8	26	46	0.5	0	1	35	703	0	0
G 3536 S	0	14	3	24	78	125	0.6	0	1	12	415	0	0
H 3549 B?	1	2	1	2	2	4	-	-	-	-	-	-	0
I 3575 S	0	9	0	15	53	152	0.5	0	1	29	663	0	0

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	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* SIEMEN	M	COND DEPTH SIEMEN	M	RESIS OHM-M	DEPTH M	NT
LINE 10220	(FLIGHT	1)											
A 3849 S	0	5	0	7	18	39	0.5	0	1	48	790	0	0
B 3809 S	0	9	2	7	47	126	0.5	0	1	15	537	0	70 B
C 3791 S	0	10	0	16	21	128	0.5	0	1	16	520	0	6
D 3772 S	0	3	3	10	41	64	0.6	4	1	20	561	0	0 A
E 3714 S?	0	6	0	6	9	68	0.9	12	1	63	794	0	0
F 3673 S	4	10	7	18	54	82	2.8	3	1	32	143	0	50 M
G 3626 S	0	10	0	7	60	176	0.5	5	1	28	579	0	0 V
H 3620 S	0	11	0	22	54	245	0.5	8	1	32	588	0	0
LINE 10230	(FLIGHT	1)											
A 3980 S	0	4	0	3	19	23	1.0	0	1	7	407	0	0
B 4001 S	0	2	0	2	2	4	-	-	-	-	-	-	0
C 4017 S	1	2	1	2	2	4	-	-	-	-	-	-	0 B
D 4038 S	0	7	1	7	22	63	0.7	0	1	29	715	0	0 P
E 4108 B?	0	20	0	23	108	202	1.5	5	1	8	335	0	220
F 4130 S	4	25	5	45	131	314	1.1	0	1	19	235	0	0 M
G 4164 S	0	8	0	14	46	103	0.8	0	1	27	675	0	0 V
LINE 10240	(FLIGHT	1)											
A 4444 S	0	3	0	7	30	59	1.0	9	1	32	706	0	0
B 4419 S	0	3	0	6	19	40	1.2	10	1	26	674	0	50
C 4398 S	0	3	1	9	23	62	0.7	0	1	23	623	0	0 B
D 4373 S	0	2	1	2	2	4	-	-	-	-	-	-	0
E 4278 S	2	5	3	13	39	86	1.8	9	1	21	245	0	40
F 4267 S	2	8	4	11	6	68	1.9	8	1	25	422	0	0 M
G 4207 S	0	10	0	21	59	217	0.6	3	1	30	566	0	0
LINE 19010	(FLIGHT	3)											
A 4429 S?	0	11	0	15	51	102	0.5	0	1	32	678	0	0
B 4467 S	0	15	1	34	88	317	0.5	6	1	7	355	0	0
C 4490 S	1	7	1	13	41	134	0.5	0	1	22	597	0	0
D 4515 S?	0	11	4	10	47	65	0.9	0	1	25	274	0	0
E 4539 S	3	11	2	27	74	221	1.1	0	1	25	132	0	0
LINE 19020	(FLIGHT	3)											
A 4974 S	0	2	0	2	2	4	-	-	-	-	-	-	0
B 4953 S	0	6	1	14	34	112	0.5	4	1	16	459	0	0
C 4944 S	0	10	2	19	30	148	0.5	4	1	22	344	0	0
D 4879 S	1	2	1	2	2	4	-	-	-	-	-	-	0
E 4845 S?	0	2	0	2	2	4	-	-	-	-	-	-	210

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	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* SIEMEN	COND DEPTH M	COND DEPTH SIEMEN	COND DEPTH M	RESIS OHM-M	DEPTH M	NT
LINE 20020	(FLIGHT	3)											
A 1719 S?	5	12	3	20	59	169	2.4	6	1	14	489	0	0
B 1712 S	4	9	0	3	21	101	0.3	0	1	19	234	0	0
C 1690 S	1	2	0	2	2	4	-	-	-	-	-	-	0
D 1651 S	1	5	1	7	19	62	0.6	3	1	35	663	0	0
E 1606 S	2	3	0	6	15	58	0.6	9	1	73	846	0	0
F 1573 S	1	2	0	2	2	4	-	-	-	-	-	-	0
LINE 20030	(FLIGHT	3)											
A 1795 S	2	3	0	10	23	65	1.0	9	1	44	742	0	270
B 1816 S	2	5	3	11	33	50	2.0	13	1	27	477	0	260
C 1823 S	1	5	2	9	27	94	1.2	13	1	21	537	0	0
D 1841 S	2	5	3	11	25	41	2.2	2	1	25	317	0	230
LINE 20040	(FLIGHT	3)											
A 2238 S	1	2	1	2	2	4	-	-	-	-	-	-	0
B 2210 S	1	2	0	2	2	4	-	-	-	-	-	-	0
C 2184 S	1	6	2	9	25	69	0.7	0	1	20	505	0	250
D 2095 S	2	11	4	18	33	101	1.4	0	1	18	305	0	320
LINE 20050	(FLIGHT	3)											
A 2298 S	4	4	3	10	30	46	3.4	17	1	44	214	3	250
B 2334 S	3	5	5	8	25	46	4.1	25	1	40	226	2	0
C 2382 S	2	9	6	21	59	96	1.8	1	1	36	95	6	0
LINE 20060	(FLIGHT	3)											
A 2796 S	2	6	6	12	23	40	2.3	6	1	47	108	12	0 <sup>o</sup>
B 2786 S	0	5	4	10	30	51	0.7	0	1	46	291	4	0
C 2743 S?	2	9	5	17	54	105	1.6	0	1	34	127	2	0
D 2667 S	1	6	5	12	22	39	1.9	3	1	51	131	13	0
LINE 20070	(FLIGHT	4)											
A 1357 S	4	15	7	22	61	218	2.4	4	1	26	228	0	0
B 1320 S	4	14	3	18	82	158	1.6	3	1	29	105	1	280 <sup>o</sup>
C 1214 S	2	7	3	15	17	132	1.2	1	1	35	368	0	0
LINE 20080	(FLIGHT	4)											
A 1750 S?	1	2	1	2	2	4	-	-	-	-	-	-	250
B 1810 S	2	5	3	8	26	77	2.5	23	1	36	214	1	0 <sup>o</sup>
LINE 20081	(FLIGHT	4)											
A 2081 S?	4	7	6	10	29	152	3.9	19	1	31	228	0	0

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	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR					
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* SIEMEN M	COND DEPTH SIEMEN M	RESIS OHM-M	DEPTH M	NT	
LINE 20081	(FLIGHT	4)										
B 2045 S	1	2	1	2	2	4	-	-	-	-	0	
C 1965 S	0	8	2	7	36	81	0.5	0	1	25	365	0
LINE 20090	(FLIGHT	4)										
A 2182 S	1	2	1	2	2	4	-	-	-	-	0	
B 2217 S	1	4	3	5	21	23	1.0	0	1	18	234	0
C 2242 S	4	7	3	14	38	127	2.5	15	1	36	327	0
D 2257 S	1	7	3	11	23	44	1.2	0	1	38	265	0
E 2272 S	3	5	2	11	21	77	2.7	20	1	22	456	0
LINE 20100	(FLIGHT	4)										
A 2444 S	2	4	2	8	28	77	1.9	17	1	18	444	0
B 2429 S	2	7	5	16	44	62	2.0	3	1	29	209	0
C 2400 S?	0	6	1	6	15	57	0.5	2	1	35	685	0
D 2388 S	1	7	2	10	28	116	1.0	5	1	28	517	0
E 2366 S	1	5	2	9	25	67	0.9	3	1	38	497	0
F 2343 S	0	9	1	6	48	118	0.5	0	1	18	524	0
G 2320 S	5	7	8	36	98	252	2.9	7	1	23	168	0
LINE 20110	(FLIGHT	3)										
A 4018 S	0	8	2	12	44	47	0.5	0	1	22	504	0
B 4030 S	1	2	1	2	2	4	-	-	-	-	-	0
C 4069 S	2	3	1	6	19	61	2.6	30	1	68	441	12
D 4080 S	2	4	2	5	15	49	2.4	22	1	86	209	37
E 4089 S	1	2	1	2	2	4	-	-	-	-	-	0
LINE 20120	(FLIGHT	3)										
A 3890 S?	1	2	1	2	2	4	-	-	-	-	-	0
B 3881 S	1	3	6	9	25	34	3.5	29	1	48	246	8
C 3854 S	1	8	3	9	28	34	1.2	4	1	18	418	0
D 3771 S	0	2	1	2	2	4	-	-	-	-	-	0
E 3743 H	1	2	1	2	2	4	-	-	-	-	-	310
LINE 20130	(FLIGHT	3)										
A 3606 S	1	5	2	12	40	85	1.2	0	1	14	569	0
B 3620 S	1	2	1	2	2	4	-	-	-	-	-	0
C 3641 S	2	6	2	9	20	87	1.7	6	1	34	444	0
D 3670 S	3	5	2	8	22	50	2.6	19	1	49	264	7
E 3689 S	0	2	1	2	2	4	-	-	-	-	-	0
LINE 20141	(FLIGHT	4)										
A 2581 S	1	2	1	2	2	4	-	-	-	-	-	0

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	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* .SIEMEN	COND DEPTH M	COND DEPTH .SIEMEN	COND DEPTH M	RESIS OHM-M	DEPTH M	NT
LINE 20141	(FLIGHT	4)											
B 2613 S	0	5	4	8	29	54	1.0	0	1	43	224	2	0
C 2626 S	0	4	1	6	16	64	0.5	0	1	46	754	0	280
D 2642 S	0	8	2	10	20	105	0.5	1	1	43	698	0	450
E 2685 S?	1	11	5	18	45	87	1.2	3	1	36	217	3	260
LINE 20150	(FLIGHT	3)											
A 3522 S?	1	13	1	17	72	165	0.6	0	1	13	432	0	0
B 3517 S?	4	5	4	8	32	54	4.5	31	1	21	478	0	0
C 3493 S?	0	9	0	12	26	129	0.8	0	1	28	620	0	0
D 3473 S	1	6	2	8	15	74	0.8	5	1	55	634	0	0
E 3447 S	2	4	4	12	32	128	2.5	26	1	43	301	6	0
F 3431 S	2	7	4	12	33	77	2.0	12	1	50	166	13	250
G 3384 H	1	2	1	2	2	4	-	-	-	-	-	-	260
LINE 20160	(FLIGHT	3)											
A 3140 S?	3	4	2	4	16	29	0.6	0	1	13	186	0	0
B 3151 S	4	12	5	26	85	175	1.9	1	1	25	178	0	310
C 3192 S	2	5	3	7	20	68	2.4	19	1	56	389	8	330
D 3272 H	1	2	1	2	2	4	-	-	-	-	-	-	0
LINE 29010	(FLIGHT	4)											
A 3976 S	2	5	6	9	25	44	3.9	17	1	39	270	0	0
B 4065 S	4	11	5	20	76	149	2.1	2	1	24	281	0	220

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	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* M	COND DEPTH SIEMEN	RESIS OHM-M	DEPTH M	NT		
LINE 30010	(FLIGHT	6)											
A 3556 S	0	5	4	9	29	52	0.9	6	1	31	289	0	0
B 3569 S	0	10	4	17	53	105	0.5	0	1	30	254	0	0
C 3596 S	0	5	1	9	28	61	0.5	0	1	23	455	0	230
LINE 30020	(FLIGHT	6)											
A 3417 S	0	5	1	8	29	45	0.5	0	1	19	535	0	0
B 3366 H	1	2	1	2	2	4	-	-	-	-	-	-	0
LINE 30030	(FLIGHT	6)											
A 3278 S	0	7	3	11	42	29	0.5	0	1	36	238	1	0
B 3304 S	2	10	3	25	54	216	1.1	3	1	27	164	0	0
C 3319 H	1	2	1	2	2	4	-	-	-	-	-	-	0
LINE 30040	(FLIGHT	6)											
A 3125 S	0	8	1	16	43	163	0.5	4	1	19	504	0	0
B 3100 S	1	2	1	2	2	4	-	-	-	-	-	-	0
C 3077 S	1	9	3	16	51	133	0.8	2	1	18	306	0	210
D 3040 H	4	12	12	26	52	283	3.5	17	1	33	116	6	0
LINE 30050	(FLIGHT	6)											
A 2872 S	1	10	3	16	55	54	1.0	2	1	32	243	0	240
B 2895 S	1	8	1	18	56	158	0.7	0	1	23	402	0	0
C 2910 S	3	16	9	25	68	69	2.1	0	1	39	99	6	0
LINE 30060	(FLIGHT	6)											
A 2765 S	2	8	5	14	41	51	2.1	10	1	33	187	0	0
B 2693 S	2	8	3	17	50	79	1.1	2	1	23	346	0	210
C 2672 S	0	13	2	20	43	114	0.5	3	1	17	315	0	0
LINE 30070	(FLIGHT	6)											
A 2545 S	2	5	6	11	40	72	3.3	18	1	36	231	0	0
B 2564 S	0	4	2	5	16	47	1.0	10	1	48	466	0	0
C 2576 S	1	3	3	7	28	59	2.5	28	1	59	270	14	0
D 2619 S	2	9	3	17	39	84	1.2	3	1	29	563	0	230
E 2642 S	2	12	2	22	52	252	0.8	0	1	20	518	0	0
LINE 30080	(FLIGHT	6)											
A 2477 S?	0	2	1	2	2	4	-	-	-	-	-	-	0
B 2468 S	0	5	1	9	17	79	0.5	0	1	43	729	0	0
C 2395 S	0	5	1	8	8	27	0.5	0	1	50	469	3	0
D 2382 H	0	2	1	2	2	4	-	-	-	-	-	-	260

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OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT  
LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* SIEMEN M	COND DEPTH SIEMEN M	RESIS OHM-M	DEPTH M	NT		
LINE 30090	(FLIGHT	5)											
A 5156 S	2	7	3	10	33	121	1.8	14	1	24	570	0	0
B 5168 S	2	7	0	11	22	69	1.2	0	1	25	661	0	0
LINE 30100	(FLIGHT	5)											
A 5060 S	0	7	1	11	40	112	0.5	5	1	25	543	0	0
B 5047 S	0	6	1	13	30	107	0.5	0	1	22	604	0	0
C 4954 S	0	2	0	2	2	4	-	-	-	-	-	-	0
LINE 30110	(FLIGHT	5)											
A 4642 S	1	6	4	12	33	107	1.7	12	1	36	242	1	0
B 4665 S	0	8	4	15	54	123	0.7	0	1	30	285	0	0
C 4683 S	1	2	1	2	2	4	-	-	-	-	-	-	0
D 4730 S	1	2	0	2	2	4	-	-	-	-	-	-	200
LINE 30120	(FLIGHT	5)											
A 4222 S?	0	7	1	5	14	49	0.5	0	1	58	646	0	190
LINE 30121	(FLIGHT	5)											
A 4503 S	1	12	2	17	33	186	0.6	3	1	18	454	0	0
B 4476 S	3	6	3	11	41	84	2.4	18	1	31	336	0	0
C 4458 S	1	5	2	8	15	78	1.3	10	1	36	483	0	0
LINE 30130	(FLIGHT	5)											
A 3816 S	0	4	4	8	21	45	1.4	16	1	49	249	8	190
B 3827 S	0	5	2	8	17	66	0.5	0	1	46	371	3	0
C 3841 S	0	2	1	2	2	4	-	-	-	-	-	-	0
D 3874 S	0	10	1	12	35	129	0.5	0	1	38	500	0	220
E 3909 S	0	2	1	2	2	4	-	-	-	-	-	-	0
LINE 30140	(FLIGHT	5)											
A 3741 S	0	5	0	6	11	46	0.5	0	1	46	744	0	210
B 3691 S	0	9	1	8	36	97	0.7	0	1	32	627	0	230
C 3661 S	0	7	0	8	19	84	0.5	0	1	40	722	0	240
LINE 30150	(FLIGHT	5)											
A 3557 S	0	5	2	9	25	74	0.5	0	1	29	545	0	0
B 3580 S	1	5	2	11	27	79	0.9	0	1	32	388	0	0
LINE 30160	(FLIGHT	5)											
A 3441 S	0	5	0	8	21	53	0.5	0	1	43	732	0	0
B 3389 S	0	5	2	3	12	36	0.3	0	1	18	411	0	0

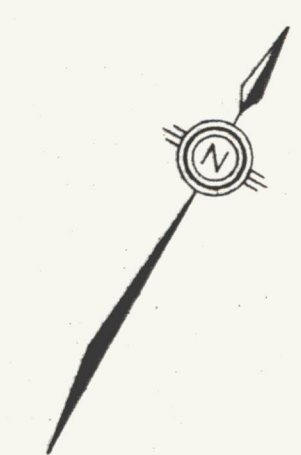
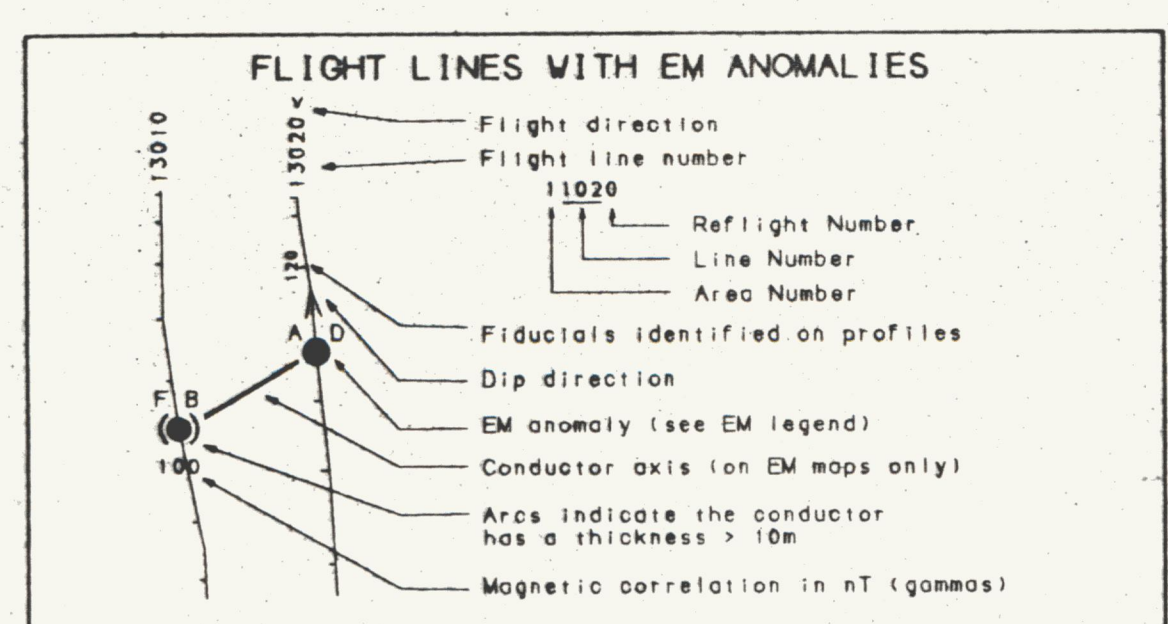
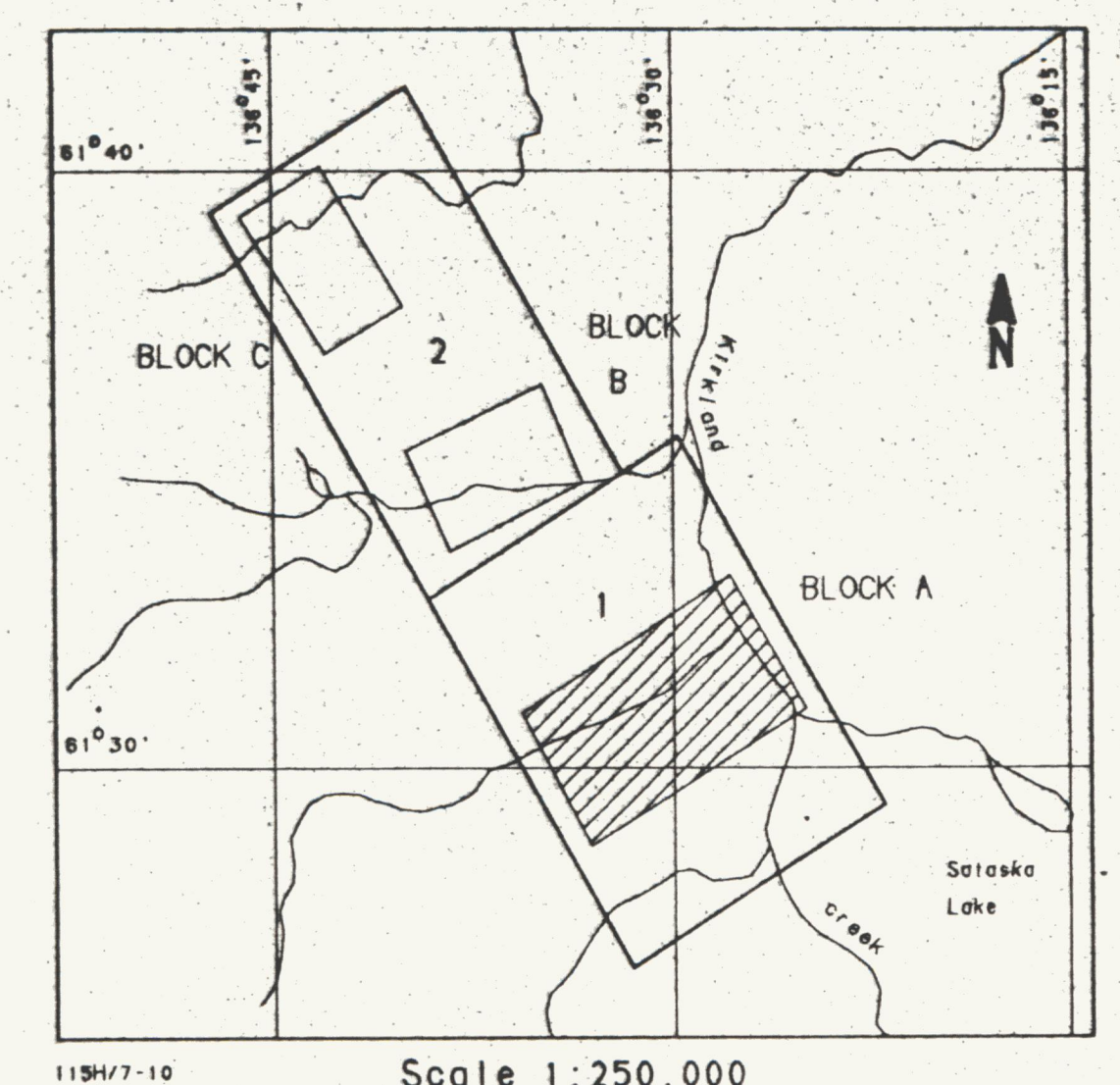
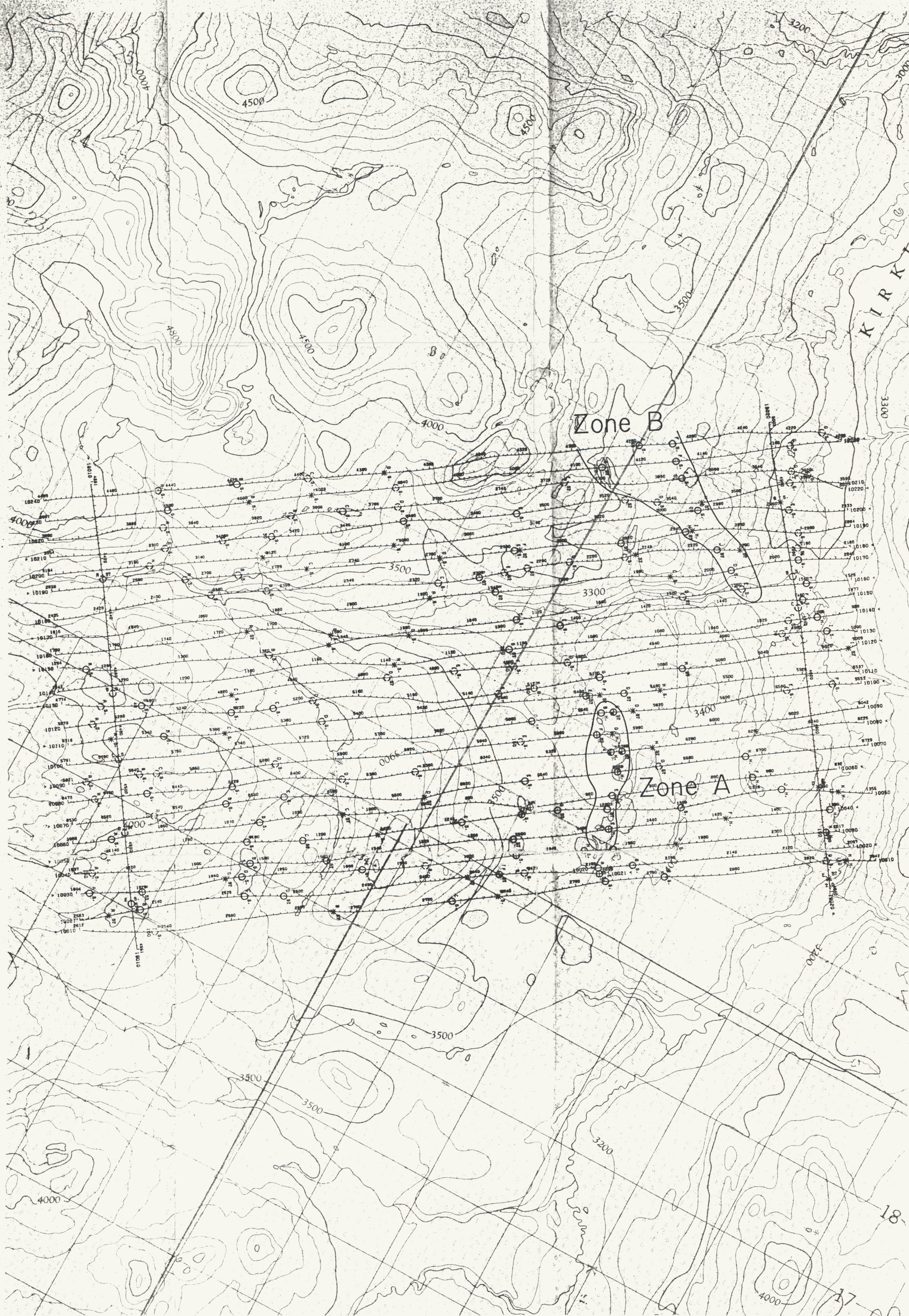
\* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART  
OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT  
LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* SIEMEN	M	COND DEPTH SIEMEN	M	RESIS OHM-M	DEPTH M	NT
LINE 30170	(FLIGHT	5)											
A 3137 S	0	2	1	2	2	4	-	-	-	-	-	-	0
B 3170 S	0	7	0	10	20	106	0.5	1	1	39	686	0	0
C 3181 S	0	2	2	6	21	41	1.9	26	1	41	495	0	250
LINE 30180	(FLIGHT	5)											
A 3020 S	0	5	0	7	16	60	0.5	0	1	57	785	0	0
B 2977 S	0	4	3	8	22	43	0.9	10	1	38	483	0	0
C 2955 S	0	6	2	5	30	26	1.0	0	1	22	201	4	0
LINE 30200	(FLIGHT	5)											
A 2714 S	0	2	0	2	2	4	-	-	-	-	-	-	0
LINE 30210	(FLIGHT	5)											
A 2531 S	0	10	0	17	40	208	0.5	8	1	22	496	0	0
B 2575 S	0	8	0	11	33	88	0.5	0	1	31	656	0	0
LINE 30220	(FLIGHT	5)											
A 2384 S	0	8	0	13	29	133	0.5	6	1	27	556	0	0
B 2361 S	1	2	1	2	2	4	-	-	-	-	-	-	0
C 2326 S	1	2	1	2	2	4	-	-	-	-	-	-	0
LINE 30230	(FLIGHT	5)											
A 2224 S	1	2	1	2	2	4	-	-	-	-	-	-	0
LINE 30240	(FLIGHT	5)											
A 2093 S	1	6	3	10	26	60	1.2	2	1	30	545	0	0
B 2072 S	0	7	2	10	28	71	0.5	0	1	40	348	0	0
LINE 30250	(FLIGHT	5)											
A 1858 S	0	2	1	2	2	4	-	-	-	-	-	-	0
B 1884 S	0	5	2	7	20	60	0.6	0	1	29	447	0	0
LINE 30260	(FLIGHT	5)											
A 1753 S	1	9	2	12	33	81	0.6	5	1	25	409	0	0
B 1721 S	0	4	2	6	16	71	0.5	0	1	42	586	0	0
LINE 39010	(FLIGHT	6)											
A 4219 S	0	8	0	9	35	104	0.5	0	1	30	691	0	240
B 4308 S	1	8	3	12	18	63	1.2	5	1	25	426	0	0
C 4325 S	1	7	3	13	16	88	0.9	2	1	27	375	0	0
LINE 39020	(FLIGHT	6)											
A 3883 S	0	9	3	13	51	187	0.6	0	1	18	381	0	0

\* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART  
 OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT  
 LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

	COAXIAL 900 HZ	COPLANAR 900 HZ	COPLANAR 7200 HZ	VERTICAL DIKE	HORIZONTAL SHEET	CONDUCTIVE EARTH	MAG CORR						
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND DEPTH* SIEMEN	COND DEPTH M	RESIS OHM-M	DEPTH M	NT				
LINE 39020	(FLIGHT	6)											
B 3848 S	0	9	2	16	41	101	0.5	0	1	32	280	0	0

\* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART  
 OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT  
 LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.



Grade	Anomaly	Conductance
7	●	≥100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	<1 siemen
-	*	Questionable anomaly

Anomaly identifier	Interpretive symbol	Conductor ('model')
B	●	Broad conductor
D	○	Narrow bedrock conductor ('thin dike')
S	⊕	Conductive cover ('horizontal thin sheet')
H	⊗	Broad conductive rock unit, deep conductive weathering, thick conductive cover ('half space')
E	⊙	Edge of broad conductor ('edge of half space')
L	—	Culture, e.g. power line, building, fence

Depth is greater than:  
 15 m  
 30 m  
 45 m  
 80 m

Inphase and Quadrature of coaxial coil is greater than:  
 5 ppm  
 10 ppm  
 15 ppm  
 20 ppm

092959

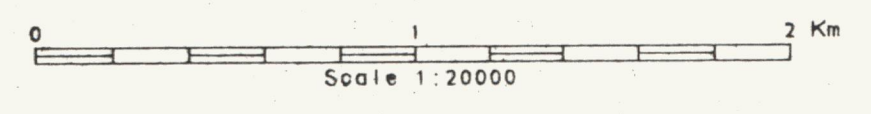
MAP# 115H-7,8,9,10 Doc# 092959 (55)

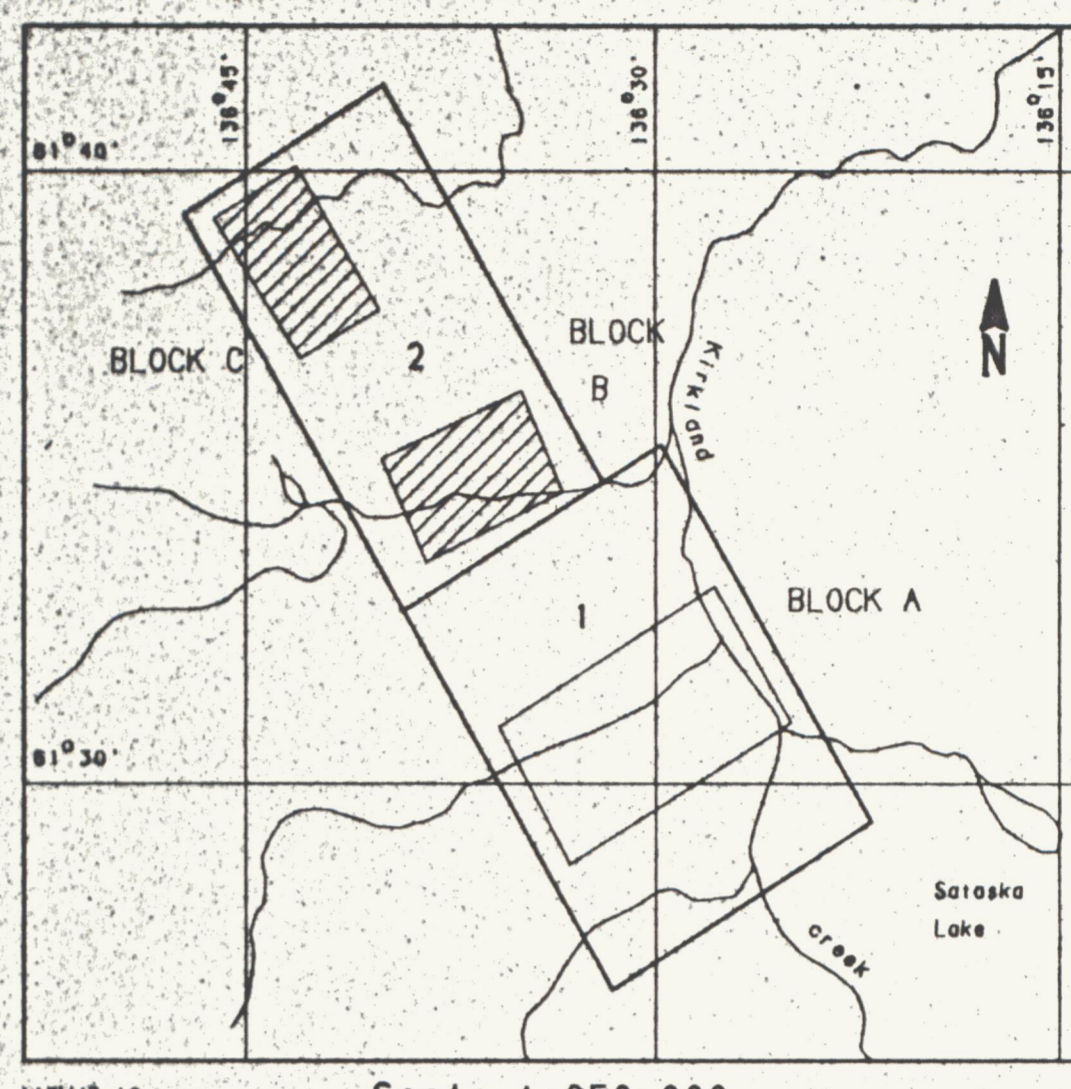
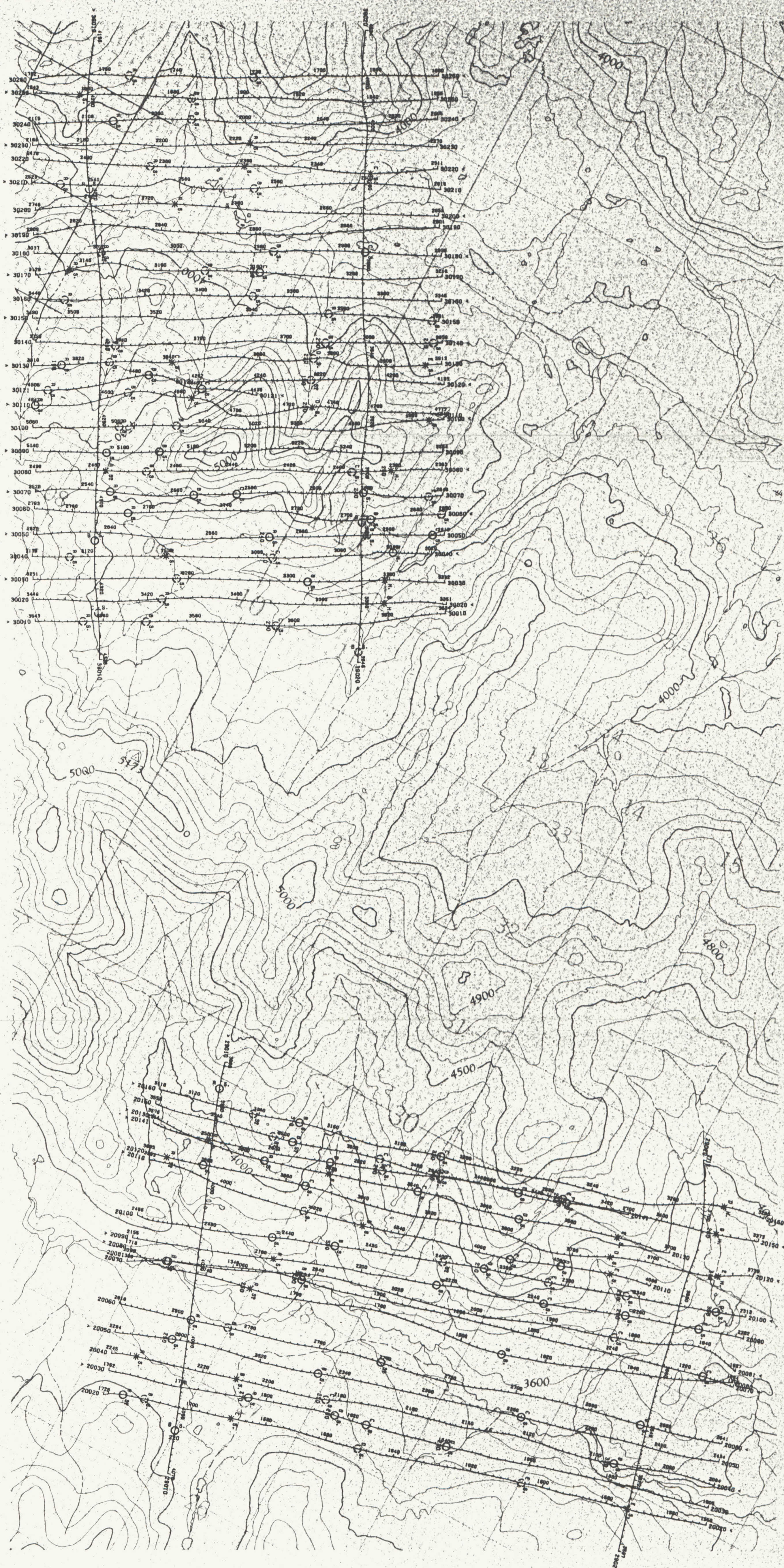
**GOLDEN QUAIL RESOURCES LTD.**  
**CARMACKS, YUKON**

**ELECTROMAGNETIC ANOMALIES**

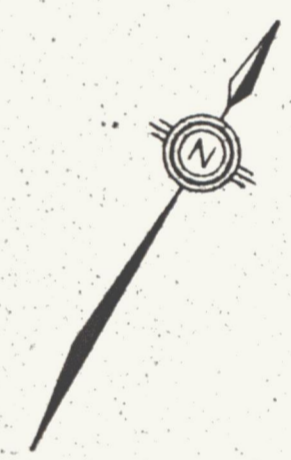
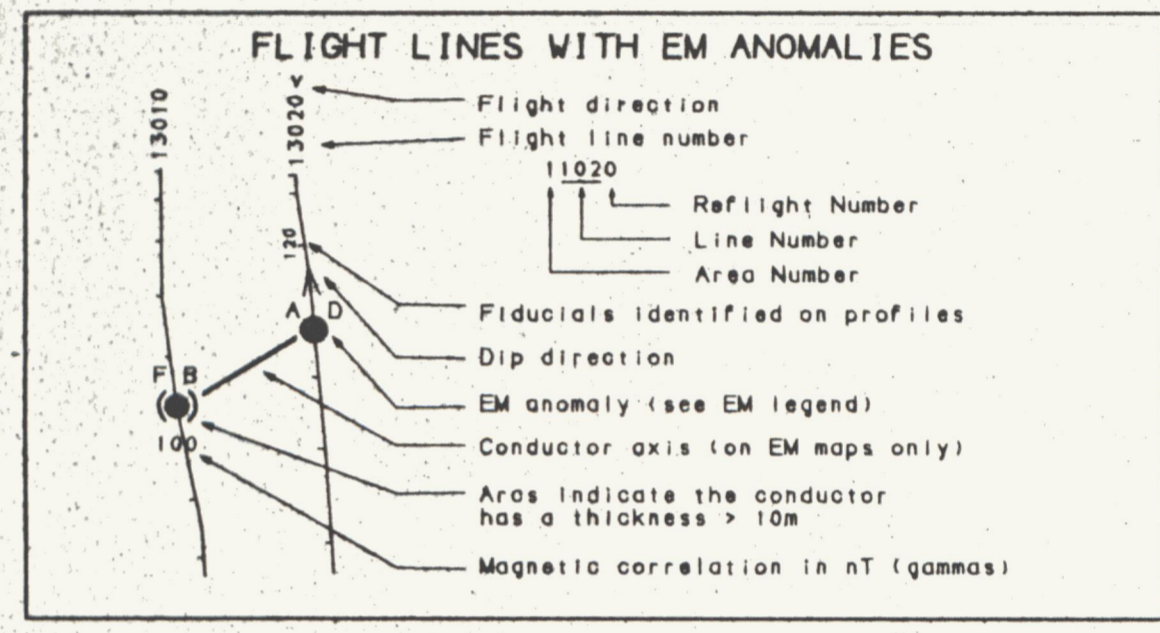
DIGHEM <sup>TM</sup> SURVEY	NTS: 115H/7, 8, 9, 10	GEOPHYSICIST: RP
DATE: MARCH 1990	JOB: 1056	SHEET: 1

DIGHEM SURVEYS & PROCESSING INC.





Scale 1:250,000



Grade	Anomaly	Conductance
7	●	2100 siemens
6	⊙	50-100 siemens
5	⊗	20-50 siemens
4	⊕	10-20 siemens
3	⊖	5-10 siemens
2	⊙	1-5 siemens
1	⊗	< 1 siemen
-	*	Questionable anomaly

Anomaly Identifier	Interpretive symbol	Interpretive symbol	Conductor ('model')
●	B	B	Bedrock conductor ('thin dike')
⊙	D	D	Narrow bedrock conductor ('thin dike')
⊗	S	S	Conductive cover ('horizontal thin sheet')
⊕	H	H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ('half space')
⊖	E	E	Edge of broad conductor ('edge of half space')
*	L	L	Culture, e.g. power line, building, fence

Depth is greater than:  
 15 m  
 30 m  
 45 m  
 60 m

Inphase and Quadrature of axial coil is greater than:  
 5 ppm  
 10 ppm  
 15 ppm  
 20 ppm

092359

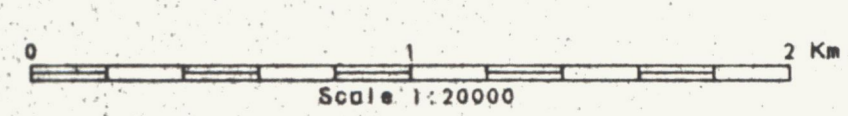
MAP# 115H-7,8,9,10 Doc# 092359 (54)

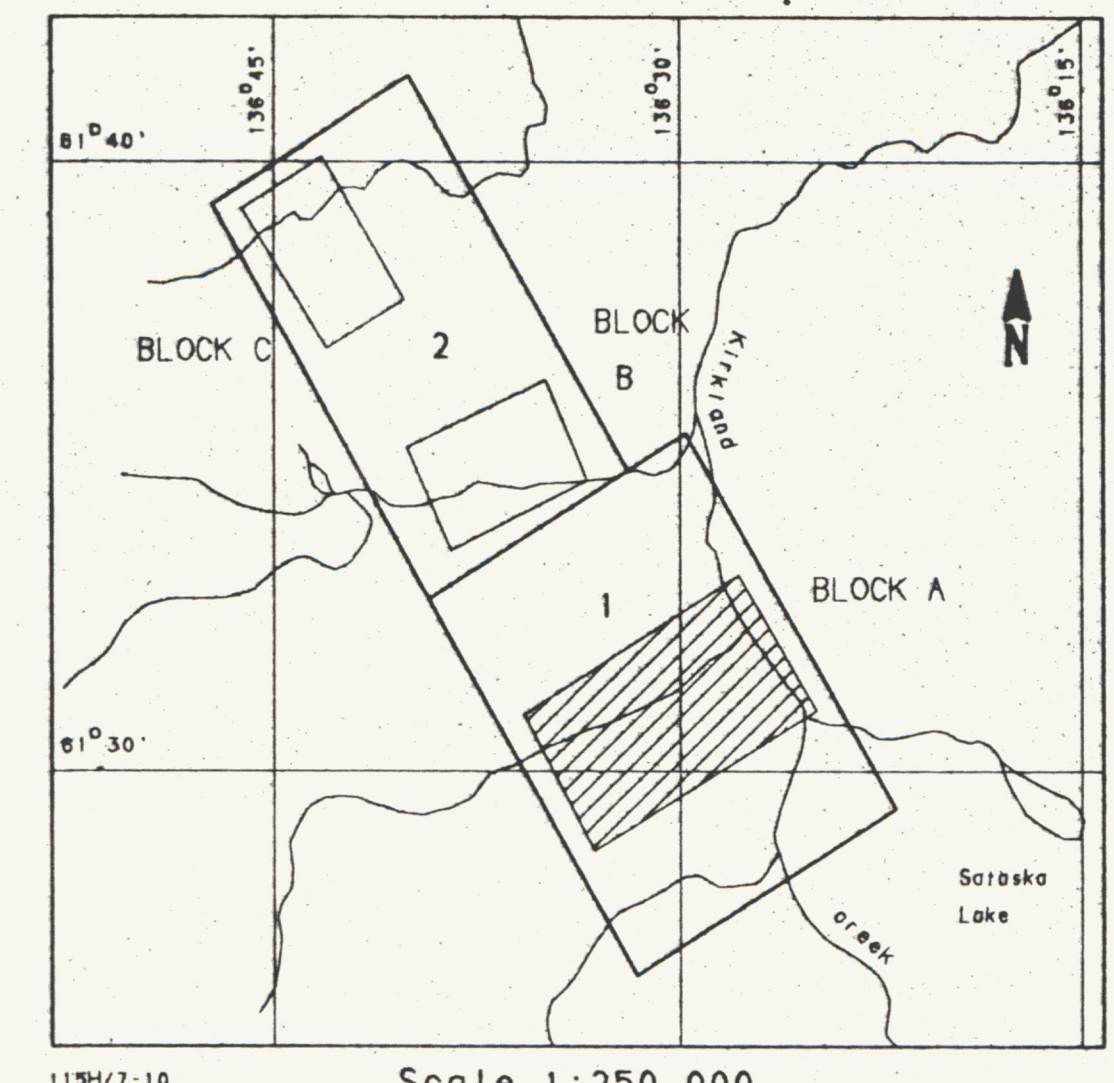
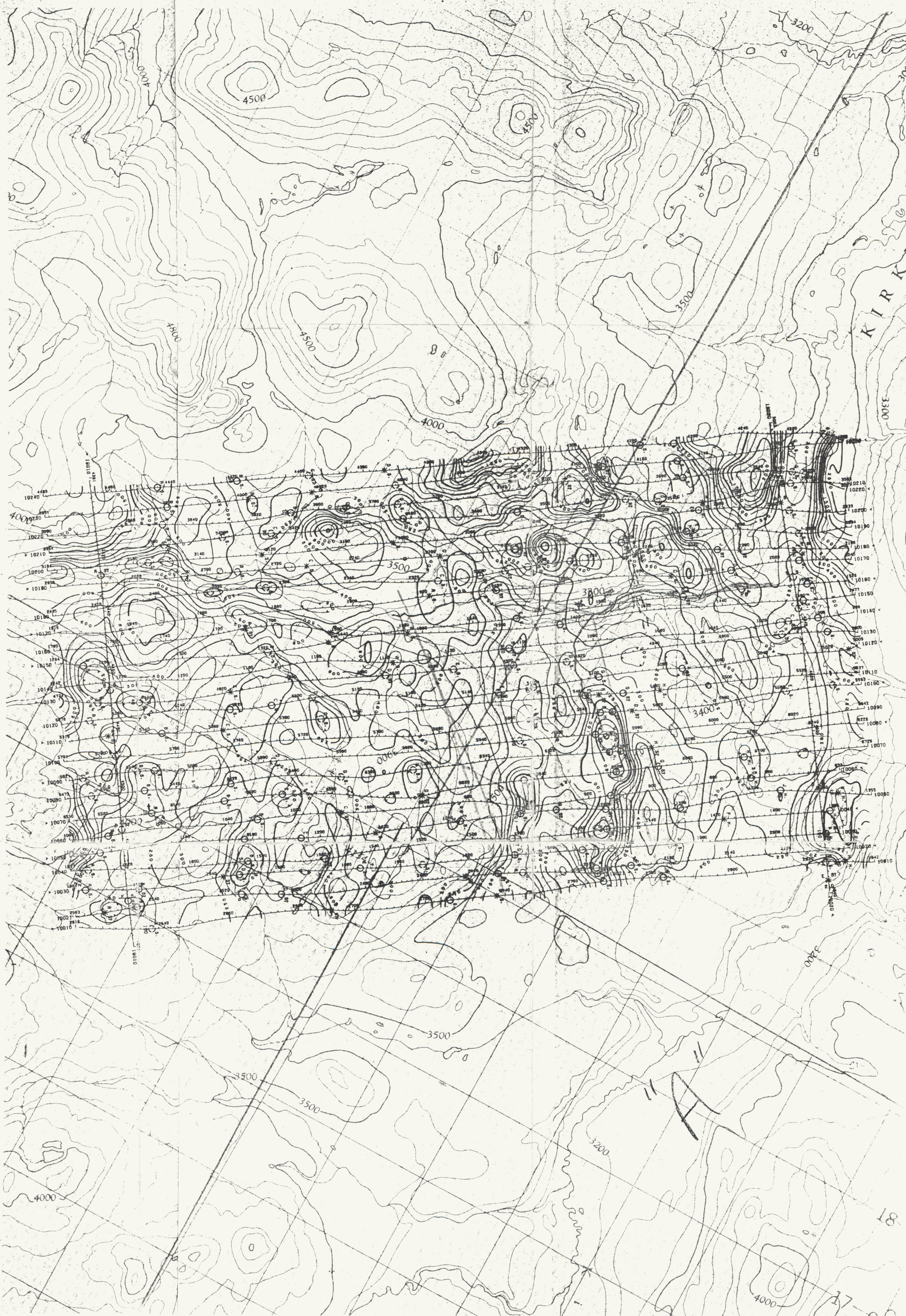
**GOLDEN QUAIL RESOURCES LTD.**  
**CARMACKS, YUKON**

**ELECTROMAGNETIC ANOMALIES**

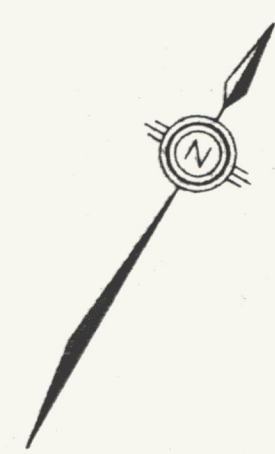
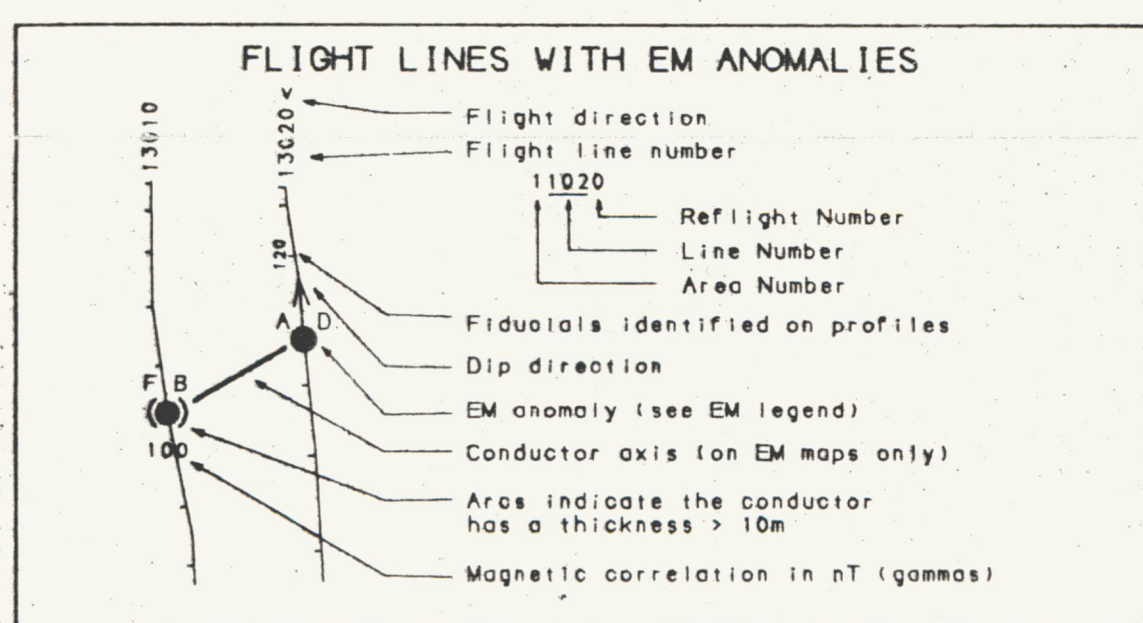
DIGHEM <sup>TM</sup> SURVEY	NTS: 115H/7.8.9.10	GEOPHYSICIST: <i>RP</i>
DATE: MARCH 1980	JOB: 1086	SHEET: 2

DIGHEM SURVEYS & PROCESSING INC.





115H/7-10 Scale 1:250,000



Grade	Anomaly	Conductance
7	●	2400 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	<1 siemens
-	*	Questionable anomaly

Anomaly identifier	Interpretive symbol	Interpretive symbol	Conductor ('model')
CH	○	B	Bedrock conductor
	○	D	Narrow bedrock conductor ('thin disk')
	○	S	Conductive cover ('horizontal thin sheet')
	○	H	Broad conductive rock unit, deep conductive weathering, thick conductive cover
	○	E	Edge of broad conductor ('edge of half space')
	○	L	Culture e.g. power line, building, fence

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CONTOUR LEVELS	
1000	—
800	—
600	—
500	—
400	—
300	—
250	—
200	—
150	—
125	—
100	—

Contours in ohm-m at 10 intervals per decade

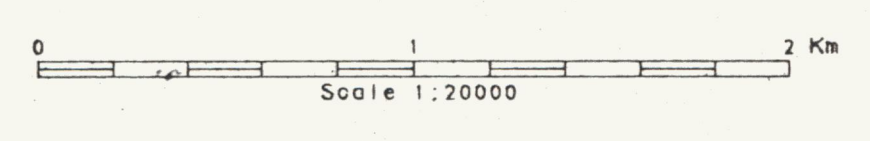
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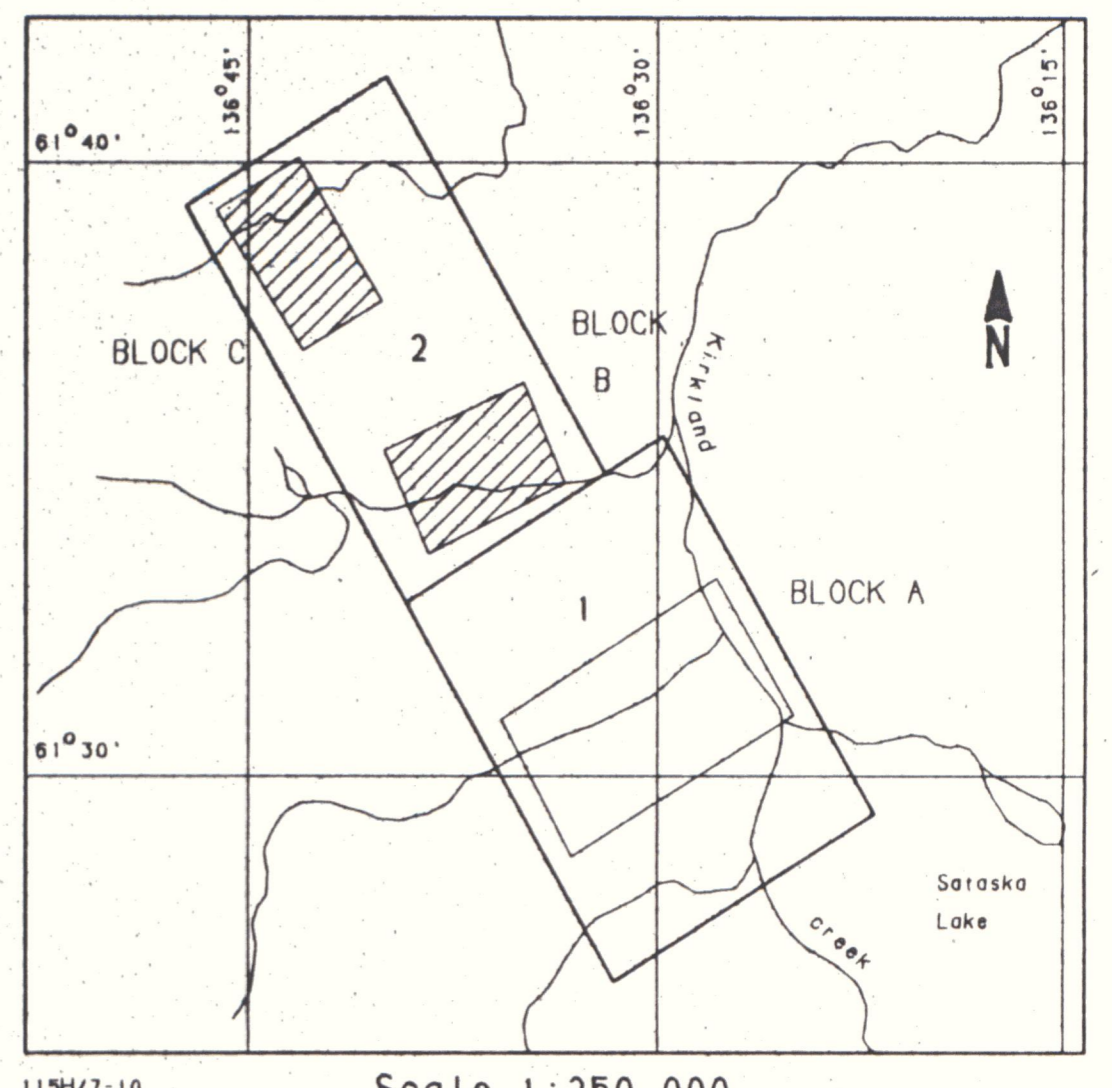
**GOLDEN QUAIL RESOURCES LTD.**  
CARMACKS, YUKON

**RESISTIVITY (7200 Hz)**

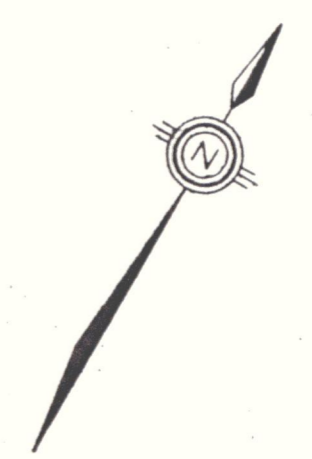
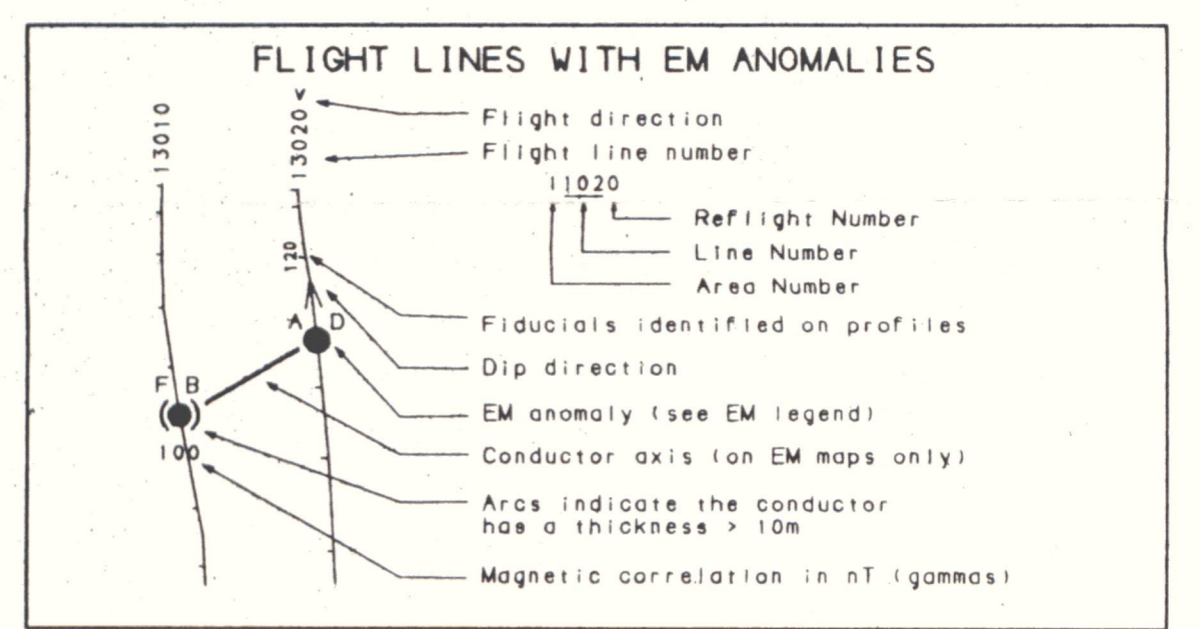
DIGHEM SURVEY	NTS: 115H/7,8,9,10	GEOPHYSICIST: RP
DATE: MARCH 1990	JOB: 1086	SHEET: 1

DIGHEM SURVEYS & PROCESSING INC.





115H/7-10 Scale 1:250,000



Grade	Anomaly	Conductance
7	●	≥100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	< 1 siemen
-	*	Questionable anomaly

Anomaly identifier	Interpretive symbol	Interpretive symbol	Conductor ('model')
	B		Bedrock conductor
	D		Narrow bedrock conductor ('thin dike')
	S		Conductive cover ('horizontal thin sheet')
	H		Broad conductive rock unit, deep conductive weathering, thick conductive cover ('half space')
	E		Edge of broad conductor ('edge of half space')
	L		Culture, e.g. power line, building, fence

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CONTOUR LEVELS	
1000	—
800	—
600	—
500	—
400	—
300	—
250	—
200	—
150	—
125	—
100	—

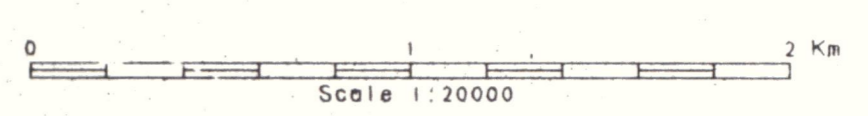
Contours in ohm-m at 10 intervals per decade

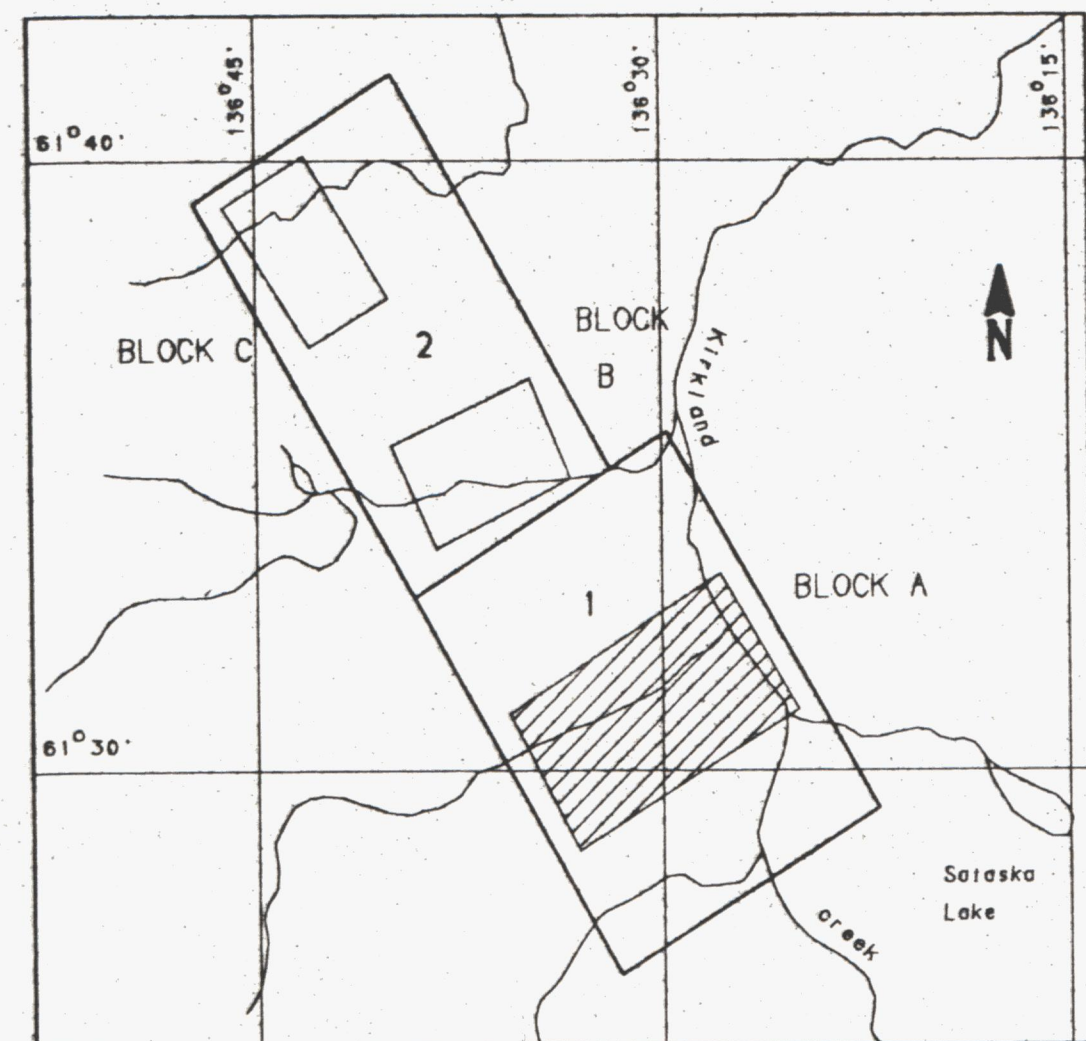
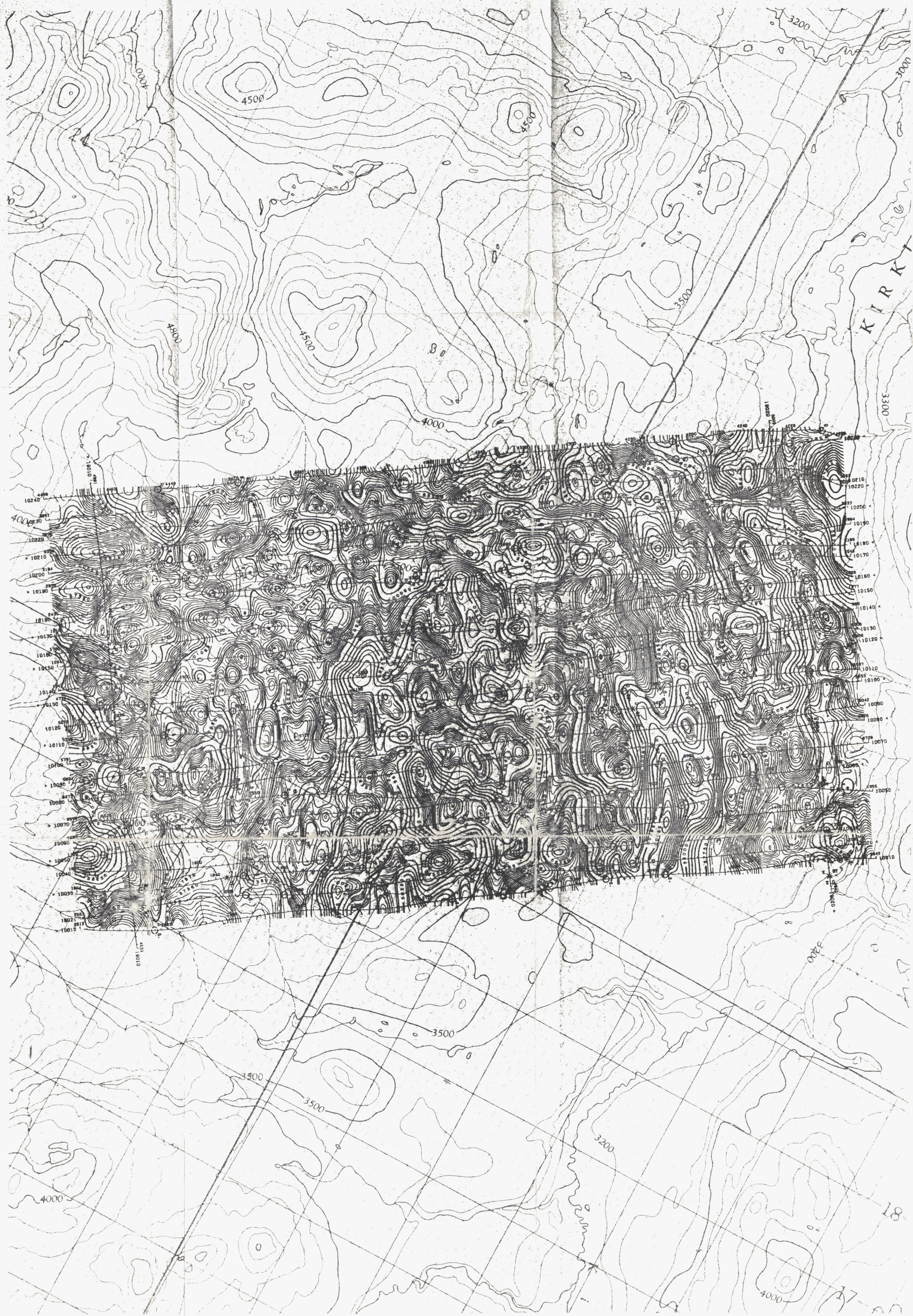
MAP# 115H-7,8,9,10 Doc# 092959 (56)

**GOLDEN QUAIL RESOURCES LTD.**  
CARMACKS, YUKON

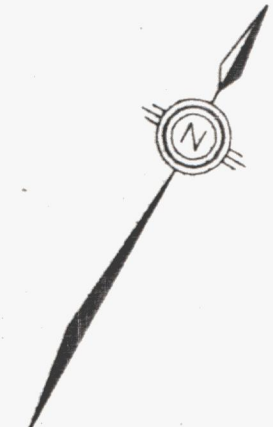
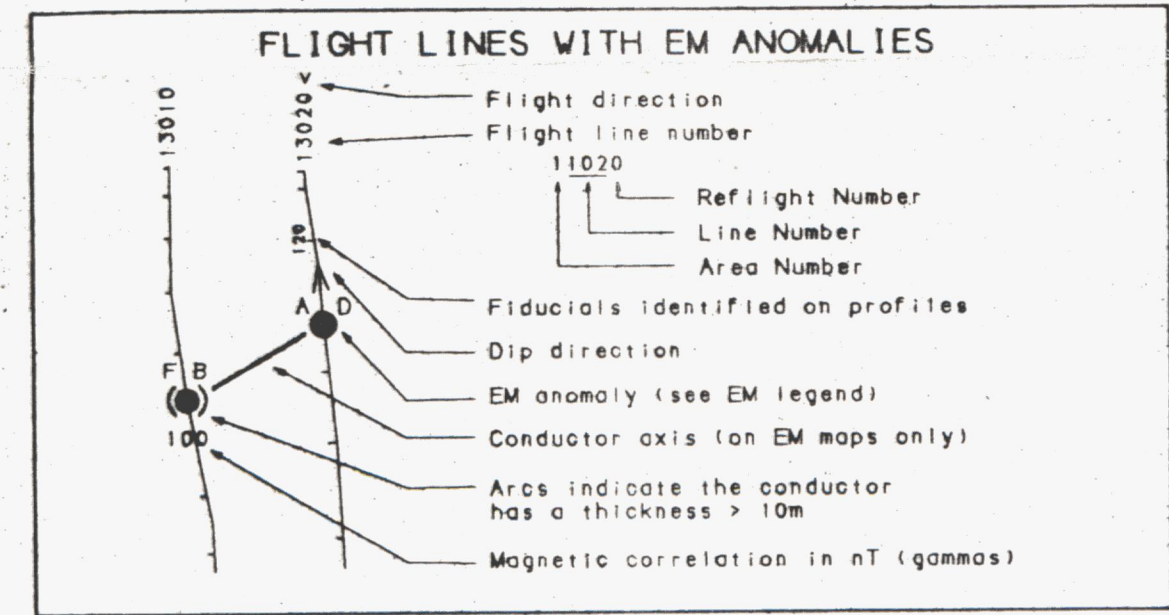
**RESISTIVITY (7200 Hz)**

DIGHEM <sup>TM</sup> SURVEY	NTS: 115H/7, 8, 9, 10	GEOPHYSICIST: RP
DATE: MARCH 1990	JOB: 1086	SHEET: 2
DIGHEM SURVEYS & PROCESSING INC.		





115H/7-10 Scale 1:250,000



Grade	Anomaly	Conductance	Interpretive symbol	Conductor ("model")
7	●	2100 siemens	B	Bedrock conductor
6	●	50-100 siemens	D	Narrow bedrock conductor ("thin dike")
5	●	20-50 siemens	S	Conductive cover ("horizontal thin sheet")
4	●	10-20 siemens	H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
3	●	5-10 siemens	E	Edge of broad conductor ("edge of half space")
2	○	1-5 siemens	L	Culture, e.g. power line, building, fence
1	○	< 1 siemens		
-	*	Questionable anomaly		

Depth is greater than:  
 15 m ... 5 ppm  
 30 m ... 10 ppm  
 45 m ... 15 ppm  
 60 m ... 20 ppm

Inphase and Quadrature of coaxial coil is greater than:  
 5 ppm  
 10 ppm  
 15 ppm  
 20 ppm

092959

CONTOUR INTERVALS	
—————	250nT
—————	50nT
—————	10nT
—————	5nT
○	magnetic low

Magnetic inclination within the survey area: 76 degrees

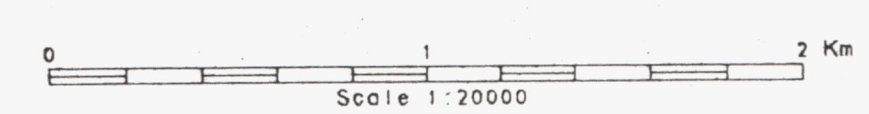
MAP# 115H-789/10 Doc# 092959 59

**GOLDEN QUAIL RESOURCES LTD.**  
 CARMACKS, YUKON

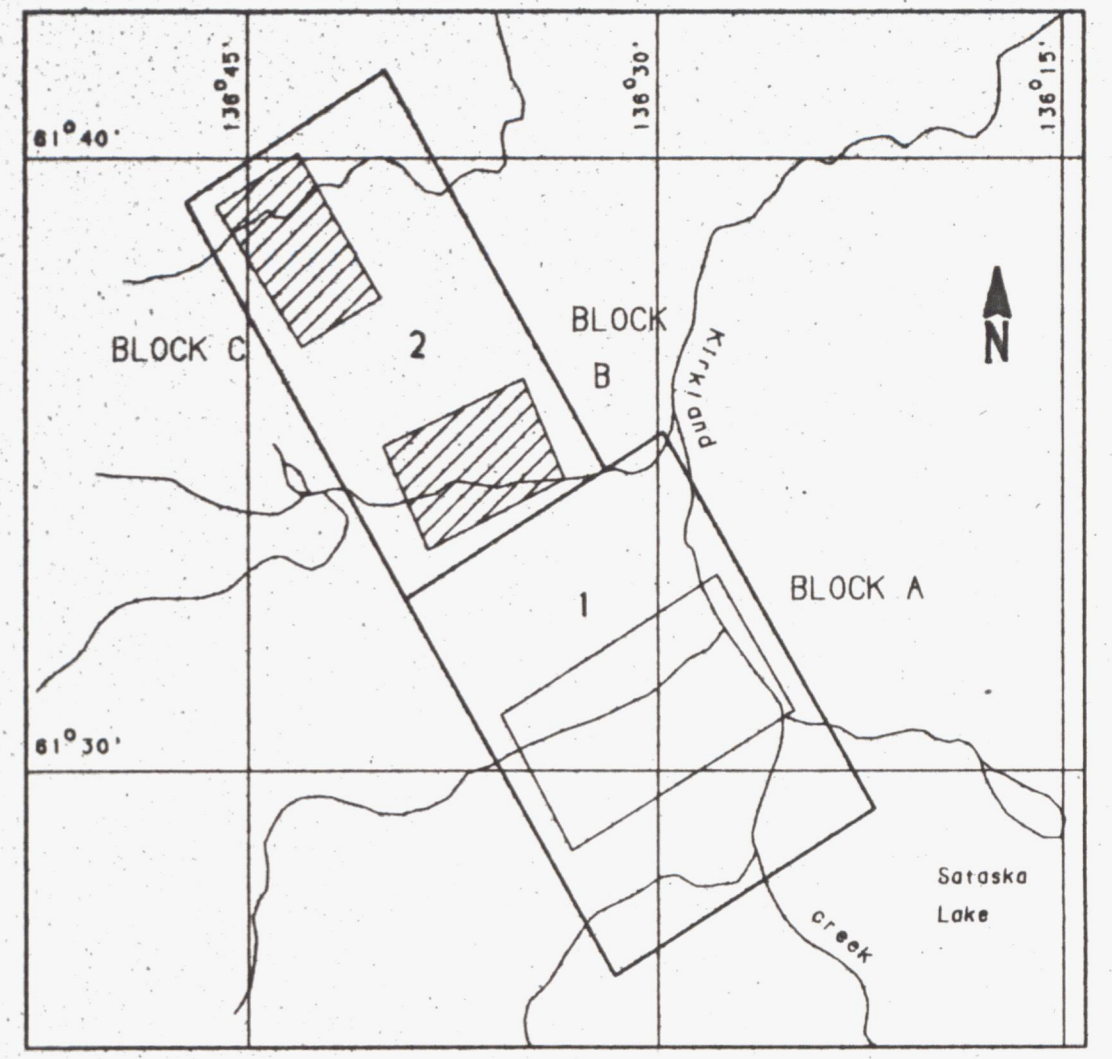
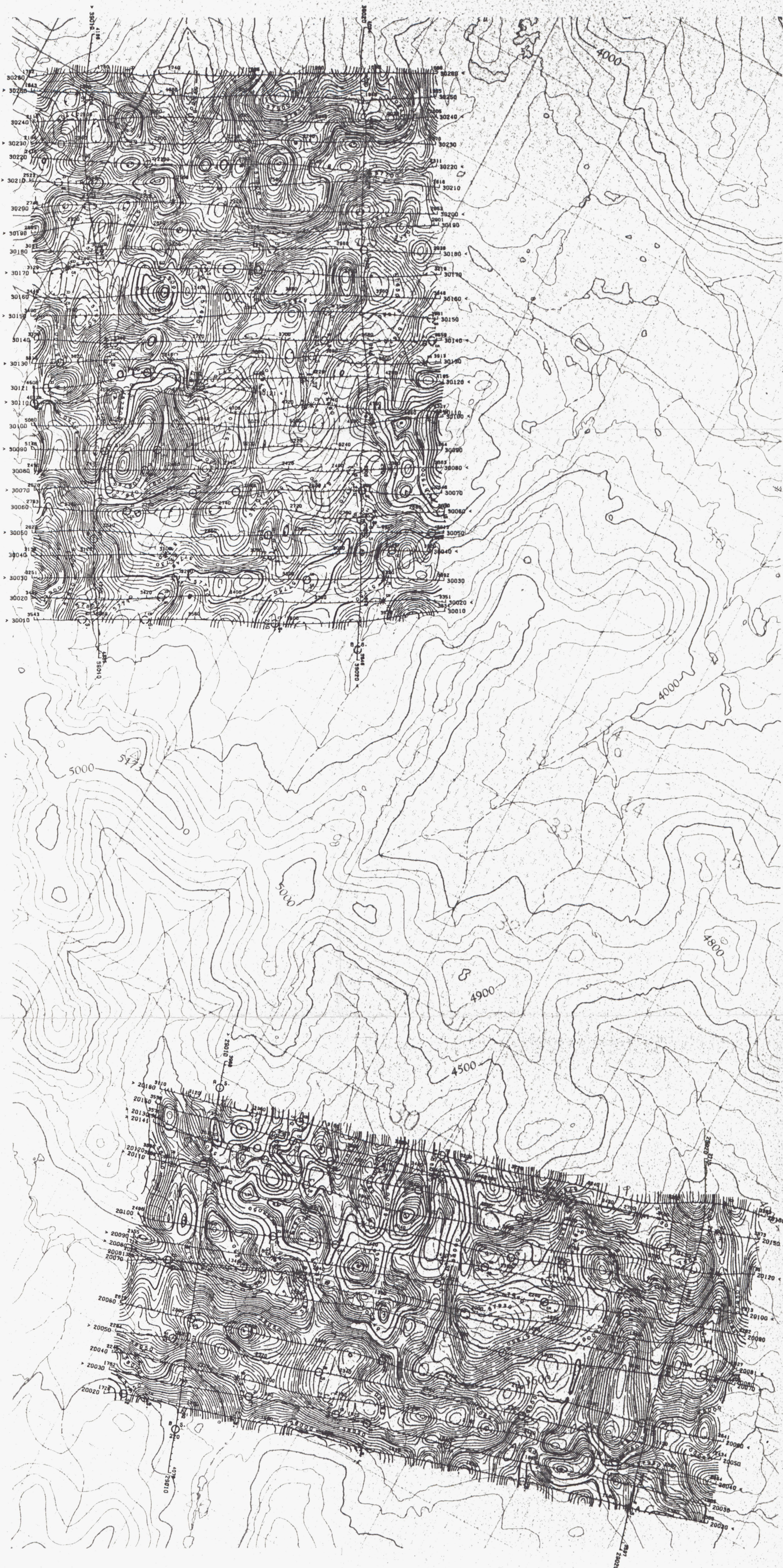
**TOTAL FIELD MAGNETICS**

DIGHEM <sup>TM</sup> SURVEY	NTS: 115H/7.8.9.10	GEOPHYSICIST: RP
DATE: MARCH 1990	JOB: 1086	SHEET: 1

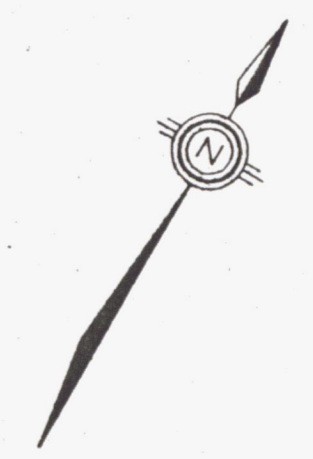
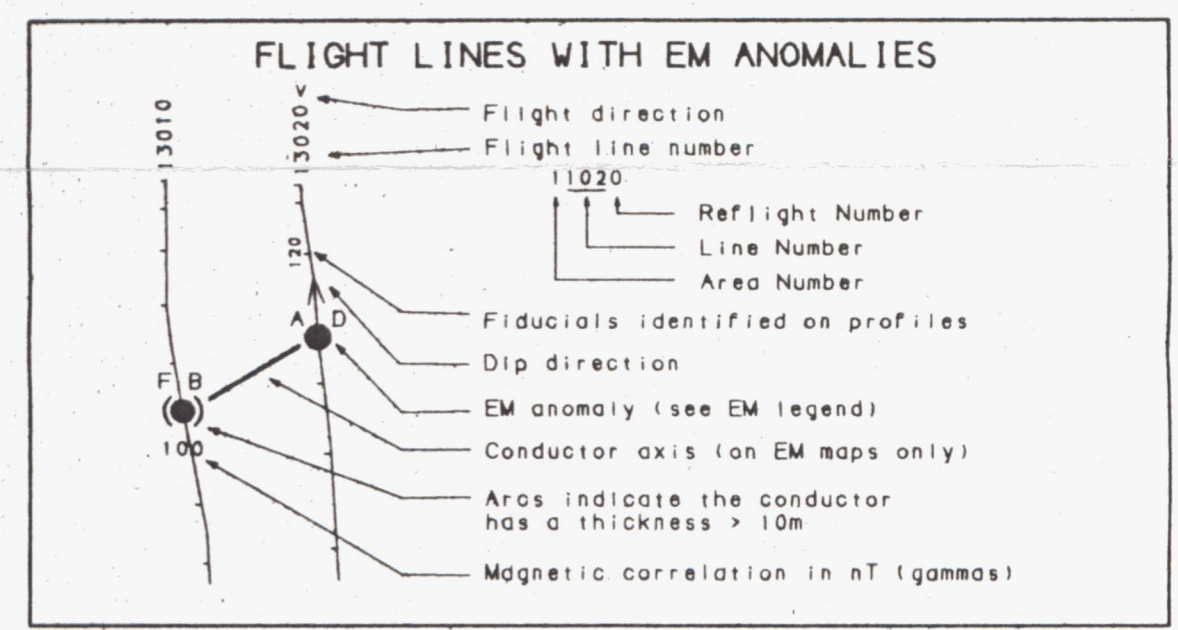
DIGHEM SURVEYS & PROCESSING INC.



**Dighem**



115H/7-10 Scale 1:250,000



Grade	Anomaly	Conductance
7	●	≥ 100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	< 1 siemen
-	*	Questionable anomaly

Anomaly identifier	Interpretive symbol	Conductor ('model')
B	●	Bedrock conductor
D	○	Narrow bedrock conductor ('thin dike')
S	○	Conductive cover ('horizontal thin sheet')
H	○	Broad conductive rock unit, deep conductive weathering, thick conductive cover ('half space')
E	○	Edge of broad conductor ('edge of half space')
L	○	Culture, e.g. power line, building, fence

Depth is greater than:  
 15 m ... 5 ppm  
 30 m ... 10 ppm  
 45 m ... 15 ppm  
 60 m ... 20 ppm

Inphase and Quadrature of coaxial coil is greater than:  
 5 ppm  
 10 ppm  
 15 ppm  
 20 ppm

092959

**CONTOUR INTERVALS**

—————	250nT
—————	50nT
—————	10nT
—————	5nT
○	magnetic low

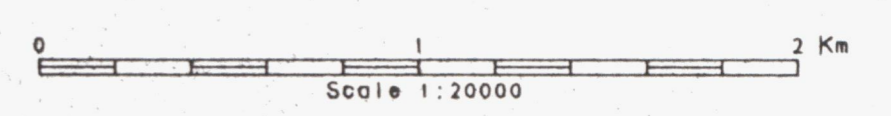
Magnetic inclination within the survey area: 76 degrees

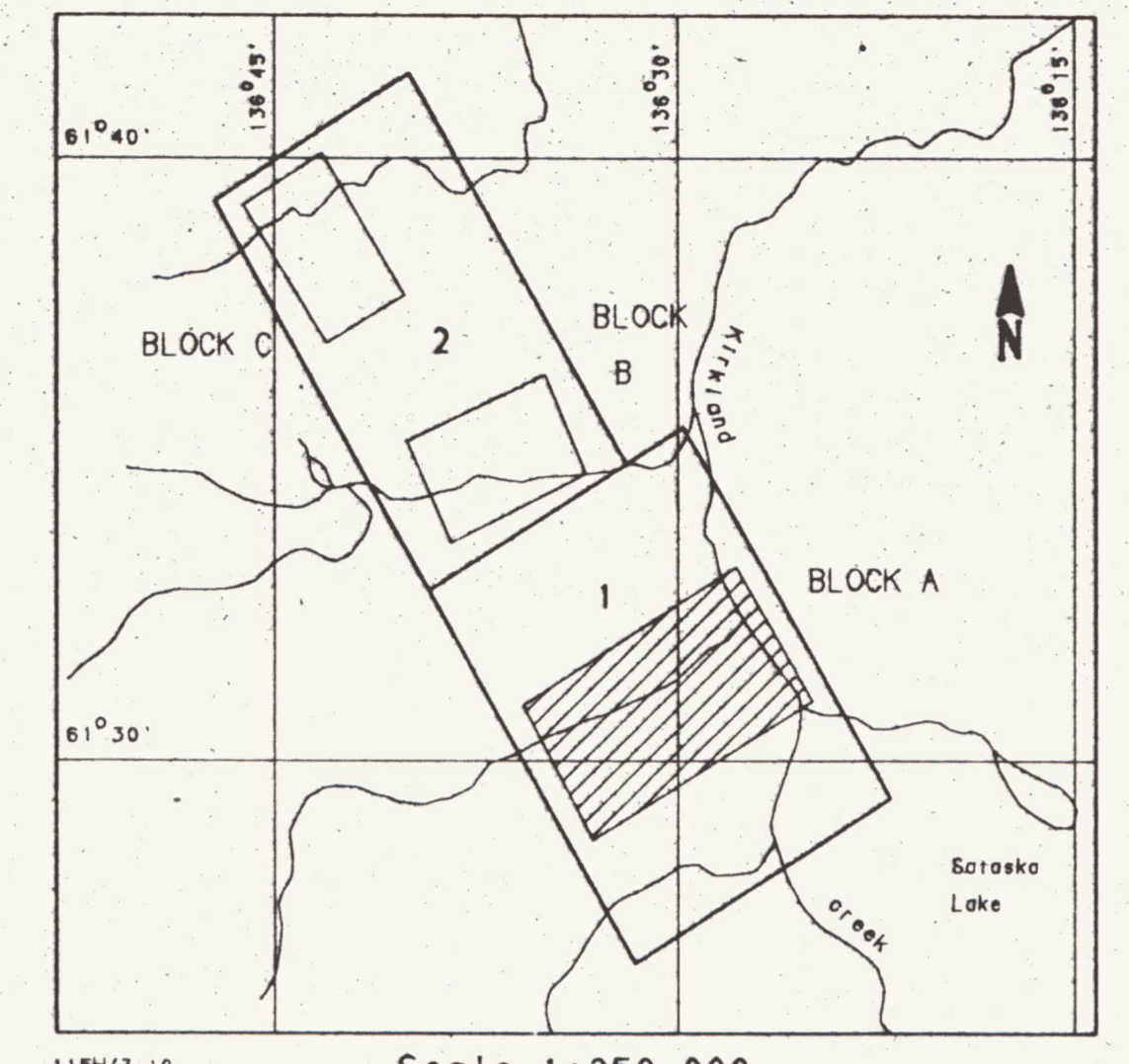
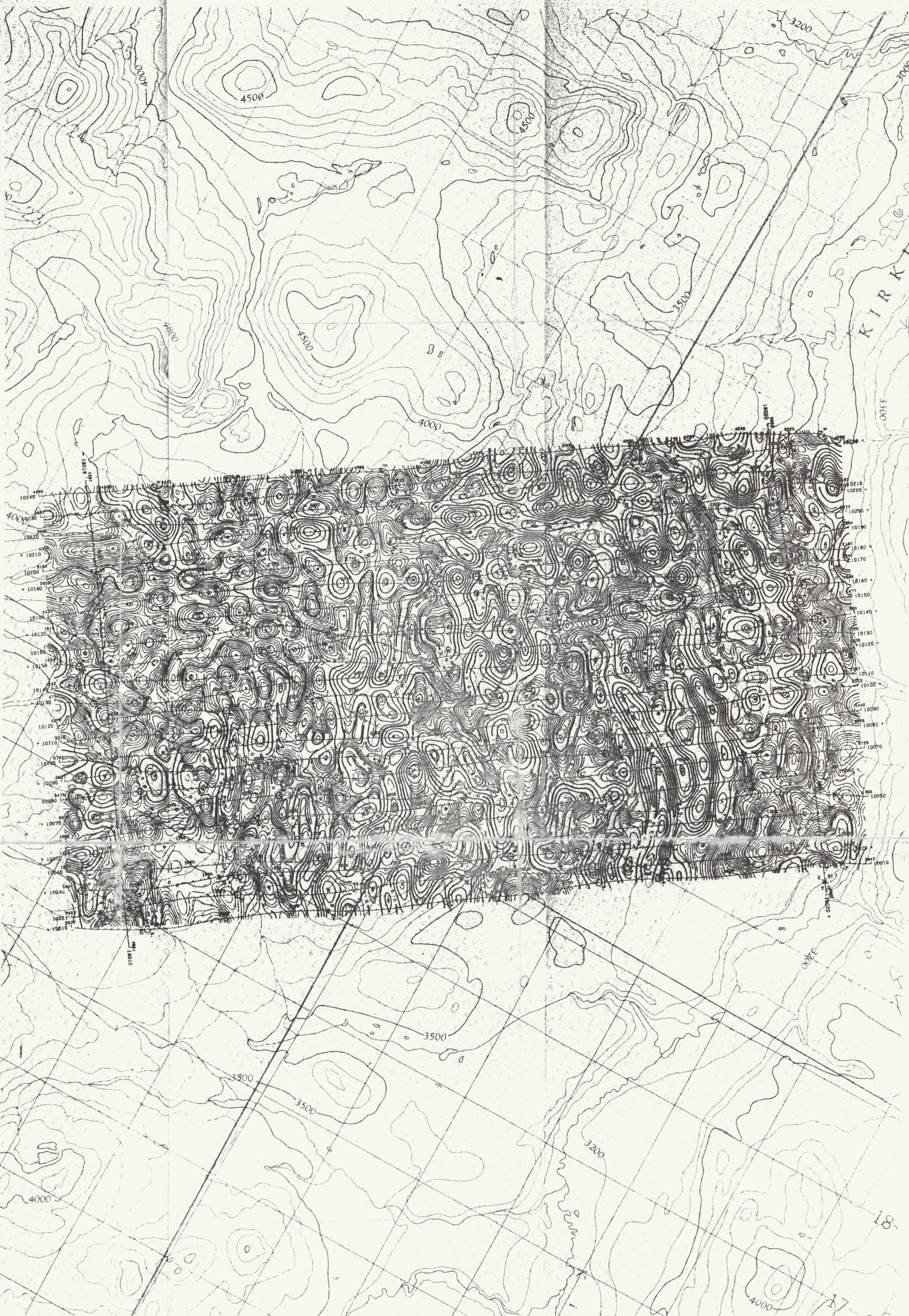
MAR# 115H-7,8,9,10 Doc# 092959 58

**GOLDEN QUAIL RESOURCES LTD.**  
**CARMACKS, YUKON**

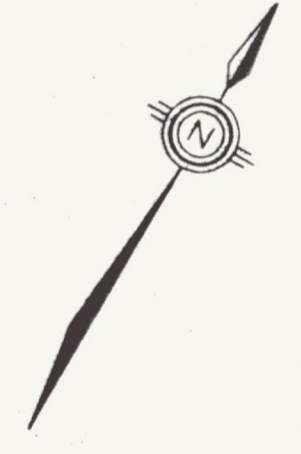
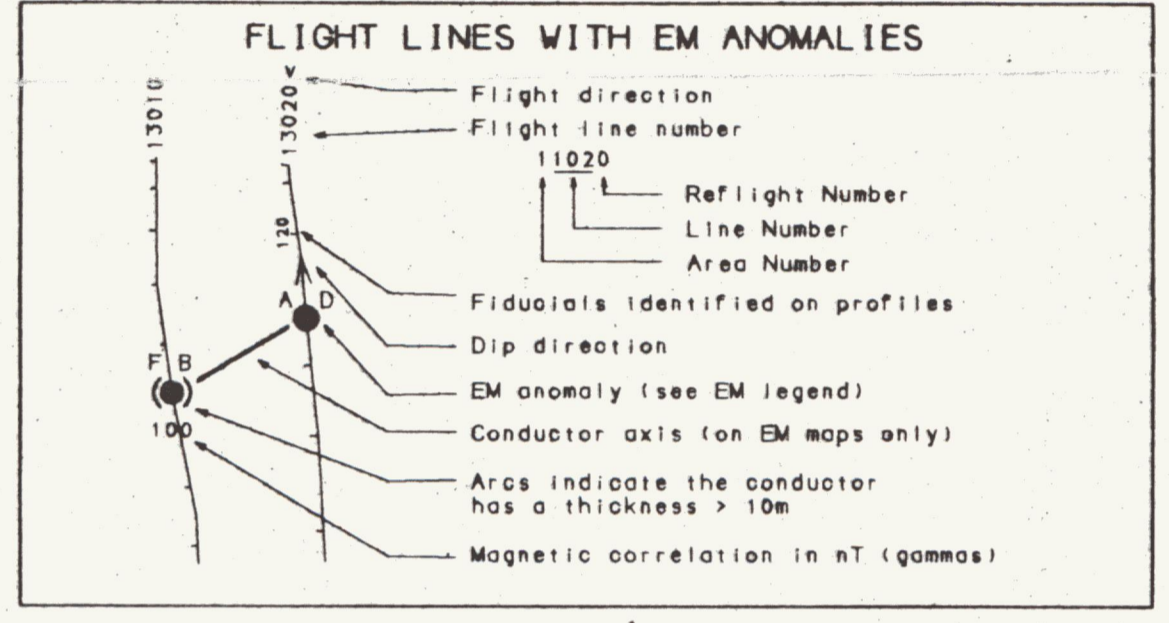
**TOTAL FIELD MAGNETICS**

DIGHEM SURVEY	NTS: 115H/7,8,9,10	GEOPHYSICIST: RP
DATE: MARCH 1990	JOB: 1086	SHEET: 2
DIGHEM SURVEYS & PROCESSING INC.		





115H/7-10 Scale 1:250,000



Grade	Anomaly	Conductance
7	●	>100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	<1 siemen
-	*	Questionable anomaly

Anomaly identifier	Interpretive symbol	Interpretive symbol	Conductor ('model')
B	●	B	Bedrock conductor
D	●	D	Narrow bedrock conductor ('thin dike')
S	●	S	Conductive cover ('horizontal thin sheet')
H	●	H	Broad conductive rock unit with conductive overlying thin conductive cover ('half space')
E	●	E	Edge of broad conductor ('edge of half space')
L	●	L	Culture, e.g. power line, building, fence

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**CONTOURS**

—————	2.5 nT/metre
—————	0.5 nT/metre
—————	0.1 nT/metre
—————	0.05 nT/metre

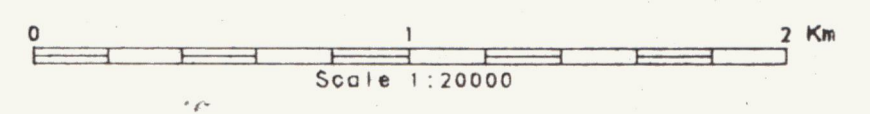
MAP# 115H-789.10 Doc# 092959

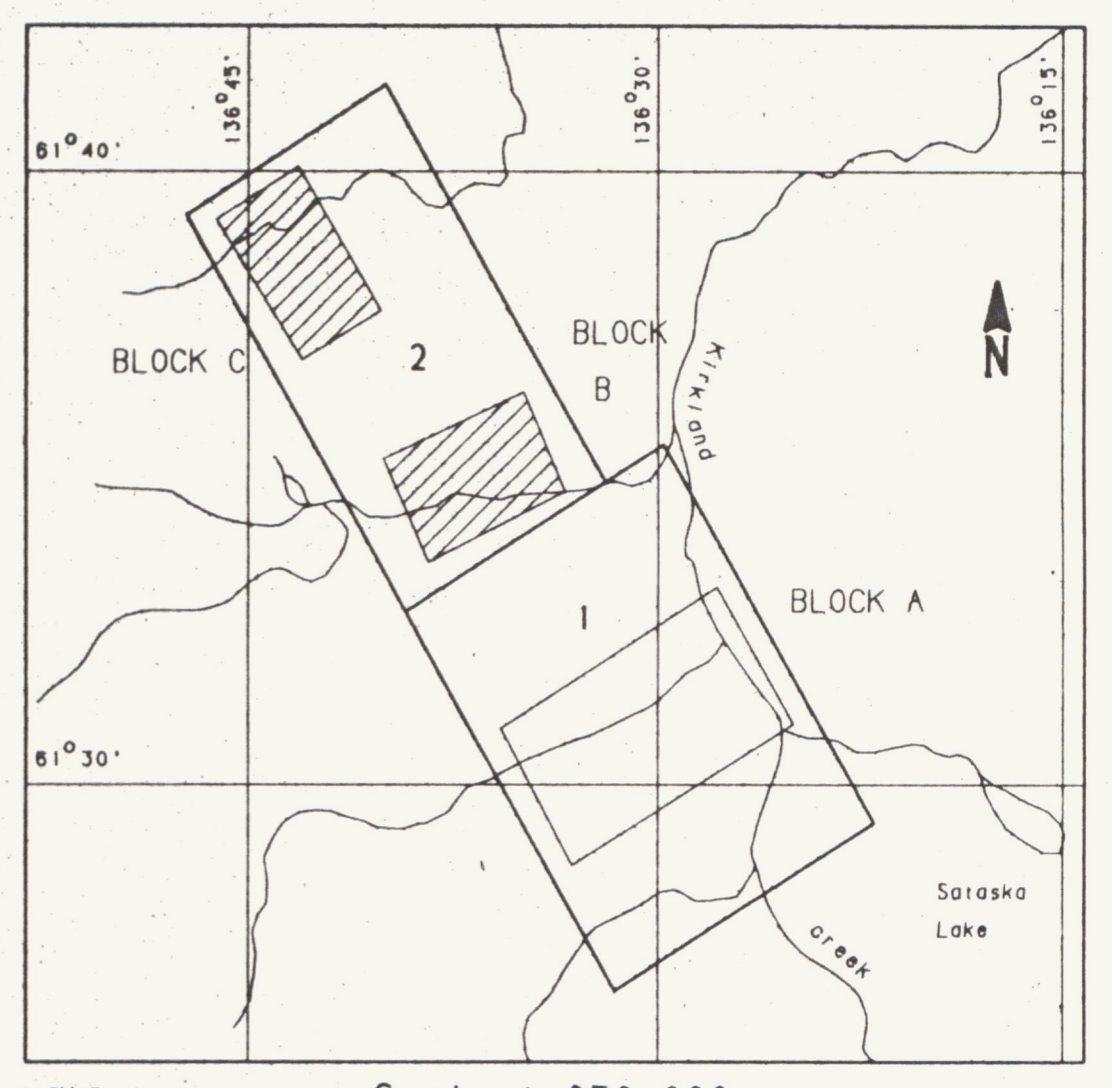
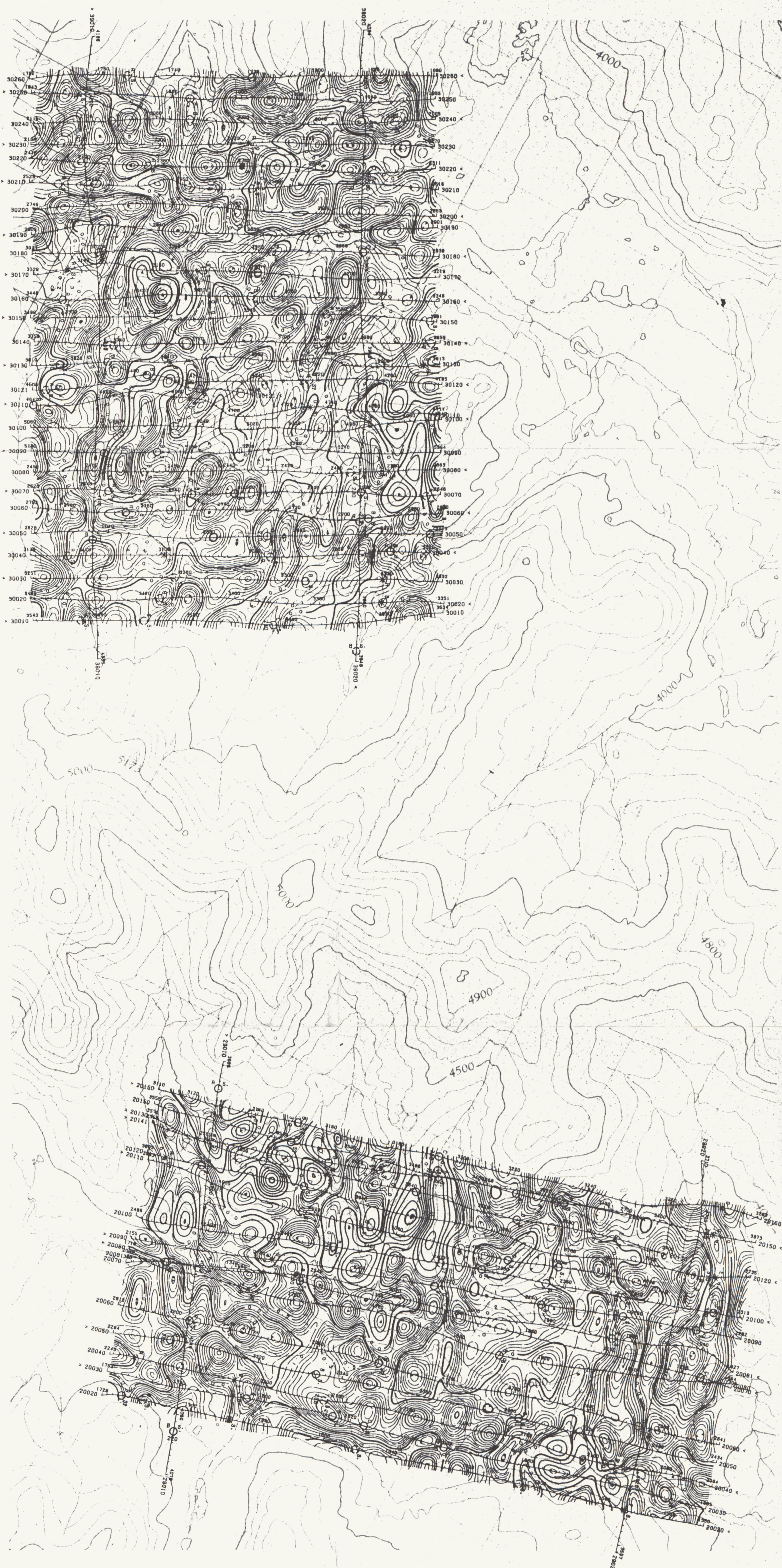
**GOLDEN QUAIL RESOURCES LTD.**  
CARMACKS, YUKON

**CALCULATED VERTICAL GRADIENT MAGNETICS**

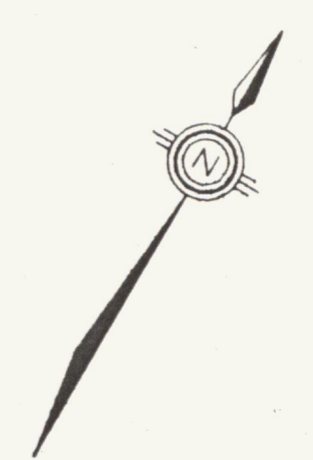
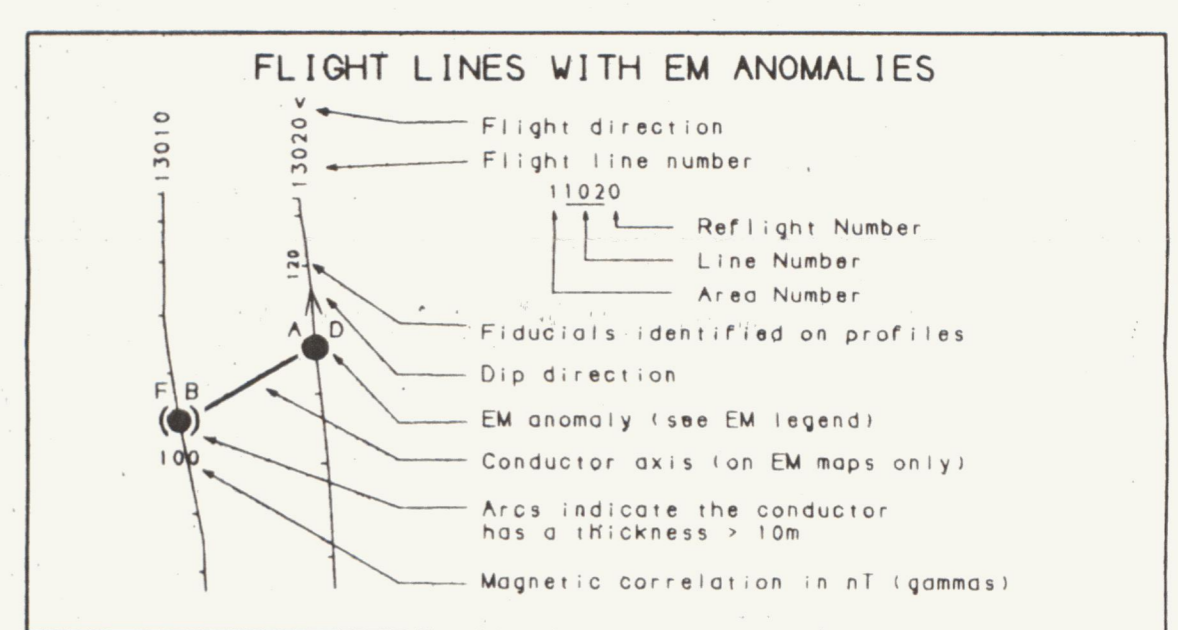
DIGHEM SURVEY	NTS: 115H/7 8.8.10	GEOPHYSICIST: RP
DATE: MARCH 1990	JOB: 1086	SHEET: 1

DIGHEM SURVEYS & PROCESSING INC.





115H/7-10 Scale 1:250,000



Grade	Anomaly	Conductance
7	●	≥100 siemens
8	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	< 1 siemen
-	*	Questionable anomaly

Anomaly identifier	Interpretive symbol	Interpretive symbol	Conductor ('model')
	B		Bedrock conductor
	D		Narrow bedrock conductor ('thin dike')
	S		Conductive cover ('horizontal thin sheet')
	H		Broad conductive rock unit deep conductive weathering thick conductive cover ('half space')
	E		Edge of broad conductor ('edge of half space')
	L		Culture e.g. power line, building, fence

Depth is greater than:  
 15 m  
 30 m  
 45 m  
 60 m

Inphase and Quadrature of coaxial coil is greater than:  
 5 ppm  
 10 ppm  
 15 ppm  
 20 ppm

092959

**CONTOURS**

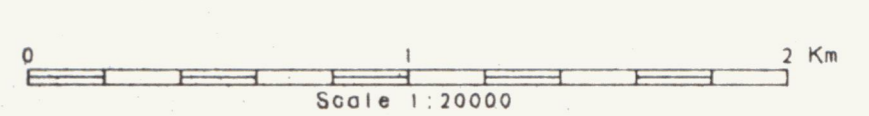
—————	2.5 nT/metre
—————	0.5 nT/metre
—————	0.1 nT/metre
—————	0.05 nT/metre

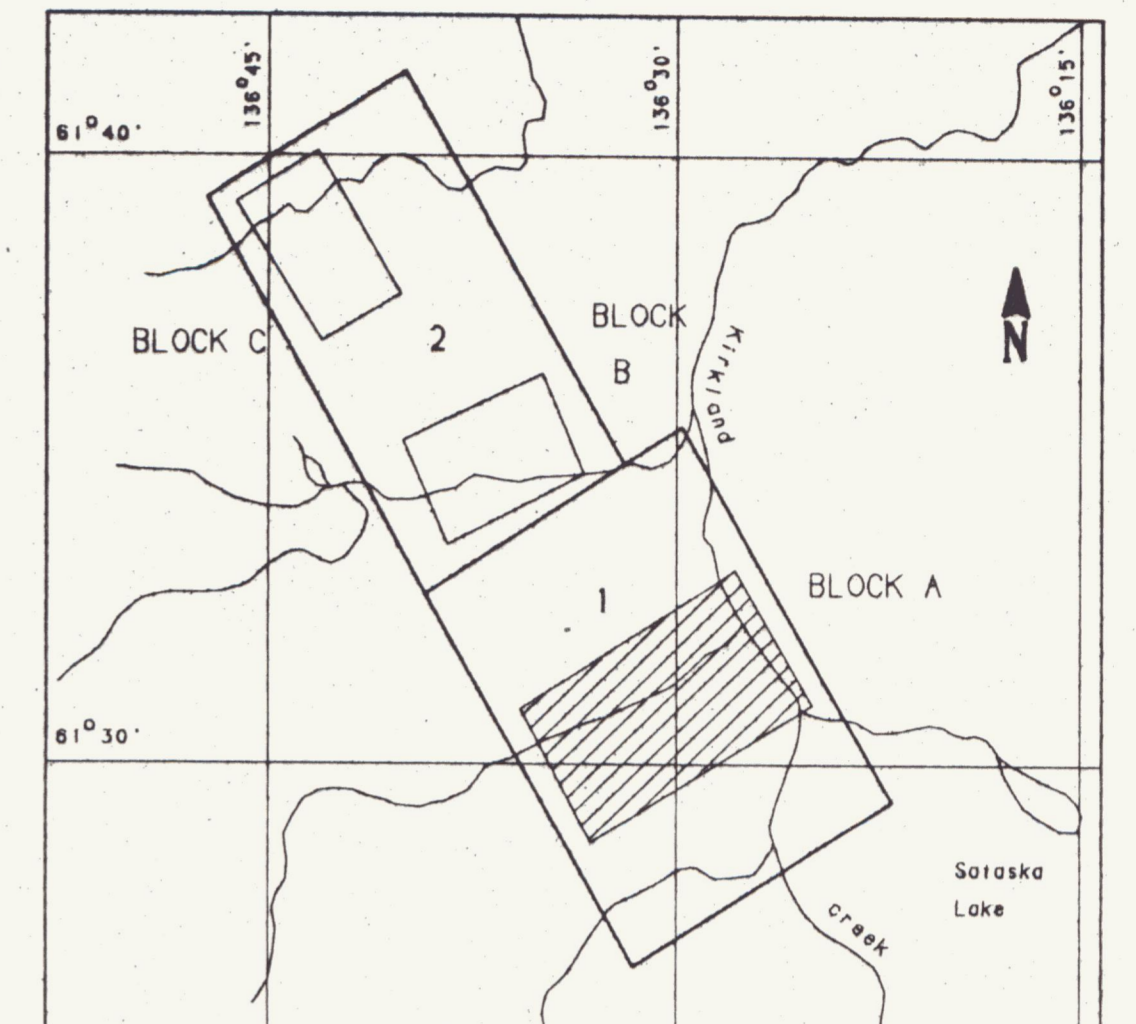
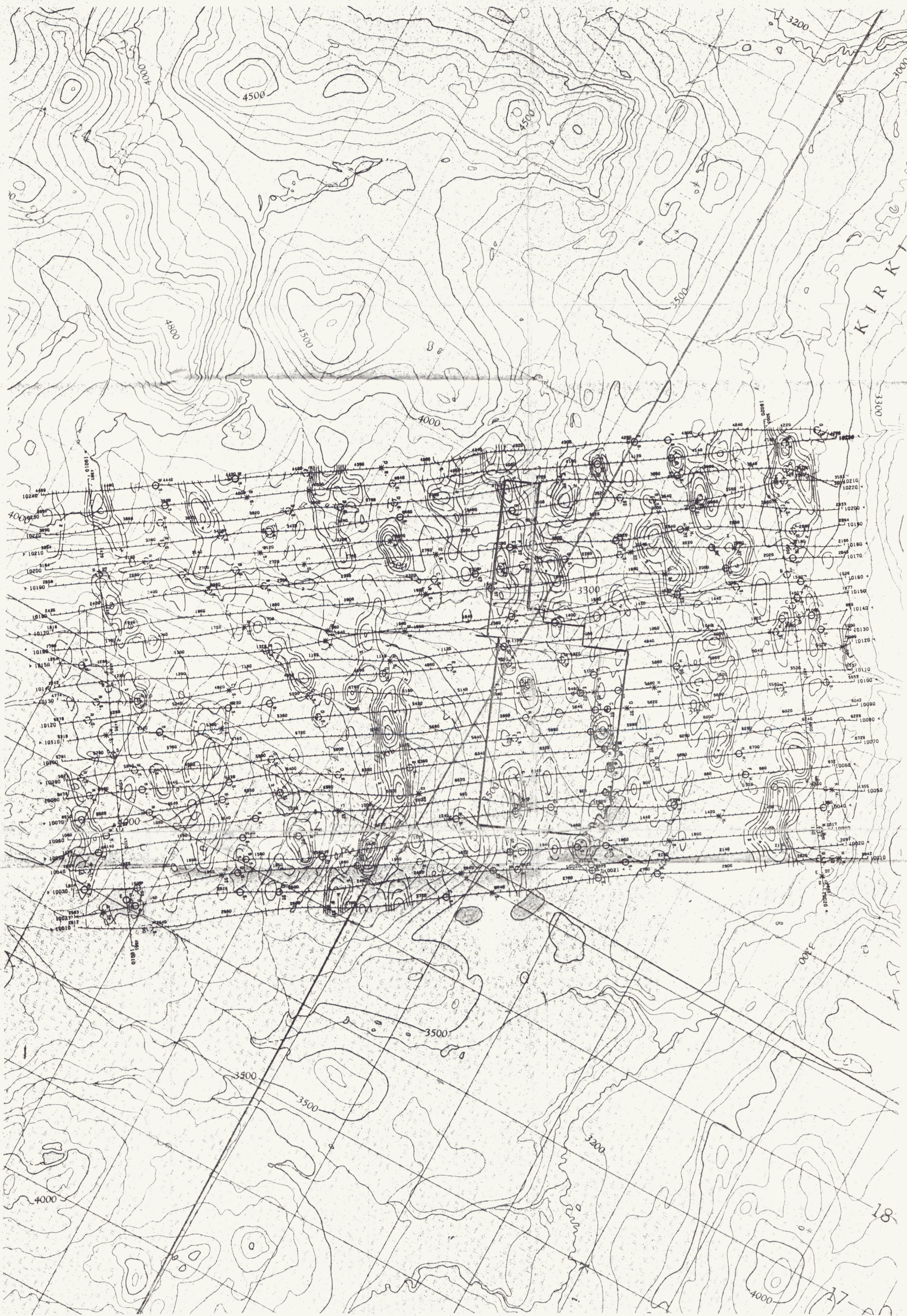
MAP# 115H-7,8,9,10 Doc# 092959 (60)

**GOLDEN QUAIL RESOURCES LTD.**  
**CARMACKS, YUKON**

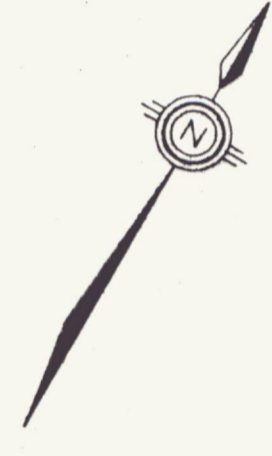
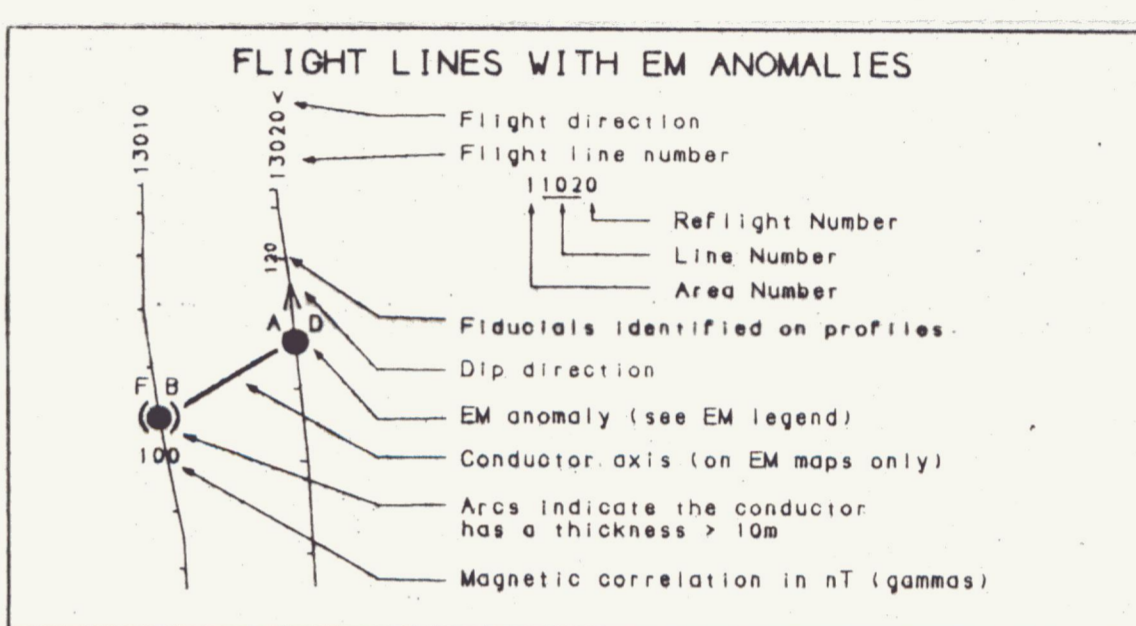
**CALCULATED VERTICAL GRADIENT MAGNETICS**

DIGHEM <sup>TM</sup> SURVEY	NTS: 115H/7.8.9.10	GEOPHYSICIST: RP
DATE: MARCH 1990	JOB: 1086	SHEET: 2
DIGHEM SURVEYS & PROCESSING INC.		





115H/7-10 Scale 1:250,000

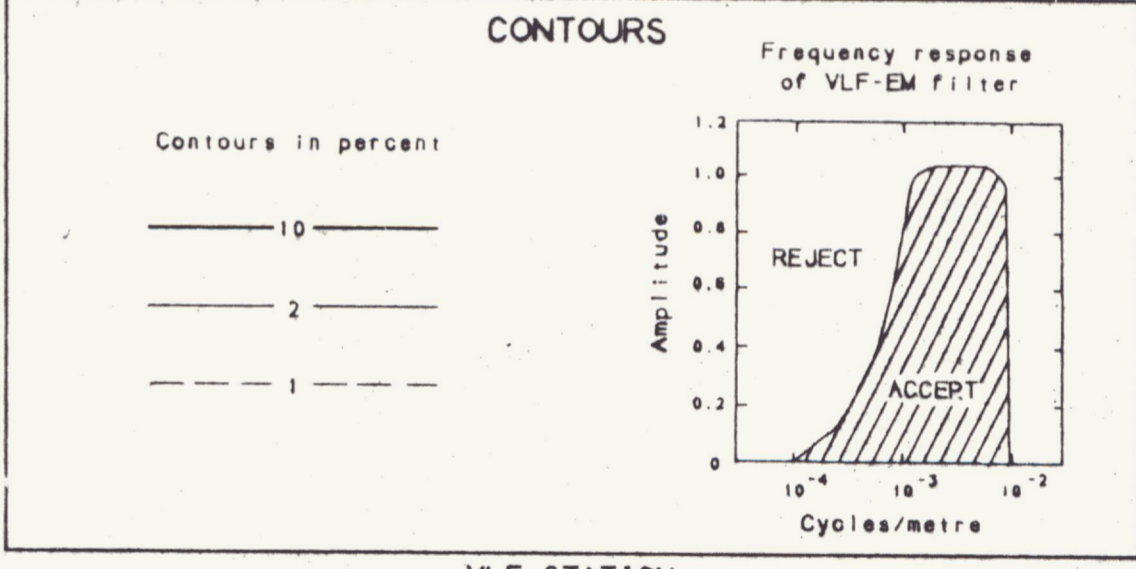


Grade	Anomaly	Conductance
7	●	≥ 100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	< 1 siemen
-	*	Questionable anomaly

Anomaly identifier	Interpretive symbol	Interpretive symbol	Conductor ('model')
CH	●	B	Bedrock conductor
	○	D	Narrow bedrock conductor ('thin dike')
	○	S	Conductive cover ('horizontal thin sheet')
	○	H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ('half space')
	○	E	Edge of broad conductor ('edge of half space')
	○	L	Culture, e.g. power line, building, fence

092-59



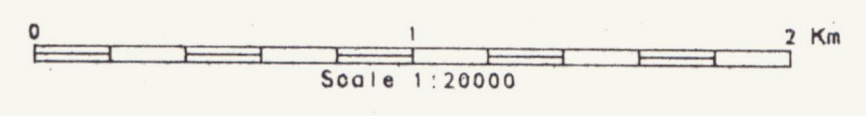
VLF STATION  
TRANSMITTER SEATTLE, WASH. LINES ALL

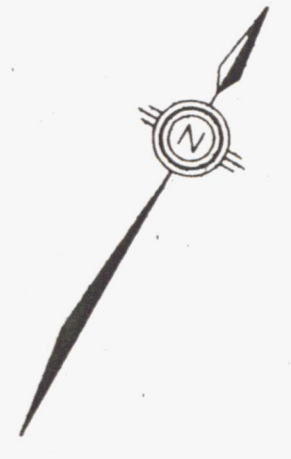
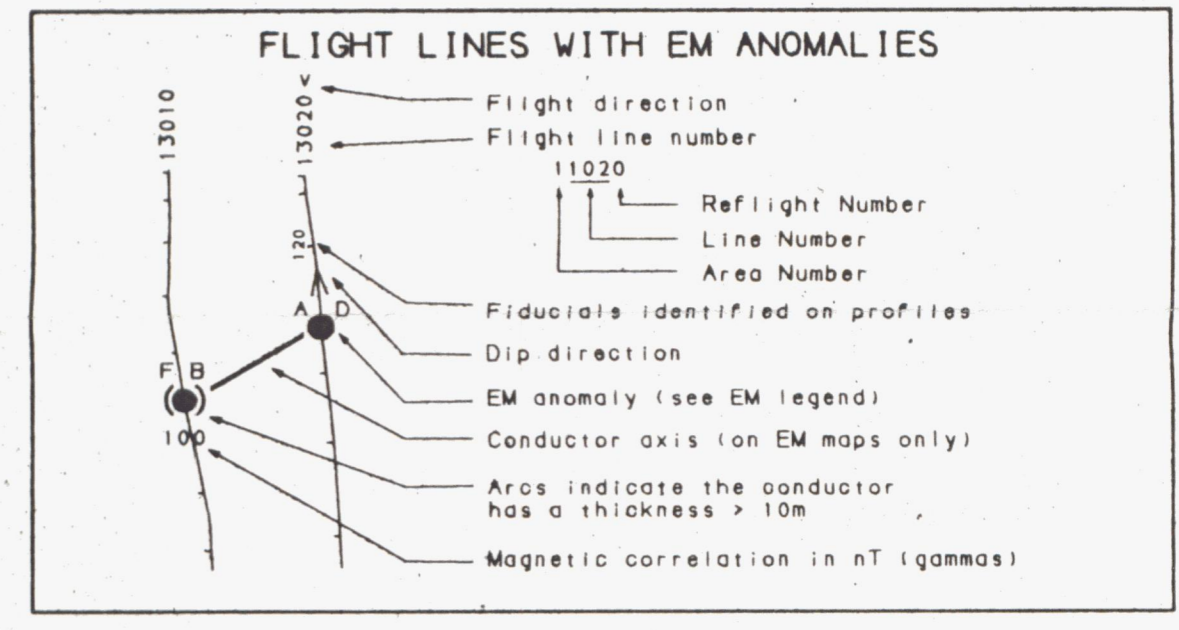
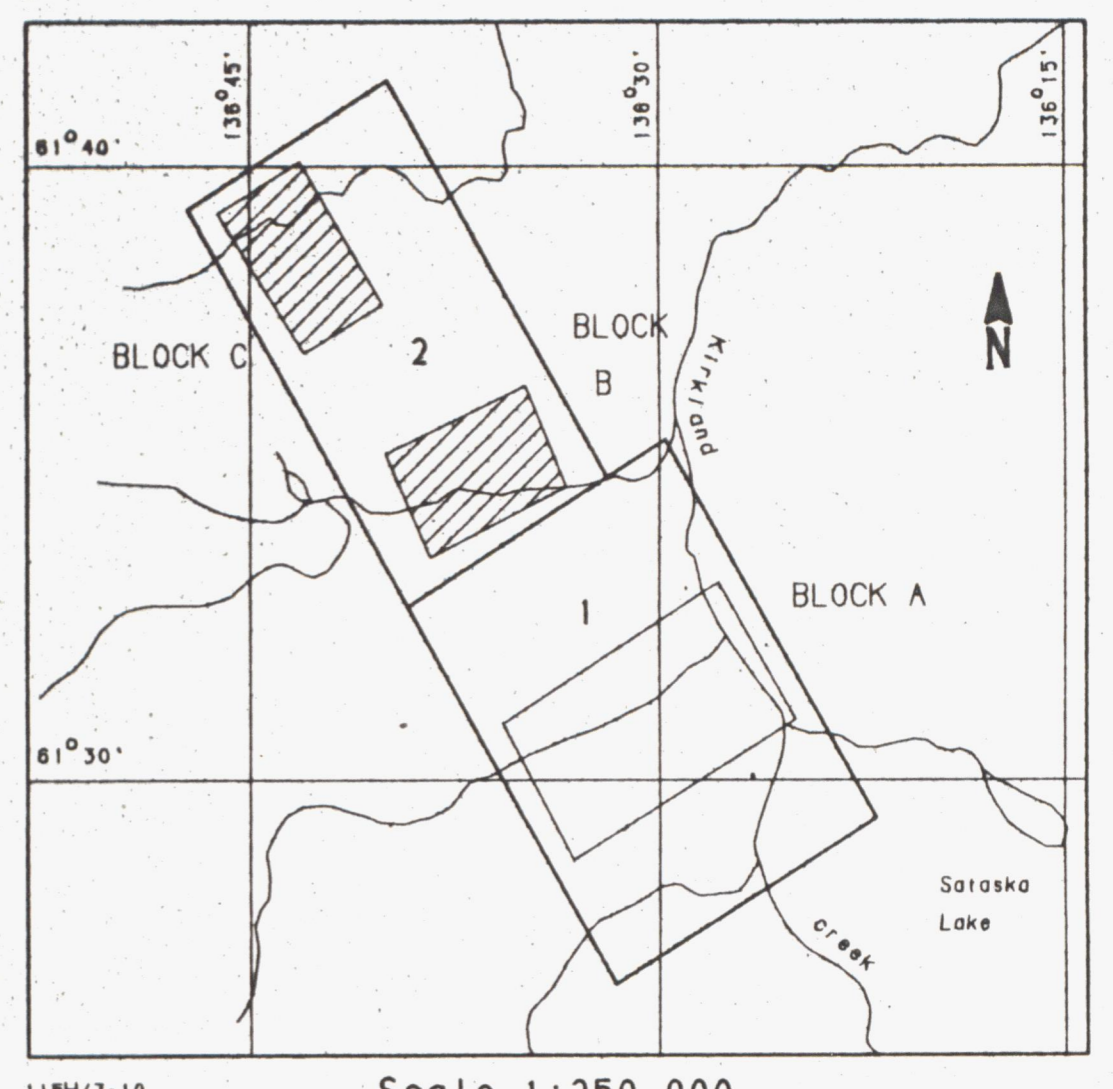
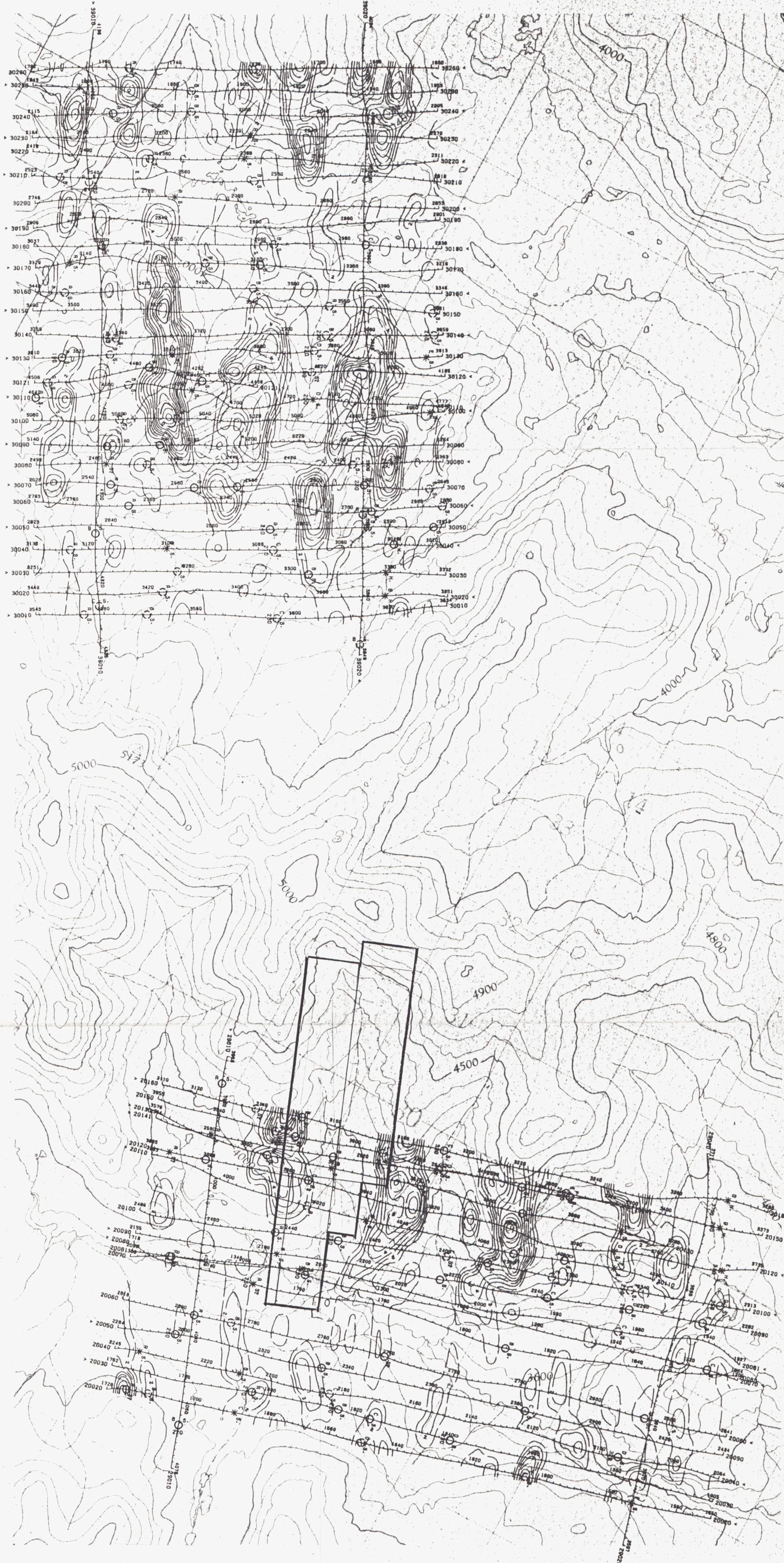
Map# 115H-7,8,9,10 Doc# 092959 (63)

**GOLDEN QUAIL RESOURCES LTD.**  
CARMACKS, YUKON

**FILTERED VLF**

DIGHEM <sup>TM</sup> SURVEY	NTS: 115H/7, 8, 9, 10	GEOPHYSICIST: RP
DATE: MARCH 1990	JOB: 1086	SHEET: 1
DIGHEM SURVEYS & PROCESSING INC.		





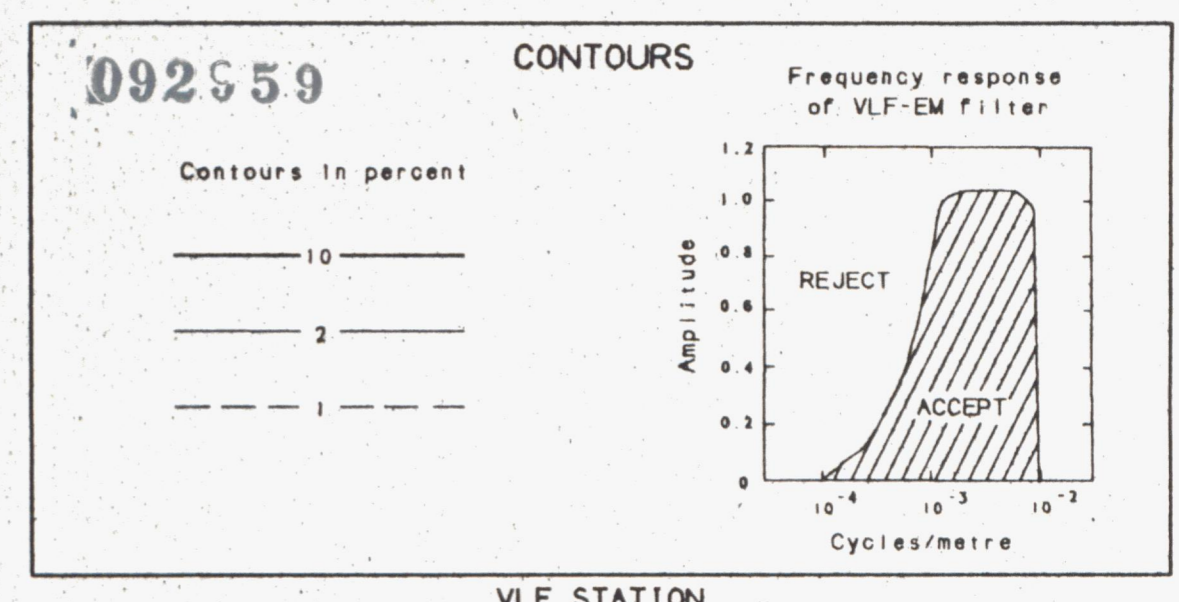
Grade	Anomaly	Conductance
7	●	2100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	< 1 siemen
-	*	Questionable anomaly

Anomaly identifier	Interpretive symbol	Conductor ('model')
B	—	Bedrock conductor
D	—	Narrow bedrock conductor ('thin dike')
S	—	Conductive cover ('horizontal thin sheet')
H	—	Broad conductive rock unit deep conductive weathering, thick conductive cover ('half space')
E	—	Edge of broad conductor ('edge of half space')
L	—	Culture, e.g. power line, building, fence

Depth is greater than	Inphase and Quadrature of coaxial coil is greater than
15 m	5 ppm
30 m	10 ppm
45 m	15 ppm
60 m	20 ppm



MAP# 115H-7,8,9,10 Doc# 092559 (62)

**GOLDEN QUAIL RESOURCES LTD.**  
CARMACKS, YUKON

**FILTERED VLF**

DIGHEM <sup>III</sup> SURVEY	NTS: 115H/7,8,9,10	GEOPHYSICIST: DP
DATE: MARCH 1990	JOB: 1086	SHEET: 2

DIGHEM SURVEYS & PROCESSING INC.

