COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

ASSESSMENT REPORT

1998

DIAMOND DRILLING, GROUND MAGNETICS AND EM

SURE BET PROPERTY

CLAIMS:

NELSON MINING DIVISION

CRYSTAL I - III
CRYSTAL 1 - 2
SURE BET 1 - 12
PUP 1 - 4
BAY I

CRAWFORD BAY, BC

MAP NTS 82 F/10

LATITUDE 49° 37' N

LONGITUDE 116° 50' W

OWNER

BRUCE DOYLE
1424 CREASE ST
NELSON, BC, VIL 1A2

OPERATOR

COMINCO LTD
KOOTENAY EXPLORATION
1051 INDUSTRIAL ROAD 2
CRANBROOK, BC, V1C 4K7

REPORT AUTHOR: P.W. RANSOM

DATE SUBMITTED: NOV 29, 1998

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APPENDICES

I - INTRODUCTION

In 1998 Cominco Ltd. conducted a geophysical survey, geochemical sampling and diamond drilling of two holes on the Sure Bet property. The property comprises 76 claim units on Crawford peninsula located about 30 km east of Nelson. The area of interest has modest relief and is partly covered by mature fir and cedar, part has been clear-cut logged.

Access to the claims is by logging roads that join the Kootenay Lake Highway 3A at Crawford bay.

II - OBJECTIVE

The objective of the work being reported on was to locate a significant base metal deposit through diamond drilling geophysical anomalies in the vicinity of geochemically anomalous soils and high-grade sulphide boulders reported in previous work.

III - GENERAL GEOLOGY

The Kootenay Arc is a narrow belt of complexly deformed lower Paleozoic rocks that extends several hundred kilometres from northern Washington state to north of Revelstoke, BC. The stratigraphically lower rocks in the Kootenay Arc are present in the Crawford Bay area where metamorphic grade is amphibolite facies (Rice, H.M.A., 1941, Insley, M.W., 1982). In ascending order the formations and inferred protoliths are: Hamill Fm, siliciclastics; Mohican Fm, primarily calcareous siliciclastics and impure limestone; Badshot Fm, a regionally persistent limestone marker unit; and Index Fm (basal unit of the Lardeau Group) of graphitic, pyritic, biotitic calc-siliciclastics, basic sills or flows, volcaniclastics and limestones. The sequence represents a transition from stable shelf, shallow water conditions to an unstable and progressively deeper water environment.

The Badshot Fm hosts large stratabound, probably early replacement, lead - zinc - iron sulphide deposits in the Salmo and Duncan areas (Fyles, J.T., 1959, 1964). At Riondel, 15 km north of Crawford Bay, is Bluebell, an Eocene replacement lead - zinc - copper - silver - iron sulphide deposit in the Badshot marble (Shannon, 1970, Ohmoto, H. and Rye, R.O., 1970, Beaudoin et al, 1992). Associated with Bluebell, and at least one of the Ainsworth deposits, is the rare mineral knebelite, a manganiferous olivine.

Sulphide boulders similar to ore at Bluebell have long been known on Crawford Peninsula. Knebelite, a silicate mineral associated with ore at Bluebell, is present in some of the boulders. There are several small sulphide occurrences on the peninsula. The Badshot marble crosses Crawford Peninsula where it is tectonically thickened and repeated in a zone about 1 kilometre wide.

IV - RESULTS

GEOPHYSICAL (MAG, EM) SURVEY

4.5 line-km of Mag and 0.5 line-km of EM were done on a grid in the vicinity of high-grade boulders and an area of soils with anomalous Cu, Pb and Zn. On Line 2350 N, EM anomalies are associated with Mag anomalies. The results of the geophysical survey with profile plots of Mag and EM data and a plan of Mag data are in Appendix 2. A drill program was designed to test these Mag and EM targets.

DIAMOND DRILLING

An agreement was reached with M. Denis to use roads and skid-trails across his land in order to drill a coincident Mag/EM/Geochem anomaly on adjacent Crown land. Drilling started August 9 and finished August 21. Two holes were drilled, S98-1 (312 m, -45° toward azimuth 138°) and S98-2 (91.4 m, -45° toward azimuth 318°), both from approximate grid position 1715 W; 2320 N. NAD 83 collar locations are in the logs. S98-1 flattened to -40°, azimuth 138°; S98-2 flattened to –44.2°, azimuth 324°. Both holes were drilled NQ, recoveries were very good. No significant Pb/Zn sulphides in marble were intersected and the option with claim owner B. Doyle has been dropped.

S98-1 cored rocks of the Mohican Fm, primarily quartz rich, often pyrrhotitic, micaceous schists with occasional intervals of calc-silicate schist. Pegmatite, an amphibolite and lamprophyre dikes and some quartz veining were observed. One 3 cm vein of coarse dark brown sphalerite with traces of galena was intersected at 84.2 m; this vein has brittle calcite-filled fractures. Elsewhere in the hole, very rare grains of galena and marmatitic sphalerite (with characteristic red streak) were observed. Chalcopyrite is more common, and is usually associated with occasional coarse pyrrhotite. Minute black specks, often with yellow to creamy rims, are common but volumetrically insignificant, were confirmed by petrography to be sphene. It is clear the hole cored obliquely along the moderately-dipping west limb of an overturned syncline. The quartzose schists commonly have 1 to 5% pyrrhotite and short intervals probably have up to 10%. Commonly, fine pyrrhotite grains are interconnected and are electrically conductive over several cm. In addition there are a few pyrrhotite veinlets that are conductive over unbroken core lengths up to 30 cm. The pyrrhotite is also magnetic. The content and character of the pyrrhotite in the schist adequately explains the Mag and EM anomalies. S98-1 was stopped when it was apparent the steep limb of the syncline would not be intersected.

S98-2 was drilled to evaluate the Mohican marble that outcrops just west of the rig. This marble is on the moderately-dipping west limb of the overturned syncline mentioned above. Marble of both Badshot and Mohican Fm host ore at Bluebell, and this rock type is the perceived target for mineralization at Sure Bet. S98-2 intersected quartz-rich schist to 11.7 m, marble from 11.7 to 82.5, quartzitic schist from 82.5 to 86.5, and marble to the end of the hole at 91.4 m. A number of faults occur below 68 m. The quartzose schist at

82.5 is probably the western contact of the marble. Marble below 86.5 may be a faulted repetition. A few grains of fine pyrrhotite and coarse pyrite were noted below 86.5m.

The marble in S98-2 resembles barren marble between ore shoots at Bluebell mine where the cut-off between ore and waste is usually sharp.

PETROGRAPHY

Thin section study was made of 23 outcrop and core specimens. In general the rocks are greenschist to amphibolote metamorphic grade amphibolite, leuco-granite or quartz-mica schist. Detailed description of, and comment on, the thin sections is in Appendix 3.

GEOCHEMISTRY

Soil samples of 200 to 300 grams were collected from the B Horizon and placed in kraft paper bags. Samples were dried and shipped to the Cominco Exploration Research Lab in Vancouver. Samples were screened to –80 mesh and 0.5 gram portions digested using hot reverse aqua regia then analyzed by Atomic Absorption Spectroscopy for Cu, Pb, Zn and Ag and by Ion Coupled Plasma for As.

Drill core samples, typically 10 cm long and sawn in half, were analyzed at the Cominco Exploration Research Lab in Vancouver. After being crushed and pulverized 0.5 gram portions were digested in hot aqua regia and analyzed by Ion Coupled Plasma for a suite of 28 elements.

SOILS

Twenty-eight soil samples were collected on the cut grid. All samples were elevated to anomalous in Pb and Zn and confirm, in general, results obtained in the same areas in 1997. Pb and Zn values are plotted in Figure 4.

DRILL CORE AND ROCK

Forty-five core and nine outcrop specimens were analyzed by ICP or AAS. Except for three samples, Pb and Zn values are remarkably low. The highest Zn value was 473700 ppm Zn (±47%) from the 3 cm sphalerite vein at 84.2 m in S98-1. High Cu values from S98-1 indicate a high background in the pyrrhotitic quartz rich schists. Indicator elements such as Mn, Sn and volatiles are low or below detection limit.

Soil and rock geochemical data are in appendix 4.

V - CONCLUSIONS

The Mag and Em anomalies are explained by interconnected wispy pyrrhotite in quartz-feldspar mica schists that initially, probably, were sub-arkosic sedimentary rocks. Pb-Zn

contents of both the quartzitic schists and lime marble are distinctly low. The one small 3 cm vein of sphalerite is indicative of a mineralization event affecting the rocks in this area, however a significant concentration has not been identified. Low levels of indicator elements seem to imply the mineralizing event was not pervasive.

VI - SELECTED REFERENCES

Beaudoin, G., Roddick, J.C. and Sangster, D.F., 1992, Eocene age for Ag-Pb-Zn-Au vein and replacement deposits of the Kokanee Range, southeastern British Columbia, Canadian Journal of Earth Sciences 29: 3-14.

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Rice, H.M.A., 1941, Nelson Map-Area, East Half, British Columbia, Geological Survey of Canada Memoir 228.

Shannon, F.G., 1970, Some unique geological features at the Bluebell Mine, Riondel, British Columbia, in Lead-Zinc Deposits in the Kootenay Arc, Society of Economic Geologists 1970 Northwest Field Conference Guidebook.

VII - COST SUMMARY

Line Cutting	3435
Geophysics	1305
Analyses and Thin Sections	2954
Diamond Drilling	34806
TOTAL	42500

Signed: P. Ransom

P.W. Ransom, Project Geologist

COMINCO LTD

EXPLORATION WESTERN DISTRICT

AUTHOR'S QUALIFICATIONS

As author of this report, I, P.W. Ransom, certify that:

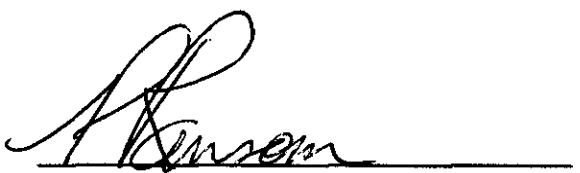
I am a geologist active in mineral exploration.

I am a graduate of McGill University with a degree of Bachelor of Science.

I have been continuously engaged in mining and exploration since 1966.

I am a member of the Geological Association of Canada and of the Canadian Institute of Mining and Metallurgy.

I supervised Cominco Ltd's exploration on the Sure Bet Property in 1998.



P.W. Ransom
Project Geologist

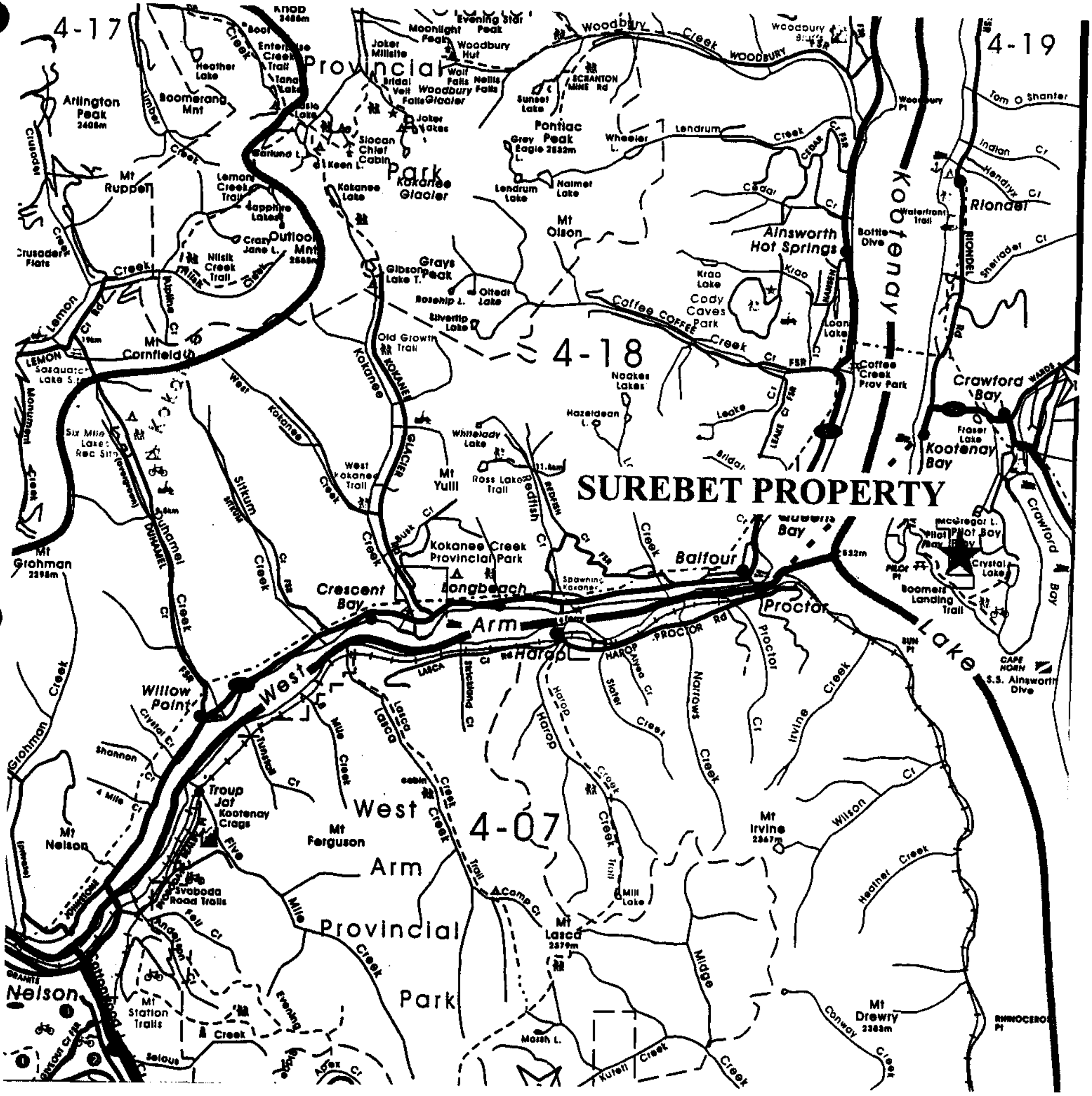


FIGURE 1. INDEX MAP AND LOCATION OF SURE BET PROPERTY

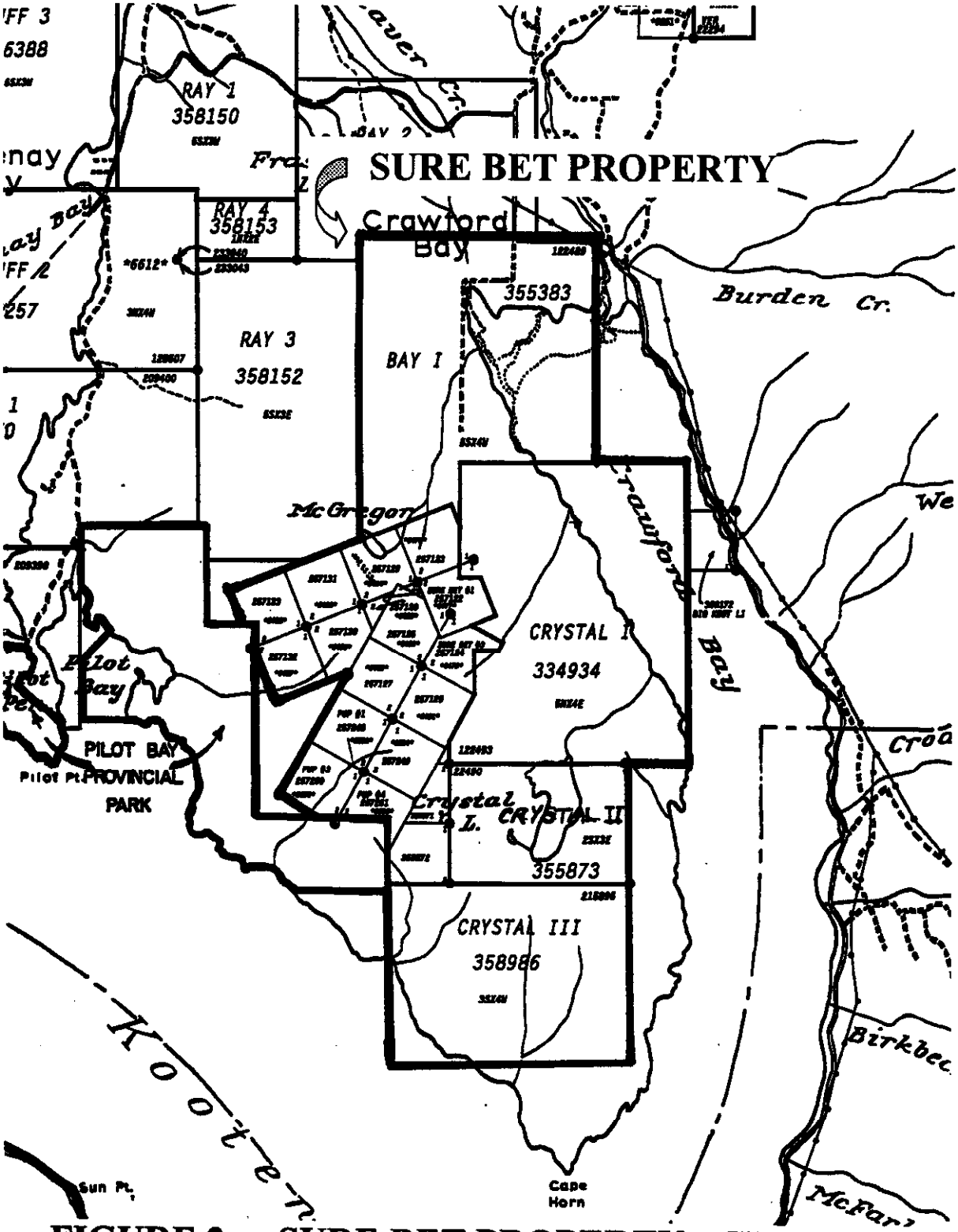


FIGURE 2. SURE BET PROPERTY - CLAIM MAP
NTS 82F/10W

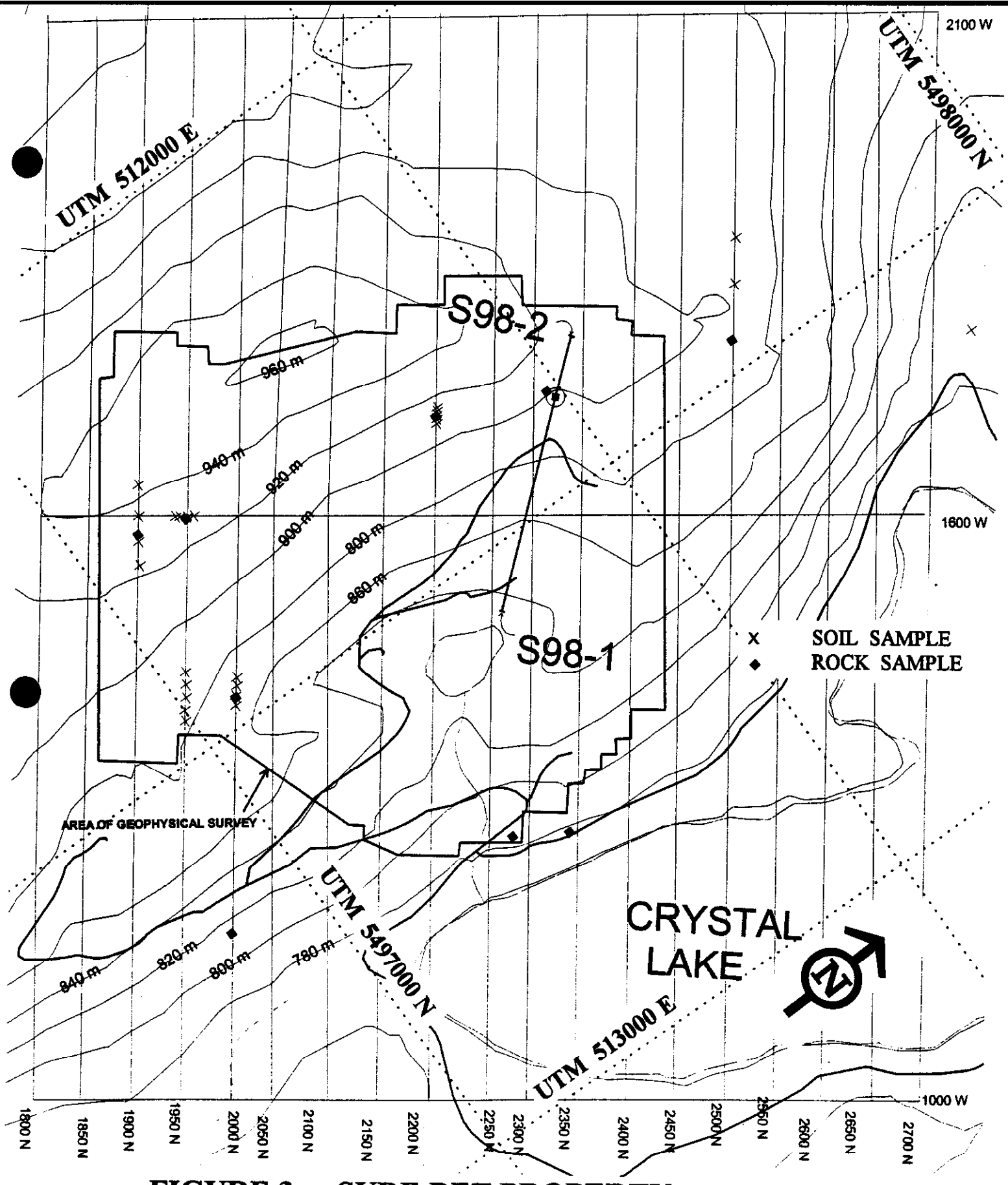
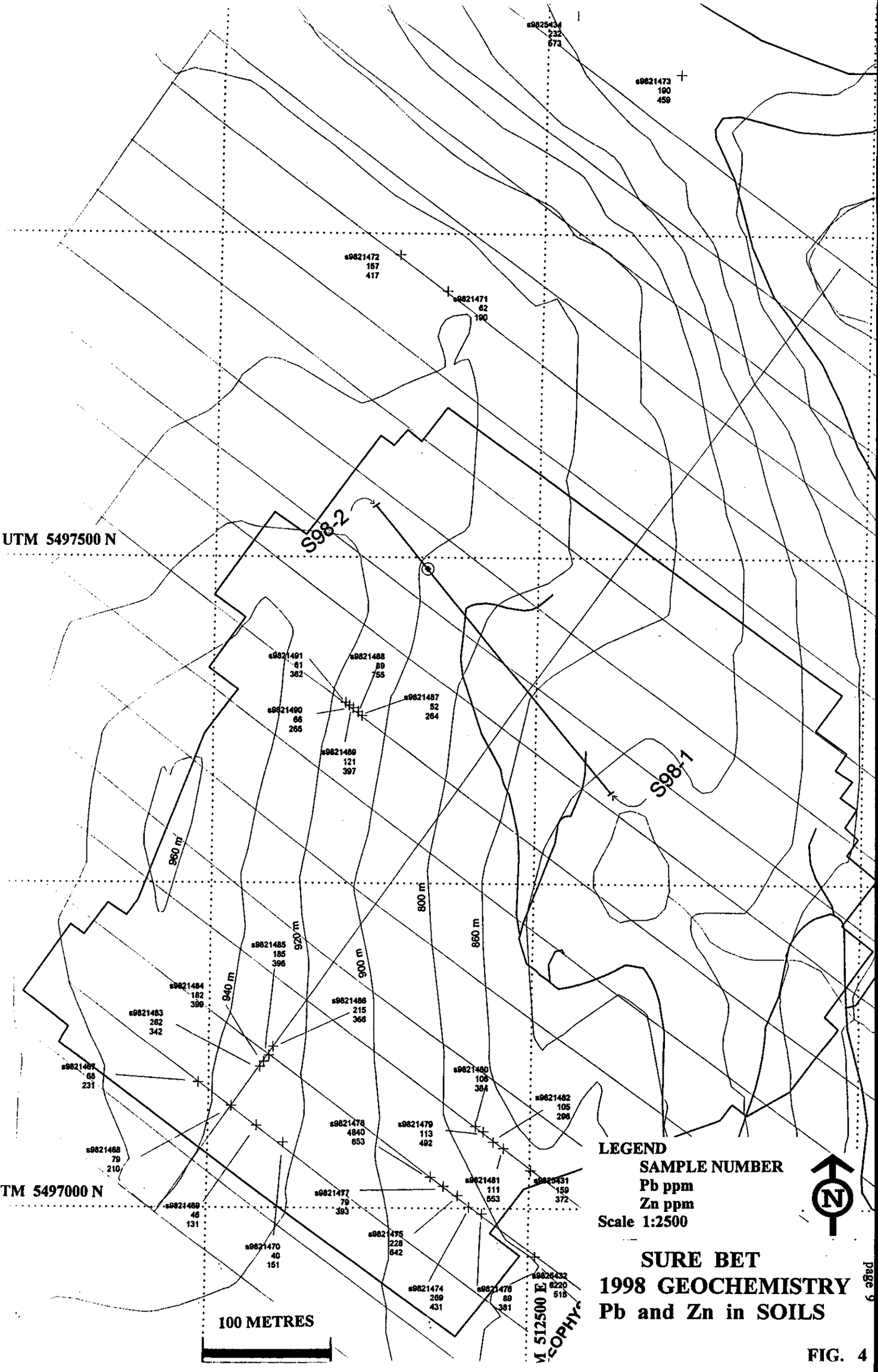


FIGURE 3. SURE BET PROPERTY – GEOCHEMICAL SAMPLING, GEOPHYSICAL GRID AND DDH LOCATION MAP

100 METRES


s9825434
232
573
s9821473
190
459
s9821472
157
417
s9821471
62
190
S98-2
S98-1
UTM 5497500 N
s9821491
61
362
s9821488
89
755
s9821487
52
264
s9821490
66
268
s9821489
121
397
960 m
940 m
920 m
900 m
800 m
860 m
s9821485
185
396
s9821484
182
399
s9821486
215
368
s9821483
282
342
s9821480
106
384
s9821482
105
296
s9821478
4840
653
s9821479
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492
s9821468
79
210
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111
553
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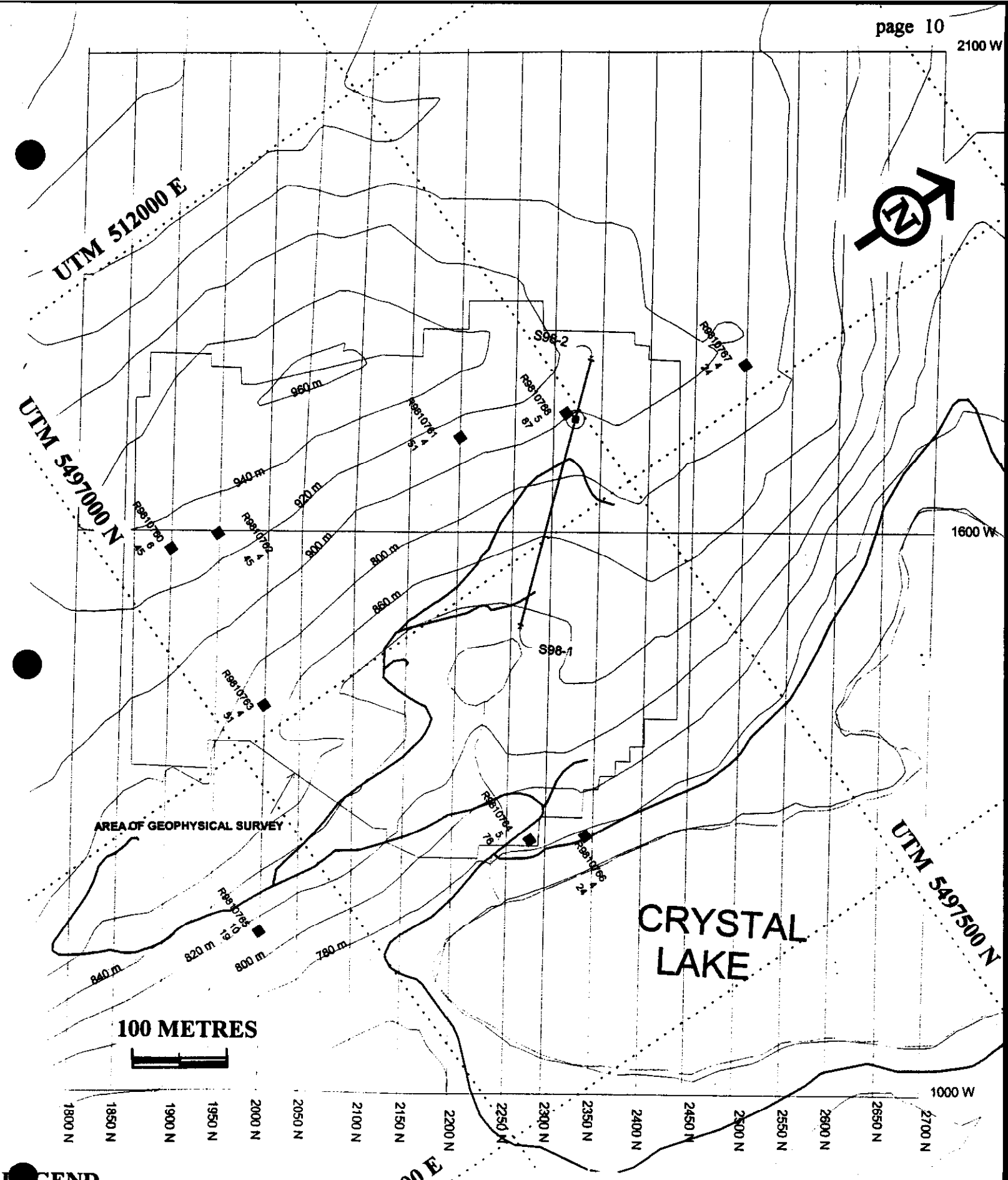
269
431
s9821476
89
381
s9825432
8220
515
100 METRES
LEGEND
SAMPLE NUMBER
Pb ppm
Zn ppm
Scale 1:2500
N
SURE BET
1998 GEOCHEMISTRY
Pb and Zn in SOILS
FIG. 4



LEGEND

SAMPLE NUMBER
Pb ppm
Zn ppm

Scale 1:5000

SURE BET
1998 GEOCHEMISTRY
Pb and Zn in ROCKS

FIG. 5

Appendix 1

DIAMOND DRILL LOGS

S98-1

S98-2

Hole_ID	**S98-1**	**Hole_Type**	Diamond	*Purpose/Comments*
x	512415	**Survey_Type**	Sperry Sun	Explore EM/Mag/Gc anomaly in vicinity of high grade Bluebell type boulders.
y	5497478	**Drill_Type**	Super 38	
z	895	**Hole_Diameter**	NQ	
Azimuth	138	**Drill_Operator**	West Gate DD L	22 feet (6.7 m) of casing was left in the hole, with a threaded cap at ground level.
Dip	-45	**Drill_Rig**	Skid	
Total Length	311.8			
Location	SEBC	**StartDate**	98/06/07	Core is stored at end of logging trail about 200 m north of collar.
Grid	NAD 83	**EndDate**	98/06/17	
Project	Sure Bet	**Loggedby**	KRP/PWR	
Claim	Crystal II	**Sampledby**	PWR	
MapSheet	82F/10	**Reloggedby**		

Sperry Sun Survey Data

From	*To*	*Azimuth*	*Dip*
198	136	-43	
307	138	-40	

From (m)	*To (m)*	*Geological Description*	*FROM*	*TO*	*INT. (m)*	*Zn*	*Pb*	*Fe*
0	7	Phlogopite, quartz, muscovite schist. Core broken, fractures coated with iron oxide. Foliation at 40 dtc. Patchy hornfels alteration, pinkish Mn mineral, chlorite, minor Py and Po. Altered carbonate?						
7	18	Phlogopite, quartz, muscovite schist. 1-2% disseminated pyrrhotite.						
18	27.2	Phlogopite, quartz, muscovite schist. Pyrrhotitic, from 19-20 m is 5-10% Po with trace Cpy, 20-21 m is 3-5% Po, at 23 m is hornfels patch with Po in fractures with trace Sph. At 23.7 is speck of Gal in 2mm quartz-Po veinlet, bleached margins on veinlet. At 27 foliation is 35° tc.						
27.2	30.3	Calcsilicate. Silicified impure carbonate. Pink garnet? patches at top contact. Patchy and fracture Po with trace Cpy. Disseminated Po and Py and trace of dark Sph. At 29.8 a Po veinlet at 40° tc contains a few specks of black Sph.						
30.3	41.7	Phlogopite, quartz, muscovite schist. Spotted texture caused by dark grey 2-3 mm dark grey quartz porphyroblasts. Foliation 40° tc at 34.4. From 37.2-37.5 m is 5% Po .						

From (m)	To (m)	Geological Description	FROM TO	INT. (m)	Zn	Pb	Fe
41.7	43.4	Calcsilicate.					
43.4	44.5	Mafic intrusion.					
44.5	46.9	Phlogopite, quartz, muscovite schist.					
46.9	49.5	Calcsilicate. Patchy Po. Top contact at 30° tc.					
49.5	50	Lamprophyre.					
50	51	Calcsilicate.					
51	64.5	Phlogopite, quartz, muscovite schist. Spotted texture. Patchy calc-silicates 60.7-63.7. Possible faults at 52.4 m (broken), 55.2-56.0 (chlorite slips), 56.0-58.5 (chlorite and graphite slips). From 63.7 - 64.0 5-7% Po with trace Sph.					
64.5	75.3	Calcsilicate. Accessory brown biotite, chlorite ?, actinolite. 1-3% disseminated disseminated Po with trace Cpy.					
75.3	80	Phlogopite, quartz, muscovite schist.					
80	80.8	Fault. Gouge.					

From (m)	To (m)	Geological Description	FROM	TO	INT. (m)	Zn	Pb	Fe
80.8	86	Calcsilicate. From 83.8 - 84.3, brown Sph vein 3 cm thick at 10 dtc cut by fine calcite veinlets, Po present with trace Cpy. At 84.5 Po fractures with specks of Gal.						
86	99.1	Phlogopite, quartz, muscovite schist. Spotted texture, 1 - 3% Po.						
99.1	100.5	Calcsilicate. Po disseminated and in veinlets, trace Cpy and black Sph. Occasional speck Gal.						
100.5	111.5	Phlogopite, quartz, muscovite schist. Up to to 5% Po.						
111.5	113.5	Calcsilicate. Top contact at 25 dtc. Banded appearance caused by biotite grains. Fine black grains with yellow rims - Sphene?. Patchy Po with Py.						
113.5	114.9	Calcsilicate. Phlogopite, diposide, calcite assemblage, apple green colour.						
114.9	136.3	Quartzite. Wispy folia of fine phlogopite and Po. Short calcareous intervals and rare diopsidic patches, some intervals have spotted texture. Minute black grains with yellow rims are probably sphene. From 134-135 is calcsilicate interval in which foliation is parallel to core.						
136.3	136.8	Calcsilicate. Pod with phlogopite.						
136.8	139	Quartz muscovite schist. Po common as fine, often interconnected, grains.						

From (m)	To (m)	Geological Description	FROM TO	INT. (m)	Zn	Pb	Fe
139	144.3	Quartz, biotite, sericite schist. Biotite is fine and concentrated in augen or micro-lithons, thus giving the rock a porphyroblastic appearance. Po is common as fine grains and wisps, often interconnected. Rare Sph noted is rusty brown.					
144.3	147	Quartz muscovite schist. Phlogopitic. Po common as fine interconnected grains and wisps. Larger Po networks conductive to 10 cm.					
147	148.5	Quartzite. Alternation of clear grey and milky white quartz. Foliation marked by minor fine Po that commonly swells into coarse wisps.					
148.5	149.5	Calcsilicate. Diopside, calcite, quartz, phlogopite schist. Po most common in and adjacent to siliceous zones similar to preceeding interval.					
149.5	153.3	Quartz, phlogopite schist. Some muscovite intervals. Last 40 cm is calcareous with diopside and quartz. Scattered fine Po. Some Po interconnected and conductive to 1 cm.					
153.3	155.2	Quartz muscovite schist. Contains dark augen of quartz, biotite and fine Po. One Po-filled fracture. Small break at botom of interval.					
155.2	157.1	Quartz muscovite schist. Trace of phlogopite.					
157.1	160.7	Quartz muscovite schist. Increasing phlogopite. Po is disseminated, some grains interconnected. Po veinlet at 158.4 has rounded wall-rock fragments to 3 mm.					
160.7	178	Quartz muscovite schist. Usually phlogopitic, however phlogopite is fine and not abundant. From 163.8 to 164.3 are narrow light green calc-silicate rich layers within the foliation that is parallel to core. Po common but consitiutes less than 1% of interval.					

From (m)	To (m)	Geological Description	FROM TO	INT. (m)	Zn	Pb	Fe
178	180.6	Calcsilicate. Diopside, quartz, with wisps of phlogopite, schist. Dark phlogopite or biotite? (coarse) common. Po common, grains commonly interconnected over 1 cm. Conductive up to 1 cm across foliation and several cm along. At 178.6 is 5mm rounded black mineral with thin pale rim, possibly sphene.					
180.6	184.5	Quartz, phlogopite schist. Occasional wispy diopsidic layers, short pegmatitic sections, rare fine speck of Gal. Very fine creamy grains of sphene?					
184.5	184.9	Mafic intrusion. Chloritic, biotitic, altered mafic, with abundant sphene or rutile, weakly calcareous.					
184.9	196.7	Quartz, phlogopite schist. Common fine creamy, some euhedral, grains of rutile? Anhedral creamy yellow mineral surrounding fine black grains of sphene? noted, eg 186.5 and 191.6. From 190.2-190.9 pegmatite flanking mafic mass. Post foliation deformation common. Fine Po common, coarse masses occur in pegmatite and on occasional contact. Cpy noted at two spots between 193.5 and 194.					
196.7	199.8	Pegmatite. Intervals of quartz phlogopite schist. Brittle fracture fill Po veinlets in first pegmatite at contacts. Rare Cpy associated with coarsest Po. One Gal? Grain near start.					
199.8	206.4	Quartz, phlogopite schist. May be coarse biotite, but is reddish like the usual phlogopite, somewhat darker. Po is scattered and finely disseminated, and in short zones is abundant in wisps between 205.4-205.6 and 206.0-206.1. At 205.45 a black resinous grain with pale streak is probably sphene. A few minute silvery and black grains noted. The rock has a breccia texture in the Po-rich intervals.					
206.4	208.9	Pegmatite. Some feldspar is pale blue-green. Dark micaceous schist 208.3-208.5. Po in several fine stringers 208.0-208.1, otherwise rare scattered grains.					
208.9	211	Quartz, biotite schist. Phlogopitic. Mica grain size is smaller than the typical coarse of this hole. Yellow-brown mineral, often surrounding fine black sphene?, noted. Po is finely disseminated, less than 1%, and in rare fractures and irregular patches.					

From (m)	To (m)	Geological Description	FROM	TO	INT. (m)	Zn	Pb	Fe
211	215.4	Amphibolite. Dark green amphiboles, white feldspar, weakly calcitic patches and fractures.						
215.4	221.2	Quartz, phlogopite schist. Muscovite common, possible biotite. Medium mica grain size. A few grains of green calc-silicates and dark green chlorite on fractures. Po finely disseminated.						
221.2	221.4	Lamprophyre. Biotitic, dike, cuts core at 40°.						
221.4	222.7	Sericite schist. Dark grey with scattered micro-lithons of almost black, very fine biotitic schist. Some scattered Po.						
222.7	224.3	Lamprophyre. Biotitic, top contact at 40° tc, bottom broken but seems to be at 15° tc.						
224.3	227.6	Sericite schist. Dark grey, abundant micro-lithons of very fine grained biotitic schist. Po disseminated and very fine grained.						
227.6	229	Lamprophyre. Biotitic, top contact at 70° tc, bottom at 20.						
229	231.8	Muscovite, quartz schist. Scattered phlogopite, darker, more biotitic above 230.0. Po lightly disseminated.						
231.8	233	Quartz muscovite schist. Sericitic, grey, micro-lithons of dark fine biotitic schist. Some fine black grains may be graphite.						
233	233.5	Quartz sericite schist. Light phlogopite, possibly alteration adjacent to pegmatite below.						

From (m)	To (m)	Geological Description	FROM	TO	INT. (m)	Zn	Pb	Fe
233.5	234.2	Pegmatite. Wisps of muscovite, minor Po.						
234.2	234.8	Quartz sericite schist. Phlogopitic, relict micro-lithon texture indicates this is an alteration zone.						
234.8	235.4	Mafic intrusion. Altered, fine equigranular texture. Fine grains of creamy mineral surrounding black grains of sphene?						
235.4	245.5	Quartz muscovite schist. Dark grey, paler below 244. Micro-lithons of dark biotitic quartz schist are common but are not always uniformly distributed. Occasional interval with minor phlogopite. Some sections may be graphitic, but not enough to get a dark streak. Cuttings were very dark. Po common, usually scattered and fine, and in some wisps and thin foliation-parallel layers.						
245.5	246.4	Amphibolite. Upper contact biotitic, gradational over 15 cm, lower sharp at 15° tc. Diabase?						
246.4	248.5	Muscovite, quartz schist. Minor phlogopite, chalky appearance from sepiolite or similar mineral on some folia that are at 20° tc throughout.						
248.5	249.2	Mafic intrusion. Two small diabase units flanking dark quartzose schist.						
249.2	251.1	Pegmatite. Dark biotitic schist and interlayered foliated pegmatite.						
25.1	252	Quartz muscovite schist. Phlogopitic, with micro-lithons of dark biotite schist.						

From (m)	To (m)	Geological Description	FROM TO	INT. (m)	Zn	Pb	Fe
252	254.8	Pegmatite. Coarse grained, white feldspar, grey quartz. Po grains and small patches common.					
254.8	274.5	Quartz muscovite schist. Coarse biotite common. Generally medium grey colour, some sections lighter when muscovite takes on a pale greenish tint. Foliation 0° tc at 256, 40 at 259, 20 at 262.2, 25 at 265, 20 at 268.4, and 15 at 271.4					
274.5	275	Quartzite. Darker looking, finer frained, quartz biotite rock. Po disseminated and in interconnected grains in elongate wisps conductive up to 2 cm. Fine honey to cream coloured wedge shaped pseudomorphs of sphene? rarely encompassing minute black sphene grains.					
275	287	Quartz muscovite schist. Biotitic, with the biotite as fine or medium grains. Almost colourless garnet noted. Occasional dark finer grained sections resembling 274.5-275. Po usually fine and disseminated, occasionally in interconnected networks in which 1 to 2 mm siliceous areas are surrounded; Po diminishes gradually with depth. Rare Cpy noted.					
287	293.2	Quartz, biotite schist. Biotite is reddish brown, but darker than the normal phlogopite, speckled texture. Minute black grains of sphene? (eg 287.4). Po and rare Py are disseminated. In central part of interval is vein quartz adjacent to which is Po and rare Cpy. 5 cm diopsidic band present.					
293.2	301.3	Quartz, biotite schist. Darker than preceeding interval, still has speckled texture. Coarse grained pegmatite 296.2-297.6 and several quartz lenses between 299.3 and 300.5. Dark fine biotite-rich intervals have abundant sphene? A layering is marked by muscovite-rich bands in dark biotitic rock. Py and Po are present but rare. Po is present in the pegmatite as fill in fine brittle fractures. Some Po grains are interconnected in a network that surrounds quartz grains.					
301.3	311.8	Quartz muscovite schist. Phlogopitic, medium grey. Some granular Py up to .5x1 cm looks flashy but constitutes less than 1% of the rock. The only Po is in the bottom 10 cm. E.O.H.					

Hole_ID	**S98-2**	**Hole_Type**	Diamond	*Purpose/Comments*
x	512415	**Survey_Type**	Sperry Sun	Explore marble unit adjacent to area of coincident EM/Mag/Gc anomaly and high grade Bluebell type boulders.
y	5497478	**Drill_Type**	Super 38	
z	895	**Hole_Diameter**	NQ	
Azimuth	318	**Drill_Operator**	West Gate DD L	
Dip	-45	**Drill_Rig**	skid	12 feet (3.7 m) of casing left in hole. A water flow was encountered below 25 m. Safety plugs were placed at 25 and 12 metres and the hole was completely cemented above 25 m. The flow was successfully stopped. A threaded cap is on the casing at ground level.
Total Length	91.4			
Location	SEBC	**StartDate**	98/08/17	
Grid	NAD 83	**EndDate**	98/08/25	
Project	Sure Bet	**Loggedby**	PWR	
Claim	Crystal II	**Sampledby**	PWR	
MapSheet	82F/10	**Reloggedby**		The core is stored at the end of a logging trail about 200 metres north of the collar.

Sperry Sun Survey Data

From	*To*	*Azimuth*	*Dip*
89	324	-44	

From (m)	*To (m)*	*Geological Description*	*FROM*	*TO*	*INT. (m)*	*Zn*	*Pb*	*Fe*
0	2.6	Overburden Surface rubble.						
2.6	4.3	Quartz sericite schist. Biotitic, muscovite common, rare Po. Foliation 51° tc at 3.0.						
4.3	5.6	Amphibolite. Dark green, with elongate to flakey feldspar and rare round garnet-quartz porphyroblasts. White sphene? Small quartz vein with scattered fine Po and horses of biotite quartz schist.						
5.6	11.7	Quartz muscovite schist. Biotitic, a few short sections are limy. Po less than 1% as scattered grains. Foliation 49° tc @ 6.6, 53 @ 8.2, 59 @ 11.						
11.7	33.6	Impure calcite marble. Medium grey, banded appearance with some intervals with abundant phlogopite obscuring banding. Minor calcite and quartz veining in short broken intervals above 17. Foliation 55° tc at 17.2, 56 @ 18.3, 65 @ 19.5, 59 @ 22.4, 44 @ 26.2, 48 @ 28.6, 35 @ 31.6, 47-38 @ 32.9.						

From (m)	To (m)	Geological Description	FROM	TO	INT. (m)	Zn	Pb	Fe
33.6	34.3	Amphibolite. Abundant garnet-quartz-calcite coticules, biotite common, weakly calcareous. Sphene? noted, rare Po.						
34.3	44.9	Impure calcite marble. Light grey, brownish when wet, phlogopitic throughout. Deformed below 44.5 with calcite veinlets. Foliation 46° tc @ 35.8, 60 @ 39.9, 50 @ 42.						
44.9	45.2	Fault. Crush zone, probably of same lithotype as above, minor gouge, fault at 24° tc.						
45.2	65	Calcite marble. Grey, both dry and wet, phlogopite present only in short intervals, some of which are pale. Deformation associated with faulting continues to 48.6, mainly as small slips and calcite and/or quartz filled fractures. Quartz veins @ 51.5 (15 cm, 60 dtc) and 56.2 (15 cm) contain wispy Po, minor Py, one possible grain Sph, contacts are irregular; 56.4 (10 cm at 10 dtc) with fine wisps of Po and rare Cpy. At 57.5 is a 10 cm biotite zone with 5 cm quartz margins; a similar looking dark green biotitic rock from 58.3 to 58.4 and 58.5 to 59.0 is probably an altered amphibloite. Small fault at 65.0. Foliation 60° tc at 55 and 70 ±10 @ 62.						
65	82.5	Calcite marble. Light grey, phlogopitic, some grey banding preserved. More grey below 75.4. Faults: 68.4 (small). 68.7 to 68.9 (small, minor crush, foliation swings from 45 to 0 to 45), 73 (small), 76.0 (small), 81.2 crush zone. Foliation 65° tc @ 67. Po in interconnected wisps over 10 cm within a 25 cm biotitic zone at 79.1.						
82.5	83.5	Quartz, biotite schist. Fairly fine grained, sericite alteration adjacent to a few fine fractures. Small pieces often have slickensides.						
83.5	83.9	Schist. Intense sericite alteration of schist, broken, last 10 cm is fault crush.						
83.9	84.6	Pegmatite. Coarse grained with wisps of muscovite, small chlorite patches and scattered garnet.						
84.6	85.4	Quartz, biotite schist. Medium grained. Rare Po.						

From (m)	To (m)	Geological Description	FROM	TO	INT. (m)	Zn	Pb	Fe
85.4	86.5	Fault. Broken zone of above lithotype, slickensides and crush throughout. Contact with unit below is at 15° tc and probably is a major fault trace.						
86.5	91.4	Calcite marble. Pale greenish white with abundant diopside (incontrast to all preceeding marbles) and phlogopite. Bright greenish (when wet) coating noted on several fractures. Rare fine Po noted. Foliation: 15° tc @ 86.5, 25 @ 89.5 and 40 @ 91.2. E.O.H.						

Appendix 2

Sure Bet Property

Geophysical Survey

SURE BET PROPERTY - 1998 GEOPHYSICAL SURVEY
VINCE SCARTOZZI – April 6, 1998

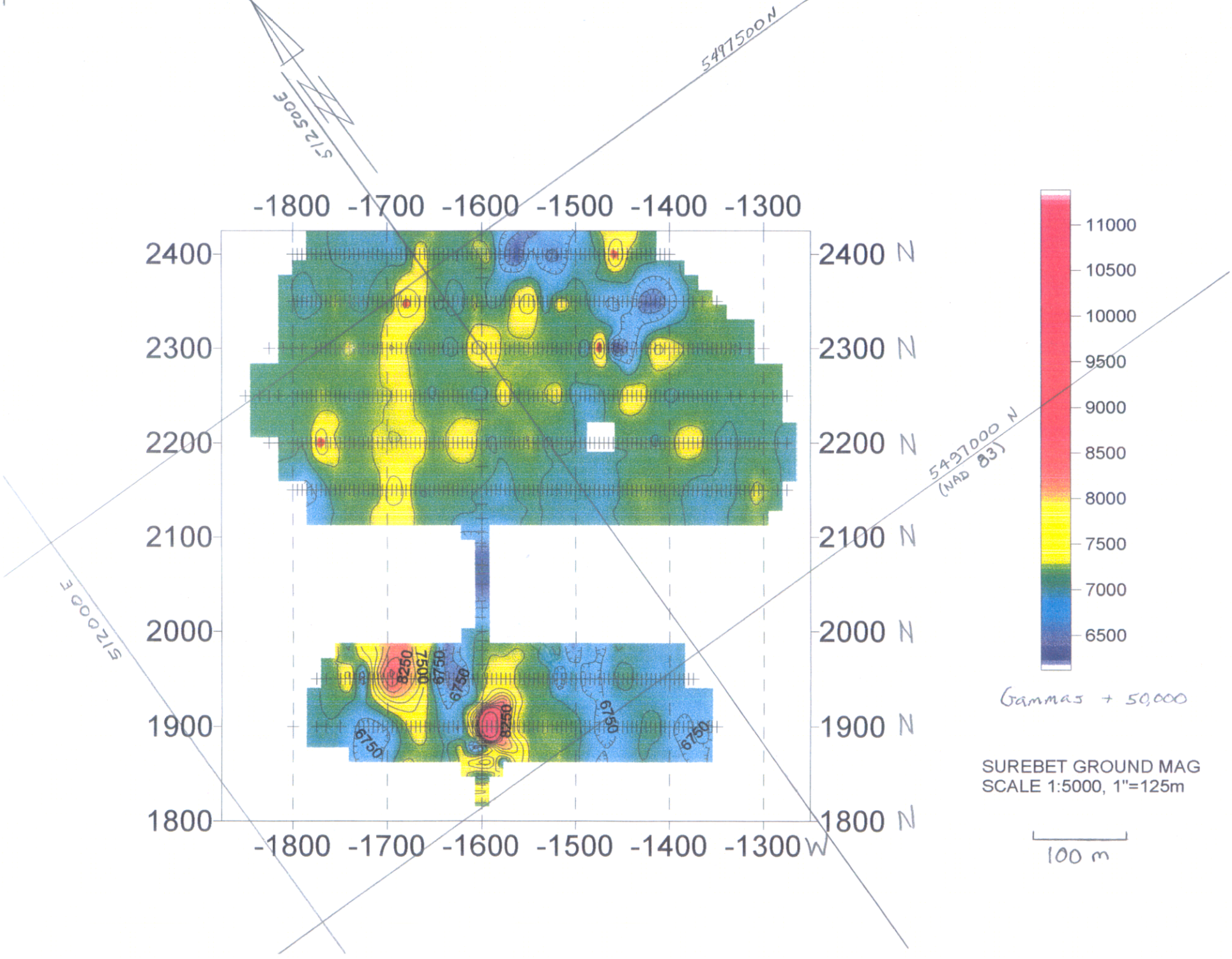
Vince Scartozzi and assistant Chuck Bishop of Cominco American performed a geophysical survey of the Sure Bet property April 1-3, 1998. A ground mag survey covering approximately 4.5 line km and a single 500m line of HLEM was surveyed.

Ground Magnetics: A Scintrex MP-2 proton procession magnetometer was used to survey 8 lines and the 1600W tie line, readings were sampled at 5 meter station intervals. Background values for the survey area are approximately 57000 gammas. Attached are profiles for each line and a contour map generated using the Kriging grid routine in Surfer software.

Three features of interest were noted:

1. A NE-SW trending zone, 25-50m wide, approximately 500m long. The highest magnetic response along this trend, at 1700W on Line 1950N, is a 2000 gamma peak above background levels.
2. An 8000 gamma high occurs at 1585W on Line 1900N. Similar high values are on tie line 1600W immediately south of Line1900N.
3. A 2500 gamma peak magnetic feature is at 1760W on Line 2200N. Readings around this peak were highly variable according to sampling position on the outcrop, however values generally remained well above background. Topographically this area forms a small topographic high. To a lesser degree, this mag feature can be recognized on lines 2150N, 2250N and 2300N as 200-300 gamma highs.

HLEM: A 500m interval along Line 2300N was surveyed with HLEM. The line was chosen because of topographic relief and proximity to the center of a mag anomaly on the north grid. A 75m coil spacing was used and stations were read at 25m intervals. The data indicates a wide, weakly conductive zone from approximately 1650W to approximately 1400W, interrupted by a resistive unit near 1550W. To a lesser degree there appears to be two narrow, weakly conductive, zones near 1600W and 1675W. Attached are profile plots for the various frequencies.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2200
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1900
1800
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2100 N
2000 N
1900 N
1800 N
-1800 -1700 -1600 -1500 -1400 -1300 W
5497000 N
(NAD 83)
512000E
8250
7500
6750
11000
10500
10000
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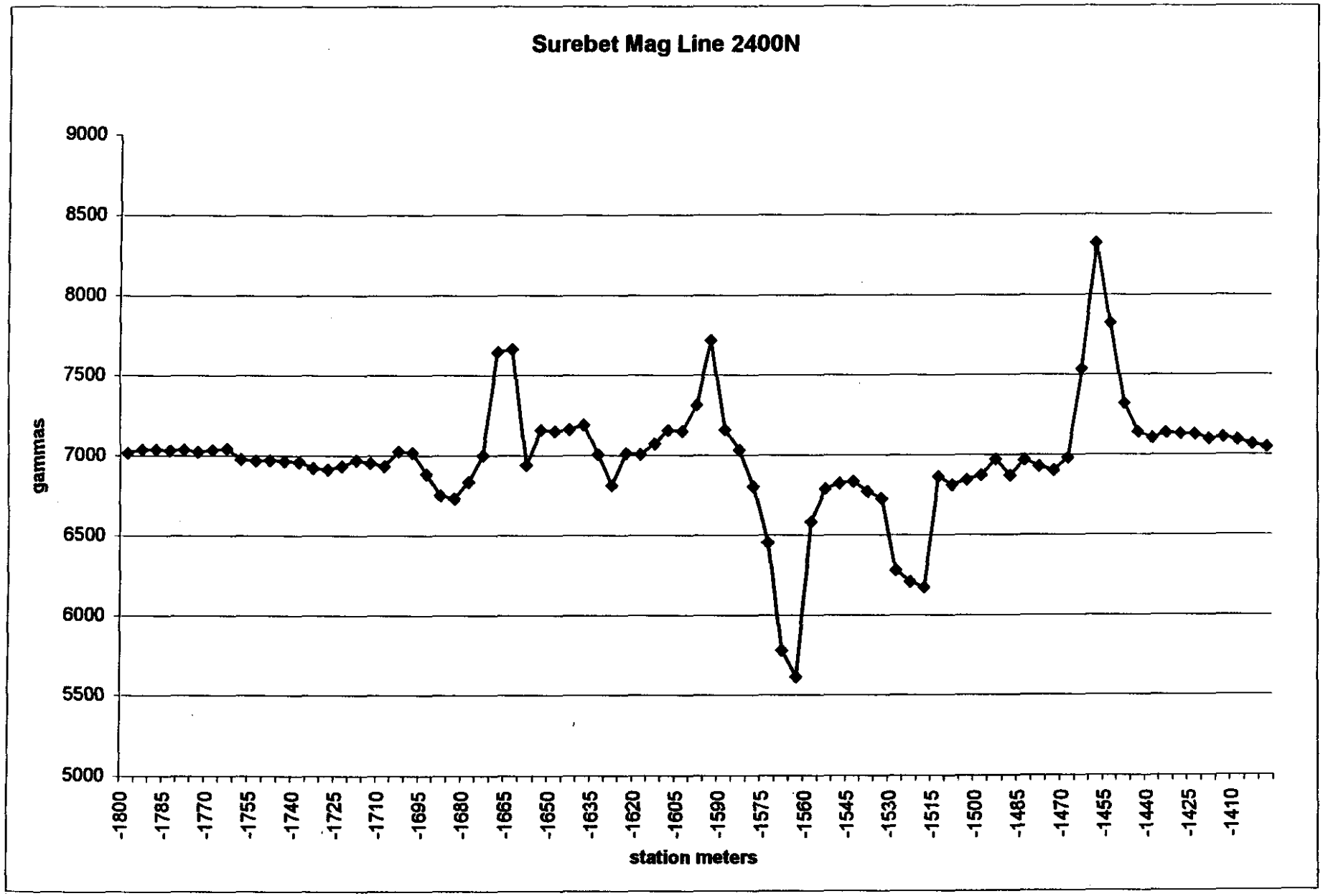
7000
6500
Gammas + 50,000
SUREBET GROUND MAG
SCALE 1:5000, 1"=125m
100 m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-1740
-1725
-1710
-1695
-1680
-1665
-1650
-1635
-1620
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-1590
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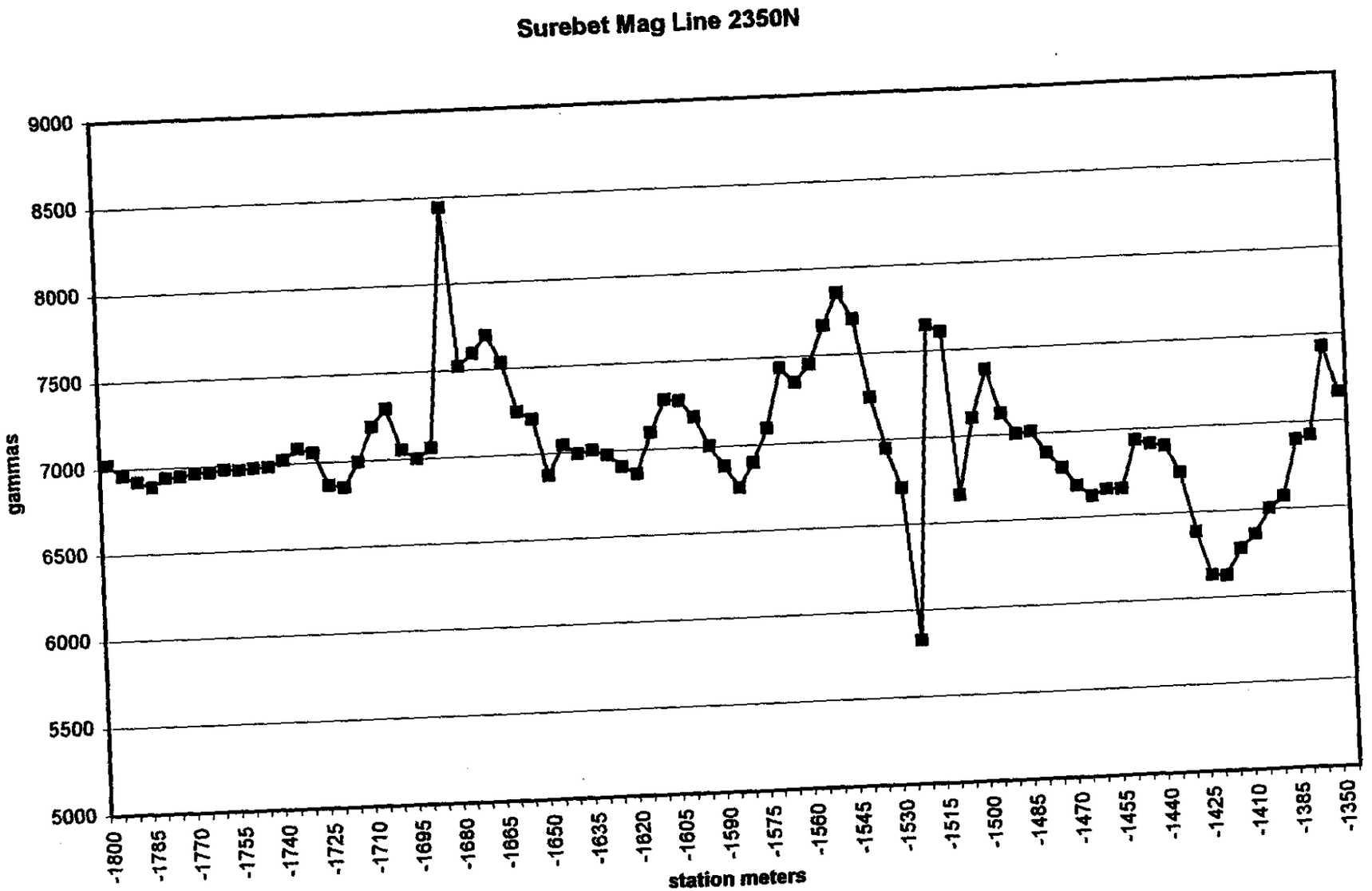
station meters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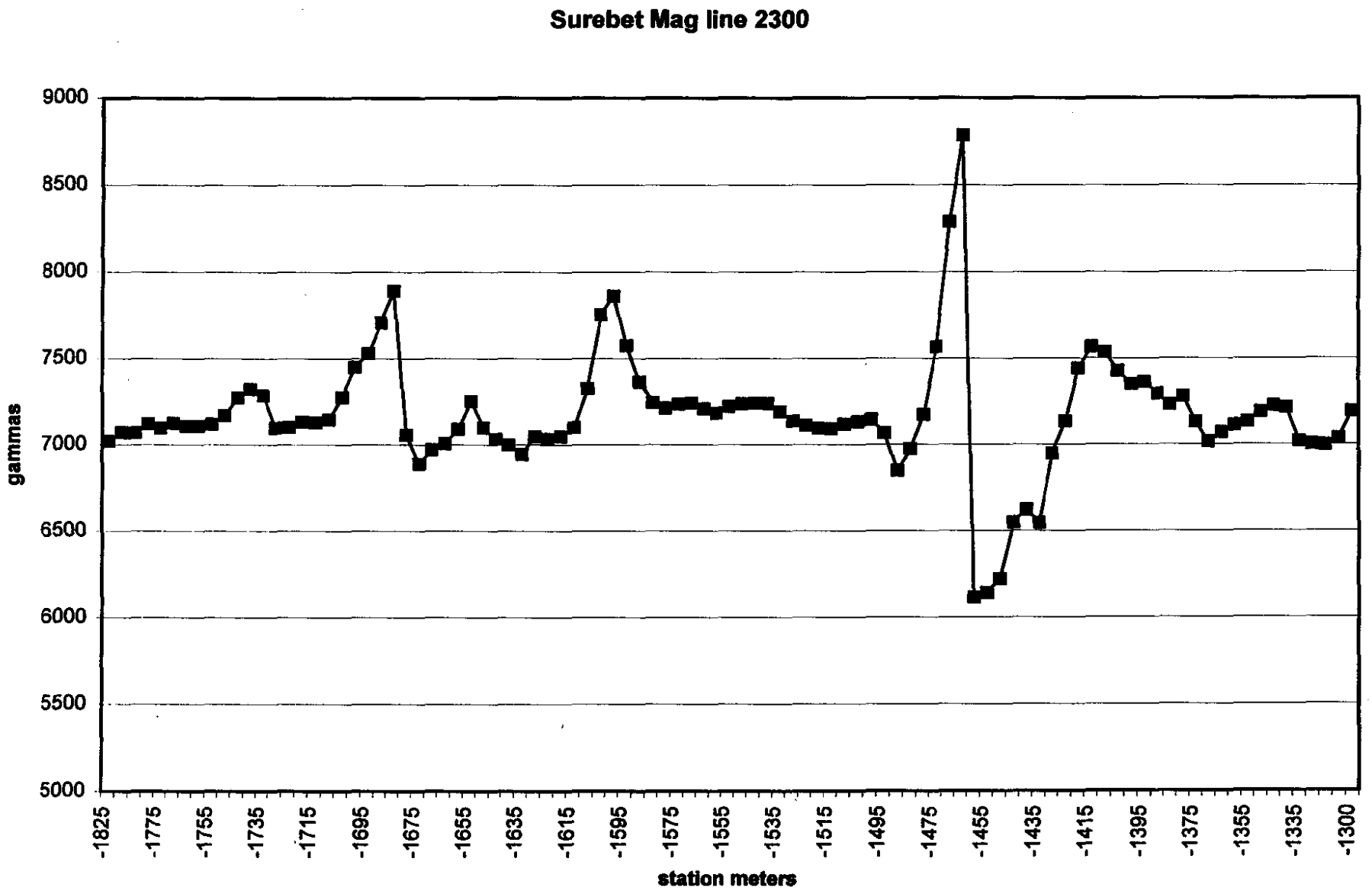
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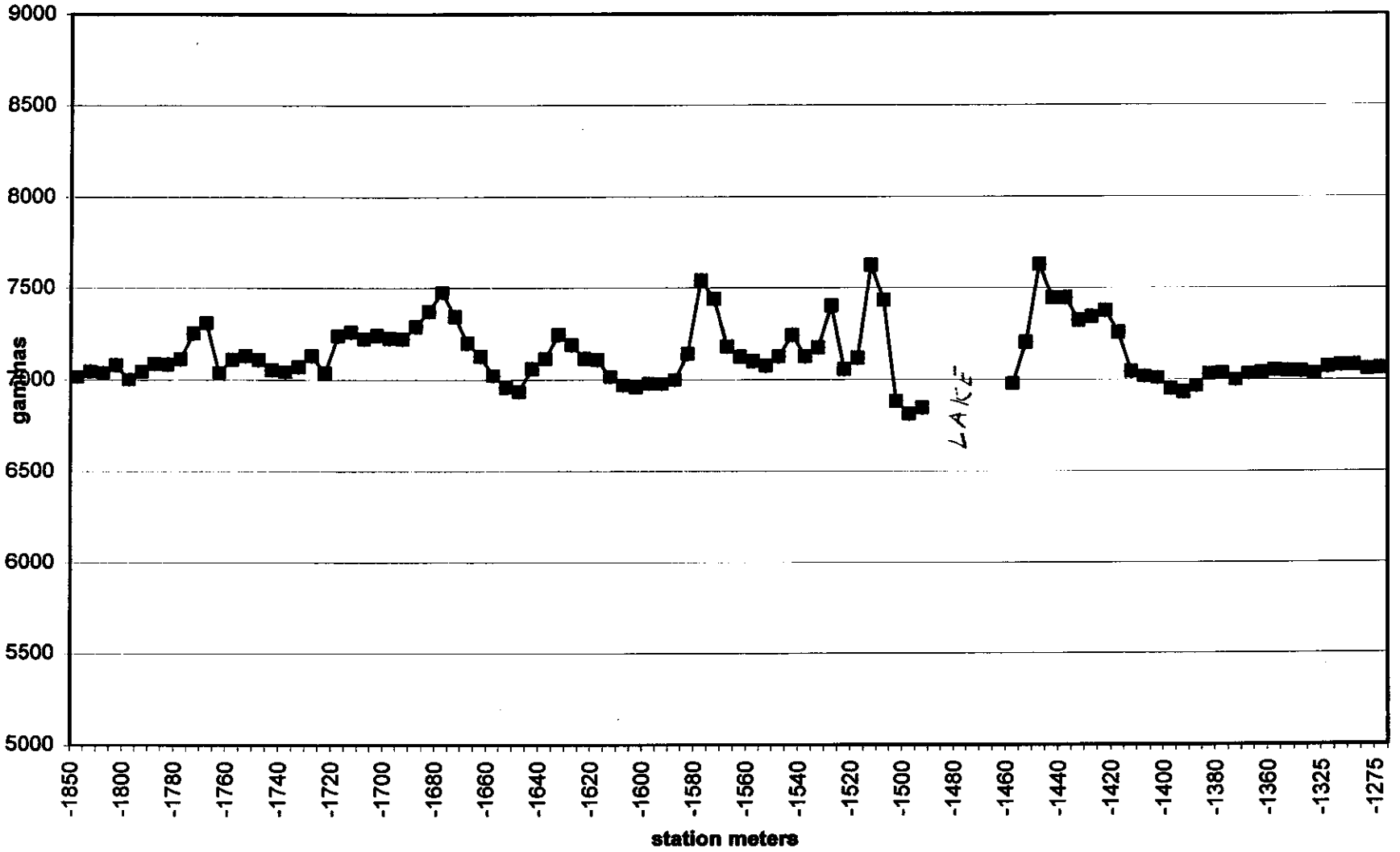
station meters

Surebet Line 2250



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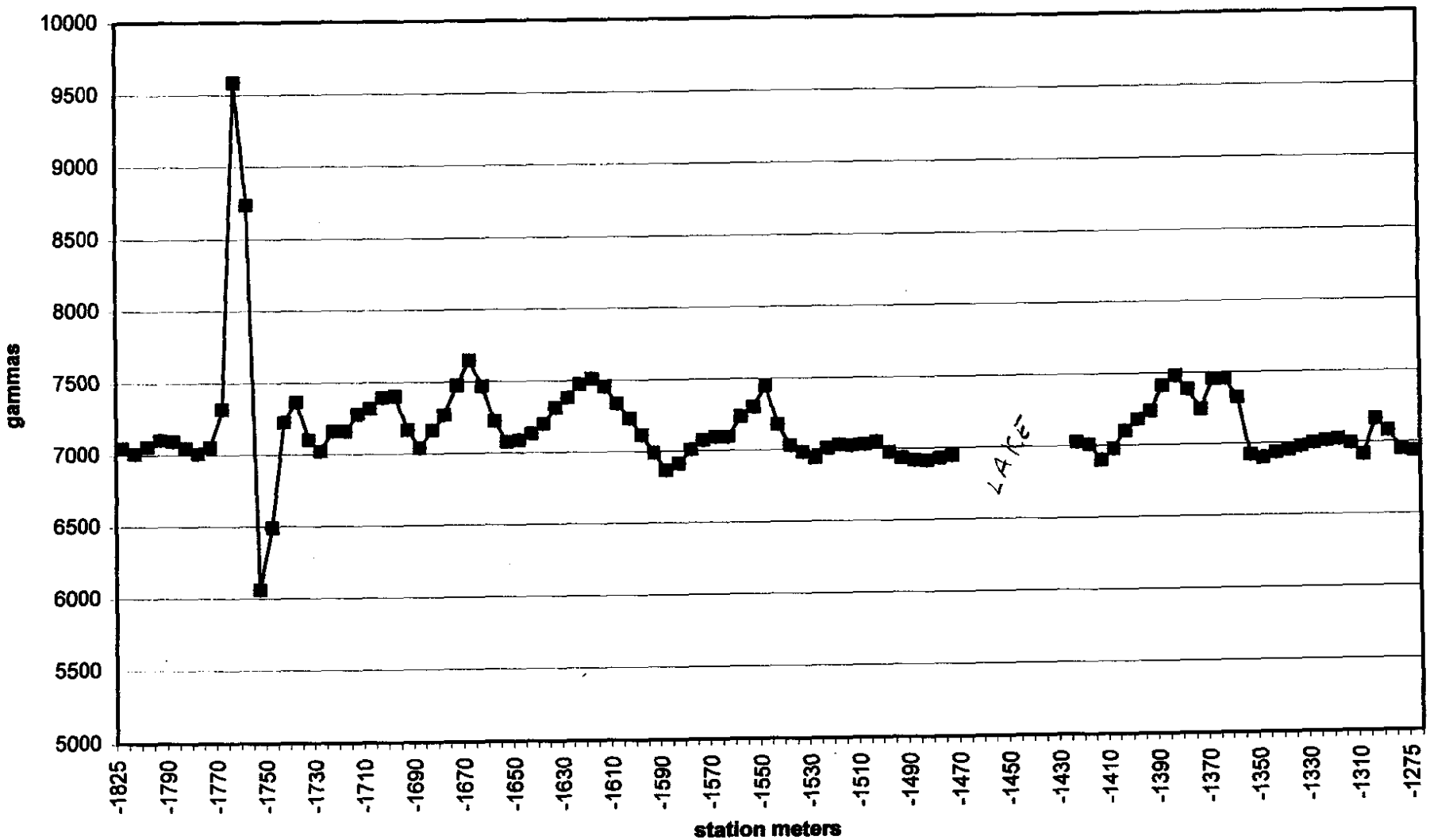

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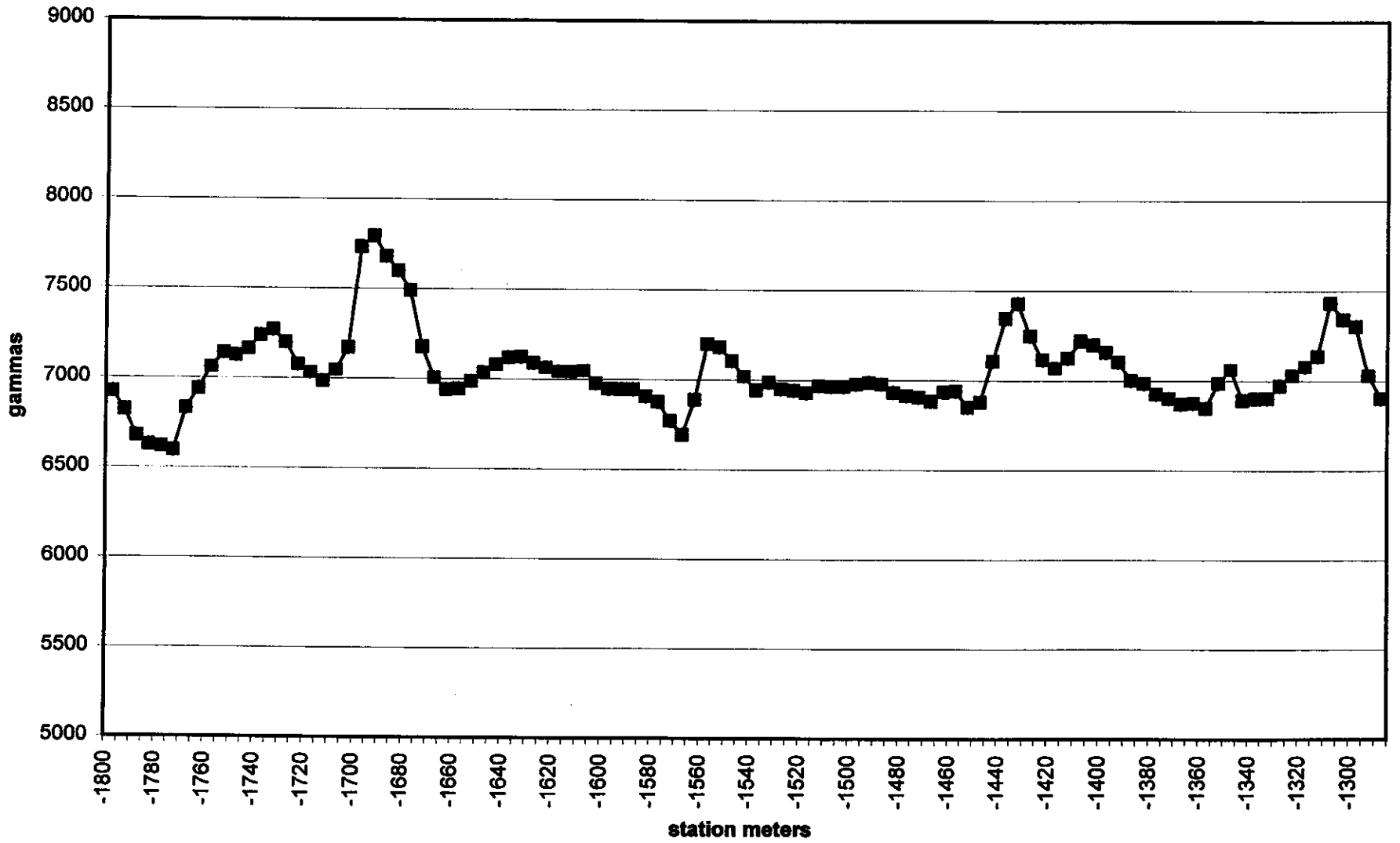

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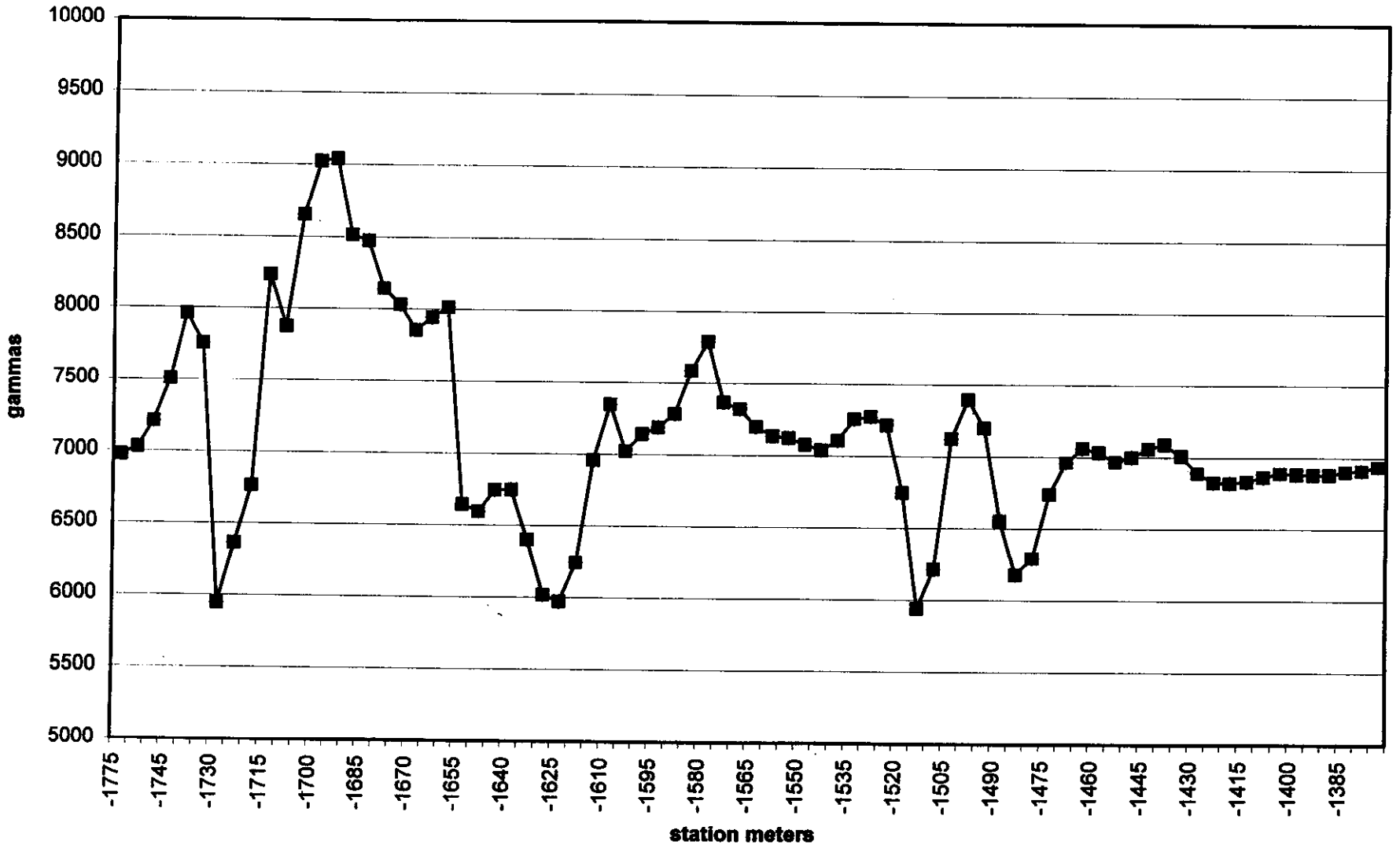

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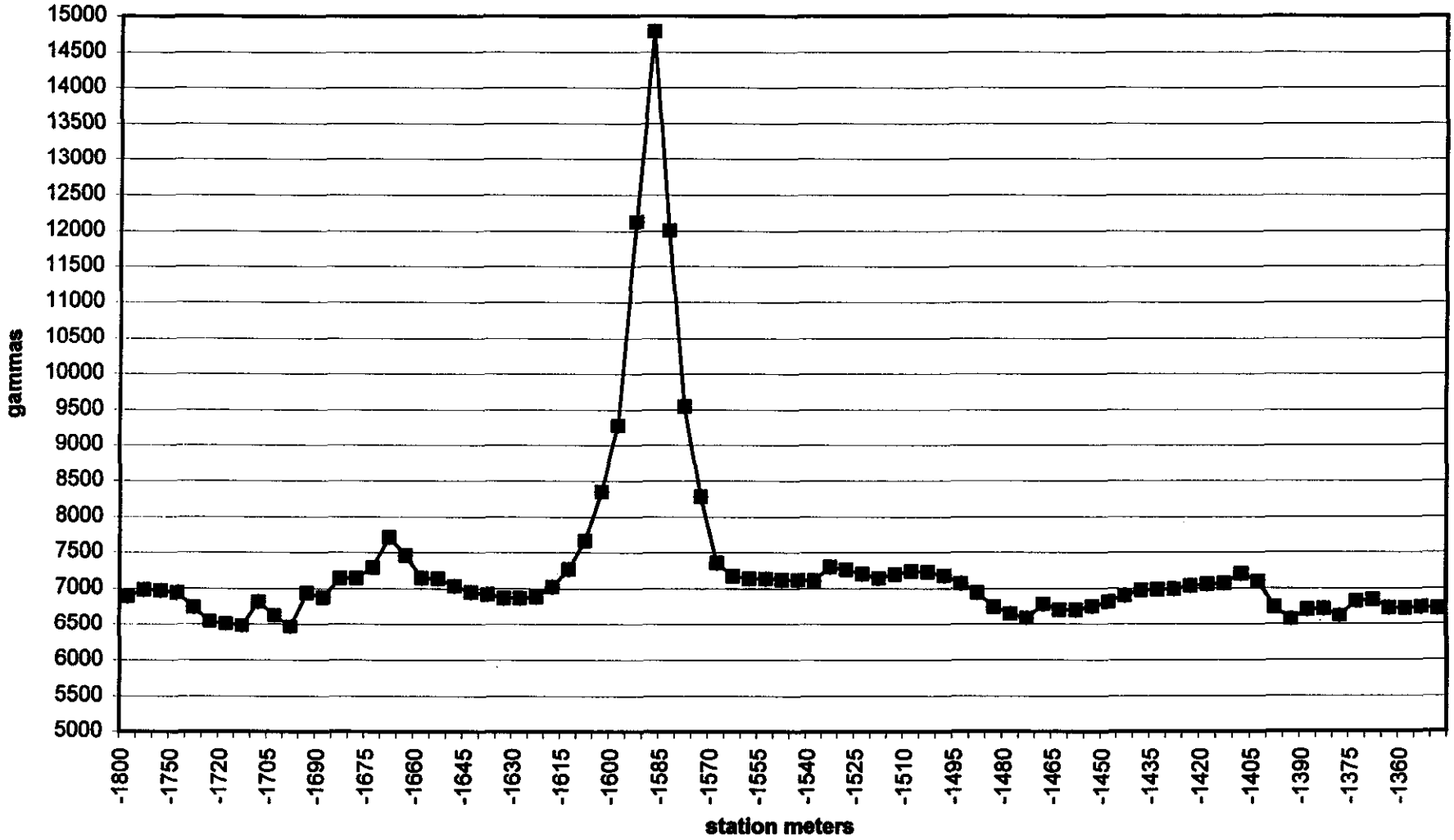

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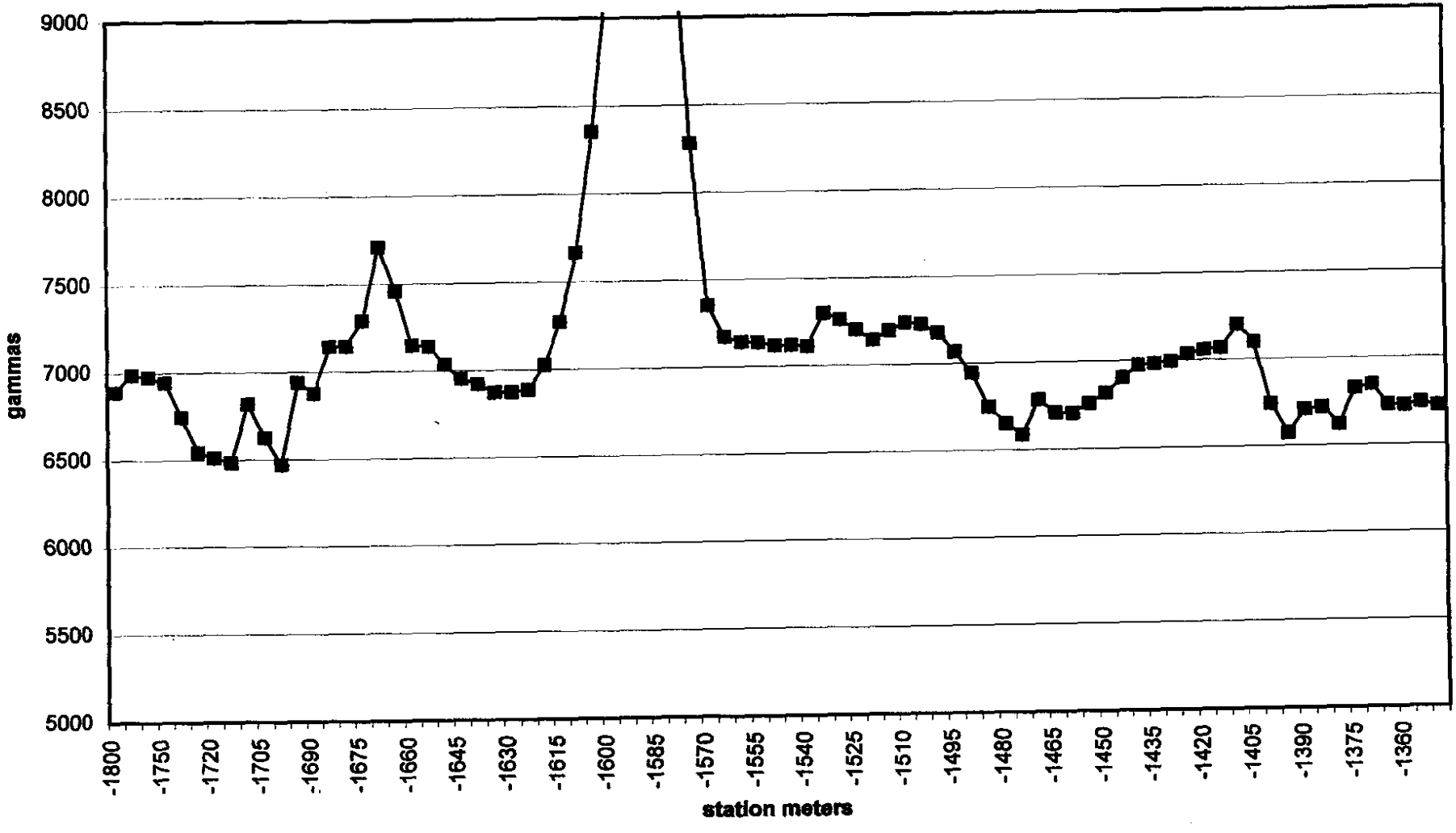

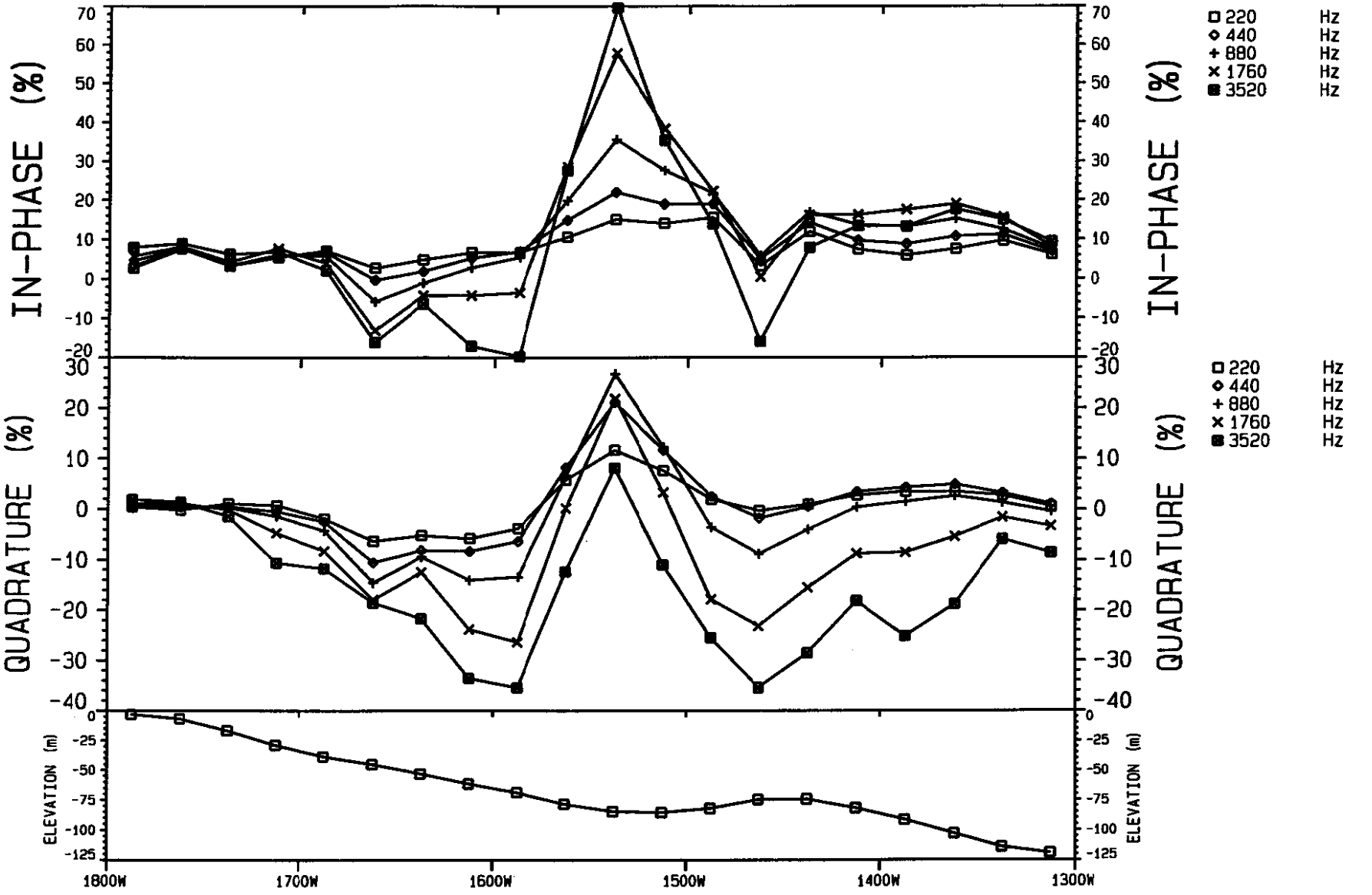

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by: Cominco American Resources Inc.	SUREBET
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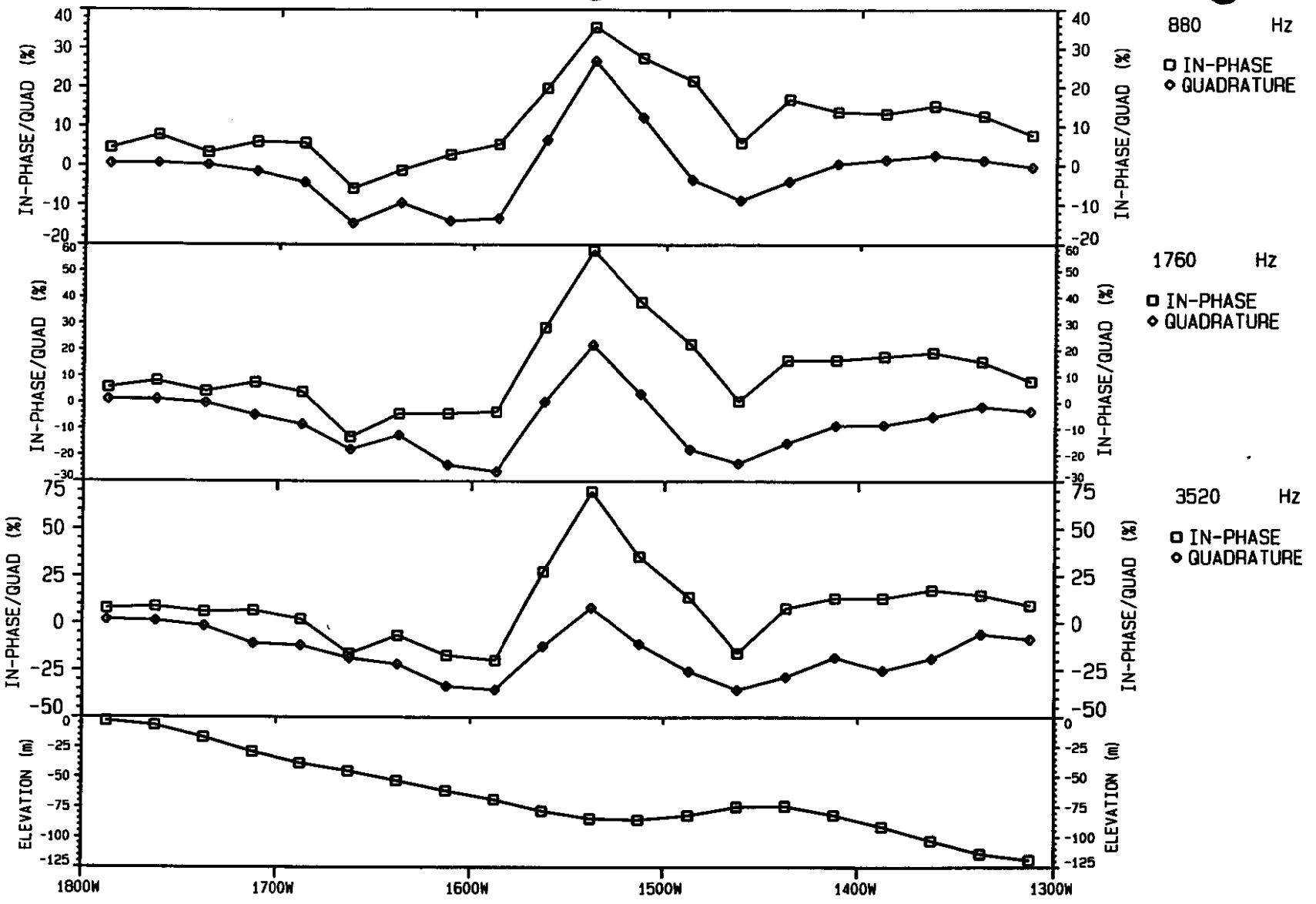
Equipment: APEX MAXMIN I / Sounding: 2300.	Azimuth: EAST-WEST



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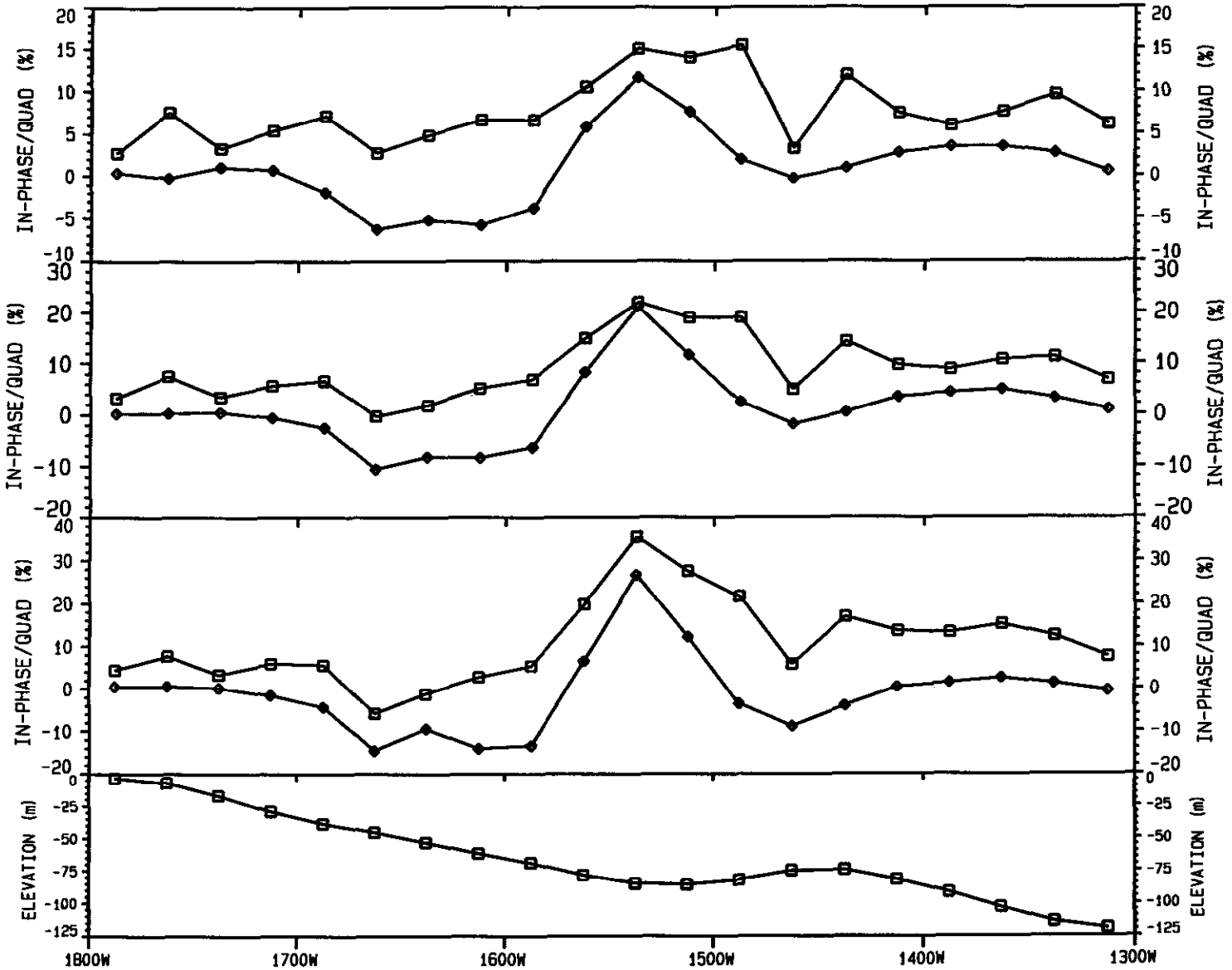
Equipment: APEX MAXMIN I / Sounding: 2300.	Azimuth: EAST-WEST



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SCALE = 1: 3028

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by: Cominco American Resources Inc.	SUREBET
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Equipment: APEX MARWIN I / Sounding: 2300.	Azimuth: EAST-WEST

Appendix 3

Petrographic Studies

MEMO TO: Exploration Manager, Kootenay Exploration (K.R. Pride)

FROM: E.R.L. Manager, Tech. Support (J.A. McLeod) 2 October, 1998

SUBJECT: SUREBET MICROSCOPY **JOB:** V980573R

A total of ten samples were submitted for sectioning and microscopic study. They are labelled as follows:

LAB NO.	***FIELD NO.***	***SECTION TYPE***
R98:10761	S98R-1	Polished Thin Section
R98:10762	S98R-2	Polished Thin Section
R98:10763	S98R-3	Polished Thin Section
R98:10764	Kr98-75	Thin Section
R98:10765	Kr98-76	Thin Section
R98:10766	Kr98-77	Thin Section
R98:10767	Kr98-78	Thin Section
R98:10768	Kr98-79	Polished Thin Section
R98:10769	S98-1-84	Polished Thin Section
R98:10770	S98-1-113.5	Polished Thin Section

Each was examined microscopically and briefly described herein:

SAMPLE R98:10761 (S98R-1).

In transmitted light the rock is seen to consist of 0.5 - 1.0 mm sized grains of quartz and feldspar that all appear to be clastic in origin. Some interstitial development of chlorite and amphibole is noted. The rock is thought to originally have been an arkose or feldspathic greywacke.

In reflected light the opaque content is between 3 - 4% and the mode is approximately as follows:

Pyrrhotite:	50%
Sphene:	40%
Chalcopyrite:	10%

Pyrrhotite appears as interstitial replacements in the rock with grains of 0.2 - 0.3 mm in size. It is extensively altered. Aggregates of rutile, invariably with rims altered to sphene occur in masses to 1 mm in size. Minor chalcopyrite is seen to be in contact with the altered pyrrhotite.

SAMPLE R98:10762 (S98R-2).

In transmitted light the rock appears to be banded and is deformed with the groundmass quartzo-feldspathic grains (0.5 mm)sheared and elongated in a foliation plane as well as at high angles to the plane in which the rock has been sheared.

The entire groundmass is seen to be overprinted by fresh, brown biotite and muscovite. The rock is some sort of deformed micaceous quartzo-feldspathic gneiss of an arkosic composition.

Opaque content is about 1 - 2%, most of which is seen to be fine grained material strung out in a cross-cutting shear. Most of the sulfides are altered to pyrrhotite in which fine grained chalcopyrite and rutile (some sphene) are developed.

SAMPLE R98:10763 (S98R-3).

The rock is a highly sheared quartzo-feldspathic material with some relict feldspars to 1 mm. Most quartz and feldspars are deformed, elongated and in the 0.5 mm and finer size range.

Significant, fine, brown biotite is developed in the rock foliation. The rock is a biotite quartzo-feldspathic material.

Opaques constituent less than 1% of the section area and virtually all is as altered pyrrhotite with associated minor Fe-oxides.

SAMPLE R98:10764 (Kr98-75).

Crystals, broken crystals and aggregates of feldspar and quartz range up to 4 mm in size and are cemented together by a fine grained silicate and brown biotite. The

cementing silicate sometimes appear sheared and sutured. The rock is believed to be some sort of a brecciated granite.

SAMPLE R98:10765 (Kr98-76).

Clasts and augens of feldspar and lesser quartz in the 0.5 - 1.5 mm size range are cemented by ribboned, sheared, wispy quartz and very fine grained quartzo-feldspathic material. The rock is a foliated arkosic arenite or may be referred to as a feldspathic rich sandstone.

SAMPLE R98:10766 (Kr98-77).

Corroded, strained, fractured and recrystallized grains and crystals of quartz and plagioclase feldspars range from 1- 4 mm in size. These grains show rim overgrowth, recrystallization, sutured grain boundaries and graphic granite textures. Rare, ragged, altered patches of biotite to a mm are seen to be present. The rock appears to be a sheared, recrystallized leuco-granite.

SAMPLE R98:10767 (Kr98-78).

The following mode is estimated:

Amphibole:	75%
Plagioclase:	10%
Quartz:	5%
Biotite:	2-3%
Calcite:	2-3%
Sphene:	2-3%
Opaques:	1-2%

Amphibole grains in the 0.5 mm size range contain intergranular plagioclase and quartz crystals. As well, some concentrations of biotite are often seen to be altered to chlorite, quartz and opaques. Sphene is seen to be disseminated in clustered of very fine grains throughout the rock. The rock is some form of amphibolite.

SAMPLE R98:10768 (Kr98-79).

In transmitted light the rock is seen to be a quartzo-feldspathic matrix dominated material which has extensively developed amphibole-biotite in a highly foliate manner overprinting the groundmass. A biotite rich amphibolite rock is believe to represent amphibolite grade metamorphism.

In reflected light opaques are developed throughout the rock in fine, foliated grains and in rare instances they occur in aggregates. About 7 - 8% of the section is as opaques and virtually all is pyrrhotite with grains in the 0.2 - 0.4 mm size range. A few minute grains of black chalcopyrite are intergrown with pyrrhotite. Also noted are a few percent of sphene in patches to 0.5 mm. Rare kernels or cores of rutile are noted in the sphene.

SAMPLE R98:10769 (S98-1-84).

In transmitted light the host rock is comprised of feldspars up to several mm's in size that are altered to sericite/clay. Some quartz is intergrown and is developed in the replacement fractures and shears. The rock is some sort of altered leucocratic intrusive that has been sheared and mineralized.

In reflected light about 70% of the sample is opaques and the mode is approximately as follows:

Pyrrhotite:	40%
Sphalerite:	60%
Galena:	Tr.
Chalcopyrite:	Tr.

Wispy layers or bands of sphalerite between host rock and near massive pyrrhotite contain elongated/foliated inclusions of fine grained pyrrhotite. Very fine grains of chalcopyrite and galena occur along the edges of sphalerite and pyrrhotite.

SAMPLE R98:10770 (S98-1-113.5).

In transmitted light the rock is seen to be some sort of weakly layered quartzo-feldspathic arkose with grains in the 0.5 mm size range. A layer of biotite (phlogopite) rich material is present on one end of the section.

In reflected light the opaque content is about 2 - 3% and the mode is as follows:

Pyrrhotite:	70%
Sphene:	30%
Chalcopyrite:	Tr.

Grains of irregular shaped pyrrhotite range from 0.1 - 0.5 mm in size and are typically strung out in bands or layers. Some rutile occurs in a similar manner and most is altered to sphene with only cores of rutile remaining. Rare, minute grains of chalcopyrite are also noted adjacent to the pyrrhotite.

DISCUSSION:

The rock types in this suite range from obvious arkosic sandstone (feldspathic greywacke) to amphibolites to sheared and deformed leuco-granites. Where metamorphism is noted it is of greenschist to amphibolite grade and is likely a local phenomenon.

Mineralization is restricted to altered pyrrhotite and associated rutile. However, rutile is often moderately to extensively altered to sphene so that grains of 0.5 mm size, strung out in rock foliation or fabric, now only have small cores of rutile. Very rare chalcopyrite and galena are noted. One sample has considerable sphalerite while demonstrates deformation on a microscopic scale as small inclusions of pyrrhotite in the sphalerite are strongly foliated.

J.A. McLeod.

JAM/skw

MEMO TO: Project Geologist, Kootenay Exploration (P.W. Ransom)

FROM: E.R.L. Manager, Tech. Support (J.A. McLeod) 14 October, 1998

SUBJECT: SUREBET MICROSCOPY **JOB:** V980611R

Ten samples were submitted for sectioning and microscopic study. They are numbered as follows:

LAB NO.	***FIELD NO.***	***SECTION TYPE***
R98:12031	DDH S98-1, 41.7 m	Polished Thin Section
R98:12032	DDH S98-1, 48.6 m	Polished Thin Section
R98:12034	DDH S98-1, 68.7 m	Thin Section
R98:12036	DDH S98-1, 85.2 m	Thin Section
R98:12039	DDH S98-1, 131.9 m	Thin Section
R98:12044	DDH S98-1, 161.0 m	Thin Section
R98:12046	DDH S98-1, 178.5 m	Thin Section
R98:12050	DDH S98-1, 209.6 m	Thin Section
R98:12052	DDH S98-1, 234.4 m	Thin Section
R98:12056	DDH S98-1, 250.9 m	Thin Section
R98:12064	DDH S98-2, 40.0 m	Thin Section
R98:12067	DDH S98-2, 91.3 m	Thin Section

Following are brief microscopic descriptions:

SAMPLE R98:12031 (DDH S98-1, 41.7 m).

The total opaque content of this section is between 3 - 5%. Pyrrhotite is the only identified sulfide. The pyrrhotite is strung out in specific seams or shears within the rock. Grains tends to be quite fine, tenth's of a mm in size. A few grains of sphene are strung out in foliation and are associated with the pyrrhotite.

In transmitted light the rock is seen to consist predominately of plagioclase clasts in the 0.1 - 1.0 mm size range. These clasts are anhedral and have subordinate quartz clasts occurring interstitial to them. Patches of biotite and laths up to 0.5 mm in length are well developed interstitially to plagioclase and quartz. They are foliated and may be accompanied by some sericite. The rock is a schistose (greenschist facies) arkosic sandstone or arenite.

SAMPLE R98:12032 (DDH S98-1, 48.6 m).

In transmitted light the rock is seen to be an arkosic sandstone as was the previous sample. This sample is obviously sheared and has both biotite and amphibole developed. Some shears or seams contain carbonate.

In reflected light the opaque content is about 5%. The opaques are very fine grained and well distributed. These opaques are concentrated in the foliation plane of the rock. Virtually all the sulfides are pyrrhotite occurring in grains of 0.1 - 0.4 mm. Rare grains of pyrite and chalcopyrite are noted. As well, non-sulfide opaques include rutile with rims of sphene.

SAMPLE R98:12034 (DDH S98-1, 68.7 m).

In transmitted light clasts of plagioclase and quartz average 0.5 mm and are strongly foliated. These grains are subangular to subrounded. Biotite (perhaps between 15 - 20%) is developed in the foliation and interstitial to quartz and feldspar grains. The biotite grains are up to 0.5 mm in length and emphasise the rock foliation.

The rock is classified as a sheared, foliated, greenschist metamorphic grade arkosic (feldspathic) sandstone.

SAMPLE R98:12036 (DDH S98-1, 85.2 m).

In transmitted light this rock is a fine grained, highly sheared version of the previous described sample, R98:12034. The rock is a biotite, quartzo-feldspathic schist of greenschist grade metamorphism. The original rock was likely an arkosic (feldspathic) greywacke or fine sandstone.

SAMPLE R98:12039 (DDH S98-1, 131.9 m).

In transmitted light the original rock was likely a banded, sorted or graded arenite (feldspathic) with some layers consisting of grains in the 0.5 mm range while others contain grains as coarse are 3 mm. Interstices contain sutured silicates, biotite and opaques. The rock is sheared along foliation/banding and is cross-fractured.

SAMPLE R98:12044 (DDH S98-1, 161.0 m).

In transmitted light subangular clasts of plagioclase from 1 mm grade down to those a tenth of a mm in size. Present in a subordinate quantity is quartz. A few percent of biotite and opaques are concentrated in specific layers or lamellae within the rock.

The rock is a quartzo-feldspathic (arkosic) sandstone/greywacke. This rock has undergone shearing and deformation.

SAMPLE R98:12046 (DDH S98-1, 178.5 m).

In transmitted light the rock is highly foliated or sheared with significant development of amphibole and lesser biotite. A layer in the rock contains clasts of amphibole, plagioclase and potash feldspar up to 5 mm in size. Opaques, biotite and amphibole grains all are foliated or elongated and help define a rock fabric.

This rock is a biotite-amphibole gneiss of original arkosic greywacke material.

SAMPLE R98:12050 (DDH S98-1, 209.6 m).

In transmitted light the rock is again seen to be a quartzo-feldspathic greywacke that is strongly sheared and specific shears have considerable biotite and opaques developed within them. The original clast size is about 0.5 mm. Thus the rock was a fine, well sorted, somewhat travelled sand or wacke.

SAMPLE R98:12052 (DDH S98-1, 234.4 m).

In transmitted light augened clasts of plagioclase and feldspathic aggregates are up to 1.5 mm wide and 2 - 3 mm in length. These clasts are set within slivers and braided quartz along with sutured, fine grained silicate and highly sheared and wispy zones of biotite along with minor sericite/muscovite. Fe-sulfides are also strung out in the rock foliation.

The rock is a highly sheared biotite, quartzo-feldspathic gneiss. Originally it was a somewhat chaotic quartz-feldspar silicate fragment wacke.

SAMPLE R98:12056 (DDH S98-1, 250.9 m).

In transmitted light this sample is seen to represent a sharp contact between two rock phases. One of the phases is a muscovite-quartz-feldspar schist. The contact is marked by the development of Fe-sulfides and the other rock type is seen to be a biotite schist with fine clastic quartz and feldspar. Also, in this rock type nodules of feldspathic sandstones of 5 mm diameter are noted.

The two rock types were both originally some sort of feldspathic sandstone/volcaniclastic material which has been brought together by local shearing and faulting from slightly different metamorphic, compositional, deformational regimes.

SAMPLE R98:12064 (DDH S98-2, 40.0 m).

This sample represents a contact. The contact may be a erosional contact which consists of plagioclase clasts (0.5 mm) in a opaque charged carbonate. This contact material has then been sheared and replaced by carbonate.

On both sides of the contact are feldspathic wackes of clastic rock fragments ranging from less than 1 mm to multi-grained elongated/augened fragments. Abundant interstitial calcite is developed on either side of the contact, often forming the bulk of the rock and then grading into a more pure feldspathic wacke. The presence of biotite on both sides of the contact is noted.

SAMPLE R98:12067 (DDH S98-2, 91.3 m).

A skarn rock:

Phlogopite:	20%
Calcite:	45%
Amphibole:	35%

A banded or layered rock appears to be a calcareous skarn material of medium grain size (0.5 - 3.0 mm). Certain minerals concentrate in specific layers.

DISCUSSION:

The rocks in this suite are essentially derived from the same source. They are some sort of plagioclase clast rich sandstone or wacke. The rocks are typically fine grained, 0.5 mm, but some layers or bands may contain coarser material. Biotite is invariably developed in the plane of lamination or foliation. Some amphibole is also noted in two samples suggesting a somewhat higher regional metamorphism.

Sulfides are scarce and when present are seen to be essentially pyrrhotite. Rare grains of pyrite and chalcopyrite have been identified.

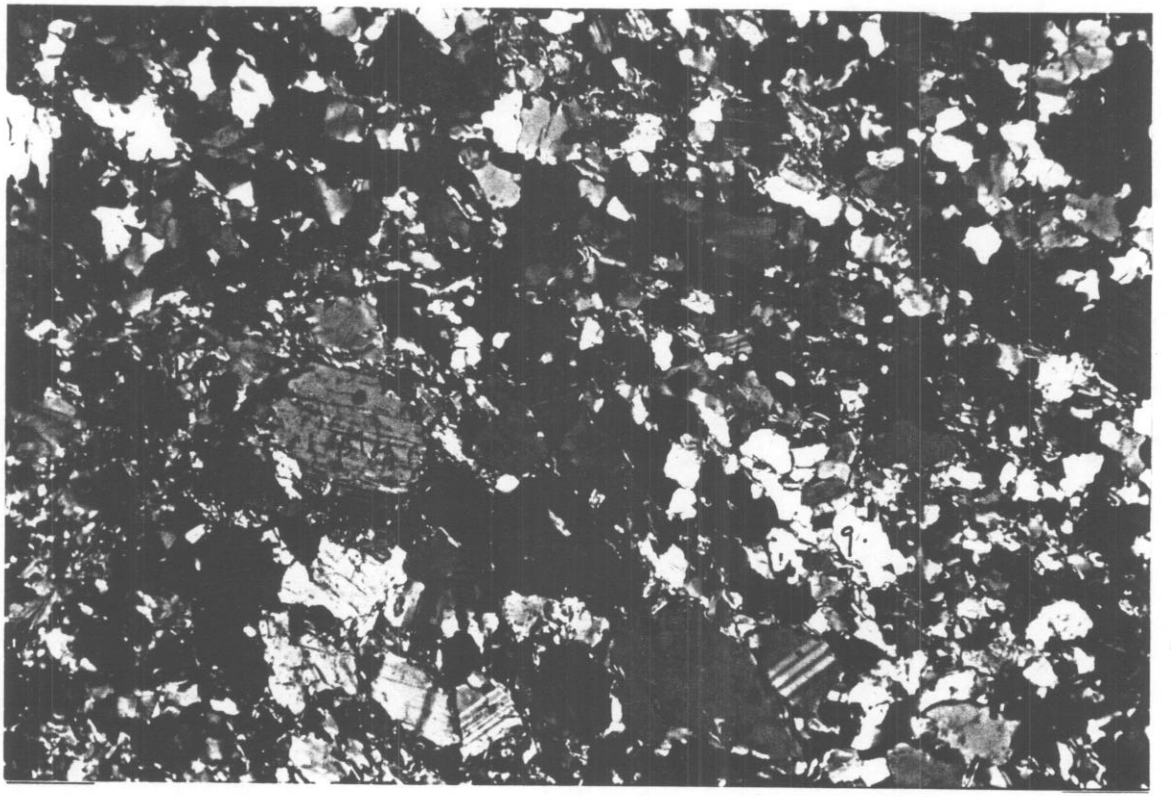
The presence of rutile with rims of sphene is often identified. It was these minerals that were queried on the core surfaces when the suite was first submitted.

A number of photomicrographs have been taken. These are captioned and appended to demonstrate rock types and mineralogy.

J.A. McLeod.

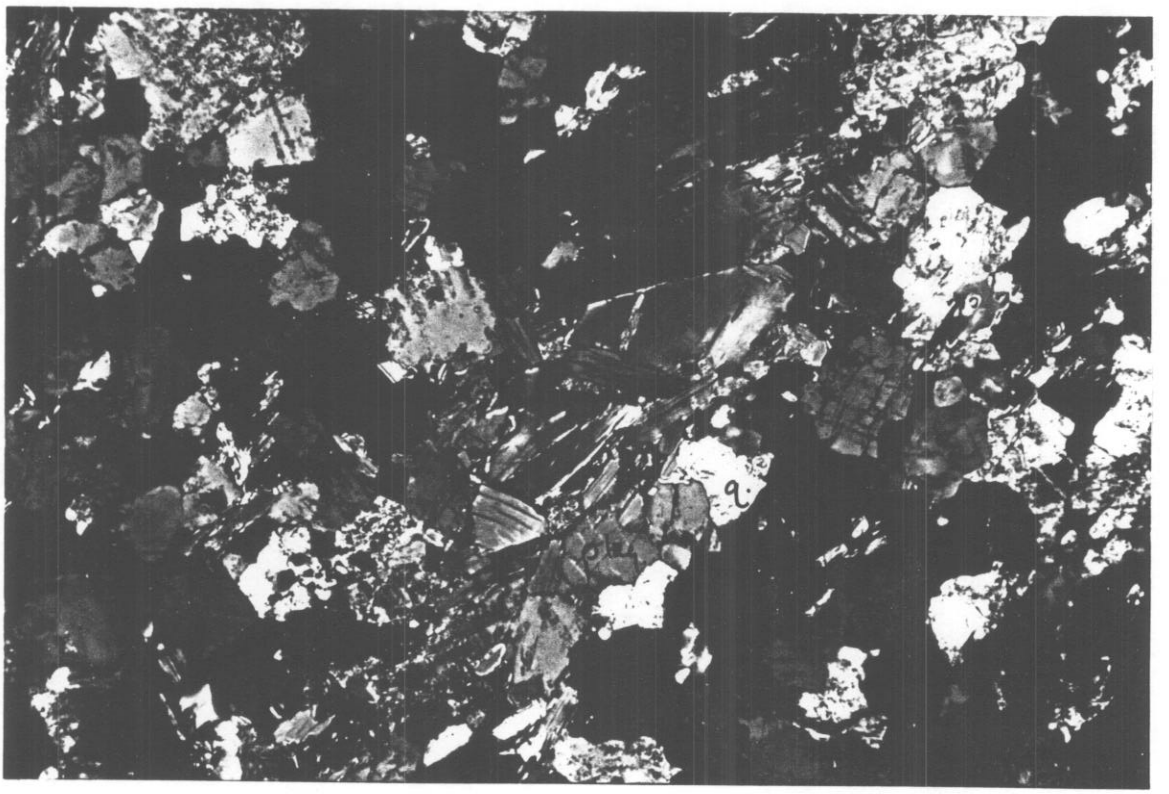
JAM/skw
Att. (Photos)

PHOTOMICROGRAPHS - SUREBET (V980611R)



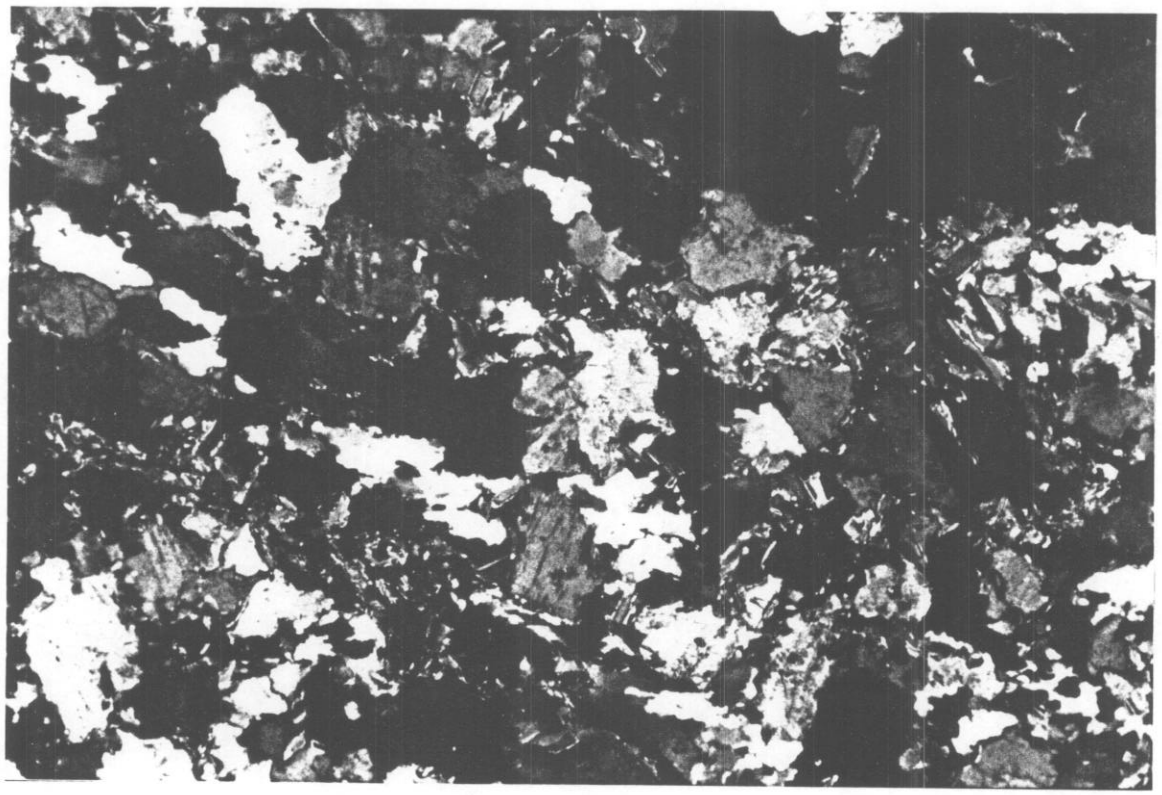
280 μm

R98:12031. Plagioclase with some quartz and biotite. A foliated wacke. Transmitted light, crossed nicols, magnification 25x.

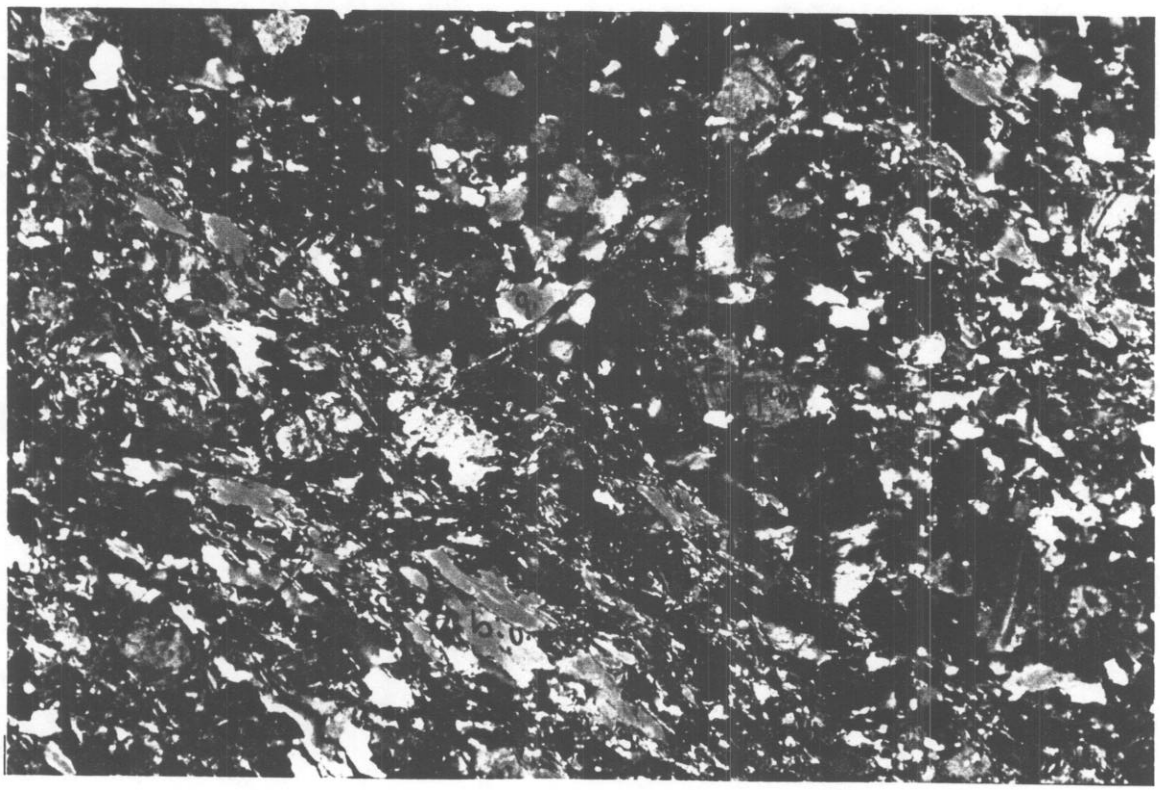


280 μm

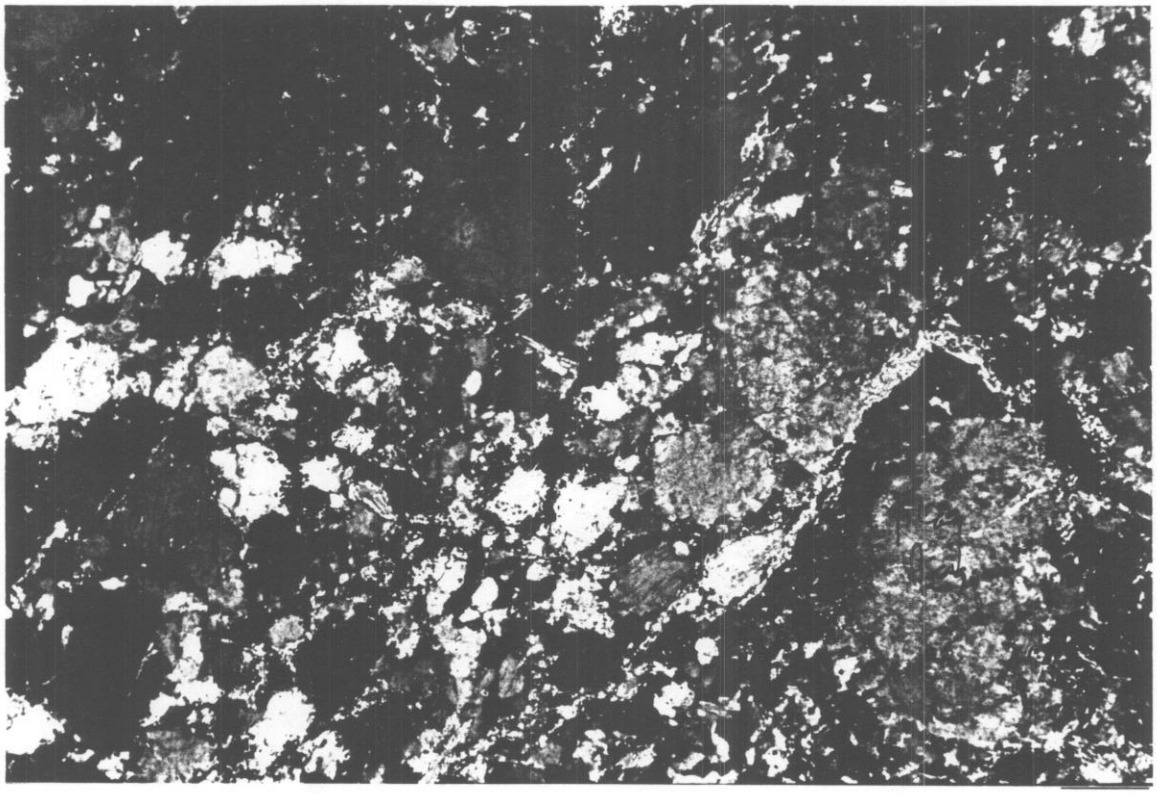
R98:12032. Plagioclase and some quartz. A biotite rich seam. Transmitted light, crossed nicols, magnification 25x.



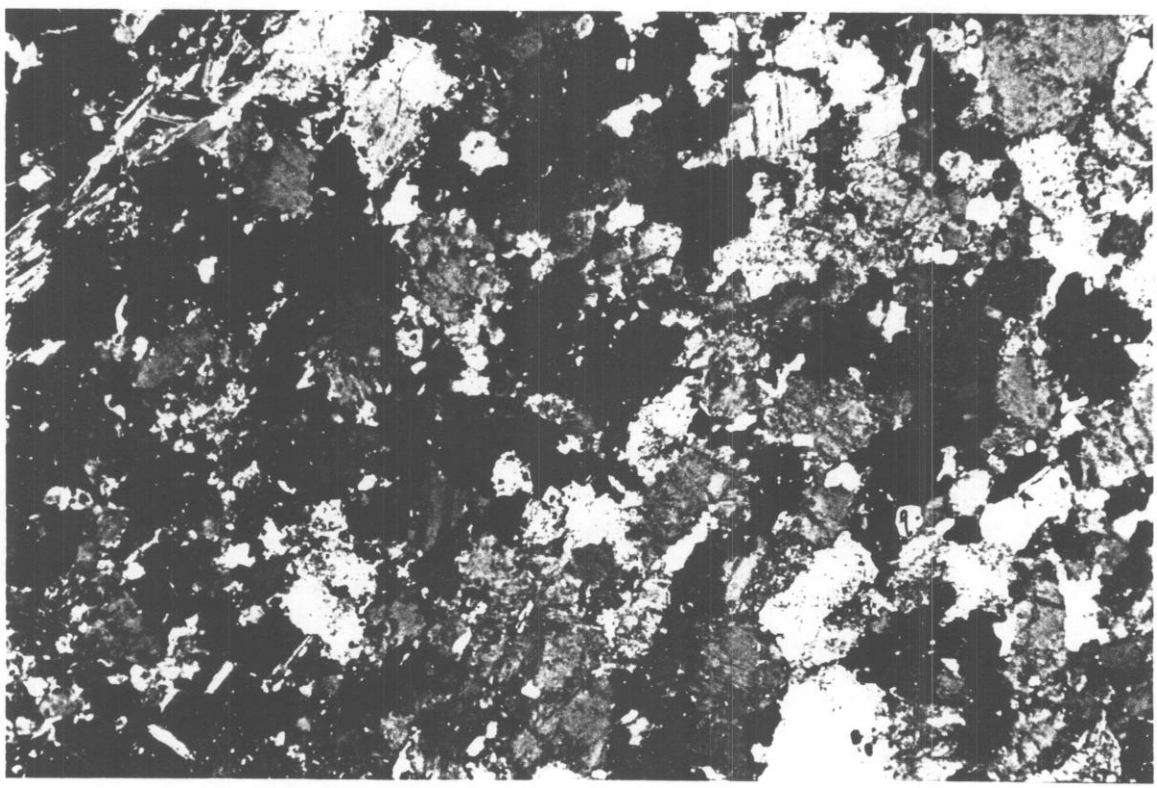
R98:12034. Similar to previous sample.



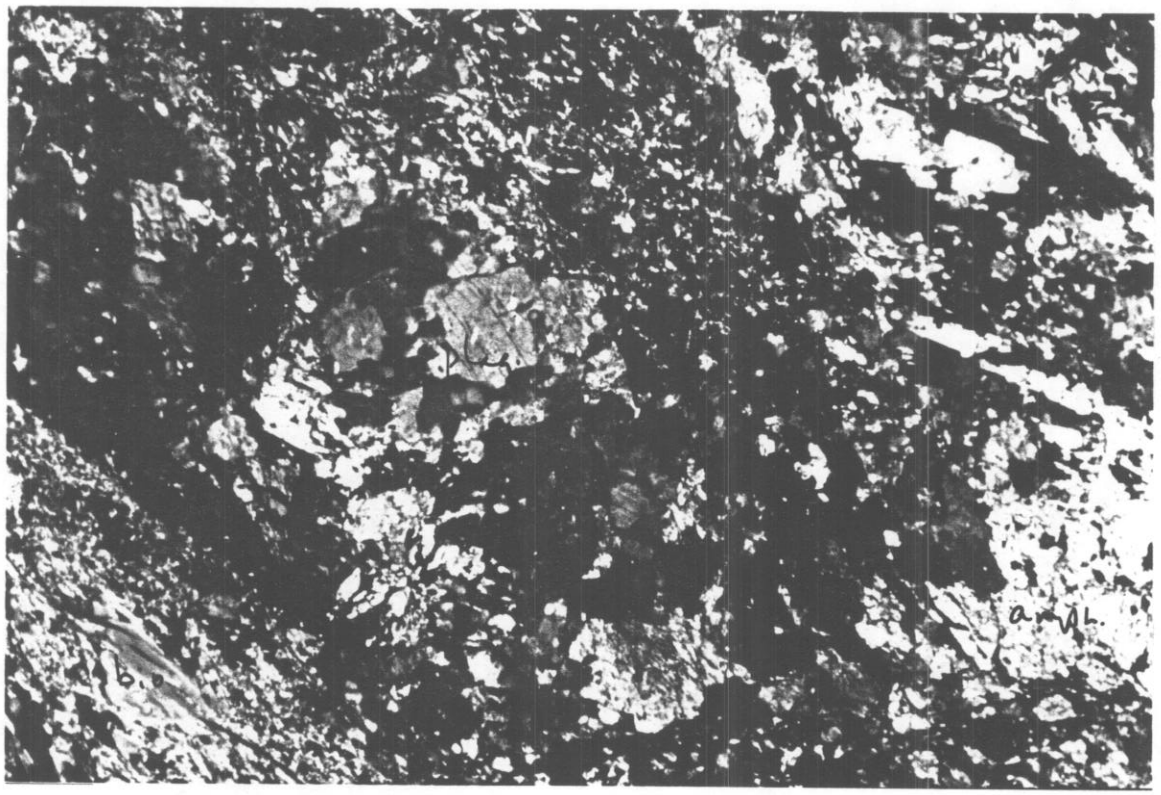
R98:12036. Biotite rich and plagioclase-quartz rich layers. Transmitted light, crossed nicols, magnification 25x.



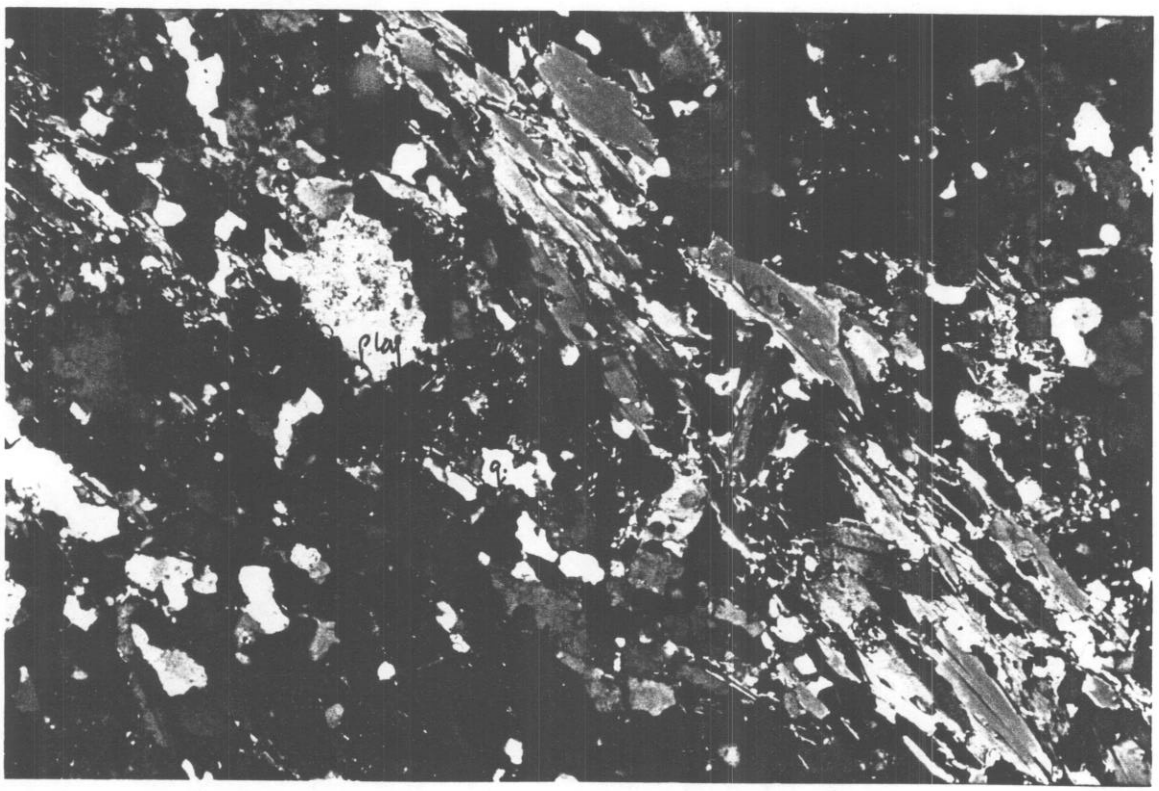
R98:12039. Poorly sorted (coarse) plagioclase clasts and fragments. Transmitted light, crossed nicols, magnification 25x.



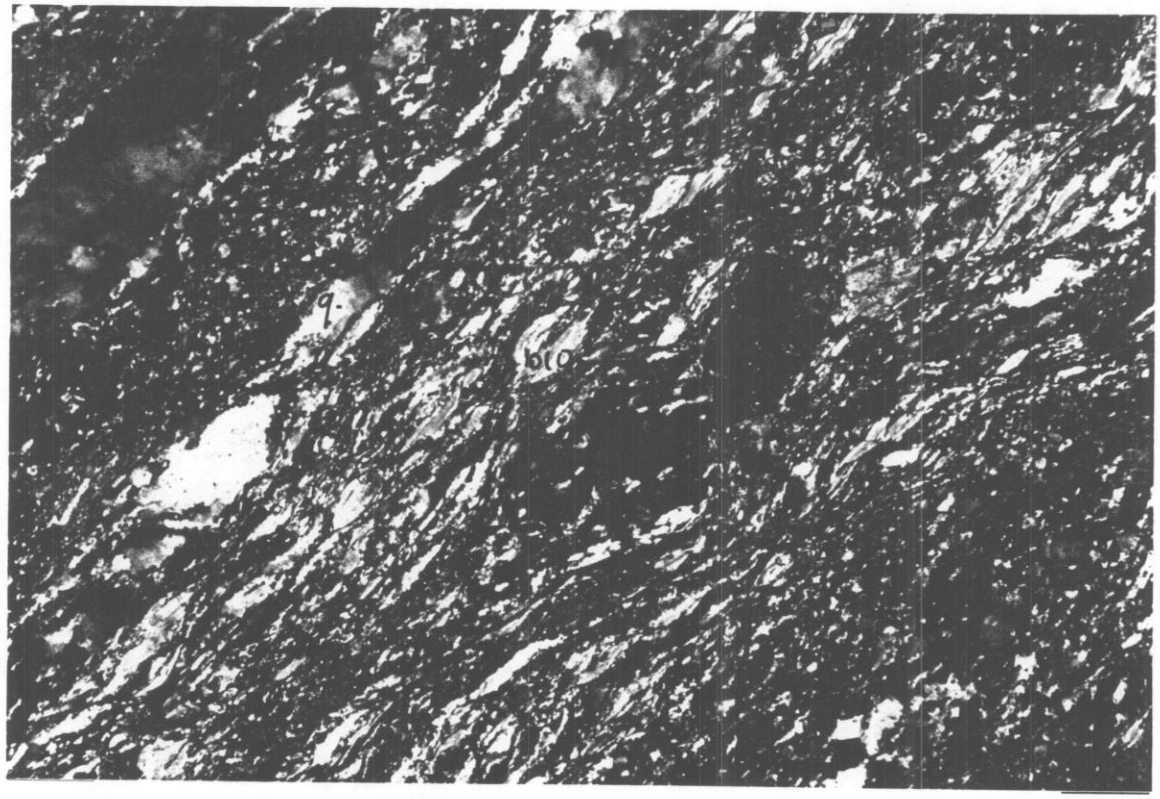
R98:12044. Opaque rich zone, plagioclase (quartz) zone and biotite zone. Transmitted light, crossed nicols, magnification 25x.



R98:12046. Biotite, amphibole and deformed plagioclase clasts. Transmitted light, crossed nicols, magnification 25x.

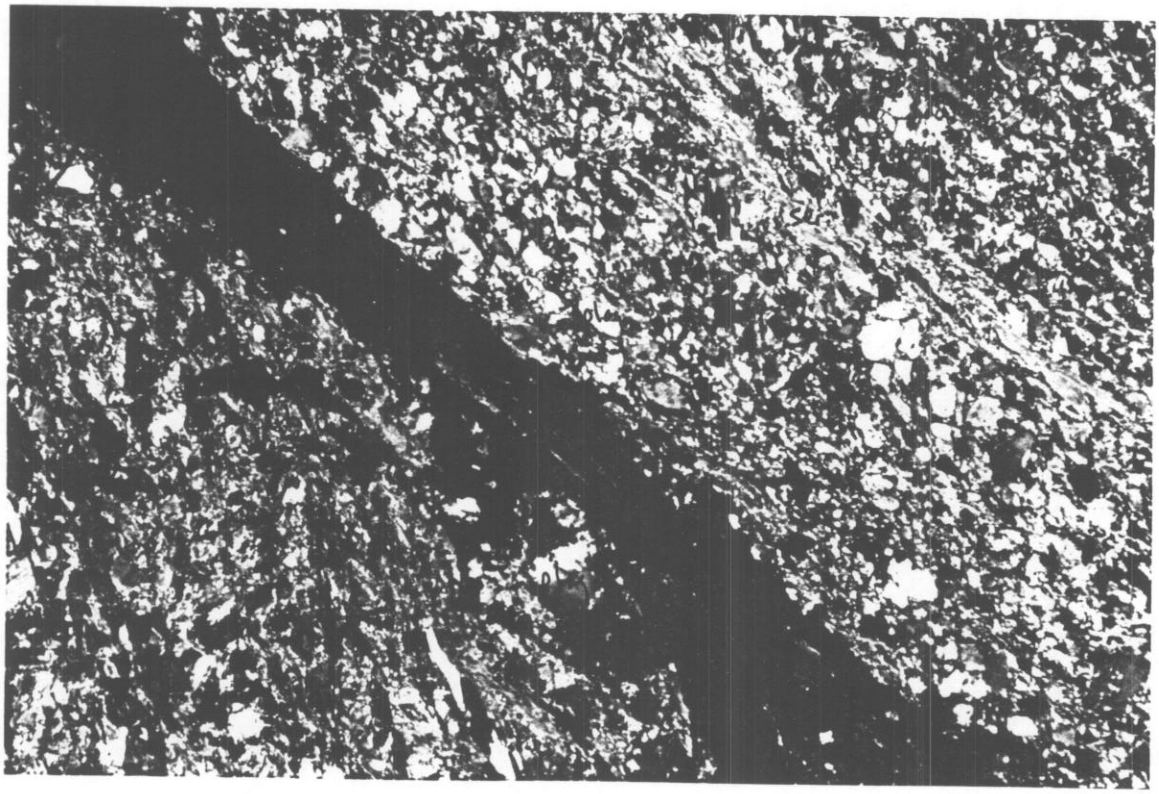


R98:12050. Biotite rich seam in deformed quartz-plagioclase rock. Transmitted light, crossed nicols, magnification 25x.



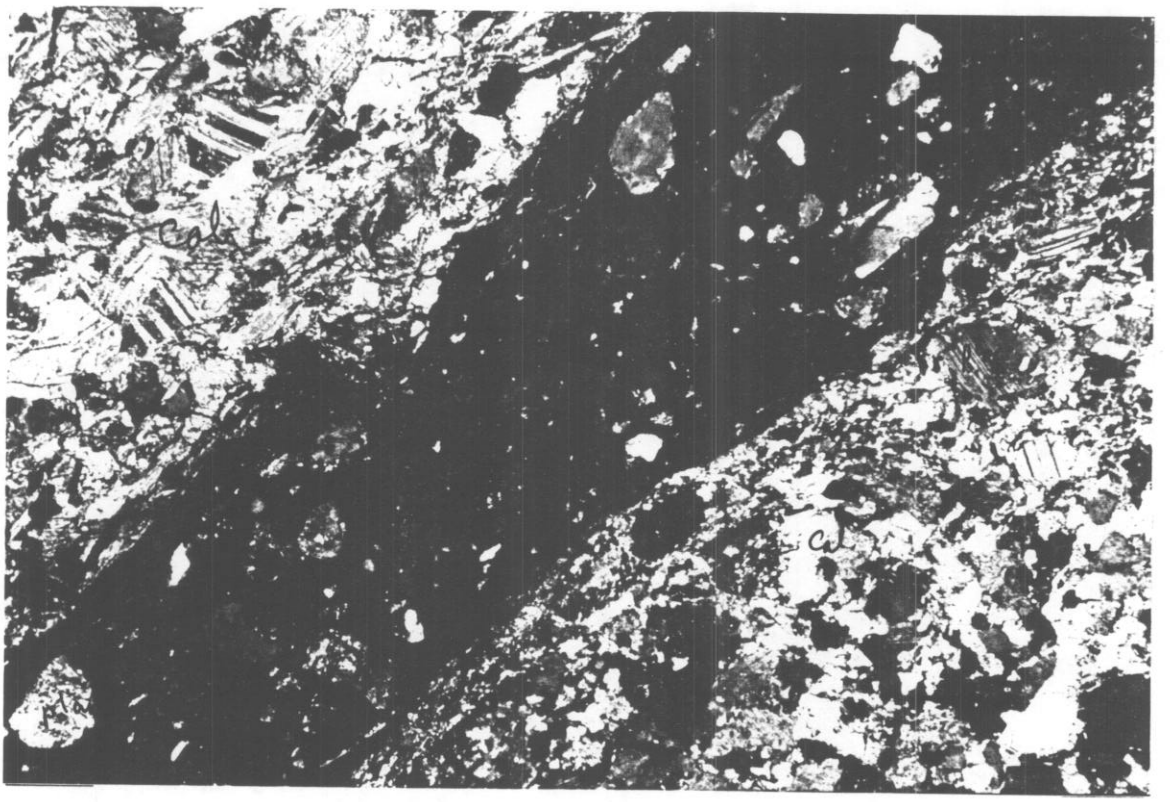
280 μm

R98:12052. Sheared quartz, biotite and plagioclase. Transmitted light, crossed nicols, magnification 25x.



280 μm

R98:12056. Contact between sericite-plagioclase rock and biotite-plagioclase rock. Transmitted light, crossed nicols, magnification 25x.



280 μm

R98:12064. Contact zone with plagioclase clasts in a carbonaceous carbonate separating to calcite rich phases. Transmitted light, crossed nicols, magnification 25x.

280 μm

R98:12067. Skarn rock with foliated biotite, amphibole and calcite. Transmitted light, crossed nicols, magnification 25x.

MEMO TO: Exploration Manager, Kootenay Exploration (K.R. Pride)

FROM: E.R.L. Manager, Tech. Support (J.A. McLeod) 23 July, 1998

SUBJECT: SUREBET/MICROSCOPY **JOB:** V980366R

LAB NO.	***FIELD NO.***	***SECTION TYPE***
R98:7302	Kr-14	Polished Thin Section

SAMPLE R98:7302.

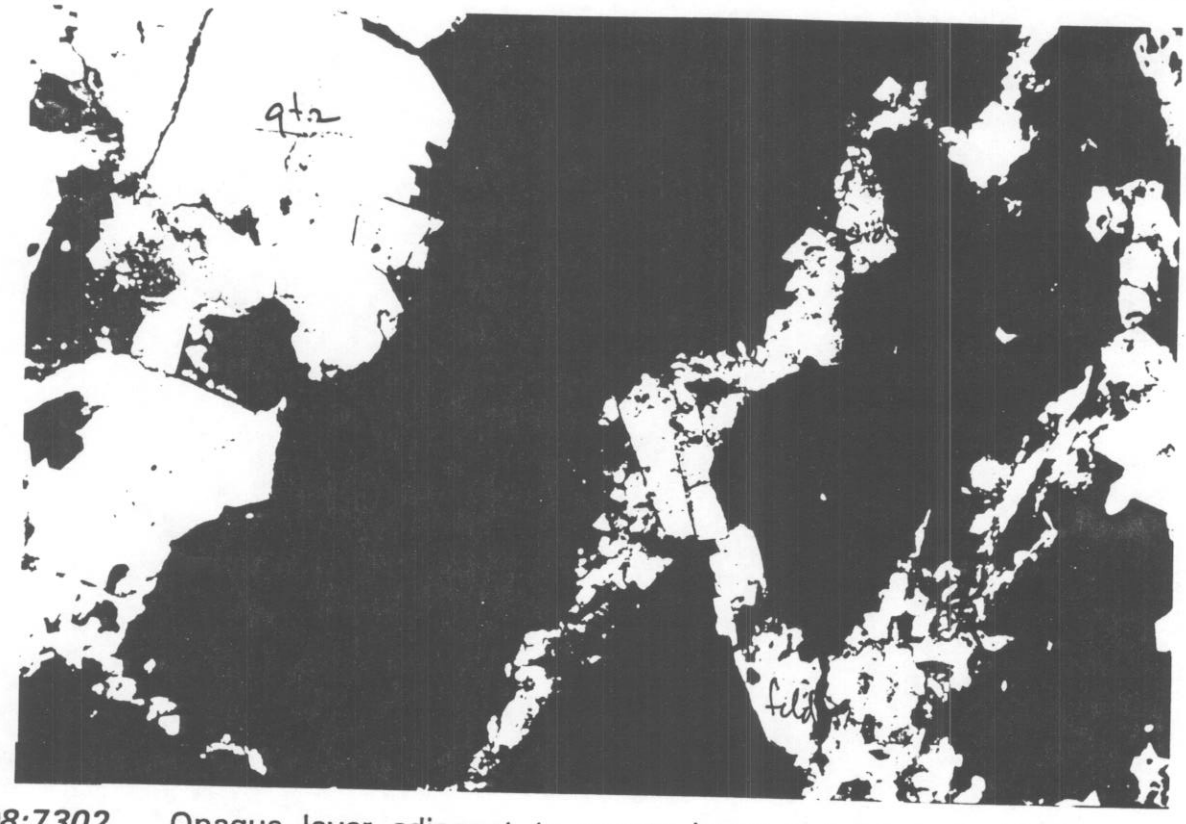
The opaque content constitutes about 60% of the section and the mode is approximately as follows:

Sphalerite:	66%
Pyrrhotite:	33%
Arsenopyrite:	<1%
Chalcopyrite:	<1%

Large masses and bands of sphalerite several mm's to cm's contain inclusions and associated discontinuous seams of altered pyrrhotite. The largest mass of pyrrhotite is 0.5 x 2.0 cm. Minor microns to 10's of micron grains of chalcopyrite are noted as exsolution grains in sphalerite and are associated with sphalerite-gangue edges. A few 0.1 - 0.3 mm, euhedral grains of arsenopyrite are seen.

In transmitted light the rock consists of crushed up quartz in grains of 1- 2 mm, some feldspar grains, minor intergranular clay and minor intergranular siderite.

The rock is a mineralized, sheared quartzo-feldspathic material.



280 μm

R98:7302. Opaque layer adjacent to quartz layer and internal siderite layer. Some feldspar. Transmitted light, x-nicols, magnification 25x.

90 μm

R98:7302. Sphalerite with exsolution/emulsion chalcopyrite. Altered pyrrhotite and grain of arsenopyrite. Reflected light, magnification 80x.

Appendix 4

Geochemical Data

SURE BET- SOIL SAMPLES COLLECTED IN 1998 Sheet 1 of 1

Jobs V980572S V980713S

Lab No	East+ West-	North+ South-	Cu ppm	Pb ppm	Zn ppm	Ag ppm	As ppm	
S9825431	-1375	2000	26	159	372	0.4	19	
S9825432	-1430	1950	126	6220	515	2.5	31	
S9825434	-1860	2725	55	232	573	0.4	19	silt
S9821467	-1625	1900	16	68	231	0.4	2	
S9821468	-1600	1900	61	79	210	0.4	3	
S9821469	-1575	1900	91	46	131	0.4	2	
S9821470	-1550	1900	50	40	151	0.4	2	
S9821471	-1825	2500	13	62	190	0.4	2	
S9821472	-1885	2500	39	157	417	0.4	23	
S9821473	-1775	2735	45	190	459	0.4	18	
S9821474	-1400	1950	22	269	431	0.4	15	
S9821475	-1410	1950	30	228	642	0.4	19	
S9821476	-1390	1950	19	89	381	0.4	7	
S9821477	-1420	1950	15	79	393	0.4	2	
S9821478	-1430	1950	159	4840	653	2.3	36	
S9821479	-1425	2000	24	113	492	0.4	13	
S9821480	-1435	2000	17	106	384	0.4	12	
S9821481	-1405	2000	31	111	553	0.4	7	
S9821482	-1415	2000	79	105	296	0.4	13	
S9821483	-1600	1940	45	262	342	0.4	18	
S9821484	-1600	1945	54	182	399	0.4	24	
S9821485	-1600	1950	58	185	396	0.5	7	
S9821486	-1600	1955	74	215	366	0.4	15	
S9821487	-1690	2200	131	52	264	0.4	2	
S9821488	-1695	2200	42	89	755	0.4	6	
S9821489	-1700	2200	42	121	397	0.4	2	
S9821490	-1705	2200	64	66	266	0.4	2	
S9821491	-1710	2200	58	61	362	0.4	2	

Grid North at azmuth 35° to UTM north. At 1800 N on 1600 W, BL is UTM 512205, 5497995.

ANALYTICAL METHODS

Cu Reverse Aqua Regia / AAS

Pb Reverse Aqua Regia / AAS

Zn Reverse Aqua Regia / AAS

Ag Reverse Aqua Regia / AAS

As Acid digestion / I.C.P. analysis

SURE BET - 1998 ANALYSES OF ROCKS IN THIN SECTION REPORT Sheet 1 of 1

Job V980573R

Date 981002

LAB NO.	FIELD NO.	East + West -	North + South -	Cu ppm	Pb ppm	Zn ppm	Ag ppm	As ppm	Ba(4) ppm
R9810760	Kr98 -74	-1585	1900	100	6	45	0.4	2	402
R9810761	S98R -1	-1700	2200	228	4	51	0.4	2	178
R9810762	S98R -2	-1600	1950	158	4	45	0.4	2	455
R9810763	S98R -3	-1415	2000	34	4	51	0.4	2	606
R9810764	Kr98 -75	-1275	2280	4	5	76	0.4	2	1159
R9810765	Kr98 -76	-1175	2000	14	10	19	0.4	2	454
R9810766	Kr98 -77	-1275	2345	7	4	24	0.4	2	139
R9810767	Kr98 -78	-1775	2500	139	4	24	0.4	2	61
R9810768	Kr98 -79	-1725	2325	118	5	87	0.4	2	148
R9810769	DDH S98-1 84.0 m			398	78	137000	2	2	103
R9810770	DDH S98-1 113.5m			58	4	95	0.4	2	474

Grid North at azmuth 35° to UTM north. At 1800 N on 1600 W, BL is UTM 512205, 5497995.

ANALYTICAL METHODS

Cu Aqua regia decomposition / AAS

Pb Aqua regia decomposition / AAS

Zn Aqua regia decomposition / AAS

Ag Aqua regia decomposition / AAS

As Acid digestion / I.C.P. analysis

Ba(4) X-Ray Flourescence (Pressed Pellet)

SURE BET - 1998 DRILLING JOB V980611R

LAB NO	HOLE NO	DEPTH METRES	Cu ppm	Pb ppm	Zn ppm	Ag ppm	As ppm	Ba ppm	Cd ppm
R9812025	S98-1	3.2	75	7	36	0.4	2	51	1
R9812026	S98-1	6.5	52	9	41	0.4	2	32	1
R9812027	S98-1	7.6	210	13	47	0.4	2	24	1
R9812028	S98-1	10.7	60	4	43	0.4	2	57	1
R9812029	S98-1	21.3	106	9	49	0.4	2	24	1
R9812030	S98-1	27.9	66	7	61	0.4	2	53	1
R9812031	S98-1	41.7	47	6	49	0.4	2	58	1
R9812032	S98-1	48.6	156	12	41	0.4	2	39	1
R9812033	S98-1	64.6	40	13	13	0.4	15	5	1
R9812034	S98-1	68.7	69	7	45	0.4	2	71	1
R9812041	S98-1	81	61	84	1859	0.4	5	37	7
R9812035	S98-1	84.2	89	19	473700	7.1	2	5	2680
R9812036	S98-1	85.2	61	12	315	0.9	2	36	2
R9812037	S98-1	99.9	133	9	80	0.4	2	37	1
R9812058	S98-1	120.9	299	21	60	0.4	2	20	1
R9812038	S98-1	122.2	120	7	68	0.4	2	70	1
R9812039	S98-1	131.9	157	13	40	0.4	2	31	1
R9812040	S98-1	132.8	165	9	45	0.4	2	32	1
R9812042	S98-1	147.1	247	6	45	0.4	2	12	1
R9812043	S98-1	152.7	107	7	53	0.4	2	39	1
R9812044	S98-1	161	458	14	36	0.4	2	18	1
R9812045	S98-1	162.9	207	7	32	0.4	2	20	1
R9812046	S98-1	178.5	158	6	28	0.4	2	11	1
R9812047	S98-1	182.7	186	6	35	0.4	2	22	1
R9812048	S98-1	192.7	112	5	48	0.4	2	76	1
R9812049	S98-1	196.8	108	6	11	0.4	2	5	1
R9812059	S98-1	205.5	282	11	39	0.4	2	35	1
R9812050	S98-1	209.6	162	4	59	0.4	2	72	1
R9812051	S98-1	217.6	149	11	38	0.4	2	47	1
R9812060	S98-1	230.7	415	14	112	0.4	2	64	1
R9812052	S98-1	234.4	116	6	40	0.4	2	37	1
R9812056	S98-1	250.9	461	10	77	0.4	2	41	1
R9812053	S98-1	251	98	7	68	0.4	2	71	1
R9812054	S98-1	252.9	165	8	19	0.4	2	7	1
R9812055	S98-1	287.3	184	6	50	0.4	2	39	1
R9812057	S98-1	311.6	80	5	72	0.4	2	51	1
R9812061	S98-2	9.5	19	5	10	0.4	2	43	1
R9812062	S98-2	20	24	4	12	0.4	2	57	1
R9812063	S98-2	31.3	9	4	3	0.4	2	11	1
R9812064	S98-2	40	29	5	12	0.4	2	60	1
R9812065	S98-2	60	12	4	8	0.4	2	17	1
R9812066	S98-2	79.2	169	4	38	0.4	2	163	1
R9812067	S98-2	91.3	5	4	7	0.4	2	476	1

ANALYTICAL MTHODS

ICP PACKAG : 0.5 gram sample digested in hot reverse aqua regia (soil,silt) or hot Aqua Regia(rocks).

SURE BET - 1998

LAB NO	HOLE NO	Co ppm	Ni ppm	Fe %	Mo ppm	Cr ppm	Bi ppm	Sb ppm	V ppm
R9812025	S98-1	19	58	3.88	9	82	5	5	25
R9812026	S98-1	13	28	3.3	4	104	5	5	50
R9812027	S98-1	42	103	7.82	2	86	5	5	35
R9812028	S98-1	20	48	4.13	2	87	5	5	21
R9812029	S98-1	30	76	6.65	2	56	5	5	20
R9812030	S98-1	7	19	4.32	2	38	5	5	10
R9812031	S98-1	16	39	4.09	2	117	5	5	39
R9812032	S98-1	66	345	9.71	2	80	5	5	28
R9812033	S98-1	8	31	1.93	14	69	5	5	34
R9812034	S98-1	10	30	3.11	58	135	5	5	47
R9812041	S98-1	16	35	3.22	4	53	5	5	4
R9812035	S98-1	44	10	5.86	9	16	5	5	2
R9812036	S98-1	15	37	3.53	46	85	5	5	14
R9812037	S98-1	22	51	4.32	17	78	5	5	32
R9812058	S98-1	44	98	7.21	3	54	5	5	56
R9812038	S98-1	22	43	4.03	26	78	5	5	91
R9812039	S98-1	29	80	4.58	2	71	5	5	42
R9812040	S98-1	25	65	4.07	8	82	5	5	39
R9812042	S98-1	39	61	5.49	2	109	5	5	22
R9812043	S98-1	25	39	4.44	17	74	5	5	52
R9812044	S98-1	65	104	9.92	2	48	5	5	21
R9812045	S98-1	26	41	4.4	14	60	5	5	17
R9812046	S98-1	33	45	4.29	14	44	5	5	22
R9812047	S98-1	38	54	5.17	12	65	5	5	28
R9812048	S98-1	17	34	3.43	4	64	5	5	62
R9812049	S98-1	15	27	2.25	2	33	5	5	2
R9812059	S98-1	54	81	7.46	7	42	5	5	23
R9812050	S98-1	29	42	4.84	11	65	5	5	21
R9812051	S98-1	26	48	4.6	29	49	5	5	48
R9812060	S98-1	76	95	10.4	14	28	5	5	57
R9812052	S98-1	27	39	4.16	9	54	5	5	28
R9812056	S98-1	65	109	10.27	5	87	5	5	115
R9812053	S98-1	28	47	5.32	156	89	5	5	111
R9812054	S98-1	30	53	4.42	41	45	5	5	13
R9812055	S98-1	14	40	3.8	3	58	5	5	42
R9812057	S98-1	28	45	4.42	11	49	5	5	22
R9812061	S98-2	3	10	1.33	2	23	5	5	15
R9812062	S98-2	5	13	1.56	2	31	5	5	21
R9812063	S98-2	1	6	0.77	2	11	5	5	2
R9812064	S98-2	6	14	1.87	3	42	5	5	20
R9812065	S98-2	3	9	1.23	2	23	5	5	10
R9812066	S98-2	27	42	6.14	5	86	5	5	198
R9812067	S98-2	1	2	0.85	2	19	5	5	12

SURE BET - 1998

LAB NO	HOLE NO	Sn ppm	W ppm	Sr ppm	Y ppm	La ppm	Mn ppm	Mg %	Ti %
R9812025	S98-1	2	3	4	14	17	266	0.87	0.09
R9812026	S98-1	2	2	66	12	12	548	1.15	0.13
R9812027	S98-1	2	2	14	9	7	440	1.16	0.12
R9812028	S98-1	2	2	6	9	8	270	1.05	0.09
R9812029	S98-1	2	2	4	13	9	279	1.02	0.09
R9812030	S98-1	2	2	21	6	6	1715	1.37	0.07
R9812031	S98-1	2	2	49	11	12	462	1.07	0.09
R9812032	S98-1	2	2	23	8	13	477	0.82	0.09
R9812033	S98-1	2	2	55	19	15	728	0.82	0.01
R9812034	S98-1	2	2	17	20	15	581	1.12	0.14
R9812041	S98-1	2	2	24	7	9	290	0.31	0.01
R9812035	S98-1	2	2	47	3	3	652	0.2	0.01
R9812036	S98-1	2	2	28	9	12	394	0.97	0.03
R9812037	S98-1	2	2	16	20	21	440	0.57	0.02
R9812058	S98-1	2	2	15	10	8	719	1.3	0.05
R9812038	S98-1	2	2	19	14	11	629	1.21	0.1
R9812039	S98-1	2	2	19	17	17	300	0.54	0.03
R9812040	S98-1	2	2	14	13	11	285	0.63	0.04
R9812042	S98-1	2	2	9	5	2	224	0.43	0.03
R9812043	S98-1	2	2	61	13	11	862	1.56	0.08
R9812044	S98-1	2	2	15	12	7	282	0.56	0.04
R9812045	S98-1	2	2	22	29	14	350	0.54	0.04
R9812046	S98-1	2	2	37	9	9	488	0.71	0.07
R9812047	S98-1	2	2	14	13	9	323	0.82	0.07
R9812048	S98-1	2	2	28	28	18	396	1.1	0.1
R9812049	S98-1	2	2	19	4	2	145	0.07	0.01
R9812059	S98-1	2	2	62	27	23	319	0.6	0.02
R9812050	S98-1	2	2	45	27	23	506	1.18	0.07
R9812051	S98-1	2	2	22	15	13	328	0.78	0.05
R9812060	S98-1	2	2	264	17	7	1342	2.35	0.06
R9812052	S98-1	2	2	36	22	13	552	0.83	0.02
R9812056	S98-1	2	2	31	16	8	590	1.81	0.12
R9812053	S98-1	2	2	45	11	7	564	1.66	0.12
R9812054	S98-1	2	2	58	8	2	201	0.23	0.01
R9812055	S98-1	2	2	16	8	16	232	0.83	0.06
R9812057	S98-1	2	2	11	8	15	360	1.03	0.12
R9812061	S98-2	2	2	127	9	2	440	0.66	0.04
R9812062	S98-2	2	2	93	8	2	435	0.77	0.05
R9812063	S98-2	2	2	192	12	2	435	0.41	0.01
R9812064	S98-2	2	2	125	11	2	393	1.12	0.06
R9812065	S98-2	2	2	122	12	2	342	0.75	0.04
R9812066	S98-2	3	2	39	6	2	509	2.89	0.3
R9812067	S98-2	2	2	70	5	2	735	2.06	0.05

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LAB NO	HOLE NO	Al %	Ca %	Na %	K %	P ppm
R9812025	S98-1	1.53	0.26	0.06	0.61	446
R9812026	S98-1	2.84	0.88	0.29	0.96	401
R9812027	S98-1	1.89	0.28	0.11	1	311
R9812028	S98-1	1.58	0.11	0.04	1.05	340
R9812029	S98-1	1.51	0.28	0.05	0.51	525
R9812030	S98-1	1.6	3.97	0.05	0.81	252
R9812031	S98-1	2.75	1.01	0.26	0.87	455
R9812032	S98-1	0.83	2.59	0.05	0.48	333
R9812033	S98-1	0.8	5.63	0.04	0.03	409
R9812034	S98-1	1.47	0.39	0.11	0.97	736
R9812041	S98-1	0.59	0.94	0.02	0.26	361
R9812035	S98-1	0.35	2.54	0.02	0.08	58
R9812036	S98-1	1.34	0.62	0.1	0.58	251
R9812037	S98-1	0.86	0.37	0.04	0.45	312
R9812058	S98-1	1.27	0.76	0.04	0.41	771
R9812038	S98-1	1.3	0.64	0.07	0.72	666
R9812039	S98-1	0.7	0.49	0.08	0.38	19
R9812040	S98-1	0.76	0.28	0.08	0.45	98
R9812042	S98-1	0.49	0.25	0.02	0.3	105
R9812043	S98-1	1.85	0.94	0.14	0.98	182
R9812044	S98-1	0.7	0.43	0.06	0.33	289
R9812045	S98-1	0.61	0.74	0.08	0.26	545
R9812046	S98-1	0.62	0.99	0.05	0.31	200
R9812047	S98-1	0.93	0.27	0.07	0.53	318
R9812048	S98-1	1.52	0.44	0.1	0.92	432
R9812049	S98-1	0.23	0.49	0.08	0.05	143
R9812059	S98-1	0.63	0.46	0.07	0.38	634
R9812050	S98-1	1.41	0.33	0.08	0.94	374
R9812051	S98-1	1.06	0.17	0.06	0.63	466
R9812060	S98-1	2.29	1.67	0.09	1.35	285
R9812052	S98-1	1.12	0.41	0.06	0.44	414
R9812056	S98-1	2.26	0.39	0.08	1.5	474
R9812053	S98-1	2.15	0.46	0.08	1.37	799
R9812054	S98-1	0.33	0.57	0.06	0.08	310
R9812055	S98-1	0.86	0.13	0.06	0.63	320
R9812057	S98-1	1.54	0.1	0.04	1.17	343
R9812061	S98-2	0.89	17.29	0.08	0.51	244
R9812062	S98-2	1.27	14.48	0.11	0.68	280
R9812063	S98-2	0.24	22.31	0.03	0.14	133
R9812064	S98-2	1.2	12.22	0.07	0.8	393
R9812065	S98-2	1.36	16.53	0.12	0.57	276
R9812066	S98-2	3.59	6.16	0.06	2.09	798
R9812067	S98-2	1.05	12.19	0.02	0.47	139