

6305

77-#187-1005

REPORT ON THE
SKARN AND ASSOCIATED CLAIMS
NANAIMO MINING DIVISION, B.C.

of
ECHO MINING CO. LTD.
for
CLEAVER LAKE MINES LTD., (N.P.L.)

Compiled by
W.D. GROVES, Ph.D., P. Eng.

DECEMBER 1, 1976

MINERAL RESOURCES BRANCH ASSESSMENT REPORT NO. _____
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GEOLOGICAL PRECIS:

A zone mineralized with magnetite and chalcopyrite, showing geochemical and magnetic anomalies over a total of 2200' and with one showing averaging 7.12% copper, 1.44 oz/ton silver and .005 oz./ton gold over a 165 ft. sample length in a 4 wide trench exists on the SKARN group of claims in the headwaters of French Creek, near Coombs, Vancouver Island, B.C. in the Nanaimo mining district.

The claims are currently held by Echo Mining Co. Ltd., a B.C. Mining Company. The mineralized zone is one of hydrothermal activity in a fault zone cutting a skarned limestone in a volcanic series in the vicinity of a granodiorite intrusive body. This investigation leads the author to recommend the acquisition of the Skarn property by Cleaver Lake Mines Ltd. for further development of this zone.

W. J. G.

INTRODUCTION:

Examination of the property was undertaken at the request of Mr. Errol Hemingson, President of Echo Mining Co., in the Coombs area of British Columbia.

Two days were spent on the property. On November 26th, 1976, with Mr. Hemingson, the main trenches were inspected. On November 29, 1976, the showings were re-examined, features of W.G. Hainsworth's Report* were verified on the ground. A traverse was made N.E. across the granodiorite contact, then down into French Creek below the main showing to examine the granodiorite and volcanics in the creek bed. Since Hainsworth's report was made, results of preliminary magnetometer survey and geo-chemistry survey of the Skarn claims have become available and are included in this report. The present report is a compilation of the author's work, W.G. Hainsworth's unpublished June 1 report, geochemical and preliminary magnetic anomaly surveys, plus information from regional geological works by Muller and Carson** and J.T. Fyles ***.

Sources are acknowledged in the text.

* W.G. Hainsworth spent May 10, 19, 22 and 27, 1976 on the property and was instrumental in directing the 1976 season field work on the property. His report is dated June 1, 1976.

** J.E. Muller and D.J.T. Carson - GSC Paper 68-50. Geology and Mineral Deposits of Alberni Map-Area, B.C. (92F).

*** Geology of Cowichan Lake Area, J.T. Fyles, 1955, BCDM Bull No. 37.

W.D.G.

LOCATION AND ACCESS: - W.G. Hainsworth

The Skarn claim group of Echo Mining Co. Ltd. is located eleven miles southwest of Parksville on Vancouver Island, British Columbia. The claims lie directly north of the upper headwaters of French Creek (See Figure 1, Area Map).

The property can be most easily reached by turning off Highway 4 (Pt. Alberni-Parksville Road) at a point seven miles west of Parksville onto Winchester Road. At Grafton Avenue a west turn is made. This road eventually gives way to a gravel road recommended only for a four-wheel drive vehicle. This old forestry road following along the northwest side of French Creek, ends at the claims.

Co-ordinates of the claims are longitude $124^{\circ} 31'$ West and latitude $49^{\circ} 16'$ North. They lie within N.T.S. 92-F-7.

The claims, which lie at elevations ranging from 1900 feet to 2200 feet A.M.S.L., are contained within the former E & N Land Grant.

PROPERTY - W.G. Hainsworth

The SKARN group referred to in this Report consists of the 4 SKARN claims, the BEN group and the ZEN group. The larger claim groups have been recently staked to the east and west of the SKARN claims. (Showings inspected by WDG were on the 4 SKARN claims).

W.D.G.

The claims are located in the Nainaimo Mining Division of British Columbia and consist of:

SKARN GROUP:

<u>Claim Name</u>	<u>Record No.</u>	<u>Anniversary Date</u>
Skarn 1	32877 H	July 30, 1976
Skarn 2	32878 H	July 30, 1976
Skarn 3	33260 P	Nov. 9, 1976
Skarn 4	(No data - Recorded June 1, 1976)	

BEN GROUP:

Ben 12 units (No data - Recorded June 1, 1976)

ZEN GROUP:

Zen 12 Units (No data - Recorded June 1, 1976)

The Skarn 1 to 3 were staked under the old system whereas Skarn 4 and the Ben and Zen claims were staked under the new staking regulations.

HISTORY AND PREVIOUS WORK - W.G. Hainsworth

The Coombs area has had a prospecting history that dates back to the turn of the century. French Creek, although checked thoroughly for placer gold, yielded a disappointing amount.

During the depression years of the 1930's, several shallow adits were put in alongside an upper tributary of French Creek. One of the adits picked up a magnetite-copper vein and was drifted upon for a distance of twenty-five feet in a north-northeast direction. It is reported that a recent face sampling of this structure yielded a 2%

W.G.

copper assay across 5 feet. The adit directly across on the other side of the tributary failed to pick up the extension.

The area was logged in 1968 at which time road building exposed a magnetite-pyrite section of good width but low grade. Further exploration in 1969 led to the discovery of the main showing, named the Gem. The original finders did some preliminary trenching before interesting Western Mines in the property. Western took an option in 1971 and released it nine months later.

While they had the option, Western did a magnetometer and soil sampling survey over the original ten SKARN claims.

In addition to the main showing, another area of interest, coinciding both magnetometer and soil anomalies, was located some eight hundred feet on strike to the east.

Eight drill holes averaging 200 feet each were scattered through the claims. There is no data available concerning this drill programme (except for a location map showing mineralized intersections, and occasionally, copper assays - WDG).

Roughly \$30,000.00 was expended before the option was released.

The original vendors have held on to the key portions of the ground.

W.D.G.

GEOLOGY - W.D. Groves

The headwater of French Creek flows in a relatively straight line running about N.50E. The Skarn group of four claims consists of Skarn 2 in the N.W. corner of the block, Skarn 1 in the S.W., Skarn 3 in the S.E., and Skarn 4 in the N.E., all oriented with N-S, E-W boundaries. French Creek runs through the bottom S.E. corner of the Skarn 3 claim. About 1,200' N. of French Creek another tributary runs N.E. and eventually joins the main creek. The steep spur separating the two valleys runs approximately N.E. through the junction of the four claims, and through the N.W. corner of the Skarn 4 claim. Skarn 1 is entirely on the N. slope of the French Creek headwater. Skarn 2, higher up the slope, extends in its N.W. corner close to the hill top forming the headwall of the valley. Most of the Skarn 1 and Skarn 3 claims are underlain by massive volcanics, limestone and thin-bedded limey tuffts.

A gradational contact between the volcanics and the Saanich granodiorite runs across Skarn 2 and 4 trending N.E. On the N.W. side of the N.E. flowing tributary creek on Skarn 4, competent granodiorite is exposed from about the 1900 ft. elevation to the top of the tributary valley, and then to the top of the hill above the N.W. corner of the four claims. This granodiorite contact dips steeply.

The main copper-mineralized zone parallels the edge of the alteration aureole of this N.E. trending gradational granodiorite-volcanics contact but lies well within the volcanics. It is marked by magnetic anomalies (magnetite is present in the zone), geochemical copper highs, and showings dotted over a zone about 100 ft. wide and 2400 ft. long running N.E. on the French Creek side of the spur. See Figure 3.

W. D. G.

The bed of French Creek probably follows another contact between granodiorite and volcanics, or at least has downcut to the granodiorite. In the creek, in the S.E. corner of Skarn 2, the contact is not gradational on the granodiorite side. Fresh granodiorite forms branching dykes and projections up into altered volcanics. The dykes have the characteristic wedge ends and show stoping relations as reported by Fyles in the Cowichan Lake area. Some of the dykes have essentially horizontal attitudes. Hainsworth reports at one point further up the creek, in the S.W. corner of Skarn 1, that the contact appears to be faulted. He reports the contact running E-W and dipping N. at 45° . Hainsworth reports the volcanics constitute a N.W. trending structure; however, it is the author's impression, admittedly after only two days on the property, and additionally hampered by the high degree of drift coverage on the claims, that the trace of the structure is N.E.-S.W. Rather massive jointing in the volcanics exposed in the gulley of a small S.E. flowing gulley of a tiny tributary to French Creek 500 ft. W. of the main showing on the Skarn 1 claim has a predominant N.E. strike, with a dip down the slope at 30° suggesting a dip-slope, though there is also a steeply dipping N.W. striking cleavage parallel to the side creek's direction, and a N.E. striking cleavage dipping 60° N.W. into the hill. The set of three cleavages is roughly orthogonal at this point. This impression of a N.E. trace to the volcanic structure is reinforced by finding a lense of competent fine grained limestone on the contour of the main showing.

A 10' width of limestone is exposed on the N. side of the main (Gem) showing. 150 ft. down the hill there is an exposure of breccia again elongated along the contour. This breccia is formed from a thin bedded or cleaved siliceous or limey tuff completely fractured and with fractures only partly filled with aphanitic pale brown rhyolite choked with chalky broken white feldspar fragments. Veinlets of the porphyritic rhyolite cut through the breccia. It resembles an explosion breccia. It does not look like a flow-top breccia - there is not enough matrix.

W. P. G.

It does not look like a fault breccia because it looks shattered not sheared. The fragments do not look rotated. Though it was not highly mineralized, its structural implications are interesting. The relations between this breccia and the mineralized zone bear further examination.

Despite the fact that the limestone is obviously a surface facies, no primary structures in the massive volcanics in contact with them were observed, i.e. no amigdules, pillows' selvages, etc. The volcanics between the limestone bordering the main showing and the granodiorite are hornfelsed, impregnated by iron sulphides-pyrite and pyrrhotite-in sets of randomly oriented and rehealed cobble-sized fractures, increasing feldspathization and recrystallization toward the granodiorite. Over 200 ft. into the granodiorite, the latter contained blocky angular inclusions of the volcanics, altered to green minerals.

Outward from the granodiorite, alteration to epidote in cleavages and small angular masses evidenced outward hydrothermal alteration of the contact aureole. It is conjectured that the trace of the zone of weakness followed by the magnetite-copper-apatite amphibolite mineralization of the main showing, for example, is at a distance from the granodiorite contact corresponding to the outer edge of the adherent hornfels envelope, where cooling stresses between the intrusive and the volcanics might break the latter formation. While exposure in the showings as presently trenched is inadequate to confirm this, it would seem that the zone of weakness followed by the magnetic anomalies (tracing variably abundant magnetite in the zone of interest) and geochem copper anomalies conform to this zone subparallel to the edge of the contact aureole, while individual veinlets in the showings conformed to any one of the three jointing directions N.E. dipping 30° S.W., N.W. dipping steeply N.W. and N.W. dipping steeply - noticed in the less altered volcanics W. of the main trench. Minor faulting in the mineralized zone would be expected to conform to the same roughly orthogonal set of attitudes.

W.P.G.

The author does not know whether the N.E. surface trace of the mineralized zone connects with that associated with the old mine on French Creek mentioned in Hainsworth's report since he was unable to locate the old workings. The author was shown a specimen of the ore from that mine : amphibolite-magnetite-chalcopyrite which looked like a fresher version of similar mineralization taken from the Gem trench on the Skarn claims. Such a "trace" would help elucidate structure of the mineralized zone on the Skarn claims.

It could not be deduced from rock types in the volcanics whether these were of the Sicker or Vancouver group.

SHOWINGS -

a) W.G. Hainsworth

Main Showing (Gem)

This showing has been continuously exposed over a length of 269 feet. Work in 1969 consisted of bulldozing and trenching. In the intervening seven years the trenches have been partially filled in while runoff has obliterated much of the rock surface exposures.

The upper end of the workings is at 2125 foot elevation whereas the lower section is at 2025 feet. Apparent strike in North 60° ; East with a northern dip as yet undetermined.

The present exposures show a highly altered (Skarn developed) oxidized limestone in contact with a relatively unaltered section of limestone. The contact exposed on the hanging-wall side shows a sharp demarcation of the alteration. At this contact, which dips steeply to the north at 70° , the magnetite-sulphide mineralization is cut off completely exposing a baked but unmineralized limestone bed.

W.P.G.

The showing is well sheared with what appears to be two dominating fracture patterns. One set strikes N. 40° E. whereas the other has a bearing of N. 60° E. The writer suggests that the intersection of these crosscutting shears may well be the loci for mineral deposition. As the showing is progressed towards either end the alteration with its accompanying mineralization tends to thin out.

Mineralogically, the showing carries heavy amounts of magnetite, variable amounts of chalcopyrite and lesser amounts of bornite. Pyrite is also present in variable quantities. Gold and silver values appear to be associated with the copper content.

Heavy iron staining is evident throughout the showing in contrast to copper staining which is light. Oxidation is heavy in local situations.

The original character of the rock has been destroyed through the heavy deposition of the magnetite. The magnetite accumulation is at its greatest in the core of the zone.

It would appear that this is a hydrothermal replacement of a sheared limestone section.

The writer chipped a sample along a 164 ft. length of the structure. The results:

Gold	0.005 oz/ton
Silver	1.44 oz/ton
Copper	7.15%

Road Showing

Some 425 ft. east and slightly north, alongside the old logging road, is a further exposure somewhat similar to the main showing. An exposed width of well oxidized

W.P.G.

material carries a 5 ft. wide central section of heavy magnetite decreasing to lighter amounts towards the margins. Pyrite is relatively strong whereas copper minerals are in very light amounts. The contacts of the zone are poorly exposed on one side and hidden on the other.

A sample across 25 feet of width by the writer yielded:

Gold	Trace
Silver	Trace
Copper	0.08%

West Showing

365 feet west of the main showing, the property owners have blasted several small pits over a distance of 50 feet. Here they have exposed oxidation with variable amounts of magnetite and copper mineralization. The pits are shallow and small, not allowing for good sampling.

Host rock in this locality is a volcanic breccia with epidote alteration. Further to the west where several pits show no mineralization nor alteration the formation becomes a pyritic limestone.

b) W.D. Groves

The author essentially agrees with Hainsworth's observations but would like to add some comments:

The mineral suite in the main (GEM) showing was seen to consist of unevenly distributed magnetite-chalcopyrite replacements resembling the ore from the French Creek mine specimen. Magnetite-rich hand specimens deflected a compass 360° when held near the needle. This mineralization partly replaces a black amphibolite zone in the trench. Epidote, what looks like green apatite, and clay minerals

W.D.G.

all form part of a hydrothermal emplacement and alteration suites in the trench.

In the contacting limestone, brown garnet, pale brown coarse euhedral plagioclase or corundum and bright green epidote and/or apatite are present. One epidote parting contained a fine film of gold. A manganese "wad" horizon, 1/2" thick, was noticed in the soil, at one point in the wall of the trench.

Fyles' analysis of the Saanich granodiorite shows magnetite and apatite as accessory minerals. Iron sulphides are a visible part of the contact metamorphic mineralization around the granodiorite. The mineral suite is thus in keeping with contact metamorphic deposits near Jurassic intrusions, such as at Texada Mines.

Copper sulphide deposition is probably associated with the presence of limestone.

Showings which are low in copper, like the road showing, exhibit the healed fracture pattern impregnated with iron sulphides in hornfelsed volcanics more characteristic of the contact aureole rather than with the hydrothermal mechanism responsible for the magnetite-copper mineralization of the GEM showing.

W. D. G.

COMMENTS - W.D. Groves

As Hainsworth points out, economic interest in the SKARN group is dominated by a lengthy NE trending mineralized structure (the GEM showing is part of this) and its inferred north easterly extension indicated by trenches, showings, geochem and preliminary magnetometer survey highs. This structure is to be distinguished by its fault control, and high copper and magnetite content from nearby relatively barren iron sulphide mineralization within the contact metamorphic aureole immediately surrounding the granodiorite.

The highest grade of mineralization is observed in contact with skarned limestone: where the fault trace cuts other rocks grade can be expected to fall off. With the exception of the amount of magnetite present, the same general relations were present in the Cowichan Copper mine in the Cowichan Lake area to the south. The author feels Cleaver Lake Mines Ltd. would be warranted to acquire the claims for further development of this zone.

W.D.G.

CONCLUSIONS AND RECOMMENDATIONS - W.D. Groves

Hainsworth, on the basis of his evaluation of the property, felt a potential for a small tonnage mining operation, pending favourable results of additional development work, and recommended that Cleaver Lake Mines Ltd. acquire the SKARN, BEN and ZEN claims. The author concurs with this, particularly in regard to the 4 SKARN claims. Some of the 3-stage development program he advocated in his June 1, 1976 report was carried out in the 1976 field season.

This is summarized as follows:

<u>Activity</u>	<u>Value</u>
Bulldozer trenching	\$ 5,000
Magnetic Survey (preliminary)	1,000
Copper Geochemistry (available from Western Mines Ltd. work)	n/c
Equipment Rental	<u>1,000</u>
Total	\$ <u>7,000</u>

At this point the author recommends a further work program, as follows:

	<u>Activity</u>	<u>Value</u>
Stage		
1	Bulldozer trenching	\$ 5,000
	Detailed magnetometer survey	2,000
	Stream sampling for copper	2,000
	Road renovations	2,000
	Detailed geological mapping	1,000
	Assays	<u>1,000</u>
	Total	\$ <u>13,000</u>
2	Diamond Drilling	\$ 20,000
	Stage 2 drilling to include at least one deep hole to probe for disseminated mineralization at depth.	
3	Diamond Drilling	\$ 40,000

Each stage should be contingent upon obtaining encouraging results in the previous stage.

W.D.G.

AQUAFARM CONSULTANTS LTD.

CERTIFICATE

I, WILLIAM D. GROVES, HEREBY CERTIFY:

That I am a geological and chemical engineer residing at Apartment #4 - 1285 Harwood Street, Vancouver, British Columbia.

That I am a graduate of the University of British Columbia, Vancouver, B.C. with a B. Sc. in Geological Engineering, a graduate of the University of Alberta, Edmonton, Alberta, with a B. Sc. in Chemical Engineering, and a graduate of the University of British Columbia with a Ph.D. in Chemical Engineering, and am a registered member (#8082) of the Association of Professional Engineers of the Province of British Columbia.

That I have practiced my profession for six years.

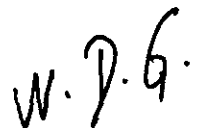
That I have no financial interest, either direct or indirect, in the subject properties, in the securities of Echo Mining Co. Ltd. and Cleaver Lake Mines Ltd., nor in that of any of their affiliates and that I do not expect to obtain any such interest.

That the information contained in this report is based on my personal knowledge of the general area, reference to the works cited in this report, and to examination of the property in question.

December 1, 1976
Vancouver, British Columbia



William D. Groves
Ph. D., P. Eng.
Geological and Chemical Engineer



W. G. HAINSWORTH

CONSULTING GEOLOGIST

CERTIFICATE

I, WILLIAM G. HAINSWORTH, HEREBY CERTIFY:

That I am a geologist residing at 3473 Capilano Road, North Vancouver, British Columbia.

That I am a graduate of the University of Western Ontario, London, Ontario, with a B.Sc. degree and am a registered member of the Association of Professional Engineers of the Province of British Columbia.

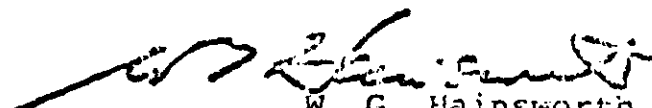
That I have practiced my profession for twenty-six years.

That I have no financial interest, either direct or indirect, in the subject properties, in the Securities of Echo Mining Co. Ltd. and Cleaver Lake Mines Ltd., nor in that of any of their affiliates and that I do not expect to obtain any such interest.

That the information contained in this report is based on my personal knowledge of the general area and to examination of the property in question on July 10th, 19th, 22nd, and 27th, 1976.

1976

British Columbia


W. G. Hainsworth,
P. Eng.
Geologist

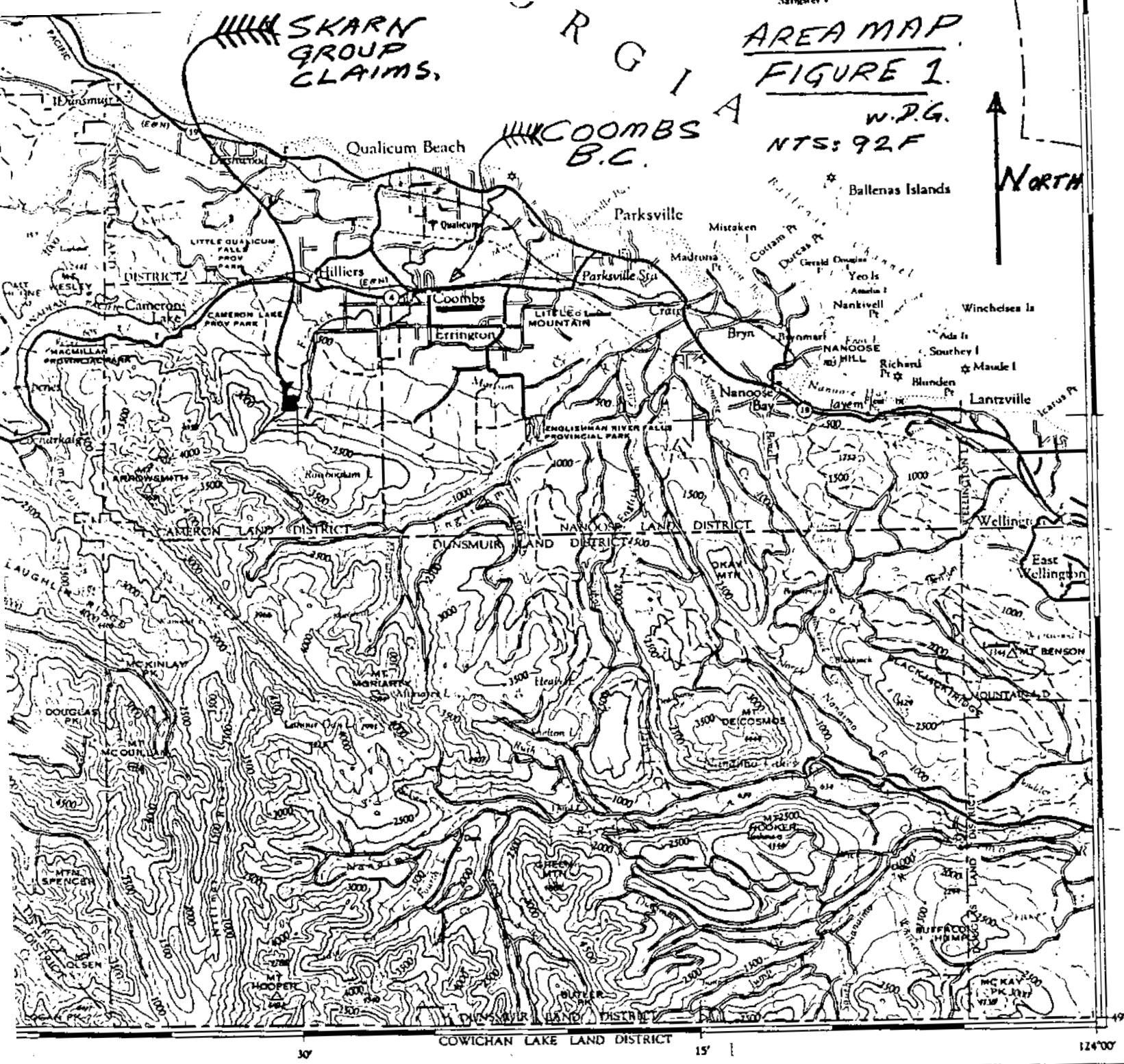
SKARN GROUP CLAIMS.

COOMBS B.C.

AREA MAP FIGURE 1.

W.P.G.
NTS: 92 F

NORTH

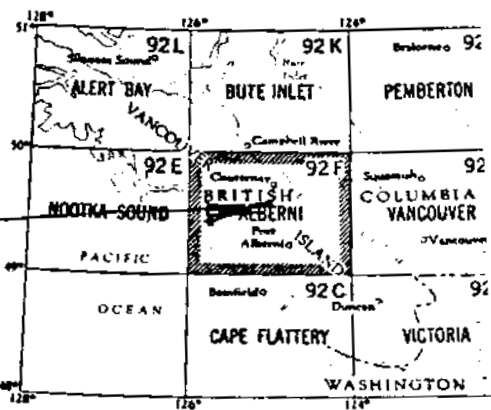


Établie par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DES TERRES ET FORÊTS (COLOMBIE-BRITANNIQUE), à partir de levés à grande échelle et de cartes provisoires de 1961-62. Reproduites par le SERVICE TOPOGRAPHIQUE DE L'ARMÉE (G.R.C.) 1966.

La déclinaison magnétique pour 1964 varie de 24°00' Est au centre de la limite Ouest à 23°40' Est au centre de la limite Est. Variation moyenne annuelle 2.8' décroissant.

#6305

..... Ville	□ Stream	Cours d'eau
o Village ou hameau	○ Intermittent or dry	intermittent ou à sec
Post Office	o Intermittent lake	Lac intermittent
Church	P Rapids; falls	Rapides; chute
School	& Marsh or Swamp	Marais ou marécage
Boundary monument	⚓ Lighthouse	Phare
Airport	o Horizontal control point	Point géodésique
Seaplane base	⊕ Landing ground	Piste d'atterrissage
	⊕	



Index to adjoining maps of the National Topographic System
Tableau d'assemblage du Système National de Référence Cartographique

ALBERNI
92 F

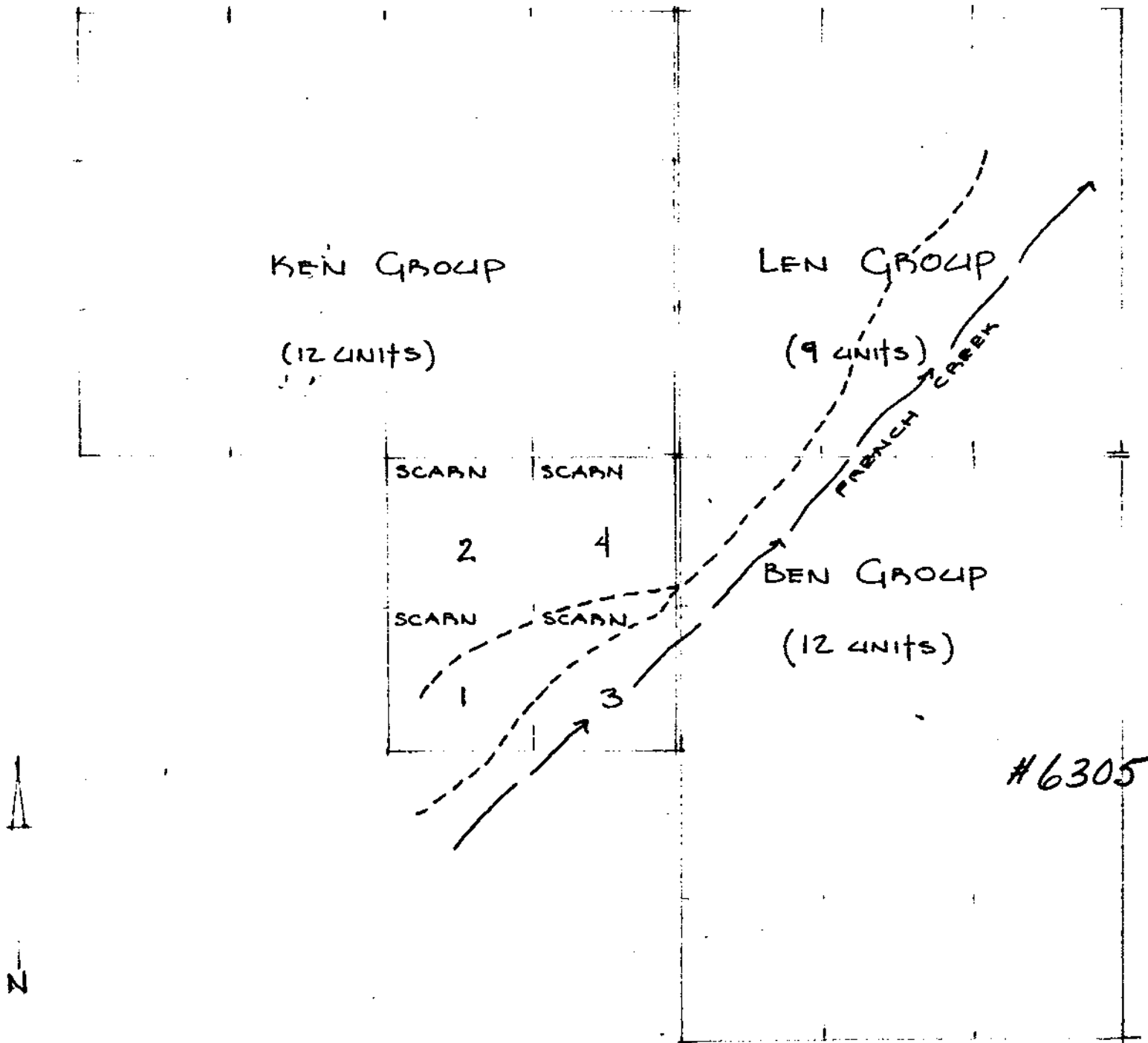


FIG. 2. CLAIM MAP - DEC. 1. 1976.
 SCARN GROUP CLAIMS, COOMBS, B.C.
 SCALE: 1" = 1640'

W.D.G.

ECONOMIC GEOLOGY

METALLIFEROUS DEPOSITS

by D. J. T. Carson

Introduction

Table 3 presents a classification of the metalliferous deposits of the Alberni map-area. The deposits are listed in Table 4 and located on Figure 3. They are classified on the basis of their metal content as well as mineralogy, textures, type and alteration of host rock, structures, and where applicable, type of related intrusion. All deposits from small prospects to producing mines are included.

Important features of the various classes are discussed below. Reference is made to some Vancouver Island mineral deposits outside the map-area, which are pertinent to the discussion.

Much of the information in this section is taken from a doctoral thesis (Carson, 1968) sponsored by the Geological Survey of Canada and written at Carleton University, Ottawa. The writer is greatly indebted to J. E. Muller for geological information and logistic assistance in the field.

Zinc-copper-lead massive sulphide deposits (A)

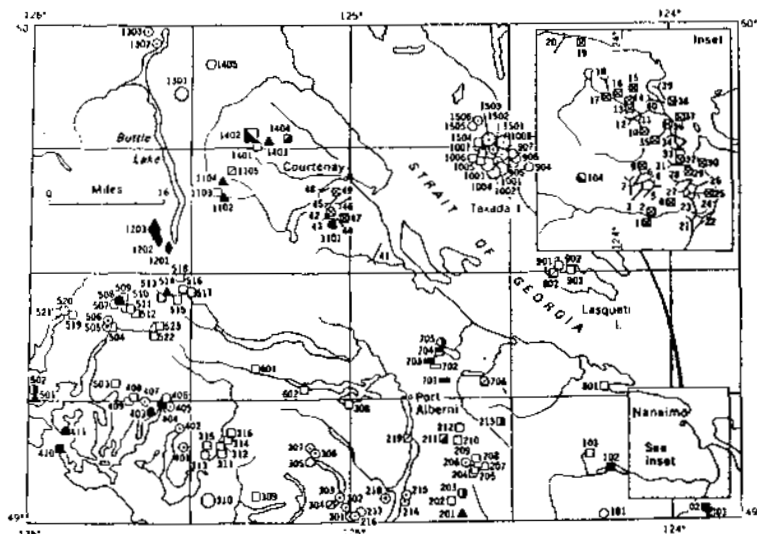
The Lynx deposit of Western Mines Limited (Jeffery, 1965) is the largest of the zinc-copper-lead massive sulphide deposits on Vancouver Island. Reserves at Lynx (September 1966) were more than 2,000,000 tons averaging approximately 10 per cent zinc, 2 per cent copper, 1 per cent lead, 0.06 ounce gold and 2.6 ounces silver per ton. Present production is about 320,000 tons per year. Paramount and Price deposits, the other two in the Alberni map-area, have not been developed. The Twin "J" mine near Duncan (Stevenson, 1945b) is in the same class but is outside the map-area. It yielded substantial ore with metal content similar to but of lower grade than that of Lynx.

All deposits of this class occur in schists derived from cherty volcanic tuffs and breccias of the Sicker Group. They are in local discontinuous 'shear zones' which are probably tightly-folded incompetent tuffaceous horizons in which axial plane cleavage is highly developed and approximates schistosity. Faults cross the 'shear zones' and in some cases have displaced ore.

The sulphide bodies are lenses, irregular masses, and tabular bodies which vary from masses less than one foot in diameter to lenses several hundred feet long. The ore commonly consists of alternating bands of chalcopyrite and sphalerite with pyrite crystals strewn out in both minerals. Galena and tetrahedrite are less abundant and occur as blebs, generally concentrated in certain bands. Minor borate may be present and pyrrhotite is rare. Distinguishing features of these deposits are pockets or lenses of barite, and absence of magnetite.

Structures in which the sulphides are localized include near-horizontal drag folds, bulges in the walls of the 'shear zones', the upper flanks of unshaped masses of rock which occur as isolated blocks in the 'shear zones', and faults.

Deposits of this class may be hydrothermal (Jeffery, 1965) and derived from intrusions (Stevenson, 1945a). However, their unique structural, mineralogical, and textural characteristics, restriction to the Sicker Group, and the lack of any obvious igneous source may indicate that the metals were deposited with their host rocks in the late Paleozoic and were in part, further concentrated by migration to favourable



METALLIFEROUS DEPOSITS

SYMBOL	CLASS	TYPE OF DEPOSIT	SYMBOL	CLASS	TYPE OF DEPOSIT
◆	A	Zn-Cu-Pb-Ag-Ba massive sulphide	■	G4	So-quartz vein
■	B1	Fe chert	■	G5	W stockwork (not in map-area)
□	B2	Mn chert	■	G6	As-carbonate vein
●	C	Cu in basic lava	■	G7	Cu-As-quartz vein or breccia zone
■	D	V in carbonaceous sediment (not in map-area)	□	G8	Au-quartz vein or fissure zone
●	E	Ni in peridotite, gneiss complex	▲	H	Cu porphyry
○	F1	Fe skarn			
○	F2	Cu skarn			
○	F3	Mo-Cu skarn			
○	F4	Zn skarn or replacement to limestone			
■	G1	Mo-quartz stockwork or vein			
■	G2	Cu-quartz stockwork or vein			
■	G3	Cu shear zone			

For list of mineral deposits, see Table IV. First digit (4) of numbers refer to subdivisions of N. T. S. map-areas. Thus 101 and 1001 are respectively in map-areas 92 F1 and 92 F10. But 01 and 02 are in 92 G4. Large-size symbols are the most important past and present producing mines.

COAL MINES (all defunct)

Shaft mine Slope mine

For list of main coal mines see Table V

Figure 3. Index map of metal deposits and coal mines.

#6305

Box 274
Qualicum Beach, B.C.
June 9, 1977

Cleaver Lake Mines Ltd. (N.P.L.)
Box 140
Coombs, B.C.

Dear Madam:

Please note the attached map which consists of a grid plan over part of the holdings of Cleaver Lake Mines Ltd, Coombs Copper property. Further work is to be carried out based on this grid.

A survey of the overlapping claims was also carried out and their relative positions are noted on the map plan.

Total value of the work amounts to \$1,120 in field work and \$125 in office work for a total of \$1,245.00 up to the date of the last billing.

Yours truly,

Barry Furneaux

Barry Furneaux
Geologist

Box 274
Qualicum, B.C.
June 19, 1977

TO CLEAVER LAKE MINES FOR SERVICES AS PER ATTACHED WORK SHEET

B. Furneaux	4 1/2 days @ \$125	\$562.50
S. Furneaux	1 1/2 days @ \$50	\$75.00
M. Furneaux	4 1/2 days @ \$50	\$225.00

In shares @ 14¢ per share - 6160
or, rounded, 6,000 shares.

Please make one 500 share certificate to Susan Furneaux
one 1,000 share certificate to Mark Furneaux and the
rest to Barry Furneaux (4,500).

B. Furneaux

B. Furneaux
Geologist

COOMBS COPPER WORK REPORT MARCH 13, 1977

ATTENTION SHEILA OSTENSOE:

Feb 5, 6- I visited property with Bob Lee and began work of sorting out staking.

Feb 12- Went over property sorting things out on the lower (nothern) part of the ares. Went through books of old notes and some old reports.

March 5,6- Worked with one helper surveying the area with compass and chain. 2 days at \$125 - 2075

March 22, 13- Worked with one helper running baseline and grid lines.

The plan is to tie all the staking, the geology etc. into the grid and end up with a composite map that we can work from. The VW sedan negotiates the road to the property with ease. At this date there is a small amount of snow on the lower end of the claims and about 3' at the back or south end. However, work can be carried on.

After the mapping and grid work is finished we plan a magnetometer and geochemical survey with some geological mapping.

Yours truly,

B. Furneaux

B. Furneaux

Geologist

March 13/77

TO CLEAVER LAKE MINES FOR SERVICES:

B. Furneaux	7 days at \$125 -	\$875
S. Furneaux	4 days at \$ 50 -	\$200
		<hr/>
		\$1075

In Shares at 28¢ per share - 3839

or 4000 shares rounded off.

Please make one 500 share certificate to

S. Furneaux and the rest to B. Furneaux.

B. Furneaux

B. Furneaux

Geologist

June 19, 1977

COOMBS COPPER WORK REPORT

Attention: Sheila Ostensoe

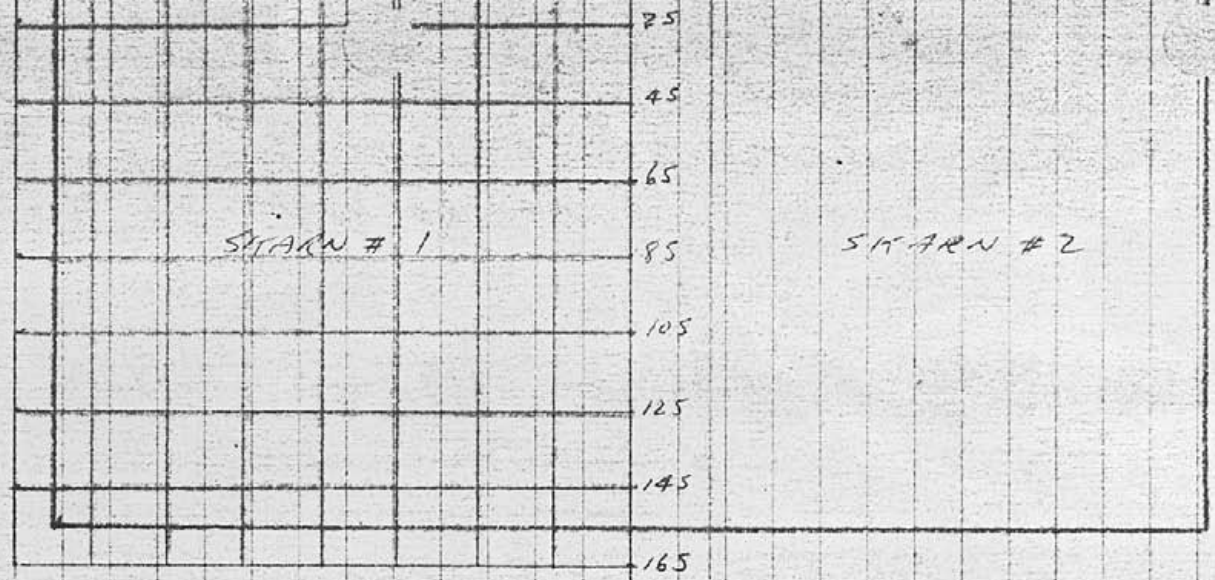
- March 19 - Ran Baseline and continued grid
- March 27 - Continued grid
- April 3 - Continued grid
- April 17 - Continued grid
- April 24 - Continued grid and completed same
- May 30 - Discussion with S. Ostensoe re property
- June 4 - Experimented with magnetometer. Had to solder one loose lead. Seemed okay according to directions.
- June 18 - Ran mag. over part of the grid. Machine does not seem to be responding correctly. Even over pure magnetite there is no large difference. Bring in for overhaul.

Yours truly,



B. Furneaux
Geologist

BASE LINE



STARN # 1

STARN # 2

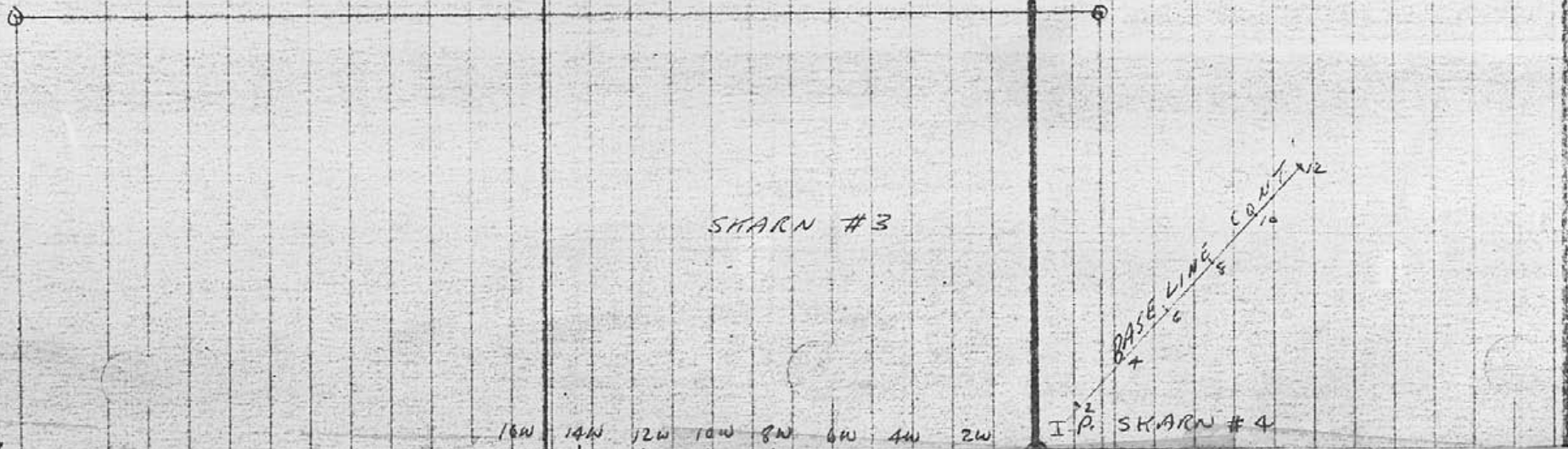
25
45
65
85
105
125
145
165

I.P. COOMBS COPPER

1" = 500'

B.T.F.

1A STARN #4 = ON OS OE OW



STARN #3

BASELINE CONT
1
2
3
4
5
6
7
8
9
10
11
12

I.P. STARN #4

16W 14W 12W 10W 8W 6W 4W 2W