SUNSET GROUP

95-E-6, Watson Lake M.D., Y.T.

Lat. 61° 17' N. - Long. 127° 03' W.

REPORT for Mr. D. Gordon

by

P.H. Sevensma, Ph.D., P. Eng.

P.H. SEVENSMA CONSULTANTS LTD.

November 5, 1969.

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $ 1600

D.B. Craig, R.G.

~~Resident Geologist or~~
Resident Mining Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

Commissioner of Yukon Territory

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ILLUSTRATIONS

SUNSET GROUP

95-E-6. Watson Lake M.D., Y.T.

REPORT for Mr. D. Gordon

1. INTRODUCTION

The writer studied the information on these claims in detail in 1968 and recommended an airborne magnetic survey at that time. The property was examined by the writer on October 5, 1969, in the company of Mr. D. Gordon, Mr. Mack Lutz, prospector, acting as guide.

2. PROPERTY, LOCATION, ACCESS

Claims	Record No.	Expiry Date
Sunset 1-16	Y17354-Y17369	December 19, 1970 as Estate lay-over, but being transferred.
Sunset 17-32	Y22319-Y22334	February 28, 1970.

Location: Adjoining Y.T. - N.W.T. border at about Lat. 61° 17' N. and Long. 127° 03' W., between elevations of 3,900' and 6,000', claim sheet 95-E-6.

The property lies 3 miles North of a lake at an elevation of 3,800' suitable for Cessna 180 and Beaver on floats, and 96 airmiles N NE of Watson Lake, the nearest centre of supply.

The timber line is at about 4,200' - 4,500' and several creeks on the property can supply water for drilling purposes.

Potential road access is up the Coal River from mile 580 on the Alaska Highway, a distance of about 92 airmiles.

The writer has checked a number of posts in the field which have been placed in accordance with the Quartz Mining Act of the Yukon Territory.

3. HISTORY

The showings were previously covered by the Ram Group, at which time they were visited byMr. Al Story for Conwest Explorations Ltd. Subsequently, they were staked as the Dell Group.

They have been known as the Sunset since 1965 or earlier, when they were restaked by Hugo Brodell of Watson Lake, Y.T., for the Brodell Syndicate.

Assay results of samples taken by Mr. Brodell at that time have been kindly made available to the writer by a member of the former syndicate.

The Sunset 1 - 8 and the Sunset 9 - 16 were restaked last respectively on February 2nd, 1967, by Mr. Brodell and on February 16th, 1967, by Mr. T. Cairns and recorded respectively on February 24th, 1967, and February 28th, 1967.

Certificates of work for these claims were issued on January 29th, 1968, keeping the claims in good standing until respectively February 24th and 28th, 1969. These certificates were

issued to Mr. T.R. Cairns, whose untimely demise in December 1967, put the due date ahead to December 19th, 1970.

On September 15, 1966, the claims were examined by George E. Midgley, P. Eng., Alberta, who reported on these claims on September 27th, 1966, and who submitted an amended report on October 28th, 1967. The latter report is available to the writer.

After a study made in 1968, the writer recommended an airborne magnetic survey, subsequently flown by Seigel Associates Limited on November 15, 1968, and filed as representation work.

The writer examined the property on October 5, 1969, under ideal weather conditions and only a minor sprinkling of snow above 5,000' on the North slopes.

In the literature, brief mention is made of the property in G.S.C. paper 61-23, page 46.

The area is part of map 35-1964, Flat River sheet 95-E, on a scale of 1" = 4 miles, published by the G.S.C., prepared by Gabrielse, Roddick and Blusson, paper 64-52.

4. AREAL GEOLOGY

The general claim area is underlain by Lower Cambrian or Late Precambrian argillite and Lower Cambrian Dolomite, about 6 miles South of the Flat River Cretaceous (?) granodiorite to quartz monzonite batholith.

About 24 miles to the NNW, near the Northern boundary of this batholith there is a belt of skarn type copper-lead-zinc showings low in silver, known as the Lucky Lake occurrence. These were recently drilled by Cyprus Exploration Corp. Ltd.

Some 12 miles NW of the Sunset group, a lead-zinc-tin showing with pyrite in a carbonate matrix is associated with the SW border of the intrusive stock; it carries some stannite and possibly geocronite (G.S.C., Paper 64-52).

In the writer's opinion, the area as a whole has an excellent potential for the discovery of large economic deposits. It is part of the Eastern boundary of the great intrusive arc extending well beyond the Tintina Trench NE of Watson Lake, which, in the continental framework, may be compared to the Columbia arc of intrusives extending East across the Rocky Mountain Trench as far as Butte, Montana.

The latter arc is associated with some of the most outstanding mining districts of the continent, i.e. the Sullivan Mine, the Coeur D' Alene District and the Butte, Montana District.

5. LOCAL GEOLOGY

The property is underlain by a thick massive dolomite sequence, clearly over 500' thick, overlain by a sequence of thin-bedded argillites and quartzites extending to the top of the ridges.

Excellent bedding-attitudes were observed of N 30° W., with dips varying from 20° to 60° NE, with occasional local vertical attitudes.

Strong cleavages affect these units, in particular the argillites, giving them a phyllitic to slaty character. Cleavage attitudes are of the order of N 60° E/45° NW.

These beds have been identified as Cambrian and earlier (formation 12 a) on the G.S.C. map, and are overlain to the East by the Lower Cambrian carbonates (formation 15 c).

The only intrusive known in the claim area is a gabbroic mass about 70' wide with an andesite porphyry shell some 20' thick, striking about N 5° W, as observed by the writer. No other intrusives were observed in the claim area.

The attitude of the gabbroic mass, which clearly widens at depth where cut by the erosion, and which appears to die out in the higher argillites, suggests that it has been barely unroofed.

Both isoclinal warping, with dips of from 35° to 85° NE, and minor drag folding have been observed by the writer, but the overall attitude is definitely a relatively shallow dip to the NE of the order of 30° - 35°.

6. SHOWINGS

The writer checked several of the showings as reported by the Brodell Syndicate on its field sketch, both as to location and grade (fig. 3).

Originally, the terms limestone and limestone-breccia had been used; in the field, the rock is clearly a dolomite, locally brecciated and/or quartz-veined.

Also, bornite and chalcocite were reported originally, but no positive identification of these minerals could be made, malachite being the predominant mineral, with some proportion of cuprite. It is obviously derived from fine specks and patches of oxidized sulphides, some of which may have been either one of the above-named minerals, as well as chalcopyrite and tetrahedrite.

The Brodell Syndicate assays may be summarized as follows (see figure 2):

A. Copper Showings

Sample No.	Description	Au.	Ag.	Cu.
19835	Cemented Q + Cp., bo., cl.	tr.	1.50	5.25
19836	Q + D.br. + Cp., bo., cl.	.01	1.95	17.05
19837	Large trench, D.br. + mal., bo., cl.	.01	1.10	35.80
19838	Float, Q + D.br. + mal., Cp., some cl.	.02	3.90	10.19
19846	D.br. + heavy mal., possible cl.	.01	0.80	18.20
Total of 6 samples		.06	9.85	93.27
Arithmetic average, 6 samples		.01	1.64	15.55

Abbreviations: Q = quartz; D.br. = Dolomite breccia; mal. = malchite; cp. = chalcopyrite; bo. = bornite; cl. = chalcocite.

B. Silver-Lead Showings

Sample No.	Description	Au.	Ag.	Pb.	Zn.
19840	D.br. + gn.	.01	57.40	37.75	7.80
19841	D.br. + gn.	.02	27.85	71.87	tr.
19842	D.br. + gn.	.005	36.40	43.25	.05
19843	D.br. + gn.	.005	18.15	17.60	1.00
19844	D.br. * gn., massive shwg.	tr.	48.40	63.18	4.50
19845	Dissem. gn. in grey Dol.	tr.	3.30	2.67	4.35
19847	Dissem. gn. in altered Dol.	.005	31.10	15.65	tr.
Total of 7 samples:		.045	222.60	251.97	17.70
Arithmetic average, 7 samples:		.006	31.80	36.00	2.53

Average silver-lead ratio: 0.88
Minimum silver-lead ratio: 0.39
Maximum silver-lead ratio: 1.98

Note: All original notations "Limestone" have been changed to "Dolomite" by the writer.

C. Samples taken by G.E. Medgley, P. Eng., on the main showing (No. 5, figure 2) are reported as follows:

No.	Width	Description	% Cu.
1	7'	Leached material	15.75
2	-	Selected from dump	27.36
3	18"	Footwall rock	0.44

D. The writer took check samples, and estimated the high-grade part of the main showings, which is a mass of limonitized sulphides and malachite averaging at least in the 15% - 30% Cu. range across the 7' (long or wide ?) exposure.

These check samples are as follows:

Location	Sample No.	Width	oz/t. Au.	oz/t. Ag.	% Cu.
Main showing 5	Estimated	7'	-	-	15 - 30.0
HW dolomite 5	140	10' wide, 5' high	.01	.5	1.86
Dissem. Cp. in D., 5 - 4	141	Float for 600'	.005	.3	.60
Float patch 15 (19846)	142	?	.01	4.0	15.35
9 - 14	Estimated	Pods and veinlets	Not assayed, silver-lead-zinc.		

Location 9 - 14, represented by the Brodell samples 19840 - 19845 and 19847, is an irregularly brecciated area with much gossan cementing dolomite fragments and ± 1" wide galena veinlets. Some of the patches are 3' wide; they occur over a length of some 300' and disappear under talus and grassy overburden. Trenching to fresh material is required to assess this occurrence.

E. Description of Copper Occurrences

The main showing is a remarkably high grade mass of limonitized sulphides and malachite and some cuprite. As exposed in the pit, it appears limited by a HW bedding plane in the dolomite. The overlying dolomite shows patches and veinlets of quartz and chalcopyrite, some bornite (?) and possibly some chalcocite, as well as malachite.

The exposure in the bottom of the pit is 7' long and visible for a thickness of about 2'.

The strike and depth extensions of this mass is covered by soil and slide.

About 30' to the SE, the 60' - 70' wide dyke is exposed in argillite. To the NW, the mineralized dolomite is found in float for at least 600' and is said to extend for two or three claim lengths to the most Northerly No. 1 occurrence. A light snow-cover in this area precluded following the float much further. In places, this float is said to run much higher in copper than the writer's sample 141 of 0.6% Cu.

There is always some quartz associated with the mineralizations and the same is true to the South. Intermittent float is found, and in location 15, there is abundant good grade float; a snow-filled trench failed to locate the mineral in place. This occurrence is highly siliceous.

F. Summary

The copper minerals have been introduced into the dolomite near its contact with the overlying argillite-quartzite sequence, and are usually associated with quartz. Total length of the mineralized zone is of the order of 2 miles and its center is marked by a very high grade occurrence near an andesite-porphyry-gabbro intrusive.

In view of the high grade center near an intrusive and the great length of the mineralized zone, field-relations suggest a good probability that further testing will reveal an economic situation. The writer's work-hypothesis is that high-grade copper

bodies lie near the dolomite-argillite contact where it is intersected by the intermediate to basic intrusive, and that these bodies are surrounded by a hole of minor quartz veins and copper-minerals in the dolomite.

7. AIRBORNE SURVEY

a. Flight Plan

Flown without any technical difficulties with a Scintrex NPM-1 nuclear resonance airborne magnetometer, at 660' line-spacing and a mean terrain clearance of 300', to cover 45 line miles, this survey showed clearly an anomalous magnetic relief of from 200 - 250 gammas.

Whereas a small part of this relief could be interpreted as due to topography, this is clearly not the case for most of the map-area.

The flight-directions were chosen parallel to the topographic trend, which is near-parallel to the strike of the bedding. This direction was chosen due to the strong topographical relief; ground-control was obtained with a Bonzer HF solid state radio altimeter and Vinten Mark 3 16 mm positioning camera.

b. Results

The relatively strong relief obtained, i.e. some 200 - 250 gammas, appeared unusual in this reputedly sedimentary terrain.

Subsequent terrain-inspection revealed the presence of a gabbroic and porphyritic intrusive near the main showing, as well as

the fact that the known showings all lie just West of the axis of the main positive anomaly.

Although both the mineralized outcrop and the gabbro where found not to react to a magnet, the field-relationships suggest very strongly a connection between the magnetic highs, the gabbroic mass and the belt of showings. Consequently, ground-magnetic work is recommended to test this apparent coincidence.

Experience has shown that in mountainous terrain with talus and grass covered slopes, a maximum station spacing of 100' should be employed, initially on selected sets of lines 800' apart, with immediate detail follow-up work in areas of even weak relief.

C. Conclusion

There is a strong suggestion that the airborne magnetic highs are related to an intrusive feature and that they are indirectly indicative of the areas of maximum economic potential.

The results of the airborne survey thus support and strengthen the work hypothesis suggested by the observed field relationships, and reconnaissance geological mapping followed by selective ground magnetic surveying should be used to investigate in more detail the structures controlling the location of the centre, or centres, of mineralization.

8. CONCLUSIONS

High-grade to low-grade copper-showings lie in dolomite near its contact with overlying argillites and quartzites. The highest grade showing occurs near a gabbroic-andesitic intrusive and the results of an airborne magnetic survey suggest that the magnetic highs reflect this intrusive feature. All known showings lie along the flank of the magnetic highs.

Quartz and copper minerals are definitely introduced and do not appear to reflect a stratabound deposit of so-called syngenetic origin.

Field relationships suggest that high-grade bodies lie near the intersection of the intrusive contact with the dolomite-argillite contact, and that the lower grade mineralization represents a structurally controlled halo in the dolomite.

Detailed surveying of the dolomite-argillite contact in relation to the magnetic high is recommended. In view of the high-grade (15% - 30% Cu.) of the best showings, there is a good probability that primary ore in the 5% - 10% Cu. range is present.

The great length over which copper-mineralization is present suggests that the probability for the presence of one or more deposits of economic size is good.

9. RECOMMENDED PROGRAM

a. Program Outline

If located near a road, geological, geochemical and geophysical mapping would be followed by bulldozer trenching to analyze and to add to the presently existing drill-targets.

In view of the distance of some 100 miles to the nearest road, it is believed that the more economical approach is to use fixed-wing and helicopter support for both the geological surveys and the initial drilling.

In order to use the helicopter time efficiently, it is recommended to add two prospecting parties to the property program, in view of the fact that the area is very favorable for both visual and geochemical prospecting.

The attached cost-estimate is therefore based on the required crew and equipment rather than on a detailed program outline. The program is based on a 4-month field exploration period from June 1st to September 30th, including mobiliation and demobilization time of crews.

Experienced prospectors familiar with the area are recommended, as they have knowledge of certain favorable occurrences which warrant investigation.

b. Cost Estimate

1. Program preparation

Airphoto topo-map of property, 1" = 500'	$2,500.00
Photogeological sutdies	2,500.00

2. Helicopter, 4 months @ $12,000.00 — 48,000.00
Fuel for 400 hours, 5,000 gallons and 100 drums — 3,500.00
Ferrying of fuel in winter — 3,500.00

3. Drilling

2,000' @ $16.00	32,000.00
Fuel and winter-ferrying, 500 gallons	1,000.00

4. Camp construction and mobilization — 10,000.00

Total $103,000.00

5. Crew

1 = salaried crew
2 = contractor's crew

	Man-months 1	2
1 geologist	6	
2 assistants (geochem, mag, EM)	8	
2 trenchers, 2 months	4	
4 prospectors, 4 months	16	
1 cook	4	
2 helicopter crew		8
4 drillers @ 2 months		8
Total	38	16

38 man-month wages @ $1,100.00	41,800.00
54 man-months camp operation @ $400.00	21,600.00

6. Fixed wing support

Beaver, 200 hours, supplying and demobilizing crews and drill, @ $80.00	16,000.00

7. Communication, travelling

Radio, telephone	3,000.00
Travelling, C.P.A.	2,000.00

8. Field-work and supplies

Soil samples, 2,000 @ $6.00	12,000.00
Assaying	2,000.00
Magnetic surveying, 20 line-miles @ $100.00	2,000.00
Picketing, 20 line-miles @ $75.00	1,500.00
IP, 10 line-miles @ $400.00	4,000.00
Total	$105,900.00
Total in field	208.900.00
Engineering and supervision, 10%	21,000.00
Administration, 10%	23,000.00
Contingency, 10% overall	25,000.00
TOTAL BUDGET	$277,900.00

An allowance of $4,000.00 is included for IP; there is some leeway in the budget to move and accomodate this crew for about two weeks.

The actual cost of areal prospecting cannot be assessed, but may be estimated at one prospecting crew full time, i.e. 8 men-months and 100 helicopter hours, i.e. about $30,000.00 or about 10% of the total budget. This is a very important adjunct to the property program, and it is essential that prospectors familiar with this area be employed.

10. SUMMARY and RECOMMENDATIONS

High-grade copper occurrences lie near and along a dolomite-argillaceous quartzite contact which is cut by a porphyritic basic to intermediate intrusive.

The showings occur along the flank of a magnetic high located by a helicopter-borne survey and this high may reflect the presence of the intrusive.

The lower grade mineralization appears to form a halo around the higher-grade zones, and in view of the length of the zone, the probability that one or more high grade deposits of economic size exist along the contact is considered good.

The area lies near the front of the Selwyn intrusive arc and nearby granodiorite bodies are related to significant deposits of tungsten, silver-lead and zinc.

In view of the extent of the mineralized zone, the high-grade copper showings and the favorable geological conditions, a major helicopter-supported program of exploration is recommended at an estimated total cost of $277,900.00.

Respectfully submitted,

P.H. Sevensma, Ph.D., P. Eng.
P.H. SEVENSMA CONSULTANTS LTD.

November 5, 1969.

CERTIFICATE

I, PIETER H. SEVENSMA, of 908, 1280 Haro Street, in the City of Vancouver, in the Province of British Columbia, DO HEREBY CERTIFY:

1. THAT I am a Consulting Geologist, with a business address at 715 - 850 West Hastings Street, in the City of Vancouver, in the Province of British Columbia.

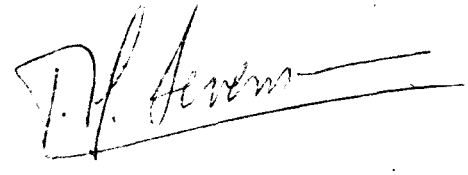
2. THAT I am a graduate of the University of Geneva, Switzerland (Physics and Chemistry, 1937; Geology and Mineralogy, 1937) where I obtained my Ph.D. in Geological and Mineralogical Sciences in 1941.

3. THAT I am a Registered Professional Engineer in the Geological Section of the Association of Professional Engineers of the Province of British Columbia and of the Association of Professional Engineers of Yukon Territory.

4. THAT I have practiced my profession as a geologist for the past 30 years.

5. THAT the information contained in my report is based on a study of all available data on previous work, and on a personal examination of the Sunset claims on October 5, 1969.

6. THAT I have no direct or indirect interest in the Sunset Group claims, and do not expect to receive or acquire any.



P.H. Sevensma, Ph.D., P. Eng.

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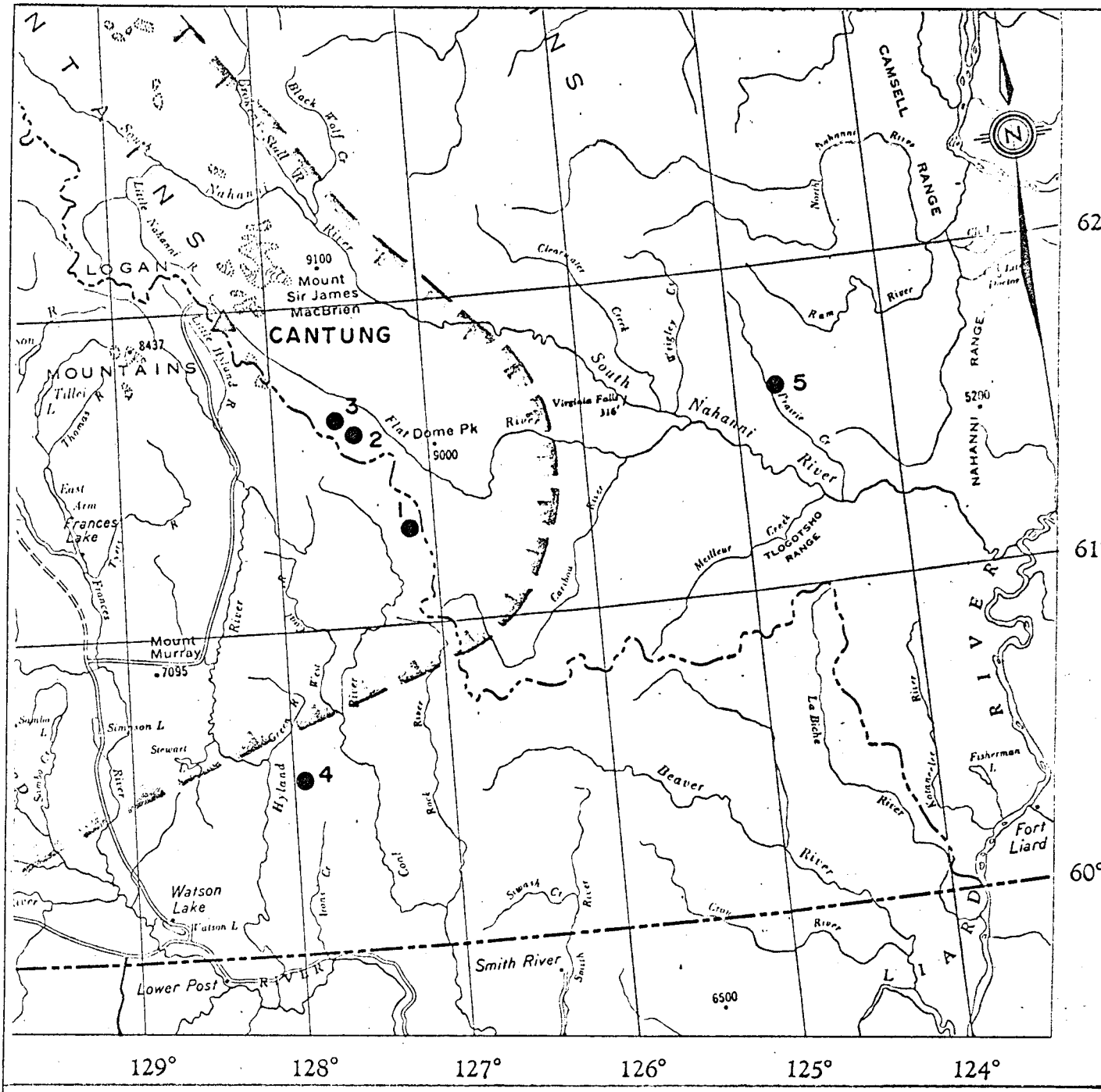


LEGEND

- △ Producer
- ● Significant showings
- Approximate boundary of Selwyn arc of intrusives.
- Roy Examined by the writer.

1. Sunset
2. Lucky Lake
3. Roy Group
4. Dorothy
5. Cadillac Explorations

FIG. 1

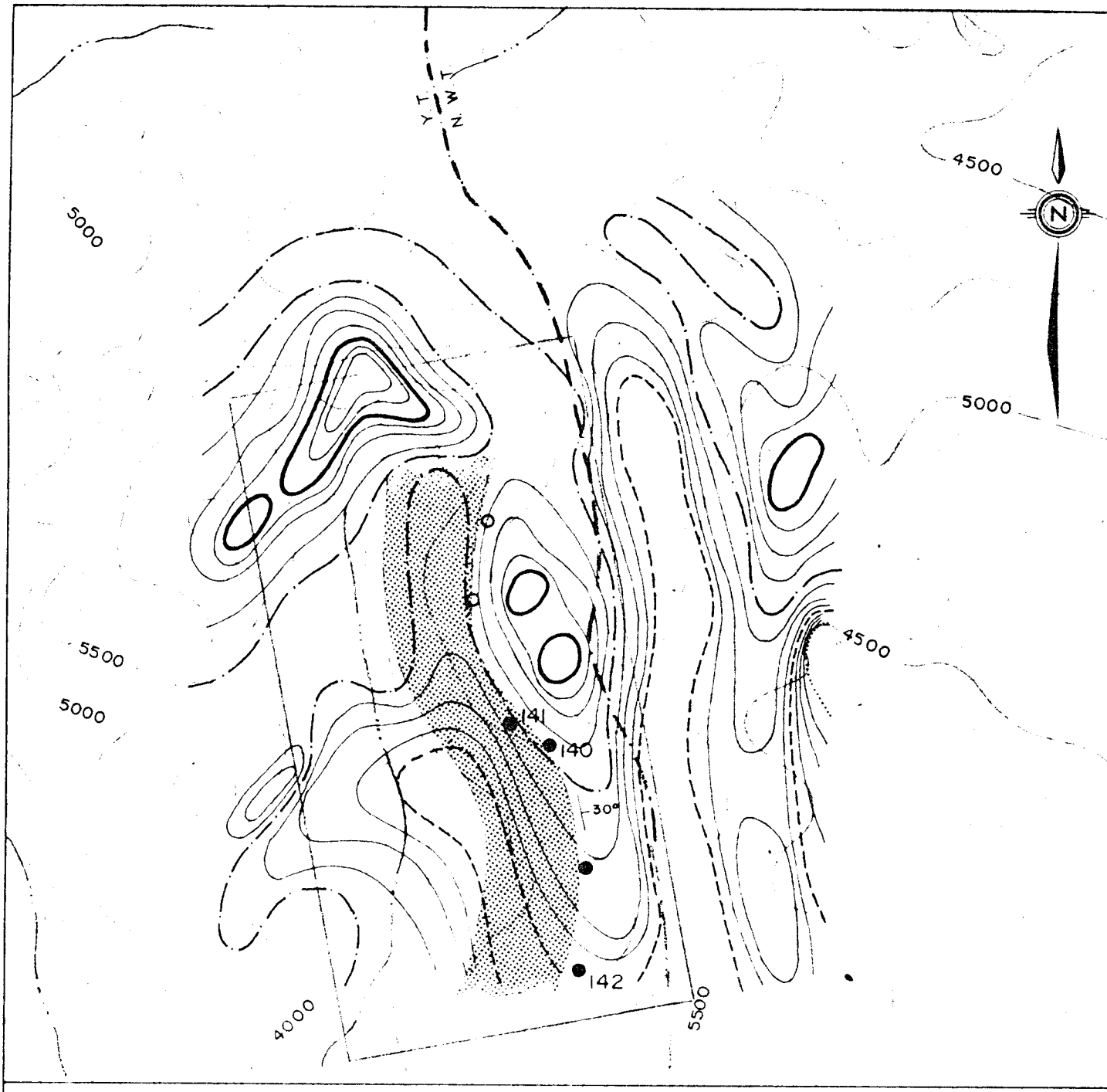
SUNSET GROUP

LOCATION MAP

Nahanni M.D.– N.W.T. & Watson Lake M.D.–Y.T. 95 – E – 6

P. H. Sevensma Consultants Ltd.– Vancouver B.C.

Nov. 1969, Scale: 20 0 20 mi.



LEGEND

Dolomite

O Reported showings

● 140 Examined showings

Results of H.A.M. Survey by Seigel Assoc, Nov. 1968

..... 500 γ Contour

– – – – – 600 γ "

– · – · – 700 γ "

——— 800 γ "

SUNSET GROUP

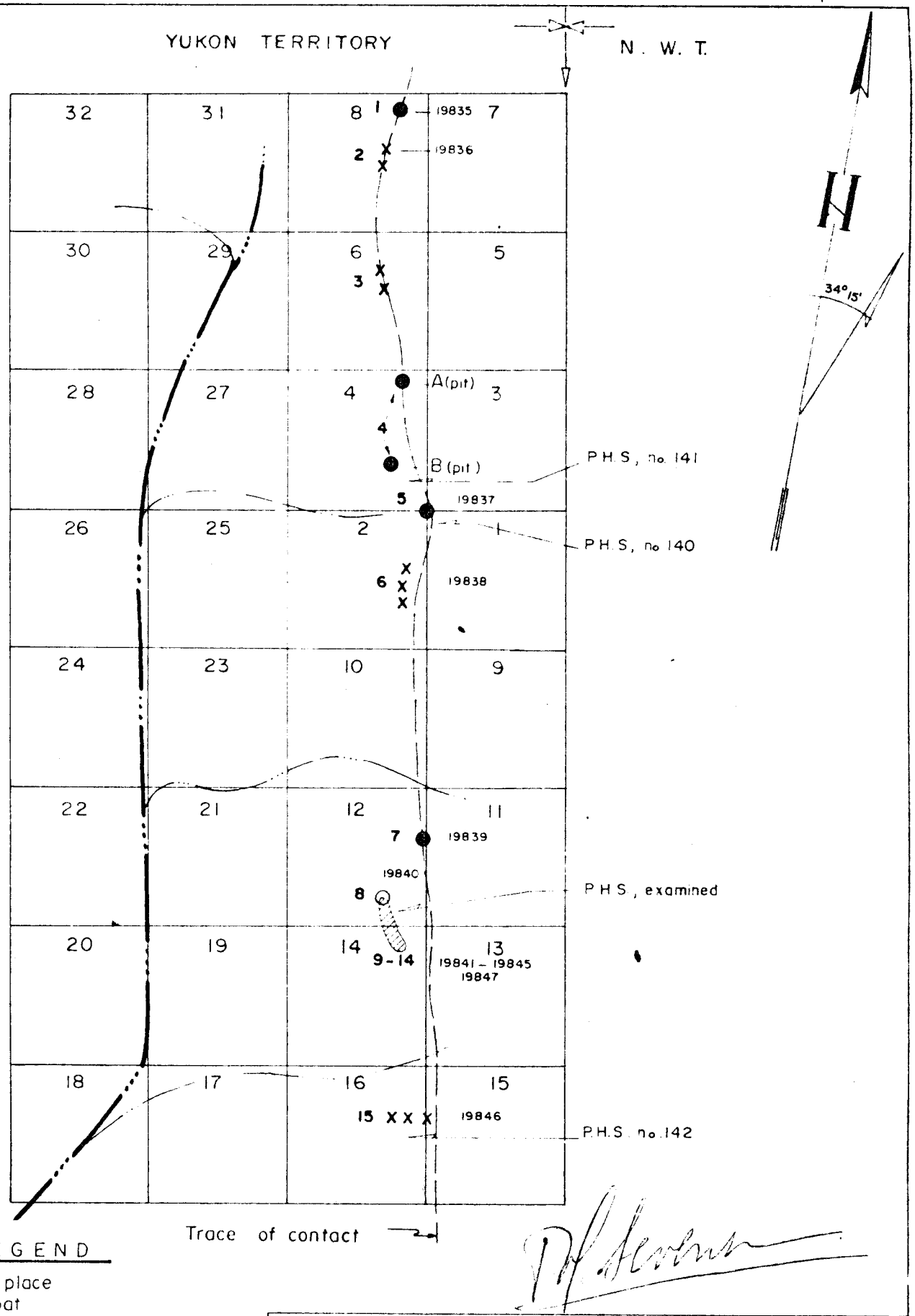
CLAIM OUTLINE and H.A.M. SURVEY

Nahanni M.D. – N.W.T. Watson Lake M.D. – Y.T. 95 – E – 6

P. H. Sevensma Consultants Ltd. Vancouver, B.C.

Dwg. No. Fig: 2

November 1969, Scale: 0 1500 3000'



LEGEND

- ● In place
- XX Float
- Silver – Lead zone
- 19835 – 46 Brodeli Syndicate sample numbers.
- 1 – 14 Showing numbers

SUNSET GROUP — CLAIM MAP

Location of showings

Nahanni M.D. – N.W.T. & Watson Lake M.D. – Y.T. 95–E–6

P. H. Sevensma Consultants Ltd. Vancouver, B.C.

November 1969, Scale: 0 1500 ft.

FIG. 3