

825834

SUMMARY REPORT

T.O.K. and KAY CLAIMS

of

STIKINE SILVER LTD. N.P.L.

UNUK RIVER

SKEENA M.D.

N. $56^{\circ} 15'$

W. $130^{\circ} 25'$

Office - 805 - 837 West Hastings
Vancouver, B.C. V6C1B6

104 B17

September, 1983

R.H. Seraphim, Ph.D., P.Eng.

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SUMMARY, CONCLUSIONS, RECOMMENDATION

Stikine Silver's T.O.K. and Kay claims, totalling thirty units, cover a northeasterly trending zone of silica domes with associated gold and silver mineralization. Individual showings named MacKay, No. 22, No. 21 and No. 5 have received exploration at intervals since 1932. Many surface trenches and drill holes and several tunnels disclose values across widths that encourage further exploration. The size and continuity of individual shoots have yet to be established, perhaps in part because of lack of understanding of the nature of the host breccias and stringer zones. Short "pack sack" or Winkie drill holes, directed to determine whether the individual shoots of mineralization are within "vent zones" or "exhaled zones", are recommended. The configuration and extent of the zones is unknown.

COSTSStage I

Camp equipment, expedition, transportation	\$ 25,000.00
Drilling - "pack sack or Winkie" - say 1000 ft. on each of 22, 21, and 5 zones initially @ \$25/ft. = 3000 x \$25	75,000.00
Assaying, geological supervision, compilation of data	<u>25,000.00</u>
Total	\$125,000.00

Stage II (contingent)

Continued drilling based on above, sites and hole lengths to be de- termined by engineer or other supervisor in the field - say 2000 ft. @ \$25/ft.	\$ 50,000.00
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(Note: Due to problem of short season and difficult communication, the decision of implementation of Stage II should be made in the field, assuming funds are available.)

INTRODUCTION

The claim area was revisited under the guidance of T.J. McQuillan on August 17, 1983. The writer had examined the showings twice previously, in 1946 and in 1966. The present examination was made to re-assess the mode of occurrence of the mineralization in the light of modern geological theory; to facilitate correlation of the numerous data available, and to provide an opinion on the scope of further exploration.

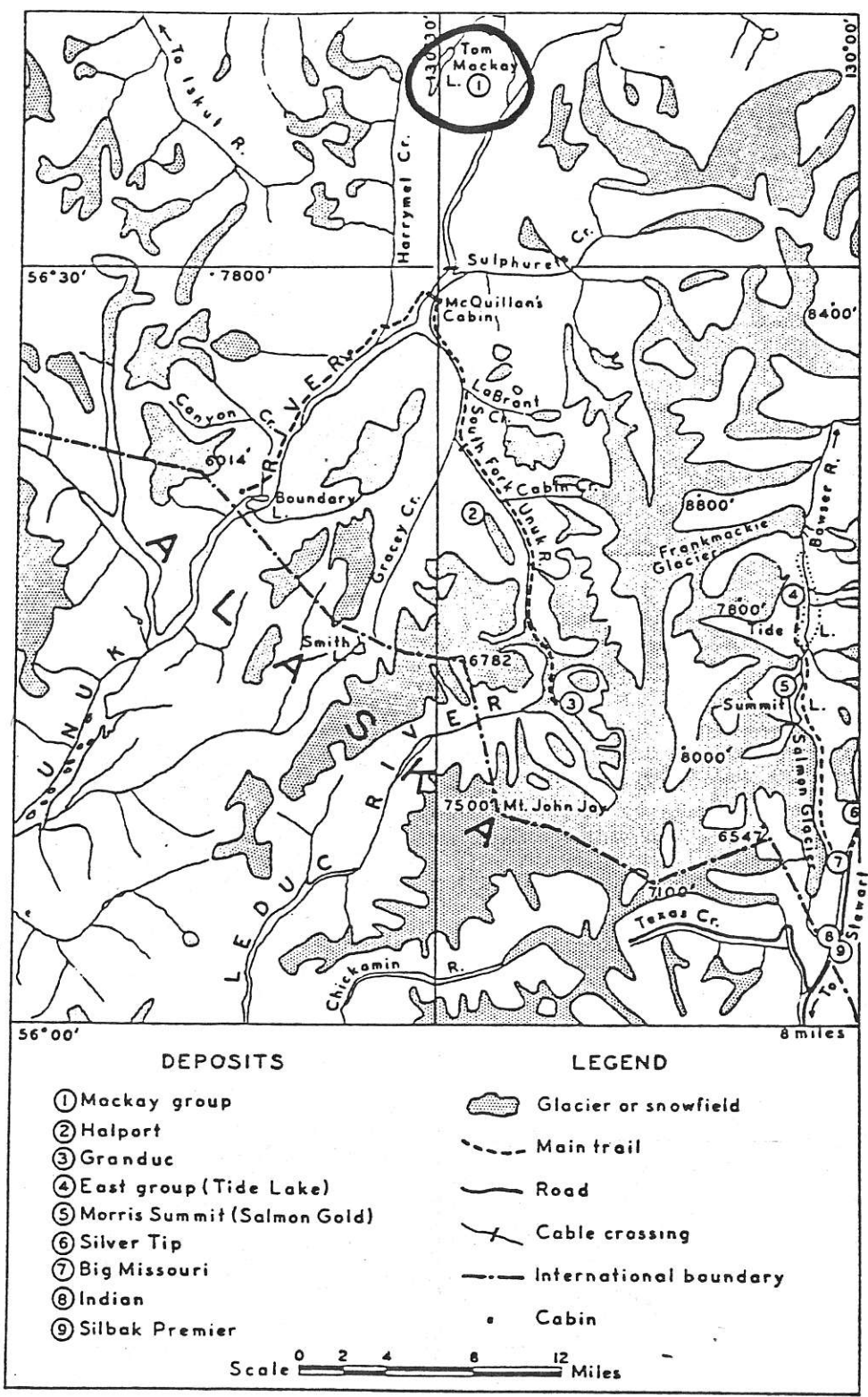
LOCATION AND ACCESS

Access in recent years has been by helicopter based in Stewart, B.C., which is sixty miles to the southwest. Float planes can land on Mackay Lake, three and one half miles by rough trail from the prospect. An airstrip four miles south of the prospect requires improvement before use by Otter fixed-wing aircraft. A road approximately thirty-five miles long via Tiegen and Unuk Rivers would be needed to connect the prospect to the Cassiar-Stewart road at Snowbank Creek.

The area is upland, near and above timberline, elevation 3500 to 3800 feet. Heavy snowfall usually limits surface exploration to about four months of the year.

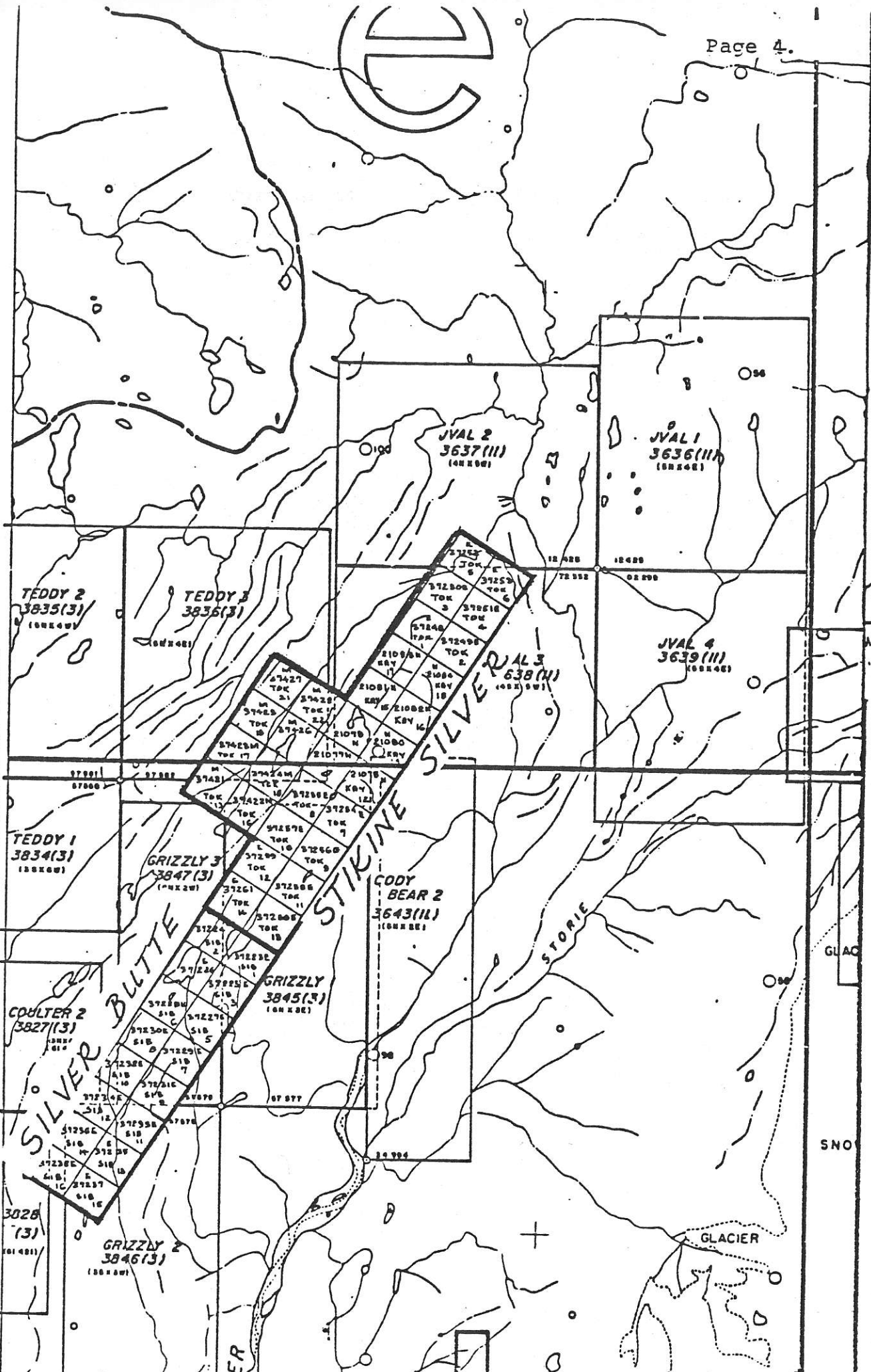
LODE METALS

A 83



Location of mineral deposits in the Unuk River-Stewart area.

TO WEST SEE MAP 104B/10E



SNO

GLAC

GLACIER

CLAIMS

The record office shows the following:

<u>Name</u>	<u>Record No.</u>	<u>Expiry Date</u>	<u>Owner</u>
T.O.K. #1	37248	May 31/83 (survey pending)	Stikine Silver Ltd. N.P.L.
#2	9		
#3	50		
#4	1		
#5	2		
#6	3		
#7	4		
#8	5		
#9	6		
#10	7		
#11	8		
#12	9		
#13	60		
#14	61		
T.O.K. #15	37421	Oct. 11/83	" "
#16	2		
#17	3		
#18	4		
#19	5		
#20	6		
#21	7		
#22	8		

<u>Name</u>	<u>Record No.</u>	<u>Expiry Date</u>	<u>Owner</u>
Kay #11	21077	Oct. 11/83	Stikine Silver Ltd. N.P.L.
#12	8		
#13	9		
#14	80		
#15	1		
#16	2		
#17	3		
#18	4		

The map included herewith shows that the above listed claims, and also the claims adjoining and south (of Consolidated Silver Butte Mines Ltd. N.P.L.) have been in part overstaked by others.

HISTORY

The first claims in the area were staked in 1932 as a result of mineral discoveries made by Mr. T. MacKay. Prospecting, trenching and exploration work by Premier Gold Mines Ltd. followed under the direction of Mr. G.A. Dirom in 1935, 1936 and 1937. Some diamond drilling was carried out.

Two hundred and seventy-six feet of tunnelling were driven in 1939 on the MacKay (most southerly) showing. This tunnel was extended for eighty feet by Canadian Exploration Ltd. in 1946.

In 1963, Western Resources Ltd. attempting to explore the 22 showing, drove an adit for 360 feet. Six diamond drill holes partially tested the showing when Canex Aerial Exploration Ltd. held an option on the property in 1964. Stikine Silver Ltd. drove this adit an additional 240 feet in 1965.

Stikine Silver Ltd. carried out trenching and stripping on the 22 showings on the Kay 12 and Tok 8 claims during the summers of 1971 and 1972.

Between September 6 and October 15, 1973 Kalco Valley completed 983 feet of diamond drilling in the 22 area.

Texas Gulf examined and explored the massive sulphide occurrences in 1975 and 1976. Seven holes totalling 1225 feet were drilled. May-Ralph Resources Ltd. acquired an option in 1979, and mined 9½ tons of 4.22 oz. gold per ton and 84 ounces of silver per ton; silver-gold mineralization which was transported by helicopter to the Stewart-Cassiar Highway. Ryan Exploration Co., a subsidiary of U.S. Borax, optioned claims in 1980 and explored them with

geochemical surveys, surface sampling, and diamond drilling in 1981 and 1982.

Most of the pertinent data from the above is available (see Bibliography).

UNDERGROUND DEVELOPMENT

Two adits are shown on the maps on the following pages: the MacKay adit, near the old campsite, and the twenty-two zone adit. A third adit probably very short was observed from the air to the south of the MacKay adit. Diamond drilling has been completed by almost all of the companies who have explored the claims. Most of the pertinent results are available, and some are described below re "mineralization".

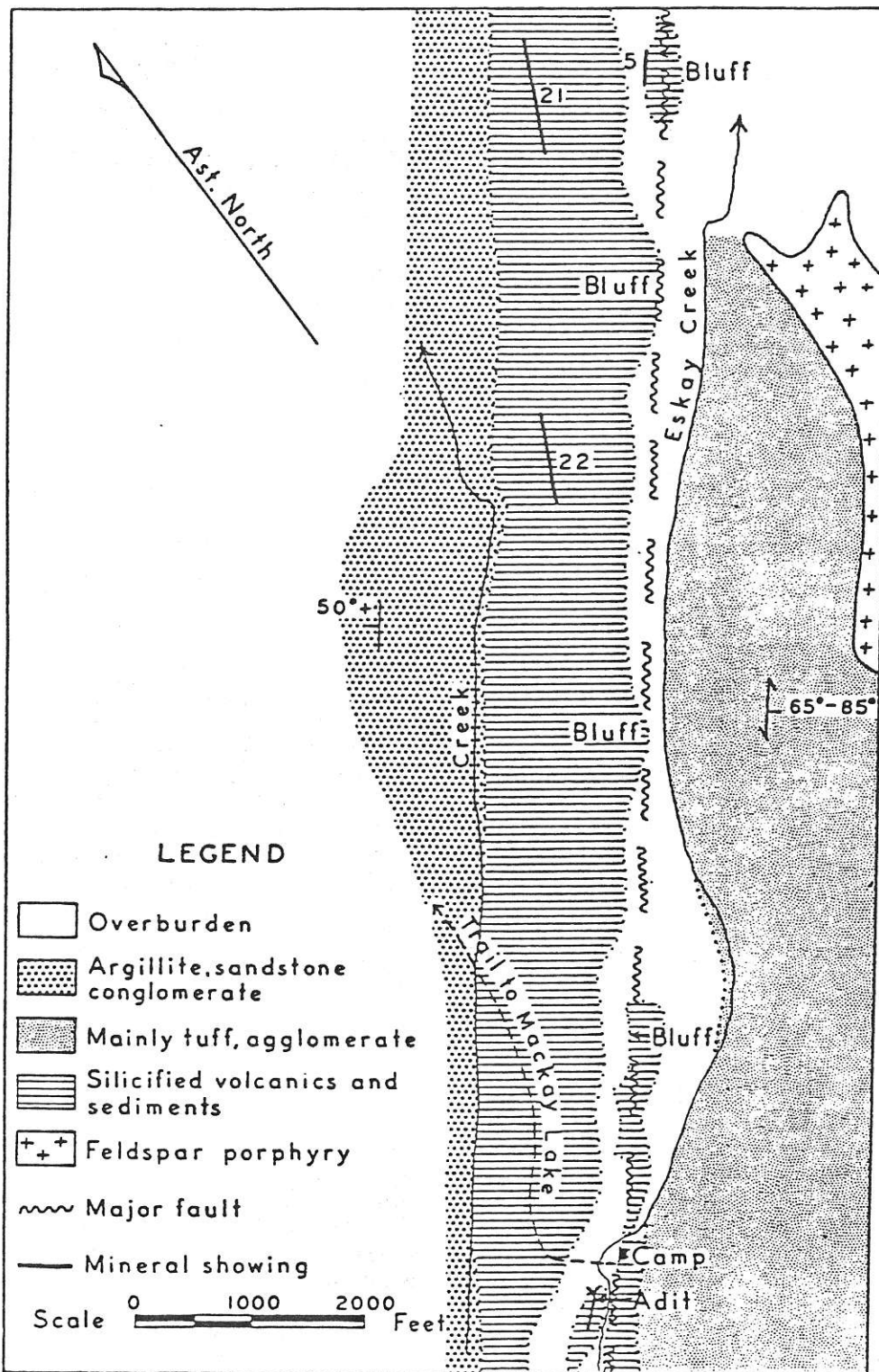


Figure 4. Geology of Mackay group.

GEOLOGY

The geology of the claims is well described in Minister of Mines Report for 1953, p. 87 as follows:

"The rocks from Tom Mackay Lake east to the western boundary of the property consist of folded argillites, sandstones, and minor conglomerate. They strike northeastward, and the prevailing dip is 50 degrees or more to the northwest. Easterly dips were observed in the vicinity of the lakeshore.

The eastern part of the property is largely underlain by greenish tuffs, agglomerates, and minor amounts of sandy sedimentary material. Shearing is common, and in many places the rock may be accurately described as a schist. The strike of the schistosity is northeasterly, and a steep southeasterly dip is most common. As shown in Figure 4, these rocks are intruded by a stock of feldspar porphyry.

Between the sediments on the west and the sheared green tuffs on the east is a zone 1,500 feet wide that is interpreted as a fault zone. It can be traced for at least 2 miles southwest of the southern boundary of Figure 4. Northeast of the figure it is obscured by overburden.

The fault zone is marked at irregular intervals by great orange-red bluffs that can be seen for miles from the air. (These bluffs attracted the attention of Mackay and his associates to the area.) Examination of the bluffs revealed an abundance of disseminated pyrite in silicified rock.

Widespread silicification is the dominant characteristic of the fault zone. Where silicification is less intense or in some places absent, the rocks can be identified. In the valley of what is locally called Eskay Creek, argillites, argillaceous tuffs, sandy tuffs, and agglomerates are present. On the western slope of the valley, dark-green flows and volcanic breccia occur. Breccia is fairly common in the silicified fault zone, and, because volcanic breccia is a recognizable component of the zone, it is not always clear in examining the silicified rock whether the brecciation is primary or secondary. Certainly some of the brecciation is of secondary origin, presumably related to the faulting.

A great deal of work has been done on the Mackay group, and only the more interesting showings are described. Near the southern edge of Figure 4 an adit penetrates silicified rock for 360 feet in a south 47 degrees west direction. Narrow bands of highly contorted argillaceous material are present. Although phenocrysts of plagioclase are discernible in some of the rock, its original nature remains uncertain. Pyrite and less arsenopyrite occur sporadically. Minute amounts of chalcopyrite, sphalerite, and galena were observed in narrow fractures that traverse the rock. In addition to the adit, thirteen closely spaced holes have been diamond drilled from the surface in this area. Some gold assays of more than 1 ounce per ton were obtained, but all evidence points to an erratic, seemingly patternless distribution of gold.

In the No. 21 outcrop area, silicified rock has been trenched at irregular intervals for a distance of 1,050 feet in a north 25 degrees east direction. Brecciation is rare, but the rock is well fractured. Certain narrow fractures, commonly north dipping, are filled with comb quartz. Others, commonly south dipping, are filled with tetrahedrite and minor amounts of galena and sphalerite. These fractures are generally less than 2 inches wide. For much of the 1,050-foot length, the mineral-bearing fractures are too few to be of more than academic interest. For 250 feet near the middle of the investigated distance, however, they are somewhat more abundant. Here the ground has been tested by seven diamond-drill holes, and narrow sulphide-filled fractures have been intersected that assayed hundreds of ounces of silver per ton. Unfortunately, these fractures are not sufficiently abundant to constitute an orebody.

Similar showings are exposed in the No. 22 outcrop area. About twenty trenches have been cut at intervals over a distance of 800 feet in a north 25 degrees east direction, and two holes have been diamond drilled.

In the No. 5 area six trenches have been dug at intervals over a distance of 300 feet in a northeasterly direction. They expose relatively massive sulphide mineralization, consisting of sphalerite, galena, and pyrite. A 5-foot band in the northernmost trench assayed: Gold, 0.05 oz. per ton; silver, 3.4 oz. per ton; lead, 5.9 per cent; zinc, 9.3 per cent. Overburden obscures much of the bedrock between the trenches and the area to the northeast of the northernmost trench."

The writer's interpretation of the structure (and apparently also that of Texas Gulf and U.S. Borax geologists) is that most of the mineralization is volcanogenic and closely associated with volcanic vents. The oxide-stained bluffs (see Minister of Mines Figure above) are deduced to be pyritized quartz and/or rhyolite domes extruded at intervals along a northerly trending rift or shear zone. Determination and use of criteria in each mineralized zone such as size, heterogeneity, and lithology of fragments; and whether the mineralization is in stringers (vent zone?) or massive in matrix or in fragments (exhaled zone?) would be very pertinent to continued exploration. Perhaps also tabulation and correlation of these criteria in rocks logged in drill holes and in underground workings will assist in determining the spatial relation and size of the better grade mineralized shoots. The work to date has shown that these mineralized shoots may have dip-lengths measured in tens of feet, however, plunge lengths (related to paleo surfaces?) are yet to be determined.

MINERALIZATION

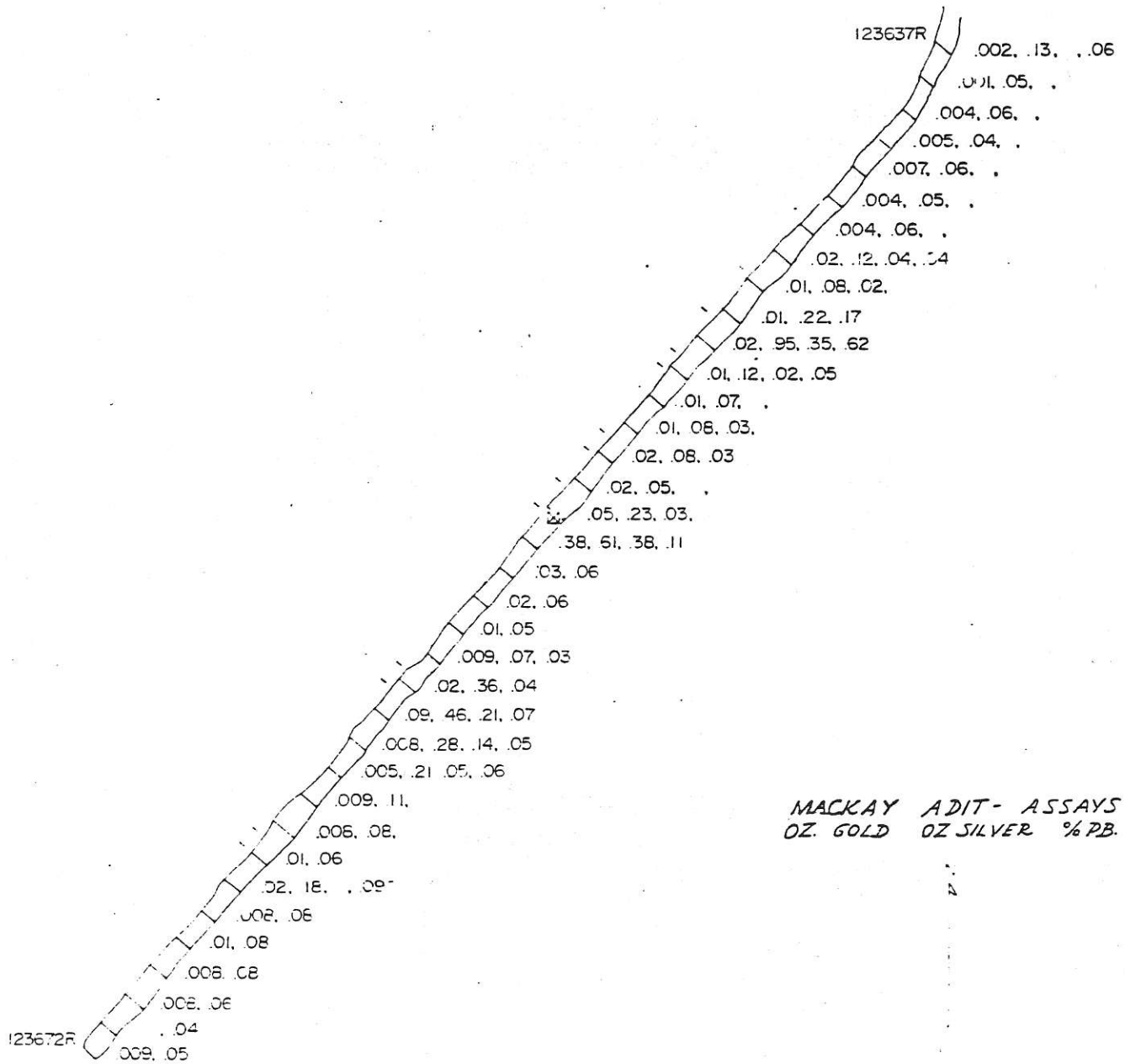
Cummings (1936) examined one mineralized specimen believed to be from No. 22 zone. He identified the following minerals in one polished section: pyrite, sphalerite, galena, chalcopyrite, arsenopyrite, pyrrhotite, gold, chalcocite, covellite, and quartz. Tetrahedrite is conspicuous by its absence, as it has been tentatively identified by those who examined the prospects at Emma Creek.

Cummings observed that gold in the sample was present as metallic gold alloyed with a high percentage of silver. He noted that 44 of 50 grains of gold which were observed were directly associated with pyrite. No gold was observed in quartz. A three stage paragenesis was suggested; (1) introduction of pyrite, arsenopyrite, and quartz (2) fracturing (3) introduction of sphalerite, chalcopyrite, galena and gold. Some quartz probably accompanied the third stage. Fracturing and brecciation probably preceded stage one.

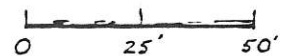
Zones of interest include:

The Original MacKay Showings

Surface sampling shows gold content in some samples in the range of 0.1 oz. per ton, with highs of 0.56 and 1.54 oz. in sample lengths of 8 and 18 feet respectively (U.S. Borax Plate II of 11-8-82). This zone is described also by Whiting (pages 4, 5) and assays by A.H. Melville and D.L. Coulter are on a map dated October 14, 1933, also drill results on a map dated November 18, 1934. A sample taken by the writer near the "A" frame and north of the main showing assayed 0.44 oz. silver and 0.012 oz. gold per ton.



MACKAY ADIT - ASSAYS
 OZ. GOLD OZ SILVER % PB. % ZN.



Thompson (November, 1973) is quoted as follows:

"Attitude and Dimensions

Surface mineralized area 220 feet by 40 feet trending NNE. Gold in N80° E cross structures dipping 45° (?) to the south. There are 11 cross structures, eight of these are too narrow to mine. The remainder reach widths of 20, 10 and 14 feet. The distance between the structures varies from 10 to 40 feet.

Host Rock

Sericitized, chloritized, silicified volcanic and sediments striking NNE within core of a steep sided anticline bounded by argillite.

Mineralization

Patchy galena and sphalerite with disseminated pyrite and finely disseminated arsenopyrite. The gold occurs as particles averaging less than 200 mesh in size.

General Remarks

The gold bearing structures have been explored by shallow drill holes 30' - 20' from the horizontal, sub-parallel to the mineralization. This gave very unfavorable angles of interception. Core recovery of the EX holes was poor.

The best body of gold mineralization appears to be lense-shaped and 160 feet long with a maximum thickness of twenty feet. Dip is estimated to be in the neighbourhood of 45° to the south. This lense averages 0.22 ozs. gold DST calculated from surface assays.

Gold and silver values found by Premier in their 1937 trenching illustrates the widespread nature of the gold mineralization. These are given below.

<u>Trench</u>	<u>Width (ft.)</u>	<u>Ozs. Au.</u>	<u>Ozs. Ag.</u>
47	43	0.05	0.70
36	21	0.18	0.54
44	15	0.16	0.33

<u>Trench</u>	<u>Width (ft.)</u>	<u>Ozs. Au.</u>	<u>Ozs. Ag.</u>
45	132	0.13	0.47
46	109	0.16	0.10
35	59	0.20	1.10
55	37	0.09	0.20
34	11	0.05	0.27
54	39	0.05	0.54
56	23	0.06	0.61
56E	33	0.01	0.15
47E	15	0.02	0.23
43E	19	0.04	0.51
43	9	0.02	0.44

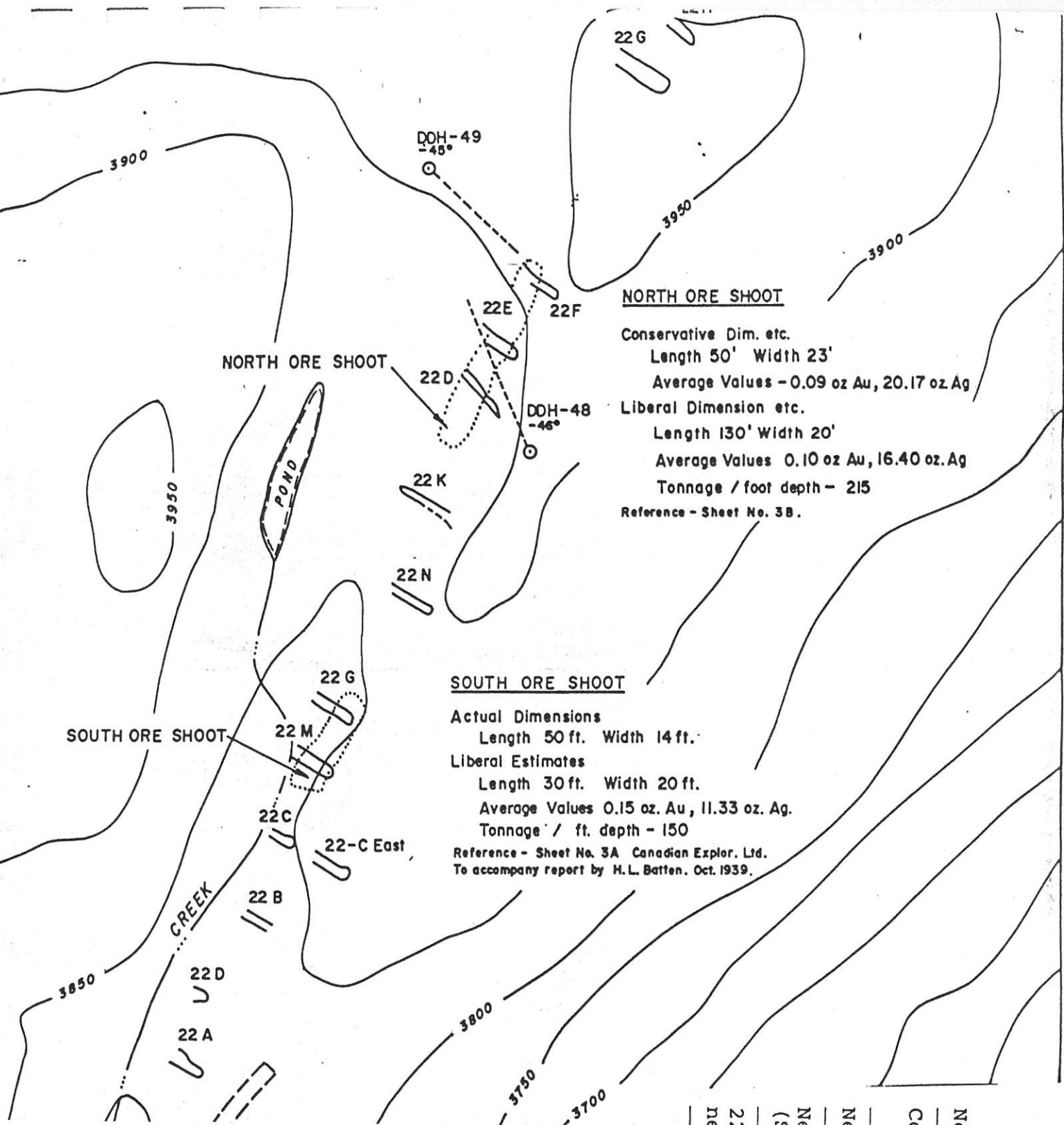
Possibilities

The strong N80°E alignment of the gold surface values and apparent dip of 45° to the south suggests there is a relationship with prominent local cross faulting."

The writer comments that the stringers described above appear to be vein or "vent" mineralization rather than exhalative.

No. 22 Area

The map on the following page shows the location of surface trenching and of the adit, together with a summary of the extent and grade of gold and silver. A sample map is also available in U.S.



NORTH ORE SHOOT

Conservative Dim. etc.
Length 50' Width 23'
Average Values - 0.09 oz Au, 20.17 oz Ag
Liberal Dimension etc.
Length 130' Width 20'
Average Values 0.10 oz Au, 16.40 oz Ag
Tonnage / foot depth - 215
Reference - Sheet No. 3B.

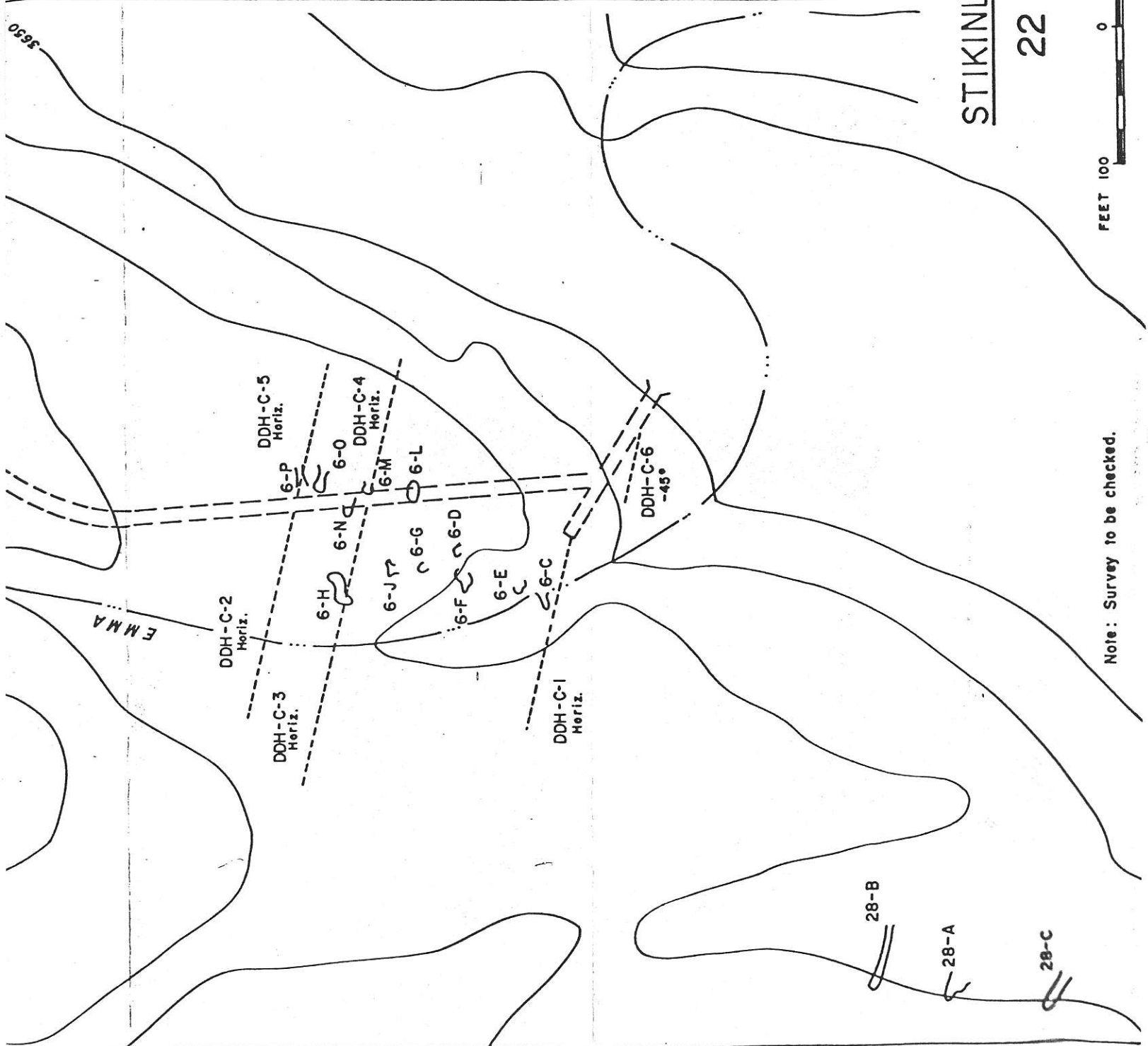
SOUTH ORE SHOOT

Actual Dimensions
Length 50 ft. Width 14 ft.
Liberal Estimates
Length 30 ft. Width 20 ft.
Average Values 0.15 oz. Au, 11.33 oz. Ag.
Tonnage / ft. depth - 150
Reference - Sheet No. 3A Canadian Explor. Ltd.
To accompany report by H.L. Batten, Oct. 1939.

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CHECK SAMPLES BY SERAPHIM

<u>Location</u>	<u>Width (meters)</u>	<u>oz.gold</u>	<u>oz.silver</u>	<u>% Copper</u>
ar 22 D	2	0.03	0.01	<.01
contiguous to above	3	0.052	0.01	<.01
ar 22 E	6	0.06	16.38	0.05
ar 22 M (outh Shoot)	grab of rejects from sorted ore	0.062	4.80	0.14
Zone ar 28C	grab of high grade	0.702	20.56	0.23



STIKINL
22 ZONE



Note: Survey to be checked.

Borax' data. Shipments from this area were recorded under "History". Thompson and the writer concur that the mineralization lies within silica-rich agglomerate, with trend northerly. Thompson reports:

"Strong N20°E shearing dipping 85° to 75° to the west has localized two zones of mineralization. One zone occurs above the Emma Adit as well as in the adit where it's extension has been explored by drilling. The other parallel zone lies one hundred feet to the west and is the principal zone so far explored in the 22 area."

The writer suspects that the southmost zone exposed on surface, inasmuch as it displays stringers of quartz with tetrahedrite, is vein or "vent" mineralization and that some of the northmost zone which displays very fine grained "smokey" mineralization may be exhaled near or emplaced at the throat of a vent. Short "pack sack" or "Winkie" drill holes might be utilized to trace the individual shoots of high grade along a plunge; if such plunge exists, it might be shallow with dip to the east at the northmost showings. Hence initial holes here should be directed westerly rather than easterly.

Kalco Valley's holes drilled in 1973 (ref. Thompson) are shown to be directed easterly, hence would have undershot shallow easterly dipping mineralization. Data regarding these holes is listed as follows:

DDH #	Location	Azimuth	Dip	Intercept (feet)	Grade	
					oz.Au	oz.Ag
1	North end	120	45 E	63.5 - 78.0	0.78	
				4 - 12.5	.083	.14
2	" "	120	45 E	-	-	-
3	?	120	45 E	-	-	-
4	on outcrop		90°	0 - 40'		"low"
5	" "	120	50°	0 - 30'		"low"
6	North end	075	48°	8 - 27	.094	0.02
7	" "	120	70°	4.5 - 26	0.11	0.03

No. 21 Showings

These were not examined by the writer during the recent examination. Thompson reports as follows:

"Location

Two thousand feet north of the main camp and two thousand north east of the 22 zone.

Mineralization

Tetrahedrite, carrying gold and silver pyrite, minor galena, and sphalerite, rare realgar as thin discontinuous veinlets along shattered surfaces.

Attitudes and Dimensions

Delimited by surface trenches over a NNW strike length of 1000 feet. Dip 60° to 70° to the west.

Host Rock

Sericitized and silicified andesitic flow.(?)

General Remarks

Values encountered by Premier in their 1937 Surface trenching are given below:

<u>Trench</u>	<u>Width</u>	<u>ozs. Au</u>	<u>ozs. Ag</u>
21D	17'	.07	4.50
21A	97'	.01	.47
21P	25'	.02	5.76
21F	28'	.04	6.20
21M	11'	.08	7.20
21J	37'	.06	5.53
21N	22'	.06	1.30
214(north)	73'	.06	9.20
21K	29'	.10	2.70
21L	35'	.07	1.88

In 1937 five shallow drill holes put down by Premier beneath the surface trenches intercepted values in two holes. These were as follows:

<u>Hole No.</u>	<u>Width</u>	<u>ozs. Au</u>	<u>ozs. Ag</u>
47	16.2	0.10	39.20
42	20.0	0.09	12.82
	Depth below surface	115'	
	Possible strike length	190'	

No. 5 Showing

This showing is also described by Thompson (1973) as follows:

"Location

Lies 450 feet southeast of the No. 21 showing.

Attitudes and Dimensions

Scattered trenches over an area of 200 by 300 feet. Mineralization appears to strike N20°E, is patchy up to 3' wide and with the greatest known length of 5 feet. Dips are steep to the west.

Host Rock

Silicified and sericitized andesitic flow.

Mineralization

Scattered light to heavy disseminated pyrite along fracture planes with or without strong local galena - sphalerite mineralization.

Samples taken by D. Cannon in 1951 assayed as follows:

<u>Cut</u>	<u>Width</u>	<u>ozs. Au</u>	<u>ozs. Ag</u>	<u>%Pb</u>	<u>% Zn</u>
1	9'	.08	0.95	1.30	3.5
2	7'	.04	11.25	23.50	15.0
3	6'	.01	1.05	2.80	7.0

Samples taken by D. Thompson in 1973 assayed:

<u>Cut</u>	<u>Width</u>	<u>ozs. Au</u>	<u>ozs. Ag</u>	<u>% Pb</u>	<u>% Zn</u>
13531	10'	.027	0.91	.46	.01
13532	12'	.014	0.40	.24	.10
13533	10'	.003	0.47	.16	.20
13534	3'	.019	8.10	19.58	19.30"

Texas Gulf drilled six holes totalling 288 meters in this area in 1976. Hole 1 intercepted 0.95 meters of 8.01% Pb, 5.36% Zn, 1.9 oz. per ton silver centered at 39 meters depth, and Hole 4 intercepted 0.4 meters of 5.45% Pb, 16.65% Zn, 3.1 oz. per ton silver at 61 meters depth. Details are available in the report by E.A. Schink, G.R. Peatfield dated November 1976.

GEOPHYSICS

Some Shoot-Back E.M. and Magnetic surveys were completed by Texas Gulf on the claim groups covering and north of No. 22 and No. 21 areas. Peatfield (1975) reports:

"The Shoot-Back E.M. survey was moderately successful in that it suggested a weak conductor in the vicinity of No. 5 showing, but on the whole, the rough terrain hampered the survey severely. The magnetometer work was not particularly revealing."

GEOCHEMISTRY

The U.S. Borax' report contains data on geochemical surveys that provided several anomalies of interest - e.g. 14,660 ppm lead, 38 ppm silver; and 101,500 ppm lead, 161,000 ppm zinc. (George p.21 to 23). These apparently have not been followed up by exploration. Other anomalies are attributed to known occurrences of mineralization such as No. 22 Zone.

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R. H. SERAPHIM ENGINEERING LIMITED
GEOLOGICAL ENGINEERING

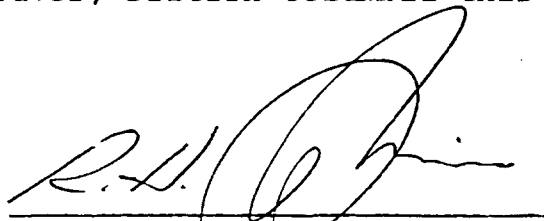
316 - 470 GRANVILLE STREET
VANCOUVER, B.C. V6C1V5

CERTIFICATION

I, Dr. R.H. Seraphim, of the City of Vancouver, Province of British Columbia, hereby certify as follows:

- 1) I am a Geological Engineer residing at 4636 West 3rd Avenue, Vancouver, B.C., and with office at 316 - 470 Granville Street, Vancouver, B.C.
- 2) I am a registered Professional Engineer of British Columbia. I graduated with a Master of Applied Science from the University of British Columbia in 1948, and with a Doctor of Philosophy in geology from the Massachusetts Institute of Technology in 1951.
- 3) I have practised my profession continually since graduation.
- 4) I have no interest, direct or indirect, in the claims of Stikine Silver Ltd. N.P.L. or its affiliates and I do not expect to receive any interest.
- 5) The attached report is based on a study of maps and reports and examination completed between 1936 and 1982 and re-examination on August 17, 1983 and redated.
- 6) I consent to the use of this report in or in connection with the prospectus or in a statement of material facts relating to the raising of funds for this project.

DATED at Vancouver, British Columbia this
9th day of September, 1983.



R.H. Seraphim, Ph.D., P.Eng.



CHEMEX LABS LTD.

212 BROOKSBANK AVE.
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CANADA V7J 2C1

• ANALYTICAL CHEMISTS

• GEOCHEMISTS

• REGISTERED ASSAYERS

TELEPHONE: (604) 984-0221
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CERTIFICATE OF ASSAY

TO : SERAPHIM, DR. R. H.

316 - 470 GRANVILLE STREET
VANCOUVER, B.C.
V6C 1V5

CERT. # : A8314008-001-A
INVOICE # : I8314008
DATE : 1-SEP-83
P.C. # : NCNE

Sample description	Prep code	Cu %	Ag FA oz/T	Au FA oz/T			
20284	207	<0.01	0.01	0.030	} No 22 Zone	--	--
20285	207	<0.01	0.01	0.052		--	--
20286	207	0.05	16.38	0.060		--	--
20287	207	0.23	20.56	0.702		--	--
20288	207	0.14	4.80	0.062		--	--
20289	207	<0.01	0.44	0.012		--	--



MEMBER
CANADIAN TESTING
ASSOCIATION

.....
St. Amant
Registered Assayer, Province of British Columbia