GEOLOGICAL REPORT

SILVERTIP, TOPAZ and BELL CLAIMS
59° 130° S.E. SILVERKNIFE MINES LTD.

C. B. Selmser, P. Eng.

Nov. 25, 1967

Calbert B. Selmser, P.Eng.

CHIEF ENGINEER
GEO CAL LIMITED

2658 NELSON AVENUE
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November 25, 1967

Mr. Charles E. Craig, Pres.
Silverknife Mines Ltd., (NPL)
409 - 612 View Street,
VICTORIA, B. C.

Dear Sir:

As requested I have prepared a Geological Report with maps on the Silverknife property near Tootsee River, Liard Mining Division, Province of British Columbia.

This report includes the latest drilling done during the Summer season, all former drilling, and underground development work. Most of the assays and geology were available subsequent to this report, but the findings of the latest drilling have increased the prospective tonnage many fold.

not included here

This report outlines the ore zones on your property with the estimated tonnages and average grades for Silver, Lead and Zinc. These are based on previous work and as a result of a visit by me to the property on August 10, 1967.

An examination has been made of all pertinent data concerning this property and a reassessment made to determine initial development of the surface deposits. Removal of these deposits will be followed by the development of subsurface deposits, which have already proved economic.

It should be noted that average grades of ore in the surface zones have increased from those grades covered in my Summary Report to you dated November 13, 1967, due to the method used in averaging surface and subsurface assays. (see Page 1 of "Mineralization.")

This report with my recommendations is herewith submitted.

Yours truly,

GEO CAL LIMITED

C. B. Selmser

CBS:MJM

C. B. Selmser, P. Eng.

GEOLOGICAL REPORT
SILVERKNIFE MINES LIMITED
TOOTSEE RIVER, LIARD M.D.
PROVINCE OF BRITISH COLUMBIA

for

SILVERKNIFE MINES LTD.
VICTORIA, B. C.

by

GEO CAL LIMITED
WEST VANCOUVER, B. C.

November 25, 1967

By C. B. Selmser, P. Eng.

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MAPS

SUMMARY

Silverknife Mines Ltd., (NPL) holds a block of 112 contiguous mineral claims (9 square miles) near Teetsee River, 17 air miles south-southwest of the Alaska Highway at Mile Post 701. The property consists of the Silvertip group of 30 claims and the Topaz (Ruby) group of 62 claims and the Bell (Rod) group of 16 claims. In addition to these groups there are also Ex. H. 1, 2 and 3 claims.

The original showings were discovered in 1955 and consist of Silver-Lead mineralization. This mineralization was later developed both on the surface and underground. Assays taken both in drifts and in diamond drilling show that these deposits have a large Silver content. The 4 oxidized gossan zones contain boulders and nodules of argentiferous galena. Samples from these zones averaged over 98 ounces of Silver per ton with a 2.0 to 1 Silver to Lead ratio.

Since 1956 several companies have spent more than $630,000.00 on access roads, diamond drilling and underground workings besides doing extensive trenching on the surface. These groups include Conwest Exploration, Canadian Exploration Ltd., Noranda, Bralorne; Chapman, Wood, Griswold Ltd., and the present interests. In addition AFMAG. I. P. and Airborne E. M. and Magnetic surveys have been carried out over the general area.

This report deals specifically with the area located west of the Camp Fault, but some drilling has now been completed east of this fault and an approximate tonnage for this area will be included in this report. In former reports on this area there was a conflict

they probably are fracture at rt angle to the axes of the folding in the lime.

in conclusions as to the prevalent structural conditions on this property. West of the Camp fault the predominent structures dip steeply to the west and fellow fault zones, while to the east of Zone 4 there are probable zones aligned with the dip of the bedding (20 to 30 degrees southeast.)

note!

(then is purely hypothetical - there is no outcrop.

It is proposed that the surface material of Zone 1, 2, 3 & 4 be removed with D-8 Caterpillars using 3 shank ripper blades and 18 yard scrapers. This material, which consists of frozen talus, can be easily removed at a rate of 900 tons per hour. Since there are 1.8 million tons of this material with at least an average grade of Silver of 97.99 ounces per ton, Lead of 50.3% and Zinc of 1.22% a mill rated at 1500 tons per day is necessary, with an increase to 2000 if warranted.

!!

wrong ?

The mill would concentrate the material removed by the scrapers to an average grade of galena of 70% which would contain approximately 150 ounces of Silver. This concentrate would then be trucked to a railroad loading point at Whitehorse, Y. T. (250 miles.) This part of the work will be preceded by the test milling of 2 to 3 tons of material to ascertain exact average grades and to decide on the best way of concentrating this material for shipment.

The scraping operation would take approximately 10 months to finish at which point the broken material would be completely stock-piled. The concentration of this stock-piled material would then take at least 4 years to mill at which point the operation might be shifted to an underground operation to remove the rest of the projected ore.

The direct worth of the ore would be at least $300.00 per ton. This would provide a return of about 600 million dollars or 150 million per year of operation.

Other subsurface ore bodies to be produced from Zones 2, 4 and 8 would provide tonnage and grades as follows:

ZONE 2 (1.08 million tons)

Ag	Pb	Zn
13.2 oz.	10.16%	3.04%

ZONE 4 (0.9 million tons)

Ag	Pb	Zn
14.96 oz.	10.08%	8.7%

ZONE 8 (1.0 million tons)

Ag	Pb	Zn
15.65 oz.	15.94%	8.92%

Other possible ore as depicted on the geological section would add another 20 million tons with an estimated grade averaging Ag 13 oz. Pb 10% and Zn 7%. This amount of tonnage would call for a much larger operation and a large increase in through tons per day for concentration.

It is proposed that for the present 4 million dollars be spent for a plant and the stock-piling of the ore from the material at the surface on Zones 1, 2, 3 & 4.

This might be divided as follows:

Concentration plant 1500 tons @ $2000.	3 million dollars
Stock-piling ore (2000 hrs. @ $500.00)	1 million dollars
Add for General Exploration	1 million dollars
	5 million dollars

INTRODUCTION

Two days were spent at this property doing a survey by airborne methods and another two days were spent in examination of the access and main workings. The survey was first based at the Rancheria Camp at Mile Post 701 on the Trans-Canada Alaska Highway. The next excursion was made by 4-wheel drive vehicle over 17 miles of very rough access road to the property.

On the second visit to the property, the author was accompanied by Mr. Andy Zborovszky, a prospector, who was one of the original discoverers of the showing. Much valuable time was saved by being guided to the principal locations and having the previous work explained on the spot by this very able prospector, who has been in attendance at the property while all of the previous work was being carried out.

After a second ride out to the highway over the access road it was quite apparent that this road would need some improvement before much concentrated work could be performed at the location. Several of the fords should be bridged and surface rock should be placed over the rough sections.

Since visiting the property the author has been making an assessment of this property using information on recent drilling in order to direct the development of this property. All of the former work on the property has now been compiled under one cover and has been reassessed in order to present average grades and tonnages.

LOCATION AND ACCESS

This property may be reached from Mile Post 701 on the Alaska Highway by a 4-wheel drive trail, which follows the valley of the Little Rancheria River south for 17 miles, where a crossing is made over the Tootsee River. Shortly after this the boundary between the Yukon and British Columbia is crossed. At this point entry is made into the northern part of the property.

The access road requires considerable improvement before any concentrated effort can be made to market the concentrates. Bridges would have to be built across the Rancheria and Tootsee Rivers to insure all season travel. The road must also be graded and fill be placed over some parts to insure a smoother passage.

Truck haul on the Alaska Highway would be 217 miles to the railhead at Whitehorse. From Whitehorse it would be 111 miles to ocean transport at Skagway, Alaska, using narrow-gauge railroad.

THE PROPERTY

The property of Silverknife Mines Ltd. consists of 112 claims divided into 3 general groups; The Silvertip, Topaz (Ruby) and Bell (Rod) groups and the extension claims Ex. No. 1 and No. 2 and H.

The company holds the Bell (Rod) group and is a holder of an option to acquire the rest of the claims. All of the above described claims are in the Tootsee River area of northern British Columbia.

GEOLOGY

This property lies in a limestone belt which is in contact with the Cassiar granite batholith. The karst topography with sink holes has been disrupted by faulting in the competent limestone strata. This has caused prominent scarps toward the north and gently dipping slopes toward the south. The drainage meanders in and out of this topography and exhibits a terellis pattern with some captured drainage systems which are at right angles to the regional drainage pattern.

The upper ridges which are at an elevation of 5500 feet a.s.l. exhibit alpine characteristics with bald ridges incised by glacial cirques. The lower valleys which are wooded are at an elevation of slightly less than 4000 feet a.s.l. The trees in the area are composed of spruce, balsam and jackpine.

On higher ridges a very marked contact between the limestones and overlying phyllites is exposed. This contact has a mean dip of 25^{o} toward the southeast. On the northern facing scarps, this rock appears as a dip with a most consistent demarkation which might indicate a fault contact.

A strong shear zone 2 miles wide, striking N 15^{o}E passes along the northeast edge of the claims and divides Cambrian and Paleozoic rocks. This is approximately $2\frac{1}{2}$ miles southeast of the granite contact. Northeast and northwest trending faults can be related to the main fault structure.

The bedrocks in this area are probably Mississippian in age. The older succession of rocks would probably be quartzites and shales in contact with Cambrian quartzites. The Mississipian limestone is in turn overlain with shales and then quartzite. Since the rocks in this area are as yet unclassified it is not possible to set out a table of formations.

HISTORY

The original showing was found by 4 prospectors working on a provincial grant in the Fall of 1955. These men staked the original claims in June 1956 and did some assessment work in the form of trenching. The trenching exposed 4 parallel zones with oxidized galena.

Conwest Explorations optioned the property in 1956. They built the present 4-wheel drive access road and constructed camp buildings. They diamond drilled 1908 feet of core and bulldozed some trenches. They also drove the 2 cross-cutting adits lower and upper, with a total length of 1950 feet. They also drilled 650 feet of core in the underground levels.

The Noranda-Bralorne joint venture was started next and performed 3,024 feet of underground diamond drilling. Some downward extension of the surface showings was obtained at this time.

Peerless Oil and Gas Company and Pegasus Exploration Ltd. enlisted the help of Chapman, Wood and Griswold Ltd. to carry out further work on the property. This consisted of an AFMAG survey with inconclusive results and an Induced Polarization survey, which gave indication of further ore indications. They also did a photo geologic survey and conducted a geochemical survey. Some subsequent drilling struck prominent fault and shear zones and found some pyrite mineralization. Out of the total drilling one hole showed strongly mineralized galena, sphalerite and chalcopyrite.

The photo geologic study revealed a whole system of faults, which cut the bedrock into blocks. These are traced on the

plan accompanying this report. The (THM) geochemical survey on the other hand gave conclusive evidence of heavy mineralization in the area where the IP survey was made as well as in small areas north and south of this location.

In 1966 Rodstrom Yellowknife Mines did 2243 feet of rotary drilling in this area. This drilling pointed toward some mineralization in the area covered by the IP survey. In 1967 an Airborne EM survey gave good correspondence with the geochemical survey. This work has now been followed up with diamond drilling under the direction of the author.

MINERALIZATION

The original surface showings are composed of altered mineralization with manganese and iron carbonates. Pebbles of galena and pieces of decomposed sphalerite have evidently been carried downward from fault zones. Assays made of this material yield 98 ounces of silver per ton and 50% lead per ton. Underground intersections of these zones are also decomposed and altered showing that the depth of alteration is great at this locality. The prominent sulphides present are galena, sphalerite and pyrite in ratio of 2 to 1 to 1. Other minerals present are chalcopyrite, tetrahedrite, cerargyrite, cerussite, anglesite, bornite, quartz, hematite and limonite. The galena is 10% of the out-cropping material and the oxidized vein material at depth. The cuttings recovered at depth by the core drilling contained 163.4 oz. of silver per ton, and 52.5% lead per ton.

not true

The main zone (No. 2 zone) was not cut by the Lower Adit. The No. 4 zone was cut by the Lower Adit 600 feet down dip. The exposure was much the same as at the surface being decomposed with much the same mineral composition. The sections in the underground drilling show the presence of the number 2 zone at the 4500 foot level and 600 feet southeast of the lower adit. The results of the drilling, muck sampling and channel sampling are shown below:

D.D.H. No. 12 (Surface, 2 zone)

Ag	Pb
6.7 oz.	3.87%

no width stated anywhere

D.D.H. No. 14 (Surface, 2 zone)

Ag	Pb
2.0 oz.	1.42%

NUMBER 2 ZONE (Surface and Subsurface)

Ag	Pb	Zn
13.2 oz.	10.16%	3.04%

NUMBER 3 ZONE (Surface)

Ag	Pb	Zn
119.83 oz.	68.15%	0.47%

NUMBER 4 ZONE (Surface

Ag	Pb	Zn
160.94 oz.	72.6%	0.15%

NUMBER 4 ZONE (Subsurface)

Ag	Pb	
11.67 oz.	8.29%	(channel samples)
18.25 oz.	11.86%	(muck samples)
14.95 oz.	10.08%	(average)

NUMBER 8 ZONE (Surface and Subsurface)

Ag	Pb	Zn
15.65 oz.	15.94%	8.92%

The underground drilling from the end of the Lower Adit did not give reliable assay values, since the oxidized material was either lost in coring or flushed out by the drilling fluid. Future drilling on these zones would seem to demand air percussion drills and sampling of the cuttings bailed out of the hole to give reliable averages. Some selected assays made by Conwest and the later operators are outlined as follows:

SURFACE CUT

NUMBER 2 ZONE (Surface & Subsurface)

	Ag	Pb	Zn
	10.60	4.60	1.00
	2.90	4.10	1.00
	4.40	5.00	1.30
	2.70	4.40	1.50
	1.70	3.00	1.40
	1.40	6.30	1.70
	1.84	8.20	6.40
	11.10	8.50	6.10
	5.00	6.90	1.90
	7.40	7.90	1.80
	124.08	74.70	0.90
	26.14	26.60	.01
	12.10	9.90	2.30
	17.02	12.00	2.00
	9.70	9.20	2.20
	7.06	6.10	8.00
	5.42	7.80	2.10
	5.90	5.40	4.70
	2.30	3.50	2.70
	2.88	5.60	3.40
	1.72	5.80	2.60
	3.65	5.09	2.05
	7.80	7.70	3.20
	10.20	9.00	3.30
	4.10	4.50	3.70
	2.30	5.70	3.00
(27)	75.11	38.60	2.00
	356.53	296.09	82.26

NUMBER 3 ZONE (Surface)

	151.40	78.00	0.50
(2)	88.26	58.30	0.45
	239.66	136.30	0.95

NUMBER 4 ZONE (Surface)

	191.26	77.7	0.10
(2)	130.62	67.5	0.20
	321.88	145.2	0.30
	13.20	10.16	3.04
	119.83	68.15	0.48
(3)	160.94	72.60	0.15
	293.97	150.91	3.67

ZONES (2, 3, & 4)

Av.	97.99	50.30	1.22

DIAMOND DRILL HOLES

D.D.H 4

	Ag	Pb	Zn
	41.40	13.10	
	2.50	1.98	
	63.30	22.52	
(4)	57.50	14.90	
	164.50	52.50	

Av.	Ag	Pb
	41.1	13.1

D.D.H 12

6.70	3.87	
2.30	0.88	
5.60	3.65	
10.90	6.64	
(5) 8.00	4.32	
33.50	19.36	

Av.	Ag	Pb
	6.7	3.87

D.D.H.14

1,56	1.30	-			
1.10	1.10	-			
1.22	1.20	-			
1.38	1.20	-		Ag	Pb
3.30	2.76	-			
3.00	1.16	-	Av.	20	1.42
2.10	.96	-			
2.30	1.46	-			
1.90	1.54	-			
(10) 2.10	1.50	-			
19,96	14.18				

D.D.H. 11

7.44	2.90	8.70

NUMBER 4 ZONE (Subsurface)
Channel Samples

Ag	Pb	Ag	Pb
7.90	2.25	17.85	15.80
1.80	1.95	13.55	13.30
15.90	11.80	26.65	16.50
1.40	1.45	19.20	16.90
4.40	5.35	29.20	15.30
1.20	1.60	36.00	29.90
1.40	1.45	25.30	15.70
1.20	1.60	21.55	14.40
7.60	3.35	24.35	21.60
1.30	1.55	8.15	5.10
3.40	3.45	16.00	8.60
4.90	4.45	3.07	3.89
2.30	2.00	22.18	16.45
1.30	1.50	5.50	4.50
3.20	2.20	(15) 13.19	6.79
6.10	4.55	281.74	204.73
(17) 7.10	3.75		
72.40	54.25		

Ag	Pb	Ag	Pb
		4.70	4.40
		7.65	4.70
8.10	7.25	(12) 7.50	2.70
3.70	1.35	143.65	96.50
36.60	16.90		
13.30	8.40		
15.70	15.70		
3.95	2.70	Av. 4.26	3.19
23.00	22.20	11.97	8.04
2.90	2.80	18.78	13.65
16.55	7.40	35.01	24.88
		11.67	8.29

NUMBER 4 ZONE (Muck Samples)
Lower Adit

	Ag	Pb
	16.30	7.80
	62.30	19.40
	15.60	6.70
	86.40	24.40
	45.15	19.02
	6.55	3.65
	10.63	10.25
	20.30	18.45
	17.70	17.63
	7.30	13.92
	10.70	15.00
	9.47	7.28
	5.60	7.12
	5.93	6.12
	8.90	1.90
	3.88	2.97
	4.85	6.92
	2.92	3.42
	11.15	15.40
	25.20	24.12
	28.37	25.12
(22)	4.44	4.34
	401.64	260.93

NUMBER 8 ZONE

	Ag	Pb	Zn
	29.20	27.30	4.00
	17.34	19.30	4.40
	12.36	14.10	27.20
	7.68	7.90	4.40
(5)	11.64	11.10	4.60
	78.22	79.70	44.60
Av.	15.65	15.94	8.92

NUMBER 4 ZONE

	Ag	Pb
Av.	11.67	8.29
(2)	18.25	11.86
	29.92	20.15
	14.96	10.08

Note:

Zone 1 and other possible concentrations of mineralization are also shown on the Geological Section A to B. The contact zone has been cut by at least 3 holes in recent drilling, but assays are not available at this time. All of these locations must be drilled with air percussion drills to obtain reliable average grades.

ECONOMICS OF PRODUCTION

Recent practice in the southwest part of the United States has pointed up the cheapness and ease of surface mining using ripper-tractor and scraping methods. The use of a parallelogram ripper with a D8H Caterpillar tractor would break up the frozen talus within the boundary of the cut area (see Geological Plan) and could be used also to deepen the cut area to the 5100 foot level, (See Geological Section.) An engineering Seismograph can be used, while the operation is progressing, to determine the rippability of the limestone bedrock. Often extremely hard material can be ripped if it lies in fractured planes, is laminated and is laced with softer foreign material. All of these conditions exist at this property.

The scraping and stock-piling of the material could be carried out with 18 yard scrapers. Each would have an average rate of over 900 tons per hour. After the ore was stock-piled, the transfer to the concentrating plant could be accomplished most cheaply with a 5 yard articulated wheel loader.

Ripping procedures could be used for a cost of less than 15 cents per ton and the scraping cost would be about 20 cents per ton. If the wheel loading cost another 15 cents per ton, this would mean an average cost of 55 cents per ton for mining and delivering to the concentrator.

Concentration costs to provide an average grade of 150 oz. of silver and 70% galena would not be more than $1.50 per ton. Transportation to a smelter would vary as to routes but should not be more than 35 dollars per ton. If this is the case the concentrate would yield at least $300.00 per ton for the total minable grade or $600 million dollars for the surface cut area.

RECOMMENDATIONS

It is at this time proposed that the Surface Cut Area be mined with a year being consumed in stock-piling the ore and that a mill be constructed to provide the concentrate. Other areas will be drilled concurrently to obtain the total tonnage and average grade of the sub-surface mineralization.

The mill would be of a 1500 ton per day capacity and would run for a period of 4 years to consume all of the minable grade ore in the Surface Cut Area. The concentrate would be trucked from the mill-site to railroad loading facilities at Whitehorse. From there the ore concentrate could be trans-shipped at the coast to any point served by ore carrying freighters.

The author is indebted to Mr. Ace R. Parker, mining engineer, for material which has been compiled in this report and for his efforts in the field in mapping and resampling the surface deposits. He has also been in agreement with the author on the preliminary mining of the surface deposits in order to expose the bedrock for further geological study and development.

After the surface bedrock has been thoroughly exposed and concurrent precussion drilling has blocked out all possible underground mineral deposits another geological report will be made. The result of this study may entail further assessment of the underground mineral deposits and a feasibility study and report for a permanent milling and mining arrangement.

Respectfully submitted,

GEO CAL LIMITED

C. B. Selmser

C. B. Selmser, P. Eng.

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CERTIFICATE OF QUALIFICATIONS

The formal education of the author consists of undergraduate studies at Union College, Schenectady, N. Y., in engineering and science with a degree conferred as B. Sc. Graduate study was taken at McGill University and at the University of Toronto in mining geology and geophysics with a degree conferred as M. Sc. He is qualified both in engineering geology and geophysics as a professional engineer.

The author has had some twenty years' experience in the fields of geology and geophysics doing exploration work throughout Canada. He has also worked for a short period of time in the Transvaal region of South Africa.

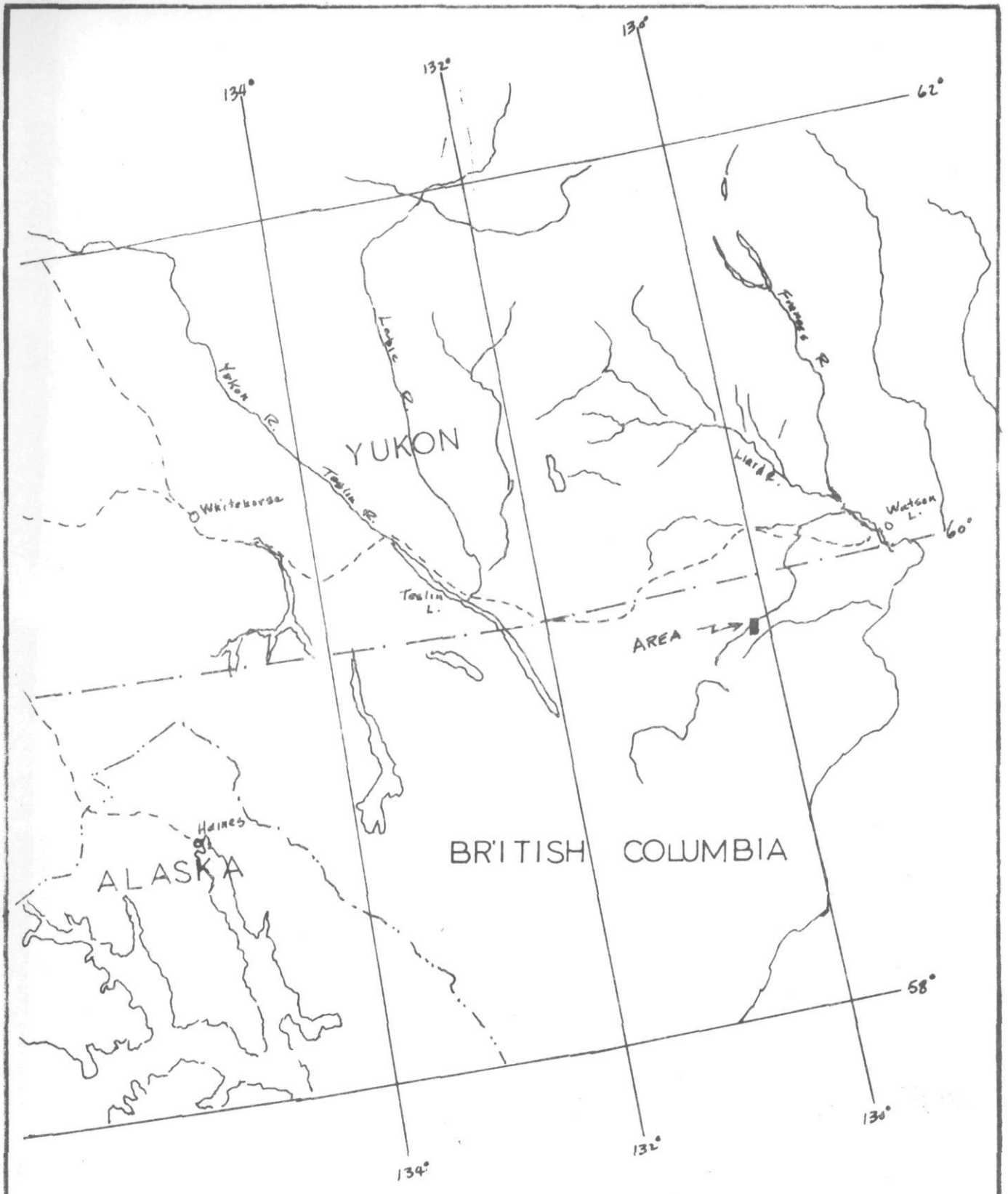
The author has been a member of the Association of Professional Engineers of Ontario, Alberta and British Columbia for the past 14 years. He is at present an active member of the Association of Professional Engineers of British Columbia with certificate number 4683.

His knowledge of the property outlined in this report has been gained from the surveys. Reference has also been made to government reports and pertinent texts.

The author has no interest in the property of the company or in securities thereof either directly or indirectly and does not expect to receive any such interest in the future. He is acting wholly as a consultant to the interested principal. Any remuneration received has been for expenses incurred during the survey and for his professional services.

C. B. Selmser

C. B. Selmser, P. Eng.



LOCATION MAP

1 in. = 46 mi.

Fig. 1