

THE GEOLOGY OF THE ETZEL CLAIMS
Latitude 63°39' Longitude 131°55'W
NTS 105-0-12, MAYO MINING DISTRICT
YUKON TERRITORY

Report Submitted for Assessment Credit
D. H. James
Union Carbide Exploration Corporation
Vancouver, B.C.
October, 1982

091378

This report has been examined by
the Geological Evaluation Unit
and is valued at \$5,400 Yukon Quartz
All expenses are allowed as
representative of the amount
of \$ 6,400-

P. Watson

P. Regional Manager, Exploration and
Geological Service for Commissioner
of Yukon Territory.

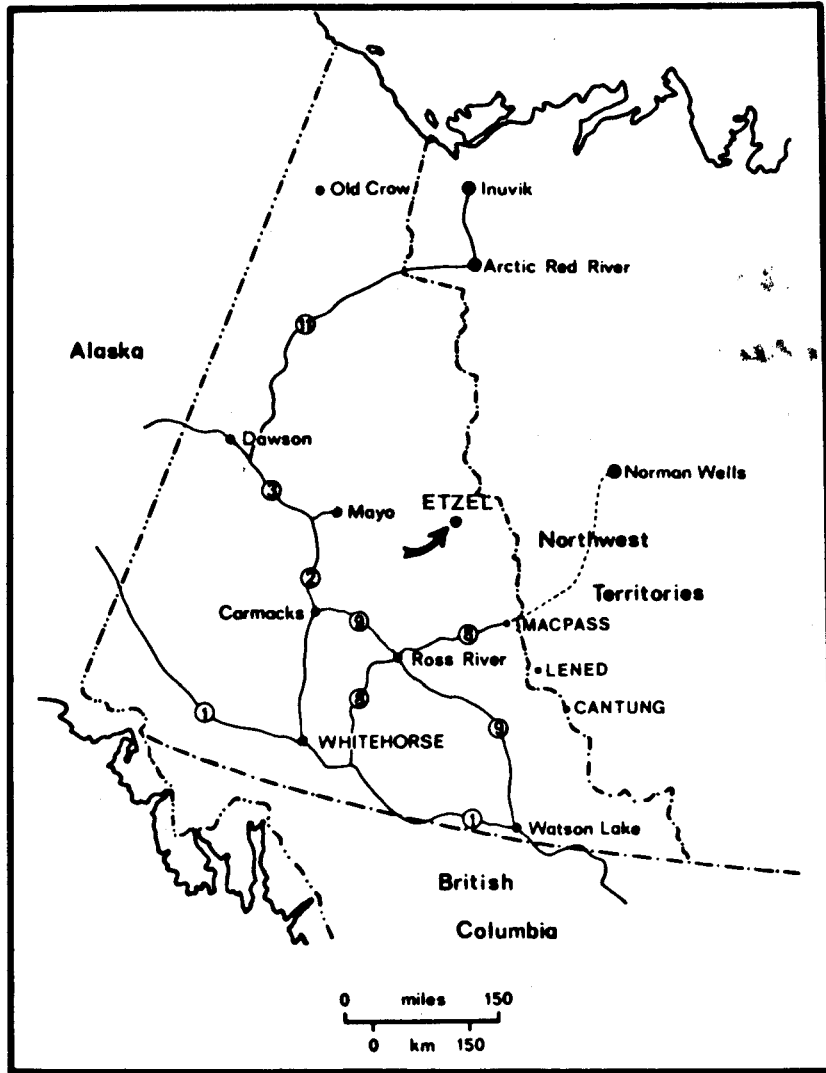


Fig. 1. Locality of the ETZEL Claims.

I N D E X

1.0	<u>INTRODUCTION</u>	Page 1
	1.1 General	1
	1.2 Location	2
	1.3 Access	2
	1.4 Topography	2
	1.5 Climate	3
	1.6 Logistics	3
	1.7 Claims	3
2.0	<u>GEOLOGY OF THE ETZEL CLAIMS</u>	4
	2.1 Previous Geological Mapping	4
	2.2 Stratigraphic Description	4
	a. Hadrynian, Cambrian and Ordovician	4/5
	b. Silurian(?) Volcanics	5/6
	c. Devonian Sediments	6
	d. Mid-Cretaceous Granodiorite	6/7
	e. Quartz Veining	7/8/9
3.0	<u>CONCLUSIONS AND RECOMMENDATIONS</u>	9/10

STATEMENT OF QUALIFICATIONS

MAP 1, PLATE 1

TABLE 1 SAMPLE SUMMARY

APPENDIX I SUMMARY OF COSTS

1.0 INTRODUCTION

1.1 General

During the years 1971 - 1976 several grass roots exploration programs were conducted in the Niddery Lake area (NTS 105 - 0), Yukon. At that time stream concentrates were analysed primarily for WO_3 and Cu. In the first quarter of 1981 the stored samples from selected areas within the Niddery Lake area were re-analysed for gold, silver, molybdenum and arsenic and a number of sites anomalous in these elements were recognized. A small low-key, low budget prospecting program was instituted for the summer of 1981 to follow-up the anomalous gold and silver stream geochemistry.

Anomalous gold and silver values appeared to be associated with granodiorite intrusion south of the Rogue River. Prospecting and stream geochemistry were conducted on two separate days - 11 July and 8 August, 1981. Some 22 rock chip samples and 29 stream samples (panned concentrates and silts) were collected and analysed. A massive yellow-green weathering stibnite boulder 1m in diameter was discovered in a rock glacier directly NW of the intrusion. Veins within the intrusion contained quartz, pyrite, galena, arsenopyrite and stibnite. On the basis of these results it was decided to stake the property. Thirty-two claims were staked as the ETZEL claims, which were registered on the 2 September, 1981. This report supports an application for assessment credit which will hold the claims valid to 2 September, 1984.

The primary purpose of the 1982 program was to map the property, locate the origin of the large stibnite boulder and assess

the importance of the veins. No 1:10,000 scale contour map was available due to a "hole" in the existing aerial photography and so a sketch map to an approximate 1:20,000 scale was prepared.

1.2 Location

The ETZEL claims are located at 63°39'N: 131°55'W in the Mayo Mining District of the Yukon Territory (Fig. 1). The claim group is situated in mountainous terrain 7 km south of the Rogue River. MacMillan Pass lies 105 km to the south east.

1.3 Access

Access to the property is hampered by extremely rugged terrain. Fixed wing float planes can land at Arrowhead Lake or Emerald Lake - both approximately 35 km to the west. Further access is by helicopter. Contract helicopters are available from MacMillan Pass which is served by a summer schedule air service out of Whitehorse. MacMillan Pass is connected to Ross River by the all-weather North Canal Road.

1.4 Topography

A rugged northwest trending ridge attaining an elevation of 7,000 ft (2,100m) forms the southern property boundary. Five north and northeasterly trending ridges emanate from the main ridge, the largest and most easterly of these, Misty Ridge, connects below a conical peak with a further northwesterly trending ridge that cuts across the northern property boundary (Map 1). Streams drain northwest and east from Misty Ridge. Outcrop is confined to the ridge tops and cirques above 5,000 ft. (1,500m). The remainder of the area is grass and bush covered.

1.5 Climate

The combination of steep terrain and elevation results in a majority of the property being snow covered from early September until late June. During the two short summer months daily weather conditions can be extremely variable, ranging from cool, wet conditions with occasional snowfalls to warm dry weather. Winter snowfall normally exceeds 3 metres and annual temperatures vary from a low near minus forty to highs approaching twenty-five (Celsius).

The configuration of the topography seems to encourage precipitation. During the period of mapping fog and mist would envelope the southwest ridge and cirques during the morning. As a result boulders within the cirques are totally covered with wet, black, slippery mosses and lichens. Vegetation on Misty Ridge is more abundant than normal.

1.6 Logistics

Exploration was conducted from the Union Carbide camp on the OLD CABIN claims 24 km to the east. A helicopter (Terr-Air Rotary Ltd. Hughes 500-D) was used for daily set-outs and pick-ups. A fuel cache was established at Emerald Lake 20 km south-east of the OLD CABIN camp. Mapping was conducted in the period 5 - 8 August, 1981.

1.7 Claims

The ETZEL claims were staked by Union Carbide personnel in August, 1981. The claims were registered on the 2 September, 1981. Details are as follows:

ETZEL 1 - 32 YA 75992 - 76023 NTS 105-0-12

2.0 GEOLOGY OF THE ETZEL CLAIMS

2.1 Previous Geological Mapping

Early geological mapping by the Geological Survey exists in the form of an Open File Map 205 dated June, 1974. Map scale is 1:250,000 (approximately 1 inch to 4 miles). The individual units have been broadly defined. According to this map the ETZEL claims straddle the contact between the "Grit Unit" (Hs) of Hadrynian and Cambrian age, and Ordovician to Mississippian sediments (Ps). A Mid-Cretaceous granodiorite stock has intruded the contact in the centre of the claim block.

2.2 Stratigraphic Description

a) Hadrynian, Cambrian and Ordovician

The "Grit Unit" occupies the northern half of the claim block. The lowermost exposed rocks are maroon and green shales interbedded with minor brown weathering shales. This unit is characterized by recessive weathering. It underlies gently sloping, usually grass and brush covered slopes. The unit grades upwards into brown weathering shales with interbedded argillites and thinly bedded fine-grained sandstones. The upper part of the unit outcrops near the crest of the northwest trending ridge on the property. Small scale folding has resulted in local open anticlines and synclines. In contrast the "Grit Unit" exposed on the hill in the north-eastern part of the property appears undisturbed, dipping gently northwards.

The "Grit Unit" is capped by orange or grey weathering

limestone beds. North of Misery Cirque the limestone is partly in fault contact with the overlying Early - to Mid-Devonian sediments. However the latter sediments appear to be underlain by a brown weathering grey phyllite south of Misery Cirque. The phyllites are probably metamorphosed equivalents of the brown weathering shales with minor argillites and sandstones. In support of this statement it was noted that the maroon shales of the "Grit Unit" appear to change in colour and character closer to the granodiorite pluton. The maroon colour changes to purple and the shales become harder and more resistant. Below Spiral Will Peak the sediments surrounding the northern contact of the granodiorite have been completely metamorphosed into a brown, largely massive, brittle hornfels.

b) Silurian(?) Volcanics

Grey weathering intermediate to mafic volcanic flows outcrop east of Spiral Will Peak. The volcanics are flat-lying and form terraced scarp faces east of the pluton where the sequence is at least 250 ft. (80m) thick. The steep scarp faces owe their origin to columnar jointing. This unit thins northwards and eastwards. The rock weathers to a grey or black cindery or pitted surface which emphasizes individual flow units. Amygdales and vesicles are calcite and chlorite filled. Open File Map 205 indicates that these volcanics are of Hadrynian or Cambrian age (Unit Hv). More recent work by the G.S.C. suggests the volcanics may be of younger, possibly

Silurian, age.

c) Devonian Sediments

The ridge forming the southwestern property boundary comprises a very thick sequence of massively bedded chert pebble conglomerate. The total thickness is unknown as the top of the ridge was not mapped. These rocks weather to a dark chocolate brown. They are extremely resistant to weathering and form the jagged steep sided ridges. The conglomerate is remarkably uniform and contains rounded to angular pebbles and cobbles of grey, black, green or whitish chert set in a fine-grained quartz matrix. No bedding was noted. This unit has been accorded a Middle to Late Devonian age by the G.S.C.

The chert pebble conglomerate is underlain by a sequence of thin-bedded black and white cherts, cherty argillites, chert conglomerates and black siliceous shales. Some of the black shales carry disseminated pyrite. These sediments belong to the Early to Middle Devonian.

d) Mid-Cretaceous Granodiorite

The granodiorite forms an irregular shaped intrusion approximately 1 km X 1 km in size. The best outcrop underlies Misty Ridge. Most of the pluton comprises a medium- to coarse-grained equigranular white to grey weathering granodiorite. Mineral composition is quartz, K-feldspar, plagioclase, biotite and hornblende. Grain size is slightly finer near the northern margins of the pluton and coarse-grained at the

southern contact, where in the presence of quartz veining it resembles a quartz porphyry. Towards the centre of the pluton stubby feldspar phenocrysts are more commonplace.

e) Quartz Veining

Quartz veining is confined largely to the granodiorite. It is prolific and several generations are represented. The earliest veins occupy a regularly oriented vertical and horizontal joint system that is probably related to cooling shrinkage of the pluton subsequent to emplacement (Plate I). The early quartz veins are cut by a later generation of quartz veining with associated hydrothermal alteration. In areas of intense quartz veining the quartz grains are enlarged and rounded by overgrowths giving the rock the general appearance of a quartz porphyry. Potassic alteration is characterized by green-tinted sericitized plagioclase, which is recognized by rusty-weathering zones surrounding the vein on exposed surfaces. Minor chalcopyrite was noted in some of these veins. Pyrite-arsenopyrite - (stibnite?) mineralization seems to be associated with gently south dipping quartz veins. Sulphides preferentially concentrate along the vein margin. Small pockets of disseminated mineralization occur at the intersection of these and the sericitically-altered veins. Nowhere did these veins occur with sufficient abundance to be regarded as economic.

The small southwestern tongue of granodiorite shows the

strongest "quartz-eye" porphyry development. Sample 1714 comes from its northern contact. The vein itself was not found in outcrop and the sample was the most impressive from the down-slope rubble train. Sample 1-131-K150B of the 1981 program also came from this locality. The sample (1714) consists of banded vein quartz about 7 cm wide. The centre of the vein is vuggy and is lined with perfectly formed small quartz crystals (less than 4 mm in length) and partly oxidized sphalerite crystals.

The crude banding in the vein quartz is emphasized by thin (less than 4 mm wide) streaks and aggregates of mixed sulphides. Visible sulphides include pyrite, arsenopyrite, galena, very fine stibnite, and yellow brown sphalerite. Secondary yellow-green scorodite staining is ubiquitous.

The source of the stibnite-rich boulder discovered during the 1981 field season was not located. It probably originated in the general area of the vein described above at the contact between granodiorite and chert conglomerate. At this contact passage of the vein would be impeded by the impermeable chert conglomerate. A hydrothermally prepared pocket of altered granodiorite would form acting as a favourable environment for the precipitation of sulphides. The normal upward sequential precipitation, or zoning, of sulphides would also be disrupted at this point. Stibnite is found typically as a low temperature hydrothermal vein mineral and its association with arsenopyrite, galena and sphalerite, normally regarded as higher temperature sulphides, points to the superimposition of sulphide precipitation.

Therefore physiochemical constraints imposed on the hydrothermal system by the restricted passage of vein-forming fluids at the granodiorite - chert conglomerate contact resulted in the complex, or telescoped, sulphide mineralogy that is seen in the vein material recovered near the southern granodiorite contact.

This zone presents itself as the most favourable exploration target.

3.0 CONCLUSIONS AND RECOMMENDATIONS

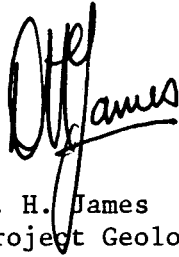
There is no individual vein of sufficient magnitude to constitute a bonanza-type orebody.

Superficially the intensity of veining, separate generation of auriferous arsenopyrite and minor chalcopyrite veins accompanied by hydrothermal alteration and quartz-eye porphyries (quartz overgrowths) point to the possible existence of a bulk-tonnage low-grade deposit hosted by the granodiorite pluton. However the sulphide content is too low, and the location too remote for this type of deposit ever to be regarded as economically viable.

The only remaining possibility for economic concentrations of ore-grade material would be at the contact of the granodiorite, specifically the contact with impermeable chert conglomerate. Most of this contact has been exposed by erosion though it is largely debris covered. A partially exposed orebody of this type would show up as numerous fragments in the boulder field. Since only one stibnite boulder and occasional vein fragments have been found to date the existence of this type of orebody is unlikely.

In summary the 1982 mapping program did not locate the origin

of the stibnite boulder found in 1981, although the geological environment in which it may have formed is proposed. This environment, at the contact between granodiorite and chert conglomerate, has been exposed by erosion and has not yielded evidence of an ore-body. Veins within the granodiorite pluton do not carry sufficient sulphides to be economic. On these ground no further work is recommended and the claims should be allowed to lapse in 1984. Competitor activity in the immediate neighbourhood would be the only reason for proposing a more detailed examination of the property.

A handwritten signature in black ink, appearing to read 'D. H. James', with a stylized flourish extending from the bottom.

D. H. James
Project Geologist

STATEMENT OF QUALIFICATIONS

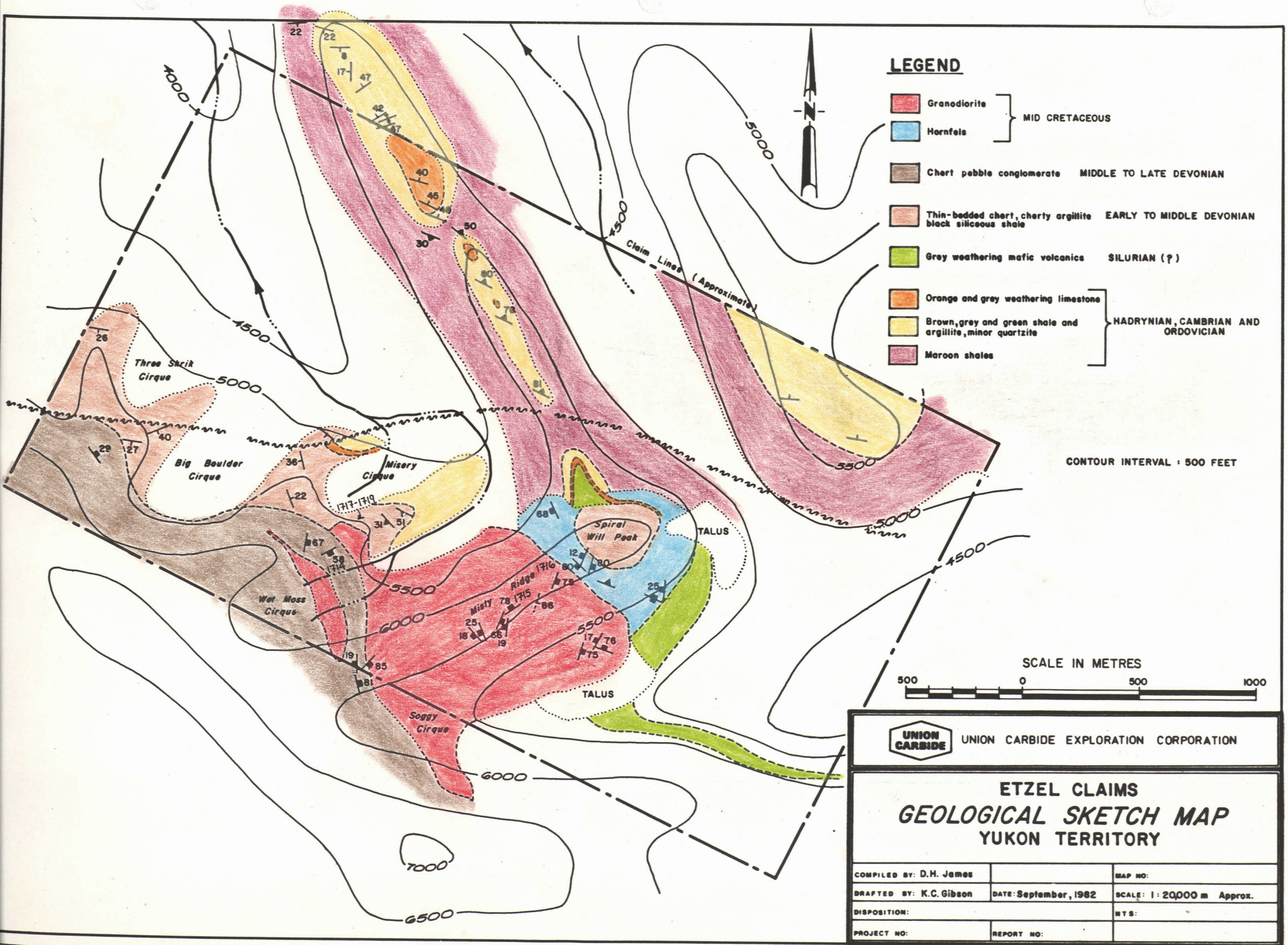
I, Dereck H. James, do hereby certify that:-

1. I am a professional geologist employed by Union Carbide Exploration Corporation.
2. I hold the following graduate degrees:-
 - a) B.Sc (Eng.) Mining Geology - University of the Witwatersrand, Johannesburg, South Africa.
 - b) M.Sc. Mineral Exploration - Royal School of Mines, University of London, England.
3. I have practiced my profession continuously since graduation while being employed by O'Okiep Copper Company, Nababeep, South Africa (1971 - 1976) and Union Carbide Exploration Corporation both in South Africa and Canada (1976 - present)
4. I am a member in good standing of:

The Institution of Mining and Metallurgy, England
The Canadian Institution of Mining and Metallurgy
The Geological Society of South Africa

August 1982
Vancouver, B.C.


D. H. James



LEGEND

- Granodiorite
 - Hornfels
 - Chert pebble conglomerate
 - Thin-bedded chert, cherty argillite
black siliceous shale
 - Grey weathering mafic volcanics
 - Orange and grey weathering limestone
 - Brown, grey and green shale and
argillite, minor quartzite
 - Maroon shales
- } MID CRETACEOUS
- } MIDDLE TO LATE DEVONIAN
- } EARLY TO MIDDLE DEVONIAN
- } SILURIAN (?)
- } HADRYNIAN, CAMBRIAN AND ORDOVICIAN

CONTOUR INTERVAL : 500 FEET

SCALE IN METRES



UNION CARBIDE EXPLORATION CORPORATION	
ETZEL CLAIMS GEOLOGICAL SKETCH MAP YUKON TERRITORY	
COMPILED BY: D.H. James	MAP NO:
DRAFTED BY: K.C. Gibson	DATE: September, 1982
DISPOSITION:	SCALE: 1 : 20,000 m Approx.
PROJECT NO:	NTS:
REPORT NO:	



PLATE I Regularly oriented horizontal and vertical quartz veins in the granodiorite pluton. Canadian national hat for scale.

TABLE 1 SAMPLE SUMMARY

Sample Number	Abbreviated Description	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Cd ppm	Sb ppm
1714	Quartz-arsenopyrite-pyrite-Stibnite vein.	1400	12.1	825	1.2%	2.2%	1.4%	237	2404
1715	Altered granodiorite, with finely disseminated pyrite and arsenopyrite.	410	0.4	12	88	285	6067	1	2
1716	Granodiorite contact zone (north), fine grained with finely disseminated arsenopyrite.	1190	0.1	34	31	28	8748	1	2
1717	Hornfelsed black shale with finely disseminated pyrite.	15	0.5	882	19	227	58	3	2
1718	Partially hornfelsed (siliceous) black shale.	35	0.6	186	19	154	26	1	2
1719	Black shale.	45	1.3	370	47	142	41	1	2



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Report No: **82-93-056**

Page of

Samples Arrived:

Report Completed:

For Project:

Analyst:

Job No.

Invoice No.

Attention:

Fire Assays detected by AAS

Sample Marking	Au ppm					
TZ - 1714	1.400					
15	0.410					
16	1.190					
17	0.015					
18	0.035					
105 - TZ - 1719R	0.045					

MASTER PRINTING LTD.

REMARKS: * Project # 105, Job # 82-158

Signed:

% Mo x 1.6683 = % MoS₂ 1 Troy oz./ton = 34.28 ppm 1 ppm = 0.0001% nd = none detected ppm = parts per million
 All values are believed to be correct to the best knowledge of the analyst based on the method and instruments used.

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 NORTH VANCOUVER, B.C. V7P 2S3

UNION CARBIDE PROJECT # SOLUTION FROM VANGEOCHEM JOB# 82-195 FILE # 82-1199

PAGE #

SAMPLE #	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Hg	Ba	Ti	B	Al	Na	K	N
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
105-TZ-1714R	5	823	12093	22139	12.1	8	1	21	2.59	13906	2	ND	2	5	237	2404	4	2	.01	.01	2	30	.01	64	.01	9	.09	.01	.04	ND
105-TZ-1715R	1	12	88	285	.4	2	2	131	2.66	6067	2	ND	6	3	1	2	2	2	.03	.03	11	29	.02	56	.01	11	.34	.01	.23	2
105-TZ-1716R	1	34	31	28	.1	6	3	11	2.92	8748	2	ND	2	8	1	2	2	5	.02	.01	6	15	.04	140	.01	6	.51	.01	.35	2
105-TZ-1717R	27	882	19	227	.5	135	34	558	8.30	58	2	ND	4	76	3	2	5	351	.67	.14	12	238	1.76	831	.31	3	2.65	.22	1.56	2
105-TZ-1718R	3	186	19	154	.6	29	6	476	2.04	26	12	ND	3	222	1	2	2	137	2.74	1.19	18	47	.80	253	.85	7	1.29	.85	.81	2
105-TZ-1719R	37	370	47	142	1.3	14	2	124	4.32	41	58	ND	5	190	1	2	2	208	2.44	1.32	14	43	.21	244	.82	7	1.15	.82	.41	2

ETZEL CLAIMS NTS 105-0-12

SUMMARY OF COSTS

Helicopter Charges - Terr-Air Rotary Ltd.

5th August	2.2 hrs
6th August	0.6 hrs
7th August	1.1 hrs
8th August	<u>1.8 hrs</u>

5.7 hrs @ \$500/hr \$2,850

Wages \$245 X 3 X 5 days
(4 days fieldwork, 1 day compilation) 3,675

Board and lodging \$30 per man per day 450

\$6,975

Number of claims - 32
Amount per claim - \$218



D. H. James
Project Geologist



Department of Indian Affairs and Northern Development
YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

(This form required in duplicate with sketch showing location of work.)

I (Name)	D. H. JAMES	Occupation	GEOLOGIST
(Postal Address)	#930 - 800 WEST PENDER STREET, VANCOUVER, B.C. V6C 2V6		

OFFICE DATE STAMP

MAKE OATH AND SAY, THAT:-

- I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.
- I have done, or caused to be done, work on the following mineral claim(s):
(Here list claims on which work was actually done by number and name)
YA 75992 to YA 76023 ETZEL 1 to ETZEL 32

situated at ROGUE RIVER Claim Sheet No. NTS 105-0-12
in the MAYO Mining District, to the value of at least \$6,975
dollars, since the 2nd day of SEPTEMBER 1981.


to represent the following mineral claims under the authority of Grouping Certificate No. _____
(Here list claims to be renewed in numerical order, by grant number and claim name, showing renewal period requested).

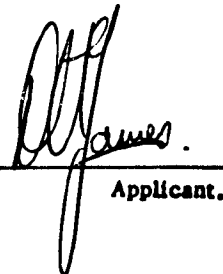
YA 75992 to YA 76023 ETZEL 1 to ETZEL 32
2ne September 1981 to 2nd September, 1984

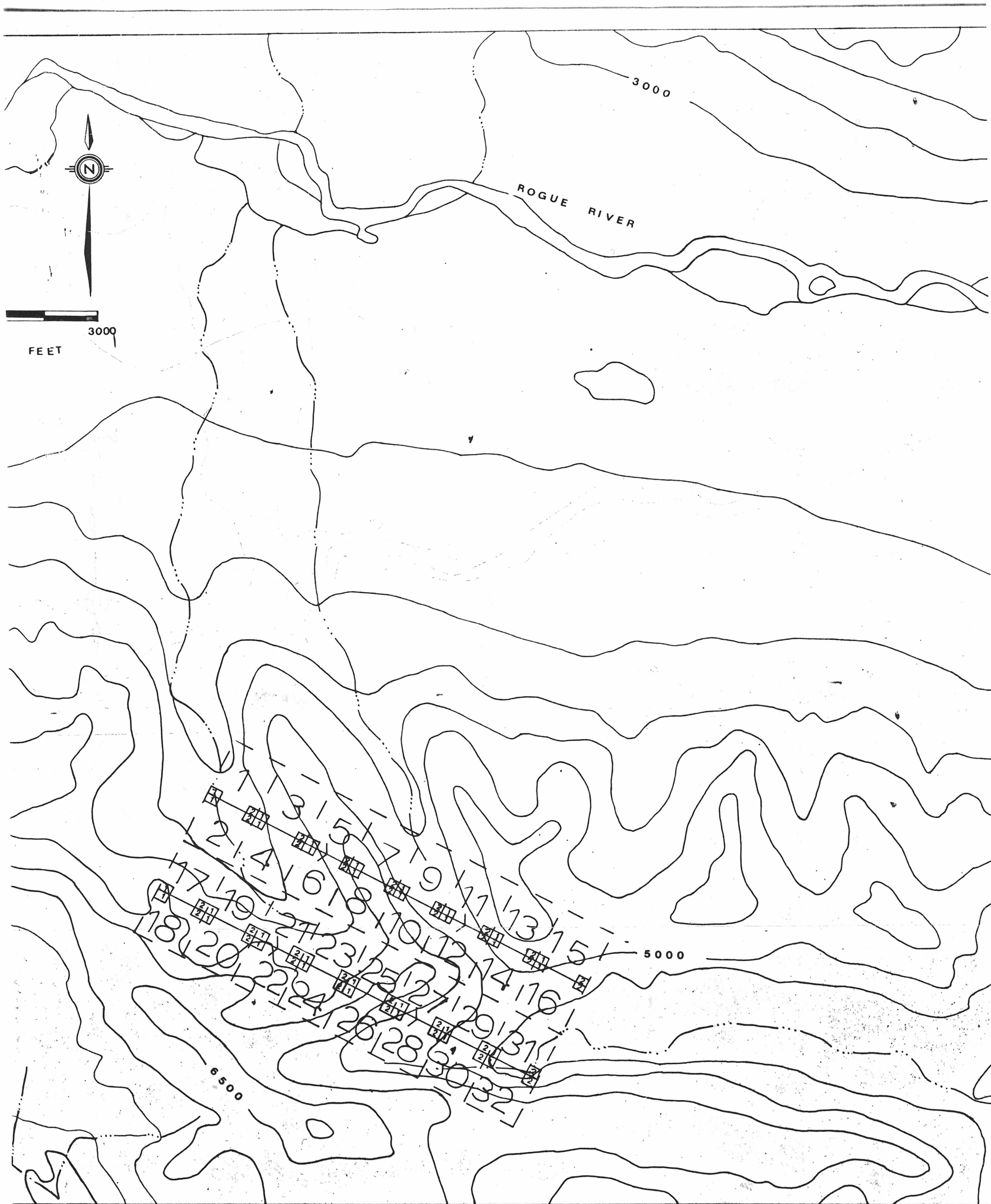
- The following is a detailed statement of such work: (Set out full particulars of the work done indicating dates work commenced and ended in the twelve months in which such work is required to be done as shown by Section 53.)

Geological mapping 5th August - 9th August, 1982
(Supporting report will be submitted by 30th November, 1982).

Sworn before me at VANCOUVER, B.C.
this 2nd day of September 1982


Notary Public


Applicant.



CLAIMS STAKE D

C. KUSS	1-8
D. JAMES	9-16
P. DOYLE	17-24
M. BURSON	25-32
AUGUST 14, 1981.	

105-0-12
MAP 2D

ETZEL CLAIMS
SCALE: 1 inch = 1/2 m
CLAIM BOUNDARY
LOCATION LINE

091378