REPORT OF PIT SAMPLING AND GEOLOGICAL PROGRAM FOG GROUP DUNCAN LAKE, KASLO MINING DIVISION SLOCAN M.)

BRITISH COLUMBIA

(center south of Lardeau one degree quadrilateral, in the southeast corner of which is 50 degrees 50 116 SW north and 116 degrees west; NTS 82K.)

> Prepared for KING RESOURCES COMPANY George A. Wilson, P. Geol., Eng.

George A. Wilson Geological Consultants Ltd. Alberta Calgary

Field work and report completed during periods September 19 - 27, and October 10 - 16, 1967 for King Resources Company.



1561

REPORT OF

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LIST OF ILLUSTRATIONS

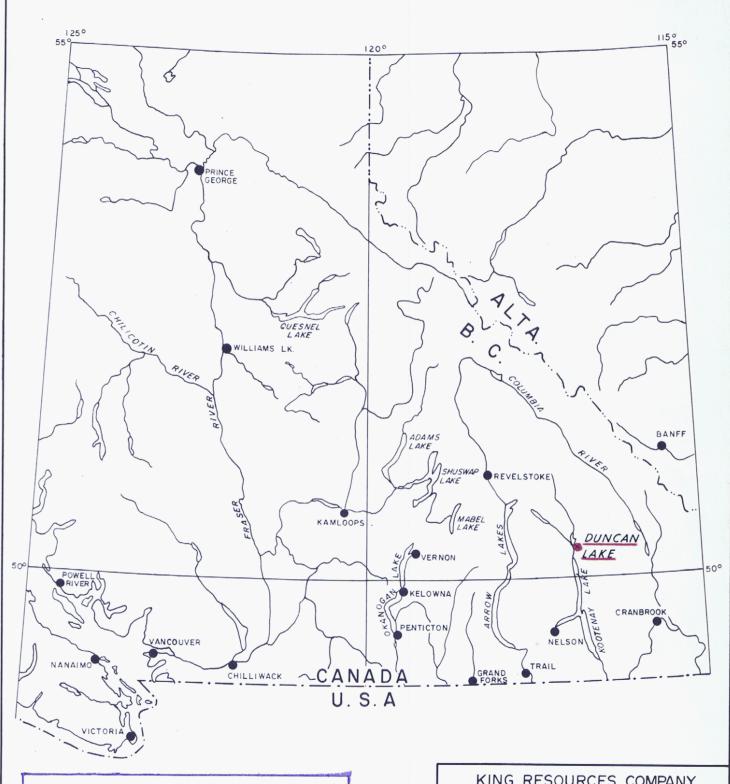
Figure

Figure 1. Claim Map with Pit Locations # 2 In Pocket Figure 2. Geology Map # 3 In Pocket Figure 3. Sketch of Quartz in Dolomite Page 8

Figure 4. Sketch of Quartz in Dolomite

0 1 044

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Department of Mines and Petroleum Resources ASJESSMENT REPORT

NO. 1561 MAP 1

KING RESOURCES COMPANY

LOCATION PLAN

DUNCAN LAKE PROPERTY KASLO MINING DIVISION B.C.

FIGURE No.

SCALE DATE Nov 1967

CONCLUSIONS AND RECOMMENDATIONS

The present investigation has not provided much encouragement on a property which still may have considerable potential. It seems unlikely that large bodies of lead-zinc ore exist in the vicinity of the trenches. At least one dithizone sample, #204, is from a shallow, dry stream valley 4 feet deep and 10 feet wide. The zinc in the sample could have been transported from a higher level.

A favourable feature of the property which could have had an influence on mineralization is the Phase I fold axis which extends through the property.

If the Fyles thesis is accepted, dolomite or the dolomitelimestone interface, in the vicinity of the Phase I fold axis in the south central part of the claims, may contain hitherto unrecognized mineralization.

Most mineralization seen on the property to date is galena-sphalerite-siderite or galena alone in fractures in quartz veins which are later than Phase II folds. Additional mineralization of a similar type could exist in the quartz rich limestone and dolomite which extend in a northerly direction through the western part of the Group.

It is recommended that the property be held but that the assay results from the pits be studied prior to the commencement of additional field work. The assay results are not available at the time this is written October 14, 1967.

Additional field work should involve as detailed geological mapping as is possible by the pace and compass method. If this permits a precise definition of the location of the fold axis, the intersection of the fold axis with the dolomite-limestone interface should be carefully prospected.

OBJECT OF INVESTIGATION

The object of the program was to dig pits to bedrock in the vicinity of anomalies previously discovered by dithizone tests supported by soil analyses. Bedrock was then to be sampled. A secondary objective was to obtain as much geological data on the claims as time permitted. Finally, it was planned that additional staking would be done to claim certain fractions, the existence of which had become apparent during an earlier mapping program.

PROCEDURE

The initial concept for conducting the operation was to instruct the various members of the crew to proceed to the appropriate dithizone sample points and dig pits to bedrock. While this was being done it was intended that the geologist would map and prospect the claims, stake open ground, and then examine the pits. Considerable difficulty was experienced in establishing the locations of the anomalous zones. It was necessary for the geologist to carry tape and compass or pace and compass lines from known points such as claim corners to the region of the dithizone anomalies it was proposed to evaluate. This curtailed the time available for geological mapping and prospecting and it also casts a fair degree of uncertainty on the degree of concordance between dithizone anomalies and pit sampling.

Pits were dug at the locations shown on Figure 1. The pits near the shaft on Fog 3, adjacent to the adit on Fog 4, in the southeast part of Fog 2, and near point 204 Fog 13 are accurately located. Pit 18 is taped from sample 204 and so may be considered well located. Pits 14 and 15 were located by taping from claims corner Fog 3, 4, 5, 6 and is probably on the dithizone anomaly. Sample points 19 and 20 (6743 and 6744) were established by pace and compass up a steep slope through dense undergrowth from sample point 18. The proximity of sample points 19 and 20 to the dithizone anomalies is a conjectural matter. I have little confidence that the two pace and compass lines exactly coincide. Dithizone sample points were found northwest of rock sample point 20 but their appropriate number is unknown.

Several of the pits numbers 7, 8, 9 and 10, 18 did not reach bedrock. Second pits were dug at 7, 9, 18 with satisfactory results only at 18. The locations of all pits dug in September, 1967, are indicated by orange plastic tape on which the pit number has been marked.

Five part claims were staked over fractions and two whole claims were staked on the north end of the group (Fig. 1).

Geological mapping was done as other duties permitted (Fig. 2).

Assay results are tabulated in Appendix (i).

GEOLOGY

Stratigraphy

Two and possibly three stratigraphic units are represented in the Fog Group.

Marsh-Adams Formation

An outcrop of micaceous, calcareous to very calcareous schist which occurs near the northwest corner of Fog 9 is tentatively assigned to the Marsh-Adams Formation (Fig. 2). These are probably the oldest rocks on the claim.

Another occurrence of Marsh-Adams strata is at the site of the field camp 100 feet east of the heliport, where a brown weathered micaceous schist was found about 4 feet below the surface.

Mohican Formation

Strata which could be classed as Mohican Formation were not recognized on the Fog Group although it is probable that they occur. It is possible that the brown mica schist at the field camp is Mohican Formation and not Marsh-Adams. Fyles (1964) page 23 states: "In exposures on the north slope of Hamill Creek, less than a mile west of the axis of the Duncan anticline (see Fig. 3), the Mohican Formation comprises 15 to 30 feet of greyish mica schist with minor limy lenses. On the western limb of the St. Patrick syncline in the canyon of Hamill Creek, the formation consists of about 50 feet of grey and green mica schist with several beds of limestone, each a few feet thick. To the west, both south of Hamill Creek and between the Lardeau Bluff and Marblehead, the Mohican Formation is a few tens of feet thick and is composed of greyishgreen mica schist with buff-weathering lenses of limestone an inch or so thick."

Badshot Formation

Fyles (1964) page 25 provides the following descriptions of the Badshot Formation on the north slope of Hamill Creek on the eastern limb of the Duncan Anticline. "In the lowest outcrops at 3,500 feet elevation, 150 to 200 feet of dark-grey siliceous dolomite is found near the base of the formation, and is overlain by 100 to 120 feet of buff to whitish fine-grained dolomite. Above the dolomite is 10 to 15 feet of micaceous grey limestone at the top of the formation. At an elevation of 4,000 feet, 100 feet of grey to white crystalline limestone forms the lowest member of the formation. It is overlain by 30 to 40 feet of dark-grey phyllite and argillite, which in turn is overlain by fine-grained dolomite at the top of the formation. The dolomite is partly light grey and massive."

In a later paragraph Fyles (1964) page 25 makes the following statement: "West of the Duncan anticline the Badshot Formation consists

of fine- to medium-grained grey and white crystalline limestone. The limestone weathers bluish grey and commonly contains dark-grey and white bands up to a few inches thick. Elsewhere fresh surfaces are white with dark-grey flecks, the remnants of bands destroyed by deformation. Dolomite is not found in the Badshot Formation west of the Duncan anticline except in a few localities such as on Lavina Ridge east of the St. Patrick syncline and on the shore of Kootenay Lake south of Argenta."

There is insufficient data at present to permit a detailed description of stratigraphy on the Fog Group but a few brief statements are in order. The principal rock types are fine to coarse grey to white calcareous dolomite, dolomitic limestone, crystalline limestone, and a siliceous carbonate which is dominantly limestone but which seems to be dolomite in some places. All of the above lithic types contain thin bluish grey to grey layers. The dolomite rocks and dolomitic limestones are lighter in colour than the limestones.

The distribution of the limestones and dolomite shown on Figure 2 may be the result of initial stratigraphic differences, the result of structural control of dolomitizing processes or some combination. In any case, the dolomite seems to cross the trend of the quartz rich carbonates which outcrop on the west side of the Group.

The siliceous limestones are dark coloured, fine-grained, and thinly laminated with an abundance of fine- to medium-grained quartz in lenticular and curved masses (see Figs. 3 and 4). These quartz masses are probably boudinaged siliceous beds which originally occurred in the Badshot near the top of the unit in the Fog Group. Quartz veins up to 1 inch wide are common in the siliceous unit. They are generally parallel with foliation but a few cross it. Most are curved around axial planes which are probably Phase II folds.

All of the Badshot Formation is foliated with varying proportions of dark platy material, probably graphite, occurring in the light and dark bands which appear to be concentrations of graphite probably derived from their original organic content.

Structure

Folds

Fyles (1964) page 41 states: "Complex folds dominate the structure of the Duncan Lake area." He notes further that although there are several ages of folds, the earliest known phases of deformation called by him Phase I and Phase II folds are the most important. The earliest folds Phase I, are isoclinal, plunge at low angles to the north and are difficult to recognize except by careful study of stratigraphy combined with detailed mapping. Two of the principal Phase I folds are

7 MALE

the Duncan anticline one and one-half miles east, and the St. Patrick syncline one mile west of the Fog Group. Phase II structures fold the Phase I folds in a direction slightly west of north and with a plunge of 15° to 25°, that is in a direction nearly parallel with the Phase I folds.

The axis of a Phase I fold extends through the Fog Group. Its position north of the Fog Group is shown fairly clearly by the outcrop pattern on the map by Fyles (1964) Fig. 3. The position is not well established in the northern part of the Fog Group where outcrops are sparse. Attitudes of foliation and lineation recognized near the shaft in the southwest corner of Fog #3 are what would be expected if the axis of a Phase I fold extended through pits 2 and 4. Anomalous lineations may be the result of Phase II folds or deformation in the vicinity of a postulated fault.

Lineations mapped near the center of Fog #4, at the northwest corner of Fog #9, as well as trends of primary foliation at several other places, are probably attributable to incompletely mapped Phase II structures.

The curved and, in places, closely folded quartz boudinages and/or quartz veins which are abundant on the ridge on the west side of the Fog Group were deformed during Phase II folding. This deformation takes the form of curving of the ends of some of the lenticles. In some places, this deformed quartz is fairly coarse and may represent pre-Phase II veins or eyes sweated out of the Badshot during Phase I folding.

Some deformation has occurred after Phase II folding. This has the form of fractures in quartz lenses and in otherwise undeformed quartz veins and preceded mineralization. The sequence of events is evidently Phase I folding with some boudinaging of brittle beds, sweating out of quartz or introduction of quartz, followed by Phase II folding which deformed the quartz; followed in turn by stresses which produced tension fractures; introduction of vein quartz; fracturing of quartz; and finally the introduction of sulphides and gangue.

Faults

Fyles (1964) page 60 describes and maps (Fig. 3) a fault named by him, Argenta Fault, from Duncan Lake through the Fog Group to a covered area northwest of Argenta. Evidently on the north side of Hamill Creek it is a zone of shearing several feet wide, adjacent to a contorted schist and limestone on the West and relatively undisturbed rocks on the East. The age of the fault is post Phase II folds. On the Fog Group, it probably lies to the west of the outcrops in the northwest corner of Fog 9, and west of the shaft in the southwest corner of Fog 3 in a "V" shaped dry gully. Accurate mapping of the fault may be possible by photo geology.

<u>Mineralization</u>

Duncan Lake Area

There are two philosophies concerning mineralization of the Badshot Formation in the Duncan Lake area. Fyles (1966) pages 233-4 says: "Geological as well as isotope evidence indicates that most of the structures that have produced the present distribution of favourable rocks, that have controlled the migration and deposition of lead and zinc, and that have subsequently deformed the sulphide bodies formed during the Mesozoic orogeny." More specifically Fyles (1964) page 69 relates dolomitization as well as sulphide migration and deposition to Phase I and II folds in the Duncan Lake area.

Muraro (1966) page 239 states: "It is my conviction that the deposits described existed in their respective host rocks prior to the major folding and regional metamorphism that we recognize in the rocks today."

The ore at Duncan Lake consists dominantly of pyrite, galena and sphalerite deposition in and replacement of dolomite. Pyrrhotite is present in significant amounts in some ore bodies.

Fog Group

Mineralization found to this date on the Fog Group differs from that at Duncan Lake and its relation to structure does not conform to either of the hypotheses of control by structure outlined above.

Sulphide mineralization was found at only two places, namely at the shaft in the southwest part of Fog 3 and in some deep trenches in the northwest part of Fog 4. At the shaft on Fog 3, galena occurs in a 6 inch quartz vein which trends at 015° and is nearly vertical. The occurrence in northwest Fog 4 is similar except that mineralization is galena - honey coloured sphalerite-siderite. The quartz vein on Fog 4 was fractured prior to the introduction of sulphides. The trend of the host vein was difficult to establish but it is thought to be near 340° and to dip steeply.

At both places the host quartz was probably deposited in cleavages associated with Phase II folds.

Mineralization at the adit southeast of the center of Fog 4 consists of siderite and possibly sphalerite or pyrite. Iron stain is abundant as are cavities in the quartz which could have resulted from leaching of pyrite or siderite. No sulphides were seen although a search for them was made.

Mineralization at the Fog Group resembles that at the St. Patrick Property one and one-half miles west, where galena and sphalerite in a siderite gangue are deposited in and adjacent to a number of northwesterly trending, east dipping shear zones which cut S-planes related to Phase II folds. On page 80, Fyles (1964) shows the results of six assays which went as high as 7.1% Pb and 11.9% Zn. The highest silver value was 2.0 oz. per ton in a sample with 3.78% Pb and 3.9% Zn.

Copper mineralization in the form of faint malachite stain accompanied by traces of chalcopyrite occurs on one small outcrop one hundred feet outside the Fog Group west of Fog No. 6.

Wilson, President, P.Eng., Geol.

garA. Wilson Geological Consultants Ltd.

Expiry Date: August 4, 1968

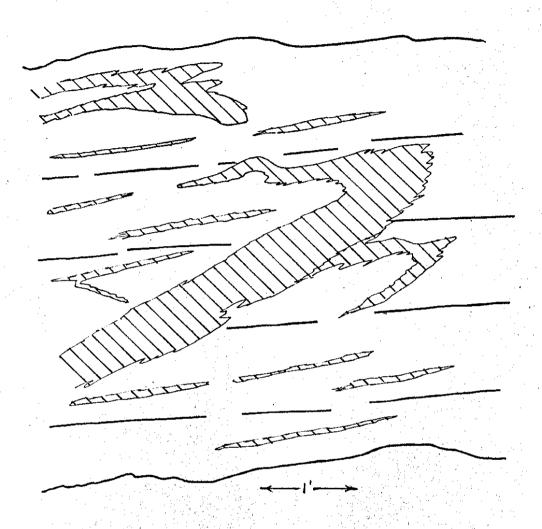


FIGURE 3

Sketch of outcrop 325' south of Pit 67-15. Quartz (pattern) occurs in dark grey to blue-grey laminated dolomite. Orientation of laminations (shown by heavy lines) is: Strike Olo; Dip 45 W. Axial Plane of folds? in quartz: Strike Olo; Dip 45 W. Hinge Line 296; Plunge -45.

7 0 dast

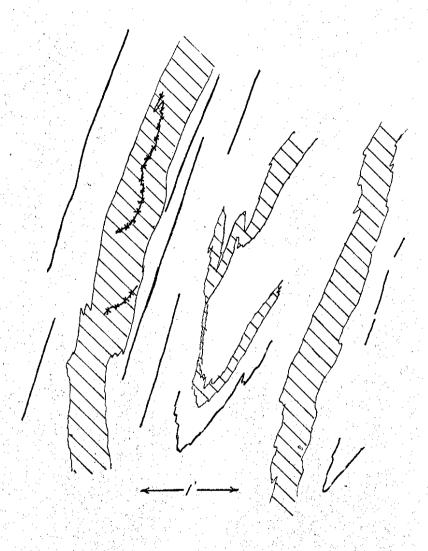


FIGURE 4

Sketch of face on one of the trenches in northwest Fog 4. Quartz (pattern) occurs in calcareous dolomite. Orientation of laminations is shown by heavy lines. Quartz is probably of two ages. Earlier quartz is folded; later quartz is not. Galena with siderite occurs in fractures in larger quartz vein.

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FYLES, J.T.:

(1964) Geology of the Duncan Lake Area Lardeau District, British Columbia, B.C. Dept. Mines Bull. No. 49.

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MURARO, T.W.:

(1966) Metamorphism of Zinc-Lead Deposits in Southeastern British Columbia; in Tectonic History and Mineral Deposits of the Western Cordillera; C.I.M.M. Special Vol. #8.

- 2040

CREST LABORATORIES LTD.

7911 Argyll Road

EDMONTON, ALBERTA

Phone 469-2391

FOR GROUP

CERTIFICATE OF ASSAY

TO King Resources

1300 Eleveden House,

Cotboer 16, 1967.

Calgary, Alberta. Attention: Mr. B.T. Gallant.

I hereby certify that the following are the results of assays made by me upon the herein described samples.

MARKED	GC	DLD	SILVER	LEAD	ZINC						TOTAL VALU
,	Ounces per Ton	Value per Ton	Ounces per Ton	Percent	(2000 LBS.)						
6726			0.1	trace	trace						
672 7			trace	trace	0.03						1 ↓
6728		[•	trace	trace	trace						
6729			trace	0.03	trace		1				
6730			trace	0.07	trace						
6731			trace	trace	trace						
6 732			0.1	trace	trace	•					
6733			0.1	trace	0.05						
6734			0.1	0.13	trace	· ·	ŀ	•		ļ	
6735			0.1	0.04	trace					-	
6736			trace	trace	trace						
673 7			trace	0.06	trace						
6738			trace	trace	trace			ļ.			
6739			trace	trace	trace					- t.:	
6740			trace	trace	0.05		1	cont	on pa	SP LKO.	•••

NOTE:

Rejects retained one month. Pulps retained three months unless otherwise arranged.

Gold calculated at \$..... per ounce

Registered Assayer, Province of British Columbia

CREST LABORATORIES LTD.

7911 Argyll Road • EDMONTON, ALBERTA • Phone 469-2391

CERTIFICATE OF ASSAY

TO	King Resources		Lab No.	44 - page	two.
			October	16, 1967.	

I hereby certify that the following are the results of assays made by me upon the herein described samples.

MARKED	GC	LD	SILVER	LEAD	ZINC						TOTAL VALUE PER TON
	Ounces per Ton	Value per Ton	Ounces per Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent	(2000 LBS.)
							-			į .	
6741		ĺ	0.1	0.10	0.36						
6742			trace	trace	trace		 		ļ]	
6743]	trace	trace	trace] 				
6744			trace	0.09	trace	ļ			<u>.</u>		
6745		ļ	2.3	6.34	4.30					}	
6745 No tag			trace	trace	trace						
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NOTE:

Rejects retained one month. Pulps retained three months unless otherwise arranged.

Gold calculated at \$..... per ounce

Registered Assayer, Province of British Columbia

APPENDIX (ii)

DESCRIPTION OF PITS MADE SEPTEMBER 19-27, 1967

Pit No.	Claim	Location	Pit Depth and Width	Sample No.
1	Fog 3	20' 000° north of shaft	3' x 3 x 3	6726
2	Fog 3	94' 000° north of pit 1	4' x 3 x 3	6727
3	Fog 3	183' 000° from pit 1	4' x 3 x 3	6728
4	Fog 3	99' ENE of shaft	4' x 3 x 3	6729
5	Fog 3	92' @ 270 ⁰ pit 1	3' x 3 x 3	6730
6	Fog 3	100' @ 180° pit 1	4' x 3 x 3	6731
7	Fog 4	191' @ 270° pit 1	5 * x 3 x 3	No bedrock No sample
. 8	Fog 2	990' @ 160° NE Cor Fog 2	5' x 8 x 3	6735*
9a	Fog 2	79' @ 155° pit 8	5' x 3 x 3	No bedrock No sample
9b	Fog 2	79' @ 155° pit 8	5' x 3 x 3	No bedrock No sample
10	Fog 2	96' @ 240° from pit 9	6' x 3 x 3	6733*
11	Fog 2	67' @ 155° from pit 9	outcrop	6734
12	Fog 2	76' @ 065° pit 9	outcrop	6732
13	Fog 13	410 0 245 from NE Cor Fog 2 (Geochem sample point 204)	3' x 3 x 3	6736
14	Fog 4	630' @ 241° from NE Cor Fog 4 (Geochem sample point 754?)	4' x 3 x 3	6737
15	Fog 4	100' @ 260° from pit 14	5' x 3 x 3	6738
16	Fog 4	50' south of adit in south central part of claim	3* x 2 x 2	6739
17	Fog 4	50' north of adit in south central part of claim	3' x 2 x 2	6740

APPENDIX (ii) (continued)

Pit No.	Claim	Location	Pit Depth and Width	Sample No.
18a	Fog 13	200' @ 255° from pit 13	5' x 3 x 3	
18b	Fog 13	As above.	5' x 3 x 3	6742
19	Fog 13	1260' X 249° from NE Cor Fog 2	outcrop	6743
20	Fog 2	Northwest corner	outcrop	6744

Sample 6741 From shear zone in old adit south central Fog 4.

Sample 6745 From trench adjacent to old adit. NW Fog 4.

Note: Work on Fog 13 (pits 13, 18, 19) was done September 23, 24, 25; the claim had been staked September 22, 1967.

^{*} Denotes sample from overburden at base of pit.

APPENDIX (iii)

STATEMENT OF EXPENDITURES SEPTEMBER 1967 UNLESS OTHERWISE NOTED

Transportation: To area In area - Truck - Helicopter	\$ 177.00 525.00	\$ 62.45 702.00
Crew charges: 6 men equipped for 7 days @ \$254.50/day		1,781.50
Supervision: Geological (field) 10 days at \$115.00/day Geological (study and evaluation) 4 days at \$115.00/day 2 days at \$125.00(1) MCR retainer	1,150.00 460.00 250.00 1,860.00 100.00	1,960.00
Assay and Handling: Crest Laboratories Rock surgery	112.00 38.10	150.10
Printing and Reproduction: Forsyth(2) West Canadian (2) Forsyth (3) Forsyth (1) Typing (1) Drafting (2)	4.23 10.92 10.77 11.00 10.00 114.00	160.92
		\$ 4,816.97

NAMES OF PERSONNEL SEPTEMBER 1967

			Days Worked Inclusive
J.	Francoeur	labourer	Sept. 21-27
R.	Hashimoto	labourer	•
J.	Leblanc	labourer	
W.	Patterson	labourer	
Α.	Peterson	`labourer	
W.	Shepherd	labourer	
G.	Wilson	Geologist	Sept.19-28, Oct.67 4 days
			June, 68, 2 days

- (1) June, 1968
- (2) December, 1967
- (3) January, 1968

Please note: Only \$1,900.00 of the above amount is claimed for the year of 1967-68.

APPENDIX (iv)

STATEMENT OF QUALIFICATIONS

This is to certify that I, George A. Wilson, am a graduate geologist with degrees from Queen's University, Kingston, Ontario (B.Sc. Geology and Mineralogy, 1949) and the University of British Columbia (M.A.Sc. Geology, 1951).

I am a registered professional geologist and professional engineer in Alberta and a registered professional engineer (non-resident) for the Province of British Columbia.

I conducted the mapping and supervised the pit sampling program described in the foregoing report.

The statement of money spent is a true and accurate one to the best of my knowledge.

George A. Wilson, P. Geol., Eng.

June 5/68.

