ASSESSMENT REPORT

STRUCTURAL, GEOLOGICAL AND GEOCHEMICAL SURVEY

BANDIT GROUP

ATLIN MINING DIVISON

TATSAMENIE LAKE AREA, B. C.

N.T.S. 104K/TULSEQUAH SHEET

58°04'N
132°16'W

OWNER: CHEVRON CANADA LIMITED

OPERATOR: CHEVRON CANADA RESOURCES LIMITED

Authors: M. Thicke
D. Shaw

October 1983

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LOCATION AND ACCESS

The BANDIT claims are situated at 132°16'W and 58°04'N, in the southeast corner of Tulsequah map sheet, approximately 185 km southeast of Atlin, B. C. (Figure 1). Access to the claims was by helicopter from a base camp at Bearskin Lake, approximately 15 km north.

CLAIMS

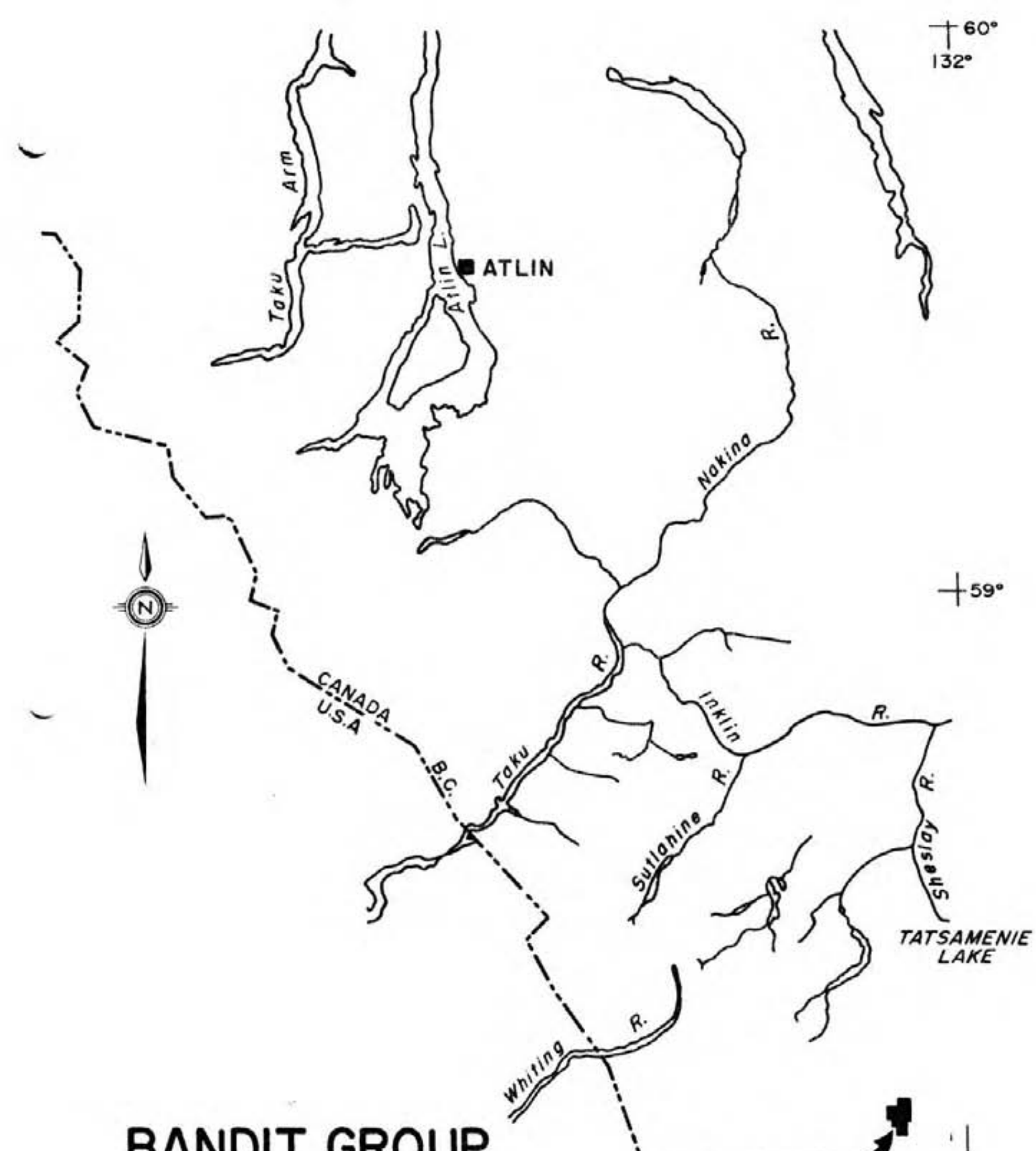
Claims within the BANDIT Group were staked between August 1981 and July 1983 (Figure 2).

Claim	Record No.	Record Date	No. of Units
BANDIT 1	1486	August 21, 1981	20
BANDIT 2	1487	August 21, 1981	20
BANDIT 3	1427	February 22, 1983	20
BANDIT 4	1963	July 4, 1983	5
HIJACK 1	1828	February 22, 1983	16
HIJACK 2	1962	July 4, 1983	18

These claims cover previously unstaked ground.

REGIONAL GEOLOGY

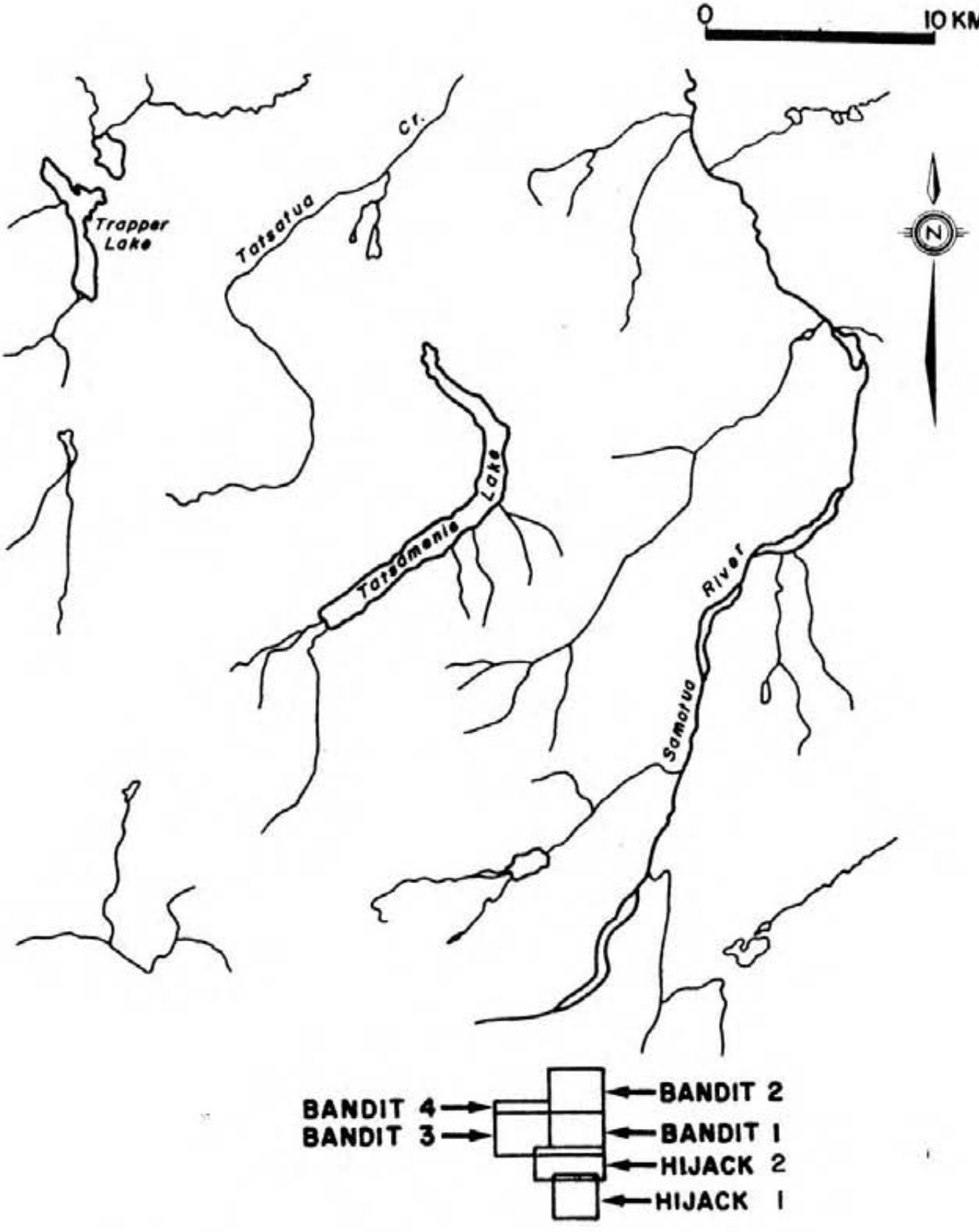
The BANDIT claims are situated within pre-Upper Triassic, clastic, sedimentary rocks and intercalated, volcanic rocks. The claims lie to the west of a fault contact between the pre-Upper Triassic rocks and Lower or Middle Triassic(?) foliated intermediate intrusive rocks (Souther, 1971). Southwest of the claims are Cretaceous to Tertiary Sloko Group rhyolites and pyroclastic rocks. To the northwest various intermediate intrusive rocks ranging in age from Jurassic to Tertiary occur. A dyke swarm that is probably related to Sloko Group volcanic rocks also occurs to the northwest of the claim group (Souther, 1971).



BANDIT GROUP
LOCATION MAP

M523

FIGURE 1



BANDIT GROUP CLAIM MAP

M523 FIGURE 2

GEOLOGICAL SURVEY OF CLAIMS

The area of detailed geological mapping is outlined on Figure 3. Mapping covered an area of approximately 1 km by 100 meters concentrated around a quartz vein-silica alteration zone that strikes 070° and dips toward 340° (Figure 4).

Triassic rocks from within the map area consist of submarine volcanic rocks which have been separated into five different units:

Unit 1: volcanic - undefined;
Unit 2: tuff and fine lapilli tuff;
Unit 3: banded and laminated fine grained tuff;
Unit 4: siliceous tuff;
Unit 5: phyllitic tuff.

Bedding attitudes within the volcanic rocks are rare. Attitudes measured suggest the vein structure is on the west limb of a northeast-southwest striking trending antiform. Bedding tops of the volcanic rocks remain unknown.

The east-northeast striking, up to 50 meter wide zone of altered volcanic rocks, is sharply defined on the hanging wall by a well defined fault. The fault, observed in a few locations, is steeply dipping to the north and is defined by a gouge zone measuring 2 cm to 1 meter wide. On the footwall side of the fault the contacts between pervasively altered volcanic rocks and fresh, unaltered rocks are transitional.

ALTERATION

The volcanic rocks in the area of detailed mapping have been subject to varying degrees of alteration. Three separate alteration facies have been recognized and are briefly described as follows:

i) Fresh: minor carbonate and quartz filled fractures, minor specularite;

ii) Propylitic: bleached, strong pervasive carbonate and clay (montmorillite?), weak pervasive silica, strong white carbonate veining, orange weathering.

iii) Silica: light to dark grey, weak to strong pervasive silica, minor quartz veining, 1-3% disseminated and minor pyrite veinlets.

Contacts between alteration facies are transitional. In general, the silica facies, in which anomalous gold mineralization has been found, has an orientation parallel to the east-northeast fault. Silicification is best developed where conjugate fracture jointing is strong.

The silica facies is widest in the central zone of mapping (Figure 4) where it reaches a maximum width of 50 meters and a strike length of approximately 150 meters. To the west and east of the central zone silica alteration narrows. Often found within silicification zones are narrow lenses of unaltered tuff.

Volcanic rocks from the east zone of the mapping area (Figure 4) display intense propylitic alteration. The tuffs are also cut by irregular, narrow, less than 1 meter wide, vein-like and stockwork silica zones.

Alteration within tuffs from the west zone of the map area are similar in character to the central and eastern zone except for a few minor differences. Silicified tuffs within the western zone contain small zones, only a few meters by one meter, of crackle breccia textured, white chalcedony veins and veinlets. These "crackle" zones contain finely disseminated pyrite mineralization up to 10%.

GEOCHEMICAL SURVEY OF CLAIMS

Throughout the BANDIT claims 93 rock samples were collected from silicified phyllites and quartz veins. Measured widths, usually one meter, were sampled and recorded where possible. Samples were placed in heavy duty plastic rock sample bags and shipped to Chemex Labs Limited of North Vancouver. Rock geochemical samples are crushed, dried and pulverized to -100 mesh.

For antiomony, a 2.0 gm sample digested with concentrated HCl in a hot water bath. The iron is reduced to the Fe^{+2} state and the Sb complexed with I^{-}. The complex is extracted with TOPO-MIBK and analyzed via A.A. Correcting for background absorption 0.2 ppm $\pm$ 0.2.

For arsenic, a 1.0 gram sample is digested with a mixture of perchloric and nitric acid to strong fumes of perchloric acid. The digested solution is diluted to volume and mixed. An aliquot of the digest is acidified, reduced with Kl and mixed. A portion of the reduced solution is converted to arsine with $NaBH_4$ and the arsenic content determined using flameless atomic absorption.

For low grade gold samples and geochemical materials 10 gram samples are fused with the addition of 10 mg of Au-free Ag metal and cupelled. The silver bead is parted with dilute HNO_3 and then treated with aqua regia. The salts are dissolved in dilute HCl and analyzed for Au on an atomic absorption spectrophotometer to a detection of 5 ppb.

For silver analysis a 1.0 gram sample is weighed and digested using hot 70% $HClO_3$ and concentrated HNO_3. Sample solutions are then analyzed by atomic absorption procedures.

GEOCHEMICAL RESULTS

Figures 6 through 9 illustrate geochemical values for Au, Ag, Sb and As respectively. Aside from a few anomalous arsenic and antimony results, >300 ppm and >10.0 ppm, values are generally very low. Silicified phyllites contained very few anomalous silver values (>2.5 ppm). High silver values do not necessarily correlate with high gold values. The highest silver value of 14.8 ppm is likely associated with chalcopyrite-pyrite mineralization. Background gold values for the silicified zones sampled are likely as high as 100 ppb to 150 ppb. No fewer than 18 samples contain gold mineralization >1000 ppb and two samples contain >10,000 ppb gold, though one was a talus sample. Silicified phyllite zones containing a chalcedonic phase, whether as veins or pervasively, and a fine grained pyrite mineralization phase are more likely to have anomalous gold mineralization (>1000 ppb) associations.

DETAILED STRUCTURAL MAPPING

Introduction

The area mapped (Figure 10) covers an area of approximately 0.2 km². The terrain is a steep slope aligned southwest-northeast. Upslope the gradient decreases slightly and the ground is scree covered. Downslope the cliffs give way to a grass and bush covered bowl. Whilst the terrain in the area of interest is difficult the good exposure makes it amenable for a detailed study.

Geology

I. Lithologies:

Lithological variation is restricted, the main rock types are greenstone and phyllite, or their altered equivalent.

The greenstone is predominantly a fine to medium grained, compact, dark green volcanic flow. Layering is difficult to distinguish unless there are associated thin (a few centimetres), chert layers. When carbonatized the massive greenstone has a buff to light brown colour, it is much less resistant and weathers to form a shaly scree. Silicified greenstone occurs as a fine grained, compact structureless rock and is often transitional to quartz-carbonate/carbonate altered greenstone.

The phyllites vary from a very siliceous type, as in the southeast section, to what appears to be a phyllitic greenstone.

II. Structure:

The area of interest is structurally dominated by a Phase II antiform, the axial surface of which can be traced across it. The structure strikes approximately northeast-southwest and dips towards the northwest at an average inclination of sixty degrees. The southern part of the area is structurally located on the northeastern or lower limb whilst the northern part is on the northwestern or upper limb. The fold is overturned towards the southeast, consequently layers on both limbs dip towards the northwest.

Numerous minor folds are associated with the main closure and are best developed in the siliceous phyllite in the southwest and within the interbedded package of phyllites and phyllitic greenstones in the north central and northwest. Whilst these folds generally plunge towards the northeast the amount of plunge is quite variable ranging from a few degrees up to fifty. These minor folds were used to define the approximate trace of the axial surface of the main structure. An exception to this is at the western end where the hinge zone can be walked around.

Within the phyllites, particularly the more siliceous type, a spaced, fracture cleavage is well developed. As with the tight, minor folds this fabric is not recognized within the massive greenstones.

The tightly folded greenstone and phyllite package has been strongly fractured by a conjugate joint set along which movement has occurred

producing a stockwork of narrow, often steeply walled, fault gullies. Two fracture orientations are dominant, one striking northwest-southeast and the other orientated north northeast - south southwest. Both fracture types are steep to vertical. A third, minor fracture strikes east-west and is also steep to vertically inclined.

Whilst slickensiding and shearing are recognized along most of the fractures it was not possible to document offset. An exception to this is is at the western end of the area where the axial surface trace of the main fold appears to be offset by a steep, northerly striking fault.

III. Conclusion:

A major Phase II antiform, which strikes northeast-southwest and dips towards the northwest, has deformed an interbedded package of massive volcanic flows and varyingly siliceous phyllites. This product of ductile deformation has been overprinted by a conjugate fracture pattern indicating later brittle deformation. A majority of the fracture surfaces formed show fabric evidence of movement between adjacent blocks.

The area upslope and to the north of the structural study area (page 2 is structurally located on the northwestern or upper limb of the main Phase II antiform.

CONCLUSIONS

Fifty-seven man days were spent geologically mapping and geochemically sampling the BANDIT claims. Geology consists of Pre-Upper Triassic pyllites, flows and tuffs which have undergone at least two phases of ductile deformation. Later brittle deformation has served to provide a stockwork fracture system enabling extensive quartz-iron-carbonate alteration to occur throughout the central and northern part of the claims along with some silica injection. The zones of silica injection and silicification often have gold associated with them, the main area of this being the strongly jointed hinge zone of the Phase II antiform.

RECOMMENDATIONS

The work done during the summer of 1983 followed up results gained during the previous year. The erratic and discontinous distribution of gold and silver has been verified along with the lack of width on many of the mineralized structures. Mineralized silica veins and silicified zones appear to be the most promising and it is proposed to continue the trenching programme on these during the next field-season.

REFERENCE

Souther, J.G. (1971). Geology and mineral deposits of Tulsequah map-area, British Columbia. Geological Survey of Canada. Memoir 362, 84 p.

1983 EXPLORATION PROGRAM
BANDIT GROUP CLAIMS
COST STATEMENT

PERIOD: July 10 to August 10, 1983

1. LABOUR

	Position	Field Days	Office Days
D. Shaw	Geologist	12	3
M. Thicke	Geologist	13	2
M. Phillips	Contract Geologist	16	3
T. Zanger	Assistant	1	-
M. Woods	Assistant	5	-
J. Franks	Assistant	1	-
G. Wober	Assistant	2	-
P. Franks	Assistant	1	-
J. Armstrong	Assistant	3	-
D. Hodge	Assistant	2	-
W. Hewgill	Assistant	1	-
	TOTAL	57	8

Average cost per field man day - $100.	$ 4,100.00
Contractor cost per field man day - $300.	4,800.00
Average cost per office man day - $150.	750.00
Contractor cost per office man day - $300.	900.00
Drafting cost - 3 days @$100. per day	300.00

2. GEOCHEMISTRY

93 rocks @$17.65 per sample	1,641.45

3. CAMP COSTS

57 man days @$60. per day	3,420.00

4. HELICOPTER

18.7 hrs. @$500. per hr. including fuel	9,350.00
TOTAL	$25,261.45

STATEMENT OF QUALIFICATIONS

I, Mike Thicke, graduated from the University of British Columbia in May, 1980 with a B.Sc. degree in geology. Six seasons have been spent working in exploration geology in B.C., including four since graduation. I am presently employed as a geologist by Chevron Canada Resources Limited of Vancouver, B. C.

Mike Thicke

STATEMENT OF QUALIFICATIONS

I, David Shaw, graduated from the University of Sheffield, England in 1973 with a B.Sc. (Hons) Geology and also from Carleton University, Ottawa, in 1980 with a Ph.D. in structural geology.

I am employed by Chevron Canada Resources Limited and acknowledge part authorship of this Assessment Report.

David Shaw

DAVID SHAW

BANDIT 4 | BANDIT 2

BANDIT 3 | BANDIT 1

AREA OF DETAILED MAPPING

AREA OF STRUCTURAL MAPPING

HIJACK 2

HIJACK 1

0 500 1000 M

SCALE

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11,824

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BANDIT GROUP

DETAILED AND STRUCTURAL MAPPING LOCATIONS

FIGURE No. 3		PROJECT No. M - 523	
DATE OCT. '83	REVISIONS		SCALE 1:10000
NTS No. 104/K			FILE No. S-49
COMPILED BY			

ROCK TYPES

MESOZOIC – TRIASSIC AND EARLIER
PRE-UPPER TRIASSIC

1	volcanic – undefined
2	tuff and fine lapilli tuff
3	tuff – fine grained, light-medium green colored fine-banded and laminated
4	siliceous tuff – dark grey
5	phyllitic tuff

ALTERATION FACIES

FACIES	SYMBOL	DESCRIPTION
fresh	a	minor carbonate and quartz filled fractures, minor specularite transitional
propylitic	b	bleached, strong pervasive carbonate and clay (montmorillonite?) weak pervasive quartz strong white carbonate veining, orange weathering transitional
silica	c	light to dark grey, weak-strong pervasive silica, minor quartz veining, 1-3% disseminated and minor veinlet pyrite

SYMBOLS

- outcrop
- bedding (tops unknown) – strike and dip
- fracture cleavage – strike and dip; w, M, S – intensity – weak, moderate, strong
- contact – defined, approximate
- fault – defined, approximate
- 1a rock type, alteration
- baseline picket
- G glacier
- 4b x minor occurrence rock type and alteration

SCALE 1:1000

25 0 25 50 75 100
metres

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DETAILED GEOLOGY
BANDIT CLAIMS

FIGURE No. 4		PROJECT No. M523	
DATE OCT/83	REVISIONS		SCALE 1:1000
NTS No.			FILE No.
COMPILED BY M.P.			

DETAILED SAMPLING

DS-415, 422, 438, 450, 464, 465, 481A 481B, 481C, 486, 487, 488, 495, 512A, 512B, 514, 517, 518, 519, 528, 530, 532, 534, 536, 536A, 561, 563A, 563B, 567A, 567B, 570

BANDIT 4 BANDIT 2

BANDIT 3 BANDIT 1

HIJACK 2

HIJACK 1

DETAILED SAMPLING AREA

0 500 metres

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ROCK SAMPLE LOCATIONS

BANDIT GROUP

FIGURE No. 5		PROJECT No.	M523
DATE OCT./83	REVISION	SCALE	1:10,000
NTS 104 K			
BY M.T.			

BANDIT 4 BANDIT 2

BANDIT 3 BANDIT 1

HIJACK 2

HIJACK 1

DETAILED SAMPLING RESULTS

DS-415	1750	DS-517	25
422	20	518	<5
438	1675	519	105
450	1150	528	<5
464	--	530	<5
465	--	532	<500
481A	45	534	60
481B	<5	536	500
481C	<5	536A	--
486	115	561	20
487	40	563A	15
488	1275	563B	<5
495	35	567A	20
512A	40	567B	<5
512B	15	570	80
514	165		

DETAILED SAMPLING AREA

0 500 metres

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GOLD GEOCHEMISTRY

BANDIT GROUP

FIGURE No 6		PROJECT No	M523
DATE OCT/83	REVISION	SCALE	1:10,000
N.T.S. 104 K			
M.T.			

N

BANDIT 4 BANDIT 2

BANDIT 3 BANDIT 1

HIJACK 2

HIJACK 1

DETAILED SAMPLING AREA

DETAILED SAMPLING RESULTS

DS-415	0.4	DS-517	0.1
422	0.1	518	0.1
438	0.4	519	0.1
450	0.8	528	0.1
464	--	530	0.1
465	--	532	0.5
481A	0.2	534	0.2
481B	0.1	536	0.1
481C	0.1	536A	--
486	0.1	561	0.1
487	0.1	563A	0.1
488	0.4	563B	0.1
495	1.5	567A	0.1
512A	0.2	567B	0.1
512B	0.1	570	0.1
514	0.1		

500 metres

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SILVER GEOCHEMISTRY

BANDIT GROUP

FIGURE No. 7		PROJECT	M523
DATE	OCT/83		1:10,000
NTS	104 K		
DRAWN BY	M.T		

N

BANDIT 4 | BANDIT 2

BANDIT 3 | BANDIT 1

HIJACK 2

HIJACK 1

DETAILED SAMPLING RESULTS

05-415	0.2	05-517	0.8
422	0.4	518	0.4
438	0.3	519	0.1
450	0.6	528	1.0
464	–	530	0.6
465	–	532	0.8
481A	0.2	534	0.3
481B	0.4	536	0.3
481C	0.2	536A	–
486	0.6	561	0.4
487	0.2	563A	0.4
488	0.4	563B	0.3
495	49.0	567A	0.2
512A	0.5	567B	0.4
512B	0.2	570	0.2
514	1.1		

DETAILED SAMPLING AREA

0 500 metres

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ANTIMONY GEOCHEMISTRY

BANDIT GROUP

FIGURE No. 8		PROJECT No.	M523
DATE OCT/83			1:10,000
N.T.S. 104 K			
DWN. M.T.			

No Steep Terrain

BANDIT 4 BANDIT 2

BANDIT 3 BANDIT 1

HIJACK 2

HIJACK 1

DETAILED SAMPLING AREA

GLACIER

GLACIER

GLACIER

DETAILED SAMPLING RESULTS

DS-415	3	DS-518	5
422	35	519	2
438	3	528	7
450	4	530	3
464	–	532	69
465	–	534	3
481A	3	536	3
481B	4	536A	–
481C	2	561	5
486	5	563A	5
487	3	563B	3
488	3	567A	3
495	290	567B	16
512A	6	670	23
512B	3		
514	20		
517	10		

0 500 metres

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ARSENIC GEOCHEMISTRY

BANDIT GROUP

FIGURE No 9		PROJECT No	M523
DATE OCT/83	REVISIONS	SCALE	1:10,000
NTS No 104 K		FILE No	
COMPILED BY M.T.			

LEGEND

- Lithological contact: known, extrapolated, assumed
- 230 60 — Bedding: strike and dip
- 230 60 — Phase II cleavage or axial surface: strike and dip
- 270 50 — Fault: strike and dip
- 060/40 — Azimuth and plunge of Phase II fold
- Minor Phase II fold sense
- Phase II antiform, overturned

1	greenstone: undefined
1b	greenstone: with chert
1c	greenstone: strongly carbonatized
1d	greenstone: weak to moderate carbonatization
1e	greenstone: silicified
2	siliceous phyllite
2b	silicified phyllite
3	phyllite
4	silica
(1) 1c	main lithology (with physically associated alteration product)

transitional alteration zones

0 20 40 60 80 100 metres

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BANDIT CLAIMS

DETAILED STRUCTURAL GEOLOGY

FIGURE No. 10		PROJECT No.	M523
DATE OCT./83	REVISIONS		SCALE 1:1000
NTS No.			FILE No.
COMPILED BY D.S.			