## SECURITY

Northwest Moresby Island Queen Charlotte Islands, B.C.

M486 - SECURITY OVERPROOF and OP #1-11 MINERAL CLAIMS NTS 103 7/14E, 14W Skeena Mining Division Lat. 453 05'N Long. 132 28'W 15'

REFORT ON THE GEOLOGY, GEOCHEMISTRY AND POTENTIAL OF THREE AREAS OF THE PROPERTY

Dates of Work: Aug. 6-Dec. 15,1979 for

Chevron Standard Limited - Minerals Staff Vancouver, B.C.

> by J.S. Christie, Ph.D. G.G. Richards, M.A.Sc. P.Eng. C. Harivel, B.Sc.

Owner	-	Chevron Canada Limited
Operator	-	Chevron Standard Limited
Contractor	_	JMT Services Corp.



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#### INTRODUCTION

The Security Property, comprised of 12 mineral claims (148 units) is centred on the peninsula between Security Inlet and Inskip Channel, on northwest Moresby Island, Queen Charlotte Islands. Staking of the Overproof and Op claims was the outcome of several exploration programmes initiated after anomalous silt samples were collected by the writers around the shores of Inskip Channel and Security Inlet while prospecting in the area in mid-June 1977 and early May 1978. The initial prospecting was funded by B.C. Department of Mines Prospectors Assistance Grants. Initial sampling indicated large areas of high arsenic geochem with associated spotty gold anomalies over a large area of about 5 km by The Overproof and Op #1-6 claims were staked to cover the 8 km. strongest parts of the geochem anomaly in late June and July 1978. Follow-up sampling indicated the need to stake more ground and the Op #7-11 claims were added in early May 1979.

In May, 1979 five geologists were deployed by boat or helicopter daily and completed independent traverses collecting samples for geochem analysis and noting the most prominent features of the geology. The object of this work was to cover the entire claim block in fairly detailed reconnaissance fashion in order to identify targets worthy of more detailed work.

As a result of this phase of work three target areas (A,B,C,) were identified for more detailed sampling and mapping. Survey control was by hip-chain, compass, barometer and topographic map enlargement.

In August, 1979 parties were sent out by helicopter in fly camps to complete the more systematic soil sampling. This sampling has confirmed the existence of coherent zones of geochemical response for both gold and arsenic over significant areal extents. Reconnaissance geology together with the positive geochemical response indicates that further detailed mapping and sampling will be useful in defining drill targets.



#### LOCATION, TOPOGRAPHY AND ACCESS

The Property covers the mountainous peninsula between Security Inlet and Inskip Channel some 40 km southwest of Sandspit. Slopes are steep and rocky and the minor drainages tend to be steep-walled, waterfall creeks that are difficult to traverse. Vegetation is typical hemlock-spruce-cedar rainforest to elevation 2000 feet with cypress swamps and brushy alpine vegetation above.

Access at present is by boat or aircraft from Sandspit or Queen Charlotte City. A road is planned to Security Cove by MacMillan-Bloedel to connect with the existing Deena road and Sandspit, but construction dates have not yet been finalized.

#### CLAIMS

The Property consists of the OVERPROOF and OP #1-11 mineral claims described below and shown on accompanying maps.

NAM	Ξ	RECORD NO.	UNITS	RECO (Moi	RD DÀ nth)	ATE
OVE	RPROOF	677	4	July	28,	1978
OP	<u># 1</u>	673	2	14	11	н
	#2	674	12		ч	
	±3	675	12	н	11	н
	<del>3</del> 4	676	6		11	41
	<b>#</b> 5	678	15	11	"	•
	<b>#</b> 6	679	15	•	"	"
	<b>#</b> 7	1305	18	Мау	29,	1979
	#8	1306	20	11	и	11
	<b>#</b> 9	1307	20	11		••
	#10	1308	20	11	ч	11
	#11	1309	4	tł	н	•





#### GEOLOGY

#### a) General

Regional mapping by Sutherland-Brown 1968, B.C. Dept. of Mines Bull. #54, indicated that the Security area is underlain by rocks of the Karmutsen and Kunga Formations of Triassic-Jurassic age. The Karmutsen is described as a submarine volcanic succession comprised principally of tholeiitic basalt but containing interbedded aguagene tuffs and minor sediments.

The Kunga is a sedimentary succession which includes massive grey basal limestone overlain by black limestone, flaggy black limestone and limy argillite, thin bedded limy argillite-argillite, and non calcareous argillite. Distinctive Kunga ammonites and pelecypods were noted at several localities on the Property.

Reconaissance mapping has indicated the presence of a stock composed of medium grey quartz feldspar porphyry in the north eastern part of the property on the OP#8 and #9 mineral claims. Dykes of similar composition and texture are numerous and tend to lie along northeasterly to northwesterly structures. Dykes of more leucocratic quartz porphyry which typically display flow banding are also abundant. Both types of dyke contain disseminated pyrite and quartz-pyrite veinlets and bear a close spatial relationship to silica alteration zones and the gold-arsenic geochem anomalies.

Structure on the Security Property is not well known but steeply dipping faults appear to be important. These vary in character from sharp planar slickensided surfaces to gougy zones many feet in width. In age, they range from pre to post-dyke and in some instances the early formed faults have localized dykes and zones of strong silica-pyrite and carbonate-silica-pyrite alteration. Minor folds have been recognized in the Kunga argillites and folding on a larger scale may be an important feature of the geology at Security. Geology to date is inadequate to demonstrate a fold pattern.

Alteration at Security is variable in character but hard dense silicification accompanied by large quartz veins, quartz veinlets, quartz breccia, fracture and disseminate pyrite, and general bleaching is most striking. Such zones are shown on the enclosed maps.

Less intense and less obvious alteration is widespread on the property. Within the volcanics large zones of chloritization and weak bleaching with up to 2 - 3% introduced pyrite are present. Within the sediments weak hornfels-like silicification or weak pervasive clay alteration (bleaching) accompanied by fracture and disseminated sulfide occurs over fairly large areas. In some argillites, alteration is hardly noticeable but examination with a high power lens reveals abundant fine disseminated and hairline fracture controlled sulfide. Within the thin bedded limy argillites and black limestone, bedded pyrite is common but such pyrite may be a feature of primary sedimentation.

#### b) Geology Area A

Area A is underlain mainly by Karmutsen Formation rocks, generally dark green flows. In the extreme southern part exposures of limestone and argillite of Kunga Formation were noted. The mapping has not been done in sufficient detail to confirm the suspected trends of Kunga rocks indicated on the enclosed geology map.

Silicified limestone, possibly of Kunga Formation, was noted at about 800' above sea level just west of the main creek in the south part of Area A. A steepJy dipping, NE-trending fault zone, with associated quartz veining is exposed in a creek near the centre of the, south part of Area A. In the north part of Area A shear zones with associated quartz veining were also noted. These zones trend NNW and NE.

It seems probable that Area A is transected by a wide, north trending, steeply dipping structure along and within which significant zones of silicification have been developed. In the southern part of Area A the largest such silicified area is up to 100 m wide and about 300 m long, while to the north the largest such zone appears to be about 200 m X 500 m.

# c) Geology Area B

Area B is underlain by rhyolitic extrusive? rocks in contact with Karmutsen greenstones and argillites. It is not certain that the rhyolites are of Karmutsen age; they may be of Tertiary age and related to the Massett Formation. However, it is possible that the rhyolites are intrusive or that contacts with the Karmutsen may be faults.

Structure in Arca B trends northeasterly and controls the map units and main alteration zones although north to northwest trending quartz veinlets in fractures are common. The largest alteration zone some 200 m X 1000 m is centered on and apparently related to the rhyolites. A second alteration zone 100 m X possibly 2000 m is related to an argillite unit within the Karmutsen which appears to lie along a northwest trending structure.

#### d) Geology Area C

In Area C exposures of green Karmutsen volcanic rocks enclose a zone of bleaching and silicification which carries significant local concentrations of tourmaline. Strongest silicification appears to be in the centre of the area and appears to trend NNW. Specially related acid to intermediate feldspar porphyry dykes are common but display a variety of orientations.

The trend of shearing exposed in a creek in the central southern part of Area C together with the co-linear zone of silicification in the central area suggests a significant NNW trending structure.

#### GEOCHEMISTRY

#### a) General

In total some 719 rock, soil and stream sediment samples were collected in the latest work phase and have been analysed for Au-As by Bondar-Clegg Company Ltd. The analysis for gold consists of a preconcentration by fusion followed by disolution in hot aqua regia and analysis by atomic absorption. For arsenic, samples were dissolved in perchloric nitric actid and analyzed colorimetrically.

## b) Gold

Regional work in the Charlottes has established a solid background value for gold in soil, rock of silts or <5 ppb. Values of 15 ppb and greater are considered anomalous and may be important.

# i) Area A

Anomalous gold values in Area A are most common in the southern part of the area. Soil samples returned values of up to 2879 ppb (H-1171) and 9 samples returned values of greater than 100 ppb. In rock chip samples the highest value returned was >10,000 ppb Au (1.3 oz/ton) for H1270 and 40 samples were reported with values greater than 100 ppb. In the northern part of the area anomalous gold values are of similar tenor. One soil sample returned 2545 ppb Au (H1036) but only 9 samples were reported at, or greater than 20 ppb. Four rock chip samples (C846, 860, 861, 854) exceeded 100 ppb Au. These were taken from an area of strong silicification and associated large dykes.

The south part of Area A has anomalous gold over 1500 m X about 500 m whereas to the north much smaller areas of significant gold response are indicated.

ii) Area B.

In Area B anomalous gold values exceeding 100 ppb Au were obtained from 14 rock samples. In the northern part of Area B the anomalous rocks occur within large areas displaying a high degree of silicification, with or without quartz veining. The area is characterized by apparent deep oxidation of sulfides and possible leaching of gold values and therefore the anomalies may be highly significant.

In the southern part of Area B 6 rock chip samples containing gold values exceeding 100 ppb Au are located on both sides of C789 (185 ppb Au) a retake of C243 (530 ppb Au). These samples are from a 50 metre long area of scattered outcrops of chloritized weakly brecciated and guartz veined Karmutsen volcanics and interbedded argillites. These outcrops constitute the lowest outcrops on the slope and may lie at the edge of a zone of strong silicification and pyritization exposed in the creek at the valley floor. This zone could be in the order of 100 metres in width and possibly may be an extension of the silicified zone containing anomalous gold in the northeast corner of Area B. Values obtained in the current sampling ranging from 145 - 405 ppb Au clearly indicate the need for more detailed work on this zone.

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iii) Area C

In Area C gold values in soils are generally low with only 4 samples being analysed at greater than 15 ppb.

#### c) Arsenic

In general, regional work in the Charlottes has shown that values in the range of 5 - 25 ppm As form a consistent background for soil, rocks and silts. Values of 50 ppm and greater are anomalous and can usually be related to some form of sulfide mineralization and silicification. At Security arsenopyrite is seldom recognized in the field although it may be fairly common considering the strong arsenic geochemistry. Sulfides tend to be fine grained at Security, and surface oxidation and leaching is strong, especially at the higher elevations.

## i) Area A

In Area A anomalous values for arsenic are common and widespread. Values of >1000 ppm were reported for soil samples H1167, H1171. The indicated zone of anomalous arsenic in soil is about 3000 m X 1500 m in the south and widening in the north to more than 2000 m. The geochem anomaly for arsenic is open to the north and cast.

#### ii) Area B

Arsenic in Area B shows partial correlation with gold geochemistry in rocks and soil. Two rock samples C730, 733, and two soil samples C753, 785 contain greater than 1000 ppm As. Arsenic geochem is strongest in the northern part of Area B. Arsenic values associated with high gold geochem in the southwest of Area B are just barely anomalous.

Arsenic values in soil are consistently anomalous near the break in slope at the southeast limit of sampling over a length of at least 1000 metres. This arsenic anomaly must be related to a structure and/or mineralized zone higher on the slope. Sampling should be extended at least 500 metres to the southeast.

#### iii) Area C

In Area C the anomalous values for arsenic in soils extends for over 100 m X 750 M. Two samples, H1187 and P626 were reported as 1000 ppm and most samples returned 100 ppm. The area is, therefore, highly anomalous for As.

## c) Discussion

The relative lack of anomalous gold values over the relatively flat topography of the north part of Area A, over similar topography in Area C and part of Area B is believed to reflect leaching of gold in such an arsenic-rich environment (Joralemon, P, 1978). If leaching has taken place, then the anomalous values in both arsenic and gold throughout Area A may be attributed to a through-going mineralized structure. Such a structure is evident in Area C and in the especially arsenic-rich environment. the liklihood that gold is present in unweathered rocks is high.

#### CONCLUSIONS

The coarse grid sampling programme on the Security Property has further delimited the areas of interest.

In Area A one rock chip sample (H1170) ran 1,3 oz/ton Au and presents an abvious target for further detailed mapping and sampling. This should be done in conjunction with more detailed soil sampling and mapping over the entire area of the southfacing slope where numerous samples gave anomalous gold and arsenic values.

In the northern part of Area A a number of rock chip samples (C854, 860 etc) returned anomalous values for gold. In light of the favourable local geology - strong quartz veining and dyking - in this area of probable leaching, a drill hole to test these rocks below the leached zone is recommended.

High gold values in soil in the extreme west of the northern area (H1036, 2545 ppb Au) warrant further interest since pyritized rocks with quartz veins were noted nearby. Detailed mapping and sampling is recommended.

In Area B, the main zone of silicification should be mapped and sampled in detail and extended at least as far northeast as sample C733 (820 pph Au), or farther if the strong alteration persists. On the basis of detailed work the centre or centres of this system could be identified and several diamond drill holes spotted. Strong leaching of sulfide and possibly gold is suspected in this part of Area B.

The area of strongly anomalous gold in rock near the southwest boundary of Area B also warrants detailed mapping and sampling to show the relationship between the area of high gold geochem and the known alteration system. More geochem lines and reconnaissance mapping should be done higher on the slope between the areas of high gold geochem at the southwest (C789-96) and northeast (C730,733) ends of Area B as a continuous mineralized system is possible.

Anomalous arsenic results in Area C are believed to be strongly associated with a NNW-trending structure indicated by reconnaissance geological mapping. Further detailed mapping and sampling in this area of strong alteration and probable leaching will likely indicate drill targets to test the extent and degree of leaching.

Respectfully submitted,

J.S. Christie, Ph.D.

G.G. Richards, M.A.Sc., P.Eng.

C.A. Harivel, B.Sc.

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# DETAILED COST STATEMENT

J.S. Christie	August 6-9,11-23, 17 days @ \$150/day		2,550.00
C. Earivel	August 11-24 14 days @ \$130/day		1,820.00
G. Skjelbred	August 11-23 13 days @ \$ 65/day		845.00
Meals (field only)	41 man days @ \$20/		820.00
Airfares	2 -one way, 1 return		300.00
Truck rental	3 days @ \$50/day		150.00
Camp rental			100.00
Geochem	Bondar Clegg C4551 C1722	5,095.50 135.00	5,230.50
Radiophone	Calls billed to 1A22	39.75 97.08	136.83
Helicopter			1,327.65
Field equipment &	technical supplies		425.50
Reproductions	Vancal #16027 #15046 #74827 #15179 #16194	23.81 88.65 17.68 93.07 26.93	250.14
Freight	CPA#4062		22.00
J.S. Christie	Expenses		355.17
G.G. Richards	Expenses		10.28
Report			750.00

\$15,093.07

Allinto

#### CERTIFICATE OF QUALIFICATIONS

I, James S. Christie of Vancouver, British Columbia do hereby certify that,

- I am a Professional Geologist residing at 3921 W. 31st Ave., Vancouver, B.C. V6S 1Y4.
- 1 am a graduate of the University of British Columbia
  B.Sc. Honours Geology 1965, Ph.D. Geology 1973.
- I have practiced my profession as a mining exploration geologist, continuously since 1965.
- 4. I am a Fellow of the Geological Association of Canada.
- 5. I am a Member of the Geologica) Society of America.
- This report is based on my personal knowledge of the district, and mapping of the geology at the property.

James S. Christie, Ph.D.

Alivista

#### STATEMENT OF QUALIFICATIONS

I, Gordon G. Richards of Vancouver, British Columbia do hereby certify that,

- I am a Professional Engineer of the Province of British Columbia, residing at 818 West 68th Ave., Vancouver, B.C., V6P 2V2.
- I am a graduate of the University of British Columbia B.A.Sc. 1968, M.A.Sc. 1974.
- I have practised my profession as a mining exploration geologist, continuously since 1968.
- This report is based on my personal knowledge of the district, and mapping of the geology at the property.

Gordon G. Richards, P.Eng. January 16, 1980

# STATEMENT OF QUALIFICATIONS

I, C.A. Harivel of Telkwa, British Columbia, do hereby certify that.

- I am a geologist residing at Bislop Road, Telkwa, B.C., VOJ 2X0.
- I am a graduate of the University of British Columbia;
  B.Sc. Honours Geology 1972.
- 3. I have practiced my profession as a mining exploration geologist continuously since 1972.

-

Colin A. Harivel December 30,1979





















