THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED
TRAIL, B.C.

563

MAGNETIC SURVEY REPORT ON
BUTTE CLAIM GROUP - ATLIN M.D.

S.E. QUADRANT LAT. 59° N, 134° W

Located claims on which one (1) year's assessment work is requested, at $100 per claim:

Claim	Record No.	Tag No.
Val No. 1	5476	A 67701
Val No. 3	5478	A 67703
Val No. 5	5480	A 67705
Val No. 30	5505	A 67730
Val No. 32	5507	A 67732
Val No. 34	5509	A 67734
Val No. 35	5510	A 67735
Val No. 36	5511	A 67736
Val No. 37	5512	A 67737
Val No. 38	5513	A 67738
Val No. 39	5514	A 67739
Bear No. 1	133	A 32088
Brothen No. 2	1783	
Tunnel Fr.	2351	206454

Located claims on which two (2) years' assessment work is requested, at $100 per claim per year:

Claim	Record No.	Tag No.
Val No. 9	5484	A 67709
Val No. 41 Fr.	5516	A 67741
Val No. 42 Fr.	5517	A 67742
HJ No. 1	2353	206439

Work on the claims was done in the period March 9 to April 10, 1964.

REPORT BY

R.G. GIFFORD
GEOLOGICAL ENGINEER

SUPERVISED BY

J. RICHARDSON
PROFESSIONAL ENGINEER

RGG:gmc

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED
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1. SUMMARY

One (1) year's assessment work credit is requested for 14 located claims, and two (2) years' assessment credit is requested for four located claims. All claims are in the 20-claim Butte group of the Laverdiere property, two (2) claims of this group are Crown granted:

Butte Claim Group

Located Claim	Record No.	Tag No.	Date Recorded
(a) Request for one (1) year's work credit per claim:			
Val No. 1	5476	A 67701	Dec. 19/63
Val No. 3	5478	A 67703	" "
Val No. 5	5480	A 67705	" "
Val No. 30	5505	A 67730	" "
Val No. 32	5507	A 67732	" "
Val No. 34	5509	A 67734	" "
Val No. 35	5510	A 67735	" "
Val No. 36	5511	A 67736	" "
Val No. 37	5512	A 67737	" "
Val No. 38	5513	A 67738	" "
Val No. 39	5514	A 67739	" "
Bear No. 1	133	A 32088	June 23/48
Brothen No. 2	1783		July 20/55
Tunnel Fr.	2351	206454	June 13/56
(b) Request for two (2) years' work credit per claim:			
Val No. 9	5484	A 67709	Dec. 19/63
Val No. 41 Fr.	5516	A 67741	" "
Val No. 42 Fr.	5517	A 67742	" "
HJ No. 1	2353	206439	June 13/56

(c) Crown granted claims:

Crown Granted Claim	Lot No.	Acres	Date Crown Granted
Butte	L 304	34.60	June 16/56
Helena	L 305	48.90	Aug. 1/55

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED
TRAIL, B.C.

MAGNETIC SURVEY REPORT ON BUTTE CLAIM GROUP - ATLIN M.D.

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ILLUSTRATIONS (Plates are attached)

Plate LV-4A - Magnetic map of Butte Group covering Val Nos. 1, 3 and 5 claims.

" LV-4B - Magnetic map of Butte Group covering Butte, Helena, Bear No. 1, Brothen No. 2, H.J. No. 1, Tunnel Fr., and Val Nos. 30, 32, 34, 35, and 41 Fr., and 42 Fr. claims.

" LV-4C - Magnetic map of Butte Group covering Val Nos. 9, 36, 37, 38 and 39 claims.

RGG:gmc
Trail Expl'n Office, Western District
May 13, 1964

The total work commitment required on the above 18 located claims is $2,200. A magnetometer survey was carried out over the claim group with a total expenditure of $2,497. This report with accompanying map and statement of expenditures, is hereby submitted to record the required assessment work.

2. INTRODUCTION

(1) General

A magnetic survey of the Butte Group was undertaken in March, 1964 to further delineate known magnetite bodies and to test for other deposits that might lie beneath Hoboe valley.

The survey of the property and subsequent preparation of data was done in the period March 9 to April 10, 1964. The project was under the supervision of J. Richardson (Geological Engineer, University of Toronto 1940), Cominco Exploration Superintendent and registered B.C. Professional Engineer. The survey was conducted by R.G. Gifford (Geological Engineer, U.B.C. 1961), Cominco Exploration Assistant, with the assistance of M.R. Wolfhard, Cominco Exploration Technician.

(2) Location

The Laverdiere property is in the Atlin Mining Division, 28 miles southwest of Atlin, B.C, in quadrilateral 59° 134° SE. The property for the most part covers the lower reaches of Hoboe Creek, which flows north into Willison Bay, Atlin Lake.

3. GENERAL GEOLOGY

The bulk of the property is underlain by a belt of pre-Permian metamorphic rocks that trend south-southeast. The western part of this belt consists mainly of limestone, tuff(?), and skarn, containing bodies of magnetite carrying low copper values. Granodiorite intrusives border both margins of the belt.

Steep walls flank Hoboe valley. In the showing area the limestone-tuff(?) assemblage forms a bench, 500' wide at best, between the valley floor and the granodiorite contact. The bench rises 30 to 50' vertically out of the flats and is intermittently interrupted by hillside draws. It is contained approximately between the north and south adits of the Laverdiere workings, a distance of 2,400'.

Thick glacial drift underlies most of the valley. However, judging from the amount and distribution of outcrop at the valley outlet its thickness may be less than 200'.

4. INSTRUMENT USED

The survey was carried out with a Sharpe MF-1 fluxgate magnetometer. The MF-1 measures the vertical component of the magnetic field and is read directly in gammas with a resolution of five gammas in the most sensitive range. Maximum sensitivity is 20 gammas per scale division.

Individual readings were accurate only to the order of ±50 gammas. Decreased accuracy was largely the result of transient magnetic disturbances and wide temperature variations. Errors in positioning orientation, and levelling likely were lesser factors contributing to reading inaccuracies.

Magnetic storms, apparently low in overall intensity, occurred from time to time through the survey. Observed maximum drifts during these storms were in the order of 100 gammas over a 15-minute interval. The largest recorded drift was 280 gammas in an 80-minute interval.

The maximum temperature change experienced in the survey amounted to 50 degrees in a four-hour period (from -25° F to +25° F). Since the MF-1 is temperature-compensated to within two gammas per °F in the range

-60° F to + 120° F, this range in temperature results in an instrument drift of about 100 gammas. However, because of the practice of making base station closures at two-hour intervals or less, the largest error attributable to temperature variations does not likely exceed 50 gammas.

5. FIELD PROCEDURE

Base lines were established in a northerly direction parallel to the long axis of the property and, from these, profile lines were run east and west. As a rule the profile lines were spaced 400' along the base line, magnetic observations were taken at 100-foot intervals along the profile and base lines. Spacing between observations was less in anomalous areas. A chain and compass survey was used to establish lines and locate stations.

Base values of magnetic intensity were established at convenient intervals along the base lines. Base station readings were made at intervals two hours or less, these readings served to establish the necessary corrections for diurnal and day-to-day magnetic variations.

All magnetic readings were obtained with the Sharpe Model MF-1 magnetometer. Two readings were made at each field station and four readings were made at each base station, all multiple readings were averaged.

The corrected value of the vertical magnetic field, in gammas, at every station is shown on the accompanying magnetic maps LV-4A to 4C inclusive. These maps are contoured to show anomalous areas. A contour interval of 200 gammas is used in areas of low relief and other intervals, variously greater, in areas of higher relief.

6. SURVEY RESULTS

(1) Magnetic values on bedrock

Correlation of magnetic intensity with outcrop type and proximity was inconclusive due to the limited number of observations actually made on bedrock. The few readings on outcrop, away from the anomalous areas, were in the order of 800 to 1,600 gammas. These readings include observations over granodiorite, on both sides of the valley, and over metamorphic rocks in the vicinity of Val Lake.

(2) Magnetic Anomalies

The general background of magnetic intensity in the area surveyed is 800 to 1,600 gammas, and averages 1,200 gammas. The overall trend of isomagnetic lines is south-southeast.

Two general areas of anomalous magnetic intensities are present. One is in the vicinity of known magnetic bodies, the other occurs along the east side of Hoboe valley.

(i) Area of known magnetic bodies

The magnetic survey in this vicinity was only of a reconnaissance nature and further detail work is required to establish more clearly the size, shape, and distribution of the anomalies. The known magnetite occurrences have been partially explored by underground workings.

Anomalies indicated by the preliminary magnetic survey appear roughly aligned and elongated in a south-southeast direction in accordance with the overall magnetic trend. A low relief magnetic ridge follows the continuation of this trend from the "high" just south of the South adit out into the valley of Hoboe Creek. This is in an area of presumed thick overburden and it may be that this low relief ridge represents an extension of the known magnetite occurrences.

The principal anomalies outlined in the showing area are as

follows, listed from north to south:

1) "Extreme high" over the North adit, 27,000 gammas above background.

2) "High" slightly south of the North adit, 7,000 gammas above background.

3) "Extreme low" at the French adit, 27,000 gammas below background.

4) "High" slightly south of the South adit, 2,000 gammas above background.

(ii) East side of Hoboe Valley

A magnetic high extends along the east side of lower Hoboe Valley to well across Willison Bay, a distance of 13,000'. Its relief is greatest along the lower part of Hoboe Creek (4,000 gammas above background) and is much less over Willison Bay.

The anomaly appears to be roughly coincident with the eastern metamorphic-granodiorite contact. It is briefly interrupted about 4,000' upstream from Willison Bay by a nose of granodiorite.

Weakly magnetic greenstone is exposed along a portion of the anomaly's west flank. It appears likely that it is this rock unit that is largely responsible for the higher magnetic intensities on this side of the valley.

ATTACHMENTS:

(1) Plan of Magnetic Survey of the Butte Group, Plates LV-4A to 4C inclusive.

(2) Statement of Expenditures.

(3) Statutory Declaration relating to expenditures.

(4) Statement of Operator's Qualifications.

Report by: R.G. Gifford
R.G. Gifford
Geological Engineer

Endorsed by: J. Richardson
J. Richardson
Professional Engineer

RGG:gmc
Trail Exploration Office, Western District
May 13, 1964

Distribution:
Mining Recorder (Atlin)	(2)
Exploration Div., Montreal	(1)
" " , Trail	(1)
Trail Exploration	(2)

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED
TRAIL, B.C.

1964 EXPENDITURES ON MAGNETIC SURVEY OF THE BUTTE CLAIM GROUP - ATLIN M.D.

R66

SALARIES

J. Richardson, Exploration Superintendent; 7 days (intermittently through March 9 - April 10) for supervision, @$50 per day	$ 350
R.G. Gifford, Geological Engineer; 22 days (March 9 - 30 inclusive) for field work, 11 days (March 31 - April 10 inclusive) for map and report preparation @$35 per day	1,155
M.R. Wolfhard, Exploration Technician; 22 days (March 9 - 30th inclusive) for field work, 8 days (March 31 - April 7 incl.) for map preparation, @$20 per day	600
	$ 2,105

INSTRUMENT RENTAL

Sharpe MF-1 magnetometer for one month @$150 per month	$ 150

COAST RANGE AIRWAYS

Atlin to Laverdiere property and return	$ 133

SUPPLIES

Equipment and groceries for field work.	$ 109
TOTAL:	$ 2,497

Endorsed by:

G. Hamson
Branch Accountant

This is Exhibit "A" to the Statutory Declaration of James Richardson, declared before me the 27th day of May, A.D. 1964.

A Notary Public in and for the Province ~~of~~ Commissioner for taking affidavits for British Columbia.

CANADA	)	STATUTORY DECLARATION RELATING TO EXPENDITURES ON A GEOPHYSICAL SURVEY OF CERTAIN MINERAL CLAIMS THE PROPERTY OF THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED
PROVINCE OF BRITISH COLUMBIA	)	
TO WIT:	)	

I, JAMES RICHARDSON, Professional Engineer, of the City of Trail, in the Province of British Columbia, DO SOLEMNLY DECLARE:

1. That I am the person who endorsed a geophysical report as the result of surveys carried out of certain mineral claims, the property of The Consolidated Mining and Smelting Company of Canada Limited, situated in Atlin Mining Division.

2. That copies of the said report are being filed with the Mining Recorder in Atlin.

3. That attached hereto and marked with the letter "A", upon which I have signed my name at the time of declaring hereof, is a statement of expenditures incurred in connection with the geophysical survey of the said claims showing in addition the dates during which those making the said survey performed their work.

AND I MAKE this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of the Canada Evidence Act.

DECLARED before me at the Municipality of Tadanac, in Province of British Columbia, this 21st day of May, A.D. 1964.

James Richardson

A Commissioner for taking Affidavits for British Columbia

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED
TRAIL, B.C.

STATEMENT OF OPERATOR'S QUALIFICATIONS

R.G. Gifford was responsible for operating the geophysical instrument used in the magnetic survey described herein. Gifford is a graduate Geological Engineer of U.B.C. and has been employed in geological field work since 1951. During this time he has operated magnetic and electromagnetic instruments for various periods. I consider him a competent and experienced operator.

J. Richardson

J. Richardson
Professional Engineer

JR:gmc
Trail Expl'n Office, Western District
May 20, 1964

M1

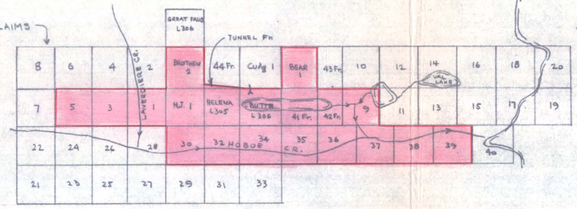
NORTH
1" = 3000'

LAVERDIERE PROPERTY

VAL CLAIMS

WILLISON BAY

ATLIN LAKE



SKETCH SHOWING LOCATION
OF BUTTE GROUP

LEGEND

Isomagnetic lines (vertical intensity)
- closest contour interval = 200 gammas

1000 — positive contour (gammas)

800 — negative contour (gammas)

600 — magnetic depression

*21,800 — spot magnetic intensity

Outcrop — Limestone, tuff(?), greenstone, gneiss

Granodiorite

Toe of slope (outcrop absent or not observed)

Ravine

Survey (tape & compass)

base line — tie line

Butte Claim Group

Laverdiere Property

Instrument : Sharpe MF-1
- fluxgate magnetometer
max. sensitivity = 20 gammas per scale division

NORTH

Val # 8

Val # 6

Val # 4

Val # 2

Brothen # 2

Val # 7

Val # 5

Val # 3

Val # 1

H. J. # 1

Val # 22

Val # 24

Val # 26

Val # 28

POST 29 DOB N

VAL SOUTH B.L.

CAMP SOUTH B.L.

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The Consolidated Mining and Smelting Company of Canada Limited			
To accompany Geological Report by R.G. Gifford, Geological Engineer, on the Butte claim group of the Laverdiere property, Atlin M.D., period of work March 9 - April 10, 1961.	LAVERDIERE ATLIN M.D. MAGNETIC SURVEY R.G. Gifford		
	SCALE: 1"=200'	DATE: MARCH 1961	PLATE: V-4A

COMINCO 0539

NORTH

Cu Ag # 1

Bear # 1

Val 43 Fr.

Val # 44 Fr.

Val # 2

Brothen # 2

Funnel Fr.

Val 41 Fr.

Val 42 Fr.

Val # 1

H.J. # 1

L. 305
Helena

L. 304
Butte

Val # 36

Val # 35

Val # 34

Val # 28

Val # 30

Val # 32

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The Consolidated Mining and Smelting Company of Canada Limited

To accompany Geophysical Report by R.G. Clifford, Geophysical Engineer, on the Butte claim group of the Laverdiere property, Atlin M.D., period of work March 9 - April 10, 1964.

LAVERDIERE ATLIN M.D.
MAGNETIC SURVEY
R.G. Clifford

SCALE: 1" = 200' | DATE: MARCH 1964 | PLATE: V-48

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 563 MAP 4C

M3

The Consolidated Mining and Smelting Company of Canada Limited

To accompany Geophysical Report by R.G. Gifford, Geological Engineer, on the Butte claim group of the Laverdiere property, Atlin M.D., period of work March 9 - April 10, 1964.

LAVERDIERE ATLIN M.D.

MAGNETIC SURVEY

R.G. Gifford

SCALE: 1" = 200' DATE: MARCH 1964 PLATE: LV-4C

COMINCO 0539