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COMINCO LTD.

GEOLOGICAL REPORT ON THE CEDAR 1-27 CLAIMS, SITUATED ON THE EAST WILD HORSE RIVER FORT STEELE MINING DIVISION LAT.49°44'N LONG.115° 29'W

82G-12

REPORT BY

F.D. GILL

UNDER THE SUPERVISION OF

J. RICHARDSON, P. ENG.

COMINCO LTD.

EXPLORATION WESTERN DISTRICT

GEOLOGICAL REPORT ON THE CEDAR 1-27 CLAIMS, SITUATED ON THE EAST WILD HORSE RIVER FORT STEELE MINING DIVISION LAT.49°44'N LONG. 115°29'W

NTS: 82G-11 & 82G-12

TABLE OF CONTENTS

Map #1 — Preliminary Reconnaissance Type Mapping — Rear

C O M I N C O L T D.

EXPLORATION — WESTERN DISTRICT

GEOLOGICAL REPORT ON THE
CEDAR 1-27 CLAIMS, SITUATED
ON THE EAST WILD HORSE RIVER
FORT STEELE MINING DIVISION
LAT 49° 44' N LONG 115° 29 W

GROUP	NUMBER OF CLAIMS	CREDIT REQUESTED
Cedar Group A	27	78 Years

Located claims on which assessment work credit is requested are as follows:

CLAIM	RECORD NO.	CREDIT REQUESTED	TOTAL
Cedar 1 - 6 incl.	14124 - 14129 incl.	3 years each	18 years
Cedar 7 - 9 incl.	14736 - 14738 incl.	3 years each	9 years
Cedar 10 - 15 incl.	14739 - 14744 incl.	3 years each	18 years
Cedar 16 - 21 incl.	14766 - 14771 incl.	3 years each	18 years
Cedar 22 - 24 incl.	15316 - 15318 incl.	3 years each	9 years
Cedar 25 - 27 incl.	15319 - 15321 incl.	2 years each	6 years
		TOTAL	78 years

Work was done on these claims during the period June 8th - July 22nd, 1970.

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F.D. GILL

UNDER THE SUPERVISION OF

J. RICHARDSON, P. ENG.

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT
August 18, 1970

GEOLOGICAL REPORT ON THE CEDAR 1-27 CLAIMS, SITUATED ON THE EAST WILD HORSE RIVER FORT STEELE MINING DIVISION LAT 49°44'N LONG 115°29'W

INTRODUCTION

Geological mapping and prospecting was carried out in an effort to locate tungsten mineralization on the property.

The survey was conducted by F.D. Gill and D. Hadoto assisted by R. Bourne under the supervision of J. Richardson, P. Eng. Assistance was also provided by J. Wan and R.A. Thomas during the early part of June.

The Cedar claims are located in the Fort Steele Mining Division, at latitude 49°44'N and longitude 115°29'W. The claims cover steep mountainous terrain on both sides of the westerly flowing East Wild Horse River. Elevations range from 4200 feet-6800 feet above sea level. In the southern half of the group outcrop averages less than 5 percent of the total surface. Most outcrops are found along skid roads put in when the area was logged several years ago. The area to the north of the East Wild Horse River is better exposed, particularly above the 5200 foot contour, where most outcrop occurs in steep slide areas.

Access is by logging road from Fort Steele, a distance of approximately 13 miles.

HISTORY

Scheelite mineralization in dolomite float was located by prospectors in the summer of 1969. As far as known no previous work has been done in the claim area.

GEOLOGY

The Cedar claims cover a tungsten prospect which occurs in dolomites of the Precambrian Kitchener Formation. Geological mapping has shown that the claims are underlain by Precambrian and Cambrian sediments. The Precambrian is represented by the Creston and Kitchener Formations and the Cambrian by the Cranbrook and Jubilee Formations. A small monzonite plug of late Mesozoic or Tertiary age intrudes the Kitchener Formation and diabase sills are intrusive into the Creston Formation.

LITHOLOGY

1. Precambrian

   a. Creston Formation

      Regional mapping by the G.S.C. shows rocks of the Creston Formation lying along the western boundary of the claim group immediately above Wild Horse River. The few scattered outcrops in this area comprise alternating thin beds of quartzite argillite and dolomite which probably represent either the top of the Creston Formation or the base of the Kitchener Formation. A number of diabase exposures also occur in this area which from their outcrop pattern, suggest sill like intrusion. The diabase unit appears to intrude only the Creston Formation.

   b. Kitchener Formation

      The Kitchener Formation underlies the greater part of the claim group and consists mainly of a thick succession of dolomitic beds. Thin quartzite and dolomitic quartz pebble conglomerates are locally

interbedded and at the southern boundary of the property, near the top of the sequence, quartzites and dolomites in roughly equal proportions predominate.

The dolomites are composed of fine grained alternating bands of light and dark grey crystalline dolomite. Bands vary in thickness from less than one inch to six inches, but the thinner banding is more typical. In places, discontinous bands of dark argillaceous material are common.

The dolomitic quartz pebble conglomerates appear to form thin beds and consist of poorly sorted sub-angular to sub-rounded quartz grains from 0.1 - 0.01" across set in a fine grained dolomitic matrix.

Quartzite beds are typically fine grained, grey to white in colour, and thinly bedded. In some areas they contain small amounts of dolomite.

Within the Kitchener Formation a large zone of tremolitic dolomite has been mapped. Because of the scarcity of outcrop the zone is not well defined. Outcrops of non-tremolitic dolomite in the zone suggest the possibility of a number of small tremolitic zones rather than a single large zone.

Tremolitic dolomites occur in varying forms. Some dolomites are intensely tremolitic while others contain only sparse to moderate amounts of the mineral. In other localities tremolite is restricted to certain thin beds with the intervening dolomite beds being tremolite free. In other areas tremolite clusters are enclosed in light coloured dolomite which are separated from each other by bands or streaks of fine grained siliceous material.

2. Cambrian

a. Cranbrook Formation

The Cranbrook Formation comprises a sequence of quartz pebble conglomerates, quartzites and minor dolomites which outcrop in the northwest corner of the claim group. The predominant rock type is quartz pebble conglomerate which consists of sub-angular to sub-rounded quartz grains 0.01-0.1 inches across. The quartz grains account for 20-40 percent of the total rock and are set in either a siliceous or a dolomitic matrix. This rock type closely resembles the thin conglomerate horizons in the Kitchener Formation. The conglomerate grades into fine grained white to grey quartzites in which cross bedding is usually well developed. The clastic sediments are, in places, interbedded with banded dolomite beds up to 10 feet thick. A thin fault wedge comprising white quartzites and coarse dolomitic conglomerate has also been included in the Cranbrook Formation.

b. Jubilee Formation

The Middle Cambrian Jubilee Formation is exposed over a broad area in the eastern section of the claim group. Both the upper and lower units of the formation are exposed on the property.

The Lower Jubilee Formation is composed of fine grained light and dark blue dolomites that occur in well defined beds from 6 inches to 6 feet thick. Some of the beds are finely laminated and pyrite and pyrrhotite are commonly present.

The Upper Jubilee Formation is composed of white to grey normally massive crystalline dolomite. Bedding is well developed locally and in one area algalaid structures have been recognized. Tremolite has been noted in a few areas in the Jubilee Formation. These occurrences tend to be local and are probably related to the major fault which brings Kitchener and Jubilee rocks into contact.

3. Monzonite

The monzonite occurs as a small plug intruding Kitchener dolomites, with dimensions approximately 1600 feet by 700 feet. Its long axis has a north-south trend which is parallel to an adjacent major fault. The contact is exposed in one area where a dip of 50°west is indicated. The monzonite is pink in colour, generally coarse grained and has a porphyritic texture. It is composed mostly of coarse, well-zoned plagioclase crystals, set in a finer grained groundmass of pink feldspar and green hornblende. Green diopsidic skann with muscovite, has developed in the immediate contact area and in one locality pockets of coarse hornblende occur along the contact.

STRUCTURE

The Precambrian-Cambrian sediments which underlie the Cedar Group form a part of a large overturned structure which lies east of the Wild Horse River.

The oldest rocks on the property, the Creston Formation, overlie the Kitchener dolomites with apparent conformity. This sequence has a general northeast strike and dips at gentle to moderate angles to the northwest. Exceptions to this trend have been noted and suggest either secondary folding or tilting due to unrecognized faults.

The Jubilee dolomites, which occupy the eastern area of the group have a northernly strike and dip steeply (60-75 degrees) to the west. They are separated from the Kitchener dolomites by a major north-south fault which dips steeply east and cuts across the entire claim group.

The conglomerates and quartzites of the Cranbrook Formation which are exposed in the northwestern part of the property strike a few degrees west of north and have steep dips to the west. They have been brought into contact with the older Kitchener rocks by a northwesterly trending fault which intersects the above mentioned northerly trending fault in the East Wild Horse River. To the northeast of this fault the Cranbrook Formation overlies poorly exposed dolomite beds. The relationship between these two sequences and the formation to which the dolomite beds belong is not known.

MINERALIZATION

Scheelite mineralization appears to be confined to the main tremolitic zone in the Kitchener dolomites. The monzonite and surrounding areas are apparently unmineralized.

Two mineralized areas have been located in the main tremolitic zone. These areas lie on the north and south sides of the East Wild Horse River and appear to be stratigraphically equivalent. They are some 2500-3000 feet from the monzonite plug. The area to the south of the river is very poorly exposed with most mineralization being noted in float. Scheelite occurs along joint and fracture planes and as disseminated grains in the tremolitic dolomite, mostly as fine specks. Coarser grains are sometimes present along fractures and the areas immediately adjacent to them. The coarser scheelite is sometimes, but not invariably, accompanied by coarse clear crystals of calcite and, in a few instances by sparse grains of magnetite.

Although mineralization is fairly widespread the overall grade appears to be very weak.

CONCLUSIONS

The program of mapping and prospecting was successful in locating minor amounts of tungsten mineralization associated with tremolitic dolomite. Mineralization is associated with fractures and is probably related to the monzonite intrusion, the surface expression of which is 2500-3000 feet from the showing areas. No significant concentrations of scheelite have been noted in the surface program and the grade of the mineralization presently exposed appears to be too weak to be of economic interest.

ATTACHMENTS

Statement of Expenditures
Statutory Declaration of Expenditures
Statement of Qualifications
Geological Map, Cedar Group 1" = 400'

Report by: F. D. Gill
F. D. Gill, Project Geologist

Endorsed by: J. Richardson
J. Richardson, P. Eng.

FDG/lmc

Distribution:

Mining Recorder (2)
Vancouver, Expl'n. (1)

EXHIBIT A

C O M I N C O L T D.

EXPLORATION — WESTERN DISTRICT

1970 - GEOLOGICAL SURVEY
EXPENDITURES
CEDAR GROUP, EAST WILD HORSE RIVER
FORT STEELE MINING DIVISION
82 G - 11 & 82 G - 12

SALARIES		
1 Geologist (D. Hodoto) 46 days during period June 8 - July 22 @ $27/day	$1242.00	
1 Field Assistant (D.R. Bourne) 46 days during period June 8 - July 22 @ $18/day	$ 628.00	
1 Project Geologist (F.D. Gill) 46 days during period June 8 - July 22 @ $43/day	$1978.00	
1 Prospector (R.A. Thomas) 8 days during period June 8 - June 15 @ $27/day	$ 216.00	
1 Prospector (J. Won) 8 days during period June 8 - June 15 @ $27/day	$ 216.00	$4280.00
GROCERIES AND ACCOMMODATIONS		$1503.78
TRANSPORTATION		
Truck and maintenance		$ 844.57
GENERAL GEOLOGY SUPPLIES		
1" = 400 ft. Topographic may from Air Photos	$ 812.00	
Air Photos, mineral lamps etc.	$ 455.06	$1267.06
TOTAL EXPENDITURES		$7895.41

J. Richardson.
J. RICHARDSON, P. ENG.

This is exhibit "A" to the statutory Declaration of J. Richardson declared before me the 14th day of Sept. 1970 A.D.

A Commissioner for taking Affidavits for British Columbia.

DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

TO WIT:

In the Matter of STATUTORY DECLARATION RELATING TO EXPENDITURES ON A GEOLOGICAL SURVEY OF THE CEDAR GROUP OF MINERAL CLAIMS, FORT STEELE MINING DIVISION.

I, JAMES RICHARDSON, Professional Engineer

of the City of Vancouver

in the Province of British Columbia, do solemnly declare that

1. I do personally know F.D. Gill who prepared the accompanying geological report as a result of a survey carried out under my supervision on certain mineral claims situated in the Fort Steele Mining Division owned by Cominco Ltd.

2. Copies of the said report are being filed with the Mining Recorder in Vancouver.

3. 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 geological 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 City of Vancouver

, in the

Province of British Columbia, this 14

day of September 1970 A.D.

J. Richardson.

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

C O M I N C O L T D.

EXPLORATION WESTERN DISTRICT

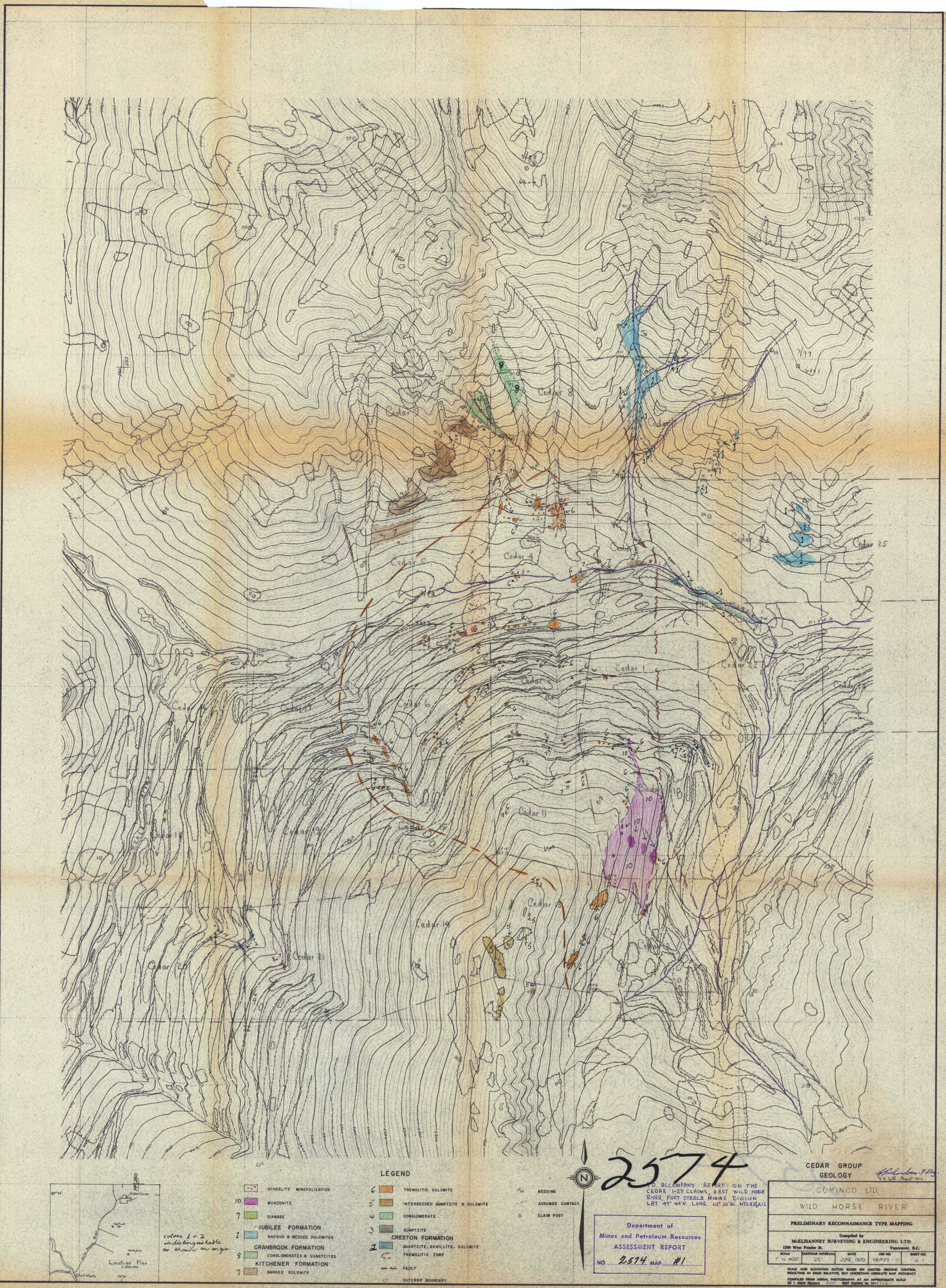
STATEMENT OF QUALIFICATIONS

F.D. Gill was responsible for carrying out the geological survey on the Cedar Claims and for the preparation of this report. Mr. Gill graduated as a Bachelor of Science from the University of Durham, U.K. in Honours Geology in 1957. He obtained his M.A. degree in Geology from the University of Toronto in 1966 and has been working in a responsible capacity for Cominco Ltd. since July 1957.

I consider him to be an experienced and capable geologist.

J. Richardson.

J. Richardson, P. Eng.


Cedar 9
Cedar 8
Cedar 5
Cedar 4
Cedar 23
Cedar 25
Cedar 1
Cedar 22
Cedar 24
Cedar 16
Cedar 17
Cedar 6
Cedar 11
Cedar 10
Cedar 15
Cedar 18
Cedar 19
Cedar 13
Cedar 14
Cedar 12
Cedar 20
Cedar 21
EAST WILD HORSE RIVER
WILD HORSE RIVER
Talus w scheelite
LEGEND
SCHEELITE MINERALIZATION
10 MONZONITE
9 DIABASE
JUBILEE FORMATION
1 MASSIVE & BEDDED DOLOMITES
CRANBROOK FORMATION
8 CONGLOMERATES & QUARTZITES
KITCHENER FORMATION
7 BANDED DOLOMITE
6 TREMOLITIC DOLOMITE
5 INTERBEDDED QUARTZITE & DOLOMITE
4 CONGLOMERATE
3 QUARTZITE
CRESTON FORMATION
2 QUARTZITE, ARGILLITE, DOLOMITE
TREMOLITIC ZONE
FAULT
OUTCROP BOUNDARY
BEDDING
ASSUMED CONTACT
CLAIM POST
colors 1 + 2 indistinguishable as shown on maps.
Location Plan 1:250,000
Cedar Claims
Vertical Mt
Mt Fisher
Wild Horse River
Fort Steele
49°45'
115°30'
N
2574
TO ACCOMPANY REPORT ON THE CEDAR 1-27 CLAIMS, EAST WILD HORSE RIVER, FORT STEELE MINING DIVISION LAT. 49° 44'N LONG. 115° 20'W. NTS 82G11,12
Department of Mines and Petroleum Resources ASSESSMENT REPORT NO. 2574 MAP #1
CEDAR GROUP GEOLOGY
G. Richardson, P.Eng. J.D. Gill August 1970
COMINCO LTD
WILD HORSE RIVER
PRELIMINARY RECONNAISSANCE TYPE MAPPING
Compiled by McELHANNEY SURVEYING & ENGINEERING LTD.
1200 West Pender St. Vancouver, B.C.
SCALE 1" to 400'
CONTOUR INTERVAL 25'
DATE JUNE 1970
JOB NO. 05499 - 0
SHEET NO. 1 of 1
SCALE AND ELEVATION DATUM BASED ON LIMITED GROUND CONTROL RESULTING IN GOOD RELATIVE, BUT UNCERTAIN ABSOLUTE MAP ACCURACY
COMPILED FROM AERIAL PHOTOGRAPHY AT AN APPROXIMATE SCALE OF 1 INCH EQUALS 3300 FEET FLOWN IN 1969 (AUG.)