

4205

GEOLOGICAL REPORT
ON
THE DAN CLAIM GROUP

OF

BOW VALLEY EXPLORATION, LTD.

AT

CARIBOU RANGE, BRITISH COLUMBIA

59° 45' North - 125° ^{30'} 25' West

BY

THOR GJELSTEEN
and
FREDERICK J. SMITH

of

FRONTIER RESOURCES, INC.
209 16th Street, Suite 515
Denver, Colorado 80202 USA

March 12, 1973

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 4205 MAP

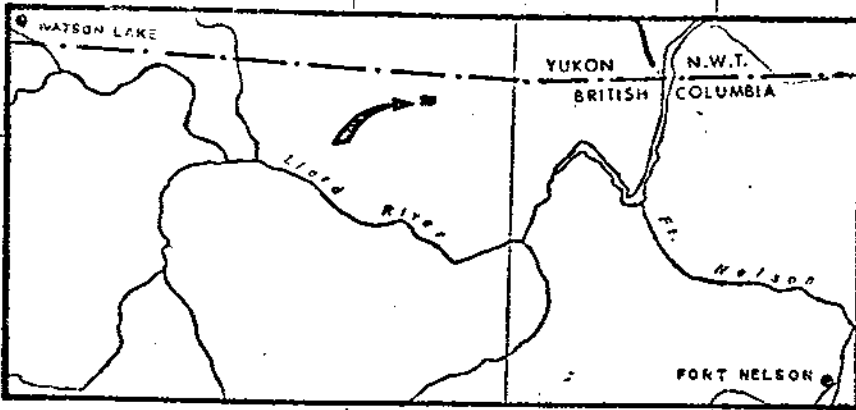
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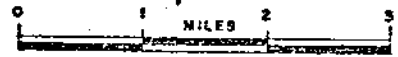
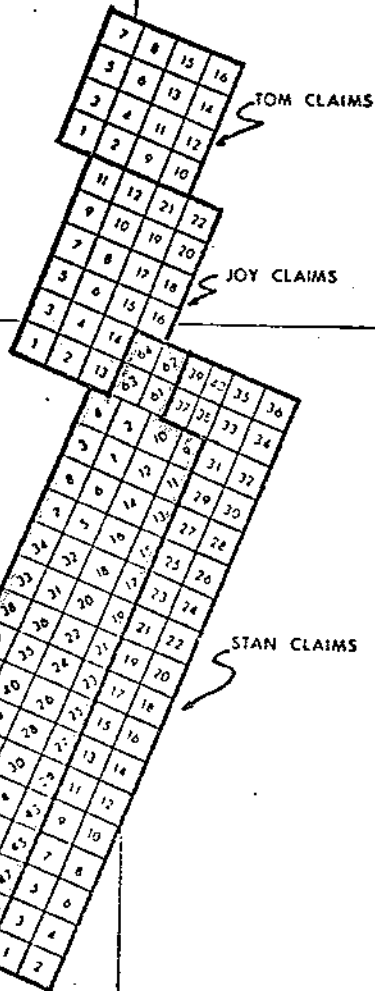
MAP (in pocket)

#1 Geological Map Scale 1 in. = 1000 feet

#2 Claim & Location Map



LOCATION MAP



SCALE 1 : 100,000

CARIBOU MOUNTAINS PROJECT
 LIARD MINING DIVISION
 BRITISH COLUMBIA

Department of
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 NO. 4205 MAP #2

INTRODUCTION

Geological mapping was done over the fluorite-barite showings on the Dan 1-64 claims. Fluorite, the principal mineral, was found to occur as vein fillings and in a bedded replacement horizon. A rock chip geochemical survey of the favorable stratigraphic interval is recommended.

LOCATION AND ACCESS

The Dan Group is located about 30 miles northeast of Mile 496 on the Alaska Highway in the Liard Mining Division. The northwest corner of the claim group is approximately located at latitude 59° 45' North, longitude 125° 25' West. Winter seismic roads come within four miles of the area, however, they are not passable during the summer months. Access to the area is best gained by helicopter from Mile 496.

TOPOGRAPHY AND VEGETATION

The prospect area lies within the Caribou Range of the Liard Plateau physiographic province. The mapped area is about 5000 feet above sea level. The relief within the claim group is moderate to gentle except for several incised valleys. Solution activity in areas underlain by limestone has created numerous sink holes, depressions, dislocated drainage, and underground streams.

Tree line is roughly at 4300 feet above sea level with grass and low brush above this elevation.

CLAIMS

The Dan Group consists of 64 claims as follows:

<u>Claim</u>	<u>Tag No.</u>	<u>Record No.</u>
Dan 1-60	346341M - 346400M	62118 - 62177
Dan 61-64	343273M - 343276M	62178 - 62181

These claims are owned by Bow Valley Exploration Ltd. and optioned to Pan Ocean Oil Ltd. and Frontier Resources, Inc.

FIELD WORK

Field work consisting of geological mapping was conducted from August 25 to September 1, 1972, by Thor Gjelsteen and Frederick J. Smith. Mapping was by compass and pace; using aerial photographs as control.

GEOLOGY

The Caribou Range is a partly eroded, north trending, anticlinal structure. Sedimentary rocks ranging in age from Cambrian to Carboniferous are exposed in narrow, north trending bands.

The fluorite-barite occurrences found on the Dan group are restricted to the Dunedin Formation of Middle Devonian age. The formation is about 850 feet thick and consists of bedded, dark gray, fetid, argillaceous, and siliceous limestone. The lower 300 feet of the formation is highly fossiliferous, thick beds of stromatoporoid and coral bearing limestone are persistent over the claim group. The middle unit is about 450 feet thick and consists of dark gray argillaceous limestone and dolomitic limestone. This unit also contains numerous thin, sporadic beds of quartz silt. The upper unit is about 100 feet thick and is basically a dark gray limestone with numerous lenses and nodules of black chert. This unit, as well as the middle unit, is generally unfossiliferous although some gastropod fossils were infrequently found.

The Dunedin Formation is underlain by the Lower Devonian Stone Formation. The lower contact with the Stone Formation was placed at the top of the highest light gray, microcrystalline dolomite. The contact with overlying Upper Devonian Basa River Formation was picked where first fissile black shale was encountered. The basal contact of the Dunedin is well exposed and easily picked, but upper contact, because of poor exposures, was drawn on the basis of float and topography.

MINERALIZATION

Twelve showings of fluorite and barite were examined. Most of the showings occurred in a 75 foot thick interval near or adjacent to the base of the Upper cherty zone of the Dunedin Formation. Mineralization consists of fluorite, barite, witherite, calcite. Mineralization occurs as vein fillings, bedded replacements and as breccia fillings. Two poorly defined mineral trends were found on the Dan Group.

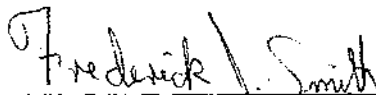
The Northern trend extends from Dan 32 to Dan 64. The trend strike is North, yet the strike of the individual showings differ. The showings on Dan 64, 61, and 8 are vein fillings, the mineralization is principally colorless and purple fluorite with traces of calcite. The veins range three inches to three feet in width. The veins are poorly exposed, thus strike length determinations are difficult, they seem to persist about 25 to 100 feet along strike. The showings on Dan 6 and 32 are bedded replacement occurrences. The mineralization is purple fluorite, barite, witherite, and calcite. It occurs as bands a few inches thick to beds five feet thick. The grain size of mineralization is highly variable. The occurrence on Dan 6 is 35 feet thick and 125 feet wide and 100 feet long. Half mineralization occurs in a coarse grained bands while the other half occurs as fine grained fluorite disseminations. The Dan 32 occurrence is basically fine grained dissemination with an exposed thickness of 8 feet, width of 40 feet and exposed strike of 150 feet. On Dan 16, a poorly exposed rubble breccia is about 50 feet thick. The breccia consists of angular limestone fragments of the Dunedin of all sizes. Calcite has healed most of the void space. No fluorite or barite was seen in this zone. The zone is 250 feet stratigraphically below the base of the cherty zone.

The Southern trend extends from Dan 60 northward to Dan 42. The showings on Dan 39, 40, 41, 50, 49, and 60 are the vein type similar dimension to those of the northern trend. The showing on Dan 48 is the bedded replacement type. The occurrence is 8 to 10 feet thick in the exposures and the length and width are 50 feet and 20 feet respectively. The mineralization is fluorite as fine grained dissemination in a pitted, sandy dark gray limestone that is cut with thin feeder fractures. Rubble breccia zones that contained traces of fluorite and barite were found on Dan 42 and 50. Their occurrence and stratigraphic position is similar to the Dan 16 showing.

A composite group sample from the bedded replacement showings was collected and then analyzed by Skyline Labs, Inc., Denver, Colorado. The report of analysis and of spectrographic analysis is included.

RECOMMENDATIONS

Bedded replacement and vein fluorite-barite were found in Caribou Range on the Dan Group. Two mineral trends were established. We recommend that rock chip geochemical samples of the favorable stratigraphic interval be taken and analyzed for F, Ba, Sr, Zn, Pb.



Frederick J. Smith



Thor Gjelsteen
AIPG Certificate No. 78

Frontier Resources Inc.

SUITE 515 MAJESTIC BUILDING
209 SIXTEENTH STREET
DENVER, COLORADO 80202


TELEX 4-5880

March 12, 1973

CERTIFICATE OF QUALIFICATION

I, Thor Gjelsteen, of Denver, Colorado, U.S.A., hereby certify that:

- 1) I am a geologist residing at 3065 South Ingalls Way, Denver Colorado, U.S.A. and employed by Frontier Resources, Inc., 209 16th Street, Denver, Colorado.
- 2) I am a graduate of Missouri School of Mines, B.Sc., 1953, and Certified Professional Geologist, Certificate Member 78, of American Institute of Professional Geologists. I have practiced my profession for 20 years.
- 3) I am the author of this report which is based on geological mapping carried out on the Dan Claim Group.


Thor Gjelsteen, President
Frontier Resources, Inc.

Frontier Resources Inc.

SUITE 515 MAJESTIC BUILDING
209 SIXTEENTH STREET
DENVER, COLORADO 80202


TELEX 4-5880

March 12, 1973

CERTIFICATE OF QUALIFICATION

I, Frederick J. Smith, of Arvada, Colorado, U.S.A., hereby certify that:

- 1) I am a geologist residing at 6523 Vrain Street, Arvada, Colorado, U.S.A. and employed by Frontier Resources, Inc., 209 16th Street, Denver, Colorado.
- 2) I am a graduate of Missouri School of Mines, B.Sc., 1965 and M.Sc., 1968. I have practiced my profession for 5 years.
- 3) I am co-author of this report which is based on geological mapping carried out on the Dan Claim Group.


Frederick J. Smith, Geologist
Frontier Resources, Inc.

SKYLINE LABS, INC.

SPECIALISTS IN GEOCHEMICAL EXPLORATION

12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

REPORT OF ANALYSIS


Job No. 90015
September 6, 1972

Frontier Resources, Inc.
Suite 511
899 Logan Street
Denver, Colorado 80203

Attention: Frederick J. Smith

1 Rock Chip Sample

Sample No.	SiO ₂ (%)	MgO (%)	CaO (%)	CO ₃ (%)	BaO (%)	CaF ₂ (%)
C-1	41.1	.038	38.1	1.4	3.2	53.4

for 
Charles E. Thompson
Chief Chemist

Appendix

SKYLINE LABS, INC.

SPECIALISTS IN GEOCHEMICAL EXPLORATION

12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

REPORT OF SPECTROGRAPHIC ANALYSIS

Frontier Resources, Inc.
 Suite 511
 899 Logan Street
 Denver, Colorado 80203

Job No. 90015
 September 6, 1972

Attention: Frederick J. Smith

Values reported in parts per million except where noted otherwise,
 to the nearest number in the series 1, 1.5, 2, 3, 5, 7 etc.

Element	Sample No. C-1
Fe	.1%
Ca	>20%
Mg	.03%
Ag	<1
As	<500
B	<10
Ba	>10,000
Be	<2
Bi	<10
Cd	<50
Co	<5
Cr	<10
Cu	2
Ga	<10
Ge	<20
La	<20
Mn	10
Mo	2
Nb	<20
Ni	<5
Pb	300
Sb	<100
Sc	<10
Sn	<10
Sr	700
Ti	200
V	30
W	<50
Y	10
Zn	<200
Zr	<20

Edwin V. Post
 for Charles E. Thompson
 Chief Chemist

STATEMENT OF EXPENDITURES
DAN CLAIMS
LIARD MINING DIVISION, B.C.

Incurred by Pan Ocean Oil Ltd.
and Frontier Resources, Inc.

PERSONNEL

Field

1 Geologist, Thor Gjelsteen 8 days geological mapping @ \$100/day	\$ 800.00
1 Geologist, Fred Smith 8 days geological mapping @ \$100/day	800.00

Office

1 Geologist, Thor Gjelsteen 1 day report writing @ \$100/day	100.00
1 Geologist, Fred Smith 3 days report writing & map preparation @ \$100/day	<u>300.00</u>
	\$2,000.00

CONTRACT SERVICES

Relcome Exploration Co. - camp costs and vehicle rental	530.00
Arctic Air Ltd. - personnel transport	550.00
Lower Liard Lodge - board and lodging	331.60
Alpine Helicopters - 15 hours @ \$150/hour	<u>2,250.00</u>
	\$3,661.60

EXPENSES AND DISPURSEMENTS

Air Photos, Mosaics, Drafting & Reproduction Costs	368.87
Camp Supplies	204.28
Air Transportation	503.72
Hotels and Meals	104.95
Telephone	19.90
Analysis and Sample Transport	<u>52.20</u>
	\$1,253.92

TOTAL EXPENDITURES

\$6,915.52

Frontier Resources Inc.

SUITE 515 MAJESTIC BUILDING
209 SIXTEENTH STREET
DENVER, COLORADO 80202

TELEX 4-5880

April 19, 1973

APR 25 '73 PM

Mr. E.A.H. Mitchell, Mining Recorder
Department of Mines and Petroleum Resources
Victoria, British Columbia, Canada

Re: File 1106 - Liard
Dan Mineral Claims - Geological Report

Dear Sir:



DEPT. OF MINES
AND PETROLEUM RESOURCES

REFERRED TO	DATE	INITIALS
D.M.		
C.C.C.		
G.O.		
M.D.C.C.		<i>JMK</i>
B.C.C.		
ACCTS.		
C.M.B.		

In regard to your letter of April 11, 1973 concerning the three discrepancies contained in the fore-mentioned geological report, I will try to clarify these points:

- (1) Letter sequence on geological map.
Upon investigation of the sepia of the map, I found that the sequence was accidentally reversed.
- (2) Report of Analysis.
In the report the analysis performed by Skyline Labs, the apparent excess is Ca O. The reason for this is that we always request a total calcium oxide assay, because our past experience with CaF₂ assays has shown that rock samples having high Magnesium (Mg) content yield erroneously %CaF₂ values. Thus most calcium of calcium oxide assay is contained in calcium difluoride assay (%CaF₂). The attached sheet shows how to interpret the assay.
- (3) Air Transportation Expenses.
The two items, Arctic Air Ltd. charge under contact services and Air Transportation under Expenses and Disbursements are questioned. The latter is the cost of two round trip tickets from Denver, Colorado to Fort Nelson, British Columbia, for Mr. Gjelsteen and myself for this project. The former charge, Arctic Air Ltd. was cost incurred getting to the Lower Liard Lodge from Fort Nelson and back. We believe that these are allowable, because they are costs that were incurred to gain access to the property.

Department of

Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 4205 MAP.....

Sincerely,

Frederick J. Smith

Frederick J. Smith
Geologist
Frontier Resources, Inc.

1776

From Assay

SiO_2 - 41.1%

CaF_2 - 53.4%

Department of
Mines and Petroleum Resources

ASSESSMENT REPORT

NO 4205 MAP

MgO - 0.038%

CaO - 38.1%

BaO - 3.2%

CO_2 - 9.4%

Calculations:

Quartz - pure 100% SiO_2
in assay sample 41.1%

$$\frac{41.1\% \text{ SiO}_2 \text{ in sample}}{100\% \text{ in Quartz (pure)}} \times 100\% = 41.1\%$$

The assay sample contains 41.1% quartz
by weight

Fluorite pure is 100% CaF_2
in assay sample 53.4%

$$\frac{53.4\% \text{ in sample}}{100\% \text{ in pure Fluorite}} \times 100\% = 53.4\%$$

The assay sample contains 53.4% fluorite
by weight

Pure fluorite contains by weight

Ca 51.3%

F 48.7%

In the assay CaO is 38.1%, the
calculated Ca % is 27.2%

The assay sample contains 53.4% CaF_2

by weight, thus Ca Content should be

$$53.4\% \text{ CaF}_2 \text{ in Sample} \times 51.3\% \text{ Ca in pure fluorite} = 27.2\% \\ \text{or } 38.08\% \text{ CaO}$$

Thus all CaO is contained within fluorite and we have no Mg interference.

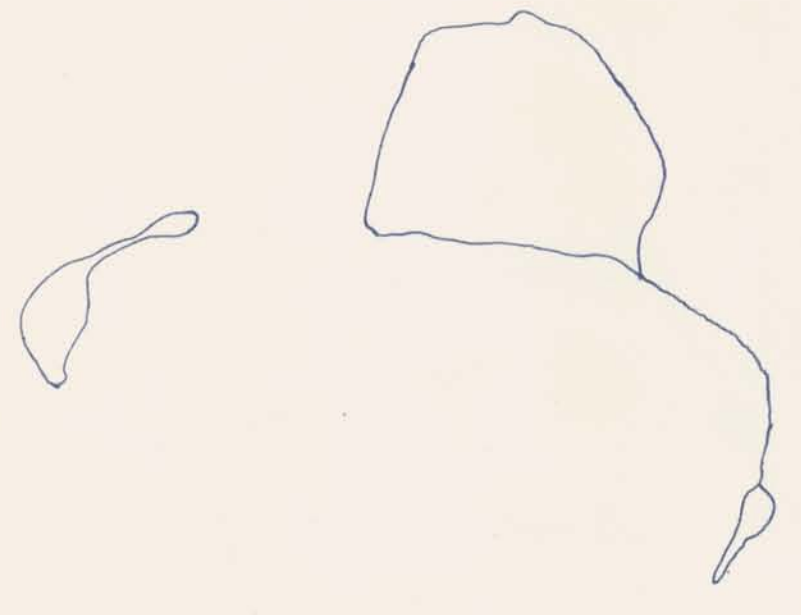
Witherite $\frac{3.2\% \text{ in sample}}{77.7\% \text{ in Witherite}} \times 100\% =$

The Assay sample contains

Fluorite	53.4%
Quartz	41.1%
Witherite	<u>4.1%</u>
	98.6%

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 4205 MAP



TO ACCOMPANY REPORT BY THOR GJELSTEEN AND FREDERICK J. SMITH,
DATED MARCH 12, 1973

Thor Gjølsteen
March 12, 1973

Frederick J. Smith
March 12, 1973

LEGEND

- Dbr UPPER DEVONIAN - Besa River Shale
- Dd MIDDLE DEVONIAN - Dunedin Limestone
- Ds LOWER DEVONIAN - Stone Dolomite
- LIMESTONE OUTCROP
- SHALE OUTCROP
- BRECCIA OUTCROP

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4205 MAP #1

4205
M-1

FRONTIER
Resources

209 SIXTEENTH ST. DENVER, COLORADO 80202 PHONE (303) 892-1036

94 N/10 TOAD RIVER

GEOLOGIC MAP OF DAN CLAIM GROUP

MAP NO.:	CONTOUR INTERVAL:	SCALE: 1" = 4000'	NAME: T. GJELSTEEN & F. J. SMITH	DATE: 3-2-73
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