

1682

DELTA EXPLORATIONS LTD.,
Vancouver, British Columbia

GEOLOGICAL REPORT

COVERING

BV 1 to BV 15 MINERAL CLAIMS

Located 2 to 4 miles east of Muncho Lake, British Columbia

Latitude 59° N.

Longitude 125° W.

LIARD MINING DIVISION

Held in trust by R.H. Dawson for Delta Explorations Ltd.

Work done July 8 - July 22, 1967

R.H. Dawson, M.Sc.

January 14th, 1968

Williams Lake, B.C.

TABLE OF CONTENTS

	<u>Page</u>
Chapter 1 - INTRODUCTION	1
Preliminary Statement	
Location	
Access	
Field Work	
Chapter 2 - GENERAL GEOLOGY	3
Stratigraphy	
Precambrian	
Silurian	
Nonda Formation	
Lower Devonian	
McConnell Formation	
Muncho Formation	
Yellow Unit	
Middle Devonian	
Arnica Formation	
Nahanni Formation	
Besa River Shale	
STRUCTURAL GEOLOGY	
Chapter 3 - DESCRIPTION OF THE BARITE DEPOSITS	10
Mode of Occurrence	
Control	
Shape	
McMechan Creek Section	
Deposit South of McMechan Creek	
Deposit North of BV 8 Claim	
Origin	
Chapter 4 - DESCRIPTION OF CLAIMS	15
BV 1	
BV 2, 4 and 7	
BV 3	
BV 5	
BV 6	
BV 8 and 9	
BV 10	
BV 11	
BV 12 and 13	
BV 14 and 15	
Particulars of BV 1-15 Mineral Claims	
Chapter 5 - COMPARISON TO OTHER BARITE DEPOSITS	21
Chapter 6 - EVALUATION OF THE BARITE ZONE	21
Recommendations	
BIBLIOGRAPHY	24
PLATES (Numbers 1-10)	26-31
APPENDIX - Specific Gravity Determinations	32

ILLUSTRATIONS

		<u>Page</u>
Figure 1	Reference Map	1(a)
Figure 2	Location Map	In Pocket ^{ca} 1
Figure 3	Geological Map	In Pocket ^{ca} 2
Figure 4	Chart for Conversion of Specific Gravity to Percentage BaSO ₄	22(a)
Figure 5	Isopach Map	22(b)

Plate 1	View south of BV 10 Initial Post	27
Plate 2	View southeast of BV 10 Initial Post	27
Plate 3	View east of BV 10 Initial Post	28
Plate 4	View north of BV 10 Initial Post	28
Plate 5	Barite zone on BV 8 and BV 9 claims	29
Plate 6	Barite zone on BV 8 and BV 9 claims	29
Plate 7	Western slope of Sentinel Range	30
Plate 8	Sentinel Range northwest of BV claims	30
Plate 9	Sentinel Range stratigraphic section north of Toad River Bridge.	31
Plate 10	Intraformational Breccia	31

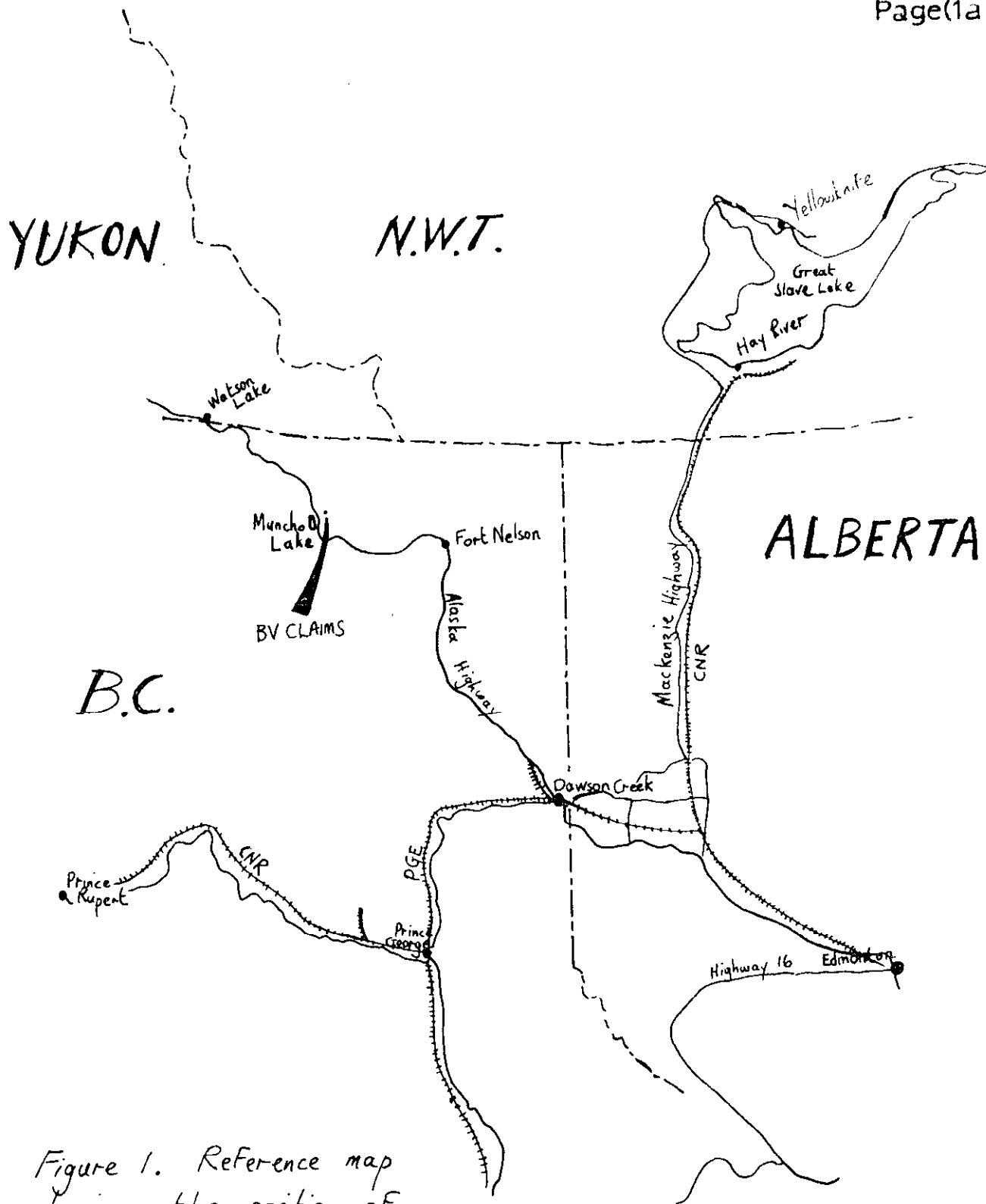


Figure 1. Reference map showing the position of the BV barite claims.

0 40 80 120 160 200 240

Scale of miles

1 inch \approx 120 miles

Chapter 1INTRODUCTIONPreliminary Statement

The B.V. claim group, located near Muncho Lake, Mile 465 on the Alaska Highway, is underlain by a high grade barite deposit with an inferred tonnage in excess of 100,000,000 long tons.

Location (See Figures 1 and 2)

The B.V. claims are located in the Sentinel Range of the Rocky Mountains, 2 - 4 miles east of the Alaska Highway near Muncho Lake. Claims BV 1 - 13 inclusive are in the valley of a tributary of Sulphur Creek, at elevations ranging from 4,000 to 5,000 feet above sea level. The tributary mentioned above is referred to in this report as Barite Creek.

Claims BV 14 and BV 15 span the height of land between Barite Creek and Muncho Lake to the west, and straddle the eastern limit of Muncho Lake Provincial Park (Class B). These two claims are at an elevation of about 6,000 feet.

Access

The BV claim group is only 2 - 4 miles from the Alaska Highway at Muncho Lake. Direct access except by helicopter or foot cannot be obtained from this point due to the rough, steep terrain.

The claims may be reached on foot from Muncho Lake by climbing the ridge east of Mile 463¹/₂ on the Alaska Highway and walking along the ridge crest until BV 14 claim is reached. From BV 14 claim, it is an easy descent down "McMechan Creek" valley to Barite Creek and the main body of the claims.

Using horses (available at Toad River Lodge and Muncho Lake), access to the claims may be obtained from either of two routes: one from the north at Mile 485; the other from the south at Mile 428. Both routes are primarily east of the high and rugged westernmost Paleozoic ridges of the Sentinel Range.

(1) Route From Mile 485. A trail from Mile 485 follows tributaries of Sulphur Creek southwest to a point 7 miles from the claims. The remaining 7 miles up Barite Creek is an easy grade and should not present any problems. Total distance from the Alaska Highway - about 30 miles.

(2) Route From Mile 428. At Mile 428, a gravelled road servicing a Canadian National Telegraphs microwave tower crosses Toad River by bridge and continues north up Nonda Creek, reaching a point close to the southern headwaters of Sulphur Creek. The distance from the end of this road to the BV claim block is 7 miles; the route follows an easy grade down a tributary of Sulphur Creek and up Barite Creek to the claims.

Field Work

The period July 9 - July 20, 1967, was spent prospecting, claim staking, geological mapping and sampling in the area. The writer and companion, Fred McMechan, established a camp at the junction of McMechan and Barite Creeks on the evening of July 12th and used this camp as a base until July 20th.

Chapter 2
GENERAL GEOLOGY

Stratigraphy

Rocks exposed in the general vicinity of the BV claims range in age from Precambrian to Middle Devonian. The table of formations refers to the rocks in the western portion of the Sentinel Range north of Toad River from Mile 437 to Mile 467.

TABLE OF FORMATIONS

Age	Rock Unit	Lithology	Thickness
Devonian to Mississippian	Besa River Shale	Black Shale	>1,000'
Middle Devonian	Nahanni-Manitoe Formations	limestone very fine to microcrystalline	700'
	Chinchaga-Arnica Formations	Dolomite	2,100'
	Disconformity		
	Yellow Unit	sandy dolomites and sandy limestones grading to sandstones, argillaceous limestone and intraformational breccias	
Lower Devonian	Muncho Formation	microcrystalline dolomite	
	Disconformity		
	McConnell Formation	microcrystalline dolomite	1,200'
Middle Silurian	Nonda Formation	Dolomites Dark fossiliferous grey with basal quartz sandstone	969'
	Disconformity		
Cambrian		Red coloured sequence containing boulder conglomerate with gabbro boulders	0 ->5,000'
	Angular unconformity		
Precambrian		Shale thin-bedded, hard, greenish, interbedded with sandstone. Cut by gabbroic dykes.	>500'

Precambrian

The Precambrian is well exposed at Toad River Bridge, Mile 437¹/₂ on the Alaska Highway, where it consists of quartzites, argillites and slates cut by a series of gabbroic dykes (Plate 9).

A thin bedded sequence of green argillites and sandstones, exposed southwest of the BV group, in the canyon of a creek which drains into Muncho Lake is cut by gabbroic dykes and is probably Precambrian.

Cambrian

The distribution of the Cambrian in the area may have been controlled by the ancient topography of the Precambrian surface. The Cambrian is missing in the area between the BV claims and Muncho Lake and is also missing where the Toad River cuts through the Sentinel Range; it is considered that the Precambrian in these two areas persisted as a topographic high and contributed sediments to the Cambrian and younger series until blanketed by the Middle Silurian sediments.

The Cambrian consists of reddish coloured strata with a high proportion of conglomerates. East of the south end of Muncho Lake, the conglomerates contain gabbroic boulders. Immediately west of Muncho Lake, the Cambrian attains thicknesses in the order of 5,000 feet.

Silurian

Nonda Formation. At Toad River Bridge and west of the BV group the Precambrian is directly overlain by Middle Silurian strata. (Norford et al, 1966) At the former location (Plate 9), the relationship is clearly an angular unconformity (nonconformity where the dykes reach the base of the Silurian).

The Nonda mainly consists of dark grey weathering fossiliferous dolomites. The fossils most commonly noted were Favosites, Halysites and stromatoporoids.

The basal portion of the Formation usually contains sandstone, about 100 feet thick at Toad River Bridge but much thinner west of the BV claim group. The type section of the Nonda is near Toad River Bridge where it is 969 feet thick (Norford et al ibid).

Lower Devonian

McConnell Formation (Plates 7 and 9). The Nonda is directly overlain by silty buff-grey microcrystalline dolomites of the McConnell Formation. The two rock units are distinguishable at a distance by the darker appearance of the Nonda and by a buff weathering recessive break at the base of the McConnell. The Formation tends to be silty or sandy in its basal portion. The thickness of the McConnell in the area between the BV group and Muncho Lake is about 150 feet.

Muncho Formation. The McConnell is overlain by the Muncho Formation; in some places a disconformity is recognizable between the two units, but this relationship is not clearly evident in the western portion of the Sentinel Range.

The Muncho mainly consists of microcrystalline dolomite beds and is distinguishable from the McConnell by being less resistant and more argillaceous; the weathering colour tends to be slightly more yellow than that of the McConnell.

The Muncho is about 600 feet in thickness in the area between the BV claim group and Muncho Lake.

The Yellow Unit (Plates 4-6, 8 and 10). This unit directly overlies the Muncho. The contact between these two units is not sharp and is arbitrarily placed at the horizon where the strata become noticeably more yellow than the underlying Muncho rocks. The Yellow Unit, because of its colours, is the most distinctive rock unit in the westernmost portion of the Sentinel Range near Muncho Lake, but was not recognized at the Toad River. (Plate 9) The Unit is much less resistant than stratigraphically adjacent units. A complete section of the Yellow Unit was examined about 3¹/₂ miles northwest of the BV claims and it was found that the Unit is lithologically divided into lower, middle and upper portions. The lateral extent of this threefold division is not known.

The lower portion consists of a transition zone about 200 feet thick in which weathering microcrystalline dolomites similar to those of the Muncho are interbedded with yellowish weathering argillaceous limestones and dolomites.

The middle portion consists of yellowish weathering, thin bedded, argillaceous carbonates (limestones and dolomites) and intraformational breccia. (Plate 10)

The upper portion (Plates 5, 6 and 8) is about 150 feet thick and consists of dolomites and minor limestones, sandy and silty, minor proportions of which grade to dolomitic sandstones or siltstones. A prominent feature of this portion is the presence in it of red beds (clearly seen in Plates).

The upper portion of the Yellow Unit was measured on McMechan Creek.

<u>Overlying Beds Barite</u>	<u>Thickness in Feet</u>
limestone and dolomite sandy and/or silty, medium to thin bedded, yellowish brown weathering with one thin red bed	20
dolomite, sandy and silty, thin bedded, light brown to olive green weathering. The sand grains are medium grained rounded quartz grains	50
dolomite as above, grading to siltstone	30
dolomite, pink weathering	2
dolomite, light brown weathering	8
dolomite, pink weathering	2
dolomite, light brown-yellowish weathering	10
dolomite, pink to red weathering	4
dolomite, light brown-yellowish weathering	20
dolomite, pink to red weathering	4
	—
Total	150
	=
Underlying beds dolomites without red colour	

Middle Devonian

Arnica Formation equivalent (Plates 5, 8 and 9). The Yellow Unit is disconformably overlain by Middle Devonian beds mainly consisting of microcrystalline or very fine grained dolomites which weather medium grey. The disconformable relationship between these dolomites and the Yellow Unit is suggested by a boulder conglomerate directly overlying the Yellow Unit at a location northwest of Barite Creek.

The barite bearing zone is sandwiched between the Yellow Unit and the Middle Devonian dolomites and is thought by the writer to be a part of the Middle Devonian dolomite unit. The latter unit is correlated with the Chinchaga and Arnica Formations.

In the Sentinel Range, the Middle Devonian dolomites are approximately 2,100 feet thick and outcrop extensively in Barite Creek valley.

Nahanni Formation. The Arnica dolomites are conformably overlain by about 700 feet of very fine grained limestones similar in outward appearance to the dolomites. Near the base of the limestone, beds carrying the stromatoporoid Amphipora were found. These limestones are the youngest rocks known to crop out in the vicinity of the BV claims.

Besa River Shale. The Middle Devonian limestones are conformably overlain by a thick black shale sequence ranging in age from Middle Devonian at its base to Mississippian at its top. These shales are correlated with the Besa River Shale (Kidd, 1963) of the Northern Rocky Mountains of British Columbia.

This shale is not known to outcrop in the immediate vicinity of Barite Creek, but does outcrop in other parts of the Sentinel Range.

STRUCTURAL GEOLOGY

The structural geology of the western part of the Sentinel Range is characterized by a few broad folds and a few low angle, west dipping thrust faults.

The area between Muncho Lake and the BV claim block, mapped by the writer (Fig. 3), is dominated by four structural features. From west to east these four features are, (1) a large anticline, (2) a large syncline, (3) McMechan Creek Thrust Fault, and (4) Barite Creek Thrust Fault. The latter two Faults are named for the purpose of discussion in this report:

- (1) The anticline is asymmetrical with a western flank dipping about 37° (Plate 7) and its eastern limb dipping much more steeply and possibly faulted. Pre-Silurian (Pre-Cambrian?) sedimentary rocks cut by gabbroic dykes are exposed in the core of the anticline. The anticline plunges to the south.
- (2) The syncline appears fairly symmetrical with gently dipping limbs; the western limb of the syncline corresponds to the eastern limb of the large anticline (1) apart from minor faulting. The syncline plunges to the north.
- (3) The McMechan Creek Thrust. The eastern limb of the syncline (2) forms the hanging wall of this thrust. At the head of McMechan Creek the attitude of the hanging wall and footwall are fairly similar, but the thrust is easy to recognize because of the different colours of the rocks between hanging wall and footwall; the fault plane appears to be roughly parallel to the hanging wall bedding.

- (4) The Barite Creek Thrust is easily recognizable in Barite Creek valley because over most of its trace in the valley the Yellow Unit rocks form the hanging wall of the thrust and the Middle Devonian Arnica and Nahanni carbonates form the footwall. Thus, the hanging wall and footwall rocks have a distinct colour contrast (Plates 2 and 3).

For discussion purposes, the rocks between Muncho Lake and McMechan Creek Thrust will be referred to as the McMechan Creek Thrust Sheet, and the rocks sandwiched between the McMechan Creek Thrust and the Barite Creek Thrust will be called the Barite Creek Thrust Sheet.

In the northern part of the valley, the hanging wall rocks are folded; two anticlines and a syncline were recognized. Apart from these folds the exposed rocks of the Barite Creek Thrust Sheet form a homocline with a dip to the west ranging from 20 to 30 degrees.

Chapter 3

DESCRIPTION OF THE BARITE DEPOSITS

Mode of Occurrence

The barite occurs on the BV claims in four modes. Most of the barite is massive, white, coarsely crystalline material in the form of beds. The specific gravity of these white beds ranges from 3.85 to 4.24. The beds are up to 15¹/₂ feet thick.

The white barite beds are interbedded with barren grey dolomite beds and other grey dolomitic beds which have a specific gravity in the order of 3.3 in which barite is visible as white blebs.

The two other modes of occurrence of barite are not of economic importance on the BV claims but do suggest clues to the origin of the deposits. In some places barite occurs as a cement for dolomite breccia and in others barite occurs as veins cutting dolomite.

Control

The barite deposits of the BV claims are stratigraphically controlled; the barite occurs in a particular position in the sedimentary sequence and original bedding is largely preserved. The barite is restricted to a stratigraphic interval immediately overlying the top of the Yellow Unit.

Shape

The outcrop pattern of the barite beds indicates that the barite deposit is a tilted plano-convex lens shaped body in cross section. The northeast edge of this lens has been folded. The top of the Yellow Unit forms the plane base of the deposit and the thickest exposed part of the lens is on the BV 8 and 9 claims (Plates 4, 5 and 6); the McMechan Creek section on BV 9 claim is of similar thickness.

The barite deposit in the McMechan Creek Thrust Sheet (BV 14 and 15 claims) and the barite deposit in the Barite Creek Thrust Sheet (BV 1 - 13 claims) are most probably both part of one large original (pre-faulting) flat lying lenticular deposit.

McMechan Creek Section

In the vicinity of McMechan Creek the gross thickness of the barite zone was 106 feet with net thickness of high grade barite of $64\frac{1}{2}$ feet.

McMechan Creek described section - located along McMechan Creek on BV 9 claim a few hundred feet northeast of BV 9 Final Post. Overlying beds consist of light brownish grey, cryptocrystalline dolomite.

<u>Description</u>	<u>Thickness in Feet</u>	<u>Stratigraphic Interval Above Base in Feet</u>	<u>Specific Gravity (TSL)</u>
Mainly brecciated grey dolomite with blocks up to 2 feet x 3 feet cemented with white very coarsely crystalline calcite	45	109 - 154	--
dolomite grey with calcite blebs	3	106 - 109	--
white barite with prominent 1 mm banding	4	102 - 106	4.07
white barite	5	97 - 102	4.08
medium grey dolomite	4	93 - 97	2.09
white barite	3	90 - 93	4.17
dark grey dolomite finely laminated	2	88 - 90	3.01
white barite with traces of bedding	3	85 - 88	4.24
dark grey dolomite with calcite veinlets and fine bedding laminations	2.5	82.5 - 85	2.77
white barite	5	77.5 - 82.5	3.85
white barite banded parallel to bedding	5	72.5 - 77.5	4.10
dark grey weathering, medium grey barite changing sharply laterally to white barite	3.5	69.5 - 72.5	2.92
white barite	5	64 - 69.5	4.07

<u>Description</u>	<u>Thickness in Feet</u>	<u>Stratigraphic Interval Above Base in Feet</u>	<u>Specific Gravity (TSL)</u>
white barite	5	59 - 64	3.91
white barite	5	54 - 59	4.00
dark grey dolomite with traces of barite, 12 inches of white barite at base	6	48 - 54	2.90
medium grey dolomite with bedding traces	4	44 - 48	2.73
white barite	7	37 - 44	4.08
grey dolomitic barite beds with sparry blebs of barite one inch in diameter	5	32 - 37	3.31
white barite	6.5	25.5 - 32	4.13
dolomite breccia with calcite cement with 4 feet of grey dolomite with calcite blebs at the top	19	6.5 - 25.5	2.48 - 2.45
white barite with 6 inches of barren dolomite in the middle of the interval	6.5	0 - 6.5	3.45

Underlying beds sandy or silty carbonates of the Yellow Unit.

The outcrops of the deposit in the McMechan Creek Thrust Sheet indicate that the barite deposit is 13,000 feet long from edge to edge.

In the following paragraphs, the outcrops of the deposit will be described, first southwards then northwards from the thick central part of the deposit.

Deposit South of McMechan Creek

The barite zone is covered by overburden from a point near the McMechan Creek section on BV 10 claim southwards to the vicinity of BV 12 Initial Post (distance about 2,800 feet).

At the BV 12 Initial Post the following stratigraphic section is exposed.

Overlying beds - dolomite with traces of barite and sparry calcite.

<u>Description</u>	<u>Thickness in Feet</u>
dolomite breccia with scattered traces of barite including 18 inches of white barite	27
dolomite with scattered barite (about 20% barite)	12
white barite with 2 stringers of dolomite 1 foot thick each.	13

Underlying beds covered but the base of section is not more than 10 feet from the top of the Yellow Unit stratigraphically.

Further south, at the BV 13 Final Post, the amount of barite is quite small and the fractures are calcite filled.

Deposit North of BV 8 Claim

From the BV 8 Initial Post northwards to a place near the halfway point along the BV 3 location line, the outcrop of the deposit is poor, but abundant barite was found in float. The deposit is folded into an anticline between the above two points.

At the above mentioned halfway point, the outcropping barite was briefly examined; the net high grade barite present appeared to be about 30 feet thick normal to bedding.

To the northeast of the last mentioned outcrop the barite deposit becomes much thinner, is folded into a syncline and anticline, and finally is truncated at the Barite Creek Thrust Fault.

Origin

The barite is considered by the writer to represent a secondary deposit formed in bedded host rocks by replacement of favourable beds.

The field evidence for secondary origin is, (a) the cementation of brecciated dolomite by barite; (b) the sharp lateral change noted in a few beds from grey dolomite to massive white barite; (c) the presence of veins of barite cutting dolomite.

Chapter 4

DESCRIPTION OF CLAIMS

BV 1 Claim

The claim posts of BV 1 are in a north-south gully on the north side of Barite Creek. The Initial Post of BV 1 is at an elevation of about 4,900 feet and the Final Post is at an elevation of about 4,300 feet. Near the Initial Post, rocks are folded into an anticline which may represent a drag fold in the hanging wall of the Barite Creek Thrust Fault; the barite bearing strata are cut off by the fault near this post. The net thickness of barite-rich strata exposed on the claim near the Initial Post is of the order of 15 feet, but outcrops indicate that the barite zone thickens rapidly to the south and west.

BV 2, 4 and 7 Claims

BV 2 and BV 4 claims straddle Barite Creek, and BV 7 claim lies entirely on the southeast side of the creek. Rock outcrops are comparatively sparse on these claims and consist mainly of the yellowish sandy dolomites and dolomite breccias which stratigraphically underlie the barite-rich zone. The strata, where observed on these claims, had a consistent attitude with a dip of about 30 degrees to the northwest.

Barite was not found on these claims; they were staked to ensure against the possibility of barite on these claim locations, occurring in patches which would be easily accessible for mining.

BV 3 Claim

The northeastern few hundred feet of the location line follows the outcrop of the rocks which directly underlie the barite zone and then crosses a large gravel fan without bedrock exposures. A synclinal axis crosses the eastern side of the claim, and an anticlinal axis crosses the western side.

The thickness of the barite-rich strata was not measured on the claim, but a brief examination at a point close to the location line, on the western flank of the syncline, showed that a considerable thickness was present; perhaps of the order of 40 feet.

BV 5 Claim

The Initial Post of this claim is located on the northeastern side of a large gravel filled gully; the Final Post is located on the southwestern side of this gully. The anticlinal axis of the BV 3 claim passes through the BV 5 claim.

The barite zone was not examined on this claim; a considerable amount of barite float occurs near the Initial Post.

BV 6 Claim

The location line of this claim follows the assumed outcrop of the beds which directly underlie the barite zone as they occur on the western flank of the anticline of the BV 3 claim.

The barite zone at the Final Post of BV 6 claim is quite similar in net thickness to the measured and sampled section on McMechan Creek.

BV 8 and 9 Claims

The location lines of these claims follow the outcrop of the yellow strata which directly underlie the barite zone. Beds of the Yellow Unit dip regularly 25° - 30° to the west-northwest along the location line.

The barite zone is very well exposed on these two claims, and is clearly shown in Plates 5 and 6. It should be noted that the zone appears quite uniform in thickness across the outcrop, and that, therefore, net barite thickness on the outcropping zone on these two claims is closely similar to the McMechan Creek sampled section located on BV 9 claim. An examination of the zone near BV 8 Initial Post showed that the thickness and quality of the barite strata was in fact closely similar to that at McMechan Creek.

BV 10 Claim

This claim is possibly the most economically important claim of the BV group. Outcrops of the barite zone on the claim were only found near McMechan Creek, but it is believed that the barite would be found on this claim in thickness and grade similar to the nearby McMechan Creek section for a significant distance along strike from this sampled section.

Especially important is the fact that this rich barite zone occurs in a situation where low cost open pit mining seems feasible, for the ground underlain by barite is flat or gently rolling on this claim.

The Initial Post of this claim is located about 100 feet south of McMechan Creek. At this post, the outcropping beds are stratigraphically 100 feet or less below the base of the barite zone.

The location line lies along fairly flat ground a hundred or so feet east of places where the barite may be expected to crop out below the overburden gravels. Outcrops are not present along the location line.

The Final Post is located on flat ground. To the east of this post lies the gully of Barite Creek, along which beds of the Muncho-McConnell dip at 25° to the west-northwest. A few hundred feet west of this post, steep, east-facing cliffs of westerly dipping Middle Devonian carbonate strata are present.

BV 11 Claim

The location line of this claim climbs sharply from the Initial Post location (BV 10 Final Post location), passing over talus slopes. The line is positioned to remain east of the barite zone outcrops. Barite is not exposed on the claim except in the vicinity of the Final Post (BV 12 Initial Post). The stratigraphic section described below was found close to BV 11 Final Post.

Overlying beds Middle Devonian carbonates.

<u>Description</u>	<u>Thickness of Interval in Feet</u>	<u>Interval</u>
Dolomite breccia with traces of barite, including an 18-inch thick lens of massive barite	27	0 - 27 feet
dolomite with scattered barite	12	27 - 39 feet
high grade barite with two - 12-inch thick dolomite beds	13	39 - 52 feet

Base of described section

Underlying beds yellowish dolomites
(strike 005 degrees, dip 33 degrees west).

Note that the net high grade barite decreases from 89¹/₂ feet at McMechan Creek to 11 feet in a distance of 3,000 feet along strike.

BV 12 and 13 Claims

The location lines of these claims follow the outcrop of the yellowish dolomite beds which occur about 50 feet stratigraphically below the base of the barite zone. The amount of barite decreases considerably from BV 12 Initial Post to the BV 13 Final Post. At the latter post the amount of barite present is quite small and the abundant fractures in the dolomite are calcite filled, rather than barite filled, a common type of barite occurrence in the area.

BV 14 and 15 Claims

These two claims are located on the ridge crest between Muncho Lake and McMechan Creek.

The barite occurs on the BV 14 and 15 claims in the same stratigraphic position as the barite on the BV 1 - 13 claims.

Structurally, the claims are located in the eastern flank of a syncline forming the hanging wall of a thrust fault (McMechan Creek thrust fault).

The net barite present was not determined, since much of the zone was covered by talus. However, on the western flank of the syncline, about 2,000 feet from the southern edge of the BV 14 claim, net high grade barite was 16 feet thick but of irregular occurrence, not persisting along strike.

Particulars of BV 1 - 15 Mineral Claims

Not Shown on Location Map

<u>Claim No. and Name</u>	<u>Tag Number</u>	<u>Record Number</u>	<u>Location Date</u>	<u>Direction to #2 Post</u>	<u>Distance to #2 Post</u>	<u>Feet To Left</u>	<u>To Right</u>
BV 1	802412	27593	July 13, 1967	165°	1,500	200	1,300
BV 2	802413	27594	July 13, 1967	234°	1,500	1,500	0
BV 3	802414	27595	July 13, 1967	234°	1,500	0	1,500
BV 4	802415	27596	July 13, 1967	190°	1,500	1,500	0
BV 5	802416	27597	July 14, 1967	245°	1,500	0	1,500
BV 6	802417	27598	July 14, 1967	180°	1,500	0	1,500
BV 7	802424	27599	July 18, 1967	180°	1,500	1,500	0
BV 8	802418	27600	July 14, 1967	205°	1,500	0	1,500
BV 9	802419	27601	July 15, 1967	203°	1,500	0	1,500
BV 10	802420	27602	July 15, 1967	190°	1,500	0	1,500
BV 11	802421	27603	July 16, 1967	177°	1,500	0	1,500
BV 12	802422	27604	July 16, 1967	150°	1,500	0	1,500
BV 13	802423	27605	July 16, 1967	175°	1,500	0	1,500
BV 14	802425	27606	July 19, 1967	010°	1,500	1,500	0
BV 15	822975	27607	July 19, 1967	North	1,500	1,500	0

All of the above mineral claims were located by

Robin Humphrey Dawson - F.M.C. No. 54701

Chapter 5

COMPARISON OF THE BV BARITE DEPOSIT TO OTHER BARITE DEPOSITS OF NORTH AMERICA

Three general types of barite deposits are recognized by Brobst (1958):

1. Vein and cavity filling deposits
2. Bedded deposits.
3. Residual deposits.

The BV barite deposit belongs to the bedded group. In a discussion of the bedded group of barite deposits, Brobst (ibid, p.94) states that, "Evidence for the origin of the bedded depositsis conflicting and suggests that the barite might have originated either as a primary deposit within the sedimentary rocks, or as a secondary deposit formed in the host rocks as a result of replacement by aqueous solutions".

The BV deposit is comparable in size with the famous Magnet Cove deposit of Arkansas (Brobst, ibid, pp.92-97) worked by the Baroid Sales Division of the National Lead Company and by the Magnet Cove Barium Company (Magobar).

In referring to this Magnet Cove deposit, Brobst (ibid, p.95) states that, "Barite ore in the richest zone contains more than 70 percent $BaSO_4$ ". In the BV deposit at McMechan Creek, 6 feet of strata contains more than 80 percent $BaSO_4$ and 39 feet contain greater than 74 percent $BaSO_4$.

Chapter 6

EVALUATION OF THE BARITE ZONE

The zone extends for more than 13,000 feet through the BV claims. One section of the zone, near the Final Post of BV 9, was sampled over a width of 106 feet. For each section, the samples were weighed and the

bulk density determined by T.S.L. (See Appendix 1). The densities range from 2.48 to 4.24, with several 10-foot sections well over 4.05. These densities have been converted to barite content according to the graph given in Figure 4. This indicates that two zones of 10 feet assay 80% BaSO₄, and 60 feet averages more than 65% BaSO₄. The inferred tonnage of the deposit is 100,000,000 long tons

This tonnage is based on the following assumptions:

- 1) Deposit has a lens-shaped cross section.
- 2) The barite-rich zone thins in all directions, both in dip and strike from a central portion at the Initial Post of BV 9 claim.
- 3) The main barite zone on claims BV 14 and BV 15 and the exposure on the McMechan Creek Thrust Sheet once formed a single large deposit.
- 4) The minimum mining width is 10 feet.

On these assumptions, the ore zone has been reconstructed as half a lens, semi-circular in plan, centred on the Initial Post of BV 9, as shown in Figure 5. From this configuration the volume is:

1,083,000,000 cubic feet.

This is a body of about 1 billion cubic feet equivalent to 117,000,000 long tons of high grade barite ore with no apparent iron impurities.

$$\frac{\text{Volume X specific gravity X wt. of ft.}^3 \text{ of water}}{2,240} = \text{Tonnage}$$

$$\frac{1,000,000,000 \times 3.9 \times 62.5}{2,240}$$

≈

117,000,000 long tons

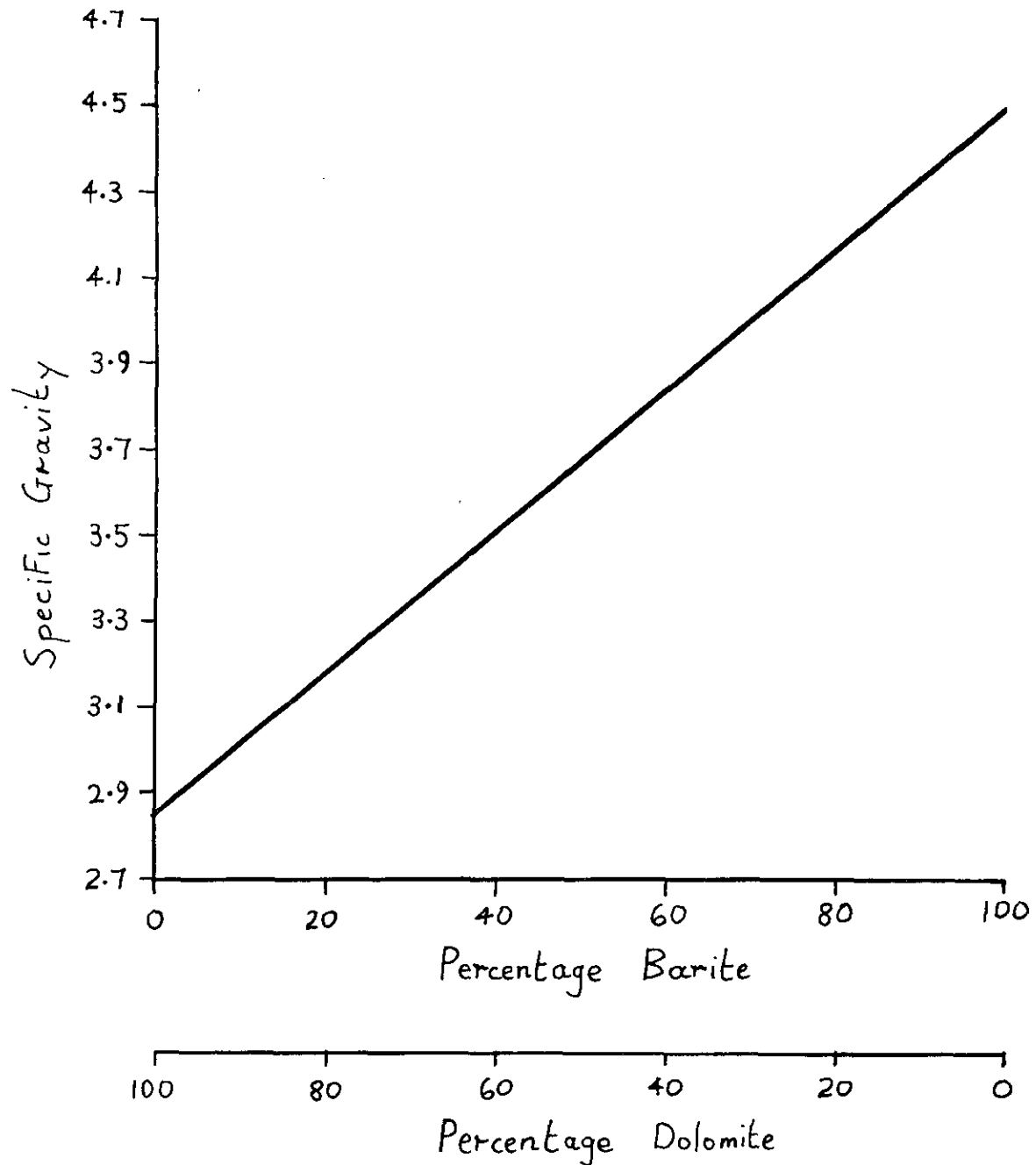
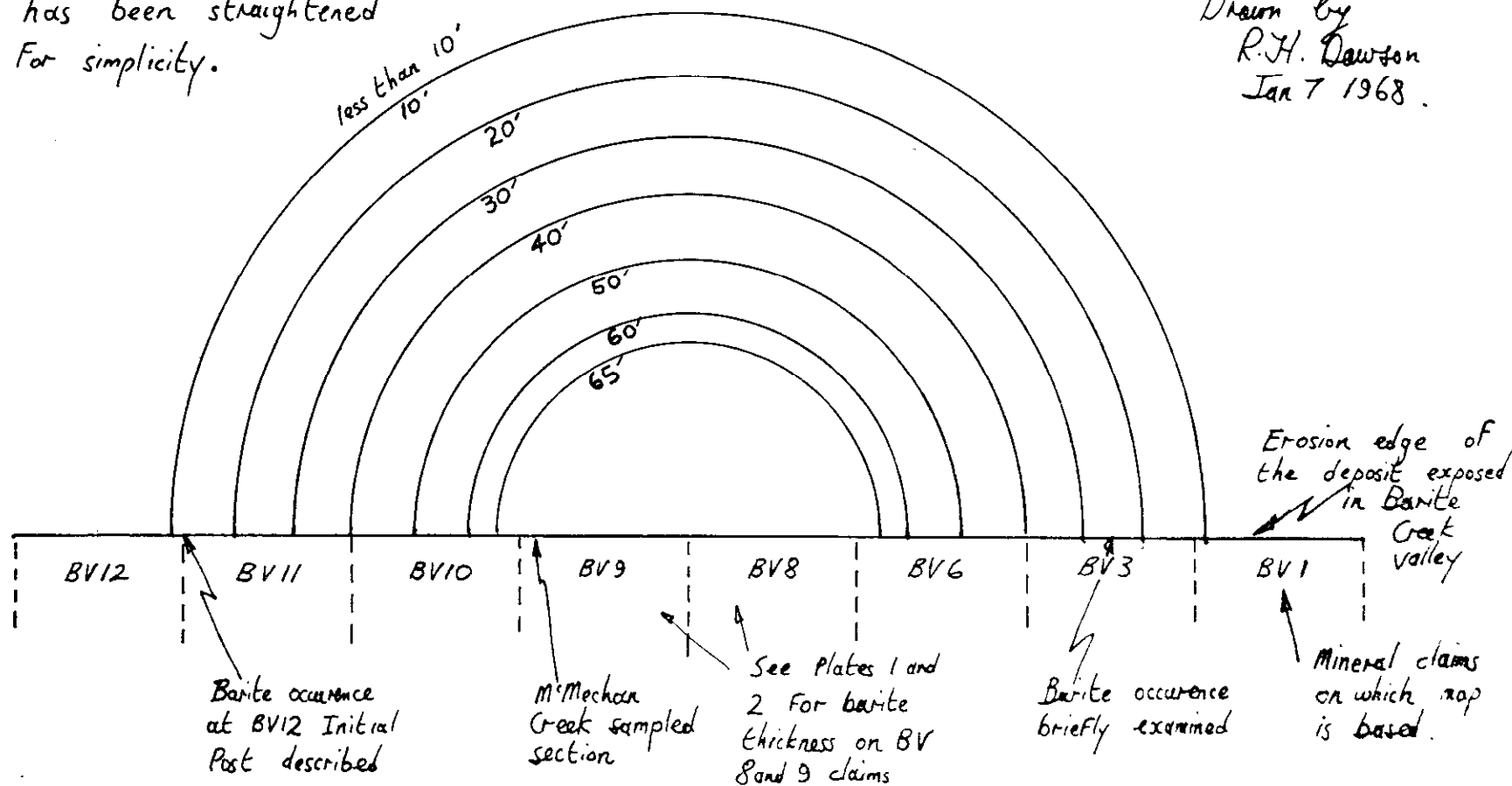


Figure 4. Chart for approximate conversion of specific gravity of rock to percentage of BaSO_4 assuming that the sample contains only barite and dolomite.

Figure 5. Isopach map of the BV barite deposit, Liard Mining Division. The map shows net high grade barite thickness in Feet (barite bearing rock with $> 25\% \text{BaSO}_4$) with the deposit restored to the horizontal. For basic assumptions used see text of report. The base line which represents the outcrop trace on the claims has been straightened for simplicity.

Drawn by
R.H. Dawson
Jan 7 1968.



RECOMMENDATIONS

The BV claims are underlain by a barite deposit with an inferred tonnage of 100,000,000 tons. The indicated grade is 65% BaSO₄ and the property warrants further examination. I recommend:

- 1) Further sampling of the exposed zone along its entire length to outline higher grade sections suitable for immediate mining.
- 2) Preparation of a preliminary report on the cost of mining, milling, beneficiation and transportation, including barge transfer to the McKenzie River from Hell's Gate on the Liard.
- 3) Survey of present and possible future market for barite, particularly for use as drilling mud in oil and gas exploration in the Yukon Territory.
- 4) Settlement of an agreement with Canadian National to use the road to the microwave station which extends from the highway to within 7 miles of the claims.
- 5) Preparation of a cost estimate and survey for 7 miles of access road to connect the C.N.T. road to the BV claims.
- 6) Stripping overburden from the zone on claim BV 10. This is the most promising site for low cost open pit operations.

Respectfully submitted,

R.H. Dawson, M.Sc.

January 14th, 1968.

Williams Lake, B.C.

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-

P L A T E S

Plates 1-4

Panoramic view of Barite Creek valley taken from the vicinity of BV 10 Initial Post. The diagram shows how the views overlap.

- tDYU - top of Yellow Unit (Devonian)
- tb₃ - top of barite zone
- DA - Arnica Formation (Devonian)
- YU - Yellow Unit
- ~ bcT ~ - approximate trace of Barite Creek Thrust Fault
- mc - McMechan Creek
- bc - Barite Creek

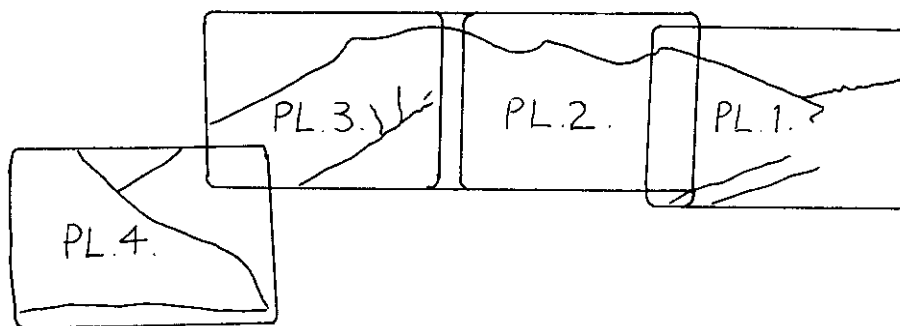




Plate 2. View looking to the southeast from BV 10 Initial Post. Note the contorted Devonian carbonates in the footwall of the fault.



Plate 1. View looking south to the head of Barite Creek valley from BV 10 Initial Post.



Plate 4. Barite zone outcrops on the north side of McMechan Creek canyon. View from the vicinity of BV 10 Initial Post. Stratigraphic thickness of the interval from the top of the Yellow Unit to top of barite zone is 106 feet.



Plate 3. View looking to the east from BV 10 Initial Post. Note the flat iron form traced by westerly dipping red beds of the Yellow Unit in the hanging wall of the fault

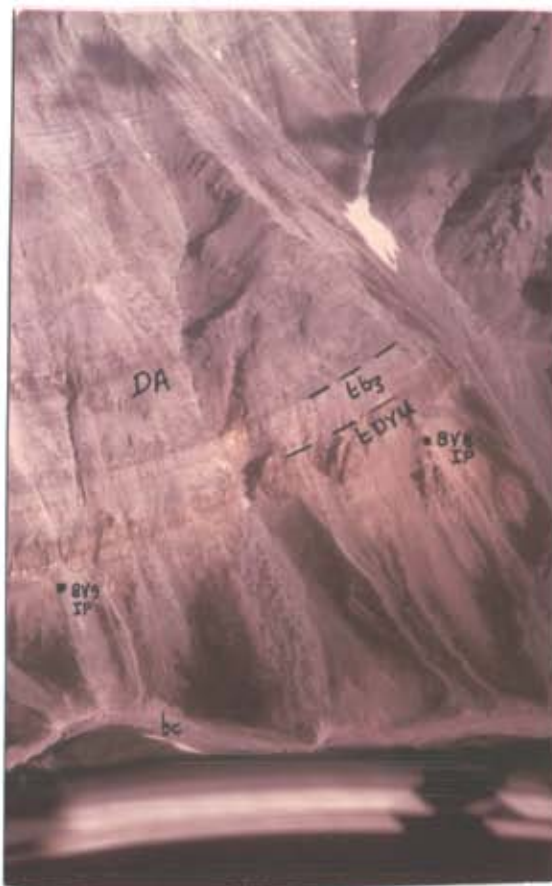


Plate 5. Barite zone showing the positions of the BV 8 and BV 9 Initial Posts.

The distance between the two posts is 1,500 feet.



Plate 6. Barite zone showing position of BV 9 Initial Post.

tDYU - top of Yellow Unit (Devonian)
 tbz - Top of barite zone
 DA - Arnica Formation (Devonian)



Plate 7. Western slope of Sentinel Range west of BV claims showing the brownish recessive beds at the base of the McConnell Formation. The ridge crest on the skyline is 4,000 feet away from Fred McMechan.

tSN - top of the Nonda Formation (Silurian)
DMc - McConnell Formation (Devonian)

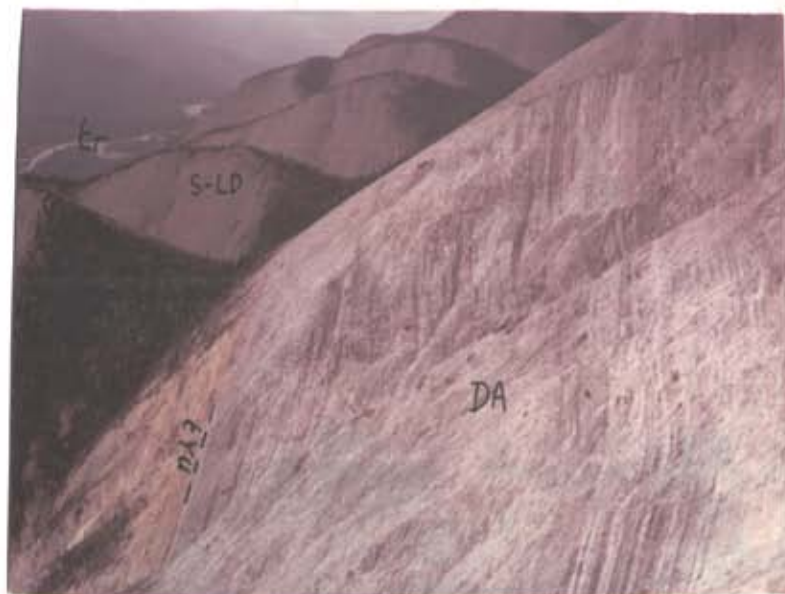


Plate 8. Sentinel Range western slopes looking north from a location 4 miles northwest of the BV 10 claim. The Arnica beds in the foreground have their tops to the east. Note that the wooded notches in the ridge lines are due to the recessive nature of the Yellow Unit outcrops.

S-LD - Silurian and Lower Devonian rocks
tYU - top of Yellow Unit
DA - Arnica Formation (Devonian)
tr - Trout River



Plate 9. Sentinel Range, stratigraphic section north of Toad River Bridge (Mile 437 1/2 on the Alaska Highway). This is the type area of the Nonda Formation. Note gabbroic dykes cutting the Pre-Cambrian rocks and the angular unconformity between the Pre-Cambrian and Nonda strata.

DMc - McConnell Formation
(Lower Devonian)

SN - Nonda Formation
(Middle Silurian)

PE - Pre-Cambrian

Plate 10. Intraformational breccia in the Yellow Unit at a section 4 miles northwest of the BV 10 claim.



APPENDIX 1

Results of specific gravity tests on chip samples taken from the McMechan Creek described section on BV 9 claim, close to BV 9 Final Post.

The testing was carried out by Technical Services Laboratories (TSL), Vancouver, British Columbia. (See copy of TSL Report Number V-2625 in pocket).

<u>Sample Number</u>	<u>Specific Gravity at 85° F.</u>
0-6.5	3.45
6.5-16.5	2.48
16.5-25.5	2.45
25.5-32	4.13
32-37	3.31
37-44	4.08
44-48	2.73
48-54	2.90
54-59	4.00
59-64	3.91
64-69.5	4.07
69.5-72.5	2.92
72.5-77.5	4.10
77.5-82.5	3.85
82.5-85.0	2.77
85-88	4.24
88-89	3.01
90-93	4.17
93-97	2.90
97-102	4.08
102-106	4.07

Note that the sample number corresponds to the stratigraphic interval above the base of the described section, measured in feet. The base of the section is at the top of the Yellow Unit (See Chapter 3).

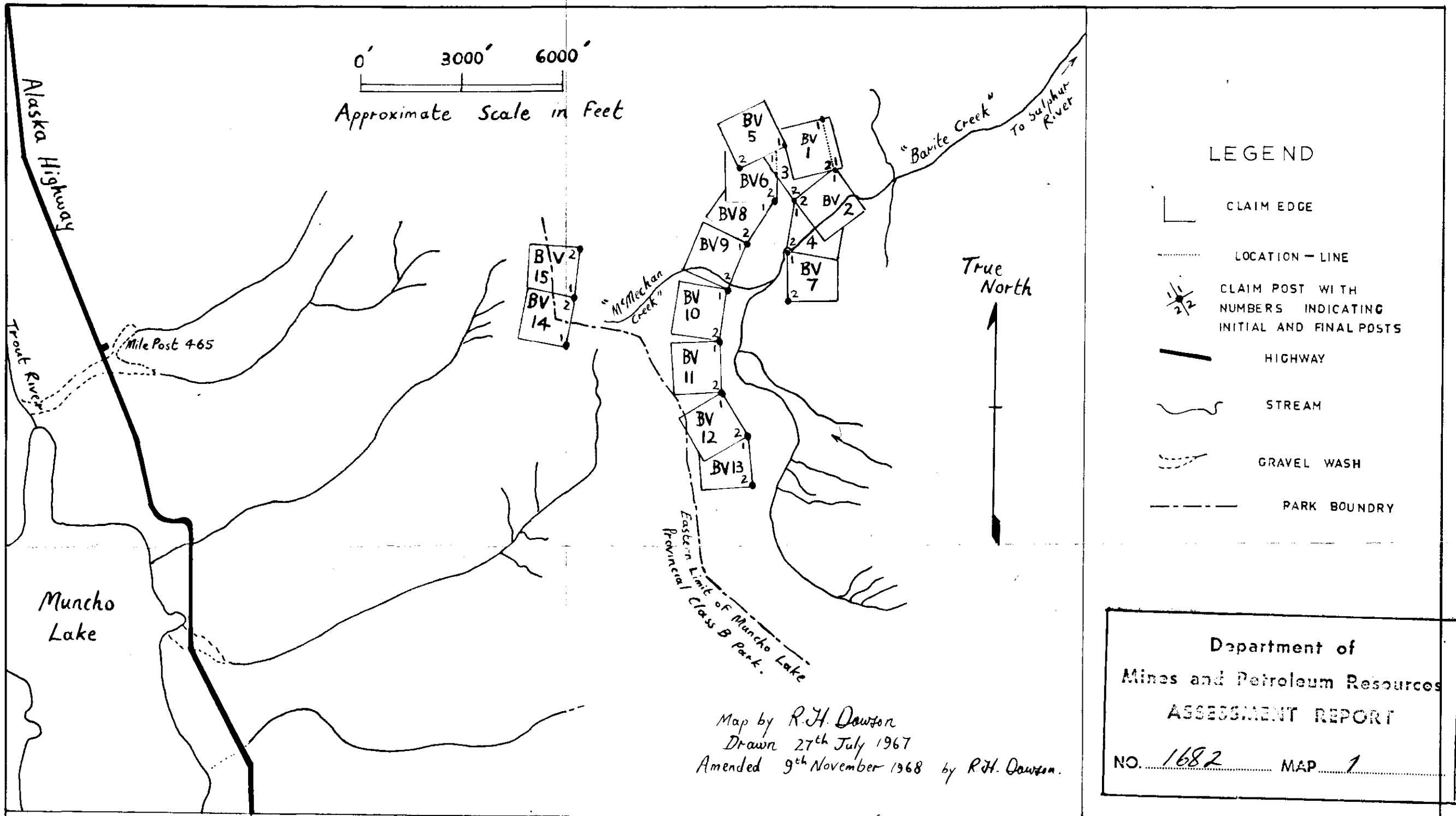


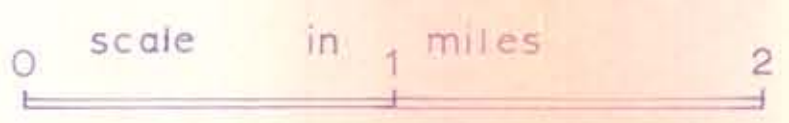
FIGURE 2 . LOCATION MAP OF THE BV1 TO BV15 MINERAL CLAIMS TO ACCOMPANY GEOLOGICAL REPORT BY R.H.DAWSON, M.Sc., COVERING THE BV1 TO BV15 MINERAL CLAIM GROUP LOCATED 2 TO 4 MILES EAST OF MUNCHO LAKE, LIARD MINING DIVISION, B.C. DATED JANUARY 14 th. 1968 .

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1682 MAP 1

1682

FIGURE 3. GEOLOGICAL MAP

TO ACCOMPANY GEOLOGICAL REPORT BY R.H. DAWSON, M.Sc.,
 COVERING THE BV.1 TO BV.15 MINERAL CLAIM GROUP
 LOCATED 2 TO 4 MILES EAST OF MUNCHO LAKE, LIARD
 MINING DIVISION, BRITISH COLUMBIA, DATED JANUARY 14th, 1968.

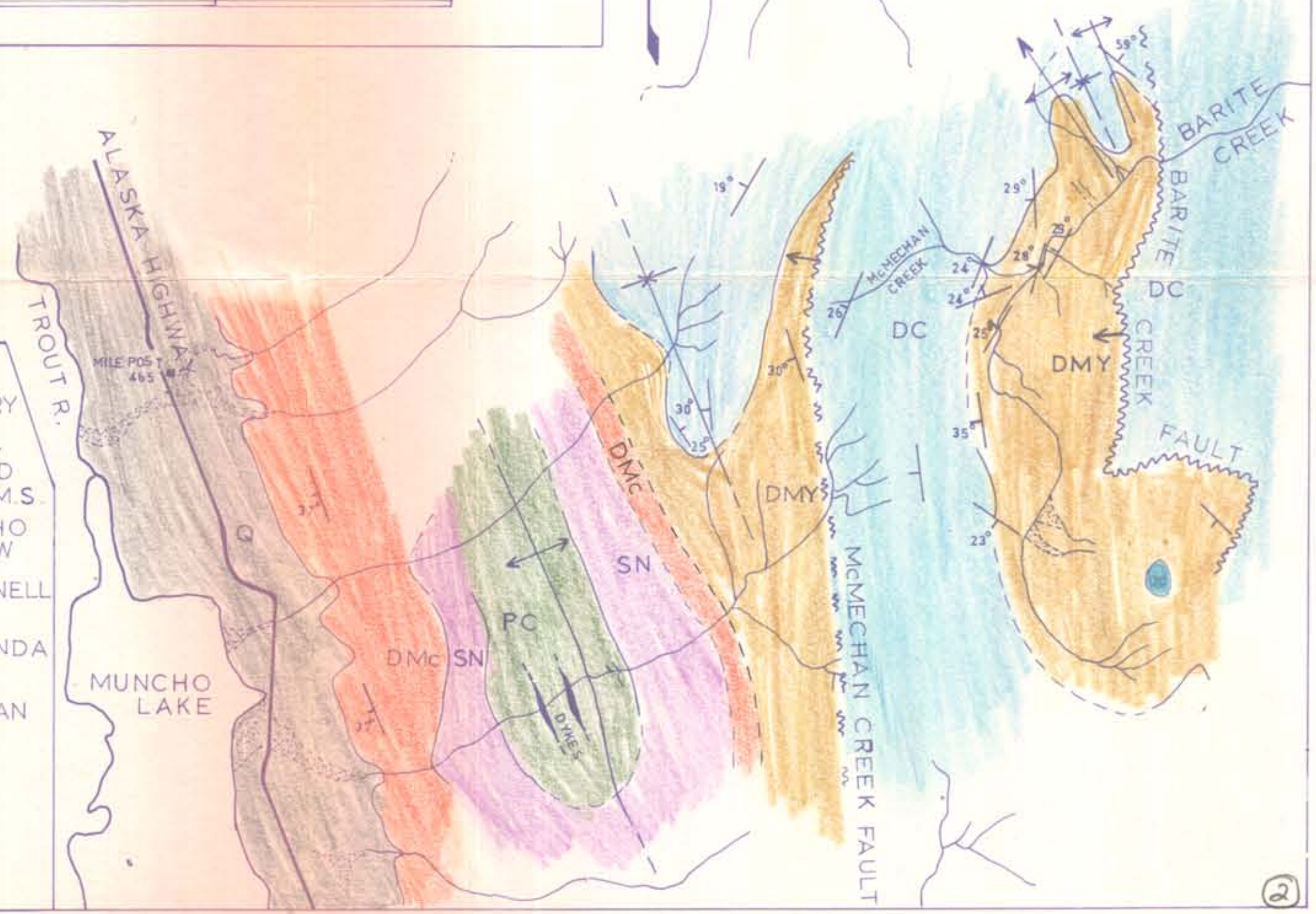


north

MAP BY *R.H. Dawson*
 DRAWN 14 JAN. 1968.
 AMENDED 9 NOV. 1968. by *R.H. Dawson*
 TOPOGRAPHIC BASE TRACED FROM
 AERIAL PHOTOS NUMBERS
 A 11631 - 204
 A 11631 - 205
 A 11543 - 217

LEGEND

- QUATERNARY
- DEVONIAN - ARNICA AND NAHANNI FM.S.
- DEV. MUNCHO AND YELLOW
- DEV. McCONNELL FM.
- SILURIAN NONDA FM.
- PRE-CAMBRIAN
- BEDDING
- FAULT
- SYNCLINE
- ANTICLINE
- FAN GRAVELS



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