

*Report*  
*1004162*  
*same*

*92I/6E & 7W*

GEOLOGICAL REPORT  
UDD-RANSAY SYNDICATE  
HIGHLAND VALLEY - 50° 122° SE  
*4 50° 120° SW*  
B. M. Middleton  
June 26 - Nov. 30, 1956

*100*

# 160

## GEOLOGICAL REPORT

UDD-RAMSAY SYNDICATE - HIGHLAND VALLEY

### CONTENTS

SUMMARY	- - - - -	Page 1
INTRODUCTION	- - - - -	" 2
GENERAL GEOLOGY	- - - - -	" 2
GEOPHYSICS	- - - - -	" 3
UDD-RAMSAY - Property	- - - - -	" 3
- Access	- - - - -	" 4
- Topography	- - - - -	" 4
- Survey Methods	- - - - -	" 5
- Geology	- - - - -	" 5
- Conclusions	- - - - -	" 7
Appendix	- - - - -	Claim staking data.

### ACCOMPANYING MAPS

(Located in folder attached hereto)

- #1 1) Geology - East Portion - Map #1
- #2 2) Geology - Central Portion - Map #2
- #3 3) Geology - West Portion - Map #3
- #4 4) Claim Map

Report on the Udd-Ramsay Syndicate Holdings in the  
Highland Valley, B. C.

18 Sept. 1956

SUMMARY

General Geology - The Highland Valley camp is in the approximate center of an oval shaped granitic type batholith varying gradationally in composition from a true diorite to a granite. Copper sulphides are the chief accessory sulphide in this intrusive.

Geophysics - The magnetometer has so far proved to be the most successful geophysical tool for reconnaissance surveying.

Property & Access - The Udd-Ramsay holdings are composed of 198 claims staked south of the Highland Valley in two groups. The Willis jeep is the only vehicle which can negotiate the existing trails providing access to Billy and Pimainus lakes. Roscoe lake at the south end of the larger group can best be reached by improving and extending the Billy lake road which at present is barely passable.

Geology - The property is underlain by granitic type rocks or (south of Pimainus lake) Diorite. Probably much of the granite is more correctly a grano-diorite. Fine grained light coloured aplite dikes cut the granite and are genetically related to it.

Five major faults have been postulated from the evidence of lineaments, fracturing and shearing, but numerous additional minor fracture zones and faults are present.

Conclusions & Recommendations - No surface finds of importance in themselves were made during the survey but signs of copper mineralization are plentiful and the ground adjoining the postulated faults F3, F4, and F5 offers some encouragement to further work which should be confined to magnetic surveys with geochemical tests over indicated anomalies.

Magnetic and geochemical surveys are recommended in the vicinity of faults F4 and F3 on the Eastern (Roscoe lake) group, and fault F5 on the western (Pimainus lake) group.

## INTRODUCTION

During the summer of 1955 encouraging drill and surface exploration results in the vicinity of the old Snowstorm copper deposit - now known as the Bethlehem - renewed interest in the Highland Valley area and resulted in the staking of many old showings and large blocks of ground. The Udd-Ramsay claims were located during January and February, 1956, by professional stakers under the direction of Mr. Frank Stibbard acting under the advice of Mr. Hamlin Hatch and Mr. Les Stearns of Ashcroft. The staking was subsequently found to be excellent throughout, although a few claims were re-located later in the year.

The present examination was made during the period June 26 to November 30, 1956. A total of 622 man days of work, employing university students, prospectors and one supervising senior geologist were required for the survey, which cost about \$15,000. Weather, during most of the period, was excellent for field work and not more than two or three days were lost on this account.

## GENERAL GEOLOGY

The Highland Valley camp is in the approximate center of an oval shaped granitic type batholith of probable Jurassic age. The major axis of the batholith lies north-south and extends for about 40 miles. The mass is approximately 15 miles wide at its center. The rock varies in composition, for the most part gradationally, from a true diorite to a granite but quartz diorite and granodiorite predominate. Although no large volcanic or sedimentary remnants are found within the central part of the intrusive it is probable that the present surface is not far from its roof as small inclusions of the intruded rocks (volcanics and sediments) are found at widely separated localities.

Copper minerals in the form of chalcopyrite or bornite are the chief accessory minerals in the granite, and can be found sparsely disseminated almost everywhere. Pyrite occurs but rarely. Many small concentrations of copper ore occur throughout the intrusive and a small amount of copper was produced from two of these - the Bethlehem and the Aberdeen.

On a regional scale, control of deposition of copper minerals, which followed emplacement of the batholith has probably been effected by major fault structures. In general, copper disseminations and concentrations are found in fracture zones adjacent t

major faults. At both the Bethlehem and Bethsaida deposits, fracture zones, probably resulting from the stresses and displacements of major faults have been impregnated to a varying degree with copper sulphides. On the Udd-Ramsay ground, occurrences of copper sulphides along tight fractures were more numerous in the vicinity of the postulated faults.

#### GEOPHYSICS

Magnetic, geochemical and self-potential survey methods are probably the most suitable of the geophysical surveys for the detection of disseminated copper ores. All three methods have been tried in the Highland Valley with varying success. Self-potential tests over at least one known deposit were not too successful. Geochemical surveys have worked to some extent but are difficult to interpret in this country owing to the wide spread and numerous small occurrences of copper, to erratics in the drift and the problems arising from down hill drainage. Ground magnetic surveys have so far proved to be the most useful in locating mineralized zones.

Magnetite as an accessory mineral occurs disseminated in small quantities through most of the intrusive but, where intense rock alteration has occurred, the magnetite is oxidized to non-magnetic iron oxides. Ideally therefore large areas of alteration, possibly accompanied by the introduction of sulphides, may be detected by the absence of magnetite resulting in low or "negative" anomalies. Within these zones of alteration deposits similar in type to those of the Bethlehem may be sought. Ground magnetic anomalies are in the order of from 400 to 600 gammas so that careful survey methods must be used.

#### UDD-RAMSAY HOLDINGS

##### PROPERTY

The Udd-Ramsay holdings are composed of 198 claims in two groups staked south of the Highland Valley. A list of the claims and descriptive data is appended to this report and an accurate claim map showing posts and location lines in relation to the topography is included. Some small fractions of claims within the groups are probably not protected by the staking and in a few cases the syndicate stakers have inadvertently over-run previously located ground, but nowhere are these errors of serious proportions.

ACCESS

The property can be reached by the following routes:

- 1) Pimainus lake - A jeep road to the lake, in poor condition even in dry weather, leads north for seven miles from the Skyline Lodge, owned by Frank Rogers of Ashcroft. The Skyline Lodge is reached by a logging road running north from a point 14 miles east of Spences Bridge on the Spences Bridge - Merritt highway. This route to the western group could be much improved for jeep travel by ditching and some bulldozer work.
- 2) Billy lake - Billy lake is reached by a rough but passable jeep road which leads from Mamet lake a distance of six miles. Mamet lake is 20 miles north of Merritt. This road could be much improved by bulldozer and would not be difficult to extend to Roscoe lake four miles to the southwest.
- 3) Calling lake - Calling lake lies four miles north of Pimainus and can be reached by a good road from the Highland Valley. It would be possible to build an extension of this road to Pimainus lake but the northern end would require bridging and some sections would have to cross low ground.
- 4) A jeep road into Roscoe from Chataway lake to the east provides possible access but bridge and bulldozer repairs would be needed and the bush portion of such a road would be about 20 miles long.
- 5) Jump lake at the north end of the eastern group is only two miles from Witches Brook in the Highland Valley and is easily reached on foot although it lies 500' above the valley. If necessary a jeep road could be constructed into Jump and Tupper lakes from either the Highland Valley or Billy lake at reasonable cost.

Of the above alternative routes, the extension and repair of the Billy and Pimainus lake roads would probably be the most practical and inexpensive.

TOPOGRAPHY

Fortunately for the progress of the current survey the Udd-Ramsay claims are located on a comparatively level (for British Columbia) plateau varying in elevation from 4500 to 6000'. Relief on the plateau is formed by deep cutting canyons, glacial ridges and more rarely by rock hills and ridges. Spaist Mountain with an elevation of 6050' is a rounded granite and diorite structure and the highest point on either group.

Outcrop is more abundant than in the lower parts of the Valley but glacial debris varying from a thin covering mantle to

razor-back gravel ridges 75' or more in thickness covers 85% of the area. The drift boulders are largely of granodiorite with occasional volcanic and sedimentary erratics. Large level areas of "parkland" characterized by well spaced trees with little underbrush and few outcrops occur in both groups.

#### SURVEY METHODS

Aerial photographs were obtained from the Provincial Photo Library and from the Vancouver branch of Photographic Surveys Limited at the available scales of 1200, 2000, and 2660 feet to one inch. Mapping and prospecting data was sketched on kodatrace overlaid on individual photographs which were carried into the field. This data was placed on a base map drawn to a scale of 1000' to one inch. Traverses were made over all the claims at 500' intervals with closer work along valleys, creek beds, etc., which could result from sheared or altered rock. Pace and compass measurements together with the photographs were used for orientation where topographic features that could be positively identified on the photographs were lacking.

Base and sub-base camps were set up on Jump, Billy, Roscoe and Pimainus lakes and fly camps for two man parties operated from these.

#### GEOLOGY

Macroscopically the major portion of the outcrops examined could be called a granite but thin sections made by the British Columbia Geological Survey from numerous specimens of the batholith show that much of the felspar is of the plagioclase variety and the rock is properly a grano-diorite. In the eastern group the granite is medium grained and the ferromagnesian minerals are equally represented by biotite and hornblende. In the western group, coarse grained granite with prominent quartz crystals and pink felspar predominates and large well formed biotite crystals are the major dark mineral. Small grains of chalcopyrite and magnetite are usually present as accessory minerals.

Fine grained light coloured dikes of aplite varying from a few inches to 25' in width commonly cut the granite and probably represent the last stages of consolidation of the intrusive. These dikes typically contain a slightly higher percentage of copper minerals than the granite but in no place found do they approach ore

in grade.

A large area south of Pimainus lake is underlain by a medium to coarse grained diorite almost totally lacking in quartz. The diorite is intruded by dikes and irregular masses of coarse grained hornblende. The diorite is probably later than and intrusive into the granite as contacts, both observed and magnetically indicated, are sharp and well defined.

On claim Frank 65 south of Pimainus lake a large block of vesicular andesite is imbedded in the diorite suggesting that this area at least is close to the roof of the intrusive.

Although numerous minor faults and fracture zones are present within the boundaries of the property, five fault structures are considered to be of major importance as judged by:

- 1) The strength and persistence of the fault lineament.
- 2) Fracturing and shearing exposed in the vicinity of the fault.
- 3) Associated mineralization and/or rock alteration.

Fault F1 - (see field map No. 1) This fault is indicated by a topographical lineament and emphasized by sharp bluffs along the east shore of Jump lake and minor rock alteration along the west side of Tupper lake. A considerable amount of rock is exposed adjacent to this fault although its trace is buried in drift. A thin coating of bornite and molybdenite along one fracture in the granite west of Tupper lake was the only sign of mineralization. SE-74

Fault F2 - This fault cuts the eastern group (field map No. 1) extending in a north-south direction for a distance of four miles. Rock exposures are fairly numerous along its northern half and thin coatings of chalcopyrite, bornite and molybdenite occur in several places in fractures associated with the faulting. With the exception of area "A" (see inset) these mineralized fractures are isolated occurrences. In area "A" shattered and broken rock over an area measuring about 50' x 200' is thinly coated with chalcopyrite along fractures 6" to 2' apart. Outcrop on both sides of this fracture zone is massive and unmineralized. No signs of rock alteration or disseminated sulphides were found along this fault. SE-90

Faults - F3 & F4 - These faults are located in the south part of the eastern group (see map No. 2). They are indicated by strong north-south lineaments converging to a point about four miles south of Roscoe lake. Although much of this area is covered by overburden



numerous signs of mineralization were noted and in general this section seems to hold more promise than the Billy - Jump lake area to the northeast. Two separate occurrences of well mineralized quartz vein material were found which are probably close to bedrock. Chalcopyrite, bornite and molybdenite occur in several locations as thin coatings along fractures in angular float, and slightly altered, highly fractured granite occurs at several points along the faults. The area between the faults and for a mile on either side of them is largely covered by light drift and further investigation may be justified.

Fault - F5 - This fault lies wholly within the diorite of the western group and is clearly indicated by a strong lineament striking northwest. Chalcopyrite occurs in fractured diorite float at two locations along its length and is also disseminated in a hornblende dike on its extension to the southeast. The type of fracturing and sulphide mineralization is stronger than seen elsewhere on the claims and further examination is warranted.

#### CONCLUSIONS

No surface finds of importance in themselves were made but signs of copper mineralization are plentiful and the ground adjoining the postulated faults F3, F4 and F5 offers some encouragement for further work.

Magnetic and geochemical surveys are recommended bordering the faults F3 and F4 in the eastern (Roscoe lake) group, and fault F5 in the western (Pimainus lake) group.

Although the two areas selected for further work appear to have a somewhat better chance of success, it is not considered that the remainder of the ground has been entirely eliminated by the present examination.

Respectfully submitted,



B. M. Middleton

Prof. Eng. Prov. of B. C.

UDD-RAMSAY SYNDICATE CLAIMS

Highland Valley, B.C.

<u>Claim No.</u>	<u>Tag No.</u>	<u>Staker</u>	<u>Date Recorded</u>
Nord 1	211501	Leslie Kerr	Feb. 20, 1956
" 2	211502	"	"
" 3	211503	"	"
" 4	211504	"	"
" 5	211505	"	"
" 6	211506	"	"
" 7	211507	"	"
" 8	211508	"	"
" 9	211509	Simon Joeffrey	Feb. 9, 1956
" 10	211510	"	"
" 11	211511	"	"
" 12	211512	"	"
" 13	211513	"	"
" 14	211514	"	"
" 15	211515	"	"
" 16	211516	"	"
Rudy 6	217882	R.W.Hiebert	June 25, 1956
" 8	217884	"	"
Ole 1	B87701	W.E. Smith	Feb. 9, 1956
" 2	B87702	"	"
" 3	B87703	"	"
" 4	B87704	"	"
" 5	B87705	"	"
" 6	B87706	"	"
" 7	B87707	"	"
" 8	B87708	"	"
" 9	B87709	W. Green	Mar. 5, 1956
" 10	B87710	"	"
" 11	B87711	"	"
" 12	B87712	"	"
" 13	B87713	"	"
" 14	B87714	"	"
" 15	B87715	"	"
" 16	B87716	"	"
" 17	B87717	E. Cowie	Feb. 14, 1956
" 18	B87718	"	"
" 19	B87719	"	"
" 20	B87720	"	"
" 21	B87721	"	"
" 22	B87722	"	"
" 23	B87723	"	"
" 24	B87724	"	"
" 25	B87725	Bill Kiss	Feb. 28, 1956

Claims - (Cont'd)

<u>Claim No.</u>	<u>Tag No.</u>	<u>Staker</u>	<u>Date Recorded</u>
Ole 26	B87726	Bill Kiss	Feb. 28, 1956
" 27	B87727	"	"
" 28	B87728	"	"
" 29	B87729	"	"
" 30	B87730	"	"
" 31	B87731	"	"
" 32	B87732	"	"
" 33	B87733	E.C.Vipond	Feb. 24, 1956
" 34	B87734	"	"
" 35	B87735	"	"
" 36	B87736	"	"
" 37	B87737	"	"
" 38	B87738	"	"
" 39	B87739	"	"
" 40	B87740	"	"
	B877		
" 41	B87741	S.Jeoffrey	June 25, 1956
" 42	B87742	"	"
" 43	B87743	"	"
" 44	B87744	"	"
" 81	B87781	F.Woodburn	Feb. 28, 1956
" 82	B87782	"	"
" 83	B87783	"	"
" 84	B87784	"	"
" 85	B87785	"	"
" 86	B87786	"	"
" 87	B87787	"	"
" 88	B87788	"	"
" 89	B87789	Allan Clark	Mar. 12, 1956
" 90	B87790	"	"
" 91	B87791	"	"
" 92	B87792	"	"
Pat 1	211401	W. A. Gray	Feb. 13, 1956
" 2	211402	"	"
" 3	211403	"	"
" 4	211404	"	"
" 5	211405	"	"
" 6	211406	"	"
" 7	211407	"	"
" 8	211408	"	"
" 9	211409	P. Sharron	Feb. 16, 1956
" 10	211410	"	"
" 11	211411	"	"
" 12	211412	"	"
" 13	211413	"	"
" 14	211414	"	"
" 15	211415	"	"
" 16	211416	"	"

Claims - (Cont'd)

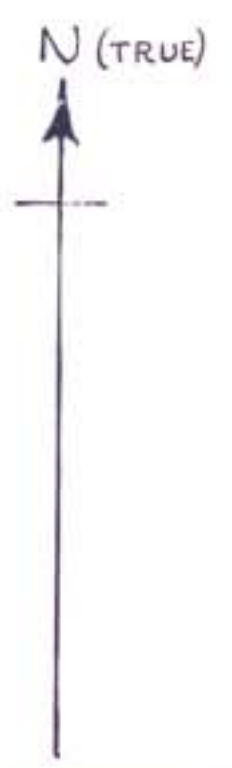
<u>Claim No.</u>	<u>Tag No.</u>	<u>Staker</u>	<u>Date Recorded</u>
Pat 17	211417	John Burlie	Feb. 7, 1956
" 18	211418	"	"
" 19	211419	"	"
" 20	211420	"	"
" 21	211421	"	"
" 22	211422	"	"
" 23	211423	"	"
" 24	211424	"	"
	211425		
" 25	211425	J.J. McMahon	May 31, 1956
" 26	211426	"	"
" 27	211427	"	"
" 28	211428	"	"
" 29	211429	"	"
" 30	211430	"	"
" 31	211431	"	"
" 32	211432	"	"
" 33	211433	Leon LeBlanc	Feb. 16, 1956
" 34	211434	"	"
" 35	211435	"	"
" 36	211436	"	"
" 37	211437	"	"
" 38	211438	"	"
" 39	211439	"	"
" 40	211440	"	"
" 41	211441	Nels Hals	Feb. 20, 1956
" 42	211442	"	"
" 43	211443	"	"
" 44	211444	"	"
" 45	211445	"	"
" 46	211446	"	"
" 47	211447	"	"
" 48	211448	"	"
" 49	211449	W.R. Mundell	Feb. 20, 1956
" 50	211450	"	"
" 51	211452	"	"
" 52	211452	"	"
" 53	211453	"	"
" 54	211454	"	"
" 55	211455	"	"
" 56	211456	"	"
" 57	211457	Arthur Peake	Feb. 29, 1956
" 58	211458	"	"
" 59	211459	"	"
" 60	211460	"	"
" 61	211461	"	"
" 62	211462	"	"
" 63	211463	"	"
" 64	211464	"	"
Frank 55	B89413	F.T. Boyd	Feb. 28, 1956
" 56	B89414	"	"

Claims -(Cont'd)

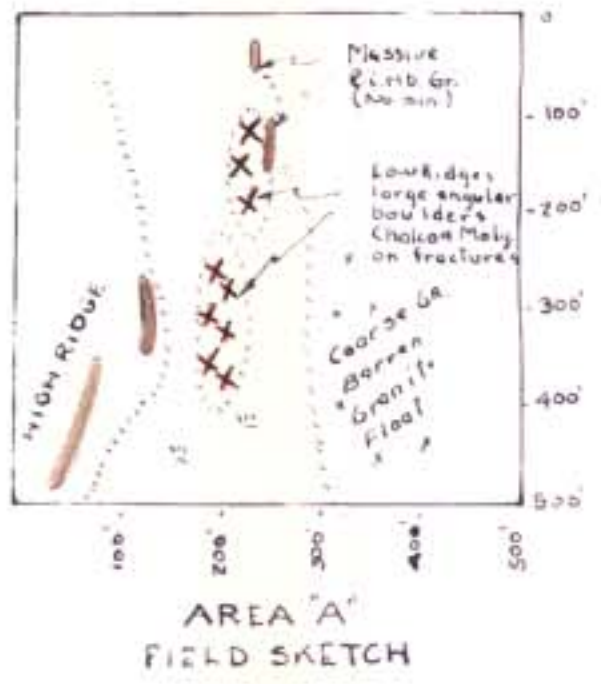
<u>Claim No.</u>	<u>Tag No.</u>	<u>Staker</u>	<u>Date Recorded</u>
Frank 61	213661	W.C.Adams	Feb. 28, 1956
" 62	213662	"	"
" 63	213663	"	"
" 64	213664	"	"
" 65	213665	"	"
" 66	213666	"	"
" 67	213667	"	"
" 68	213668	"	"
" 69	213669	W.Ratke	Feb. 28, 1956
" 70	213670	"	"
" 71	213671	"	"
" 72	213672	"	"
Bill 5	B88555	B.Parker	Feb. 28, 1956
" 6	B88556	"	"
" 7	B87625	George Barnes	Feb. 20, 1956
" 8	B87626	"	"
" 9	B87627	"	"
" 10	B87628	"	"
" 11	B87629	"	"
" 12	B87630	"	"
" 13	B87631	"	"
" 14	B87632	"	"
" 15	213601	R.G.Salter	Feb. 24, 1956
" 16	213602	"	"
" 17	213603	"	"
" 18	213604	"	"
" 19	213605	"	"
" 20	213606	"	"
" 21	213607	"	"
" 22	213608	"	"
" 23	B87641	W.Kearns	Feb. 28, 1956
" 24	B87642	"	"
" 25	B87643	"	"
" 26	B87644	"	"
" 27	B87645	"	"
" 28	B87646	"	"
" 29	B87647	"	"
" 30	B87648	"	"
" 31	213621	A.G.Becker	Feb. 24, 1956
" 32	213622	"	"
" 33	213619	"	"
" 34	213620	"	"
" 35	213617	"	"
" 39	213609	R.D.Salter	Feb. 24, 1956
" 41	213611	"	"
" 54	211500	N.H.Keech	Feb. 24, 1956

Claims (Cont'd)

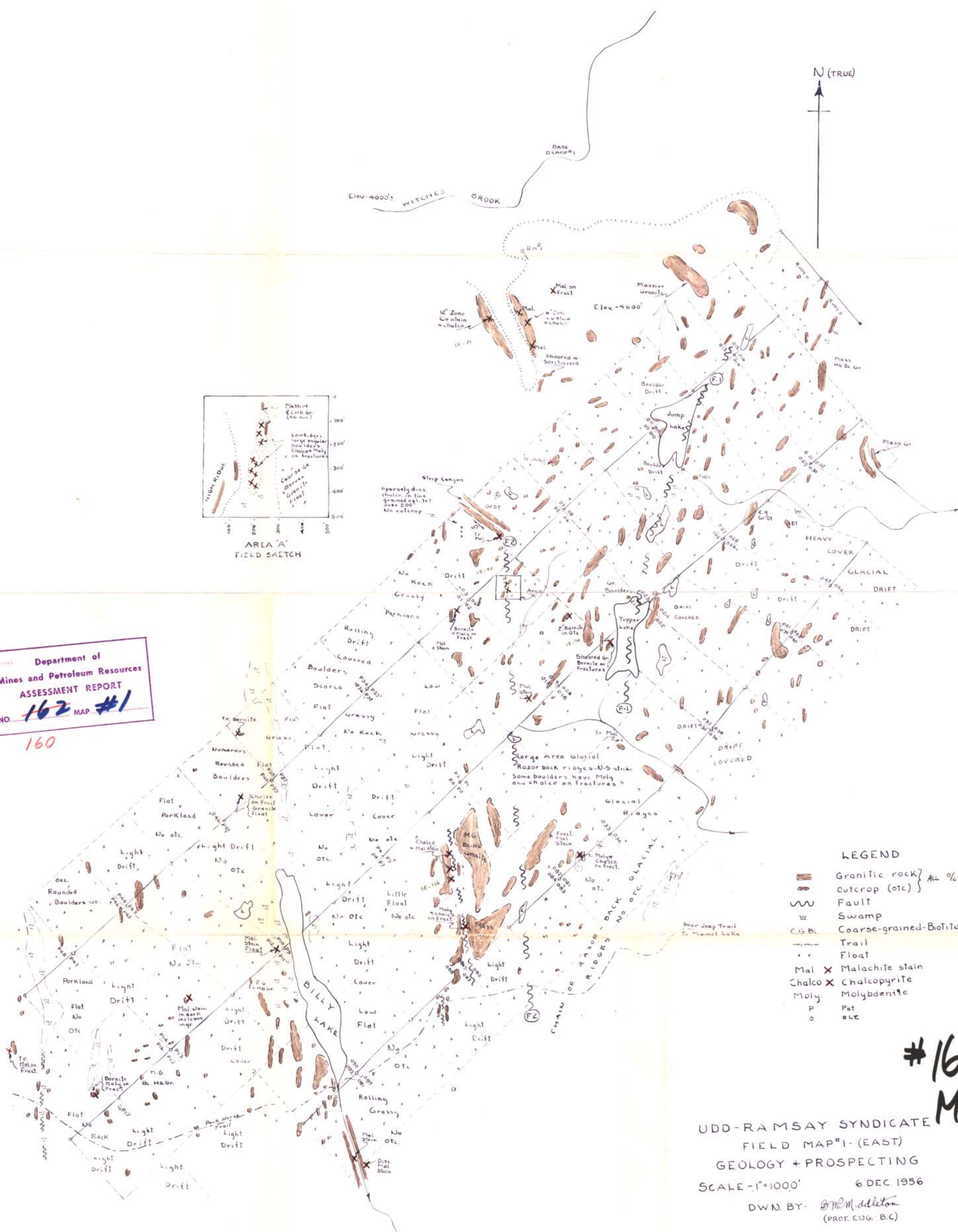
<u>Claim No.</u>	<u>Tag No.</u>	<u>Staker</u>	<u>Date Recorded</u>
Bill 55	B49148	S.H. Wells	Feb. 28, 1956
" 56	B49149	"	"
" 58	B49159	"	"
" 59	B49160	"	"
" 60	B87633	Leonard Bird	Mar. 12, 1956
" 61	B87634	"	"
" 66	B88536	G.T.Holmes	Feb. 24, 1956
" 67	B88537	"	"
" 68	B88538	"	"
" 69	B88539	"	"
" 70	B88540	"	"



BASE CLAMP  
Elev. 4000' WITCHES BROOK



Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 162 MAP #1  
160



- LEGEND
- Granitic rock } ALL % AREAS, GRANITIC
  - Outcrop (etc) }
  - Fault
  - Swamp
  - C.G.B. Coarse-grained-Biotite
  - Trail
  - Float
  - Mal X Malachite stain
  - Chalco X Chalcopyrite
  - Moly. Molybdenite
  - P Pat
  - O OZ

#160  
MAP 1

UDD-RAMSAI SYNDICATE  
FIELD MAP #1 - (EAST)  
GEOLOGY + PROSPECTING  
SCALE - 1" = 1000' 6 DEC. 1956  
DWN. BY: B.M.M. Sdleton  
(PROF. ENG. - B.C.)

BIRLY LAKE

NOTE - THIS TRAIL OVERLAPS ON MAP #1 FOR TIE-IN

N (TRUE)



LEGEND

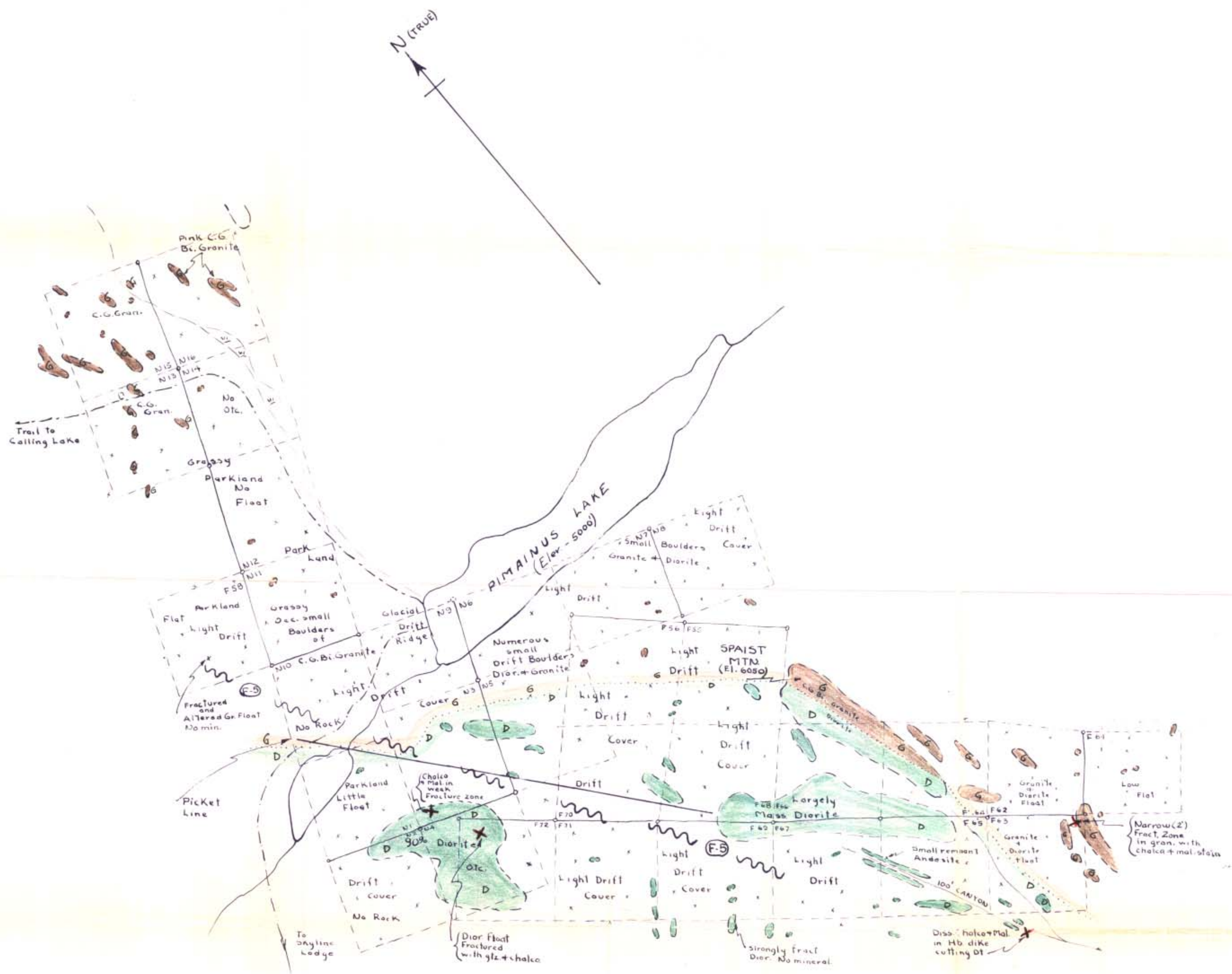
- Granitic rock } ALL % AREAS, GRANITIC
- Outcrop (etc.)
- Fault
- Swamp
- C.G.Bt Coarse-grained Biotite
- Trail
- Float
- Mal. X Malachite stain
- Chalco X Chalcopyrite
- Moly. Molybdenite
- Shearing (Vert?)
- Put
- Bill

Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 MAP NO. 160

UDD-RAMSEY SYNDICATE  
 FIELD MAP #2 - (CENTER)  
 GEOLOGY + PROSPECTING  
 SCALE - 1" = 1000'  
 6 DEC. 1956  
 DWN. BY - *B. Middleton*  
 (PROF. ENG. - B.C.)

#160  
MAP 2





LEGEND

	Granitic rocks	N - Nord
	Dioritic rock	F - Frank
	Geological contact	
	Outcrop (ote)	
	Fault	
	Swamp	
C.G.Bi.	Coarse-grained-Biotite	
	Trail	
	Float	
Mal.X	Malachite stain	

UDD-RAMSAI SYNDICATE  
FIELD MAP #3 (WEST)  
GEOLOGY + PROSPECTING  
SCALE - 1" = 1000'

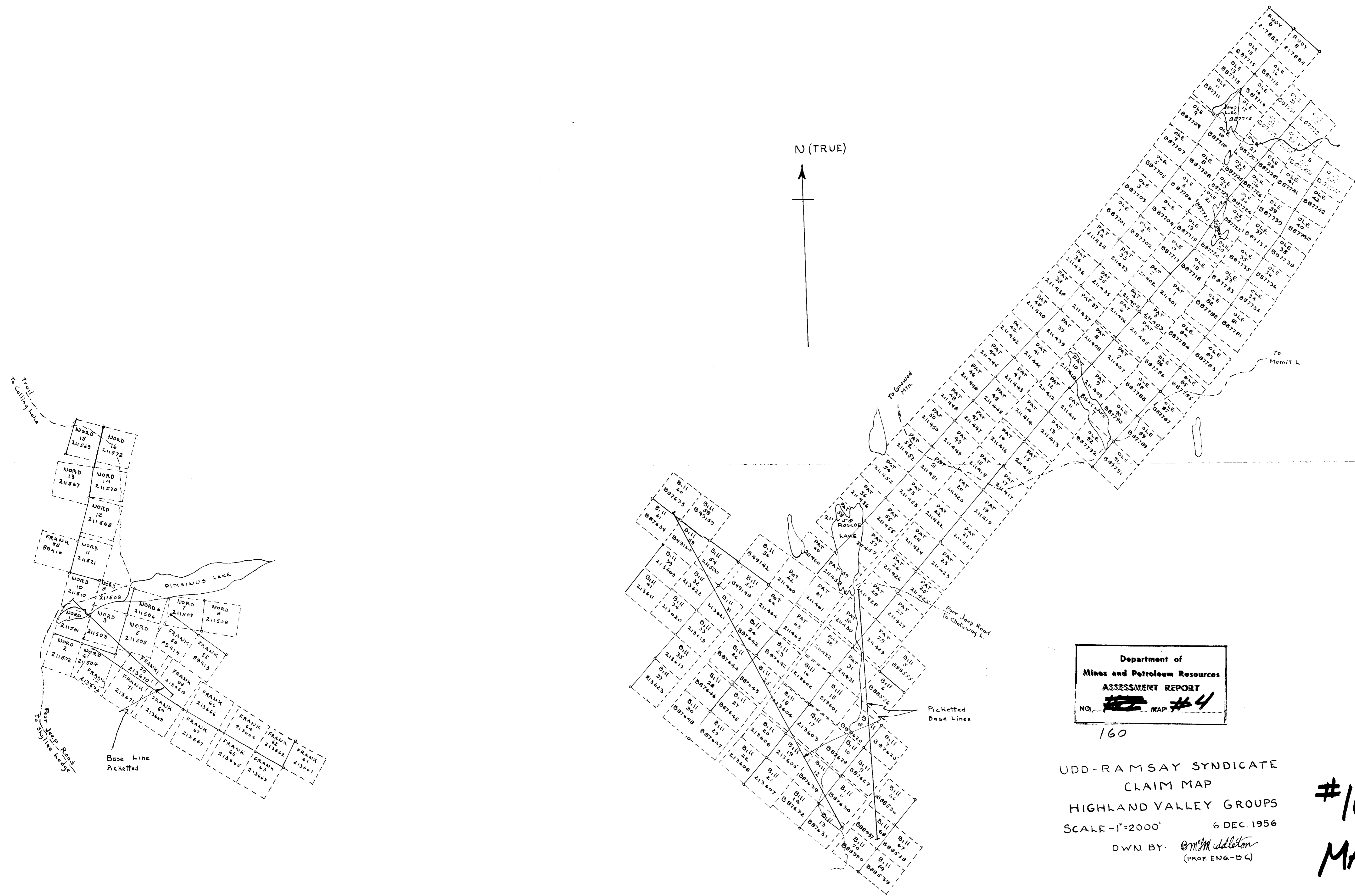
DATE - 6 DEC. 1956 DWN BY:

*B.M. Middleton*

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. ~~160~~ M.P. #3

160

#160 MAP 3



Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. ~~160~~ MAP #4

160

UDD-RAMSAY SYNDICATE  
 CLAIM MAP  
 HIGHLAND VALLEY GROUPS  
 SCALE - 1"=2000' 6 DEC. 1956

DWN. BY: *M. Middleton*  
 (PROF. ENG.-B.C.)

#160  
 MAP 4