

136

*Geology and Mineralogy*

*of the*

*MAC GROUP*

*of Mineral Claims at*

*Snakum Mountain*

*Herritt, B.C.*

*D.A. Morgan*

*September 17, 1956*

### SUMMARY

During the months of July, August and September of 1956 a four man party under David A. Morgan, Geologist, was working on the Mac group of thirty two claims and eight fractions belonging to Jackson Mines Ltd. The claims are located on Spakum Mountain, near Merritt, B.C.

The work was done as follows:-

1. A compass survey was made of the original Mac group of claims, and any open ground found within the limits of the claims was staked.
2. Geological traverses were made across all claims and fractions at intervals of approximately 500 feet, using a base line, location lines, and aerial photographs as controls. A geological map was drawn with the information obtained.
3. The Last Chance workings on Mac #3 were mapped in detail.
4. Hand trenches were cut on strike with the best copper showings at the Last Chance in an attempt to extend the zone.
5. Core and chip samples were taken from the Last Chance workings.

### CONCLUSIONS

The Spakum Mountain area in general has been carefully prospected in the past. Small showings have received attention that they frequently did not merit; for instance, in one place a 70-foot inclined shaft was sunk on a quartz stringer that was poorly mineralized and had a maximum width of five inches.

The best showing on the Mac group of claims is on Mac #3, a claim formerly known as the Last Chance. The mineralized

CONCLUSIONS (Contd.)

body here is small and has a low grade. Mineralization on the remainder of the property is negligible.

Since no important showings exist on the Mac group of claims and since there are no important showings adjacent to these claims, further exploration at the present time is not recommended.

PERSONNEL

The field party consisted of: David R. Morgan, geologist in charge; John D. Hankinson, Thomas F. Muther, Robert B. Elver, and Glen H. Lewis, all student assistants. Technical supervision was provided by James A. Soles, geological engineer.

CLAIMS AND LOCATION

The Mac group of thirty-two claims and eight fractions lies on the northern slope of Swakum Mountain ten miles north of Nicola, near Merritt, B.C. The claims are as follows:-

Mac Nos. 1 to 32 inclusive

Mac Fractionals Nos. 1, 3, 5, 7, 9, 11, 13 and 15

ACCESS

The property is reached by a 12-mile ungraded road that runs north from Nicola. The road ends at the southeast corner of the property but a trail continues from this point in a northerly direction, passes through the length of the claims, and ends at Kay Lake.

ACCESS (Contd.)

This trail was extremely useful for reaching the starting point of traverse, as progress was slow through the dense wind-fall that covers the claims.

WORK DONE

Work on the property progressed in three distinct stages:

1. A compass survey of the claims was followed by the staking of the fractions revealed.
2. The "Last Chance" copper-tungsten showings were mapped in detail on a scale of 20 feet to the inch
3. Less detailed mapping on a scale of 500 feet to the inch was carried out on the remainder of the property. The area on strike with the Last Chance showing receiving special attention.

SURVEY OF THE CLAIMS

The thirty-two claims on the Mac group were surveyed with a Brunton compass, the survey was closed and the error distributed. This survey revealed a large wedge-shaped fraction splitting the claims from south to north. To stake this fraction and also to provide control in the geological survey to follow, a north-south base line was out and chained through the centre of the property.

In addition to the claims survey, a triangulation by transit was made between two points on Swakum Mountain and a lake about a mile to the west. This yielded the bearing and distance of a line connecting two points which could be identified on an aerial photograph. With this information a 600 scale enlargement print of the area was obtained. This, used in conjunction with the base line and a survey of the Bay Lake trail, provided adequate control for mapping of the area.

### GENERAL GEOLOGY

The rocks in the area belong to the Nicola Group, which is of Upper Triassic age, and are represented in this area by andesite, feldspar porphyry, agglomerate, limestone and tuff, in order of abundance.

The andesites are dark green, aphanitic, massive and structureless except for occasional cavities filled with calcite.

The feldspar porphyries are closely related to the andesites and the phenocrysts may represent segregations to the bottom of thick andesite flows. The groundmass of these porphyries have the same appearance as the andesite, being aphanitic and dark green.

The agglomerates are composed of subangular fragments of andesitic appearance ranging in size from 0.3 to 3 centimetres.

The limestone, where unaltered to skarn, are crystalline and occasionally fossiliferous. The fossils, which may be corals, have been distorted, probably during the period of regional metamorphism when the limestone was recrystallized.

The tuffs were found in only one locality, this being in the western limb of the anticline. They are grey, siliceous, aphanitic, indistinctly bedded and extremely resistant to weathering.

### MINERALIZATION STRUCTURE

The greater part of the Snakun Mountain area is underlain by a featureless andesite. The only recognizable elements of structural change occur outside this andesite. These are:

1. The agglomerate band, which swings in an arc from east to west by way of north.
2. The steep eastward dip of the limestone - greenstone contact at the Last Chance.

MINERALIZATION STRUCTURE (Contd.)

3. The steep westward dip of the tuffs on the west side of the property.
4. The strikes of both the tuff and the contact on the Last Chance converge towards the north.

These facts suggest an anticline plunging to the north. This conclusion is contrary to the opinion of W. E. Cockfield <sup>(1)</sup>, who considers that Swakum mountain is the locus of an anticline with the axis plunging to the south. His view is based on the fact that a series of discontinuous limestone lenses form, or apparently form, a marker for this structure. The writer's view is based on a continuous bed of agglomerate.

The contacts between the andesites and the porphyries are irregular, as the map shows, but the strikes of these contacts are in general parallel to the limbs of the anticline.

MINERALIZATION

Mineralization in the Swakum Mountain area is confined to the limestone lenses. Hydrothermal solutions ascending from a hidden source have produced typical contact metasomatic bodies in these limestones. By no means all of the limestones are mineralized, nor are they all mineralized in the same way.

The Thelma shaft, which lies to the south of Swakum Mountain, was sunk to explore the sphalerite-galena deposit that occurs in the limestone skarn zone at the shaft. The Old Alameda shaft, a mile to the north of the Thelma was sunk in a skarn containing lead, zinc, and copper minerals. Finally, on the Mac #8 claim, one mile to the north of the Old Alameda shaft, are found the Last Chance copper - tungsten workings. North of the

1. Cockfield, W. E. Mem. 249, Geol. Surv. Canada, p. 142

MINERALIZATION (Contd.)

Last Chance all limestones observed were unaltered and barren.

A summary of the facts could be made as follows:

1. Mineralization is confined to the north-south striking limestone lenses.
2. There is no evidence of important structural breaks. Mineralizing solutions appear to have selected the limestones from the impenetrable and stable volcanics.
3. There is a gradation as one moves north from low temperature lead-zinc replacement through higher temperature copper - lead - zinc replacement to the (locally) highest temperature copper-tungsten mineralization on the Last Chance.

These facts suggest that the source of the mineralizing solutions lies closest to the Last Chance and, further, that any limestone lenses lying to the north of the Last Chance would almost certainly exhibit some form of mineralization. That they do not require some explanation. Two possible explanations are considered by the writer:

1. The limestone lenses that lie to the north of the Last Chance lacked sufficient vertical extent to benefit from the mineralizing solutions.
2. The source of the mineralizing solutions may lie further to the south. The apparently higher temperature mineralization at the Old Alameda and the Last Chance may have resulted from the presence of small quantities of fluxes in the hot solution which entered these limestone bodies. This would permit a high temperature mineral such as scheelite to crystallize at a lower temperature, i.e. at a great distance from the source of the solutions.

GEOLOGY OF THE LAST CHANCE SHOWING

The Last Chance workings on Mac #3 claim are in a skarn zone formed in a limestone at its contact with a greenstone. This skarn zone is about 200 feet in length, 20 feet in width, strikes north and south, and dips steeply to the east. The limestone is crystalline, grey and medium grained. The greenstone is

dark green, aphanitic and andesitic in composition. The skarn zone named "garnetite" consists chiefly of calc-silicates with much brown, medium grained garnet and accessory calcite, epidote, chlorite specular hematite and pyrite. The chalcopyrite and scheelite occur erratically through the skarn.

The property was originally developed for copper, and a fifty-foot shaft was sunk into the skarn at the site of the best showings.

The property was later explored for its tungsten and was thoroughly diamond drilled. Most of this drill core was available for inspection by the writer; however, it was impossible to correlate much of it with the numbering system used in the G.S.C. report on the area.

A ten-foot chip sample was cut across the back of the winze where the best mineralization occurred. Five feet of this sample was in the "garnetite" in which the winze was sunk; the remaining five feet were cut in the adjoining andesite which was mineralized adjacent to this contact. This sample assayed 1.05% copper.

A remainder of the samples were taken from DDH #10 core, which showed the only appreciable amounts of chalcopyrite. This chalcopyrite occurred as blebs in a "garnetite" with epidote and calcite. Three five foot samples were taken, which assayed 0.35%, 0.85% and 0.22% copper.

Two trenches were cut on strike with the winze, the first 60 feet to the north and the second 150 feet to the north. No mineralization was encountered in either of these trenches.



## CONCLUSIONS

### Surface Indications:

The best copper showing on the Last Chance (Mao #3) is at the collar of the winze. Extensive trenching, however, has failed to reveal a length of mineralization greater than 50 feet and a maximum width (at the winze) of ten feet.

### Subsurface Indications:

The best intersection in the 1500 feet of core stored in the core shack averaged 0.47% Cu. over 13 feet. Since this hole was drilled at an angle of -55 degrees from the footwall side, it represents a true width of 8.5 feet at the most.

As far as copper mineralization is concerned, the Last Chance workings consist of small low grade pockets within the skarn zone. These do not justify further exploration in view of the lack of results from extensive drilling and trenching carried out by previous owners.

The tungsten values were not investigated by the writer; however, W.E. Cockfield, who was in charge of the drilling programme on this property in 1943, concludes his report on the central part of the skarn zone;...." the average of this part of the zone is too low grade to be considered commercial, and that although streaks of good scheelite mineralization occur they cannot be related into ore shoots."

I would like to close this report on the exploration of the Mac Group Claims on Swakum Mountain by expressing by appreciation for the help I had from John Hankinson, Bob Bluer, Tom Muther and Glen Lewis.

These men worked well under conditions that were not always ideal.

*J.R. Morgan*

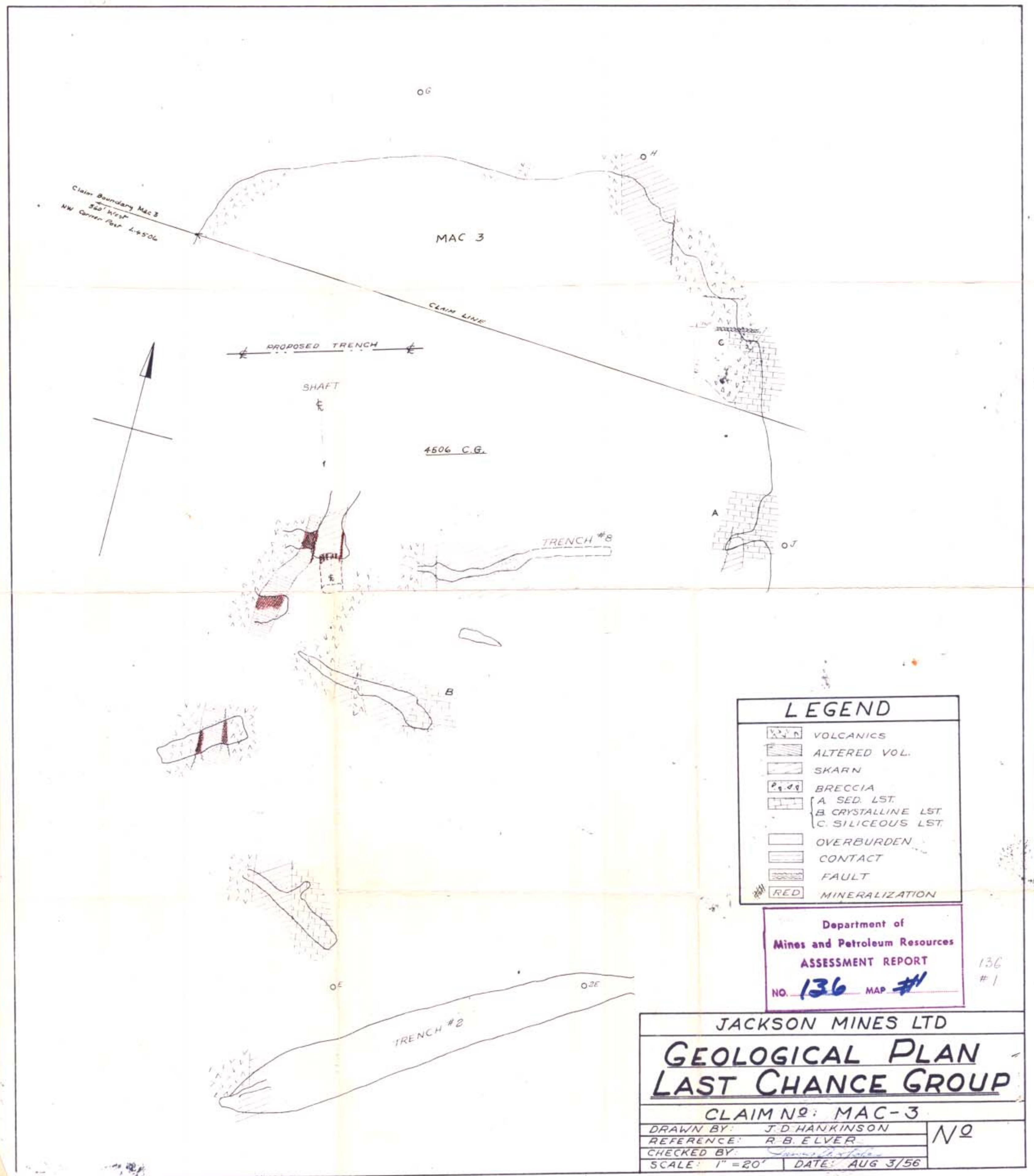
D.R. Morgan,  
B.Sc. Geology, McGill, 1954.

*Checked By*

*James C. Adams*

maps

- #1 Geological Plan - Last Chance Group  
Claim No. Mac-3. 1" = 20'
- #2 Geological Plan - Mac Claims  
Swakum Mt. 1" = 500'
- #3 Survey Plan - Mac Claims,  
Swakum Mt. 1" = 500'



**LEGEND**

- VOLCANICS
- ALTERED VOL.
- SKARN
- BRECCIA
- A. SED. LST.
- B. CRYSTALLINE LST.
- C. SILICEOUS LST.
- OVERBURDEN
- CONTACT
- FAULT
- RED MINERALIZATION

Department of  
**Mines and Petroleum Resources**  
 ASSESSMENT REPORT  
 NO. **136** MAP # **1**

136  
 #1

JACKSON MINES LTD

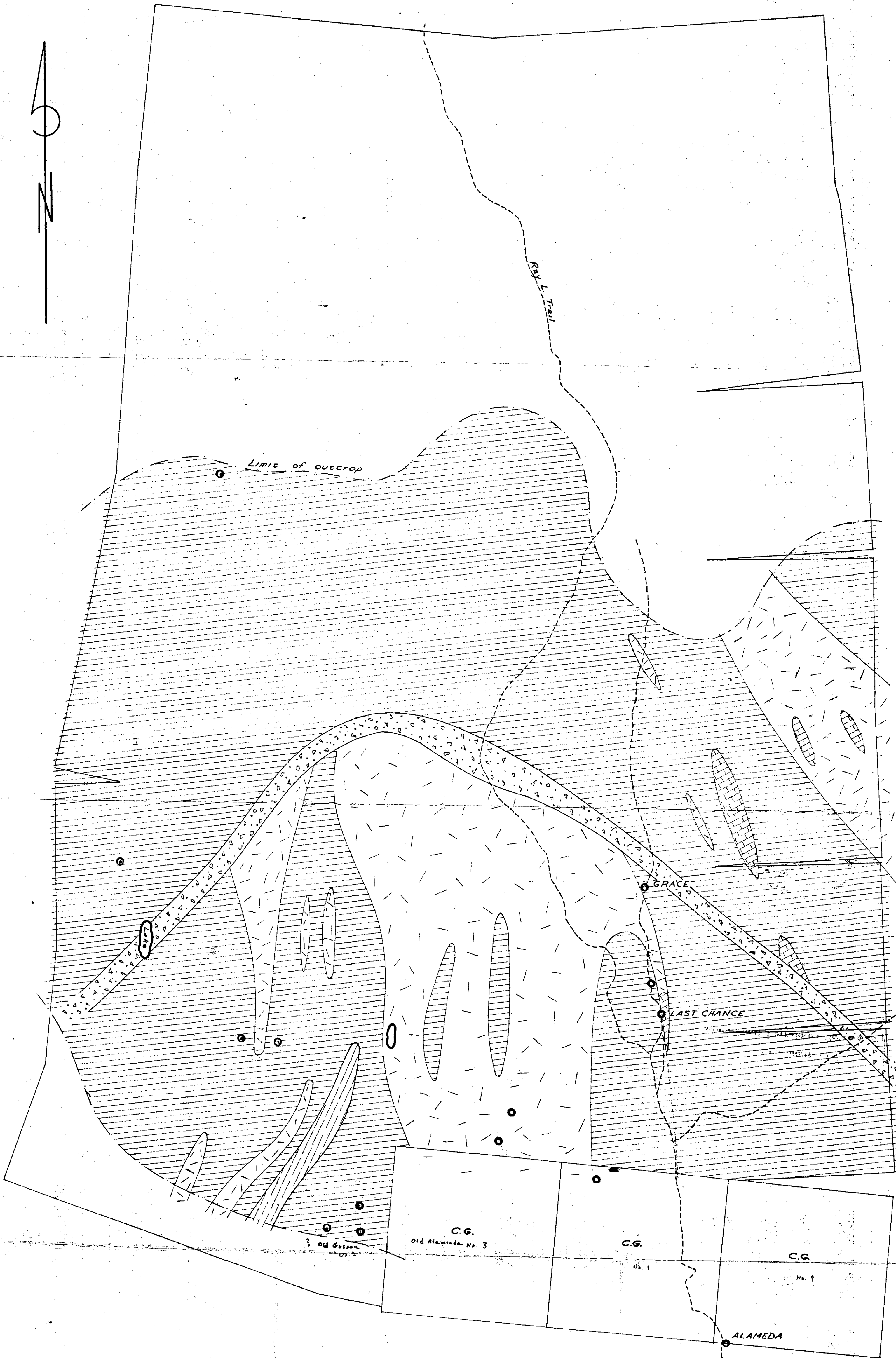
**GEOLOGICAL PLAN**  
**LAST CHANCE GROUP**

CLAIM NO: MAC-3

DRAWN BY: J.D. HANKINSON  
 REFERENCE: R.B. ELVER  
 CHECKED BY: *[Signature]*  
 SCALE: 1" = 20' | DATE: AUG 3/56

No

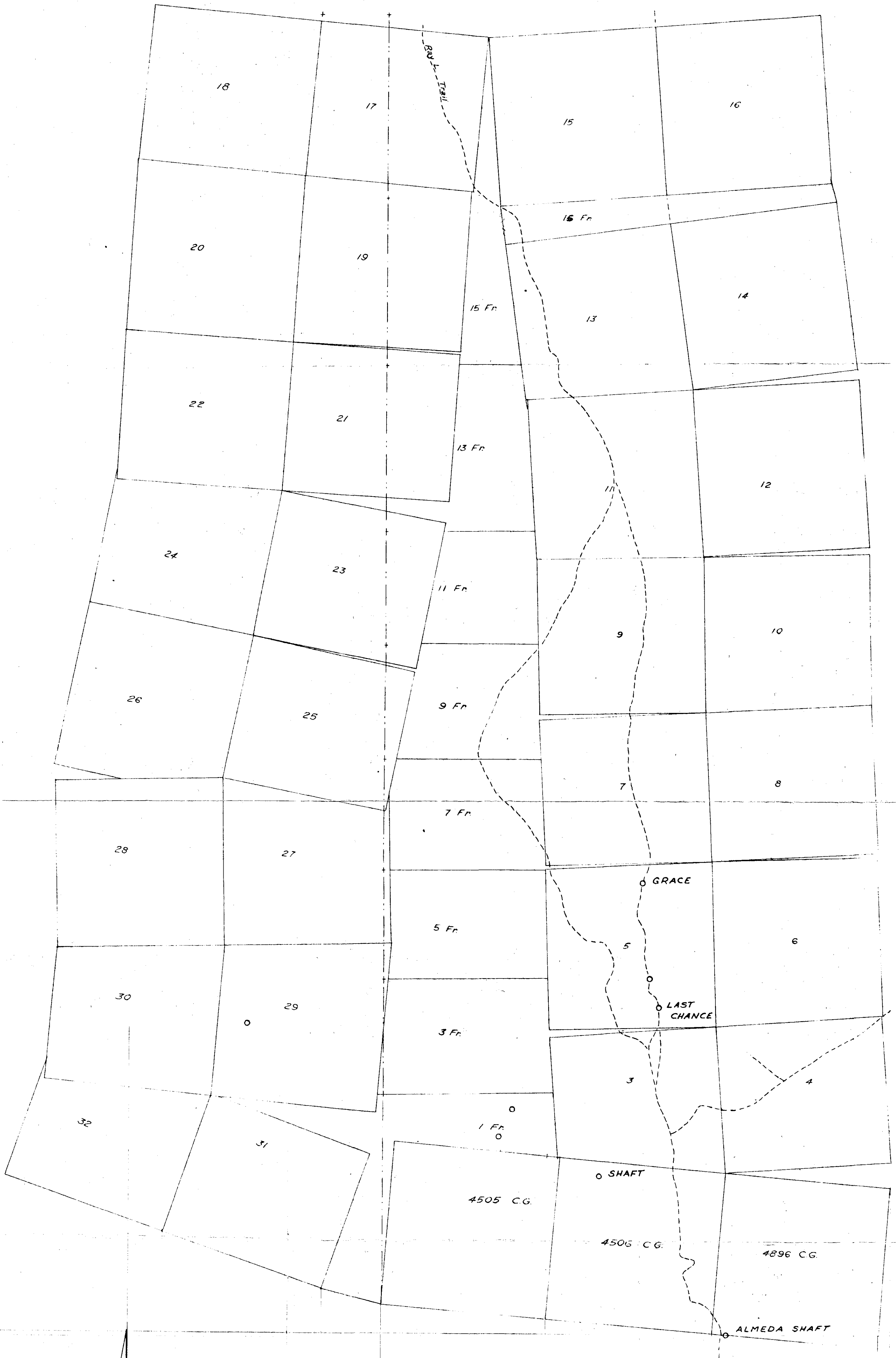




LEGEND	
	ANDESITE
	FELDSPAR PORPHYRY
	TUFF
	AGGLOMERATE
	LIMESTONE
	MINERALIZATION
	STRIKE & DIP SYMBOL
	SHAFTS, ADITS ETC.

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 136 MAP #2

JACKSON MINES LTD.  
**GEOLOGICAL PLAN**  
MAC CLAIMS SWAKUM MTN.  
DR'N BY: HANKINSON & MORGAN  
CHECKED BY: *[Signature]*  
DATE: SEPT 12/56  
SCALE: 1" = 500'



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 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. 136 MAP #3

JACKSON MINES LTD  
**SURVEY PLAN**  
 MAC CLAIMS SWAKUM MTN.  
 DRN BY: HANKINSON  
 REF: D. R. MORGAN  
 DATE: SEPT 11/56  
 SCALE: 1 IN. = 500 FT.