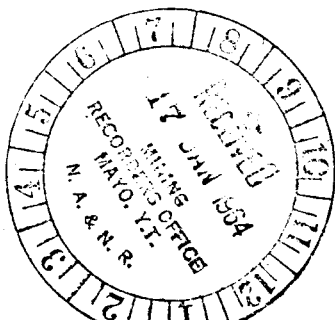


REPORT ON  
THE GEOLOGY OF  
THE BOB GROUP, MINERAL CLAIMS  
MAYO M.D. Y.T.

BY

A. E. AHO AND

D. TEMPELMAN-KLUIT



November 1963

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Bob Group

Table of Geologic Formations

Granodiorite	Granodiorite stock and plug, probably about La ramide age
Greenstone	Gabbroic to dioritic sill-like masses similar to those in Keno Hill area, age unknown, probably late Paleozoic to Mesozoic.
Upper Schist	Quartz sericite schist and micaceous quartzite typical of this unit elsewhere in the district, age unknown.
Central Quartzite	Thin bedded or slabby grey quartzite, quartz sericite schist, micaceous quartzite, difficult to separate from above, massive units if any, not exposed, age unknown.
Lower Schist	Typical graphitic to sericitic phyllite with up to 5% pyrite locally, possibly late Paleozoic or early Mesozoic.

## INTRODUCTION

About \$150 million worth of silver-lead-zinc ore has been mined from Keno and Galena Hills in north central Yukon since 1947. In view of this exploration in the surrounding area has been undertaken by a number of mining concerns. The Bob Group, originally staked on its proximity to Keno and Galena Hills and on the basis of supposed similar lithology, has been the scene of exploration during 1963. No mineralization or possible mineralized structures have so far been uncovered.

The 1963 program on the Bob Group consisted of geologic mapping and prospecting to delimit areas worthy of more detailed work.

This report describes the geology of the area covered and surrounded by the presently held Bob Group. The excessive overburden hindered accurate geologic mapping and lithologic boundaries and other structural features are based on few actual observations.

## GENERAL CONDITIONS

### Location and Access

The Bob Group lies about 9 miles due north of Elsa, Y.T., at lat. N 64°00' and long. W 135°35'. It is south of Skate Creek, a tributary of Lynx Creek. The property can be reached overland by crossing the South McQuesten River at the end of the Ur road - a branch road of the Hansen Lake road - and by heading due north from this point for about 6 miles. There is no trail.

### Topography and Overburden

The presently held group of claims lies near the northeast side of the granitic knob south of Skate Creek. The hillside dips gently and evenly toward the northeast. Relief is very low - the top of the granitic knob is at 4000 feet elevation and Skate Creek is at about 3400 feet.

The entire claim group is covered by a thick mantle of overburden, which makes mapping difficult and which allows only prospecting for float. Overburden consists of glacial and alluvial gravel and reaches depths of several tens of feet at some places.

### Timber, Water

Good timber does not grow on the Bob Group. Most trees are less than twenty feet high and only 6 inches across at the butt, and are of the black spruce variety. Buckbrush covers the hillsides. Mining timber would have to be obtained from Proctor's sawmill near Elsa.

Water is fairly abundant and a sufficient supply for a mining program is available from Skate Creek close by.

### Power and Facilities

Limited power would be available from the Northern Canada Power

Commission transmission line on Mayo-Elsa road, which services United Keno Hill Mines. United Keno Hill have special power rates of 2-5/8¢ per kwh with a flat rate which reduced their cost in 1959 to 1.41¢ per kwh.

Mayo has a thrice weekly plane service to Whitehorse and other outside points. Year round telephone and road connections with the "outside" make the area easily accessible.

Elsa has a supermarket and post office but it is a company town and there few other public facilities.

### Climate

Climate is typical of central Yukon. It is cool in summer and cold in winter with moderate precipitation. The weather conditions present no unusual difficulty to a year round mining operation. Permafrost extends from the surface to depths of several hundred feet in this area.

### Costs

Being relatively remote and about 1850 miles from smelters, this district faces higher than average costs of operation. A paper given at the Annual Western Meeting of the Canadian Institute of Mining and Metallurgy in October 1960 by the United Keno Hill staff details their present operations. Costs are cited as follows:

Mining .....	\$21.85/ton
Milling .....	4.84/ton/ore treated
Trucking Elsa to Whitehorse ..	18.57/ton/concentrate (10¢/ton/mile)

Transportation costs to smelters total about \$45/ton of concentrates. Cutoff grade is thus in the order of \$47.50/ton. A paper given at the same CIM meeting by R. Macrae outlines the general cost picture for mining in Yukon. However, these costs are offset by the rich silver content of the ores which give a silver-lead concentrate valued at over \$400/ton. Zinc concentrates, containing less silver, are barely profitable under certain conditions. For the last decade or more United Keno Hill have been producing nearly \$10 million a year with profits up to \$2 million a year (see Canadian Mines Handbook 1961, and Financial Post Survey of Mines 1962).

### History

From 1913 to 1942 the district has produced about \$25 million in silver and lead ore and concentrates. Since 1947, mostly under United Keno Hill, the district has produced over \$100 million in silver, lead, zinc and cadmium with net profits ranging to \$2 million annually. Further exploration is proving up more ore in the district and it can be expected that production will continue for many years to come since much of the district is yet unexplored.

### Property

A total of 108 Bob claims were staked in 1962. Most of them have been dropped since and only 6 claims are now held, these being Bob 15-18, 31, and 33. These claims are held by Silver Titan Mines Ltd. in trust for the Titan Project.

## Work Done to Date

No physical exploration work has been done on the property aside from the present geologic mapping.

## GEOLOGY AND MINERALIZATION IN THE DISTRICT

The main productive mines in the district occur at intervals along Keno and Galena Hills, and consist of northeast-striking, southwest-dipping vein fault systems in which the ore is localized mostly in the more massive greenstones and quartzites of the Central Quartzite formation, overlain and underlain respectively by the Upper and Lower Schist formations. The ore is localized chiefly in the more massive members of the central quartzite formation, particularly where vein-faults intersect or branch (dilation effect), where they pass upward into less competent schist or thin-bedded quartzites (damming effect), and often near minor or major northwest-striking cross-faults.

On some properties, such as the Sadie-Ladue and Yukeno, ore occurs in the Lower Schist formation but is localized mostly adjacent to competent lenses of greenstone, and its presence appears to be controlled by vein-fault intersections or cross-faults.

In the vicinity of the Bob Group similar northeast to east-west-striking vein faults may be expected to occur, and if similar competent greenstone and quartzite are cut by these vein zones and high silver values occur, conditions for occurrence of ore would be favourable.

## GEOLOGY AND MINERALIZATION OF THE BOB GROUP

### Lithology

The rocks that underlie the area in the vicinity of the Bob Group are thought to be stratigraphic equivalents of those that crop out on Keno and Galena Hills.

The accompanying reconnaissance map (fig. 1) shows the distribution of rock types. The main features of this map include the granodiorite stock in the northeast (thought to have been emplaced by stoping and dry intrusion as contact metamorphic effects are lacking in the country rocks around its margin); the greenstone lenses or masses distributed throughout the map area; the small granodiorite plug in the southern part of the area; and the contact between the Lower Schist and Central (?) Quartzite.

It must be emphasized that the geology is based on few actual observations due to the lack of out crop in the area.

Several features concerning the lithology of the rocks are noteworthy.

1. The Central Quartzite as shown in fig. 1 is not the typical massive grey quartzite that is found to the south on Keno and Galena Hills. In fig. 1 real Central Quartzite makes up a small part of the section.

For mapping purposes Central Quartzite and Upper Schist have been grouped together.

2. The Lower Schist is quite typical of lower schist. In other areas it consists largely of thin bedded graphitic dark grey argillite and slate with commonly up to 5% indigenous iron pyrite.

3. The greenstone is typical of greenstone in other parts of the district. This greenstone is orange to brown weathering, dioritic in composition and strongly sheared.

4. The Upper Schist is made up of foliated quartz sericite schist and micaceous quartzite, typical of the unit when it crops out in other parts of the district.

5. Granodiorite is fine to coarse grained uneven textured and generally biotite rich. This rock tends locally to more dioritic types.

6. Stratigraphic relations were not determined in this area due to the lack of outcrop, structural information and sedimentary structures.

7. No feldspar porphyry and lamprophyre dykes were noted in the area.

### Structure

Little structural information can be gleaned from the few outcrops in the area. Minor structures are almost entirely lacking in the few outcrops found and it is thought that the structural environment of this area is one of less intense deformation than that to the south. Perhaps the area is on the northern flank of stress patterns that acted in the vicinity of Keno and Galena Hills.

Major structural features are obscured by overbruden. One topographic trend (see fig. 1) which occurs on the north side of McQuesten River valley has not been explained. This break may be a reflection of the bedrock structure or a marginal glacial outwash channel.

### Metamorphism

Metamorphism is restricted to low grades and is of the regional greenschist facies. It is thought that metamorphism occurred before intrusion of the granitic rocks. (Cretaceous Green 1962).

### Mineralization

No mineralization has been found within the map area. Float galena carrying silver is reported to have been found about 1940 in the vicinity of the granitic plug.

### CONCLUSIONS

Aside from reported galena float in the vicinity of the presently held claims, there is no definite indication of any favourable vein-fault

structures, and the types of exposed host rocks (other than greenstone) ore do not appear to be especially favourable. However, massive quartzite occurs to both southeast (UR group) and northwest (across Lynx Creek) so further geologic investigation should clarify the present picture and silt sampling of streams may lead to discovery of mineralization.

RECOMMENDATIONS

In view of previous geologic data and reported float occurrence, it is recommended that further limited geologic reconnaissance and silt sampling of streams be done in this area to determine if an area of favourable host rocks and/or indicated mineralization exists.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read 'Aho', with a large flourish at the end.

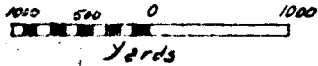
Dr. A. E. Aho.



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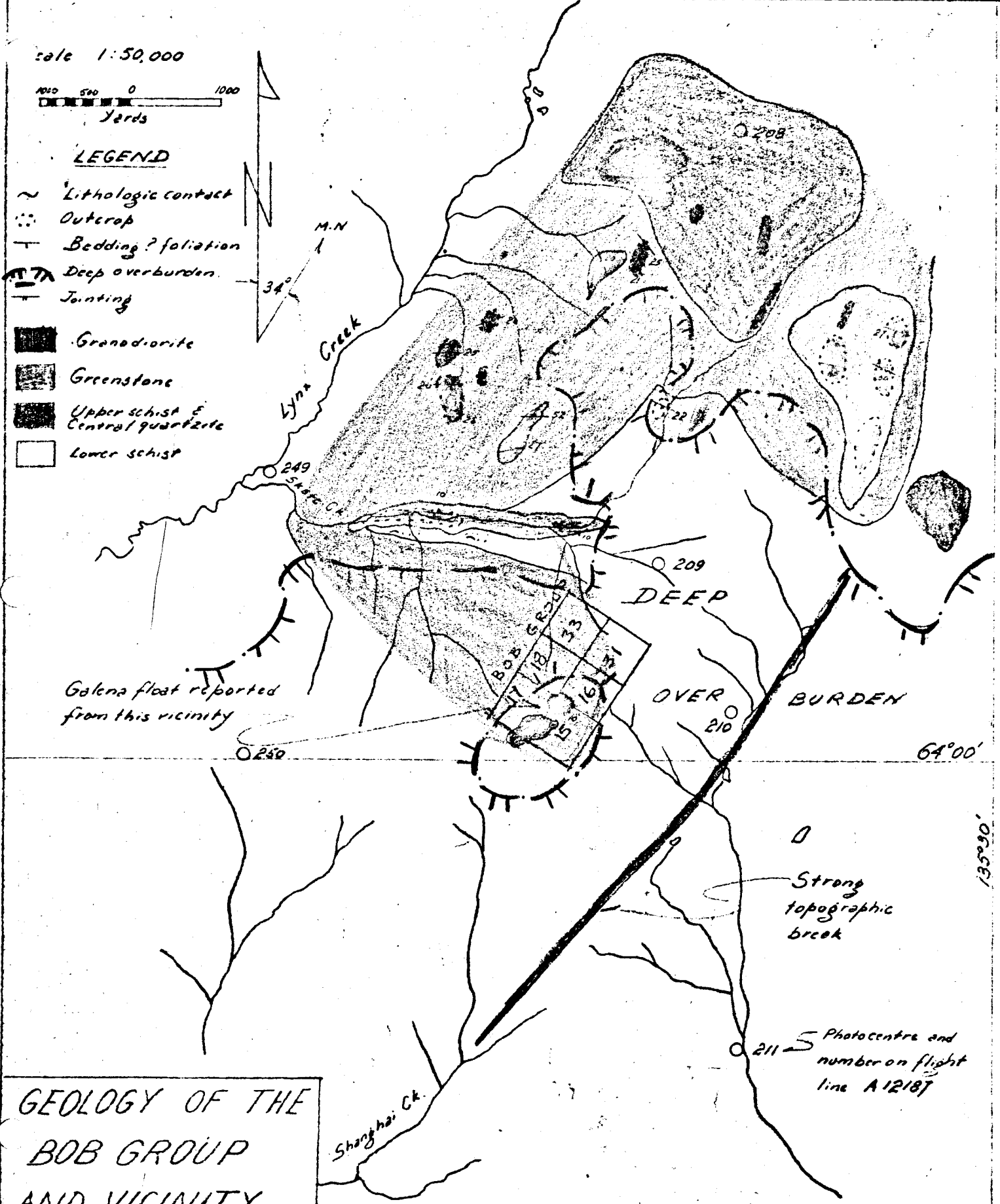
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scale 1:50,000



**LEGEND**

- Lithologic contact
- Outcrop
- Bedding? foliation
- Deep overburden
- Jointing
- Granodiorite
- Greenstone
- Upper schist & Central quartzite
- Lower schist



Galena float reported from this vicinity

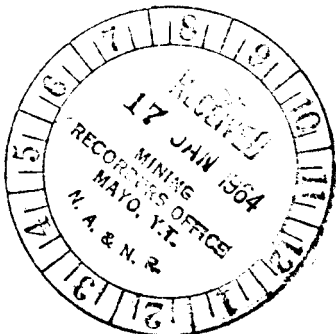
**GEOLOGY OF THE BOB GROUP AND VICINITY**

D.T.K '63

Statement of Expenditures in  
Geologic Work on  
Bob Group  
June - July, 1963

Work done by Dirk Tempelman - Kluit assisted by John French, supervised by A.E. Aho, July 1963.

<b>Transportation</b>		
2 trips to McQuesten River at UR property @ \$5.00 each		10.00
<b>Supplies</b>		
20 man day @ \$5.00 / da		100.00
<b>Equipment and miscellaneous</b>		50.00
<b>Salaries</b>		
Dirk Tempelman - Kluit total 10 day @ \$20.00	\$200.00	
John French 10 da @ \$15.00	150.00	
Plus 7 1/2% benefits	<u>26.25</u>	
		376.25
<b>Accounting and Administration</b>		
15% of salaries		52.50
<b>Air Photos</b>		
Preparation of report (including consulting time)		6.00
		<u>75.00</u>
<b>Total</b>		<b>\$ 669.75</b>



Certified correct,

*A. E. Aho*

Dr. A.E. Aho