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Progress Report  
On  
BONNET PLUME RIVER MINES LTD.

ALRAE ENGINEERING LTD.

June 9th to August 15th, 1969

TO PROTECT OUR CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS AND EXTRACTS FROM OUR REPORTS MUST RECEIVE OUR WRITTEN APPROVAL.

Board of Directors  
Bonnet Plume River Mines Ltd.  
625 - 925 West Georgia Street  
Vancouver 1, B. C.

Dear Sirs:

The following is a brief summary of the progress and direction of the exploration program underway on the properties of Bonnet Plume River Mines Ltd., in the Mayo Mining District, Yukon Territories.

In addition to the existing Mammoth claims in the Dolores Creek area, the company also took up a short option on a group of 56 claims called the Key group, situated some 20 air miles to the northwest on the eastern side of the Bonnet Plume River. It was felt that these claims showed sufficient promise to warrant a rapid reconnaissance and fell within a workable distance of the existing holdings.

As outlined in previous reports, the seasons work is largely concentrated on the production of a detailed geological and structural map and to establish the pattern of mineralization giving rise to the known mineral showings. In addition, special attention was to be given to the elucidation of the mineralized porphyry occurrence and the copper cobalt mineralization of the Cobalt Cirque area. The program also included provisions for geochemical and geophysical methods, if required, exploratory diamond drilling and the preparation of access roads to allow for a subsequent detailed exploration of mineral occurrences considered to be of above-average interest. With the acquisition of the Key claims, the task of a short term evaluation of this area has become an added objective.

#### PROGRESS

##### Mapping

At the time of writing, the main area of the Mammoth claims, excluding the Glacier Lake area, has been covered in considerable

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detail. The western half of the area was completed in the month of June and the first week in July on a prepared topographic base at a scale of 1" = 400'. The eastern part of the area, being of less economic interest, was mapped in less detail using enlarged air photographs at a scale of approximately 1" = 850' and at the time of writing is in the stage of checking and finalization. Mapping and prospecting of the Key claims was completed in early August.

Additional work engendered by the Key claims and the relatively poor weather conditions experienced in July and early August makes it unlikely that Glacier Lake area will receive more than a rapid reconnaissance survey this season.

#### GEOLOGY

Mapping to date has revealed a sequence of shales, phyllites, quartzites, limestones, dolomites and acid to intermediate volcanics. The volcanics form much of the main rock mass in the area and comprise massive and banded lavas and thick developments of volcanic breccias. The volcanic breccias are rather complex and include normal extrusion breccia and ignimbrite breccias incorporating pre-existing scree of dolomitic and limey material. In general terms, the northwesterly zone, consisting of mainly argillaceous sediments with minor carbonate horizons, is separated from a largely carbonaceous group to the southeast by a broad zone of volcanics and volcanic breccia.

These rocks have been deformed by large scale folding on two different axes, the first of these resulting in a major east-west structure with a refolding on roughly north-south axes giving rise to the present visible folds in the Cobalt Cirque area. Cleavage and minor folds are not well developed and the lack of consistent measurable structures in the volcanics renders detailed structural analysis difficult. All rock types are affected by major fault movements which tend to cut up the area into a number of fault blocks.

Coarse grained intrusives varying from syenodiorite to gabbro in composition are, in places, seen to be definitely later than the sediments and volcanics, having chilled margins and forming hornfels rims in adjacent country rocks. There is, however, a close spacial relationship between these igneous intrusives and the volcanics and it is considered that some, at least, may represent feeder dykes.

A number of specimens have been taken for petrological studies and identification to clarify the terminology and origin of some of the more obscure rock types.

#### MINERALIZATION

Two types of mineralization are observed. The first of these is in the form of disseminated sulphides in the intrusive and volcanic rocks. The second type occurring as a result of redistribution of these minerals in both volcanics and adjacent sediments along the lines of dislocation and other zones of weakness.

In most cases where intrusive dioritic rocks have been noted they invariably contain small quantities of disseminated chalcopyrite and pyrite. The most important of these intrusives occur in the southwestern part of the main claim area and have previously been described as the porphyry showings. Careful mapping has shown that these rocks are distributed in a number of elongate lenses rather than a large single body. Outcrop widths of 20 to 30 feet contain between 0.2% and 0.4% copper. These bodies are not of sufficient size or persistence to consider as low grade sources of ore. Of the second type, the Discovery Creek showing is an example of copper concentrated in calcite veins associated with late faulting, but is of limited importance and extent. The Cobalt Cirque occurrence is an example of concentration of chalcopyrite and cobaltite along bedding planes and crude cleavage planes near the core of a major fold. As

may be expected, numerous showings consisting of small stringers of chalcopyrite occur in the volcanic rocks and adjacent sediments, all of which are without economic significance.

#### GEOCHEMISTRY AND GEOPHYSICS

A 200 foot square grid was laid out to consolidate and extend the previous geochemical and geophysical surveys. The resulting geochemical pattern outlined and confirmed the presence of copper mineralization in the mapped syenodiorite intrusives and it was considered unnecessary to carry out further magnetometer work at this stage. Over most of the area soil cover is either too thin or is non-existent and soil sampling techniques are invalid. It was also considered that the amount of outcrop available favoured surface mapping rather than blanket geophysical methods, although more precise geophysical methods may be considered for specific targets at a later date.

#### DIAMOND DRILLING

Purely as an exploration method, a limited footage was drilled on the most accessible of the syenodiorite bodies in order to investigate the nature and the potential of the mineralization. Although assay results are not complete at this time, the diamond drill logs show that the intrusive material does not form a continuous dyke, as might have been concluded from surface mapping, but rather, consists of a number of lenses and pods of igneous material in volcanics and volcanic extrusion breccia. All boreholes intersected copper mineralization to some degree, but of the five holes so far with assay results, only DDH #2 and #4 contain significant mineralization. In DDH #2 an average of 0.75% copper was intersected over a distance of 64 feet from 140 feet to 204 feet. In DDH #4, 0.5% copper was intersected in the first 26 feet of drilling. The general lack of continuity of the intrusives and the sporadic nature of the mineralization is disappointing. It is obvious than any attempt to

outline mineralized zones in these rocks will require systematic and extensive drilling.

In all, seven shallow holes, totalling 2,001 feet, were drilled for a total cost of \$12,160.00 or a total cost of \$6.08 per foot. This figure includes \$3,000.00 for the purchase of non-expendible drill equipment. The actual cost per foot is under \$5.00, a remarkably low figure for drilling in this country.

#### OTHER WORK

In addition to the initial preparation and maintenance of the airstrip during the season, the company caterpillar equipment was fully employed in the excavation of drill sites on the porphyry showings and the establishment of drill access roads to Tetrahedrite Creek, Discovery Creek and Cobalt Cirque. The latter is a particularly spectacular achievement allowing access to within a few hundred feet of the Cobalt Cirque showing. This equipment is, at present, being used to excavate drill sites on the Key claims.

#### KEY CLAIMS

The area of interest on these claims was prospected and mapped during the early part of August and exploratory drill sites selected. This work is the result of a special report which has already been submitted to the Board.

#### FURTHER WORK

For the short time remaining in the season mapping and checking will be continued on the eastern section of the Mammoth claims while exploratory drilling is carried out on the Key claims. The work done and information obtained during the year will allow for the preparation of a co-ordinated program of diamond drilling for the Cobalt Cirque and the porphyry showings and any other areas of major interest which may be designated during the remainder of the season.

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EXPENDITURES

Approximate expenditures paid by Alrae Engineering Ltd. to July 31st, 1969 are as follows:

	<u>May 31</u>	<u>June 30</u>	<u>July 31</u>	<u>Total</u>
Bulldozer - D8	4,500.00	6,000.00	6,000.00	
Grader	375.00	500.00	500.00	
Welder	75.00	100.00	100.00	
Drill	---	500.00	500.00	
Aircraft - Fixed Wing	2,940.00	7,680.00	7,464.00	
Helicopter	765.00	---	---	
	<u>\$ 8,655.00</u>	<u>14,780.00</u>	<u>14,564.00</u>	<u>37,999.00</u>

Alrae Engineering Personnel

Dr. J.L. Usher	450.00			450.00
Dr. J.G. Simpson	1,000.00	900.00	750.00	2,650.00
Resident Crew	2,650.00	5,387.50	4,790.00	12,827.50
R. G. Jury		300.00		300.00
Transportation	700.00	---	---	700.00
Cat Operator	1,125.00	1,875.00	1,875.00	4,875.00
Misc. Disbursements, Room, Meals, Travel, Mapping, Assays	---	2,406.36	123.68	2,530.04
	<u>\$ 14,580.00</u>	<u>25,648.86</u>	<u>22,102.68</u>	<u>\$ 62,331.54</u>

Respectfully submitted:

Dr. J. G. Simpson, Ph. D.