

FILE

Dr. W.R. Bacon

1969 - FIELD SEASON REPORT

ON THE

KATHEX - JOHOBO PROPERTY

By

D. McSpadden

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I. ROADS

The 17-mile road joining Johobo camp to the Haines road was opened by a D-8 with 15 foot blade in about 36 hours of effort. This was after years with no maintenance being done. Included was the installation of a 30" X 20' metal culvert at mile 6 (all mileages used have reference from camp). Road building materials are coarse but compact fairly well and provide good drainage. There are 3 major stream crossings: miles 7.0, 9.4, & 11.9. A 4-by-4 vehicle can cross any of these at any time of day regardless of weather (during summer). No bridging is necessary. Between miles 9.5 to 10.5, and miles 12.5 to 15.5, the road skirts the ^{south} shore lines of Kathleen Lakes. The road in many places is only 6" to 36" above lake level. This allows wave action to wash out the road. The most vulnerable stretch is from miles 13.2 to 14.5. Steep talus slopes crowd the road along the lakes. Minor sluffs thus occur. Regardless of these 2 threats, the road remained open without maintenance for a period of 5 weeks during this season. Small sluffs proved to be the most bothersome.

The "3340" partial road was also reopened from camp, a length of .9 miles. A deep ditch was catted alongside this road from camp to the first switchback - a distance of about 2000'. The ditch diverts contact Creek as it leaves the arroyo and brings a summer flow of 5 gallons per minute off air drinking water through the centre of camp. A 6" diameter fully cased well is located 121 ft. at S35° E of the cook house. Depth to water is -22 ft. with the end of hole being hard and at -47 ft. No pump is present. The degree of toxicity of the water is not known. Such a deep well could prove highly useful in sub zero operations.

The well healed road which leads to Cottonwood Creek and thus towards the S.E. group of claims can be travelled by "4X4" vehicle for 3.4 miles terminates at elevation 2860' against blocky talus. An estimated forty D-8 hours would be needed to extend this road into the head waters of Cottonwood.

A new 1500' road was cut from camp to the plane landing on Johobo Lake. It is now a 5-minute walk to camp from this landing whilst staggering steadily leftwards.

It is worthy to note how well all roads associated with the property endure with time. Charted below are mileages and travel times from camp under good summer road conditions:

TO	Distance (miles)	TRAVEL TIME (hours)
Haines road(mile 142)	17	1
Haines Junction	34	1. 1/2
Whitehorse	132	3. 3/4

It is about 85 air miles at S80° W. from Whitehorse to camp.

II. GENERAL

A) Men

The 1969 field season on the Johobo property began on July 9 with a total of 2 men. A third member arrived on July 22. Consultants Jack Crowhurst visited on July 9, and Dr. Bill Bacon on August 1st. Kathex's Operations Manager Albert Wells spent the day of July 22nd on the property. A contract crew of 4 "Scintrex" line cutters began work on August 25th. This group remained 100% self sufficient.

Geologist, D. McSpadden handed in his Brunton to Kathex (Vancouver) on August 29th.

B) Camp

Johobo camp consists of 2 large frame type buildings. The buildings are reasonably well insulated and in a good state of repair. The 3-room cook house has a large kitchen and can sleep 4. The bunkhouse will sleep 6 comfortably. The 2 buildings are 150 feet apart and located fairly centrally in a large cleared area. Fire hazards are minimized. The entire camp is located about 800' north of the N.E. corner of Johobo Lake.

C) Equipment

A "4 by 4" open pick-up truck was rented from General Enterprise in Whitehorse. A 12-foot aluminum boat equipped with a 4 H.P. outboard motor was used on Sockeye Lake. This was rented from Harry Johannes of Whitehorse. A new 600 watt output Honda generator, purchased in Vancouver, supplied the camp with electricity. This unit did not give any difficulty whatsoever. A D-4 cat. was rented for about one month as a standby for road maintenance because many small sluffs were narrowing the road to impassability. A Marconi CH(25) radio telephone equipped with frequencies 3349, 4441, 4950, & 5009 was rented from Vancouver for the full season. Frequency 4950 was of the most use. 5009 was not really needed. 3349 sometimes worked better at night. Frequency 4441 is not a C.N.T. frequency but belongs to a Whitehorse electronics company known as TERRIKON.

This company's frequency always had the best reception. The 3 antennas for 3349, 4441, and 4950 were abandoned and left suspended in camp at the close of the field season.

D) Maintenance & Building

The 2 buildings were brought into a high state of repair (roofs doors etc.). A new 20' X 4' wide ramp was built out into Johobo Lake in order to better accomodate float aircraft. The landing is basically an extension of road's end. On the low rock bluff located half along the north shore of Sockeye Lake, a helicopter pad was made.

III. CLIMATE, GROWTH, TOPOGRAPHY

Precipitation in this area, regardless of the time of year is excessive. Reports indicate depths of 15 to 20' of snow. The writer vouches for the fact that about 2/3 of the summer days yield rain - mostly in the form of frequent showers. A weather station was kept for the government by the Johobo crew during mining operations. Such precipitation has facilitated the growth of very dense brush which grows up slopes to the 4,000' elevation. The N.E. side of North Hill & West Hill in general are so densely covered it is almost impossible to find outcrop - even with helicopter assistance. The mine hill is comparatively brush free above 3,000'. This is also true of the shoulder between Bornite and Steep Creeks. In the low lands (elevation 2,500' to 2,700') between camp and Sockeye Lake there is about 20% conifers; 60% willows and berry bushes having average height of 7'; and the remaining 20% is made up of grassy patches. Line cutting will be greatly slowed because of this brush density - perhaps as little as 1/2 mile per man per day.

The prevailing wind is from the S.E. during summer. Seldom is the area without breeze. It is this breeze which allows a well loaded Beaver aircraft to take off from the 3,000 foot long Johobo (Bornite) Lake. The lake is unsuitable for a Cessna 180. The prime area of concern and expenditure has topography as follows:

(1) Area "A" - This runs southeasterly from point 4 + 00 N.W. on the base line. The northeasterly side across Mine Mountain is nearly 1/2 free of overburden and brush. Slopes are 30° to 35°. The south west side has 15° to 25° slopes. Underbrush is thick, as is the overburden. This description is applicable from Contact Creek to Bornite Creek. Southeast of Bornite Creek the slopes are 30° to 40° and mostly covered with slight overburden and low brush. The S.E. extension of the base line climbs gently across Mine Hill and sharply over Bornite Hill, terminating close to Steep Creek at 60 +00 S.E.

(2) Area "B" - This runs N.W. from camp to the summit of North Hill. Terrain is very gently rolling from 4+00 N.W. to 76 + 00 N.W.

It is all covered with overburden (guessed at being less than 50') and brush. From 76 + 00 N.W. to 93 + 00 N.W. is Sockeye Lake. From 93 + 00 N.W. to 134 + 50 N.W. are the 30° slopes of North Hill. This south slope is totally covered with overburden and brush (except for a narrow beach).

IV. GEOLOGY & ENGINEERING

A). Staking

i) Southeast: Tagging of the "MAG 1 to 32" claim group was not carried out. These claims are the non contiguous group lying approximately 1.1/2 miles at S40°E. from camp. These were staked under very adverse conditions for political and geological reasons. Geologically, most of this ground is only likely to have low speculative potential. This is stated with reservation because the writer has made only the most cursory investigation of this rugged terrain. Mush Lake andesites and the limey fine grained associated sediments are strongly represented. However, historically the host andesite southeast of Steep Creek has not yielded positive indications of copper - that is as far S.E. as the S.E. limits of this claim group. All factors considered, it was decided to concentrate efforts on the original claim group and those to the northwest.

ii) Northwest: This northwest group of 30 claims, contiguous with the original Johobo group, are called MAG 33 to 62 . They were staked in a well controlled manner.

A 15 foot wide control line was catted 7,600' N.W. from near camp to the east shore of Sockeye Lake. The base line started from the road leading to the 3,340' portal at a point about 800' at N58°W° from camp. The line was run by Brunton and staff on a true 314° Azimuth. Control was thrown on line across the lake and the line slashed from 93 + 00 N.W. to 134 + 50 N.W. With clinometer and 200' nylon chain claims were staked at 1,450-foot intervals along this base line which can also be considered as the westerly location line for the MAG 33 to 48 claims. Staking began at 4 + 00 N.W. along the base line.

At 62 + 00 N.W. along the westerly location line, a line was slashed 2,900' at N.45°E. (90° to the location line). From this end point a line was slashed 7,850' at N.45°W. and 5,800' at S.45° E. This formed the easterly location line for the MAG 49 to 62 claims.

Consequently, all claims are close to being 1,450-foot squares each having an area of 48.49 acres. All claim posts used are 4" by 4" by 4 milled posts - mostly double dressed.

B). Geology (Johobo)

For simplicity of understanding the writer will stream line the terminology used to describe the many different(?) andesites found in the general mine area by previous professionals. The modifications are:

- (a) Altered andesite porphyry = upper andesite
- (b) Andesite porphyry = mine andesite
- (c) Mush Lake sediments = lower sediments
- (d) Fine grain andesite light green andesite, etc. = lower andesite

The upper andesite lies immediately above the mine andesite and is the top member of the Mush Lake group. The mine andesite was host to all mined sulphides. The lower andesite refers to the many phases of the andesite type that lie, for the most part, stratigraphically below the mine andesites - more exactingly, below the intervening sedimentary sequence.

Activities by other companies have been strongly restricted to the Mine Hill and Bornite Creek. Strongly controlled surface mapping extended southeasterly, nearly to Tess Creek, along strike of the mine andesite. Surface drilling amounting to 795' was done by Con West in 1959 on the Bornite Creek workings. Cerro Corporation drilled 2,028' in Mine Hill during 1960. Drill logs with plots and assays are available for the entire 2,823' of drilling.

Nowhere does it appear that the upper andesite shows copper mineralization. This is almost true also of the lower andesite - except at two locations. One is located on Bornite Creek due S. of the main workings at the contact of the lower andesite with lower sediments. The other exposure is for the north shore of Sockeye Lake about 600' east of the central Rock Point - also at a similar contact. Both of these just show trace disseminations of chalcopyrite over narrow widths. Consequently, activity has been restricted to searching for mine andesite and its' extensions. The mine andesite has great area. It is narrow in the

productive zone and has been mapped for 5,000' southeasterly - and is still open. Similarly it is assumed the ground is open to the northwest of the portal. All this ground beneath overburden. This is also true of ground below elevation 3,200' on Mine Hill. Extensive prospecting has been done in the hopes of getting some proof that mine andesite underlies the valley fill. It is only the shore lines of Sockeye Lake that gives indirect clues. A low short bluff at the southeast corner of the Lake displays lower andesite (tuff). Similarly for 800' S.W. of 36 + 00 N.W. (andesite breccia).

The north shore of the Lake gives most information. There is about 20% O.C. exposure from Rock Point easterly to the outlet. However, only about 5% exposure exists from the outlet easterly to the Dezadeash - Mush Lake contact (on North Hill) shown by Dr. Kindle. The writer was unable to find this positive contact - most likely because of not trending far enough easterly and because of till. Strong effort was given to rediscover this contact because it would be a point from which to start in order to try and prove the continuation of the of the mine andesite - possibly even to delineate it. The "gashes" on the shoulder of the hill immediately north of Sockeye Creek might offer some clues re. contacts. These "switchback" gashes are obvious on the 1949 aerial photos. The uppermost one is likely a slip contact within the Dezadeash. Black shale above and sandstone below. All these gashes are similar to "slit trenches" about 6' deep and 8' across. They were not all investigated. A thin layer of overburden masks some of them enough that it cannot be positively stated whether movement and/or solution has taken place. Andesite was not found near the North Hill Dezadeash - Mush Lake contact. The lake shore and outlet stream were prospected for about 7,000' at N70°E from Rock Point. It was mapped accurately from Rock Point to the outlet mouth. A steep narrow ravine meets the stream at 6,300'. It has a general regional trend. At the mouth is a steep Mush Lake black-shale bluff. The zone of weakness does not display movement nor change of rock type. The black shale does show characteristics which Dr. Warnock diagnosed as reflecting nearness to the mine andesite.

All outcrops from the chalcopyrite contact eastward display the Mush Lake sediments. This is approximately 6,000' of thickness measured along a N70°E trend. The lower sediments of the Bornite Creek and Mine Hill measure about 300' true thickness. E.D. Kindle reports total Mush Lake thicknesses to range from 7,000' to 20,000' within the map area of Memoir 268.

The disseminated chalcopyrite on the north shore of Sockeye Lake is in trace amounts and restricted to a narrow zone of approximately 3' that is highly broken and silicified. The degree of silicification and fracturing is not as severe as in the portal area. This beach exposure is small and it is difficult to determine attitudes and whether a fault contact is present. From Aerial photo as from the field, a narrow stream course depression a few hundred feet north of the copper exposure suggests that a fault could exist and pass through the mineralized area.

C). Aeromagnetics:

A government produced aeromagnetic map of the Johobo area was printed in 1966. Three small anomalies of low magnitude concern the mine area. An imaginary straight line trending N40°W would join the anomalies. This bearing parallels the regional trend. They are of 2,500 gammas in magnitude compared to others in the very general area attaining magnitudes of 7,500 gammas. All 3 can be superimposed on topographic highs. The most southeasterly slipper shaped ^{one} lies immediately south of Cottonwood Creek by the large gentle 90° bend entering the flat country. Random hand samples from the steep mountain between elevations 4,100' and 4,800' revealed: medium gray crystalline limestone; dark grayish black shales; limey to non-limey andesites all believed to belong to the Mush Lake Group. The andesites appear to only contain trace amounts of very fine-grained sulphides which could not be positively identified (either pyrite and/or pyrrhotite).

The middle roughly circular anomaly covers the isolated mountain across Cottonwood Creek from the first anomaly mentioned. Random samples taken above timberline in a NE to SW trend across the top of the mountain yielded a great array of the different phases of andesites represented in the area - except the altered and mine andesites. Snow and strong winds

prevented further high altitude sampling. The northerly elliptical anomaly overlooks Sockeye Lake from the NE toe of West Hill. Samples taken from outcrops 500' NE of the centre of the anomaly yielded fine-grained darker brownish black-tuff interbedded with a light-green andesite porphyry. This porphyry contained jagged phenocrysts of brown stained calcite as large as 1/2". Brown spotting was common. This is a different phase again of the andesites in the area. A crude slaty schistosity was present. There was negligible sulphide representation.

Immediately adjacent to the SW of the West Hill anomaly is a magnetic low. The high-low boundary could well reflect an underlying contact between different rock types - most likely the lower andesites with the sediments. A remote possibility also exists that it could be a southeasterly extension of the fault shown by Dr. Kindle, that is located towards the west end of North Hill.

The three low reading anomalous areas are probably the result of topographic effects superimposed on the likely fact that the andesite contains minor microscopic pyrrhotite. No great significance has been attached to these anomalies.

D). Geophysical:

The copper ore in the Johobo area is of high grade. However, historically, the nature of occurrence is in random pods and/or lenses of very low tonnage (100 ton maximum). Depositional controls are vague and could be applied to a very large area of mine andesite. Geologically, much favourable ground is associated with rugged relief and deep overburden. With the above factors considered the next economical step should be a geophysical one of the Turam (E.M.) method. To quote an abstract taken from a paper by Robbert A. Bosschart and Harold O. Siegel.....

"Most electromagnetic methods presently used in mining exploration are of the moving source type; i.e. the primary field source is moved simultaneously and in a fixed configuration with the receiver of the fixed-source methods, which employ a stationary primary field and a moving receiver, the Turam method is the most effective The results are little affected by topographic relief, and a high degree of resolution can be obtained because of the constant relation between

source field and investigation area.

Another inherent advantage of the Turam configuration is that it provides more favourable dimensional relations. Thus, the primary field attenuates at a much lower rate than in moving source configuration and secondly, the method is size sensitive ; i.e., conductor size affects the strength of the response which is not the case with moving - source methods.''

Turam coverage on the property extends from 4 + 00 NW to 60 + 00 SE. on the base line. Picket lines extend 1,000 horizontal feet to right and left. This grid is laid out to cover favourable ground and contacts in the productive zone of the original claim group on which Dr. Warnock did most of his thesis.

Turam coverage also extends from 4 + 00 NW to 134 + 50 NW. Pickets lines extend northeasterly 1,000' and southwesterly 1,500'. This coverage is probing virgin ground and is thus a highly speculative area.

All picket lines are at 200 foot (horizontal) spacings along the base line and at right angles to it. Turam readings were taken every 100 slope feet along each line. A total of 42.6 horizontal miles of line cutting was contracted. 3.6 miles would not be used for Turam readings. The 3.6 miles were slashed for location and tie-line purposes. However, this small mileage served a dual purpose - the Turam loop was laid along it. The loop must be laid accurately. Picket lines were flagged at every 100' on slope & every 200' horizontal in the steep areas.

The priority on running the survey was;

- (1) the SE area
- (2) NW of Sockeye Lake
- (3) SE of Sockeye Lake

In all likelihood, any ore body "slipping through" a 200' - by 200' section of grid, would be too small to be economical - regardless of grade. Perhaps a series of small closely - spaced high-grade pods would have economic merit.

E). Copper Mineralization in the General Area:

Copper mineralization, as revealed in stream beds, has been found in Beloud Creek and an un-named creek that enters Alsek river to the northwest

of Trout Lake. Chalcocite pebbles have been found on Shorty Creek. Harry Johannes states that old time have reported areas of deep dark brown gossans believed to be located towards the headwaters of Beloud and Cottonwood Creeks. Light powder charges evidently were unable to reach down deep enough to expose the underlying sulphides (cu.?).

"Memoir 268" states positive lode copper mineralizations(on site):

- (1) Chalcocite stringers near Mush Lake.
- (2) Native Cu. impregnations near Mush Lake.
- (3) Chalcopyrite in altered andesite 6 miles S. of Mush Lake.

All these occurrences occur in, or are closely associated with, Mush Lake andesites.

Recommendations:

(1) If a worthwhile anomalous area is indicated by Turam, additional picket lines will be required. Thus a 100'-by-100' grid would exist. This should be done while the crew is on the property.

(2) If a crew is to be in the area during the 1970 field season, let stream sampling be part of the program. Restrict it to the east limb of the Silver Creek anticline. Many of the creeks originate or pass through Mush Lake andesites.

(3) Line cutting progress is very slow and the cost per mile is fairly high. Therefore, cutting by D-6 would probably be faster and cheaper - even if the Department of Forestry became quite strict.

(4) Because the host rock is so extensive, and thus very costly to fully explore, a general procedure to follow would be:

stream sampling -- controlled localized mapping -- Turam.

This could be carried out by a small crew for the most part.

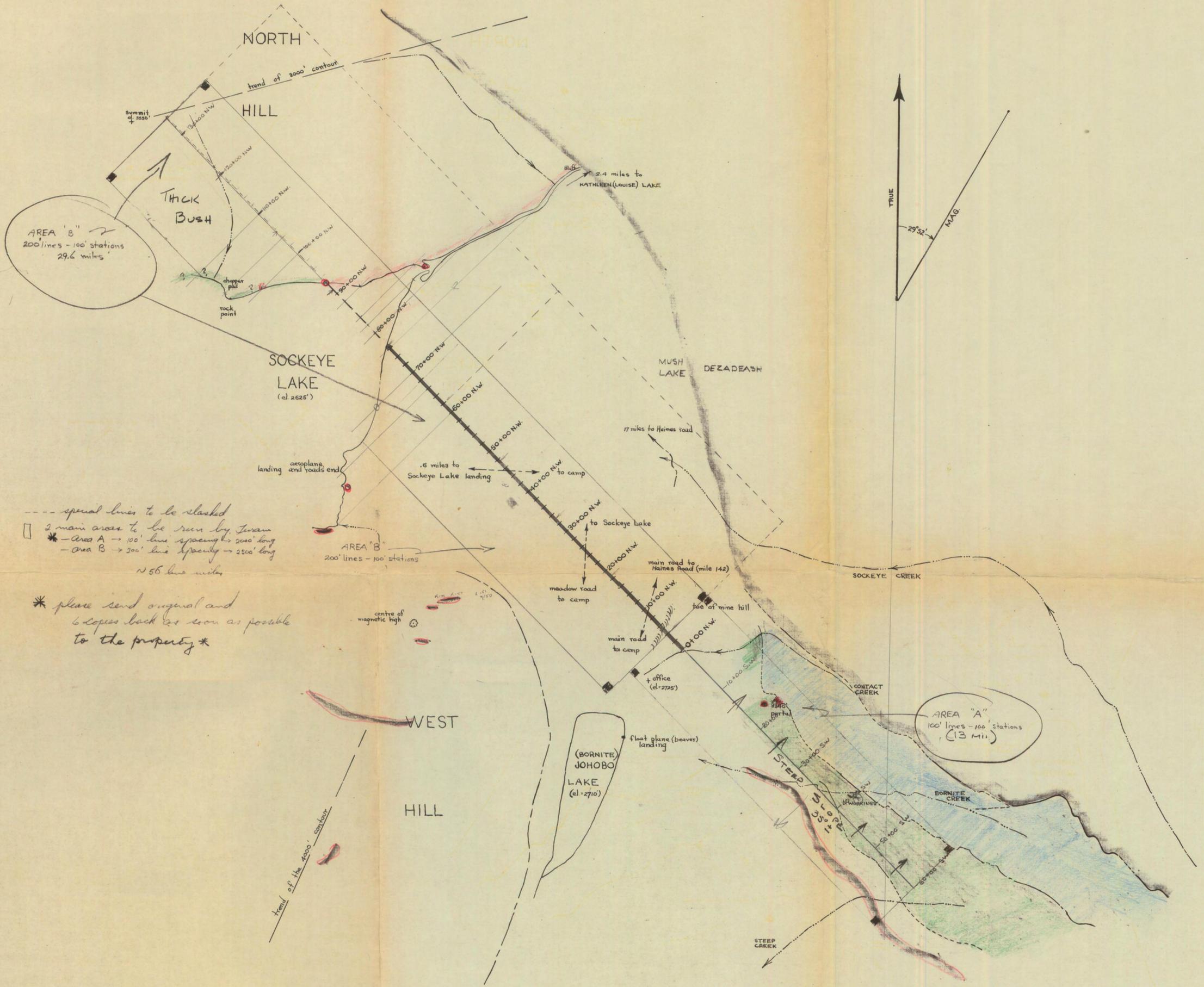
(5) Research into the staking "boom" in years past, of the Mush Lake area might yield further insight into how not to spend money on the andesites.

(6) Beware of the "tantalizing effects" of an isolated high-grade pod of low tonnage.

(7) The writer's personal belief up to the Turam stage is that the property is a poor risk. The "cons" outweigh the "pros" heavily, money and man hours could be more wisely spent on other prospects.

(8). The original group of 31 Johobo claims secure the "hot" ground. However, if they were staked in a more orderly manner, almost the same ground could be held by 11 claims. This could very easily be done by using the S.E. extension of the base line as a location line (similar to the MAG 33 to 62 claims). Such an action would be much more economical (assessment, etc.) and a neater group to manage. The claims Inspector and/or Gold Commissioner should be consulted before any restaking be attempted. Maps and field evidence should prove very convincing.

(9) That a letter of thanks for services rendered be written to G. Wood, W. Lulu, and Harry Johannes. They all did good work efficiently.



--- special lines to be sketched
 2 main areas to be run by Teram
 * Area A → 100' line spacing → 2000' long
 - Area B → 200' line spacing → 2500' long
 256 line miles

* please send original and 6 copies back as soon as possible to the property *

KATHEX MINES LTD
 COMPOSITE MAP
 of the
 "JOHOBO" PROPERTY
 Scale 1" = 1000' D.M.S. 1969

- ④ altered andesite porphyry
- MUSH mine andesite porphyry
- LAKE sediments
- ① lower andesitic rock } gradational, intercalated

52,500 N

50,000 N

47,500 N

45,000 N

42,500 N



To Haines Cutoff Road
17 mi.

To Sockeye Lake
1 mi.

A
2835'

B
2820'

C
2720'

D
2715'

JOHOBLO CAMP
2725'

MAIN SHOW
WORKINGS

BORNITE

BORNITE CREEK
WORKINGS

SOCKEYE

CREEK

CREEK

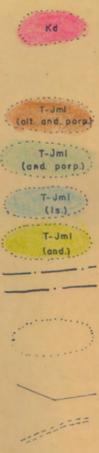
CREEK

TESS CREEK

JOHOBLO
LAKE

LEGEND

- CRETACEOUS DEZADEASH GROUP
- TRIASSIC-JURASSIC MUSH LAKE GROUP
- Altered andesite porphyry
- Andesite porphyry
- Sedimentary sequence
- Andesite
- AREA OF COMPLETE SOIL COVER
- APPROXIMATE AREAS OF OUTCROP
- CLAIM GROUP BOUNDARY
- ROADS AND TRENCHES



1" = 200'
GEOLOGICAL (surface)

GEOLOGIC MAP OF
JOHOBLO MINES LIMITED
SCALE 1" = 500'

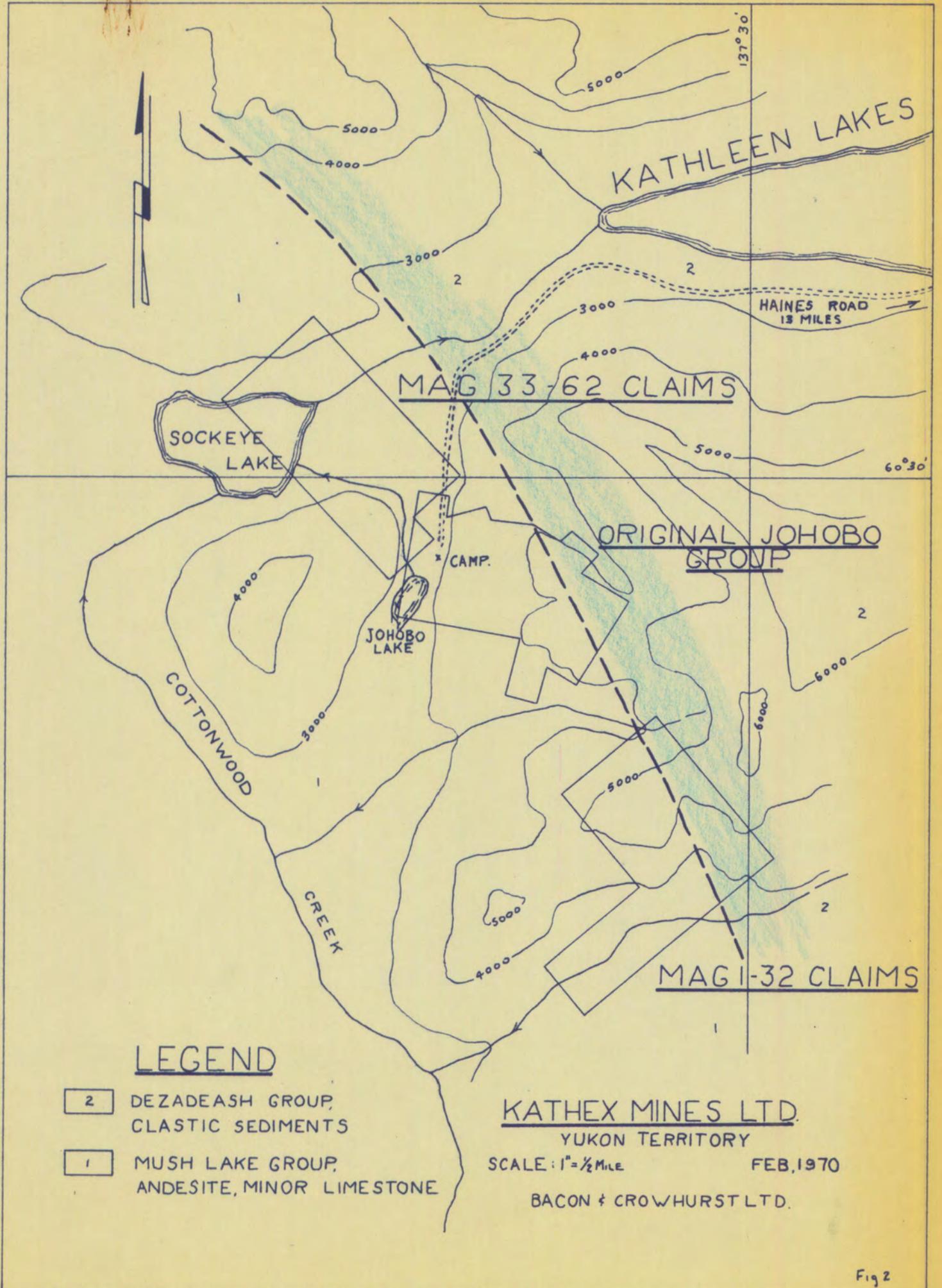
47,500 E

50,000 E

52,500 E

55,000 E

57,500 E



LEGEND

- 2 DEZADEASH GROUP,
CLASTIC SEDIMENTS
- 1 MUSH LAKE GROUP,
ANDESITE, MINOR LIMESTONE

KATHEX MINES LTD.
YUKON TERRITORY

SCALE: 1" = 1/2 MILE
FEB, 1970
BACON & CROWHURST LTD.

Fig 2