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BC 3B

KERR ADDISON MINES LIMITED

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AUG 16 1965

W.S.R.
K.C.G.
J.H.S.
E.F.
R.D.S.
P.M.K. ✓
G.W.M.
R.G.M.
C.R.W.
J.B.S.
G.P.R.
K.F.L.
J.J.B.
E.C.J.

To E.C. JACKA. **From** W.M. SIROLA.

Subject SPANN CREEK ASSESSMENT REPORT. **Date** August 12th, 1965.

Included in this report is a cost statement and schedule of labour distribution plus a summary of total costs. I have included these in the report in the hope that these might be some sort of guide for you in preparing your own statement of costs. In all probability my breakdown would suffice, but you may, in principal, wish to adhere to your customary practice.

Prior to writing this report, I discussed the matter with Hartley Sargent, who is chief of the Mineralogical Branch in Victoria. It was Dr. Sargent's suggestion that a cheque be deposited with the Mining Recorder to protect title in the event that some portion of the report might be rejected. The only reason for rejection might arise from the fact that, because of terrain problems, our work layout does not conform too closely with the usual assessment layouts. But I think Dr. Sargent is well aware of the problems involved. There seems to be some hesitation on his part to concede the need of including the helicopter time, but I feel that this is completely justified in the Stikine area. Regardless of whether the camp site is established right on the claim group, the men involved still have to be supplied from the base camp, and supervisory personnel who live at the base camp must be ferried to the property. However, the safe thing would be to send a cheque in the amount of $8,000. to the Mining Recorder in Victoria along with the report.

This is a rought draft of my report because my cost statement may be deleted in favour of yours. Will you please let us know as soon as you can whether you intend to use your own cost figures ?

Grouping would appear to be no problem in as much as there are only 2 - 40 claim groups involved. Since the helicopter time and camp maintenance would involve the entire claim group, and the S.P. survey extends from the initial post of MO No. 17 to the final post of Co No. 25, and the other surveys start one claim further north, I see no problem in

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To.....*From*.....

Subject.....*Date*.....

establishing the two groups. Essentially the 80 claim block can be divided into a north half and a south half.

You have a complete copy of the Stikine River Field Project-1964 in your files. It is my intention to use the maps which are included in this report. The only change we will make is to ensure that the relation of the work to the various claims is clearly indicated.

p/p. William M. Sirola.

WMS:iw.

KERR ADDISON MINES LIMITED

GEOLOGICAL, GEOPHYSICAL & GEOCHEMICAL INVESTIGATION

OF 80 CLAIMS CONSISTING OF

CO 33-54, LIMPOKE 41-54, COAT 1-4,

MO 1-20, AND OS 1-20 MINERAL CLAIMS

Located on Mt. Barrington

27 Miles Southwest of Telegraph Creek, B.C.

In the Liard Mining Division

Latitude 57° 45' N. Longitude 131° 45' W.

By

W.M. SIROLA, P. Eng.

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INTRODUCTION

During the months of July, August and September, 1964, Mr. Wilfred Christian, assisted by Mr. Willis Osborne, staked a group of 80 Mineral Claims on Mount Barrington located 27 miles southwest of Telegraph Creek and 12 miles northwest of the junction of the Chutine and Stikine Rivers.

Kerr Addison Mines Limited initiated a programme of geological, geophysical and geochemical surveys immediately afterward, and this work continued until September 5th, 1964, at which time camp was disbanded in order to connect with the last sailing of the "Judith Ann" to Wrangell, Alaska.

The following report covers the various types of work carried out on these claims.

- - - - - -

SCHEDULE OF CLAIMS COVERED BY THE REPORT

Claim Name and Number:	Tag No:	Staking Date, 1964:	Recording Date, 1964:	Record No:	License No:
Co 33	526033	July 29th	September 16th		27567
" 34	526034	" "	" "		"
" 35	526035	" "	" "		"
" 36	526036	" "	" "		"
" 37	526037	" "	" "		"
" 38	526038	" "	" "		"
" 39	526039	" "	" "		"
" 40	526040	" "	" "		"
" 41	526049	August 7th	" "		"
" 42	526050	" "	" "		"
" 43	526051	" "	" "		"
" 44	526052	" "	" "		"
" 45	526053	" "	" "		"
" 46	526054	" "	" "		"
" 47	526055	" "	" "		"
" 48	526056	" "	" "		"
" 49	526057	" "	" "		"
" 50	526161	" "	" "		"
" 51	526178	August 10th	" "		"
" 52	526179	" "	" "		"
" 53	526070	September 1st	" "		"
" 54	526180	" "	" "		"
Limpoke 41	526041	July 30th	" "		"
" 42	526042	" "	" "		"
" 43	526043	" "	" "		"
" 44	526044	" "	" "		"
" 45	526045	" "	" "		"
" 46	526046	" "	" "		"
" 47	526047	" "	" "		"
" 48	526048	" "	" "		"
" 49	526058	August 17th	" "		"
" 50	526059	" "	" "		"
" 51	526060	" "	" "		"
" 52	526061	" "	" "		"
" 53	526068	August 24th	" "		"
" 54	526069	" "	" "		"
Goat 1	526064	August 20th	" "		"
" 2	526065	" "	" "		"
" 3	526066	" "	" "		"
" 4	526067	" "	" "		"

The above claims were transferred from Mr. Wilfred Christian, Fort St. James, B.C., to

SCHEDULE OF CLAIMS COVERED BY THE REPORT

Claim Name and Number:		Tag No:	Staking Date, 1964:	Recording Date, 1964:	Record No:	License No:
Mo	1	526162	August 9th	September 16th		27567
"	2	526163	" "	" "		"
"	3	526164	" "	" "		"
"	4	526165	" "	" "		"
"	5	526166	" "	" "		"
"	6	526167	" "	" "		"
"	7	526168	" "	" "		"
"	8	526169	" "	" "		"
"	9	526170	" "	" "		"
"	10	526171	" "	" "		"
"	11	526172	" "	" "		"
"	12	526173	" "	" "		"
"	13	526174	" "	" "		"
"	14	526175	" "	" "		"
"	15	526062	August 10th	" "		"
"	16	526063	" "	" "		"
"	17	526176	" "	" "		"
"	18	526177	" "	" "		"
"	19	543221	September 4th	" "		"
"	20	543222	" "	" "		"
Os	1	526181	August 12th	" "		"
"	2	526182	" "	" "		"
"	3	526183	" "	" "		"
"	4	526184	" "	" "		"
"	5	526185	" "	" "		"
"	6	526186	" "	" "		"
"	7	526187	" "	" "		"
"	8	526188	" "	" "		"
"	9	526189	" "	" "		"
"	10	526190	" "	" "		"
"	11	526191	" "	" "		"
"	12	526192	" "	" "		"
"	13	526193	August 13th	" "		"
"	14	526194	" "	" "		"
"	15	526195	" "	" "		"
"	16	526196	" "	" "		"
"	17	526197	" "	" "		"
"	18	526198	" "	" "		"
"	19	526199	" "	" "		"
"	20	526200	" "	" "		"

The above claims were transferred from Mr. Wilfred Christian,

Fort St. James, B.C., to

COST STATEMENT

NAME:	JOB:	DAYS:	RATE PER DAY:	TOTAL:
Dr. R. MacDiarmid	Supervision/Geology	30	$30.00	$900.00
W. Osborne	Geologist	25	25.00	625.00
W. Christian	Prospector/Asst. Geologist	25	25.00	625.00
V.W. Shuttleworth	Geologist/Geophysical Operator	42	25.00	1050.00
G. Bysouth	Asst. Geologist/Geophysical Operator	42	25.00	1050.00
D. Hawkins	Prospector/Geophysical Operator	5	25.00	125.00
D. McCracken	Asst. Geologist/Geophysical Asst.	5	20.00	100.00
W.M. Sirola	Supervision/Report Preparation	10	30.00	300.00
				$4,775.00

LABOUR DISTRIBUTION

Grid Layout:			
Prospector/Geophysical Operator	5 days @	$25.00	$ 125.00
Geophysical Assistant	5 days @	$20.00	100.00
Geological Surveys:			
Supervisor	10 days @	$30.00	300.00
Geologist	20 days @	$25.00	500.00
Assistant Geologist	20 days @	$25.00	500.00
Self-Potential Survey:			
Supervisor	10 days @	$30.00	300.00
Geophysical Operator	18 days @	$25.00	450.00
Asst. Geologist/Geophysical Operator	18 days @	$25.00	450.00
Magnetometer Survey:			
Supervisor	10 days @	$30.00	300.00
Geophysical Operator	15 days @	$25.00	375.00
Asst. Geologist/Geophysical Operator	15 days @	$25.00	375.00
Electromagnetic Survey:			
Geophysical Operator	9 days @	$25.00	225.00
Asst. Geologist/Geophysical Operator	9 days @	$25.00	225.00
Geochemistry:			
Geologist	5 days @	$25.00	125.00
Prospector/Geological Assistant	5 days @	$25.00	125.00
Supervision/Report Preparation:			
W.M. Sirola	10 days @	$30.00	300.00
			$4,775.00

SUMMARY OF TOTAL COSTS

FOR

CO 33 - 54, LIMPOKE 41 - 54, GOAT 1 - 4,

MO 1 - 20, and OS 1 - 20 MINERAL CLAIMS.

Wages and Salaries	$ 4,775.00
Helicopter Support **	2,000.00
Camp Operation (174 days @ $15.00 per man per day)	2,610.00
Equipment Rentals (E.M. Set; Magarometer; Radios; Motor Generator)	240.00
	$ 9,625.00

**Helicopter was used to lift geological and geophysical crews from camp on lower part of the claim group to higher portions of the property, to bring supplies to the claim group from the base camp on the Stikine River, and to shuttle the project supervisor from the base camp to the property.

I hereby certify that the above is a true and correct statement of direct costs assignable to geological, geophysical and geochemical surveys carried out on the Co 33-54, Limpoke 41-54, Goat 1-4, Mo 1-20 and Os 1-20 Mineral Claims described in this report.

WILLIAM M. SIROLA, P. Eng.

GEOLOGICAL SURVEY

The entire claim group and its immediate environs was mapped on the scale of 1" = 2,640'. Aerial photos were used for map control. In addition, Dr. Roy MacDiarmid mapped a portion of the southern contact of the Mount Barrington stock on a scale of 1" = 100'.

Approximately 50% of the map area is covered by morainal material and/or permanow.

Dr. MacDiarmid describes the geology of the claim group as follows:

" Eighty claims were staked near the headwaters of Spann Creek, Cave Creek, Wimpson Creek and Wilf Creek (the latter being a newly named tributary to Limpoke Creek). The area forms the northeastern quarter of Mount Barrington. The principal mineralized zone is some four miles across rugged terrain from an old road leading south to Chutine Landing on the Stikine River. The claim group ranges from 3,500 to nearly 6,000 feet above sea level and the road terminus is less than 1,000 feet above sea level.

The Spann Creek area contains copper and molybdenum showings in outcrops and float at several places, but the principal discovery is a zone of closely spaced sulphide-bearing joints in a quartz monzonite - monzonite - granodiorite intrusive. The mineralization is largely confined to the border zone of a small

oval stock. Two different intrusives can be distinguished, and it is only the apparently older one that contains base-metal sulphides. A subordinate amount of orthoclase porphyry is also present but the relationship between the porphyry and the granitoid rocks was not determined.

The intrusive of the principal mineralized joint zones, hereafter known as the host intrusive, is a medium to dark-grey, medium-grained rock. Three facies of this intrusive were studied in thin section; each proved to be a different rock type — one a quartz monzonite, another monzonite, and the third granodiorite. Each of these rock types contains Andesine (An 35-45), orthoclase, pyroxene, hornblende, biotite, sphene and magnetite. Quartz seems to be the most highly variable constituent; it was absent altogether in the monzonite, low in the granodiorite, and abundant in the quartz monzonite. Presumably the intrusive includes all gradations among these three types. The pyroxene exists only as cores within hornblende and biotite, indicating that it was out of equilibrium with the final rest melt. Similarly, the plagioclase shows strong corrosive effects. There is clear evidence that the magnetite crystallized early in the magmatic process and is thus not a product of hydrothermal or deuteric activity. Some of the magnetite occurs poikilitically (or glomeroporphyritically ?), including small grains of plagioclase and pyroxene only slightly replaced by hornblende, but it does not envelop orthoclase or quartz. The plagioclase is selectively saussuritized, and the orthoclase is generally fresh.

Near mineralised joints the feldspars are pink. Epidote as well as chlorite contributes to a greenish colour in many specimens. At the surface the host intrusive is conspicuously rusty brown compared to the "younger" intrusive.

The second granitic rock type, forming the "younger" intrusive, is generally lighter coloured than the host intrusive. It consists of quartz monzonite with a colour index of about 20. Outcrops of this rock type are generally light grey. In hand specimen the "younger" quartz monzonite has the appearance of a medium-grained, non-porphyritic rock, but it contains phenocrysts of clear orthoclase that includes plagioclase, biotite, and hornblende poikilitically. The groundmass of the rock contains orthoclase, plagioclase, quartz, hornblende, magnetite, biotite and sphene. The plagioclase is albite (An 5) in contrast to the andesine of the host intrusive. Evidence of apparent crosscutting relationships, a different joint pattern, and the general fresh appearance of this rock type favour the interpretation that it is younger than the host intrusive.

A third type of quartz monzonite was seen beyond the claim group down Spann Creek. In hand specimen this rock is similar to the "younger" intrusive except that it contains clear to faintly pinkish, Carlsbad-twinned orthoclase phenocrysts. In detail, this quartz monzonite resembles that found in the host intrusive; for example, the plagioclase is andesine rather than albite, the rock is not strictly barren of copper mineralization,

and its jointing is similar to that found in the host intrusive. Perhaps this rock type represents a separate intrusive distinct in age from the other two, but it could rationally be just a facies of either the host intrusive or the "younger" intrusive.

The country rocks surrounding the plutonic complex consist of sediments, volcanics, and several kinds of intrusives, including granodiorite that is not readily distinguished from the darker facies of host intrusive. The sediments and volcanics are metamorphosed to quartzites, marbles, semi-schists and greenstones. The joint system in the host intrusive continues uninterrupted through the overlying country rocks.

Good exposures are found only along the steep ridges and cirque walls. The lower slopes are essentially blanketed with talus, moraines, turf, or vegetation. Moreover, there are small glaciers in the claim area, a small tarn lake, and - except during the month of August - extensive snow.

The country rocks are tightly folded and generally steeply dipping; no attempt was made to map the fold structures, though they apparently trend east-west. Within the plutonic rocks the joint patterns were found to be very consistent in attitude, especially throughout the mineralized area.

Where it can be observed, the contact of the plutonic rocks dips beneath the country rocks at an intermediate angle. It may be that the oval-shaped stock, which is about 5 miles long and 4 miles wide, represents a breached dome."

SELF-POTENTIAL SURVEY

A northwest-southeast base line, approximately two miles long, centred on Wilf Creek, was first established and profile lines were then located as topographic conditions permitted.

Fifteen lines totalling 47,800 ft. formed the basis for the geophysical surveys. Chainage markers were placed at 100-ft. intervals.

The instrument used was a transistorized Potentiometer which comes equipped with two porous pot electrodes. The electrodes are connected through a commutator-equipped reel which holds 2,000 feet of No. 8 AWG wire. The Potentiometer is a null-balanced type which measures D.C. earth potentials.

The various stations on the base line were read first to establish control for the remainder of the survey. The profile lines were read on 100 ft. spacings.

Only one significant self-potential anomaly was located. This anomaly occurs near the south end of lines 3 W. and 6 W. and is thought to result from carbonaceous material occurring in black argillite. In this area, readings as high as 700 millivolts were obtained.

Elsewhere on the grid, discontinuous 100 millivolt anomalies were obtained, but the significance of these is, for the moment, unknown. They do not appear to have sufficient size to have any importance.

MAGNETOMETER SURVEY

The grid used for the self-potential survey was also used for the magnetic work, but detailed readings were confined to a portion of the south contact of the Mt. Barrington intrusive.

The instrument used was a Sharpe Magerometer, Model MS-180, having a sensitivity of approximately 30 gammas per scale division. The instrument is oriented in the Meridian and measures variations in the total component of the earth's magnetic field.

Diurnal control was maintained by frequent checks on the base stations.

The work clearly establishes the presence of increased magnetite content in the rocks along this contact. This increase is in the order of 1,000-3,000 gammas. To some degree the increased magnetic effect along the contact may be due to the presence of a pronounced ridge which very closely follows the south edge of the intrusive. Insufficient magnetic and geologic work has been done to date to determine whether or not the increased magnetism along the stock margin persists along the entire periphery of the stock.

The significance of the magnetometer as a tool for locating mineralization, as such, remains obscure.

ELECTROMAGNETIC SURVEY

The base line and five profile lines were traversed with the Crone Dual-frequency E.M. equipment.

In carrying out the survey the two operators traversed the same line, the lines having been cut perpendicular to the average strike of the rocks. Both operators used similar units and kept a separation distance of 200 feet. At each station the chief operator first transmitted until the helper operator had oriented his coil and read a dip angle, and then their roles were reversed and the chief operator read a dip angle. The two dip angles read were recorded and the resultant obtained by adding the two readings was plotted on the station position of the mid-point between the two men.

No electrical conductors exhibiting continuity were found with the E.M. method. The mineralization in the vicinity of the survey occurs either in joint planes or as weak disseminations, and, as such, would not provide electrical continuity.

GEOCHEMICAL SURVEY

The claim group is drained by Wilf Creek which roughly bisects the claims in a northerly direction, and by Contact Creek and Goat Creek which are located in the northwest corner of the claim block.

These streams were silt sampled using the Holman Cold Extraction Method, which is specific for copper. The solvent used was ammonium citrate, and the indicator dithizone in a toluene base. The number of millilitres of dithizone required to reach the end point is a direct function of the copper content of the sample.

Anomalous values exceeding 100 parts per million were found in the upper reaches of Wilf Creek and in the upper part of Goat Creek.

In addition to the silt sampling, soil samples were tested in the area north and east of the small tarn lake on CO # 40 M.C. The samples were centred on a ridge junction located on CO # 39 M.C. at an elevation of 5,834 ft. In this vicinity copper mineralization occurs as joint planes in granodiorite.

The soil sampling revealed copper anomalies in excess of 100 parts per million down-slope from the known mineralization.

Despite the relative lack of oxidation, or chemical weathering in this area, the Holman Cold Extraction Method appears to be functional for both soils and silts.

CONCLUSIONS

None of the geophysical procedures used proved to be a reliable indicator of the presence of mineralization. It must be considered, however, that the magnetic highs which occur along the south contact of the Mount Barrington intrusive do coincide locally with copper mineralization. This may be largely a matter of coincidence.

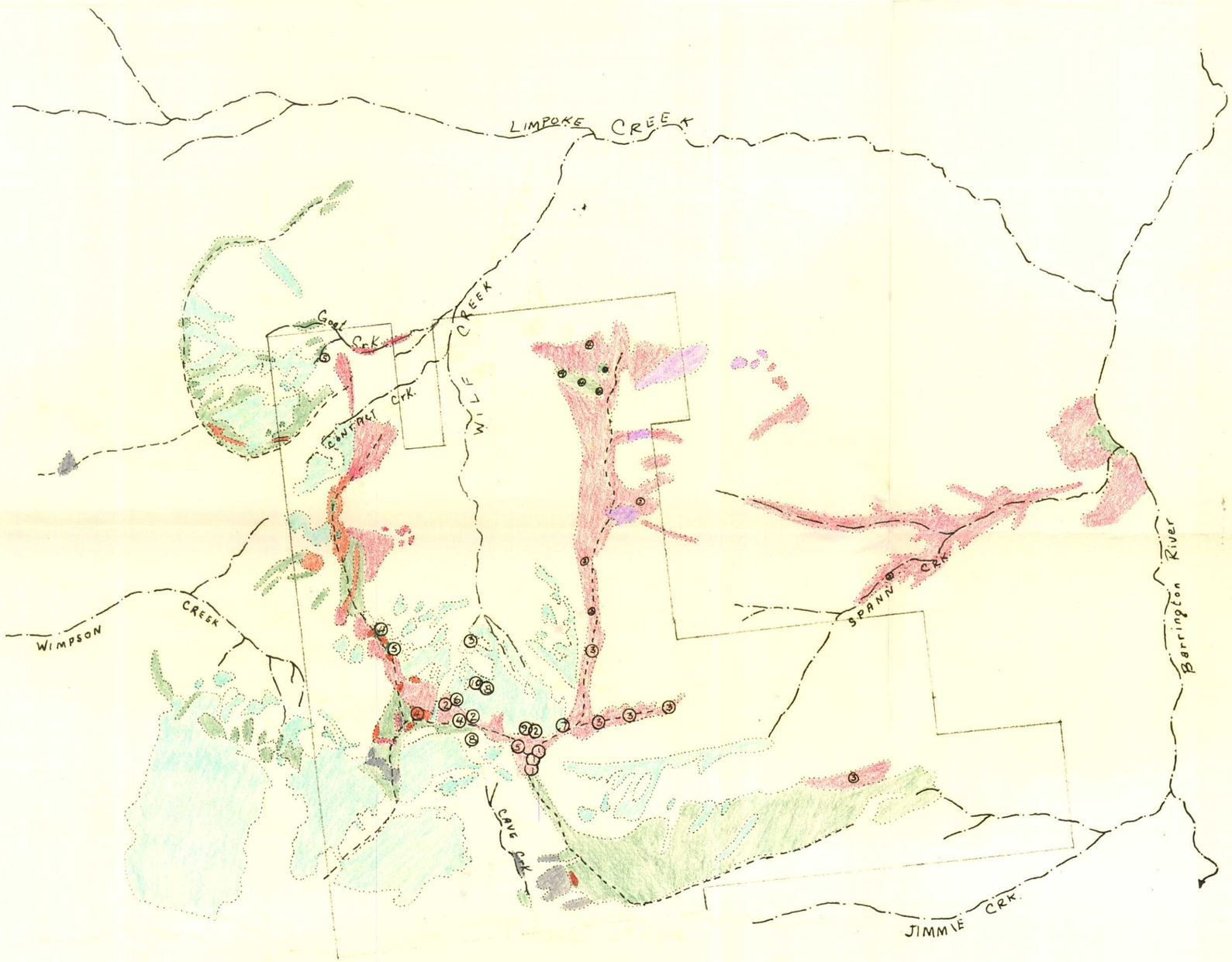
The stream silt procedure, combined with careful prospecting, would appear to be a most reliable technique.

The principal mineralized zone on the Spann Creek properties occurs on CO # 39 M.C. at the contact between the Mount Barrington granodiorite and the Triassic (?) volcanics. The significance of intrusive bodies of orthoclase porphyry occurring along the west contact of the granodiorite has not yet been determined.

William M. Sirola, P. Eng.

SCHEDULE OF ACCOMPANYING MAPS

	Scale
KEY MAP	
GEOLOGICAL PLAN	1" = 2,640'
GEOLOGICAL PLAN	1" = 100'
SELF-POTENTIAL SURVEY	1" = 400'
MAGNETIC SURVEY	1" = 400'
ELECTROMAGNETIC SURVEY	1" = 400'



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SPANN CREEK, STIKINE PROJECT.

GEOLOGICAL MAP

Prismacolor Number

- 920 Snow
- 949 Limestone & Black Argillite
- 909 PRE-INTRUSIVE IGNEOUS ROCKS
- 921 Orthoclase Porphyry, Syenite Pegmatite
- 926 Granodiorite, Quartz Diorite
- 956 Biotite, Amphibole & Magnetite - Rich Rocks

Mineralization

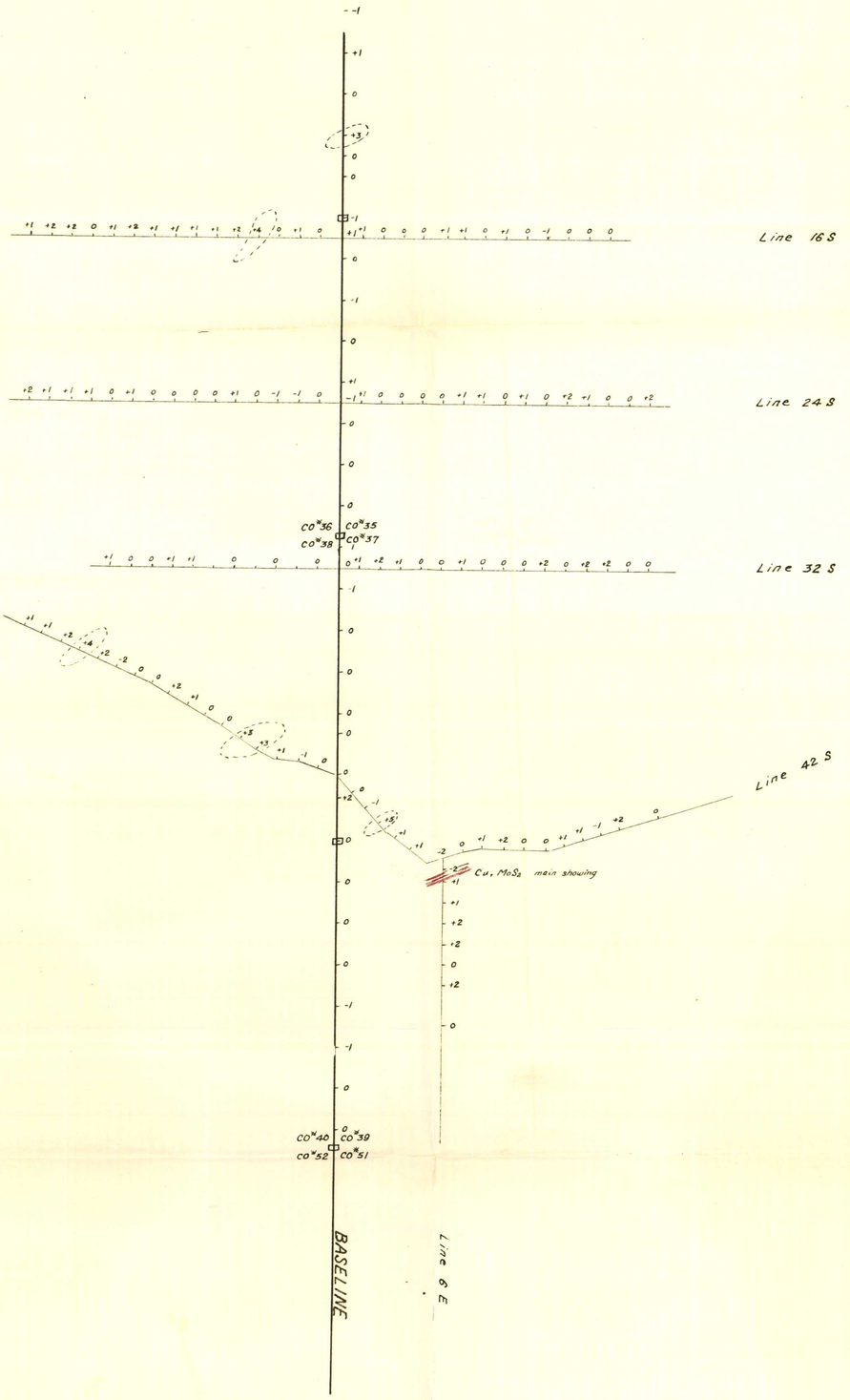
① High content of chalcopyrite (moly) in joints.
② Moderate content chpy. (moly) in joints.
③ Low content of (or leached) chpy. (moly) in joints.
④ Chpy. in quartz veins.
⑤ Chpy. in sheared dyke.
⑥ Chpy. (moly) in silicified and pyritized rock, high grade disseminated.
⑦ Malachite in intensely altered rock.
⑧ High grade chpy. in volcanic float.
⑨ Small zone of high grade chpy. in stringers in granodiorite.
⑩ Moly in joints.

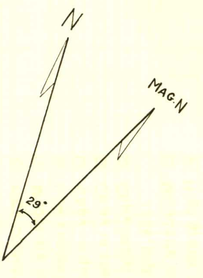
Legend

—·— Stream
----- Ridge

Scale: 1"= 2640.' Dec., 1964.

Geology by : W. Osborn





KERR ADDISON MINES LTD.

ELECTROMAGNETIC SURVEY

of WILF CREEK AREA

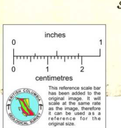
SPANN CREEK GROUP

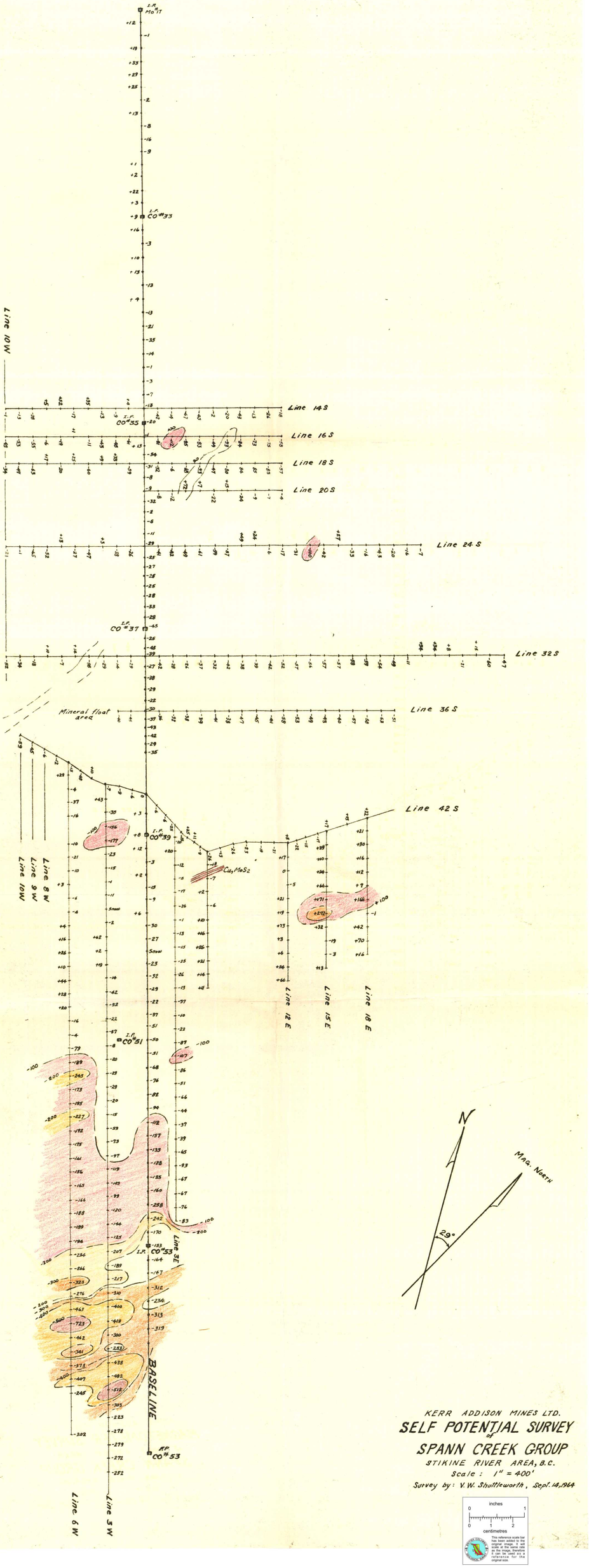
STIKINE RIVER AREA, B.C.

Scale : 1" = 400'

Survey by:

Sept., 1964





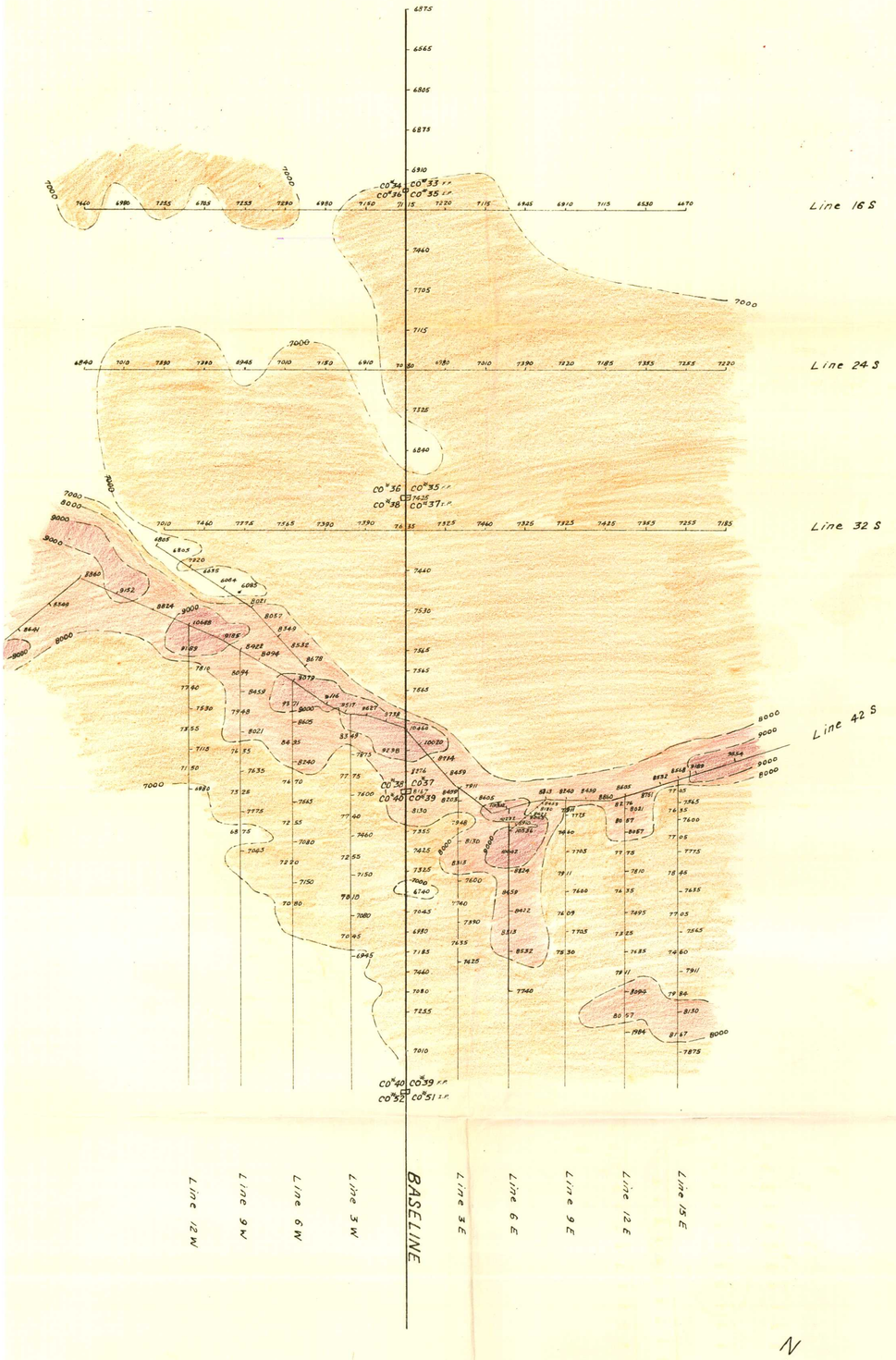
KERR ADDISON MINES LTD.

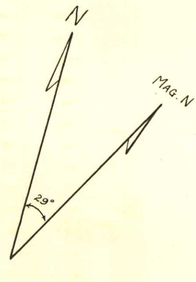
SELF POTENTIAL SURVEY of SPANN CREEK GROUP

STIKINE RIVER AREA, B.C.

Scale : 1" = 400'

Survey by: V.W. Shuttleworth, Sept. 14, 1964





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MAGNETOMETER SURVEY

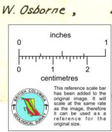
of WILF CREEK AREA

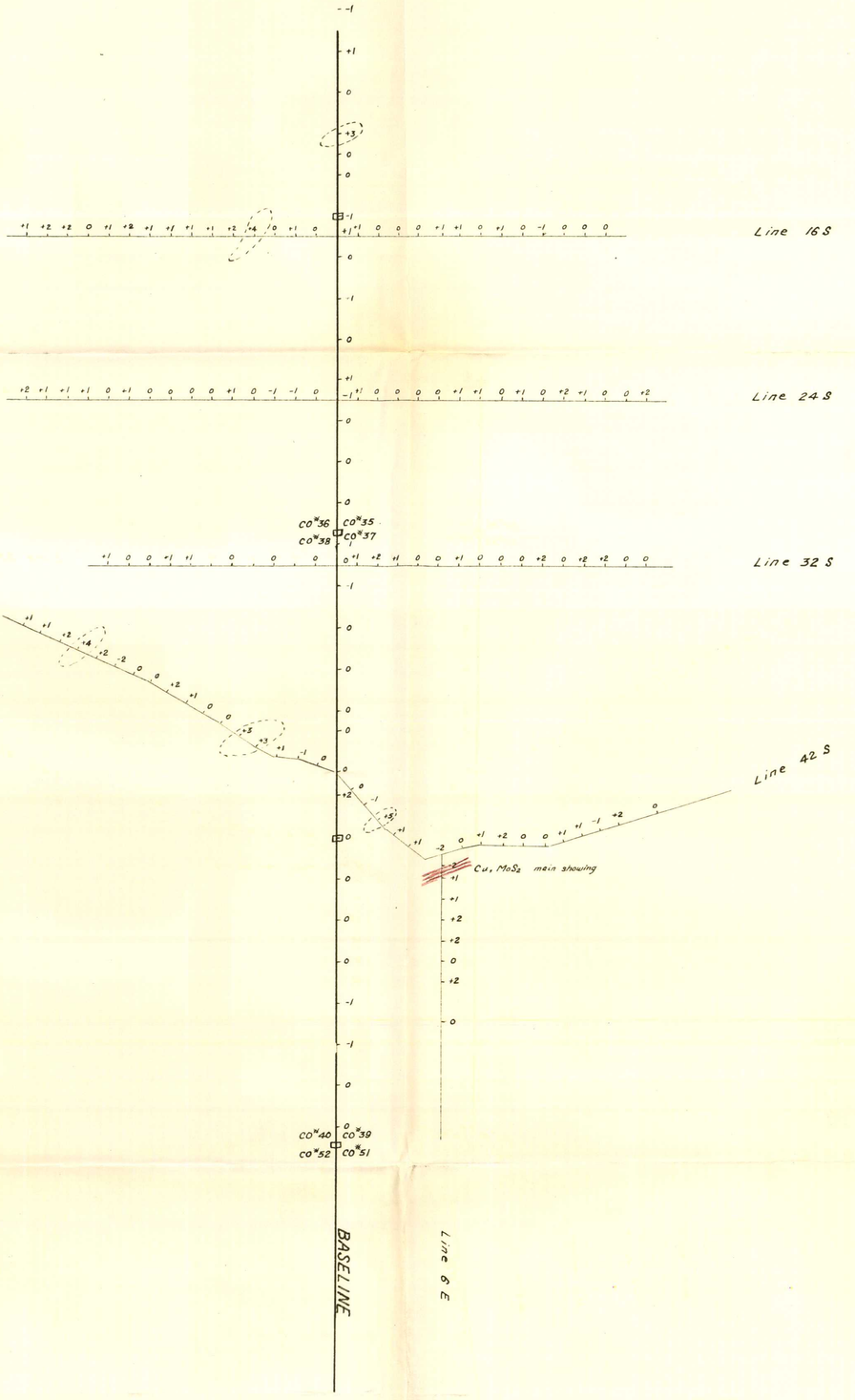
SPANN CREEK GROUP

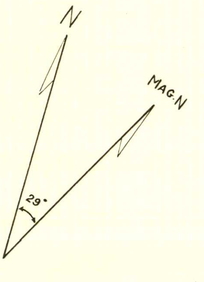
STIKINE RIVER AREA, B.C.

Scale : 1" = 400'

Survey by : W. Osborne , Sept., 1964







KERR ADDISON MINES LTD.

ELECTROMAGNETIC SURVEY

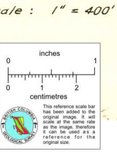
of WILF CREEK AREA

SPANN CREEK GROUP

STIKINE RIVER AREA, B.C.

Scale : 1" = 400'

Survey by: Sept., 1964



KERR ADDISON MINES LTD.
SPANN CREEK, STIKINE PROJECT.
GEOLOGICAL MAP

LEGEND

- SNOW and ICE
- "YOUNGER" INTRUSIVE
- HOST INTRUSIVE
- COUNTRY ROCKS
- Geophysics station
- Claim post
- Strike and dip of bedding
- Strike and dip of joints
- Strike and dip of foliation
- Strike and dip of faults
- Trends of mineralization

Contour interval 100 feet. Base: Kirk Landing + 400 and station 425 + 5735.

SCALE IN FEET 0 100 200

This reference scale bar has been added to the original drawing. When original drawings were used as the image, therefore it can be used as a reference for the original size.