FIELD REPORT

TELKWA PASS RECONNAISSANCE

PHASE II

D. Arscott
H. E. Madeisky

Associated Geological Services Ltd.,
Vancouver, B. C.

August 5, 1969

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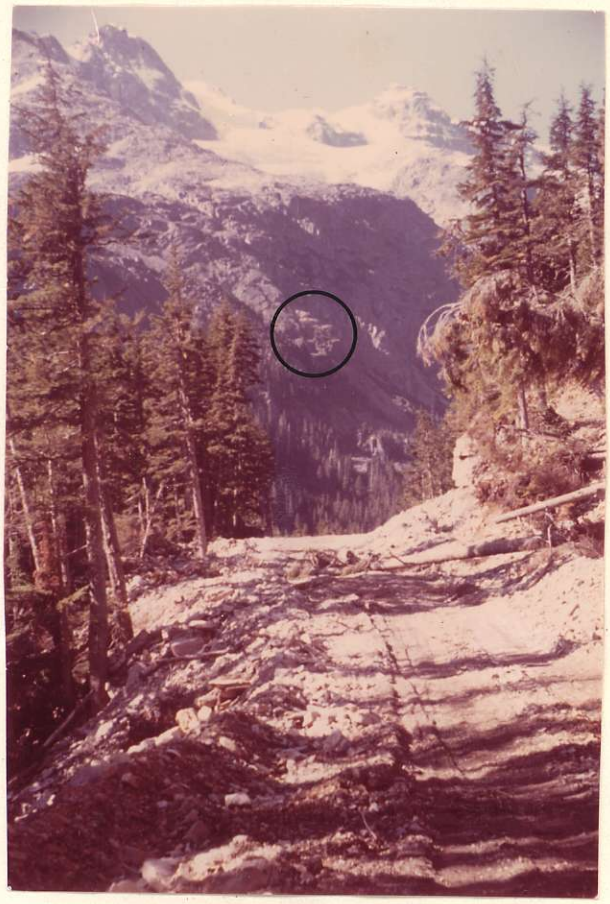
General view west along Limonite Creek. Top Lake at left.

Creek 'M' with main area of mineralization encircled.



View west along pipeline road. Major gossan encircled.

INTRODUCTION

In July, 1969 the writers and two assistants undertook surface prospecting and reconnaissance geological mapping of the Telkwa Pass area for Mr. W. Sharp, Mining Consultant. Silt and soil samples were also taken to expand the results of previous sampling, and to guide prospecting efforts.

This survey is, in effect, an extension of the reconnaissance begun in June. (See: Field Report, Reconnaissance Silt Sampling, Telkwa Pass, 19th June, 1969 by D. P. Arscott).

LOCATION AND ACCESS

Telkwa Pass is approximately 35 miles E NE of Terrace, B.C., at the west end of the Telkwa Range.

Road access is possible, but would be difficult. Helicopter remains the most economical form of transportation into the area.

GEOGRAPHY

Altitude:	Telkwa Pass, 2500 feet
Relief:	5000 feet
Slopes:	Lower slopes are mostly talus, vertical cliffs abound, and average topographic slope is 30 to 35°.
Precipitation:	Probably in excess of 200" per year.
Vegetation:	Spruce (up to 4 feet in diameter) Fir Balsam Considerable Devils Club in the vicinity of water courses.

FIELD METHODS

On the basis of previous findings, several creeks were selected for mapping and detailed silt sampling. Exposures along the pipeline road were also mapped, and a traverse made to the major gossan 1 mile southwest of camp. Rough compass, chain, and altimeter methods were used for location.

GEOLOGY

Structure:

Almost the entire area is underlain by rocks varying from dacite to andesite of the Hazelton Group.

These have apparently been intruded by a stock of diorite of the Coast Intrusives, and by dykes of various compositions. (Quartz monzonite, diorite, basaltic, intermediate composition porphyries, and what may be albite).

No bedding is recognizable in the dacite-andesites, and their surfaces suggest a plutonic as much as volcanic origin. In any case their stratigraphic width is likely to be in excess of 1000 feet in this area.

Reference to the field work, and to the airphotos, shows most major faulting to have an essentially NS trend. The pattern of smaller NW trending faults associated with these, suggest that the major faults are mainly strike faults of left hand displacement. One E NE trending lineament along the north shore of granite lake is probably of a fault, and may be responsible for the location of Telkwa Pass.

The diorite stock is faulted off against andesite along a north-south fault. A band of quartz monzonite up to 50 feet wide and a smaller diorite dyke are intruded along this fault over a distance of 1500 feet (Creek N).

There is a strong suggestion of quartz monzonite intrusion along other fault zones as well.

Lithology:

Considerable, but gradual compositional and textural variations occur within the respective rock types. They are described as follows:

1. Andesite-dacite — Hazelton Group of middle or upper Jurassic age.
   - color - dark green to light brownish-green
   - texture - porphyritic, aphanitic groundmass, with phenocrysts comprising up to 50% of the rock

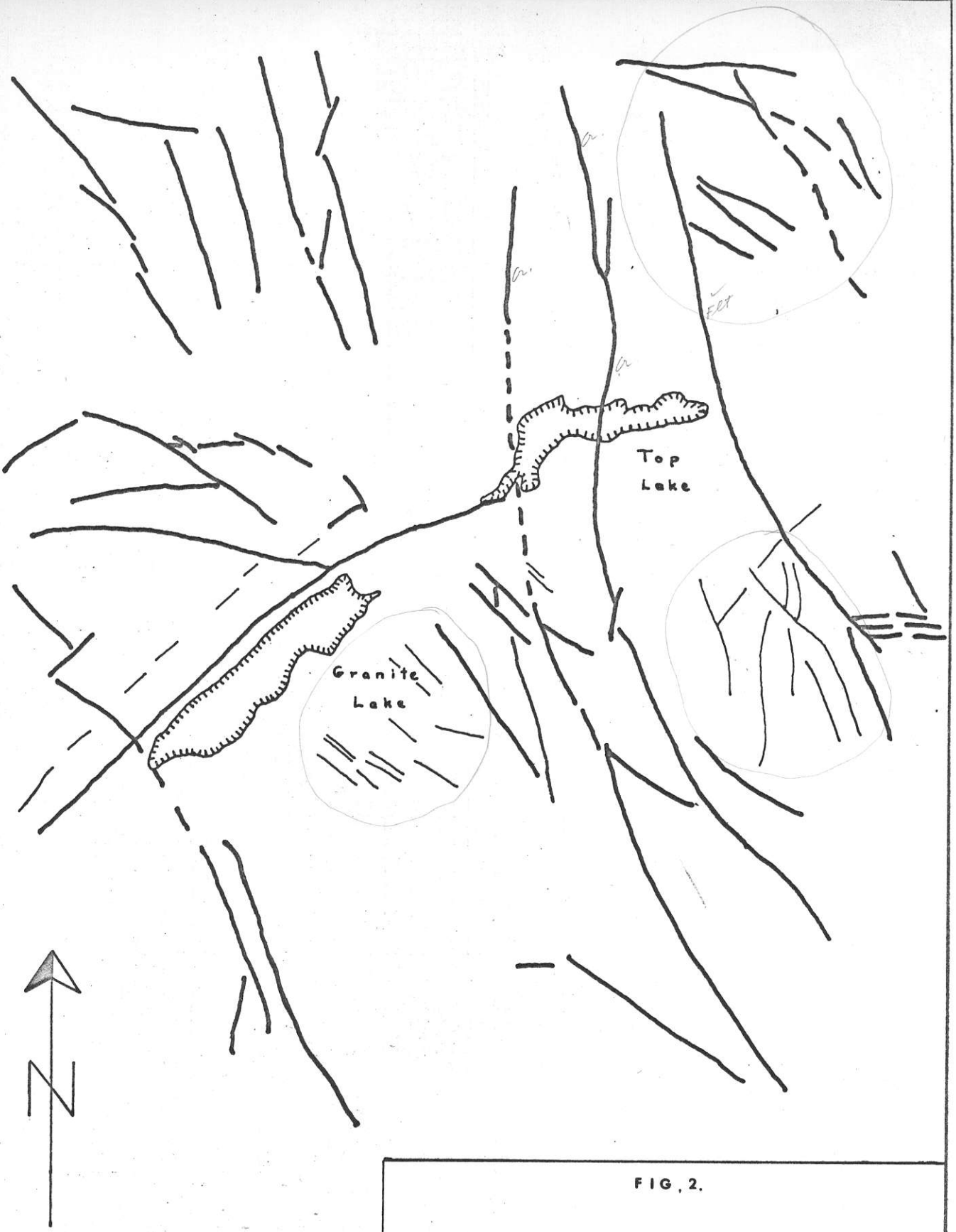


FIG. 2.

REGIONAL LINEAMENTS INTERPRETED FROM AIR PHOTOS.

TELKWA PASS, B.C.

P.F. pat. ? (!) JULY 1969.

minerals - plagioclase, commonly as phenocrysts (1/16" to 1/8") Augite and/or hornblende

alteration - both pervasive and vein types, involving hematite, epidote, and chlorite. Strong hematitic alteration produces areas of red dacite, or results in veinlets of specularite.

2. Diorite, of Coast Intrusions, upper Cretaceous age or slightly younger.

color - white plagioclase, black to green mafics

texture - granitic, medium to coarse grained

minerals - plagioclase, pyroxenes, biotite mafics comprise 20 to 30% of the rock

alteration - none to very slight, mostly evident as chloritization of the mafics.

3. Quartz monzonite, younger than the diorite

color - light grey to pinkish grey

texture - granitic to aplitic, with a slight porphyritic tendency

minerals - subequal proportions of orthoclase and plagioclase, 3% quartz, 5% biotite, Increasing mafic content towards contacts.

alteration - very slight generally, but moderate at contacts. Texture indistinct ("surgary") in places.

4. Diorite dykes, probably younger than the quartz monzonite. Greyish color. Medium to fine grained. Unaltered.

5. Basaltic dykes

6. Porphyry dykes - approximately andesitic composition
7. Albite? dykes - composition in doubt. This could be an altered tuff.

Metamorphism and Alteration:

Contact metamorphic effects are slight. Regional metamorphism is generally of low grade (greenschist facies), but alteration effects in the vicinity of faulting and fracturing are frequently intense.

The main alteration forms are:

chlorite	in mafics of the granitic rocks, dacite-andesite groundmass, and along shear planes
epidote specularite	mostly in veinlets within the dacites
hematite	pervasive in the dacites, changing irregular patches to a red jasper-like material where intense
serpentine	occurring rarely on shear planes
kaolinite	pervasive form in dacite (?) in a few locations.

MINERALIZATION

A. Specifics

Mineralization has been found in the following forms and locations:

1. Creek 'M' 1/2 mile south of the road.

This lies in porphyritic dacite-andesite within or close to northerly trending fault and shear zones. It varies from chalcopyrite seamlets, with some associated specularite, (rock samples 1007, 1008) to massive pods of specularite, about a quarter of which contain some chalcopyrite (samples 1009, 1010, 1018, 1019, 1020). Copper in these samples vary from trace to 1.55%. A third of an ounce of silver appears in samples

1007 and 1018. Samples 1009 to 1020 lie in three parallel mineralized shear zones, with widths of 6 to 10 feet. Truly representative sampling of these would be difficult, and this was not attempted in the time available. All samples in this report should be considered "best", but not excessively so.

It is of interest that an old (about 1920) prospecting cabin was set up in this area. We found what appeared to be the remains of a small smelter, and old prospecting tools. Also this area is within more recently staked ground but is, we believe, now open.

Time did not allow continuation of the traverse up this creek. The silt sampling however, after indicating a slow rise of copper values southwards along the creek, showed a fairly sharp drop just above this mineralized area, suggesting that there is less copper present further along. (See Figure 3.)

2. A basaltic dyke on the road, 2 feet wide, and 600 feet east of Creek 'N', carries disseminated pyrite and chalcopyrite (sample 1012 - 1.55% copper). Near this there is scattered mineralized rubble on the roadway, and it is uncertain if the dyke is the source of all this.

It is especially interesting that the dyke lies on or close to the same major lineament as the previous mineralization described in 1.

3. There are a number of small mineralized <u>quartz veins</u> in the area, all about 2 feet in width, with these characteristics:

Location	Strike	minerals seen	Sample No:	Assays
3100' W of camp on road	NE	pyrite specularite?	1015	0.35 oz/t Ag 0.08% Cu
1150' W of camp on road	NE	5% marcasite and pyrite	1006	1.01 oz/t Ag 0.07 oz/t Au
1000' W of camp on road	N	pyrite chalcopyrite	1011	0.26 oz/t Ag 0.04 oz/t Au 0.4% Cu
3200' N from road along Creek J	E	pyrite	1005	0.6% Cu

Three of these veins also lie on or close to NS lineaments, and are associated with strong chlorite and epidote alteration.

4. A very highly altered and rusted zone 10 feet wide, lying 2200 feet up the Creek J traverse carries 5 to 10% disseminated pyrite, and a grab sample (No. 1004) assayed 0.85 oz/t Ag and 0.04 oz/t Au. Rock samples 1016 and 1017 are from very similar material but show no metal values whatsoever.

5. A small boulder found in the creek bed about 2100 feet up Creek 'N' contained 5% disseminated bornite and chalcopyrite. It appeared to be a hematitically altered coarse grained dioritic texture. No coarse diorite was found above this location, and so this may have been an erratic.

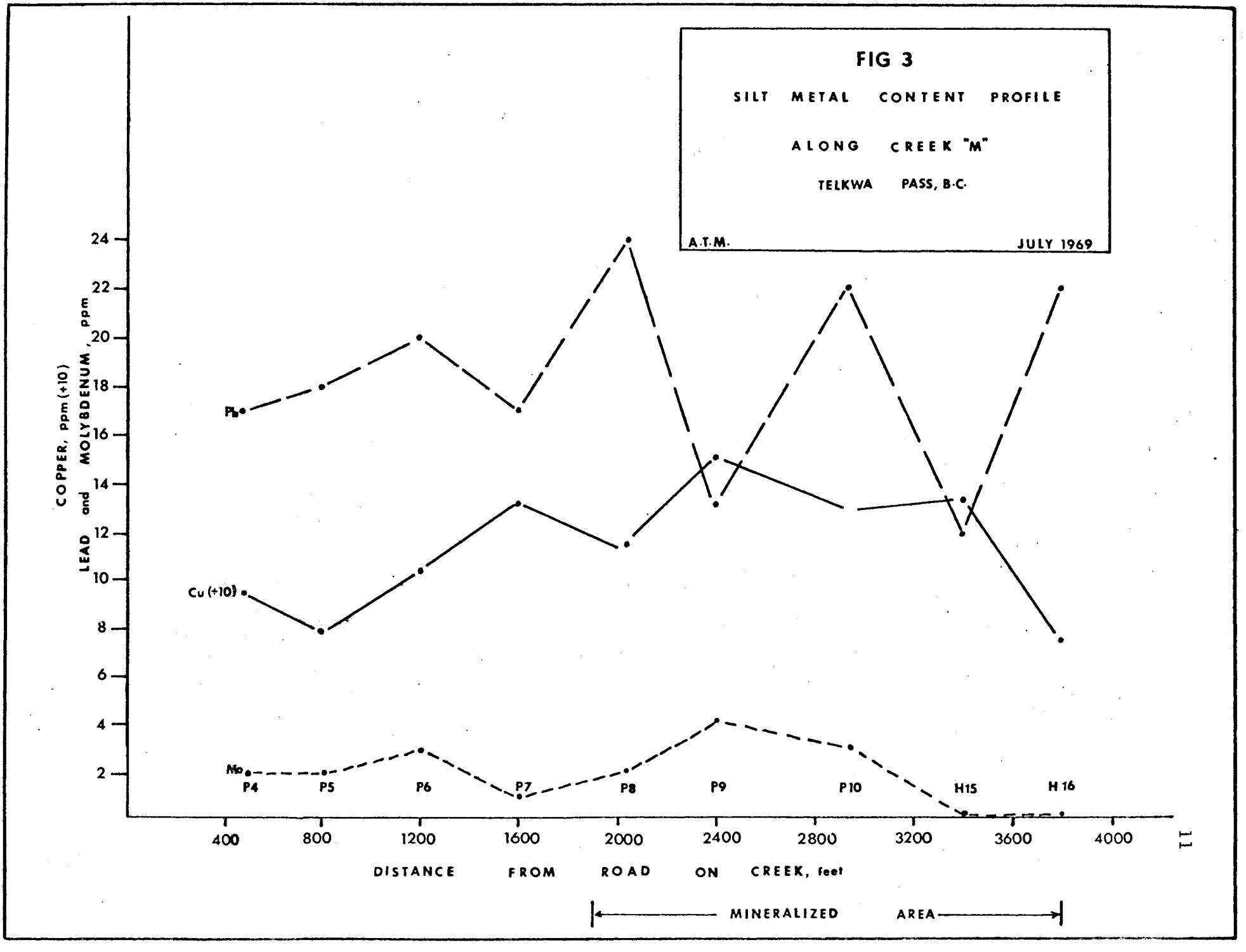


FIG 3
SILT METAL CONTENT PROFILE
ALONG CREEK "M"
TELKWA PASS, B.C.
A.T.M.
JULY 1969
COPPER, ppm (+10)
LEAD and MOLYBDENUM, ppm
24
22
20
18
16
14
12
10
8
6
4
2
Pb
Cu (+10)
Mo
P4
P5
P6
P7
P8
P9
P10
H15
H 16
400
800
1200
1600
2000
2400
2800
3200
3600
4000
DISTANCE FROM ROAD ON CREEK, feet
MINERALIZED AREA

Nevertheless its position on the well mineralized lineament represented by Creeks M and N, is of interest.

6. In the same area as the above boulder there are a number of traces of malachite and chalcopyrite, but they seemed to be very scattered.

7. The major gossan 1 mile southwest of camp showed no significant mineralization in sample 1017, nor in 2 samples taken during the previous survey. The soil sampling, however, conducted across the 'front' of the gossan, gave very high copper, lead, and molybdenum values, and these highs were mostly concentrated at the edges of the gossan, giving a brassière-shaped anomaly (See Figure 5.) Mineralization then is suspected to lie in major fault zones which form the boundaries of the gossan.

General Comments:

There are several obvious mineralization controls:

a) Major NS faulting (especially creeks M and N)

b) Quartz monzonite intrusions (associated with a))

c) Quartz veins (associated with a))

Copper, silver, and some gold are the principal metals. No evidence of significant quantities of molybdenum or lead were found. (Earlier silt sampling had been suggestive of lead). One spectrographic analysis was made (Sample 1009). The results are not available at the time of writing.

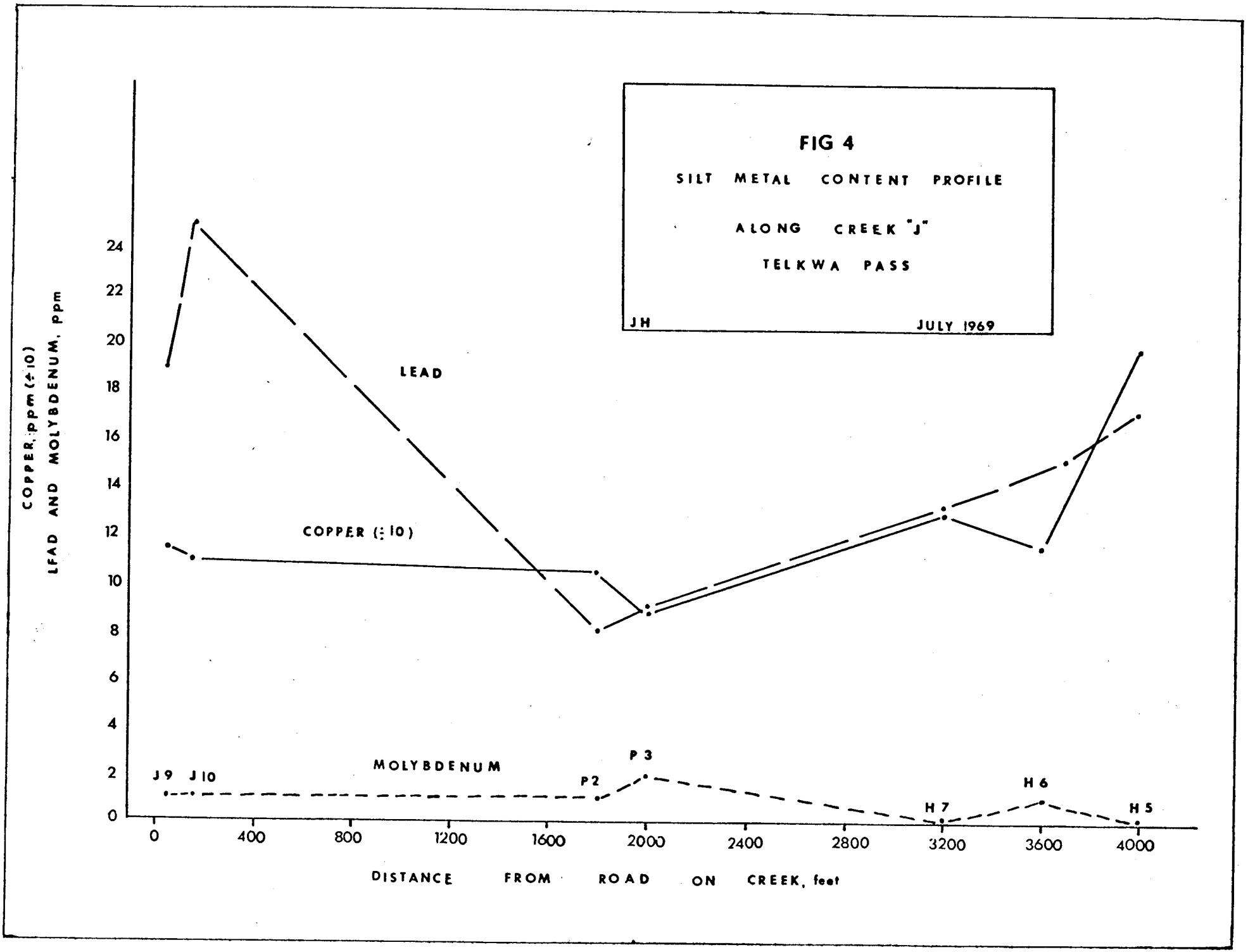
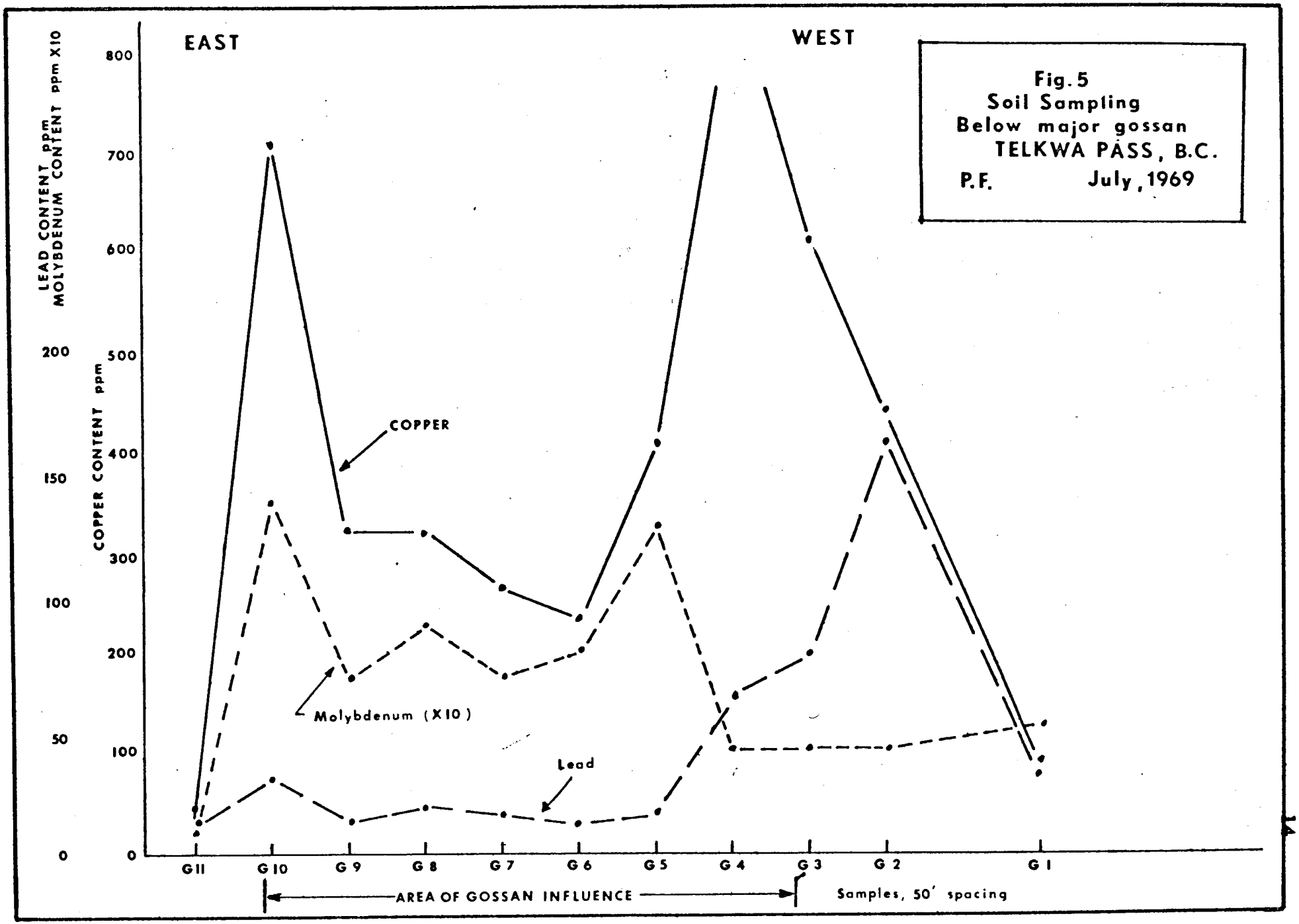


FIG 4
SILT METAL CONTENT PROFILE
ALONG CREEK "J"
TELKWA PASS
JH
JULY 1969
COPPER, ppm (÷10)
LEAD AND MOLYBDENUM, ppm
LEAD
COPPER (÷10)
MOLYBDENUM
J9
J10
P2
P3
H7
H6
H5
0
400
800
1200
1600
2000
2400
2800
3200
3600
4000
DISTANCE FROM ROAD ON CREEK, feet


EAST
WEST
Fig. 5
Soil Sampling
Below major gossan
TELKWA PASS, B.C.
P.F. July, 1969
LEAD CONTENT ppm
MOLYBDENUM CONTENT ppm X10
COPPER CONTENT ppm
800
700
600
500
400
300
200
100
0
200
150
100
50
0
COPPER
Molybdenum (X10)
Lead
G11
G10
G9
G8
G7
G6
G5
G4
G3
G2
G1
AREA OF GOSSAN INFLUENCE
Samples, 50' spacing

SILT SAMPLING

Comparison of the silt results from the June survey and the present one, taken at the same locations, show an approximate 10% decrease in metal content. The consistency of results in general lends a high degree of confidence to individual values.

Care was taken to avoid silts with a high organic content, as these were found to carry higher and more erratic values during the earlier survey.

Threshold values, as determined earlier, were:-

Copper	-	100 parts per million
Lead	-	12 parts per million
Molybdenum	-	indeterminate, very little present
Silver	-	indeterminate, very little present

It is now found that:

1. Copper mineralization coincides extremely well with the anomalous silts.

2. Lead silt anomalies are probably too erratic to be of use in prospecting, due, no doubt, to the higher mobility of the element. A very vague correlation of copper and lead profiles is observed, but no lead mineralization was found.

3. We have the first indication that some molybdenum may exist. In Creek 'M' molybdenum values in silt correlated well with copper values and chalcopyrite-specularite mineralization. From the profile (Figure 3.) the molybdenum threshold would be about 3 ppm.

4. Threshold for silver in silts is approximately 1.0 ppm. No silver analyses were made this time, as former results had been discouraging. A re-evaluation however comparing former silt silver contents to present rock sampling, suggests that silver mineralization is reflected in silts, with the above mentioned threshold.

A rubeanic acid test was carried out on 6 of the samples, with fairly good results. (See Appendix III)

SUMMARY

Moderately good copper mineralization has been located, associated with major north-south trending fault zones, especially the one underlying Creek 'M'. Silver is a common constituent in widely scattered, quartz veins.

Silt sampling in this area is an excellent search tool for copper, and probably good for silver.

Soil sampling data, while not yet correlated with mineralization, and of insufficient quantity for statistical analysis, has been strongly suggestive of copper-molybdenum-lead mineralization in major fault zones bounding the large gossan 1 mile south west of camp.

CONCLUSIONS AND RECOMMENDATIONS

Good showings have been found, and we feel that, providing sufficient money is available, work in the area is well worth continuing.

The best exploration approach might include:

1.	Further prospecting	to sample representatively, and extend mineralization already found, with correlated use of geochemistry.
2.	Airborne Electro-magnetic survey	this should delineate specularite-chalcopyrite zones.

3. Ground follow-up Soil Sampling and/or EM

This would be a fairly major programme, but the mineral potential indicated in the area is believed to justify it.

Cordially submitted,

D. Arscott, P. Eng.,

APPENDIX I

ROCK SAMPLE ASSAYS

T S L Laboratories Limited
325 HOWE STREET - VANCOUVER 1, B.C.
TELEPHONE 688-3504
ASSAYERS
CHEMISTS
GEOCHEMISTS

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM ASSOCIATED GEOLOGICAL SERVICES LTD.

REPORT NO. V-6296

SAMPLE(S) OF ROCK Submitted on August 1, 1969.

Sample No.	Gold (Au)oz:ton	Silver (Ag)oz:ton	Copper (Cu)%	Lead (Pb)%	Molybdenum (Mo)%
1004	0.04	0.85	trace	----	-----
1005	0.01	trace	0.60	----	----
1006	0.07	1.01	trace	----	----
1007	trace	0.25	0.35	0.01	0.01
1008	trace	trace	0.46	----	----
1009	0.02	trace	0.90	0.01	0.01
1010	0.01	trace	1.00	----	----
1011	0.04	0.26	0.42	----	----
1012	0.02	trace	1.55	----	----
1013	0.02	trace	0.03	----	----
1014	0.01	trace	trace	----	0.01
1015	trace	0.35	0.08	----	trace
1016	0.01	trace	----	----	----
1017	trace	trace	----	----	----
1018	0.03	0.32	trace	----	----
1019	0.01	trace	0.06	----	----
1020	0.02	trace	0.22	0.01	----

oz:ton - Troy ounces per 2,000 lbs.

DATE August 6, 1969. SIGNED R.B. Fletcher

PULP AND REJECTS DISCARDED AFTER 3 MONTHS

APPENDIX II

SILT AND SOIL ANALYSES AND DESCRIPTIONS

BONDAR-CLEGG & COMPANY LTD.

geologists • geochemists • analysts

1500 PEMBERTON AVENUE, NORTH VANCOUVER, B.C.
PHONE 988-5315

GEOCHEMICAL LAB REPORT

No: 29-247

Extraction HNO_3 -HCl

From Associated Geological Services

Method Atomic Absorption

Date August 6 1969

Fraction Used -80 mesh

Analyst D.M.

SAMPLE NO.	Cu ppm	Pb ppm	Mo ppm	REMARKS
G 1	86	34	5	MED. BR. STONY SILT ND - Not Detected
G 2	436	166	4	MED. BR. STONY SILT
G 3	605	79	4	" " "
G 4	880	64	4	SLIGHT RED-BR. LOAM
G 5	407	15	13	SLIGHT RED-BR STONY LOAM
G 6	231	11	8	" " "
G 7	264	15	7	"
G 8	319	19	9	" " "
G 9	220	13	7	" " "
G 10	715	29	14	" " "
G 11	53	11	1	MED. BR. LOAM
H 1	189	42	2	DK. BR. COARSE SAND-HUM
H 2	55	19	3	DK. BR. HUM LT. BR. COARSE SAND
H 3	88	13	8	DK. BR. SILT WITH LITTLE HUM
H 4	57	13	3	MED BR. TALUS FINES
H 5	193	17	ND	LT. GREY-BR SILT
H 6	114	15	1	LT. BR. SILT 3/4 COARSE SAND
H 7	139	13	ND	" " "
H 8	66	4	ND	GREY SILT 3/4 SAND
H 9	121	9	1	DK. BR. SILT. LITTLE HUM
H 10	52	24	16	" " "
H 11	65	24	5	LT. BR. SILT 1/2 SAND
H 12	66	13	2	DK. BR. SILT SANDY
H 13	75	18	2	MED BR. SILT 3/4 SAND
H 14	81	18	1	DK. BR. SILT
H 15	132	12	ND	SANDY GREY SILT
H 16	75	22	ND	" " "
P 1	88	19	ND	MED. BR. SILT
P 2	106	8	1	LT. BR. SILT
P 3	88	9	2	LT. BR. COARSE SILT & SAND
P 4	94	17	2	LT. GREY BR. SAND

Report No. 29-247

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Page No. 2

GEOCHEMICAL LAB REPORT

SAMPLE NO.		Cu ppm		Pb ppm		Mo ppm		REMARKS
P 5		79		18		2		LT. GREY BR. SAND
P 6		103		20		3		LT. BR SANDY SILT
P 7		132		17		1		" " "
P 8		114		24		2		LT-BR. SAND
P 9		150		13		4		LT. GREY-BR SAND
P 10		129		22		3		" " "
P 11		77		6		1		LT. BR. SAND

APPENDIX III

TEST OF RUBEANIC ACID METHOD

BONDAR-CLEGG & COMPANY LTD.
geologists • geochemists • analysts
1500 PEMBERTON AVENUE, NORTH VANCOUVER. B.C.
Phone 988-5315

August 7, 1969.

Mr. Dave Arscott,
Associated Geological Services,
#17 - 558 Howe Street,
Vancouver, B.C.

Dear Mr. Arscott:

RE: Our Report No. 29-247
Suitability of Rubeanic
Acid Field Test

As requested by you, the following stream sediment samples were analyzed for cold extractable copper by the rubeanic acid field test:

	ppm Cu (by A.A.)
H2	55
H3	88
H5 (substituted for H1)	193
H10	52
P6	103
P8	114
P9	150

Samples which gave values of 150-200 ppm copper by atomic absorption were readily distinguishable from samples giving 80-110 copper values; these in turn were distinguishable from samples running 40-60 ppm copper. It should be emphasized, however, that the method is purely qualitative.

...2/

APPENDIX IV

NOTES ON FURTHER PROSPECTING

NOTES ON FURTHER PROSPECTING

A number of unexamined gossans exist in the area. These have been plotted very approximately on the reconnaissance map.

As seen from the opposite hill there is some slight brownish colouring associated with a gully tributary to Creek 'M' at about the point where most mineralization was found. (See photo). This gully should be examined in detail.

About 1500 feet northwest of this, at an elevation of about 3200', are two very light coloured outcrops with sizes about 100' x 60' and 100' x 20'. These might be quartz, or quartz monzonite the latter often being associated with mineralization.

APPENDIX V

REFERENCES

REFERENCES

Airphotos: BC 5307-098, 099, 1" = 1/2 mile

Reports on neighbouring areas:

GSC Memoirs 205, 223, 329
covering Terrace and Smithers area

Silt sampling reconnaissance map, W. Sharp, Nov. 1968.

Field report: Silt Sampling Reconnaissance Survey, D. Arscott, June, 1969