

A REPORT ON THE HESS PROJECT

MEHITABEL CLAIM GROUP

YUKON - N. W. T. BORDER

PANOCHÉ MINING CORPORATION LTD.

NOV. 1971

IAN TURNBULL

<u>Contents</u>	<u>Page</u>
Introduction	1
Location and Access	1
Topography	1
Claims	1
General Geology	2
Mineralization	4
Amax MacTung Property	5
Rock Sampling Results	6
Geochemical Sampling	7
Magnetometer Survey	7
Regional Reconnaissance	7
Conclusions and Recommendations	9
 <u>Accompanying Maps</u>	
Geology	1":1000'
Silt Sampling Location Plan	1":1/2 Mile
Drainage Geochem: Molybdenum	1":1/2 Mile
Drainage Geochem: Tungsten	1":1/2 Mile
Sketch Map: Target A, B & C	1":1/2 Mile

## INTRODUCTION:

The Mehitabel claim group, comprising 38 full size claims were located in September 1970, as a result of a regional program, involving reconnaissance stream sediment sampling and geological mapping. This was followed in 1971 by a program of more detailed mapping, sampling and prospecting.

This report is a compilation of data gathered during the 1971 field season from the Hess property and immediate vicinity. A decision was made in August 1971 to discontinue exploration in these areas and consequently claims staked the previous year have been allowed to lapse.

## LOCATION AND ACCESS:

The Hess property is located in the northern part of the Selwyn Mountains, east of Keele Peak, (Sekwi Mountain Map Sheet 105P-5). The claims straddle the Yukon-NWT boundary, some 10 miles north of mile 225 on the Canol Road, (Lat.  $63^{\circ}26'$ , Long.  $129^{\circ}55'$ ).

Access to the property area is by helicopter from the Macmillan Pass airstrip, some 20 miles to the southwest. The Canol Road is maintained only as far as Macmillan Pass, a road distance of approximately 150 miles from Ross River. During the summer months, the Canol Road can be negotiated by 4-wheel drive vehicles as far as an abandoned camp at mile 222.

## TOPOGRAPHY:

The Hess property lies above tree line and covers a rugged area with severe relief. Valley walls have in most cases broken down into extensive talus slopes and the valleys themselves are narrow with immature swamps developed in the valley floors.

## CLAIMS:

The Hess property comprised 38 full size claims held by Panoche Mining Corporation, which were allowed to lapse on the 21st August and 9th September, 1971. An additional 32 claims located during the current season were not recorded.

## FIELD WORK PROGRAM:

A crew of five men were employed during the period 10th July - 13th August, 1971, gathering data from the Mehitabel claim group comprising:

1. Geological mapping at 1":1000'.
2. Rock sampling.
3. Geochemical soil and stream sampling.
4. Magnetometer survey.

In addition detailed prospecting and stream-sediment sampling was done on regional reconnaissance targets in adjacent areas.

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#### 1. GENERAL GEOLOGY:

The area of interest covers an assemblage of presumed Devonian and Mississippian sediments which have been intruded by two related granitic stocks, some 10,000' apart. Rock outcrop is virtually 100%, the only mapping problem arises from the extensive talus material which often obscures contacts.

Exposed sedimentary rocks are conformable with some lateral thinning of beds considered to be facies variations.

#### STRATIGRAPHY:

The sedimentary rocks have been mapped and separated into the following units. The thicknesses quoted are apparent and the terms lower, middle and upper are indicative only of the order of supposition as seen at this locality.

Unit 1 - Thickness 400 feet. White, pale grey and black finely banded non-calcareous chert. The lower horizon of this unit is interbanded with beds of medium-grained limestone (1-2" wide). Differential weathering of these two rock types produces a strongly corrugated surface and a "swiss cheese" appearance to the unit. This effect is accentuated where metamorphism has converted silty layers to dense calc-silicate hornfels and the limestone to an impure marble.

Unit 2 - 500+ feet. Dark green to dark grey extremely hard silicious microcrystalline to very fine grained hornfels. Remnant primary stratification indicates the original rock to have been a finely banded chert or quartzite.

Unit 3 - 20-1000 feet. Purple to black cryptocrystalline chert. Pyrite is commonly disseminated through the rock, and concentrated along bedding and fracture planes. Iron oxide stain is pervasive.

Unit 4 - 1500 feet. Medium and dark grey argillaceous siltstone, in part calcareous, with up to 20 percent limestone in the central section; fissile to platy. 2-3 percent disseminated fine pyrite and associated medium brown to rusty weathering.

Unit 5 - 600 feet. Medium grey shale, commonly fissile and noticeably barren of iron sulphides and iron staining.

Unit 6 - 5-100 feet thick. Light bluish grey and dark grey medium grained limestone. White veinlets of calcite, mottled weathering.

Unit 7 - Pure white to pinkish medium-grained quartzite, with occasional limonite specks. Partly friable.

#### INTRUSIVE ROCKS:

The two plutons which intrude the sediments are typical of the Cretaceous intrusive bodies which occupy a belt extending from Keele Peak south to the Itsi Range.

The plutonic rocks are commonly fresh, grey-green, medium-coarse grained acidic rocks, varying in composition from granite to granodiorite. Dominant hornblende and biotite comprise about 25 percent of the rock. They frequently exhibit a porphyritic habit, with phenocrysts of potash feldspar up to 1 inch long, and occasionally hornblende. Contacts with the country rocks are normally sharp and steep. Though cross cutting on a regional scale, contacts are locally controlled by planar structures such as bedding, slaty cleavage and joints.

Directly related to the plutons are numerous 5 foot to 30 foot wide dykes which invade the sediments. These usually strike N10°W to N20°W and are either vertical or dip steeply towards the west. They are fine to medium grained intermediate rocks, generally fresh and with approximately 25% mafic minerals, and may carry minor disseminated pyrite. The larger dykes extend longitudinally for up to a thousand feet - crosscutting the bedded sediments at angles varying from 50° to 70°.

#### STRUCTURE:

Regional folding early in the structural history is apparent, but little information has been gathered in the map area. Locally the sedimentary rocks form a simple conformable dipping sequence. A major fault strikes east-west between the two intrusive stocks possibly along a regional fold axis. The displacement along this fault is unknown. Radial faults about the northern pluton were probably formed during intrusion.

## MINERALIZATION:

Two separate types of mineralization were identified and sampled on the Hess property.

### 1. Skarn Deposits:

Skarn zones of dark green calcium, magnesium and iron silicates have developed in a limey environment within the Unit 2 hornfels. These skarn zones are the product of contact metamorphism, and either abutt one of the intrusive stocks or lie in an area dissected by dykes related to the intrusives. Fluids necessary to develop and mineralize the skarns were presumably derived from the plutonic rocks.

These skarn zones occur in the form of lenses, extending up to 100 feet in length and varying from 2 to 10 feet in width, paralleling the strike of the enclosing unit. Ten skarns were found to be mineralized and rock samples were collected from them. The skarn mineral assemblages comprise dark green diopside, pink grossularite-andradite, calcite, epidote and quartz. The noted sulphides are massive and dominant pyrrhotite, minor chalcopyrite, rare molybdenite and rare scheelite. These occur both as disseminated flakes and crystals and on open fractures associated with quartz. The skarn zones are never completely mineralized, sulphides occurring in irregular and discontinuous pods accompanied by a brick red-orange gossan.

### 2. Intrusive Mineralization:

Within both the intrusive plutons there exists extremely weak and erratic molybdenite and scheelite mineralization, associated with quartz on fracture planes.

In the northern pluton (spotheight 7364') a roughly circular zone of extremely well-jointed rocks form a shattered core over which a cirque and permanent snowfield have developed. Prospecting in this zone revealed very occasional coarse rosettes of molybdenite within quartz filled fractures. The host rock is unaltered and the fracture density low.

Follow up of anomalous stream sediment samples led to the discovery of identical mineralization on the northern side of the southern pluton (spotheight 7654'). Scheelite was found to be generally associated with the molybdenite on fracture faces. No disseminated sulphides were found, and no hydrothermal alteration noted. However, this type of mineralization has been located over an area approximately 6000 ft. x 2000 ft. Rock samples were collected and results are tabulated below.

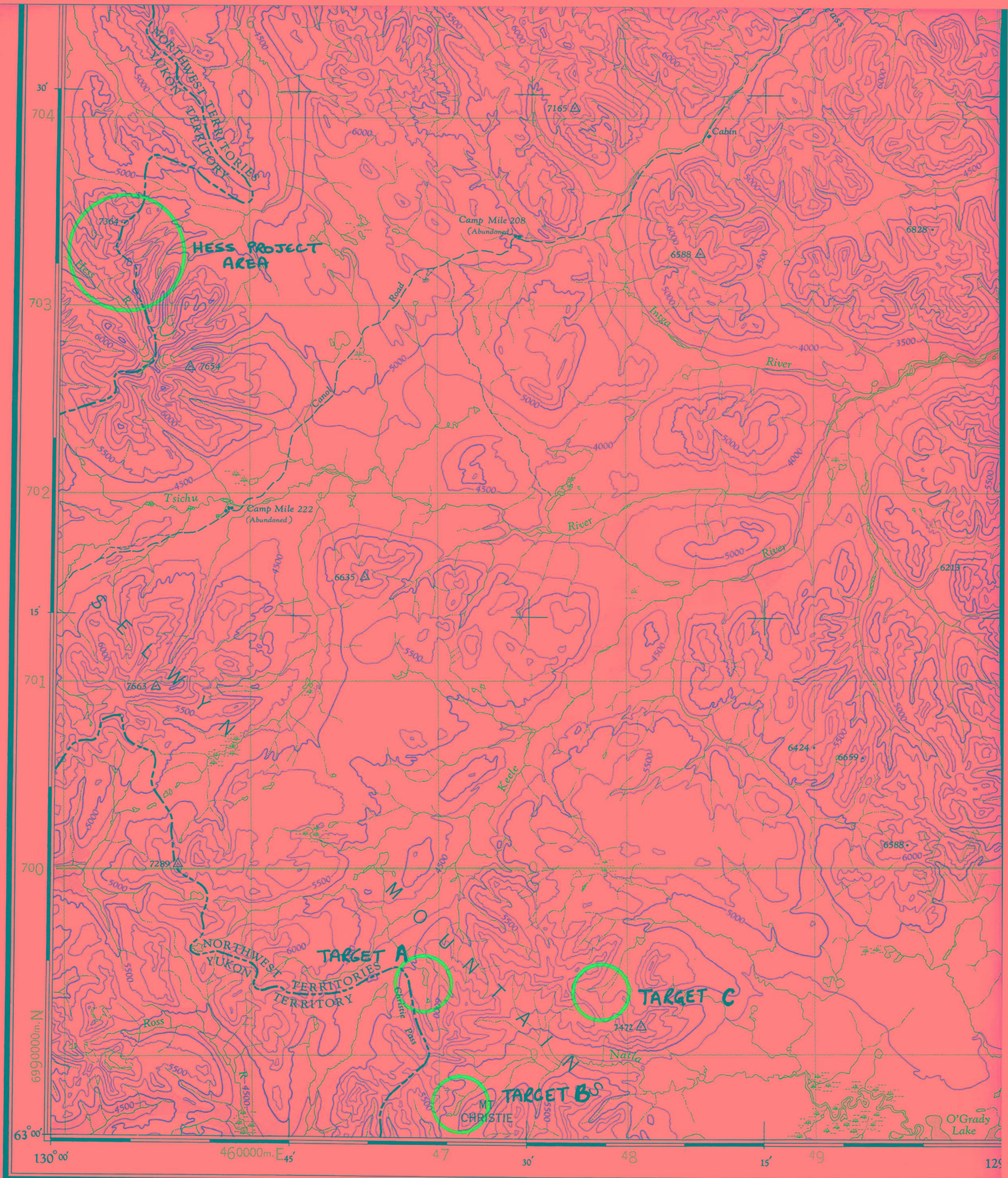
AMAX MACTUNG PROPERTY:

This is located some 12 miles to the southwest of the Hess property, and is characterized by a very similar geological environment to that of the Hess skarns.

A diopside skarn some 80 feet wide has developed in lower Cambrian limestones; this skarn is well pyrrhotized and averages approximately one percent tungsten. The hanging and footwall limestone carries tungsten values of about 0.4%  $W_3O_8$  for a width of 400 feet. An intrusive stock, while not in contact with the limestone, is responsible for metamorphic actions. Reserves at present are reportedly in the region of 5 million tons at one percent  $W_3O_8$ .

2. ROCK SAMPLING RESULTS:

Sample No.	Sample Width Ft.	Type	Location	Metal Values %			
				Cu.	MoS <sub>2</sub>	W <sub>3</sub>	Ni.
01	5	) Grab samples from mineralized	56+50N 60+50E	.21		.005	.01
02	5	) skarns usually with heavy	57+50N 57+00E	.34		.005	.01
03	10	) gossan capping.	59+50N 55+00N	.43		.01	.01
29	app. 10	) Samples of float from sub out-	60N+50N 40+00E	.13		Tr	
30	app. 10	) cropping (?) mineralized skarns,	60N+50N 44+00E	.32		Tr	
31	app. 10	) collected on traverses along	60N+50N 48+00E	.23		Tr	
32	app. 10	) grid lines 400' apart.	60N+50N 52+00E	.33		Tr	
33	app. 10	)	60N+50N 58+00E	.30		Tr	
06	5	) Grab samples from skarn zone;	North side of	.07		Tr	
07	5	) massive pyrrhotite, minor	pluton 7364.	.04		Tr	
08	10	) chalcopyrite.	Samples are app.	.04		Tr	
09	10	)	15' apart. Zone	.04		Tr	
10	10	)	50' long.	.07		Tr	
11	10	) Grab samples from skarn	Northwest section	.02		Tr	
13	10	) zones in contact with the	of pluton 7364.	.04		Tr	
16	20	) intrusive stock.	Samples are app.	.02		.035	
18	10	)	200 ft. apart.	.11		.02	
04	-	) "High grade" selection from	At cirque and head			.015	
05	-	) specimens.	of valley on north			.13	
			side of pluton 7654.				
12	20	) Mineralized quartz veins	Samples from areas	.012		Tr	
14	10	) infilling fractures in an	with apparent	.012		Tr	
27	50	) intrusive stock. Approximately	quartz veining.			Tr	
28	40	) one fracture per 5 feet.				Tr	
15	10	) Fractured and weakly altered	Northwest section			Tr	
17	10	) contact margin of intrusive	of pluton 7364.			Tr	
19	40	) stock; Grab samples from	Samples relate also			Tr	
20	40	) pluton where in contact with	to Nos. 11, 13, 16,			Tr	
21	10	) skarns and limey rocks.	18. Samples app.			Tr	
22	20	)	200' apart.			Tr	
23	20	)				Tr	
24	-	) "High grade" grab samples of	Shattered centre			Tr	
25	-	) quartz filled fractures in	core of pluton			Tr	
26	-	) intrusive rocks.	7364.			Tr	



ORIENTATION OF THE COMPASS NEEDLE. 1954



Surveyed, compiled, drawn and printed by the  
 ARMY SURVEY ESTABLISHMENT R.C.E., 1950-54.  
 Aerial photography by the R.C.A.F. 1949.

Universal Transverse Mercator Projection.

SEKWI MOUNTAINS  
 NORTHWEST TERRITORIES

### 3. GEOCHEMICAL SOIL AND STREAM SAMPLING:

Eighty soil samples were collected from a grid established over the Hess property. As only a few percent of the property area has any soil profile - and this in any case is poorly developed - an overall detailed soil sample program was not attempted. It was anticipated that the samples obtained would indicate an extension of those limey units and associated skarns which strike "into" a swampy valley. Samples were analysed for Cu., Mo. and W. Results do not delineate any anomalous zones.

Stream sediment sampling was undertaken in detail in two areas immediately adjacent to the Hess property, where reconnaissance stream sediment sampling the previous year had indicated anomalous values in molybdenum and tungsten.

The molybdenum anomaly to the west of the Mehitabel claims, was prospected but no sulphides or intrusive was located. Detailed stream sampling of this area indicates that all anomalous samples are from creeks draining a black shale horizon (Unit 5), which has a high background Mo. content throughout the MacMillan Pass area.

Detailed stream sampling was also undertaken of the drainage from the northern and eastern flanks of the southern pluton, to follow up anomalous tungsten values. A large source area was defined which in part is coincident with high molybdenum values. Mapping of the area indicated the nature of the mineralization, which though widespread, is very weak. Viz: scheelite and molybdenite occur with one inch wide quartz veins.

### 4. MAGNETOMETER SURVEY:

A magnetometer survey was run coincident with the geochemical soil sampling on the Hess property. Again it was impracticable to cover the whole claim block as the steep nature of the terrain made many stations inaccessible. Test lines run over known skarn zones were unable to define them, and as the outcrop exposure was excellent, further mag. work was abandoned.

### REGIONAL RECONNAISSANCE:

Fly camps were established in three other areas some 20 miles south of the Hess camp, to further investigate drainage anomalies located in 1970. The location of these targets is indicated on the accompanying sketches.

#### TARGET A: CHRISTIE PASS AREA

Resampling of the creeks did not show any high metal ions in the sediments and prospecting failed to locate any sulphide mineralization.

TARGET B: CHRISTIE MOUNTAIN AREA

Prospecting in this area revealed mineralization associated with intrusives identical to that formed in the north sections of the 7654 pluton. Occasional 1/2" - 1" wide quartz veins infill fractures in an unaltered porphyritic granitic stock. Scheelite is also occasionally associated with these quartz veins. Two samples of this material were assayed and returned trace values of tungsten. Streams were resampled and results show high to anomalous tungsten values for all samples which are almost certainly in response of very widespread subtle scheelite mineralization, as noted in the Hess area. Assays for copper and zinc returned background values only.

TARGET C: SELWYN MOUNTAIN AREA

Follow up work was undertaken on Target C because earlier regional sediment sampling had located several creeks carrying anomalous zinc values.

A small intrusive stock on the western margin of this area intrudes limey sediments, and an erratic diopside skarn is developed along that contact. This is pyrrhotized but otherwise appears barren. A part of the intrusive and related aplite dykes carry disseminated fine grained pyrite, as do the invaded sedimentary rocks. However, detailed prospecting failed to locate any source for the high zinc values. Outcrop exposure is roughly 75 percent, so no meaningful soil sampling can be undertaken. A block of 30 claims (Record #'s 84331-45) were staked in this vicinity by one G. Connor on 9 March 1971.

CONCLUSIONS AND RECOMMENDATIONS:

(1) 10 diopside skarn zones, formed at intrusive/limey sediment contacts, were located and sampled on the Hess property. Copper values in the order of 0.20 to 0.40% Cu., and tungsten values of Tr to .01%  $W_3O_8$  were obtained across widths of approximately 10 feet. The skarns are erratic lens shaped bodies, varying from 5 to 100 feet in length.

(2) Very weak scheelite and molybdenite mineralization occurs associated with quartz infilling fractures, within the intrusive stocks. This type of mineralization is probably characteristic of all the Cretaceous plutons of the Itsi/Keele Peak range. Selected samples of this type of mineralization generally contained only a trace  $W_3O_8$ , to a maximum of 0.13%  $W_3O_8$ . Values of .012%  $MoS_2$  accompany the high-grade tungsten.

(3) Additional mineralized skarns and extensions with depth of those known undoubtedly exist. However, none of those examined show persistent homogeneous copper mineralization, and tungsten is noticeably absent. Mineralization within the plutons does not appear to be of economic interest. Alteration of the intrusive rocks is minimal, and quartz veining and fracture density is for the most part very weak.

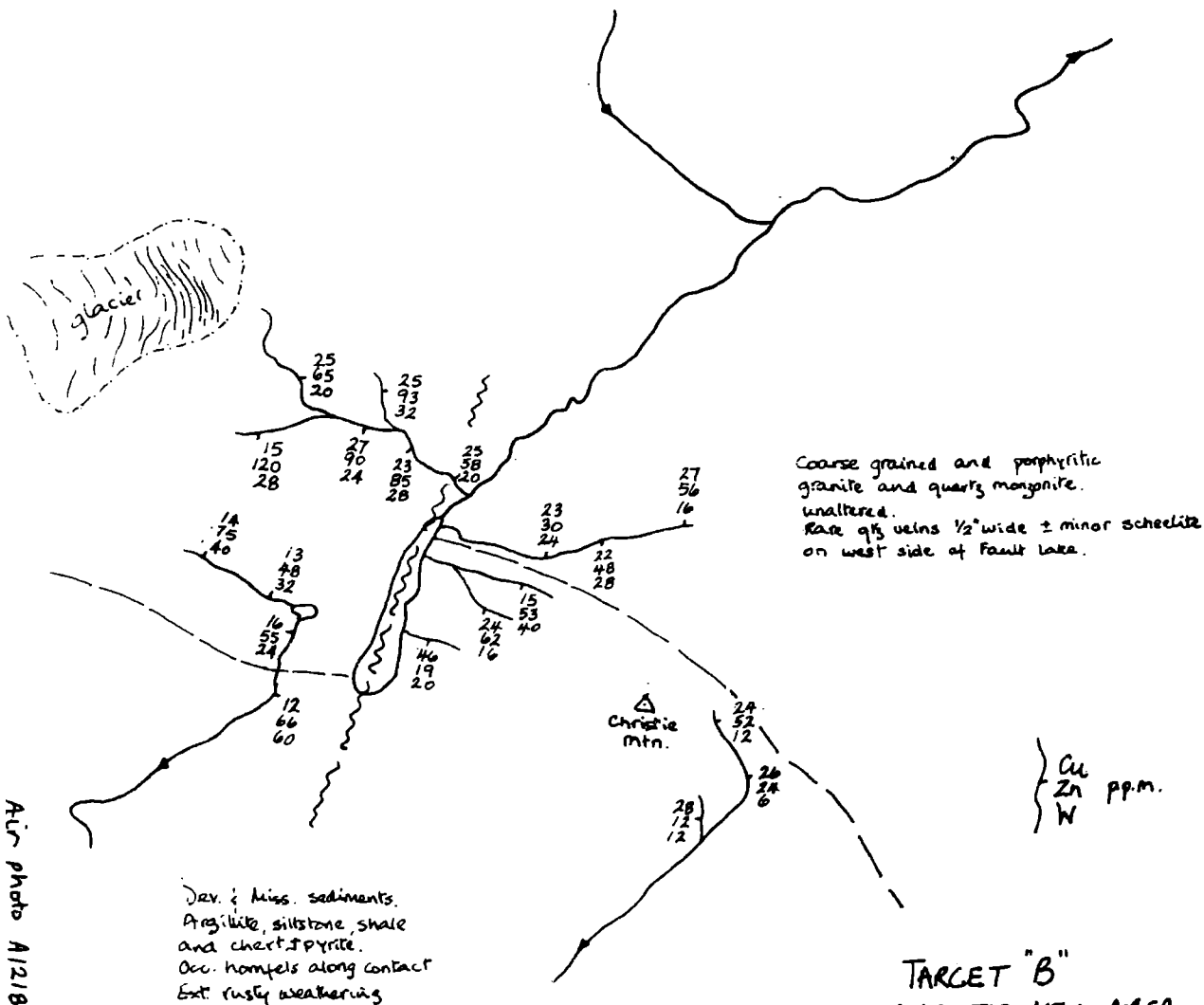
(4) In view of these facts a decision was taken in early August to terminate the Hess field program, and the Mehitabel claims have since lapsed.

Respectfully submitted

A handwritten signature in blue ink, appearing to read "A. G. ...".

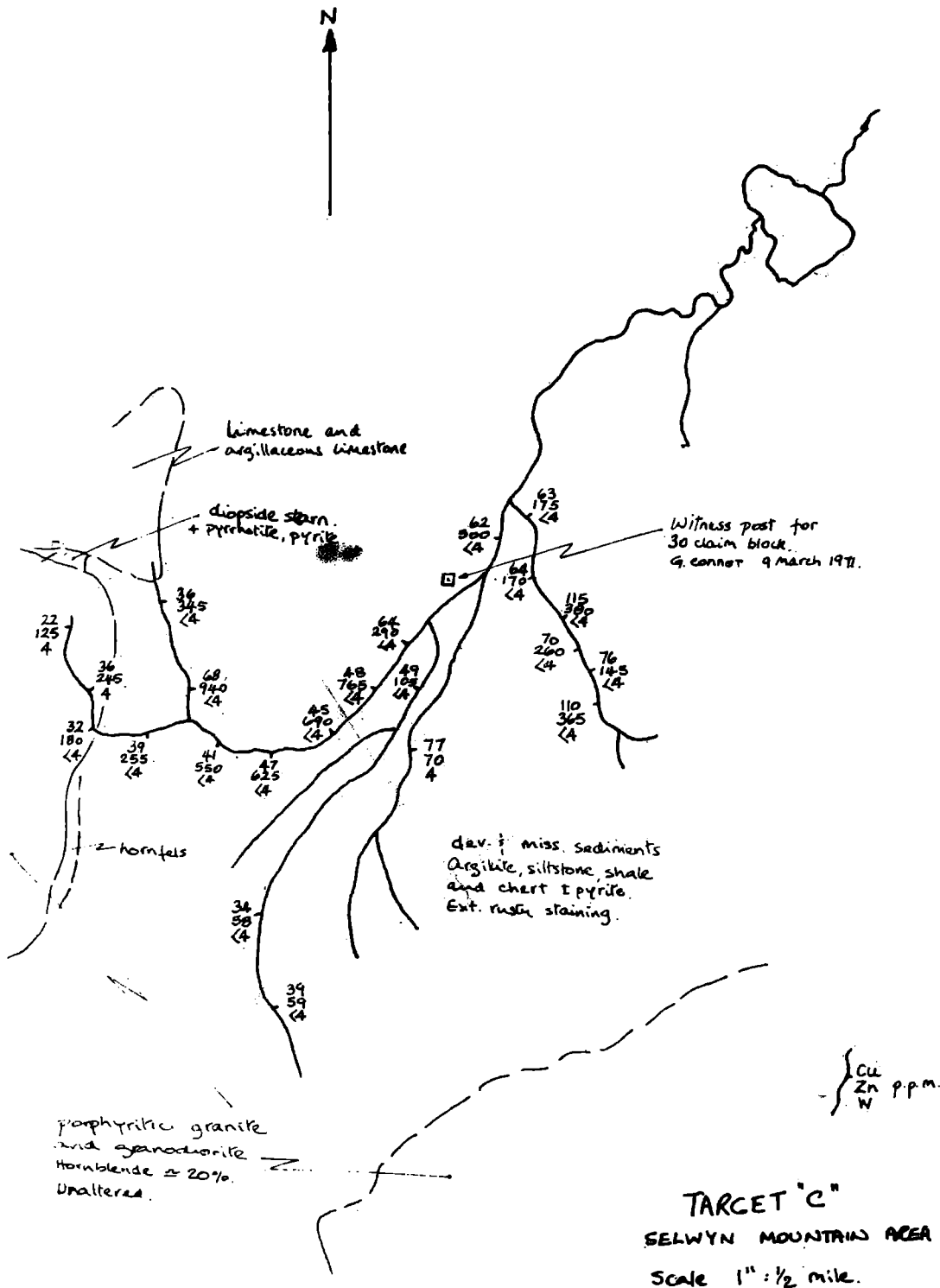
November 8, 1971

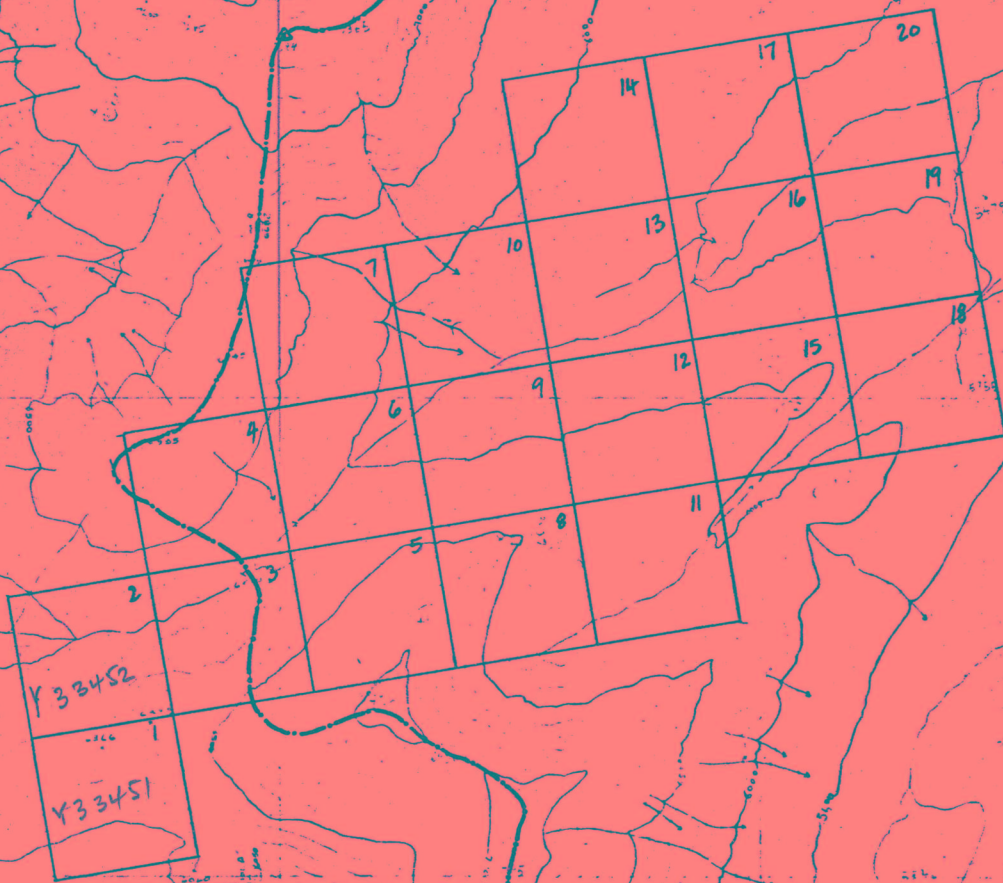
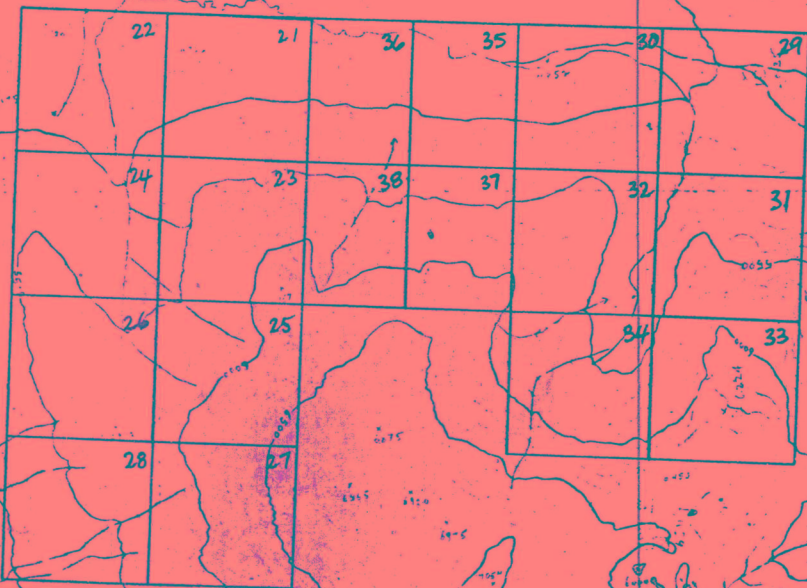
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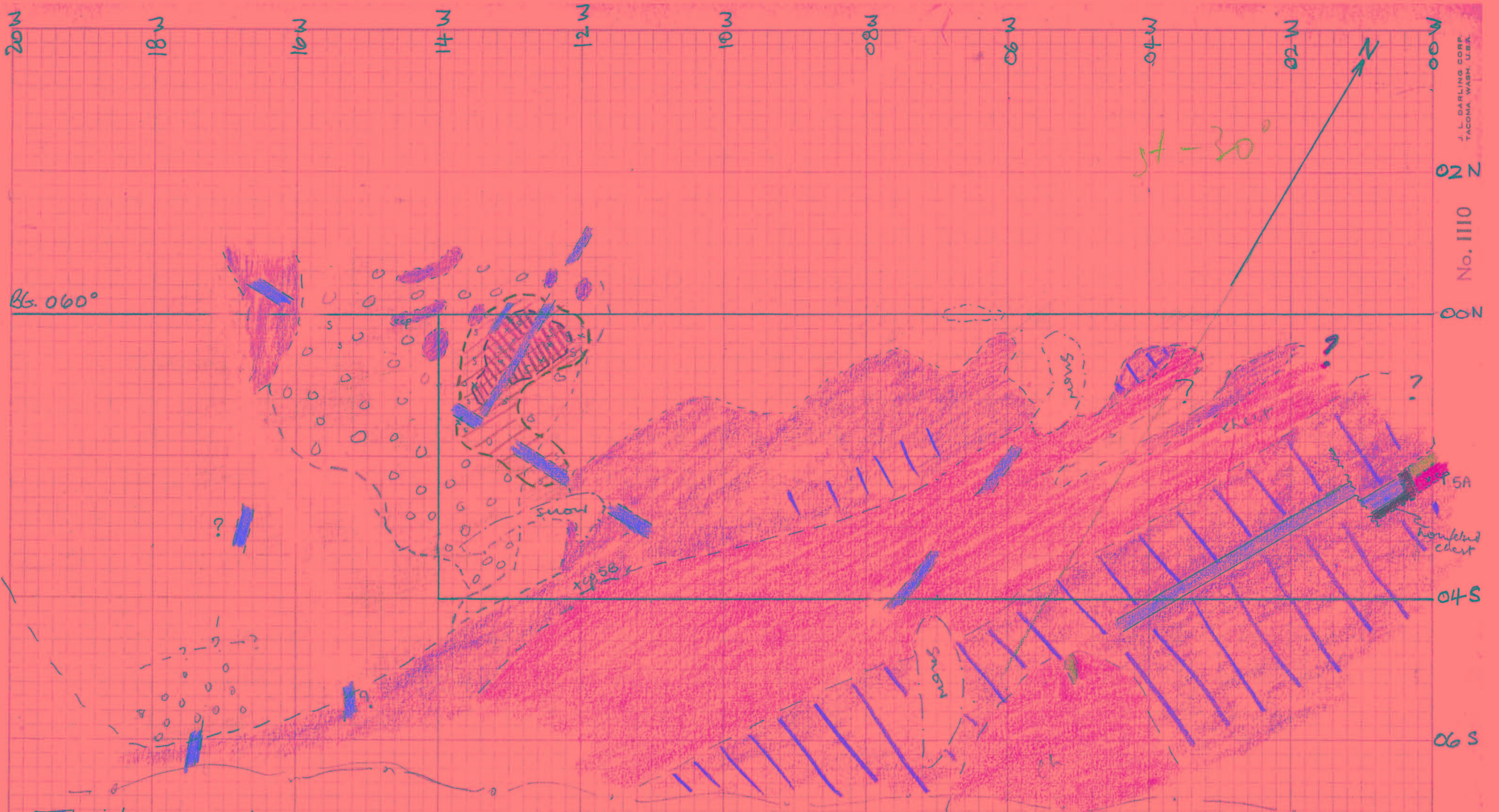










TARGET "B"  
CHRISTIE MTN. AREA  
Scale 1" = 1/2 mile.

Air photo A12188-229







-  Intrusive dyke
-  dark grey - pale grey - purple chert. + pyrite
-  dark grey - black massive and well jointed argillite. Heavy iron stain
-  Black shale, v. friable
-  blue grey fine grained limestone and limy argillite
-  "Swiss cheese", product of above
-  skarn zone. Grossular, wolastonite, idocrase etc.
-  laminated zone. Chalcopyrite, minor MoS.

MEHTABEL PROPERTY

N.W.I.

Airphoto A 12232-451

Scale 1" = 200'

105P-GS5

1 AUGUST 1971