| | | | |
|---|---|---|---|
| **MAP NO.:** 115 I 6, 7 | **ASSESSMENT REPORT** X<br>**PROSPECTUS**<br>**CONFIDENTIAL** X<br>**OPEN FILE** | **DOCUMENT NO:**<br>**MINING DISTRICT:**<br>**TYPE OF WORK:** | 092570<br>Whitehorse<br>DIAMOND DRILLING |

| | | | |
|---|---|---|---|
| **REPORT FILED UNDER:** | Dawson Range Joint Ventures | | |
| **DATE PERFORMED:** | 1965 - 1967 | **DATE FILED:** | 1971 |
| **LOCATION:** **LAT.:** | 62°19'N | **AREA:** | Stoddart Creek |
| **LONG.:** | 136°58'W | **VALUE $:** | |
| **CLAIM NAME & NO.:** | MARCH 1-78 | | |
| **WORK DONE BY:** | Dawson Range Joint Venture | | |
| **WORK DONE FOR:** | Dawson Range Joint Venture | | |

**DATE TO GOOD STANDING:**

| | |
|---|---|
| | |
| | |
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| | |
| | |
| | |

**REMARKS:** # 36 GRANITE MOUNTAIN
In 1971, previous drill holes were re-logged, a geochemical survey was carried out and four diamond holes were drilled totalling 299.6m. The drillholes intersected several zones of brecciation and fracturing but no significant mineralization.

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

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115 I 16

POST OFFICE BOX 1708
WHITEHORSE, Y.T.

# DAWSON RANGE JOINT VENTURE

# SUMMARY REPORT

## GRANITE MOUNTAIN PROPERTY,

## YUKON



M.P. Phillips, Senior Geologist
Archer, Cathro and Associates Ltd.

June 10, 1971

# INDEX



# MAPS

Figures

## SUMMARY AND RECOMMENDATIONS

The Granite Mountain, Yukon porphyry deposit owned by Canex Aerial Exploration Ltd., has been re-evaluated. Exploration consisted of relogging of Canex core, replotting of Canex magnetic data, bulldozer trenching and pitting to provide, (a) a better geochemical soil survey, and (b) a more detailed bedrock geology map. This work outlined an area southwest of the Canex drilling, in the valleys of March and Hart Creeks, which produces a magnetic low, had the strongest soil response for copper and molybdenum, and which contains patchy zones of phyllic and potassic alteration. Four diamond drill holes, aggregating 983 feet, found several zones of brecciation and strong fracturing but failed to intersect significant amounts of mineralization. If commercial grades are associated with this porphyry environment, it would have to occur at considerable depth. No furthur work is justified and it is recommended that the Canex option be terminated.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES LTD.

092570

M.P. Phillips
Senior Geologist

## INTRODUCTION

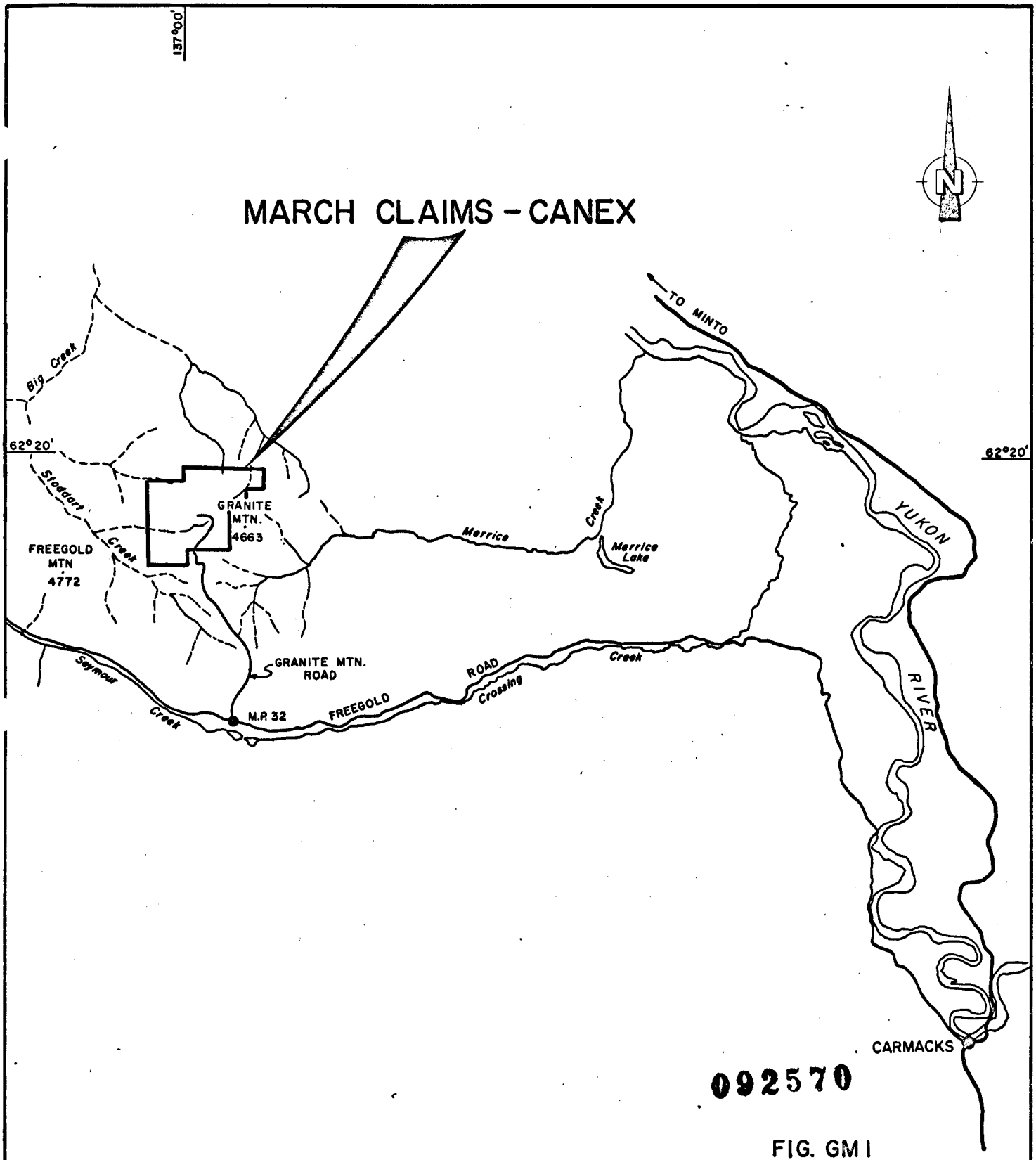
This porphyry prospect is owned by Canex Aerial Exploration Ltd., a subsidiary of Placer Development Ltd. Between 1965 and 1967, inclusive, Canex conducted preliminary surveys and drilled two rotary holes (900 feet) and six diamond drill holes (3000 feet). The property then lay idle until it was optioned in July 1970 by DRJV, based on the theory that the Canex work was not done in the best mineralized area. Work completed by DRJV consisted of 13.4 line miles of bulldozer trenching, bedrock and soil sampling, relogging of the Canex core, reinterpretation of the Canex magnetic survey, and four diamond drill holes (983 feet). In May, just prior to the drilling, half the DRJV interest in the property was assigned to Mitsubishi Metal Mining Co. Ltd.

All Canex data was made available to DRJV and extensive use was made of a Summary Report by D. Howard dated January, 1968.



## PROPERTY, LOCATION AND ACCESS
(Fig GM-1)

The property comprises 78 March claims which form a single, contiguous block. The claims are about 25 air miles northwest of Carmacks (NTS claim sheets 115-I-6 and 115-I-7; 62°19'N, 136°58'W), and are reached by an eleven mile bush road which leaves the Revenue-Mt. Freegold road at Mile 32.




092570

FIG. GM I

ARCHER, CATHRO & ASSOCIATES LTD.

*LOCATION PLAN*

GRANITE MOUNTAIN, YUKON

DAWSON RANGE JOINT VENTURE

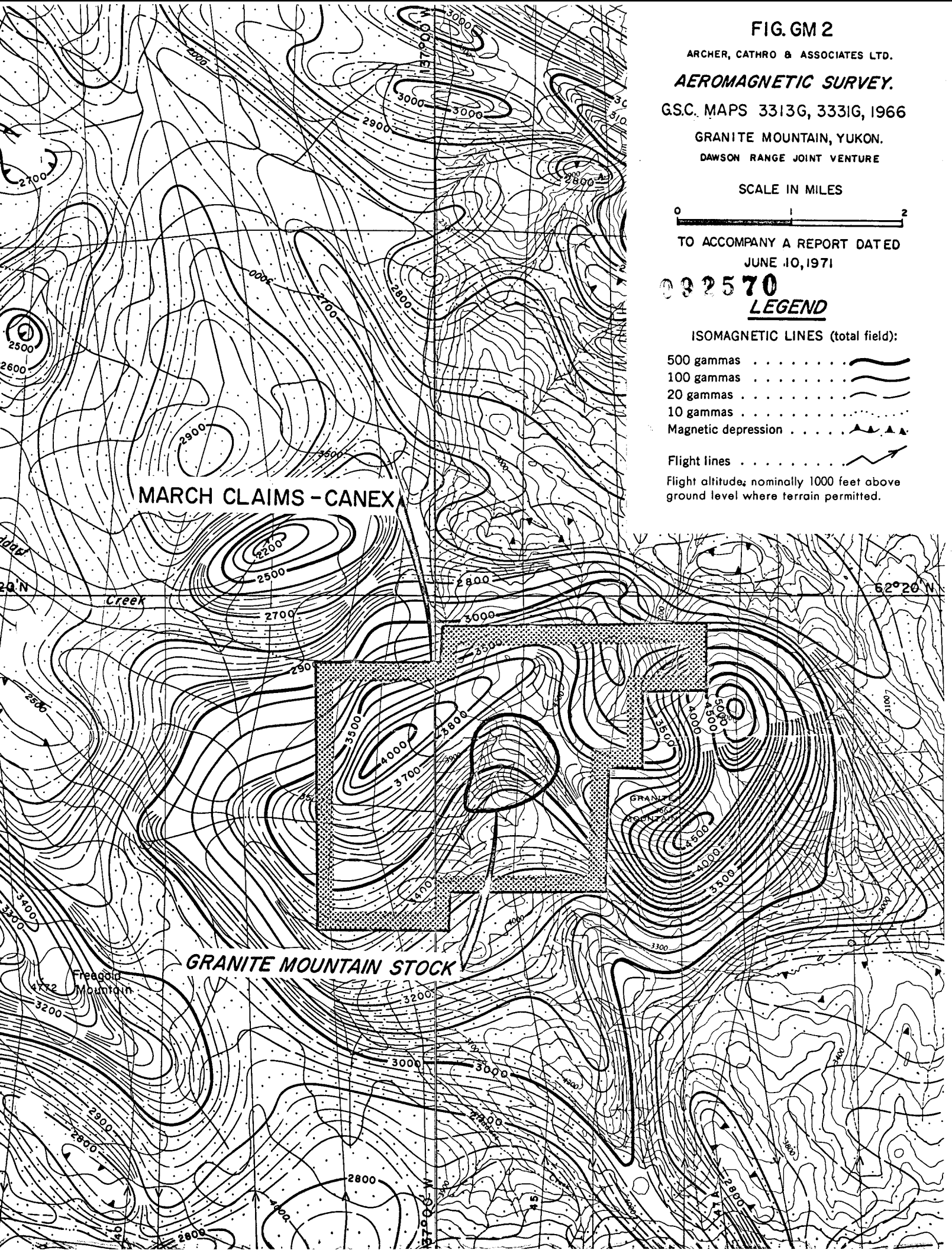
SCALE 1" = 250,000'

TO ACCOMPANY A REPORT DATED JUNE 10, 1971

## MAGNETIC SURVEYS
(Fig's GM-2,GM-3)

Aeromagnetic coverage for this area was published by the Geological Survey of Canada in 1966 (Maps 3313G and 3331G). These surveys were flown at a mean terrain clearance of about 1000 feet, with a flight line spacing of about 3500 feet, and are shown on a scale of 1 inch to 1 mile. Figure GM-2 (following page) shows a portion of the GSC survey in the vicinity of the property. Several prominent magnetic lineaments have been interpreted near the Granite Mountain Stock, which is situated between two strong magnetic highs. Most copper-molybdenum mineralization in the Dawson Range shows a similarly close spatial relationship to magnetic linears.

A ground magnetic survey by Canex with readings at 100 foot intervals on lines 500 feet apart, failed to show a clear pattern. To produce smoother trends and remove bias caused by the uneven distribution of readings, the Canex data was recalculated using a five-point moving average and by plotting readings every 500 feet along the lines (Fig GM-3). This crude filtering produced a definite arcuate low (below 600 gammas), which follows Hart Creek valley and curves northeastward inside the IP anomaly. The best Canex hole (DDH #1) was located near this low and assayed 0.23% Cu and 0.029% $MoS_2$ between 130 and 200 feet. Relogging of the Canex core showed an antipathetic relationship between magnetite and chalcopyrite.




# FIG. GM 2

ARCHER, CATHRO & ASSOCIATES LTD.

## AEROMAGNETIC SURVEY.

G.S.C. MAPS 3313G, 3331G, 1966

GRANITE MOUNTAIN, YUKON.

DAWSON RANGE JOINT VENTURE

SCALE IN MILES

0 1 2

TO ACCOMPANY A REPORT DATED JUNE 10, 1971

092570

## LEGEND

ISOMAGNETIC LINES (total field):

500 gammas . . . . . .

100 gammas . . . . . .

20 gammas . . . . . .

10 gammas . . . . . .

Magnetic depression . . . . .

Flight lines . . . . . .

Flight altitude nominally 1000 feet above ground level where terrain permitted.

Higher magnetic response to the northwest was caused by disseminated and veinlet magnetite, often associated with hornblende and biotite. DDH #7-10 showed that the area of low response was caused by the presence of phyllic altered dykes of chlorite granite in a biotite quartz monzonite host rock. Chloritic dikes, which appear to be very numerous in this area, and the presence of a northeast-southwest fault structure,combine to produce a magnetic low.

## INDUCED POLARIZATION SURVEY

The results of a McPhar-type IP survey conducted by Canex have been shown on Figures GM-2, GM-3 and GM-4. The anomaly within the plus 9% frequency effect (second separation) forms a distinct arc on the north and east side of the Granite Mountain Stock and the soil geochemical anomaly. RH #1 and DDH #4 showed that this represented a pyrite halo.

## GEOCHEMICAL SURVEYS
(Fig GM-4)

Canex conducted a conventional soil sample program which produced distinct anomalies in both copper and molybdenum, situated inside the pyrite halo. To the south and west, the geochem anomaly became erratic and poorly defined. This also coincided with the area in which the anomaly passed downhill from alpine tundra into a spruce forest. Soil conditions showed a corresponding change from a thin residual soil and rubbly bedrock with a broken brush cover, to a frozen blanket

of peat, black muck, volcanic ash, occasional thin lenses of glacial silt and till, and residual overburden with a cumulative thickness of 2 feet to 5 feet.

The entire Canex grid and a southwest extension was resampled by stripping off the vegetation and ash and digging pits into rubbly and frost-shattered bedrock with a bulldozer. The new sample pattern was at 400 foot intervals on lines 500 feet apart. Soil samples were colelcted from a B + C horizon near bedrock and were analyzed by Chemex Labs, North Vancouver, using a hot acid extraction.

The 1970 sampling showed a pronounced downhill extension of the Canex anomaly. The best copper response, about 2000 feet west of Canex DDH #1, has values exceeding 320 ppm copper over an area of approximately 800 feet by 1200 feet. This area shows a fair correlation with the magnetic low. Molybdenum response is generally below 5 ppm, but the highest assays, in the range 10-60 ppm, tend to occur near the south edge of the copper anomaly. Background outside the stock is in the range of 30 to 50 ppm copper and less than 1 ppm molybdenum.

## GEOLOGICAL MAPPING
(Fig's GM-5,GM-6)

Field experience elsewhere in Yukon (i.e. Keno Hill, Casino, Ketza River) has shown the tendency of coarse blocks of ridge rock to slide downhill on permafrost slopes and obscure the underlying bedrock. The bulldozer trenches served

a dual purpose in permitting detailed mapping of intrusive composition and alteration. From the results of this trench mapping and drill core relogging, the intrusive rocks have been subdivided as follows (units 1 to 9 comprise the Granite Mountain Stock):

(1) Quartz Porphyry (QZPPRY) - White to buff coloured, aphanitic with approximately 5%, 1-3 mm phenocrysts of doubly-terminated quartz crystals, quartz grains and minor pink potassium feldspar grains.

(2) Breccia (BRXX) - Composed of 60-90%, 1-1-1/2" rounded fragments of biotite granite, quartz porphyry and chlorite granite in a dark green aphanitic matrix.

(3) Aplite (APLT) - Pink coloured, fine grained quartz and potassium feldspar.

(4) Biotite Quartz Diorite (BIQZDR) - Grey, fine to medium grained, hiatial porphyritic dikes with a northeast trench, contains significant amounts of magnetite.

(5) Chlorite Granite (CLGRNT) - Varied from dark green, aphanitic rock at the contact to a grey-greey, fine to medium grained hiatial porphyritic texture with phenocrysts of chloritized biotite and feldspar. Phyllic alteration is normally intense with large amounts of chlorite, sericite and carbonate. Country rock is normally strongly altered and often brecciated for up to 3 ft from the contact.

(6) Chlorite Quartz Monzonite (CLQZMZ) - Light pink to grey, texture varied from fine grained, slightly porphyritic (DDH #5) to hiatial porphyritic 1-5 mm (occasionally up to 10 mm) phenocrysts in a very fine matrix (DDH #2). Phenocrysts consist of plagioclase, poikolitic potassium feldspars and minor quartz crystals. Biotite appears in two forms (1) the predominant form is fine shredded biotite (probably formed by biotitization of the hornblende) and (2) thin, subhedral book of primary biotite (which predominates in the upper sections of the diamond drill holes and gradually changes with depth to the fine shredded variety).

(7) Biotite Quartz Monzonite (BIQZMZ) - Colour varies from pale green to light grey to pink, depending upon the intensity of alteration and the amount of orthoclase. Texture varied from fine to medium grained, hypidiomorphic rock, through slightly porphyritic, to hiatial porphyritic rock with a very fine grained matrix containing from 1-5 mm diameter phenocrysts of feldspar. Poikolitic orthoclase phenocrysts to 10 mm in diameter are often present. Quartz phenocrysts, occasionally as doubly terminal crystals, are present in minor amounts. Biotite and chlorite vary in amounts from 5 to 20%, and average 5-7%. Chlorite is the most common mafic mineral and appears to have formed from the propylitic alteration of hornblende and biotite (as the deeper diamond drill holes show weakening alteration with increasing amounts of biotite and hornblende). Biotite occurs as thin (1-2 mm) subhedral books and fine shredded biotite which is thought to be derived from the biotitization of hornblende through late deuteric alteration of the crystallized intrusive. Subhedral book biotite predominates in the upper section of the diamond drill holes with shredded biotite predominant in the deeper holes where the alteration is weaker.

(8) Hornblende Quartz Monzonite (HBQZMZ) - Light grey, fine to medium grained with a few scattered pink poikolitic potassic feldspars up to 5 mm. Hornblende is present in amounts equal to or greater than biotite. This unit is thought to be the unaltered equivalent of biotite quartz monzonite. Weakly developed foliation is often present. D. Howard interpreted this gneissic foliation to represent the Yukon Group metasediments, but it probably represents foliation developed at the time of intrusion.

(9) Biotite Granite (BIGRNT) - Pale green to grey, fine to medium grained, even textured, with fine shredded biotite varying from 5 to 20% in the interstices of the feldspar and quartz crystals. Chloritization of the biotite decreases with depth.

(10) Hornblende Granite (HBGRNT) - This unit is the country rock for the Granite Mountain Stock. It is a grey to pink, equigranular, fine to medium grained rock characterized by up to 20% hornblende. Near the Stock, some biotite and occasional poikolitic potassium feldspar phenocrysts become common. Chloritization of the hornblende is common. On the strength of texture characteristics, the Biotite Granite may be the biotitized equivalent of this unit.

## ALTERATION FACIES

Alteration was plotted in computer card form (Chapman, Wood & Griswold Form 71-02). Several distinct facies were recognized but these do not form a distinctive pattern and for this reason, an alteration map has not been included in this report. In general, intense alteration is only found in the vicinity of late dikes and shear zones, and these areas were largely confined to the area near Hart Creek which contained the magnetic low and geochemical high. A description of the facies recognized follows:

Potassic - potassium feldspar as veinlets, associated with quartz veinlets or quartz biotite veinlets; biotite is present as veinlets.

Phyllic - strong coarse sericite, minor clay and minor quartz veining and carbonate.
- plagioclase is altered to sericite; potassium feldspar is stable.

Argillic - strong clay (kaolinite) and bleached biotite (hydromica). This facies is developed in the supergene zone in drill holes.
- strong clay (montmorillonite - pale green and swelling), minor carbonate (calcite), chlorite bleached.

Propylitic - abundant chlorite, carbonate, epidote and strong magnetite in two gradational subtypes:
(a) strong chlorite, strong carbonate, weak to moderate magnetite.
(b) weak-moderate chlorite, weak carbonate, strong magnetite and epidote grading into unaltered rock.



## MINERALIZATION

Pyrite occurs as dissemination and fracture fillings, and varies from 1/2 to 2%. Fractures are generally hair-like

cracks which do not cross the core width. DDH #4, on the west end of the IP anomaly, had the highest pyrite content (2%) in the form of 1/16" cross cutting fracture, with density of 1-2 per foot.

Chalcopyrite is associated with pyrite in hair-like cracks. Copper mineralization is strongest where the fracturing and brecciation is well developed as shown in the assay results of the following diamond drill holes:

| Hole No. | From | To | % Cu | % $MoS_2$ |
|---|---|---|---|---|
| 4 | 140 | 200 | .23 | .029 |
| 3 | 230 | 280 | .28 | .021 |

Disseminated chalcopyrite is present in the centers of biotite orchlorite books. Coarse chalcopyrite, with minor pyrite, is associated with potassium feldspar-biotite-quartz alteration envelopes which vary in width from 5 mm to 20 mm.

Molybdenite occurs (in order of decreasing importance) in potassic alteration envelopes, quartz veins and as disseminations.

Chalcocite occurs in the supergene zone as a thin film on chalcopyrite and pyrite, and never completely replaces the chalcopyrite.



Minor amounts of the oxide minerals malachite, azurite, tenorite-neotocite occur in fractures and disseminations.

Magnetite is generally present as discrete grains; occasionally in veinlets. There appears to be aninverse

relationship between chalcopyrite-pyrite and magnetite mineralization.

The cap, oxide and supergene zones are not well developed and contacts are very gradational. A generalized summary of the zones is as follows:

| Zone | Thickness in Ft Minimum-Maximum | Minerals in Approximate Order of Abundance |
|---|---|---|
| Cap | 0-240 | hematite(after magnetite)<br>magnetite<br>jarosite<br>goethite |
| Oxide | 0- 61 | magnetite<br>hematite(after magnetite)<br>malachite<br>azurite<br>tenorite & neotocite<br>pyrite<br>molybdenite |
| Supergene | 0-210 | pyrite<br>chalcocite<br>magnetite<br>hematite<br>chalcopyrite<br>molybdenite |
| Hypogene | | pyrite<br>magnetite<br>chalcopyrite<br>molybdenite |



## 1971 DRILLING
(Fig's GM-5,GM-6)

Four BQ size core holes were drilled near March and Hart Creeks, in an area which appeared to potentially contain a copper-molybdenum concentration on the basis of alteration, soil geochemistry and geophysical response. The footages of

of the holes, all of which were vertical, were:

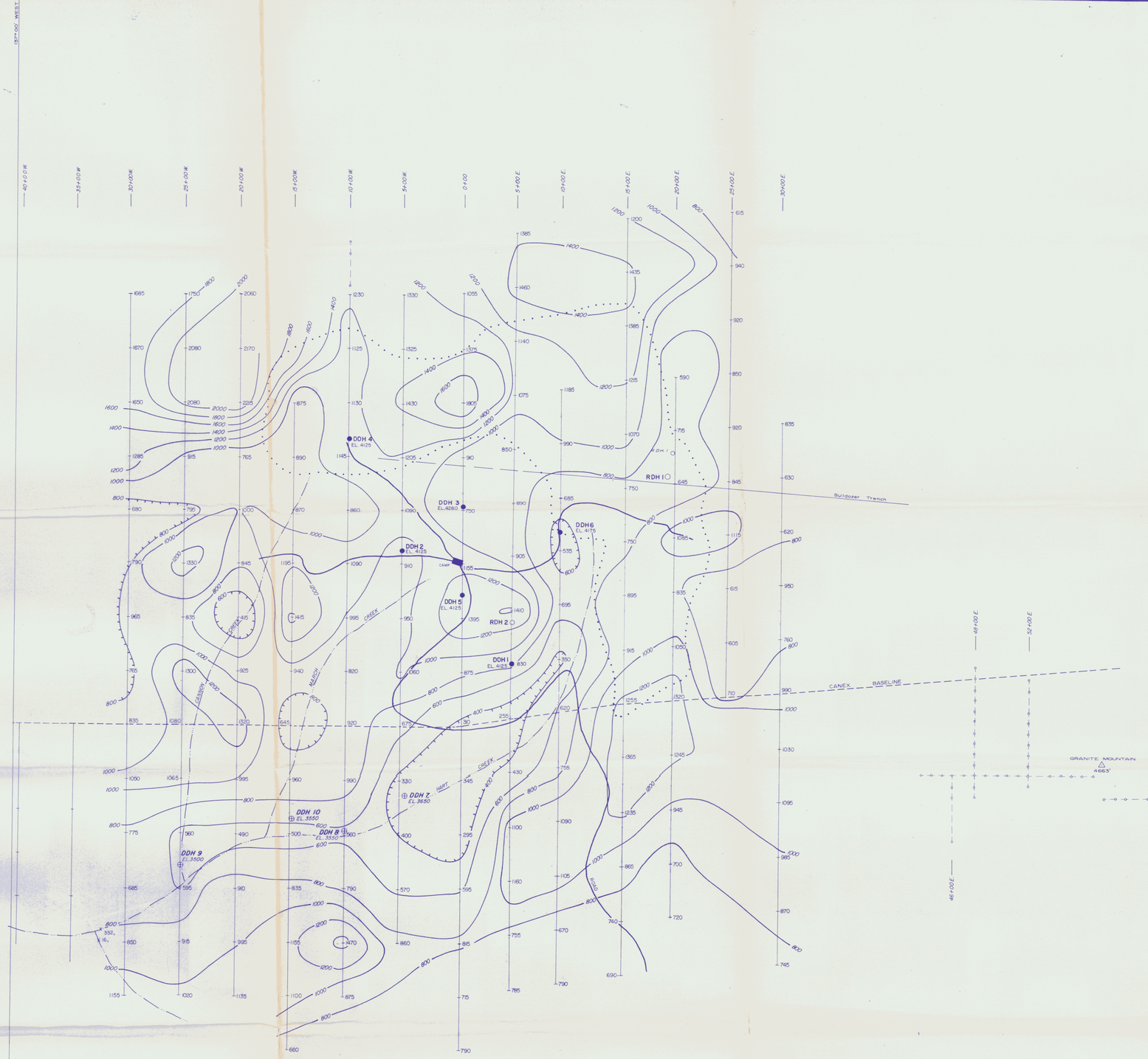
| Hole | Overburden(ft) | Depth(ft) |
|---|---|---|
| 7 | 9 | 253 |
| 8 | 12 | 246 |
| 9 | 36 | 240 |
| 10 | 15 | 244 |
| | | 983 |

This drilling was entirely within the hypogene zone and the detailed logging is shown in Fig GM-6. Some brecciation was intersected but this probably represents a structure rather than a pipe. No assays above 0.2% copper equivalent were obtained.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES LTD.

M.P. Phillips
Senior Geologist




LEGEND

- I.P. Anomaly – McPhar Method
  ≥ 9% Frequency Effect – Second Separation.
- Diamond Drill Holes (7-10) 1971
- Diamond Drill Holes (1-6) 1967
- Rotary Drill Holes (2) – 1966
- D.R.J.V. Bulldozer Trench 1970
- Canex Blazed Lines 1967
- Road

CONTOUR INTERVAL 200 ϒ

1967 Canex Ground Survey Data – Recalculated to produce a smoother pattern, using a moving average method, as follows:

LINE 30 W.

| | | |
|---|---|---|
| 2+00 N. | 720 | |
| 1+00 N. | 795 | |
| 0+00 | 825 | = 835 |
| 1+00 S. | 865 | |
| 2+00 S. | 965 | |
| | 4170 | |
| | 5 | |

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FIG. GM 3

ARCHER CATHRO & ASSOCIATES LTD.

DAWSON RANGE JOINT VENTURE

GRANITE MOUNTAIN

# MAGNETOMETER SURVEY

Feet 400 0 400 800 1200 Feet

SCALE IN FEET

TO ACCOMPANY A REPORT DATED JUNE 10, 1971

864

SOIL PROFILE - JUNE 24/70

| TYPE | DEPTH | $C_u$ | $M_o$ |
|---|---|---|---|
| MIXED BLACK SOIL AND ASH | 3" | 457 | 6 |
| BROWN "B" | 9" | 1090 | 8 |
| MIXED "B" & "C" | 12" | 970 | 12 |

37+00 WEST

40+00 W | 35+00 W | 30+00 W | 25+00 W | 20+00 W | 15+00 W | 10+00 W | 5+00 W | 0+00 | 5+00 E | 10+00 E | 15+00 E | 20+00 E | 25+00 E | 30+00 E

DDH 4 EL.4125
DDH 3 EL.4280
DDH 2 EL.4125
DDH 6 EL.4175
DDH 5 EL.4125
DDH 1 EL.4125
DDH 7 EL.3650
DDH 10 EL.3550
DDH 8 EL.3550
DDH 9 EL.3500
RDH 1
RDH 2
Bulldozer Trench
CANEX BASELINE
CAMP
ROAD
CREEK
GRANITE MOUNTAIN 4663'

37+00 WEST

40+00 W | 35+00 W | 30+00 W | 25+00 W | 20+00 W | 15+00 W | 10+00 W | 5+00 W | 0+00 | 5+00 E | 10+00 E | 15+00 E | 20+00 E | 25+00 E | 30+00 E

48+00 E | 52+00 E

49+00 N | 72+00 N

## LEGEND

- Elevation contours — Thommen Altimeter — base station Granite Mountain 4663ft.
- (200,24) Check soil samples by G. Dirom
- 26,– Assay for copper, molybdenum in ppm. – molybdenum > <1 ppm
- >320 copper.
- Road
- I.P. Anomaly – McPhar Method >= 9% Frequency Effect > Second Separation.
- Diamond Drill Holes (7-10) 1971
- Diamond Drill Holes (1-6) 1967
- Rotary Drill Holes (2) – 1966
- D.R.J.V. Bulldozer Trench 1970
- Canex Blazed Lines 1967
- 62 Soil Sample Location and assay in ppm. — D.R.J.V. 1970
- 46 Soil Sample Location and assay in ppm. — Canex pre 1968

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FIG. GM 4

ARCHER CATHRO & ASSOCIATES LTD.

DAWSON RANGE JOINT VENTURE

GRANITE MOUNTAIN

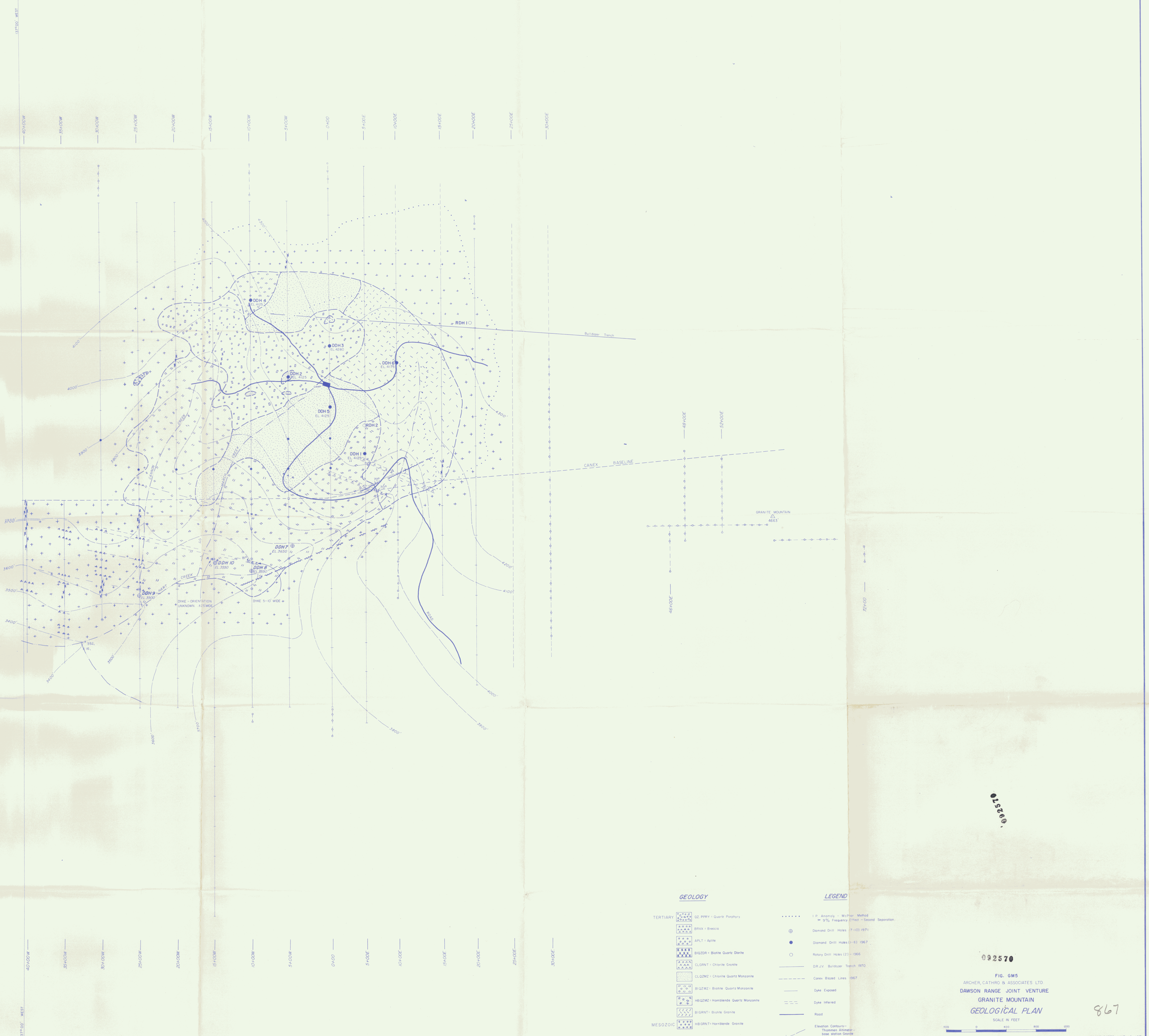
# COPPER & MOLYBDENUM SOIL SURVEY

865

Feet 400 0 400 800 1000 Feet

SCALE IN FEET

TO ACCOMPANY A REPORT DATED JUNE 10, 1971




## GEOLOGY

TERTIARY

- QZ. PPRY = Quartz Porphyry
- BRXX = Breccia
- APLT = Aplite
- BIQZDR = Biotite Quartz Diorite
- CLGRNT = Chlorite Granite
- CLQZMZ = Chlorite Quartz Monzonite
- BIQZMZ = Biotite Quartz Monzonite
- HBQZMZ = Hornblende Quartz Monzonite
- BIGRNT = Biotite Granite

MESOZOIC

- HBGRNT = Hornblende Granite

## LEGEND

- I.P. Anomaly - McPhar Method ≥ 9% Frequency Effect - Second Separation
- Diamond Drill Holes (7-10) 1971
- Diamond Drill Holes (1-6) 1967
- Rotary Drill Holes (2) - 1966
- D.R.J.V. Bulldozer Trench 1970
- Canex Blazed Lines 1967
- Dyke Exposed
- Dyke Inferred
- Road
- Elevation Contours - Thommen Altimeter - base station Granite Mountain 4663ft.

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FIG. GM5

ARCHER, CATHRO & ASSOCIATES LTD.

DAWSON RANGE JOINT VENTURE

GRANITE MOUNTAIN

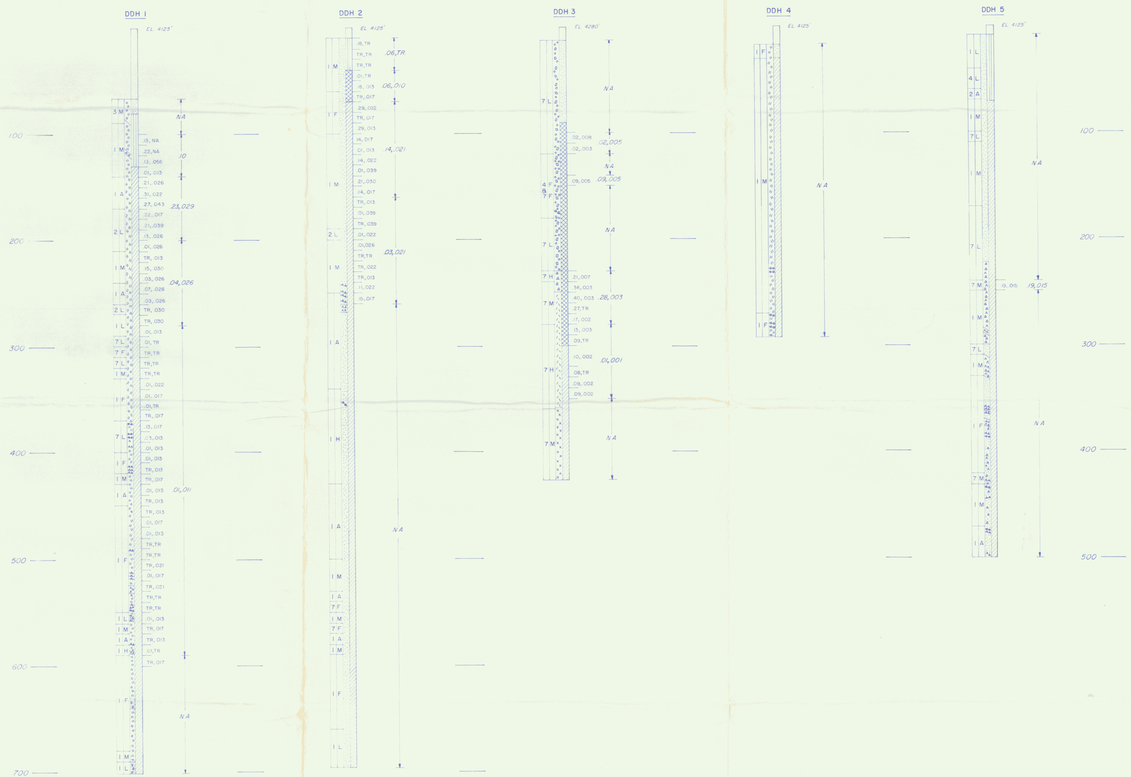
GEOLOGICAL PLAN

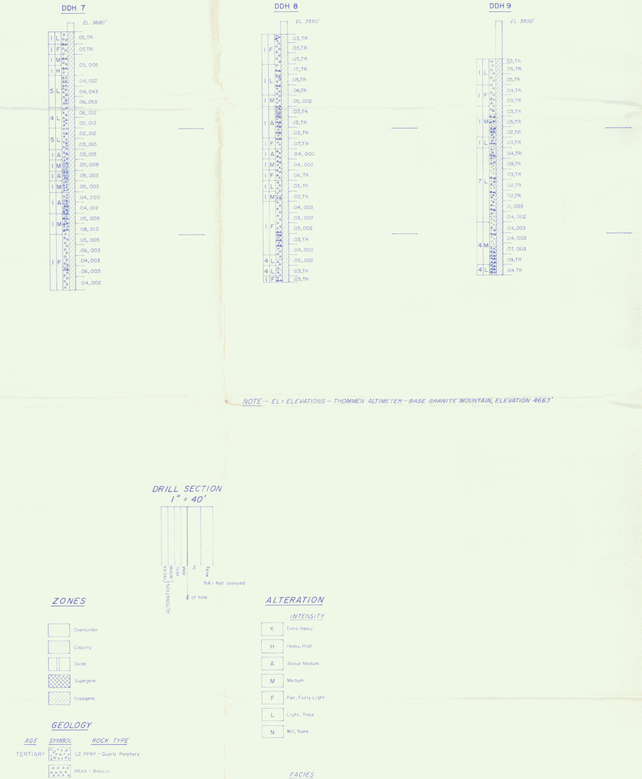
SCALE IN FEET

400 0 400 800 1200

TO ACCOMPANY A REPORT DATED JUNE 10, 1971

867




NOTE – EL = ELEVATIONS – THOMMEN ALTIMETER – BASE GRANITE MOUNTAIN, ELEVATION 4663'

DRILL SECTION
1" = 40'

Alteration | Intensity | Facies | Zones | Geology

NA = Not assayed

# ZONES

- Overburden
- Capping
- Oxide
- Supergene
- Hypogene

# GEOLOGY

| AGE | SYMBOL | ROCK TYPE |
|---|---|---|
| TERTIARY | QZ PPRY | Quartz Porphyry |
| | BRXX | Breccia |
| | APLT | Aplite |
| | BIQZDR | Biotite Quartz Diorite |
| | CLGRNT | Chloritic Granite |
| | CLQZMZ | Chloritic Quartz Monzonite |
| | BIQZMZ | Biotitic Quartz Monzonite |
| | HBQZMZ | Hornblende Quartz Monzonite |
| | BIGRNT | Biotitic Granite |
| MESOZOIC | HBGRNT | Hornblende Granite |

# ALTERATION

## INTENSITY

| | |
|---|---|
| X | Extra Heavy |
| H | Heavy, High |
| A | Above Medium |
| M | Medium |
| F | Few, Fairly Light |
| L | Light, Trace |
| N | Nil, None |

## FACIES

| | |
|---|---|
| 7 | POTASSIC |
| 5 | PHYLLIC 1 Potassium Feldspar Unstable |
| 4 | PHYLLIC 2 Potassium Feldspar Stable |
| 3 | ARGILLIC 1 Kaolinite |
| 2 | ARGILLIC 2 Montmorillonite |
| 1 | PROPYLITIC |

# LEGEND

DDH 1 – 6 CANEX 1967
DDH 7 – 10 GR-JV 1971
DIKE or SILL

092570

FIG. GM 6

ARCHER, CATHRO & ASSOCIATES LTD.
DAWSON RANGE JOINT VENTURE
GRANITE MOUNTAIN
DRILL HOLE SECTIONS 4166

SCALE IN FEET
40 0 40 80 120

TO ACCOMPANY A REPORT DATED JUNE 10, 1971