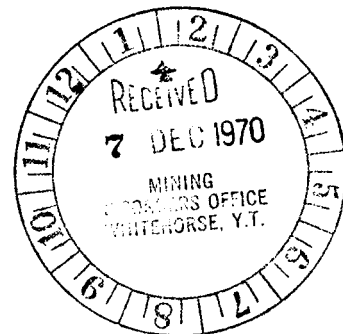
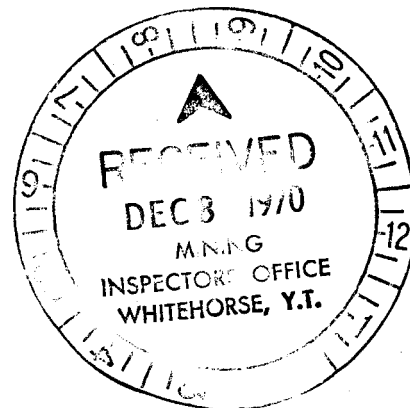


GEOLOGICAL, GEOCHEMICAL & GEOPHYSICAL

REPORT ON THE MAX GROUP



Rhyolite Creek Area  
Yukon Territory



Longitude: 138°34'W

Latitude : 61°51'N

N.T.S. 115-G-15 & 16

This report has been examined by the Geological Evaluation Unit and is recommended to the Commission to be considered as a preliminary report to the amount of \$31,122.33

*D.B. Craig*

Director of Geological Survey

Work done in the period of time specified in the permit work under  
June 1st - August 16, 1970 Section 27(1) of the Quartz Mining Act.

*[Signature]*  
Commissioner of Yukon Territory

By:

G.H.K. Pearse, P. Eng.  
D. Francis  
D. Brabac

ATLAS EXPLORATIONS LIMITED

November, 1970

*[Handwritten signature]*

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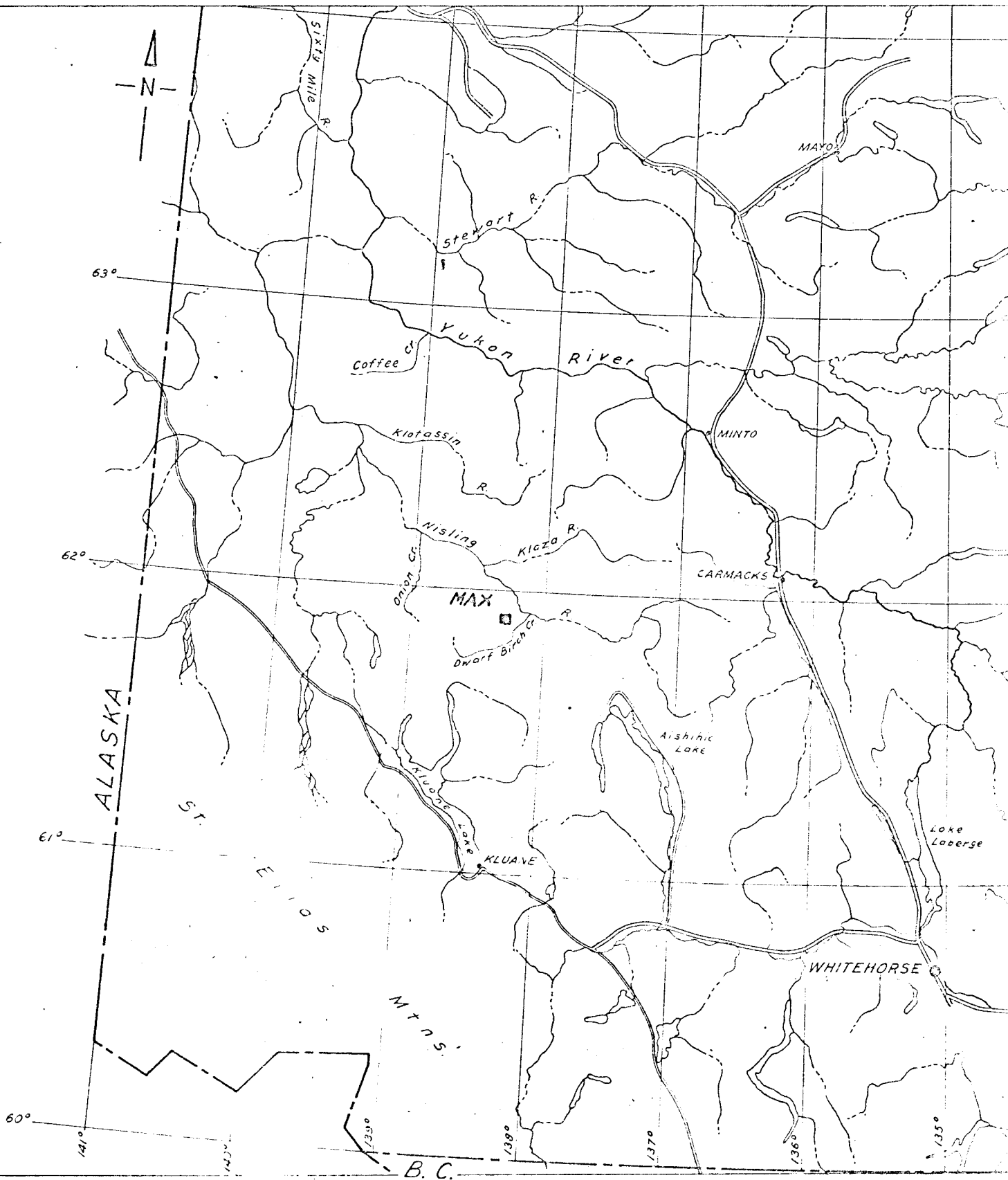
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LIST OF CLAIMS

<u>Claim Number</u>	<u>Grant Number</u>	<u>Recording Date</u>
MAX 1-14	Y52929-52942	June 24, 1970
15-22	Y53022-53029	June 29, 1970
23-28	Y52943-52948	June 24, 1970
29-42	Y53517-53524	July 13, 1970
57-80	Y53070-53093	June 29, 1970
85-136	Y53094-53145	June 29, 1970
137-144	Y53260-53267	July 3, 1970
145-160	Y53146-53161	June 29, 1970
200-234	Y53162-53196	June 29, 1970
246-253	Y53197-53204	June 29, 1970
254-261	Y53382-53389	July 6, 1970
262-269	Y53205-53212	June 29, 1970
270-277	Y53390-53397	July 6, 1970
300-307	Y54494-Y54501	Aug. 19, 1970



Scale: 1" = 3.2 miles

KEY MAP SHOWING  
 MAX CLAIM GROUP  
 NISLING RANGE YUKON TERRITORY

# ATLAS EXPLORATIONS LIMITED

330 MARINE BUILDING  
355 BURRARD STREET  
VANCOUVER 1, B.C.

## GEOLOGICAL, GEOCHEMICAL & GEOPHYSICAL REPORT ON MAX GROUP

### INTRODUCTION

The Max Claim Group is a copper-molybdenum prospect which was discovered in the course of regional exploration in the Nisling Range. Stream silt and soil sampling outlined a series of copper-molybdenum anomalies over an east-west belt some three miles long. 217 claims were staked to cover this favourable area.

Immediate follow-up work was undertaken. 800 ft. and 400 ft. spaced grid lines were layed out in selected areas and geologic mapping, soil sampling, prospecting, magnetometer and barometer topo surveys were run.

The claim group is separated into two zones, the eastern and and western Max claims by a north-south ridge dividing the headwaters of Rhyolite and Onion Creeks.

### LOCATION

The claim group is located in N.T.S. areas 115-G-15 and 16 centred approximately at  $61^{\circ}51'N$ ,  $138^{\circ}34'W$  in the Nisling Range. It lies between the headwaters of Rhyolite Creek and Onion Creek.

### ACCESS

At present, direct access to the property can be made only by helicopter. The Casino road which is passable only during winter, lies about five miles west of the claim block. The northwest flowing tributary of Onion Creek which drains the west end of the group is a broad valley suitable for tracked vehicle access from the road.

### PROPERTY AND OWNERSHIP

The property is wholly owned by Atlas Explorations Limited. It consists of 217 claims numbered as follows:

Max 1-42; 57-80; 85-160; 200-234; 246-277; 300-307

No claims were previously staked in the area.

### TOPOGRAPHY

The topography is mountainous with steep unglaciated valley slopes. Maximum relief is in the order of 2000 ft. Bedrock is poorly exposed and obscured by felsenmeer and moss which on north-facing slopes are permanently frozen. Trees are generally restricted to the valley bottoms.

### GENERAL GEOLOGY

The Max claims are underlain by rocks mapped by the G.S.C. as schistose and gneissic Yukon complex metasediments which contain many rhyolite dykes and sills (G.S.C. Unit 1a). In detail the geology is complex. The dominant rock types within the group are quartzose metasediments. The east end of the claims is underlain by andesite including flows and pyroclastic breccias. Similar rocks occur in places along a belt immediately above the north boundary of the claim group. Three phases of intrusive activity are distinguishable on the property which include two small plugs of coarse grained hornblende-biotite quartz monzonite and several small fine to medium

grained hornblende diorite to gabbro stocks and dykes, coarse grained alaskite and a variety of acid to intermediate late stage dykes.

### Yukon Group

The Max claims are underlain largely by Yukon Group rocks thought to be late Precambrian to Cambrian in age consisting of micaceous meta-quartzite, amphibolite gneiss and minor marble.

Due to a wide variation in initial clay content, the quartzite varies from a quartz biotite schist to a clear quartzite. In many areas the quartzite is black probably reflecting carbonaceous content, isolated seams of graphite occur in places. Much of the quartzite has been silicified. This is evidenced by visible silica halos around recognizable rounded grains. Barren bull quartz lenses are very common but these are parallel to the foliation and appear to be made up of silicified rounded quartz grains also. The most silicified quartzites are usually banded with alternating black and light brown to white 1 cm. layers. All varieties of quartzite are finely foliated. In locales where the quartzite is not carbonaceous, rusty cavities are often found lining the laminations. This is especially apparent at 30S on lines 80 and N.E. Grid #2 and might indicate some sort of leached capping.

The amphibolite gneiss is a very fine grained, green black rock; often strongly lineated. In coarser grained specimens it is composed of alternating 1 mm. lenses of quartz-feldspar grains and aligned actinolitic hornblende blades. The fine grained specimens are difficult to tell from the dirty quartzites, but are usually recognizable by a slight lineation. In places the amphibolite contains a few light pink garnet eyes. From exposures at the south end of line 48E, Grid #2, the amphibolite is thought to be younger than the quartzite because of its

superposition and local brecciation in the quartzite immediately below it. The eastern contact of this amphibolite contact, however, is gradational to quartz mica schist.

A few limy sections have been found on the claims. These vary from a slightly limy quartzite to a 50 ft. band of siliceous white marble.

### Volcanics

The far eastern portion of the Max claims is covered by dark green to purple andesite. They vary from porphyritic flows to pyroclastic breccias. The peak on the east side of the main junction of Rhyolite Creek is composed entirely of volcanic breccia except for the bottom several hundred feet. An area of bleached white breccia float was found on the south spur of this peak that yielded a "recce" soil sample running 60 ppm  $\text{MoS}_2$ .

The volcanics are thought to be early Mesozoic in age.

### Intrusive Activity

Later Mesozoic and early Tertiary time was marked by complex igneous activity which can be divided into three separate phases.

The first phase is represented by the intrusion of "Nisling Range Granodiorite". On the Max claims this is represented by two small, coarse grained, hornblende-biotite, quartz monzonite plugs. Except for weathering, both plugs are fresh in appearance. Widely scattered chalcopryrite and molybdenite have been found in both plugs, and quartz veins containing molybdenite and chalcopryrite occur in the western plug. Possibly included in this phase of activity are several small fine to medium grained hornblende diorite to gabbro stocks and dykes. These are found only on the eastern Max claims and are associated with a major

northwest trending fracture.

The second phase of intrusive activity involves the intrusion of a coarse grained, occasionally porphyritic alaskite with associated felsite dykes.

The characteristic feature of the alaskite is the presence of white to black quartz as equant crystals to rounded eyes. A large mass of this rock is found at the southern end of the eastern Max claims.

There are five varieties of acid dykes which are believed to be late stage or high level derivatives of the original alaskite magma. Age relations between these south to southwest trending dykes are uncertain.

- (1) The most common dyke variety is a pink, quartz eyed, K-feldspar, felsite porphyry. The morphology and colour of the quartz eyes are identical to those of the quartz eyes in the alaskite. It occurs not only as dykes but underlies the northern part of the eastern Max claims and a large region to the northwest. It has been suggested that this latter unit is made up of porphyritic rhyolite flows or a series of ignimbrite piles (Vim Lodder Amax). A more reasonable interpretation from detailed work is that the porphyry is a high level, fine grained equivalent of an underlying hypabyssal batholith of alaskite.
- (2) Similar to the above is a grey feldspar porphyry which usually lacks quartz eyes. At the borders of these dykes the rock is dioritic in composition. The interiors however are fairly acidic, probably monzonitic. There is field evidence to suggest that this variety of porphyry postdates #1.
- (3) The third variety is a pink white to buff felsite which usually occurs as very small dykes. It is often spherulitic and lacks phenocrysts. On the geologic map this

variety has been included with #1 due to the difficulty in detecting phenocrysts in altered equivalents of dyke variety #1 . This buff felsite, however, has been observed cross-cutting variety #2 dykes.

- (4) The fourth (not necessarily chronologically) variety of dyke is found only on the western Max claims. It is a large quartz eyed (to 1 cm.), K-feldspar green felsite porphyry of probable granitic composition.
- (5) The fifth variety is a grey white felsite which occurs only in small dykes and usually contains finely disseminated pyrrhotite. Host rocks of this dyke often contain disseminated pyrrhotite as well with traces of chalcopyrite.

The final phase of igneous activity is represented by the intrusion of basic dykes. The rock types vary from fine grained diorite to lamprophyre to green black trap.

#### STRUCTURE

The dominant structural feature in this region is a series of northwest trending faults, two of which pass through the Max claims. These have been traced for over 20 miles to the southeast and are interpreted as normal faults. The Max Group is situated at the point where these two faults are disrupted. The northern fault is bent westward within the Max claims and the southern fault appears to be broken up by cross faults (compilation map, Figure 3 ). The flexure and cross faulting are considered to have been of prime significance in localizing complex intrusive and attendant mineralization.

TABLE OF FORMATIONS

TERTIARY

- Aphanitic basic dykes, some lamprophyre dykes
- Fine grained diorite dykes

EARLY TERTIARY- LATE MESOZOIC

- Grey white felsite dykes - contains pyrrhotite
- Large quartz eye - feldspar green felsite porphyry; some propylitization, granite - quartz monzonite in composition.
- Grey feldspar felsite porphyry; quartz monzonite-quartz diorite in composition.
- Quartz eye, K-feldspar felsite porphyry; pink felsite sometimes spherulitic; medium grained alaskite (Nisling Range Alaskite)

MESOZOIC

- Fine grained diorite
- Coarse grained biotite and biotite hornblende quartz monzonite (Nisling Range Granodiorite?)

EARLY MESOZOIC

- Andesite volcanics often highly porphyritic; volcanic breccia.

EARLY PALEOZOIC

Yukon Group

- Very fine grained green-black amphibolite.
- Micaceous quartzite; quartz mica schist; white pure quartzite; black carbonaceous quartzite; marble bands; amphibolite not divided in recce work.

ECONOMIC GEOLOGY

Over 20 copper and/or molybdenum showings have been found on the eastern Max claims. All are of low and uneconomic grade.

Occurrences

1. Molybdenum

- in quartz veins and as a minor disseminate in the western quartz monzonite plug.
- as rosettes in quartz veins cutting quartzite (one such vein is about 20 ft. wide and carries an estimated 2% MoS<sub>2</sub>).

2. Copper

- associated with pyrite and pyrrhotite in rusty breccia pockets in quartzite.
- associated with pyrrhotite in white grey felsite dykes and their immediate host rock.
- in quartz veins and as a disseminate in the western quartz monzonite plug.

Several samples were assayed and the results are as follows:

1. Western quartz monzonite plug

An 80 ft. chip sample was taken of rusty biotite-quartz monzonite cut by numerous mineralized quartz veinlets. Visible chalcopyrite, molybdenite and pyrrhotite were noted.

<u>Sample</u>	<u>No.</u>	<u>oz/ton</u> <u>Au.</u>	<u>oz/ton</u> <u>Ag.</u>	<u>Cu.%</u>	<u>MoS<sub>2</sub> %</u>
0-20'	9711	Tr.	.04	.03	.025
20'-40'	Y1303	Tr.	.02	.04	.003
40'-60'	Y1305	Tr.	.06	.03	.005
60'-80'	Y1306	Tr.	.04	.03	.003

2. Yukon Group

The following grab samples of rusty and brecciated Yukon Group from various localities in the central part of the Max Group were assayed:

<u>Sample</u>	<u>No.</u>	oz/ton <u>Au.</u>	oz/ton <u>Ag.</u>	<u>Cu.%</u>	<u>Mo.%</u>
Grab	Y 1307	Tr.	Tr.	.31	.003
Grab	Y 1308	.005	.16	.20	.003
Grab	Y 1309	Tr.	.20	.27	.003

3. Miscellaneous

One mineralized felsite dyke rock, two manganiferous quartzite samples and two bleached volcanic breccia samples yielded the following metal values:

<u>Sample</u>	<u>No.</u>	<u>Au.</u>	<u>Ag.</u>	<u>Cu.</u>	<u>Pb.</u>	<u>Zn.</u>	<u>Mo.</u>
Grab White felsite	9717	Tr.	.18 oz.	.06%			
Grab Mang. quartzite	Y1301	N.	0.5ppm	45ppm	9ppm	29ppm	1ppm
Grab Mang. quartzite	Y1302	N.	0.5ppm	375ppm	5ppm	103ppm	-
Bleached volcanic breccia (rock chip)	MR10013			75ppm	5ppm	15ppm	7ppm
Bleached volcanic breccia (rock chip)	MR10014			160ppm	5ppm	49ppm	13ppm

Mineralization is of a complex porphyry type associated with small plugs, acid dyke swarms and quartz veining. Both intrusive and Yukon Group rocks are mineralized.

PROSPECTING

Robert Etzel, prospector, systematically prospected the areas on the claim group outside of the grids and located several mineral showings.

Showings within the gridded areas were located during the course of geologic mapping.

## GEOCHEMICAL SURVEY

### (a) Sampling Techniques

At the reconnaissance stage, stream sediment samples were taken above every confluence. During later follow-up work additional samples were taken in anomalous areas.

Soil samples were collected over two grids indicated on geochemical maps as Grid 1 and Grid 2. Grid 1 consisted of northerly striking lines of 800 ft. spacing with sample sites every 200 ft.

### (b) Analytical Methods

After drying, all silt and soil samples were sieved to -80 mesh and the fines retained for analysis. Rock samples were crushed in a jaw crusher and then pulverized in a grinder equipped with steel plates. The resulting powder was reduced by quartering to a 20-30 g. working sample.

0.5 g. of each sample was digested with aqua regia, diluted to 10 mls. and allowed to settle. The concentrations of Cu, Pb and Zn in the solutions were determined with a Perkin-Elmer 303 AA spectrophotometer. Molybdenum content was estimated colourimetrically by the thiocyanate-stannous chloride method using isopropyl ether for extraction of the coloured Mo complex. Interferences were often encountered in this test, particularly when analyzing soil, due to the organic matter extracted by the solvent along with molybdenum. A number of Mo determinations were carried out at the Whitehorse Assay Office with a Techtron AA 4 atomic absorption unit using acetylene-nitrous oxide flame.

Analytical reproducibility was controlled by including a soil sample, selected as standard, with every 20 samples analyzed. Average precision derived there from was  $\pm 30\%$  for Cu and Zn and  $\pm 50\%$  for Pb. Mo precision was not controlled due to the lack of a suitable standard.

(c) Presentation of Data

Analytical values were plotted on a scale of 400 ft. to the inch, separately for Grid 1 and Grid 2. Anomalous areas were outlined on separate maps by contouring or symbol representation.

Discussion and Interpretation of Results

Cumulative frequency plots for Cu show a mixing of two populations of data over the 50-80 ppm range (Figure 4). Therefore, 60 ppm Cu can be taken as anomaly threshold for soils on the claim group. The number of stream sediments collected was too small for statistical treatment, so it was assumed that threshold for this material equals the one established for soils. Thresholds for Pb, Zn and Mo were taken as 20 ppm, 100 ppm and 4 ppm respectively.

Grid 1 - Results of the soil survey over Grid 1 are shown in Figure 5, and anomalies of Cu, Mo and Zn are represented by contouring in Figures 6, 7 and 8 respectively. Cu values exceed threshold in several areas, the strongest anomaly over 6000 ft. long and reaching a peak of 640 ppm, occurs on the east side of the property. The position and orientation of this anomaly may be correlated with a quartz monzonite plug and adjoining felsite. The anomalous zone extends further northward conformable with the topography and reaches another peak value over a rusty silicified zone, again in the vicinity of the felsite contact. The northern part of the Cu anomaly

coincides with a Mo anomaly of over 3000 ft. in length. Its peak value of 120 ppm lies upslope from the Cu maximum (See Geochem Profile along line 80E, Fig. 9). Likely sources of Mo anomaly are quartz veins containing molybdenite found as float over the anomalous zone. Only minor chalcopyrite with pyrrhotite was found over or adjacent to the copper anomaly (See Geologic Map).

Sediments from a small creek draining the anomalous zone had Cu and Mo values equal to 2 and 8 times respective thresholds for these metals. This anomaly is not reflected in the west branch of Rhyolite Creek which may be a result of strong dilution of anomalous material by barren sediment, such as volcanic ash. No outstanding values were found in water, with the exception of a seepage which carried as much as 4928 ppb Zn. This value is difficult to account for except by contamination.

Soil samples taken from four test pits arranged in the form of a square measuring 5 x 5 ft. show that the short distance variations in Cu and Mo are significant. Careful analysis of these samples gave values ranging from 84 to 284 ppm Cu, and 11 to 25 ppm Mo.

Two other Cu-Mo anomalies occur in the central part of the grid. The smaller one, elongated in an east-west direction, is found over an area of rusty brecciated quartzite, and adjacent to a northwesterly fault. The larger anomaly is oriented in a northeastern direction and is partly coincident with a direction of drainage. Cu and Mo peaks of high intensity overlap in the middle of this zone but further to the east the increase in Cu level is not followed by Mo. The centre of the anomaly is underlain by a quartz monzonite plug. Numerous mineralized showings of Cu-Mo were observed in the area (See Geologic Map).

The pattern of anomalies on Grid 1 may be a result of igneous activity along two major structures oriented in NW-SE and NE-SW directions.

In addition to several isolated highs, Pb-Zn values are anomalous over the southeastern part of the grid, apparently following a northeasterly trend. Maximum values within this anomaly are 130 ppm Pb and 720 ppm Zn. Cu in the area is only slightly over threshold. The Pb-Zn anomaly is adjacent to and partly overlapped on its east side by a Mo anomaly.

Grid 2 - Most stream sediments on Grid 2 are anomalous in Cu. The highest values, reaching 2-3 times threshold, occur in drainages south of base line (See the Drainage Survey Map). Cu and Pb-Zn highs mostly coincide with some Zn values reaching in excess of 4 times threshold. Mo is slightly anomalous only near the south corner of the grid.

Cu, Pb and Zn anomalies in soils are largely coincident. Cu anomalies occur mostly southeast of line 32E and seldom exceed 3 times threshold.

Pb and Zn anomalies are of high intensity (over 5 times their respective thresholds) and cover large areas over the southeast half of the grid (See the Contour Maps). Zn gives the high contrast anomalies elongated along drainage, probably as a result of pronounced saline dispersion. This pattern is not expressed as well for Pb. The highest Pb-Zn anomaly occurs over the northern half of line 96E (See the Zn Contour Map).

Geochemical soil anomalies on Grid 2 are open to the southeast.

Rare chalcopyrite and pyrrhotite occurrences were observed in schists, mostly in amphibolite (See Geologic Map) but no Pb-Zn minerals were found. Anomalies in the southeast corner

of the grid could be related to porphyry dikes, but in other areas this relationship is not expressed, for example the ring dike on line 72E does not have any outstanding geochemical expression.

Geochemical dispersion patterns on Grid 1 and Grid 2 are quite different. Grid 1 is characterized by essentially Cu-Mo anomalies, whereas anomalies on Grid 2 are multi-metal and particularly contrasting in Pb and Zn. Anomalies on Grid 2 are much better expressed in drainage than those on Grid 1. It would appear that the mineralization on Grid 1 is more localized, whereas that on Grid 2 may be of a more pervasive nature.

Molybdenum anomalies on Grid 1 can be explained by quartz-molybdenite veins and minor veinlets and disseminate in a quartz monzonite plug. No adequate source for Cu anomalies was found. Similarly, no Pb, Zn or Mo mineralization was observed on Grid 2 to account for anomalies present.

## GEOPHYSICAL SURVEY

Detailed magnetometer profiles were run over a selected area on the eastern part of Grid #1 between 30E and 96E to obtain the magnetic pattern over high copper-molybdenum soil anomalies. The instrument used was a Sharpe's MF-1. Stations were at 100 ft. intervals along N-S lines spaced 400 ft. apart. Barometer readings were taken concurrently, corrected with a variation curve obtained from a base barometer for production of a detailed topographic base map.

The general magnetic relief is subdued averaging about 4000  $\gamma$  with only local areas of high relief. Areas of magnetic disturbance are correlatable with three parameters: geology, geochemistry (mineralization) and structure.

### Geology and Structure

The magnetic features in the southern part of the grid show a high low pair demarking the contact between quartzite (high) and quartz porphyry (low). Elsewhere, in general, the quartz porphyry has a low magnetic susceptibility and is flanked by moderate to high magnetic values over Yukon Group rocks.

A northwest trending fault passes through the magnetically flat part of the grid and is expressed with prominence at the northwest corner of the grid where it separates a high low pair.

The eastern boundary of the northern part of the grid is of higher magnetic relief (5000+ $\gamma$ ). This marks the western extremity of a porphyritic andesite body.

### Geochemistry and Mineralization

Contacts between quartz porphyry and Yukon Group are commonly mineralized. The contact area in the south part of the grid mentioned above is enclosed by a 10 ppm Mo contour.

The magnetically disturbed area to the northwest which reflects contacts and a fault also coincides in part with a Cu-Mo and a Mo anomaly. These are undoubtedly inter-related.

The complex pattern of high magnetic relief in the northern part of the grid coincides with a large high Cu-Mo anomaly. Visible molybdenite in quartz was observed in this locality.

A definite relationship between geochemistry (mineralization) and magnetic susceptibility can be seen. The large north-south copper anomaly (north, central and southeastern part of the grid) enclosed by the 100 ppm contour lies over the area of moderate magnetic susceptibility and is flanked on the south, east and north by well defined moderate lows. Areas of Mo anomalies are reflected as lows. High Cu-Mo anomalies give a complex pattern of high-low magnetic anomalies. This can be explained by the association of pyrrhotite with chalcopyrite wherever the latter was observed.

The magnetometer appears to be a useful tool for outlining mineralization on the Max Group. It is recommended that extensive magnetic coverage be given to other areas of geochemical anomalies for the purpose of defining drill targets.

## SUMMARY

The area covered by the Max Group was chosen as first priority from the results of a helicopter geology and geochemistry recce conducted in early May, 1970. The area was followed up immediately and staking and property work was initiated at the beginning of June.

The claim group is underlain largely by Yukon Group quartzose metasediments which have been intensively faulted, fractured and cut by a variety of dykes and small plugs of acid intrusive rocks. Quartz veining and pervasive silicification accompanied the intrusion and mineralization.

Two large areas of copper-molybdenum anomalies occur on the eastern Max claims. A quartz vein, of widths up to 20 ft. and carrying an estimated 2% molybdenite underlies part of the Mo anomaly, minor chalcopyrite with pyrrhotite occurs in the enclosing quartzite. The second anomaly is centred over a small quartz-monzonite plug and attendant dyke swarm which bears veinlets and minor disseminated molybdenite and chalcopyrite. Much of the geology is marked by felsenmeer from upslope and large areas of the geochemical anomalies remain unexplained.

Multimetallic anomalies notably deficient in molybdenum occur over the western Max claims. These may reflect lead-zinc veins or possibly disseminated mineralization. No source for these anomalies was recognized in the course of property work.

A magnetometer survey on a detailed grid over the easternmost copper-molybdenum anomalies showed a strong correlation between high magnetic relief and mineralization. Copper mineralization tends to be reflected as highs and molybdenum as lows.

### CONCLUSIONS

1. Geochemical anomalies on Grid #1 appear to be caused by minor disseminated mineralization and veinlets in intrusive and Yukon Group host rocks and in quartz veins. Much of the anomalous areas has yet to be accounted for geologically, due, in part, to possible masking of the geology by felsenmeer derived from downhill creep, a condition which was reported at Casino.
2. Anomalies on Grid #2 are copper, lead and zinc highs which conform to the normal peripheral zoning around copper-molybdenum mineralization. No source localities for these metals were observed in the field.
3. Good correlation between magnetic response and geology, structure and mineralization was found in the selected area covered.
4. A favourable geologic environment of faulting, fracturing, acid intrusive activity, pervasive silicification and related volcanics and breccia bodies, indicates considerable potential for the Max property.

### RECOMMENDATIONS

1. Grid #1 should be resurveyed and properly picketed. Appropriate extensions should be made where anomalies are open at the boundaries of the grid. The grid should be soil sampled at 200 ft. intervals.
2. A magnetometer survey should be run over all geochemically anomalous areas. Stations should be at 100 ft. intervals and lines at 400 ft. spacing.

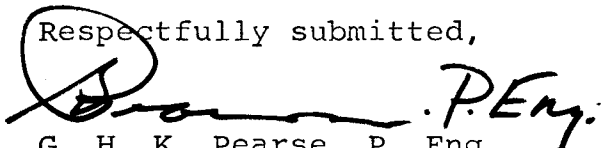
3. I.P. surveys should be run over all magnetically anomalous areas of interest in order to select priority targets for drilling.
4. Trenching of the anomalous areas chosen by the above methods should be done to expose in situ bedrock and systematic sampling carried out along with detailed geologic mapping.
5. Diamond drilling of one or more holes in each target area should be done with possible rotary fill in and extension drilling following where warranted. Because of the need for rapid results during the 1970 field season the grid was largely uncontrolled. For this reason accurate tentative drill hole locations cannot be laid out in a large part of the area. The grid surveyed for the magnetometer is accurately located however, and two tentative holes contingent on results of I.P. and trenching are recommended. The locations are:

	<u>Hole #1</u>	<u>Hole #2</u>
Location	75+00E 39+50N	66+00E 29+00N
Inclination	30°	30°
Direction	150°	105°
Depth	600 ft.	600 ft.

6. Prospecting in the Grid #2 area should be done and rock chips of various rock types taken in the anomalous areas to determine the source of copper-lead-zinc anomalies.

November 1970

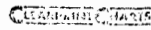


Respectfully submitted,  
 P. Eng.  
G. H. K. Pearce, P. Eng.

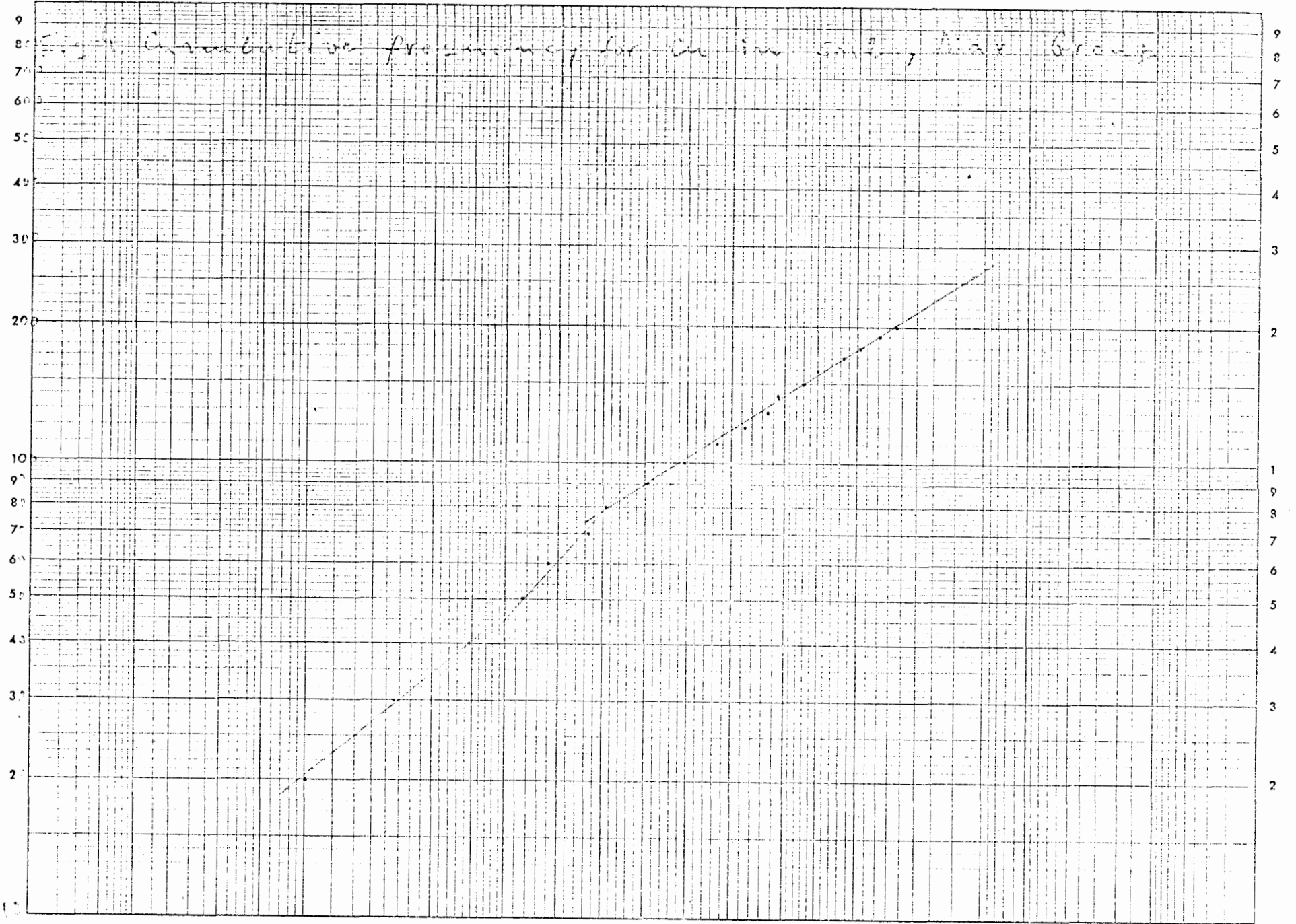
BUDGET ESTIMATE

<u>Grid Lines</u>	- 20 miles @ \$75/mile.	\$ 1,500
<u>Geophysics</u>		
Magnetometer	- 30 miles @ \$50/mile	1,500
I.P.	- 15 miles @ \$350/mile	5,250
<u>Geochemistry</u>	- 1500 samples @ \$7/sample	10,500
<u>Geology</u>	- 100 days @ \$100/day	10,000
<u>Bulldozer Trenching</u>	- 20,000 yds. @ \$5/yd.	100,000
<u>Diamond Drilling</u>	- 6 x 600' @ \$18/ft.	<u>64,800</u>
TOTAL		<u>\$193,550</u>

Estimates are based on overall unit costs



99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01

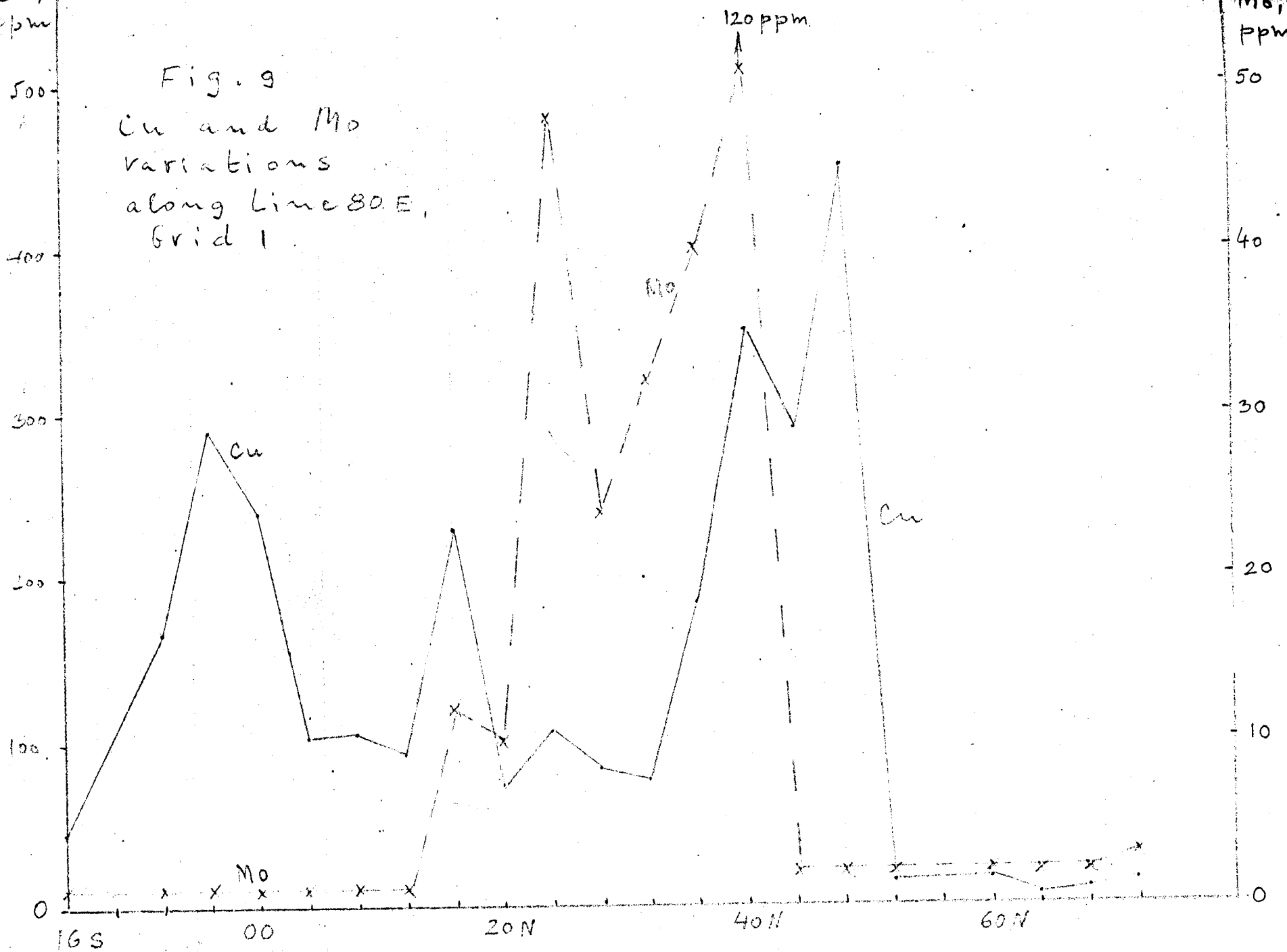


0.01 0.05 0.1 0.2 0.5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.5 99.8 99.9 99.99

Cu,  
fpm

Mo,  
ppm

Fig. 9  
Cu and Mo  
variations  
along line 80.E,  
Grid 1.



SUMMARY OF COSTS  
MAX CLAIM GROUP

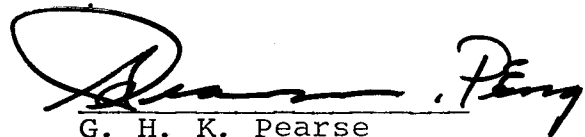
	<u>SCHED.</u> <u>No.</u>	<u>PROSPECTING</u>	<u>GEOLOGY</u>	<u>LINECUTTING</u>	<u>GEOPHYSICS</u>	<u>GEOCHEM</u>	<u>TOTAL</u>
Wages:							
General	"E"	279.55	2,799.55	1,529.21	513.56	1,791.86	6,913.73
Report Writing	"G"		213.34		53.33	183.99	450.66
Helicopter	"D"	347.24	3,477.45	1,899.50	637.91	2,225.74	8,587.84
Fixed-Wing	"D"	104.04	1,041.86	569.10	191.12	666.84	2,572.96
Assay	"C"					3,960.35	3,960.35
Supplies & Contract	"F" "D"	14.47	144.89	79.14	26.58	92.74	357.82
Camp support	"B"	164.45	1,646.87	899.58	302.11	1,054.09	4,067.10
Expediting	"A"	<u>55.91</u>	<u>559.92</u>	<u>305.84</u>	<u>102.71</u>	<u>358.37</u>	<u>1,382.75</u>
		\$965.66	\$9,883.88	\$5,282.37	\$1,827.32	\$10,333.98	\$28,293.21
Head Office Administration 10%							<u>2,829.32</u>
							<u>\$31,122.53</u>

# ATLAS EXPLORATIONS LIMITED

330 MARINE BUILDING  
355 BURRARD STREET  
VANCOUVER 1, B.C.

## AFFIDAVIT SUPPORTING SUMMARY OF COSTS

I, G. H. K. PEARSE, Geologist, Atlas Explorations Limited, of Vancouver, British Columbia, do hereby state that, to the best of my knowledge and belief, the statement of costs presented in this report -(Geological, Geo-chemical and Geophysical Report on Max Group), is both correct and true.

  
G. H. K. Pearse

Nov 30/70  
Date

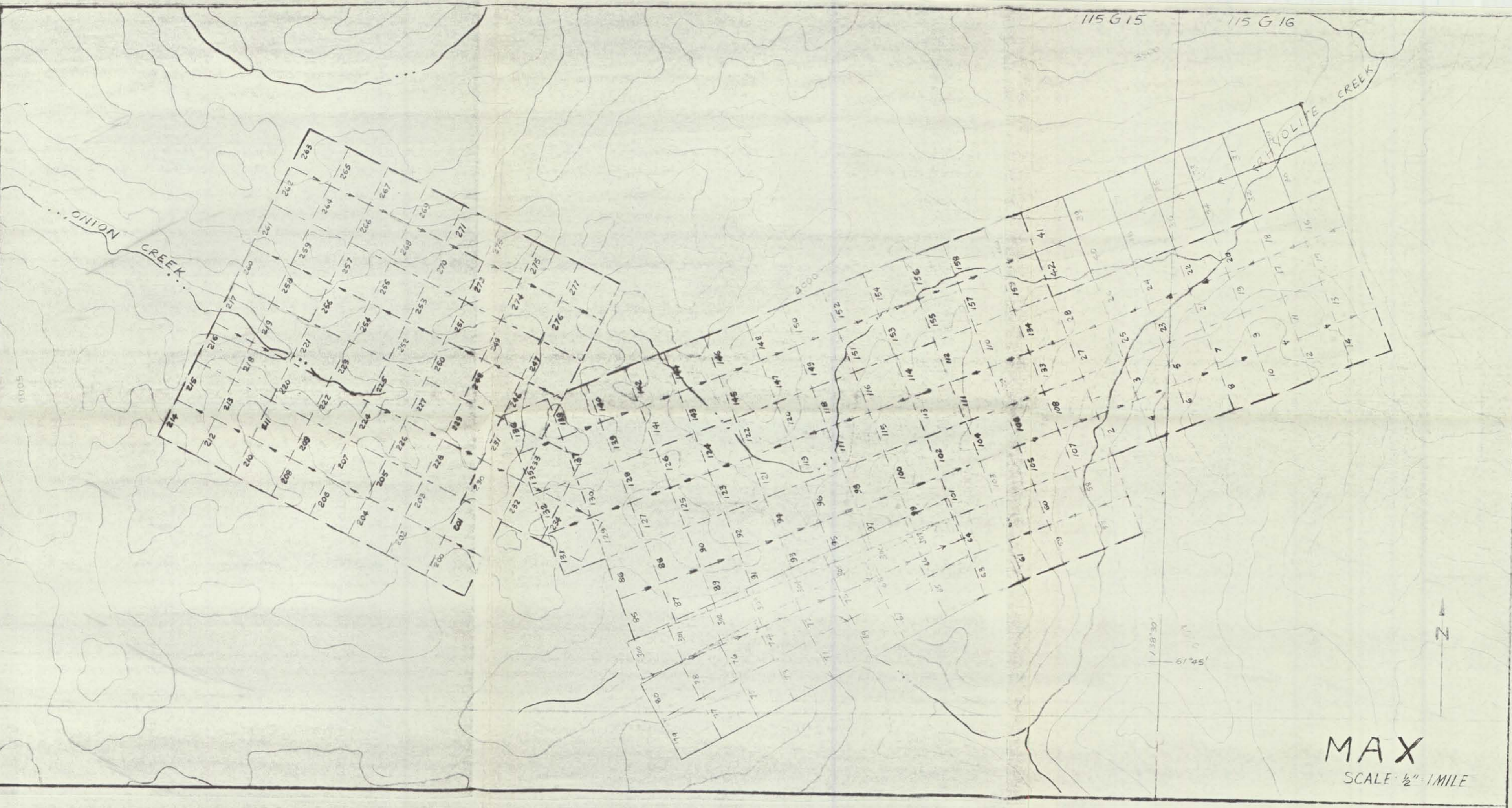
  
Notary Public in and for  
Yukon Territory

LIST OF PERSONNEL

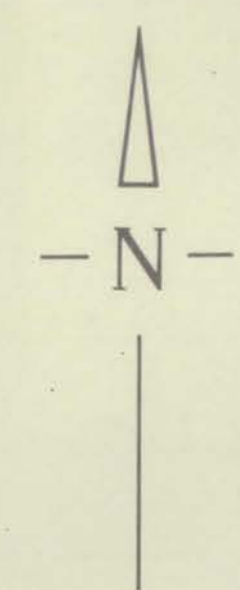
D. Francis	Party Chief-Geologist	Vancouver, B.C.
K. M. Dawson	Party Chief-Geologist (temporary)	Vancouver, B.C.
P. Dean	Party Chief (Temporary)	Vancouver, B.C.
D. Hersak	Geologist	Vancouver, B.C.
W. Roberts	Geologist	Vancouver, B.C.
R. Etzel	Prospector	Ross River, Y.T.
T. Skonseng	Prospector	Whitehorse, Y.T.
R. Craft	Linecutter	Whitehorse, Y.T.
F. Charlie	Linecutter	Ross River, Y.T.
J. Jackson	Linecutter	Whitehorse, Y.T.
P. James	Linecutter	Whitehorse, Y.T.
A. McLeod	Linecutter	Ross River, Y.T.
B. Wolsynuk	Sampler	Whitehorse, Y.T.
J. Britton	Sampler	Vancouver, B.C.
T. Reamsbottom	Sampler	Vancouver, B.C.
R. Townsend	Sampler	Vancouver, B.C.
W. Wrech	Cook	Whitehorse, Y.T.
E. Erickson	Cook	Whitehorse, Y.T.

115 G 15

115 G 16



**MAX**  
 SCALE 1/2" = 1 MILE

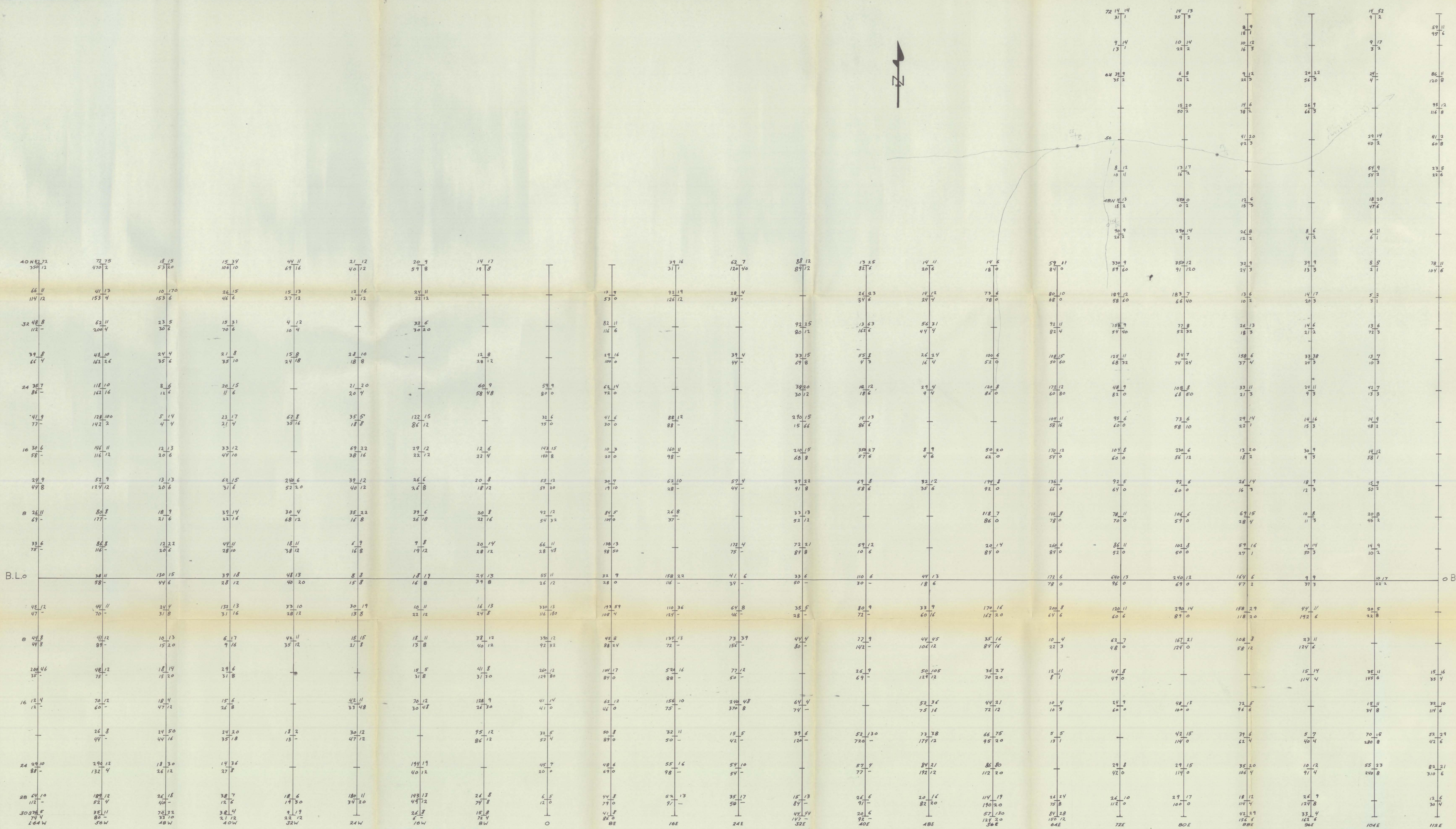


**GEOLOGICAL LEGEND**

- TERTIARY**
  - 5b Aphanitic basic Dykes, some Lamprophyre Dykes.
  - 3a Fgr. Diorite Dykes.
  - 4d Grey white Felsite Dykes, contains Po.
- EARLY TERTIARY**
  - 4c Large qtz-eye-Felds green Felsite Porphyry, some propylitization, Granite-qtz monzonite in composition.
- LATE MESOZOIC**
  - 4b Grey Felsite Porphyry, Qtz monzonite, qtz diorite composition.
  - 4a Qtz eye, K-felds felsite porphyry, pink Felsite sometimes spherulitic (this phase may be younger than 4b), m.g. Alaskite (Nisling Range Alaskite).
- MESOZOIC**
  - 3b Fgr. Diorite.
- EARLY MESOZOIC**
  - 3a Cgr. Bio-bio Hb qtz monzonite (Nisling Range Granodiarite).
  - 2 Andesite volcanics, often highly porphyritic, 2a volcanic breccia.
- YUKON GROUP**
  - 1a U.Fgr. green black Amphibolite.
  - 1b Micaceous qtzite, qtz mica schist, white qtzite, bk carbonaceous qtzite.

- Legend**
- Showing
  - ~ Assumed fault
  - Contact
  - ?-? Highly interpretive contact
  - ▲▲▲ Breccia
  - △ Mt. peak

<b>ATLAS EXPLORATIONS LIMITED</b>	
GEOLOGY OF MAX CLAIMS VICTOR PROJECT - NISLING RANGE - YUKON	
N. T. S.:	SCALE:
115-G-15	4" = 1 mile
DATE OF SURVEY:	PARTY CHIEF:
October 26, 1970	G. Pearce
DATE DRAFTED:	DRAFTED BY:
DATE REVISED:	REVISED BY:
CHECKED BY:	FIGURE NO.:

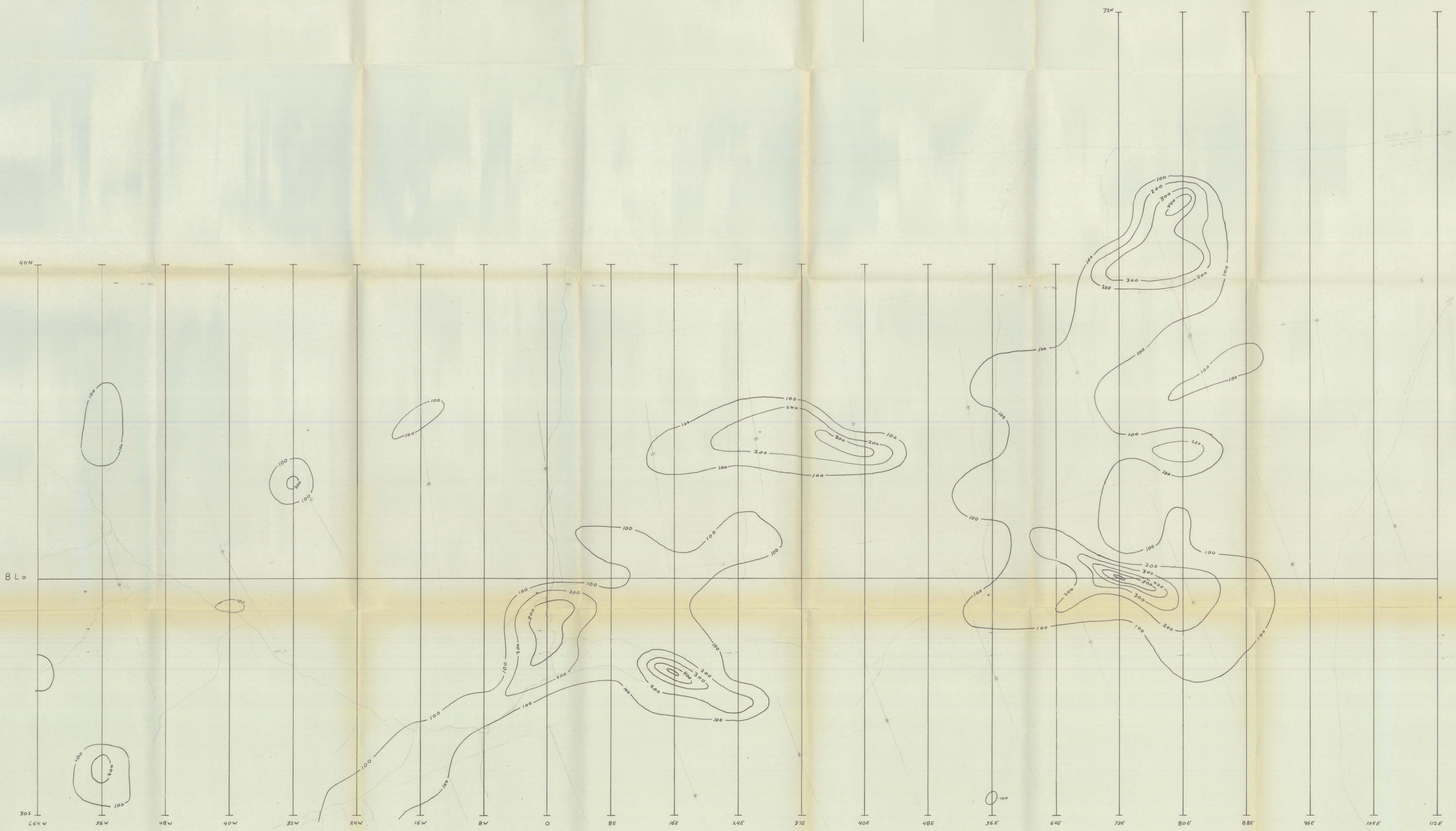


Cu Pb Zn Mo  
Order of values

**ATLAS EXPLORATIONS LIMITED**  
 Max Mineral Claims-Nising Range  
 Geochemical Values Map - GRID 1

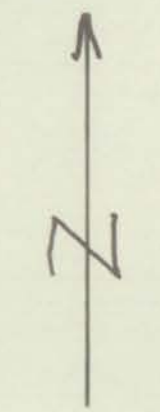
N. T. S. : 115-G-15  
 SCALE: 1" = 400'

DATE OF SURVEY: Aug 1970  
 PARTY CHIEF: Donald FRANCIS  
 DATE DRAFTED: \_\_\_\_\_  
 DRAFTED BY: \_\_\_\_\_  
 DATE REVISED: \_\_\_\_\_  
 REVISED BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 FIGURE No.:



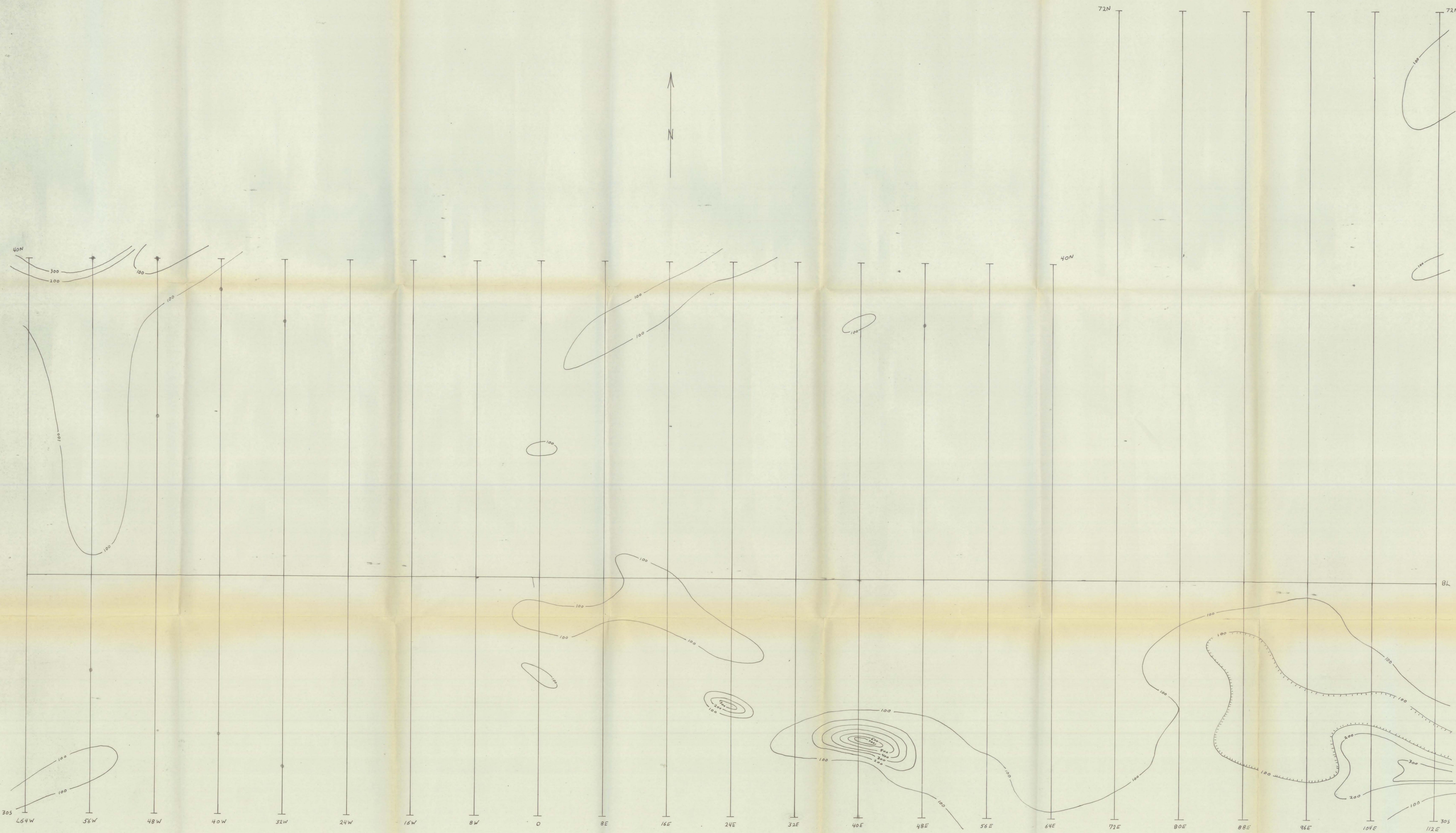
ATLAS EXPLORATIONS LIMITED  
Max Mineral Claims-Nisling Range  
GRID 1-Cu. Contours

N.T.S.	115-G.15	SCALE: 1"=400'
DATE OF SURVEY: Aug. 1970	PARTY CHIEF: Donald Francis	
DATE DRAFTED:	DRAFTED BY:	
DATE REVISED:	REVISED BY:	
CHECKED BY:	FIGURE No.	



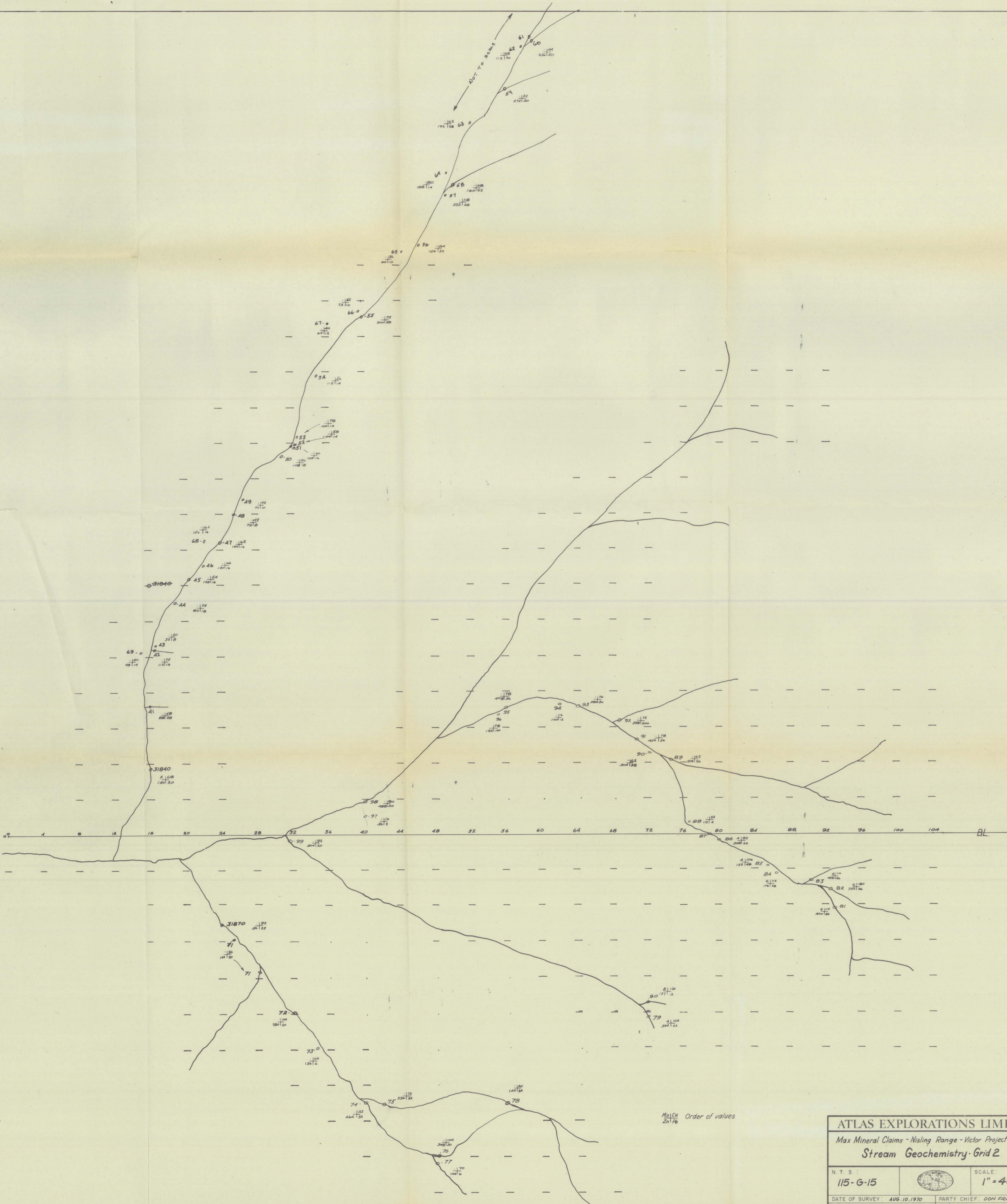
**ATLAS EXPLORATIONS LIMITED**  
Max Mineral Claims, Victor Project  
GRID 1 - Molybdenum Contours

N. T. S.:	115-G-15	SCALE:	1" = 400'
DATE OF SURVEY:	August 1970	PARTY CHIEF:	Donald Francis
DATE DRAFTED:		DRAFTED BY:	
DATE REVISED:		REVISED BY:	
CHECKED BY:		FIGURE No.:	



**ATLAS EXPLORATIONS LIMITED**  
*Max Mineral Claims - Victor Project - Nising Range - Yukon*  
**Geochemistry - Zinc Contours - GRID 1**

N.T.S.	SCALE
115-G-15	1" = 400'
DATE OF SURVEY: August 23, 1970	PARTY CHIEF: Don Francis
DATE DRAFTED: "	DRAFTED BY: "
DATE REVISED: November 26, 1970	REVISED BY: Jim Dennison
CHECKED BY:	FIGURE No.:



**ATLAS EXPLORATIONS LIMITED**

Max Mineral Claims - Nisling Range - Victor Project - Yukon  
**Stream Geochemistry - Grid 2**

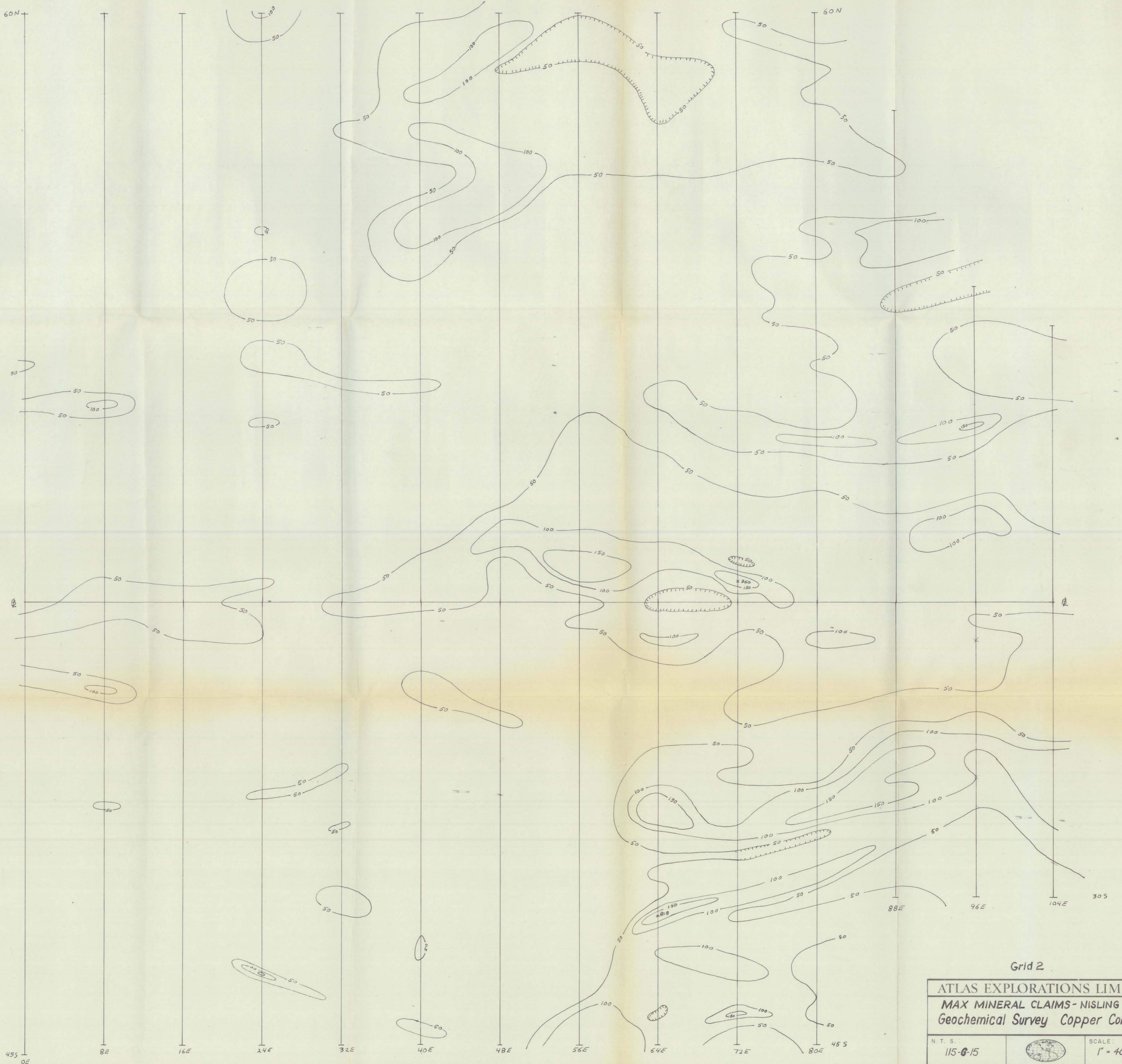
N.T.S.  
**115-G-15**



SCALE:  
**1" = 400'**

DATE OF SURVEY: <b>AUG. 10, 1970</b>	PARTY CHIEF: <b>DON FRANCIS</b>
DATE DRAFTED: <b>AUG. 17, 1970</b>	DRAFTED BY: <b>RON TOWNSON</b>
DATE REVISED: <b>NOV. 25, 1970</b>	REVISED BY: <b>JIM DENNISON</b>
CHECKED BY:	FIGURE No.:

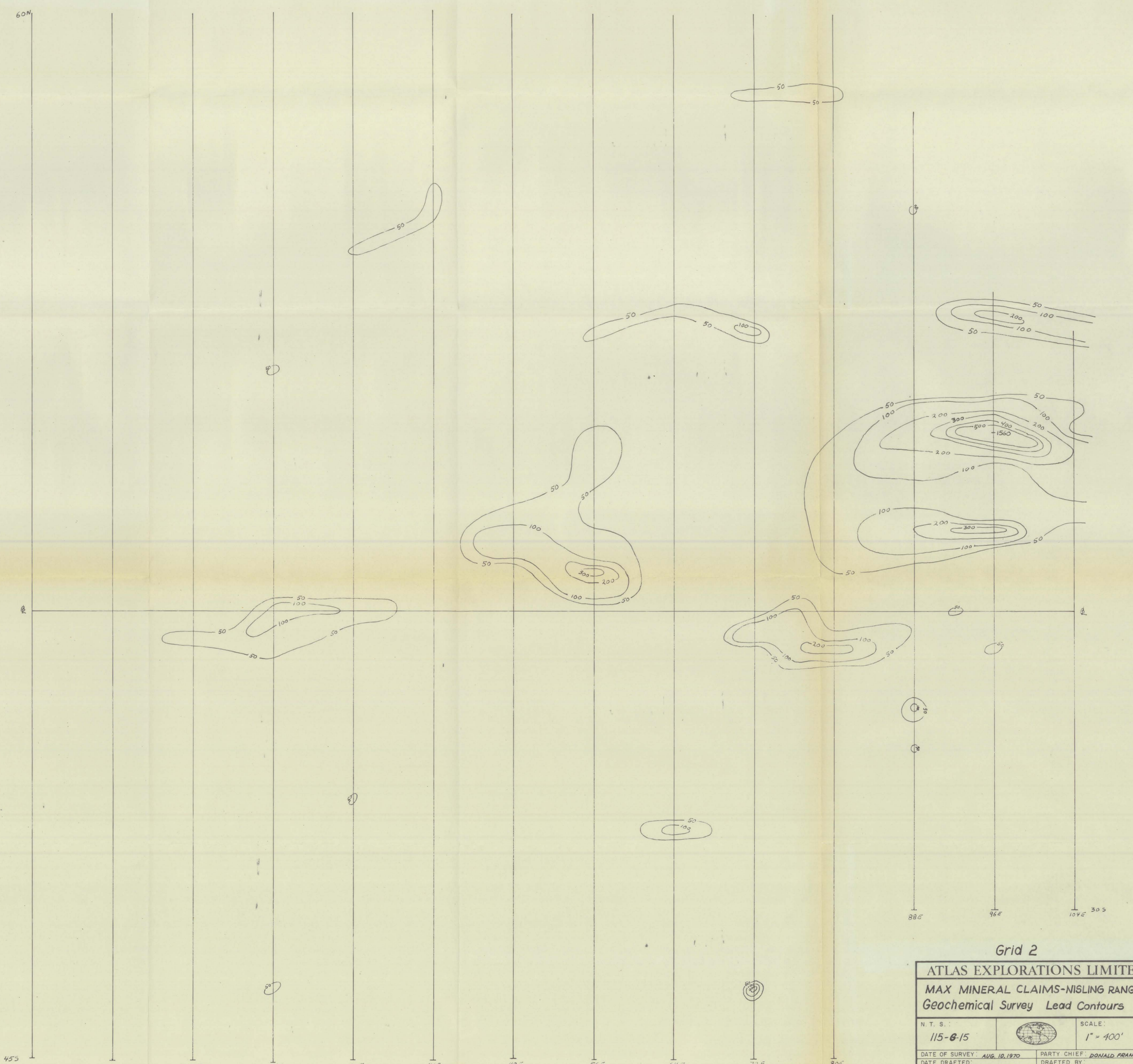





Grid 2

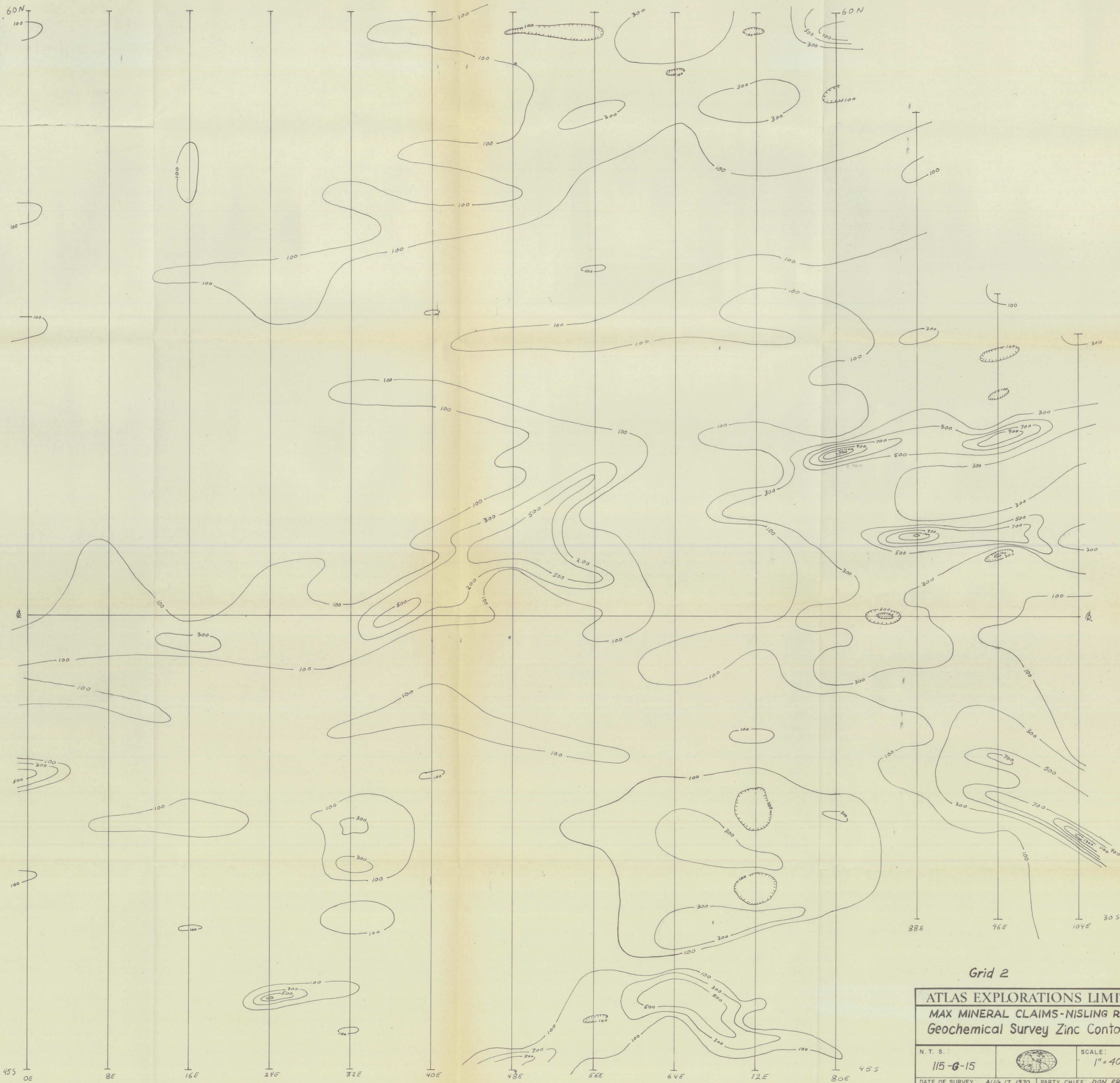
ATLAS EXPLORATIONS LIMITED  
 MAX MINERAL CLAIMS-NISLING RANGE  
 Geochemical Survey Copper Contours

N. T. S.:	115-6-15	SCALE:	1" = 400'
DATE OF SURVEY:	AUG 17 70	PARTY CHIEF:	DON FRANCIS
DATE DRAFTED:	" "	DRAFTED BY:	J.D. & D.F.
DATE REVISED:		REVISED BY:	
CHECKED BY:		FIGURE No.:	




Grid 2

ATLAS EXPLORATIONS LIMITED		
MAX MINERAL CLAIMS-NISLING RANGE		
Geochemical Survey Lead Contours		
N. T. S.:		SCALE:
115-6-15		1" = 400'
DATE OF SURVEY: AUG. 10, 1970	PARTY CHIEF: DONALD FRANCIS	
DATE DRAFTED:	DRAFTED BY:	
DATE REVISED:	REVISED BY:	
CHECKED BY:	FIGURE No.:	




Grid 2

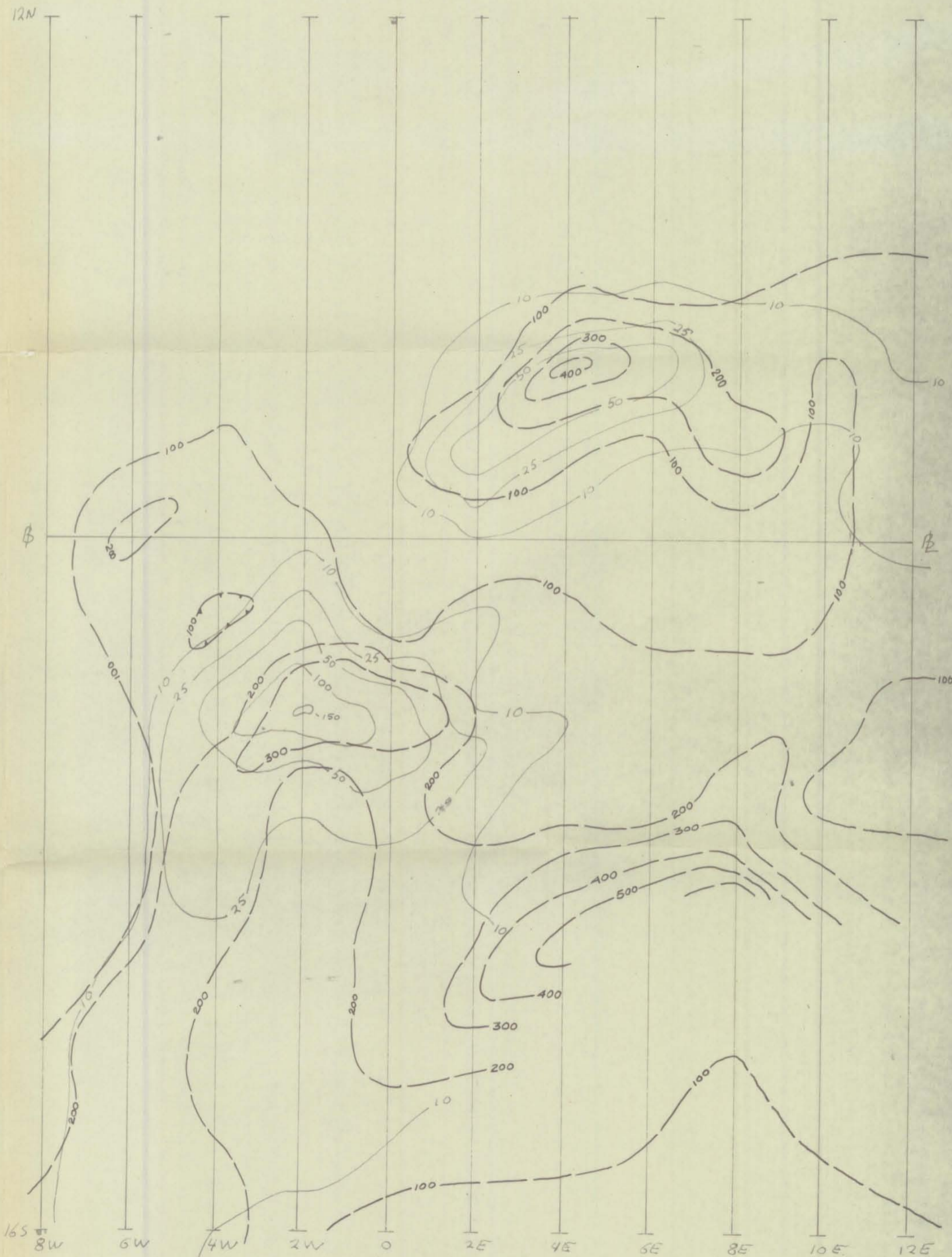
ATLAS EXPLORATIONS LIMITED		
MAX MINERAL CLAIMS-NISLING RANGE		
Geochemical Survey Zinc Contours		
N. T. S.:		SCALE:
115-G-15		1" = 400'
DATE OF SURVEY: AUG 17, 1970	PARTY CHIEF: DON FRANCIS	
DATE DRAFTED:	DRAFTED BY:	
DATE REVISED:	REVISED BY:	
CHECKED BY:	FIGURE No.:	

12N	-34	-32	-24	-26			4132	258	-42		-84
10N											
8N	-32	-30	-24	-16					674	454	-60
6N	-32						892	1066	642	8124	
4N	-26	-28	-52	452		1660	60450	70250	22132	1494	8168
2N	-34	252	2120	1650	480	96172		1040	10230	884	24148
0	-42	6220	8174	8112		1034		238	-22		14148
25	-70	2140	-62		456	14136		262	-66		4146
45	-84		70128	152400	92350	10200	10176		4164		288
65	-82	442	32270	28144	48210		662	4130	8240	436	-54
85	-50	480	32400	10112		8240	4390	6410	2550		2164
105					22210						
125	4112	20270	12186	18168	24260			4104	-96	2170	4450
145				18168							
165	8230	22220	10260	2108	-48		250	-96	-58	-38	624
8W	6W	4W	2W	0	2E	4E	6E	8E	10E	12E	




Order of values  $\frac{Mo}{Cu}$

<b>ATLAS EXPLORATIONS LIMITED</b>	
<b>MAX MINERAL CLAIMS-NISLING RANGE</b>	
<i>Grid 1 - Detailed Area - Geochemical Values</i>	
<i>Copper &amp; Molybdenum</i>	
N. T. S.	SCALE:
<b>115-G-15</b>	 <b>1" = 200'</b>
DATE OF SURVEY: <b>AVG 9, 1970</b>	PARTY CHIEF: <b>DON FRANCIS</b>
DATE DRAFTED:	DRAFTED BY:
DATE REVISED: <b>NOV 25</b>	REVISED BY: <b>JAD</b>
CHECKED BY:	FIGURE No.:



— MOLYBDENUM  
 - - - COPPER  
**Grid 1 Detailed Area**

**ATLAS EXPLORATIONS LIMITED**  
**MAX MINERAL CLAIMS-NISLING RANGE**  
**Geochemical Survey · Mo & Cu Contours**

N. T. S.:		SCALE:
<b>115-0-15</b>		<b>1" = 200'</b>
DATE OF SURVEY: <b>AUG-70</b>	PARTY CHIEF: <b>DONALD FRANCIS</b>	
DATE DRAFTED: <b>NOV. 24, 1970</b>	DRAFTED BY: " " & <b>J.D.</b>	
DATE REVISED: <b>NOV. 24, 1970</b>	REVISED BY: <b>J.D.</b>	
CHECKED BY:	FIGURE No.:	



**ATLAS EXPLORATIONS LIMITED**  
**MAX MINERAL CLAIMS - NISLING RANGE**  
**Magnetometer Survey Contour Map**  
 DETAILED GRID CONTOUR INTERVAL: 2500x

N. T. S.: **115 G:15**  SCALE: **1" = 400'**

DATE OF SURVEY:	PARTY CHIEF:
DATE DRAFTED: <b>NOV. 24, 1970</b>	DRAFTED BY: <b>J.A.D</b>
DATE REVISED:	REVISED BY:
CHECKED BY:	FIGURE No.:



4a

4a

4a

4a

1a

2

1a

1a

4a

**ATLAS EXPLORATIONS LIMITED**

MAX MINERAL CLAIMS NISLING RANGE  
 Topography & Geology for Magnetometer  
 Survey Grid

N. T. S. :  
 115-0-15



SCALE:  
 1" = 400'

DATE OF SURVEY:	PARTY CHIEF:
DATE DRAFTED:	DRAFTED BY:
DATE REVISED:	REVISED BY:
CHECKED BY:	FIGURE No.:

EM 3 ♦ Cu  
 &  
 EM 1 ♦ Po

bleached qtz-eye  
 felds  
 porphyry

Mixed Alaskite  
 & Feldspar  
 Porphyry

Alaskite

Porphyritic  
 Andesite

silicified  
 & rusty

Quartzite

quartzite  
 Muscovite  
 Quartzite

Base Line 0