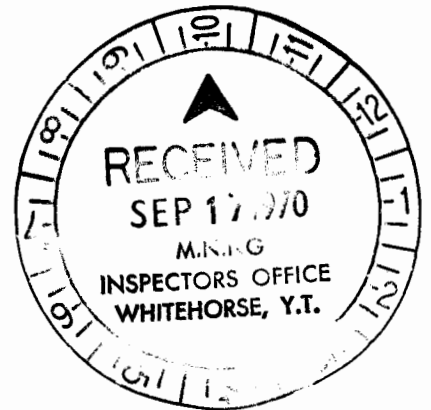




GEOCHEMICAL ASSESSMENT  
REPORT  
ON THE  
FROG CLAIM GROUP  
HAYES CREEK - DAWSON RANGE AREA  
WHITEHORSE MINING DISTRICT  
YUKON TERRITORY  
FOR  
INTERNATIONAL MINE SERVICES LTD.



BY

D.H. WAUGH

FIELD WORK: JULY 1-21, 1970

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of \$13,097

D. B. Craig

Resident Geologist or  
Registered Mining Engineer

Considered as representation work under  
Section 93 (4) of the Quartz Mining Act.

[Signature]  
Commissioner of Yukon Territory

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# GEOCHEMICAL REPORT

on

Frog 1-96 Mineral Claims

for

International Mine Services Ltd.

September 1970

D. H. Waugh

## Introduction

During the period of July 1st. to July 21st., 1970, employees of International Mines Services Ltd. conducted a geochemical and geological investigation on the Frog Claim Group under the supervision of J. L. Tindale, Professional Engineer, in the Province of Ontario.

The Frog Group includes the ninety-six contiguous mineral claims Frog 1-96, located at the head of Hayes Creek in the Dawson Range Area of the Whitehorse Mining District, Yukon Territory.

The geochemical soil survey was conducted as a follow up to the 1969 stream silt survey conducted in the Dawson Range. The purpose of the survey was to further investigate and isolate source areas for the anomalous stream silts on the Frog Claims and to outline zones worthy of further exploration.

## History of Claims and Ownership

Following the regional stream silt sampling of the Prospector Mountain area during the 1969 field season and discovery of anomalous values in copper, lead and zinc from the silts of Hayes Creek and its tributaries the area was selected for further prospecting. A group of 96 claims comprising

the Frog Group were staked by International Mine Services Ltd. at the Head of Hayes Creek and recorded at the Whitehorse Mining Recorders Office.

Particulars of the 96 contiguous Frog Claims are more particularly described as follows:

CLAIM NAME		RECORD NUMBER	RECORD DATE
Frog 17-48	(32)	Y36840-36871	Sept. 2/69
Frog 65-96	(32)	Y36872-36903	Sept. 2/69
Frog 1-8	( 8)	Y36964-36971	Sept. 4/69
Frog 49-56	( 8)	Y38081-38088	Sept.22/69
Frog 57-64	( 8)	Y38337-38344	Oct. 1/69
Frog 9-16	(8)	Y38841-38848	Oct. 20/69

The above claims are equally held by Prado Explorations Ltd., Gui-Por Uranium Mines Ltd., Lion Nickel Mines of Canada Ltd. and Indian Mountain Metal Mines Ltd. all of Suite 1601-8 King Street East, Toronto 1, Ontario.

Past history of the area is vague. Some evidence of old placer workings of very limited extent were found on the Frog Claims along Hayes Creek and its tributaries and ruins of a few old cabins with stone chimneys are still standing.

#### Property Location and Access

The Frog 1-8 mineral claims comprise a group of 80 contiguous claims situated at the head of Hayes Creek, latitude 62° 25' and longitude 137° 55' in the Dawson Range area of the Whitehorse Mining District. The claim group straddles the upper end of the Hayes Creek valley lying to the west of Prospector Mountain on Claim Sheet 115-1-5. The property is located near the boundary of the Carmacks Map area approximately 160 air

miles northwest of Whitehorse and some thirty-three miles west of the Minto airstrip situated at Mile 148 of the Mayo Dawson Highway.

Access to the property was by a Bell 47G-3B-2 helicopter on contract from Trans North Turbo Air Ltd. of Whitehorse. Personnel, supplies and equipment were transported from Whitehorse to Minto by company trucks and flown by helicopter to International Mines Services' base camp on Hayes Creek. Fuel supplies were flown to the Hayes Creek winter airstrip by fixed-wing aircraft in April and May, 1970. Personnel were boarded at the main base camp located on Hayes Creek some 10 miles downstream from the head of Hayes Creek and flown out to the Frog Claims in the morning and picked up in the evening by helicopter, an average flight distance of 7 miles.

#### Geomorphology

The Frog Claims are situated in rugged mountainous terrain straddling the upper end of the V shaped Hayes Creek valley. Hayes Creek roughly bisects the claim group in north-northwest direction. The south end of the claim group has its boundary located on the height of land dividing the Big Creek and Hayes Creek drainage. Prospector Mountain, a prominent land mark of the area, elevation 6482 feet, lies just east of the claims. The property elevation ranges from 5,000 feet on the south boundary to 3,500 feet on the north. The walls of the Hayes Creek valley and its' tributaries are generally precipitous on the northly facing slopes. Talus slopes are most common on northerly slopes though occasionally occur on southern

slopes. Evidence of recent alpine glaciation is indistinct, though the tributaries of Hayes Creek rise in deeply cut valleys with shapes that resemble cirques to some degree. With the exception of the lower end of the Frog Claims on Hayes Creek the property lies above the tree line. The higher ridge summits are relatively bare, covered by moss and some buckbrush. The gentler slopes and stream valleys are covered by copses of buckbrush, alders and occasional spruce.

### General Geology

The Frog property is situated in the Dawson Range area of the Yukon Plateau. Most of the Yukon Plateau escaped glaciation during the Pleistocene ice age and is most readily illustrated by the lack of lakes, presence of V shaped valleys and abundant residual soil deposits on hill tops and mountain slopes. The property is located in an area of both intrusive and extrusive rock types. The oldest rocks in the area are the metasedimentary series of the Yukon Group of Precambrian age.<sup>(1)</sup> The Yukon group consists primarily of quartz-mica schist, hornblende schist, quartzite and hornblende-feldspar gneiss.

In the vicinity of Prospector Mountain and at the head of Hayes Creek basalts, breccias and some tuff belonging to the Mount Nansen Group outcrop. These rocks are dated as being late Jurassic or early Cretaceous.<sup>(2)</sup> Intrusive into the schistose rocks of the Yukon Group and basalts of the Mount

(1), (2), (3), + (4) Ref. Bostock H.S. 'Carmacks District, Yukon' Geol. Survey of Canada, Memoir 189, p.14

Nansen Group are acid medium grained rocks of syenitic to quartz-monzonite composition and of Upper Jurassic age.<sup>(3)</sup> The youngest rocks found on the property are located along the northeast side of the Frog group and consists of basalt and dacite flows belonging to the Carmacks Volcanics group of Miocene or older age.<sup>(4)</sup>

During the geochemical and geological survey of the Frog property a few lead-zinc mineralized quartz veins were located in the basalts of the Mount Nansen Group. These veins could be traced for only short distances of up to 200 feet along strike.

## Geochemical Survey

A total of 1435 soil samples were collected during the survey on the Frog Group. The samples were sent to the Whitehorse Assay Office to be analyzed for copper, lead and molybdenum by the hot acid extraction technique.

### Method of Control

A 26,400 foot base line bearing N21°W<sup>was</sup> cut and chained at 100 foot intervals by employees of International Mine Services. Grid lines were turned off the base line at 800 foot intervals by Brunton Compass and extended both east and west for 4,200 feet and 4,400 feet respectively. The east and west ends of the grid lines were tied in by chain and compass. The east-west grid lines were chained at 200 foot (horizontal distance) intervals and stations marked using north-south and east-west coordinates.

### Soil Type

The greater part of the survey area is covered by light to moderate overburden consisting of residual soils, fluvial deposits and talus slopes. The soil is an immature, skeletal or azonal soil variety that is typical of the mountainous terrain in the Dawson Range. Characteristic of skeletal soils, the soil from the Frog property has thin indistinct horizons containing a relatively high proportion of partially weathered rock debris. The A horizon consists of a thin moss layer underlain occasionally by a dark brown to black organic layer. The B horizon, where developed, is a light brown coloured sandy-clay material. The C horizon constitutes the bulk of the soil in the survey area and is a light colored sandy-clay material mixed

with abundant partially decomposed rock fragments. The pH of the soil, as tested by a Lamotte Chemical pH kit, ranges between 4.5 and 6.0 typical for this region.

#### Sampling Method

Samples were taken at a depth of 6 inches to 2 feet below surface in the B horizon or upper portion of the C horizon using a soil auger. The samples were taken at 200 foot intervals where soil conditions were suitable. Sample locations were noted in a soil sample record book using the north-south and east-west coordinates to identify and locate the samples. A description of the soil type was noted by describing the sand, clay and organic composition. Samples were placed in water resistant Kraft bags and dried at room temperature.

#### Method of Analysis

The soil sample analysis were run at the Whitehorse Assay Office in Whitehorse, Y.T. Samples were dried and sieved to a minus 80 mesh. A one gram sample of the 80 mesh fraction was weighed out on an analytical balance and digested in a hot nitric acid and potassium perchloric acid bath. The digested sample was bulked to 20 c.c. and analyses made for copper, lead and molybdenum by atomic absorption spectrometry with reading reported in parts per million.

#### Conclusions and Recommendations

A histogram (see fig. 6 on the following page) on 1435 soil samples from the Frog survey was constructed showing the

frequency of the ranges of copper values in p.p.m. From the histogram a background value of 30 p.p.m. copper and a threshold value of 80 p.p.m. copper was selected for the survey area. Values above the threshold are considered as being possible or probably anomalous. The total number of values above the threshold was 74, approximately 4% of the total population.

A population study of the lead values indicated a local threshold value of about 100 p.p.m. with approximately 10% of the total population occurring above this value.

The molybdenum values were extremely low in the survey area with only 19 values occurring in greater than trace amounts and the highest value being 10 p.p.m. MoSz.

The values for copper and molybdenum are plotted together on Maps 1 and 2 contained in the map pocket of this report.

A study of the plotted values indicate a sporadic distribution for copper and lead and only sparse molybdenum occurrences of low intensity. Most anomalous values for copper and lead occur in the Mount Hansen basalts. The limited extent of the anomalous values offers insufficient values for objective contouring of the copper and lead results.

By follow-up geological mapping and prospecting the sporadic copper and lead values were traced to narrow lead-zinc mineralized quartz veins with minor copper associated. Due to the limited size of the veins and lack of a broad geochemical anomaly in either copper or lead no further work is recommended at this time.

# INDEX MAP

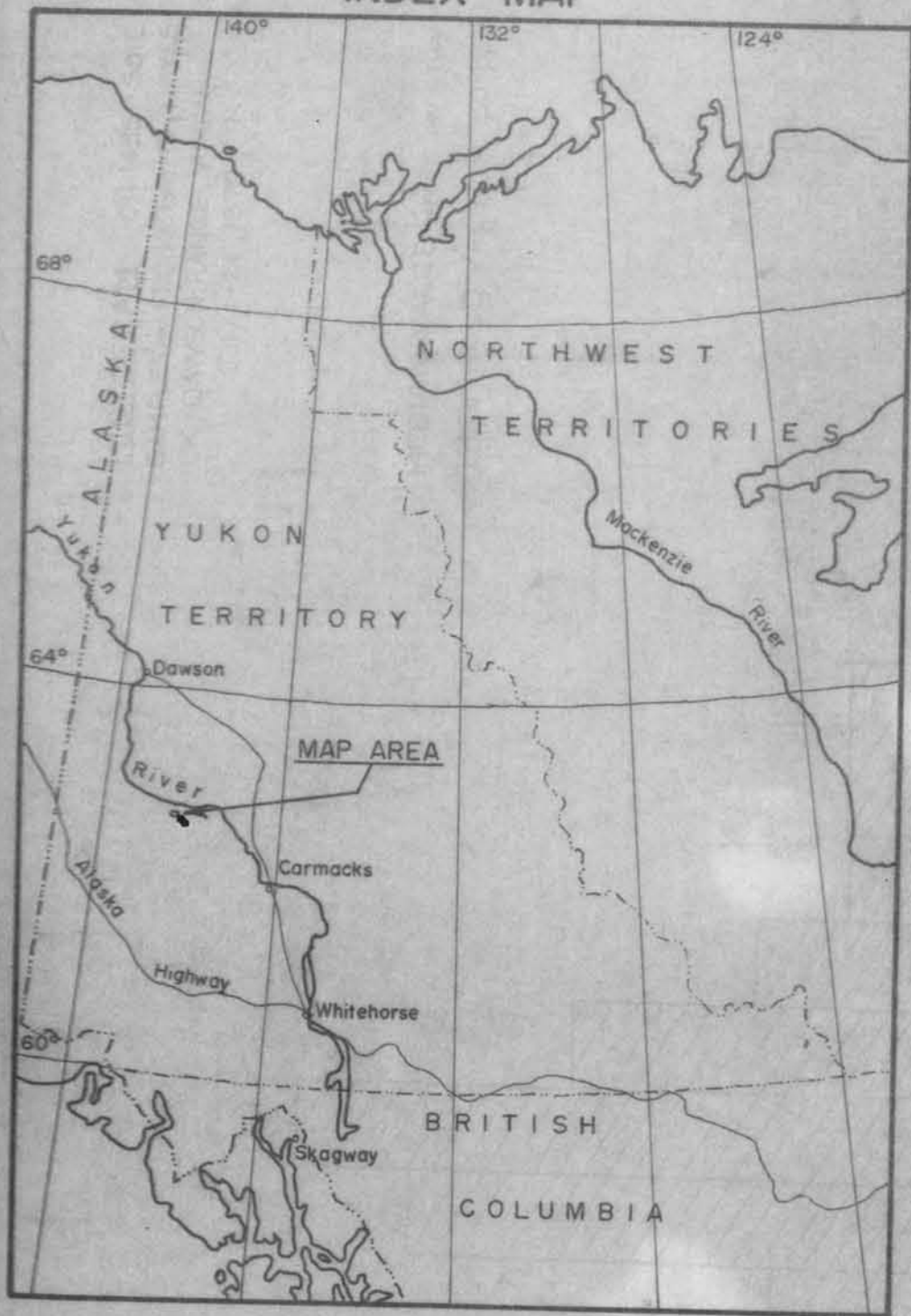
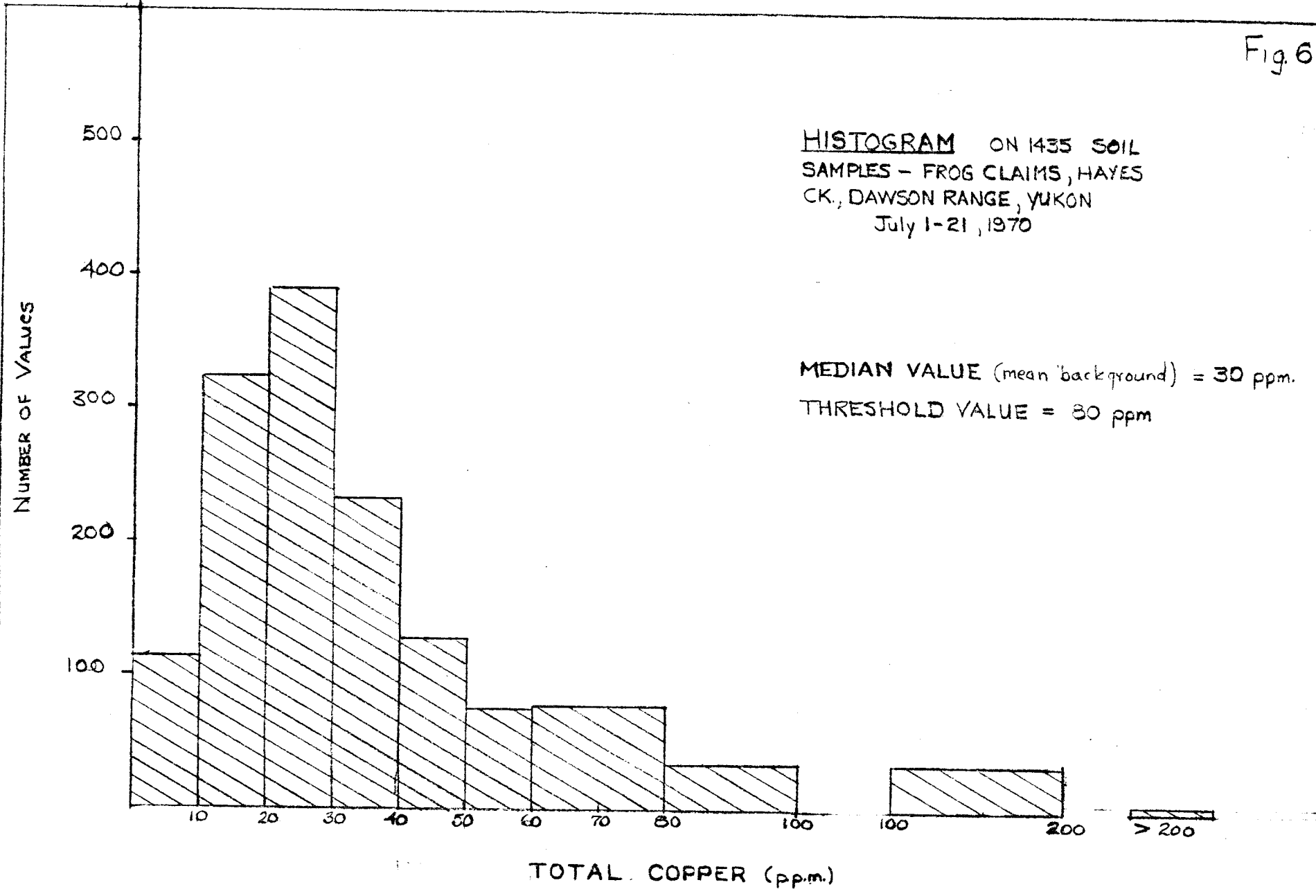


Fig. 5

Fig. 6

HISTOGRAM ON 1435 SOIL  
SAMPLES - FROG CLAIMS, HAYES  
CK., DAWSON RANGE, YUKON  
July 1-21, 1970

MEDIAN VALUE (mean background) = 30 ppm.  
THRESHOLD VALUE = 80 ppm



*Handwritten signature*



## Statement of Qualifications

I, David H. Waugh of P.O. Box 1052, Whitehorse, Yukon Territory, do hereby state that:

1. I am a geologist, educated in the geological sciences at Michigan College of Mining and Technology, '64.
2. I have practised my profession as a geologist in the field of mining exploration and development for the past six years.
3. I have been employed as senior geologist and resident Project Manager in the Yukon during the past three years for International Mine Services Ltd.
4. The information in this report represents the findings of this company during the 1970 survey conducted by myself under the direction and supervision of J. L. Tindale, Professional Engineer in the Province of Ontario.

Dated this 1st day of September, 1970, at Whitehorse, Yukon Terr.

  
David H. Waugh

## List of Employees

Ian McRae, 1665 Bloor St., Mississauga, Ontario  
Linecutting and soil sampling, 21 mandays

George Waugh, 11 Spruce St., Kirkland Lake, Ontario  
Linecutting and soil sampling, 21 mandays

Terrance Graham, 16 Saugeen Cr., Scarborough 703, Ontario  
Soil sampling, 13 mandays

Robert Mahoney, Box 761, Antigonish, Nova Scotia  
Linecutting and soil sampling, 15 mandays

Carl Anderson, Vernon Garden Apts., Apt. 14-K, Rockville, Conn.  
Soil sampling, 11 mandays

Ken Hossick, 44 Cremono Cr., Ottawa 12, Ontario  
Soil sampling, 11 mandays

Michael Braet, Box 1052, Whitehorse, Yukon  
Linecutting, 2 mandays; Drafting, 6 mandays

David Waugh, Box 1052, Whitehorse, Yukon  
Supervision, 6 mandays

### Summary of Costs

Wages:	92 man days @ \$20 per day	\$ 1840.00
	6 man days @ \$30 per day	180.00
	6 man days @ \$40 per day	240.00
	Total	\$2,260.00
Camp and Cookery:	120 man days @ \$10 per day	1200.00
Transportation:	34.6 helicopter hrs. @ \$150 per hr (\$130 per hr contract, \$20 per hr fuel)	5190.00
Assays:	1435 samples @ \$2.75	3946.00
Miscellaneous:	company trucks, sample bags, pickets, camp fuel, flagging etc.	500.00
		<hr/>
	TOTAL EXPENSES	\$13,097.00
Expenses on a per claim basis (96) claims		\$ 136.00

AFFIDAVIT

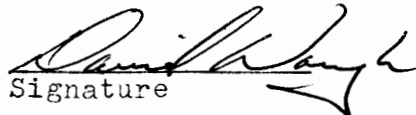
CANADA


Yukon Territory

To Wit:

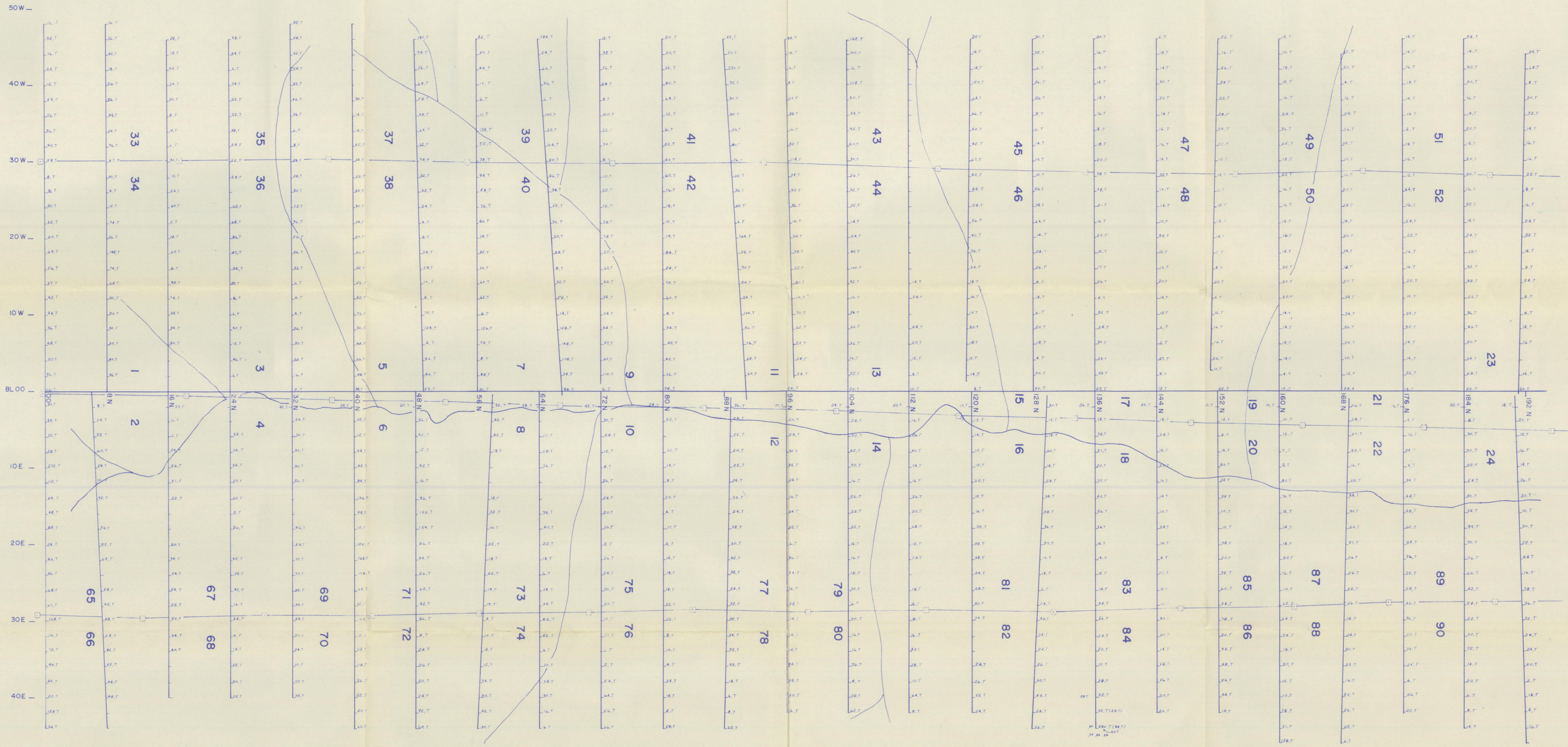
I, David H. Waugh, of Whitehorse, Yukon Territory, and agent for International Mine Services Ltd. of Suite 1601, 8 King St. East, Toronto 1, Ontario, make oath and state:

That the expenditures incurred for the geochemical survey conducted by International Mine Services Ltd., from July 1st to July 21st, 1970, on the Frog claims, Hayes Creek-Dawson Range Area, are true and exact to the best of my knowledge.

  
Signature

  
A Commissioner for taking Affidavits  
in and for the Yukon Territory.

SEP 16 1970  
WHITEHORSE, Y.T.



INTERNATIONAL MINE SERVICES LIMITED

FROG CLAIM GROUP

DAWSON RANGE, YUKON TERRITORY

Claim Sheet No. 115-1-5

Scale: 1" = 600'

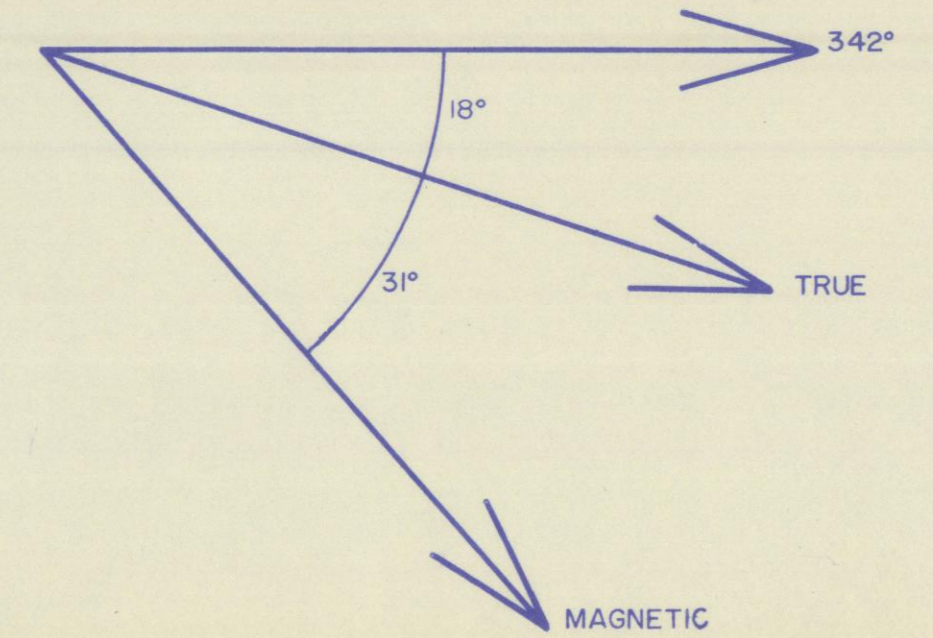


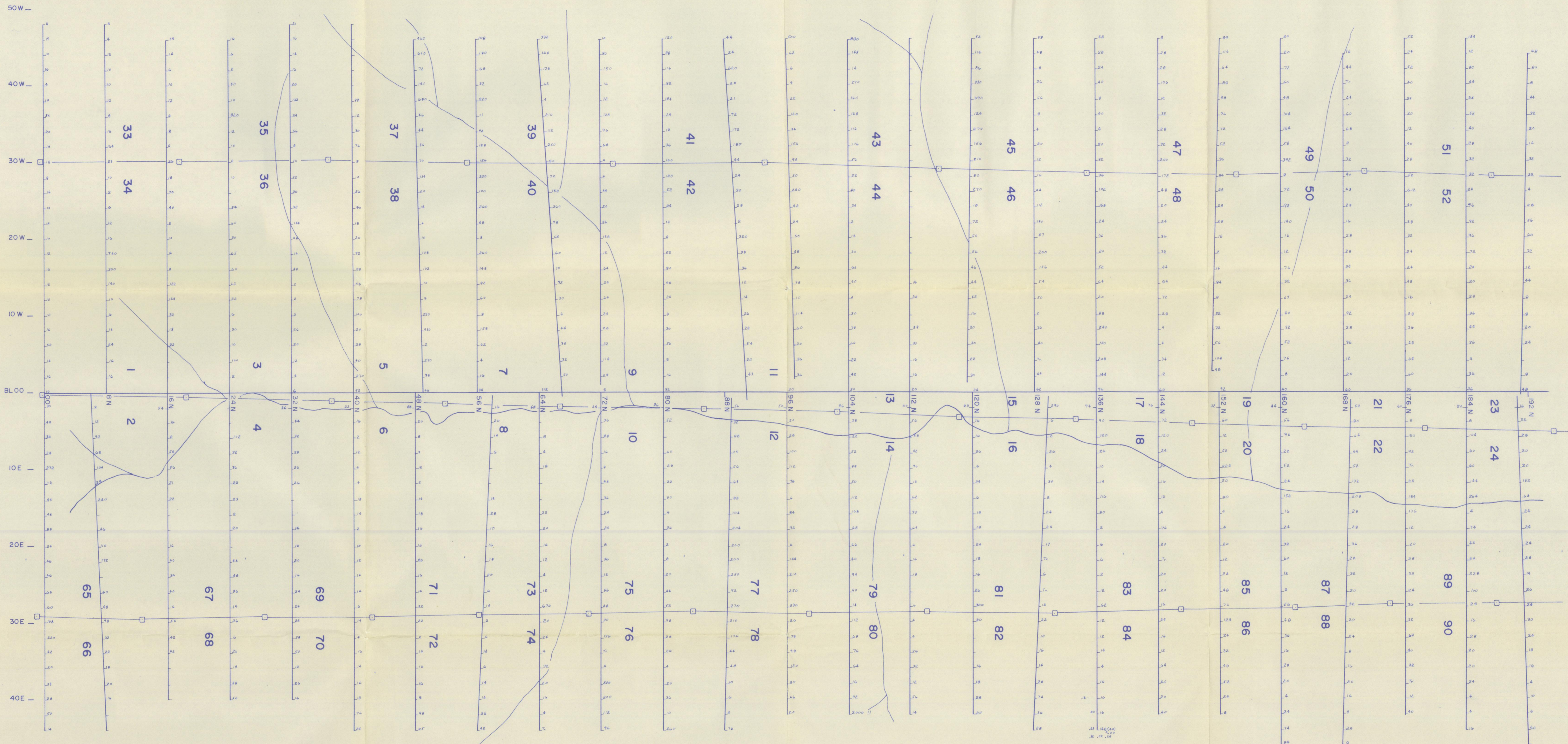
COPPER-MOLYBDENUM PLOT, 1970

MAP No. 1

□ Sample Location — Cu, Mo (ppm)

□ Claim Post and Line Location





INTERNATIONAL MINE SERVICES LIMITED

FROG CLAIM GROUP

DAWSON RANGE, YUKON TERRITORY



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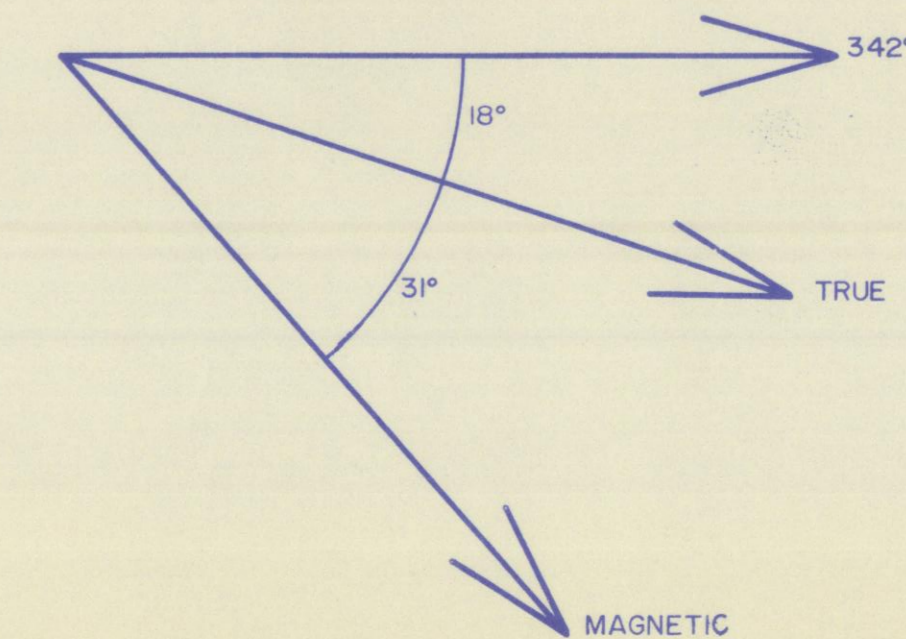
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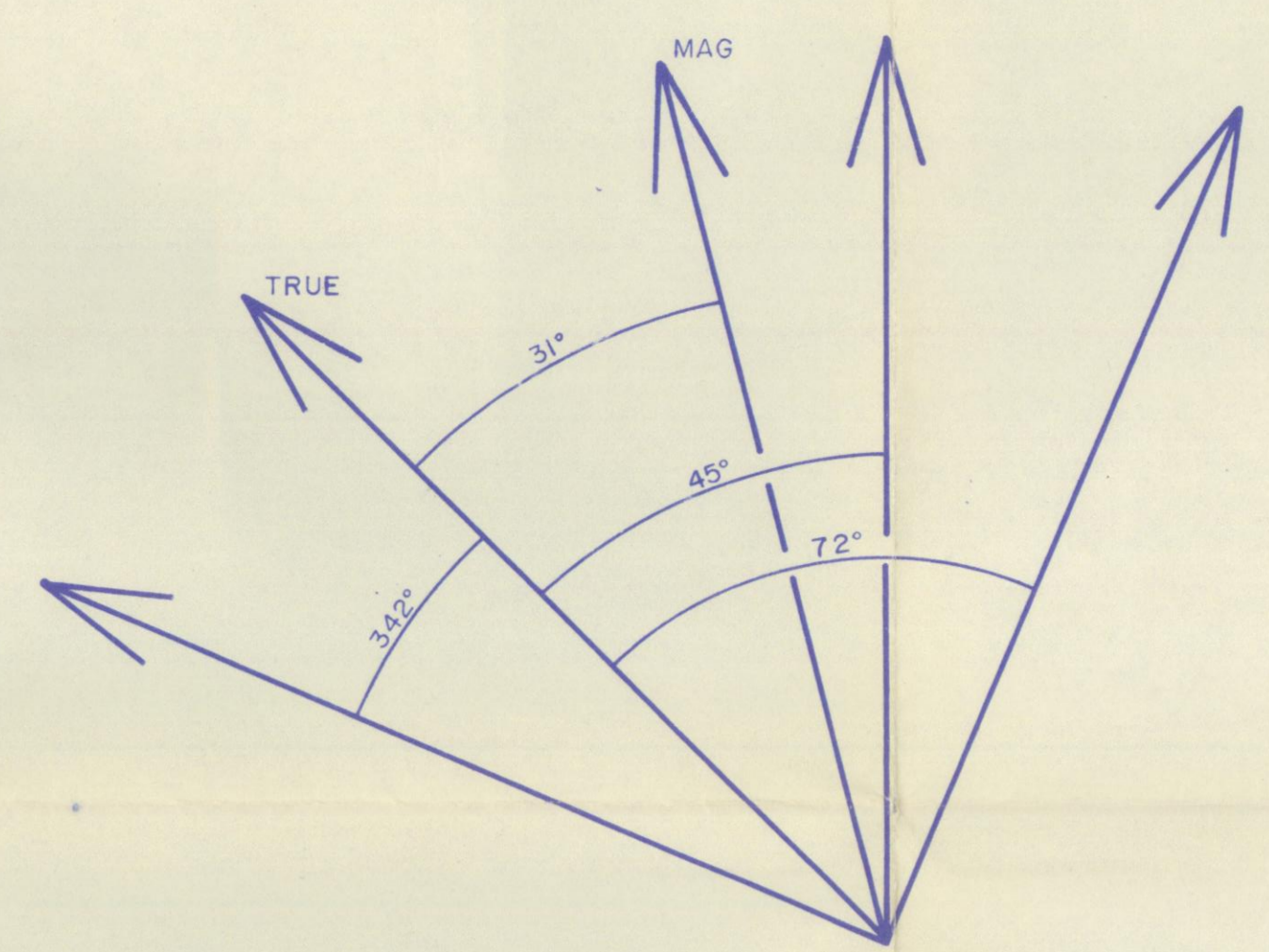
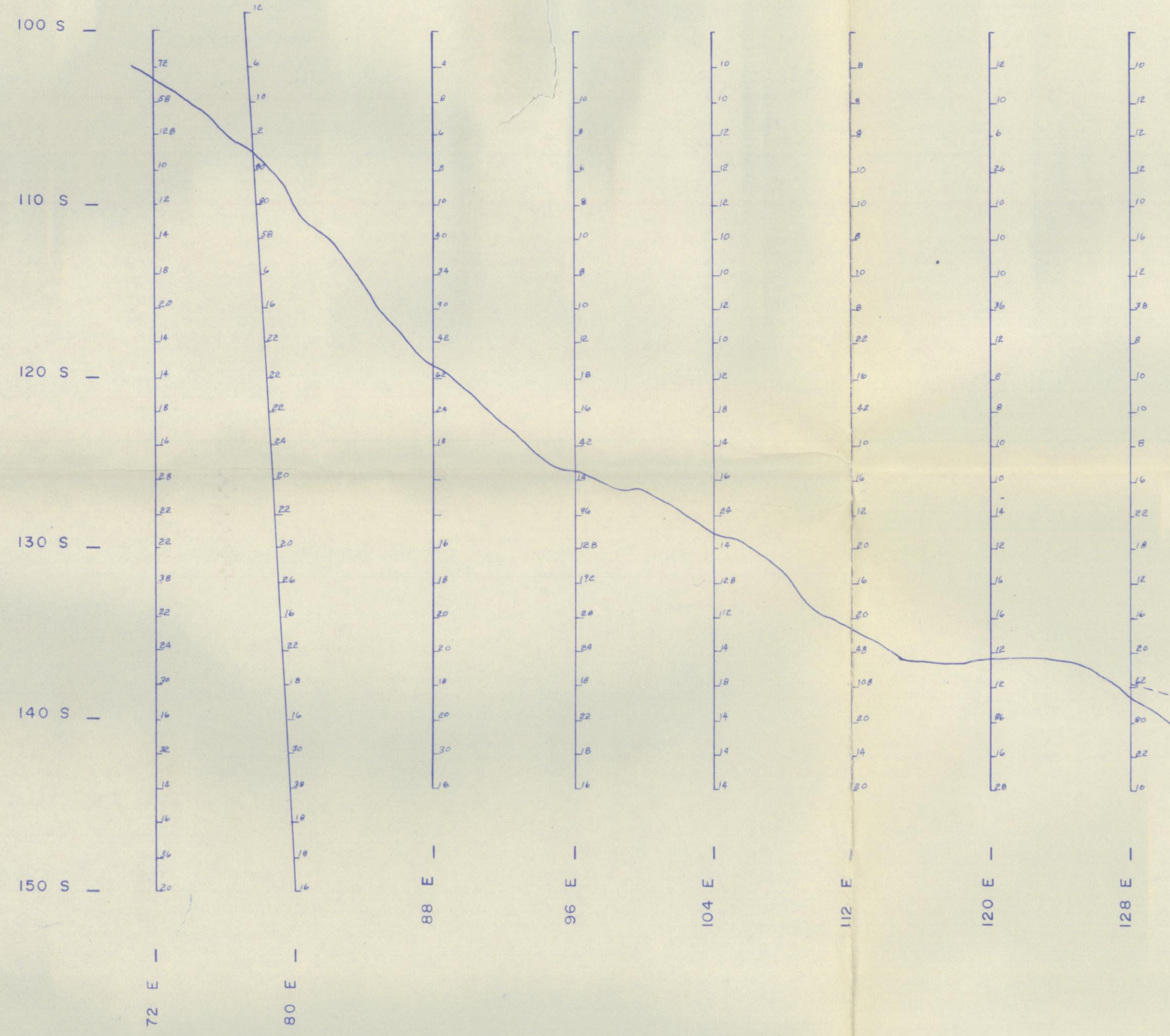


LEAD PLOT, 1970

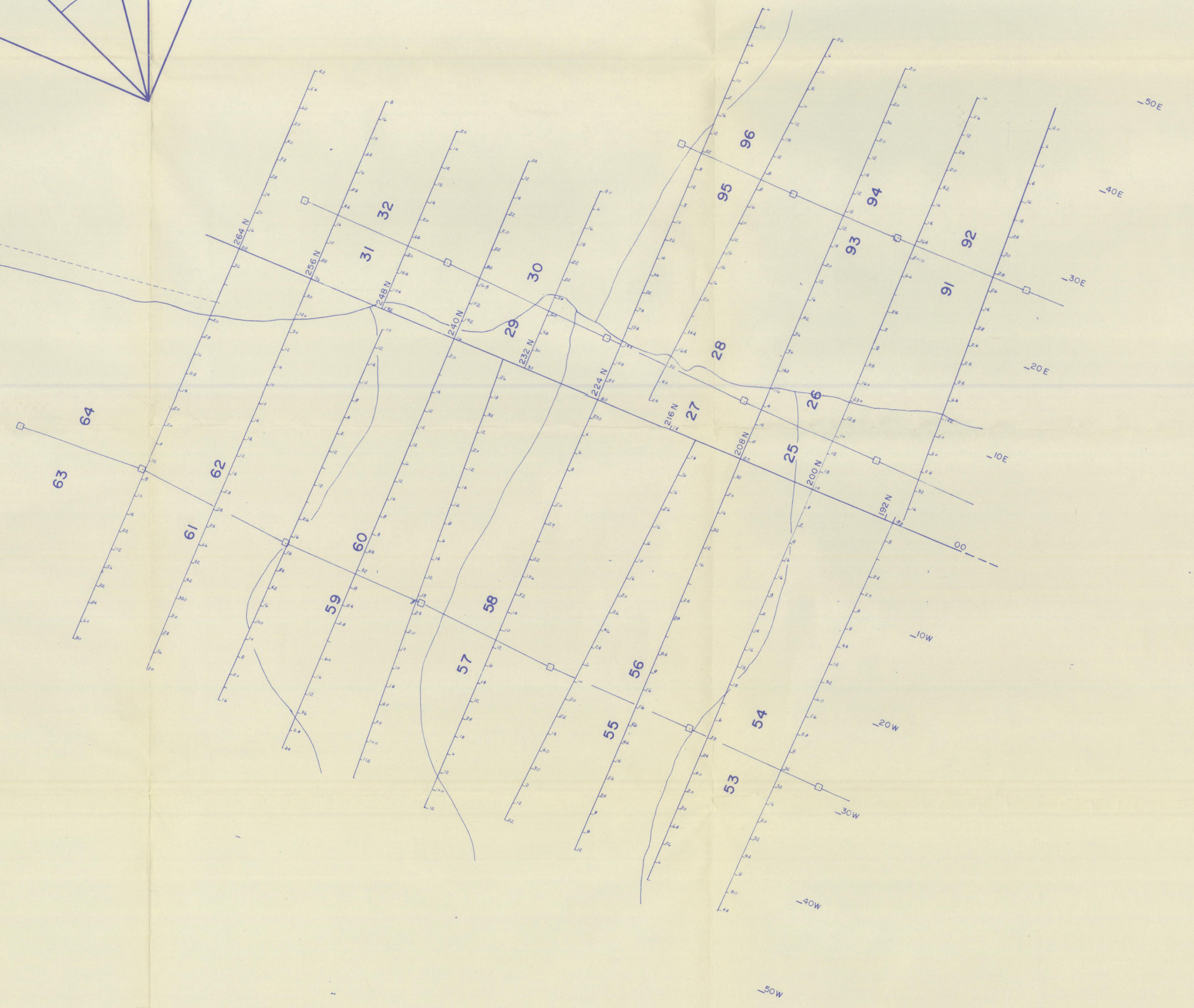
MAP No. 3

-  Sample Location - Pb (ppm)
-  Claim Post and Line Location





5055 Feet at 33.0°



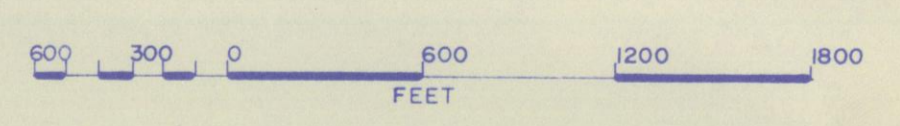
INTERNATIONAL MINE SERVICES LIMITED

TAD & FROG CLAIM GROUPS

DAWSON RANGE, YUKON TERRITORY

Claim Sheet No. 115-1-5

Scale: 1" = 600'

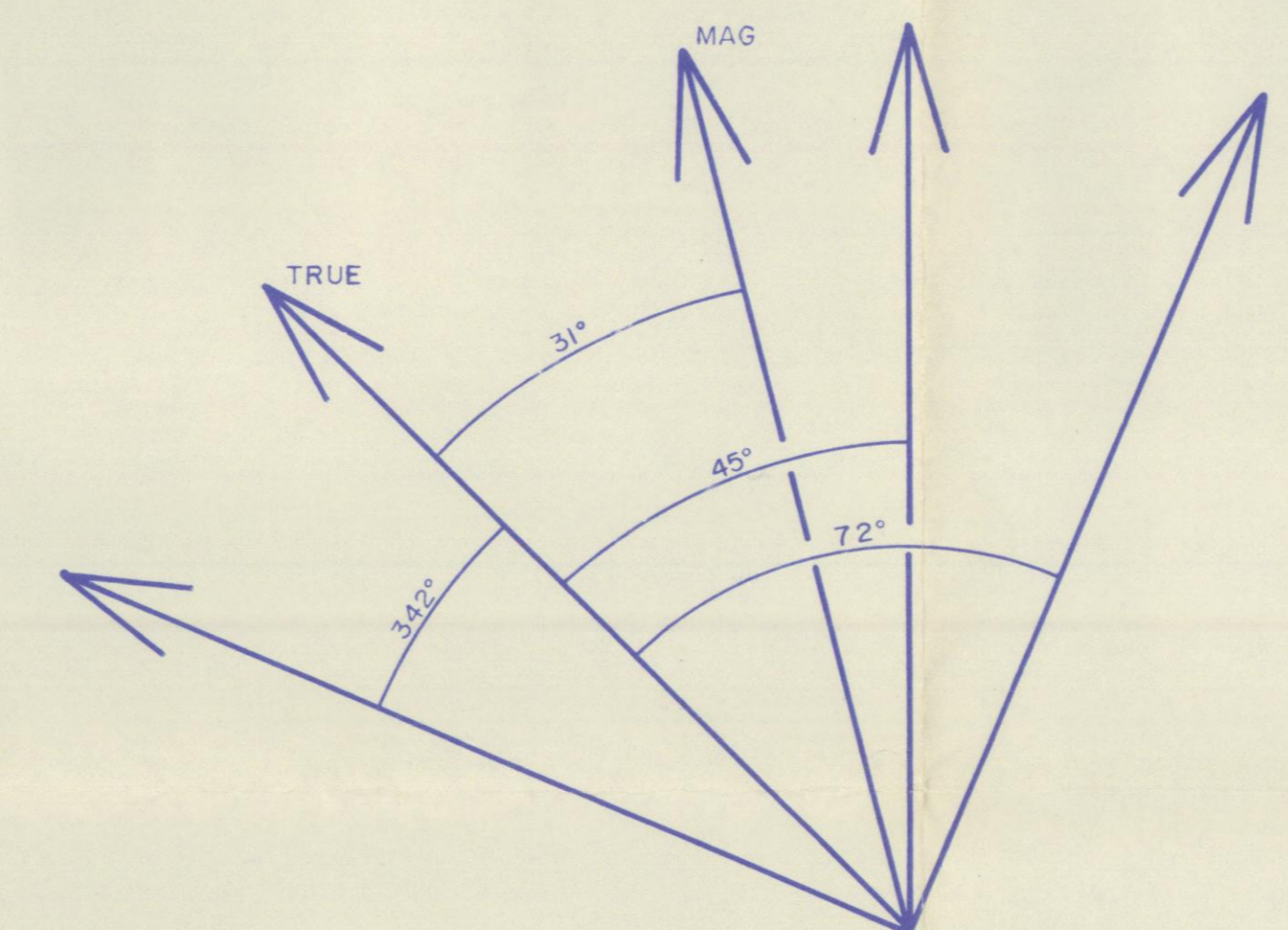
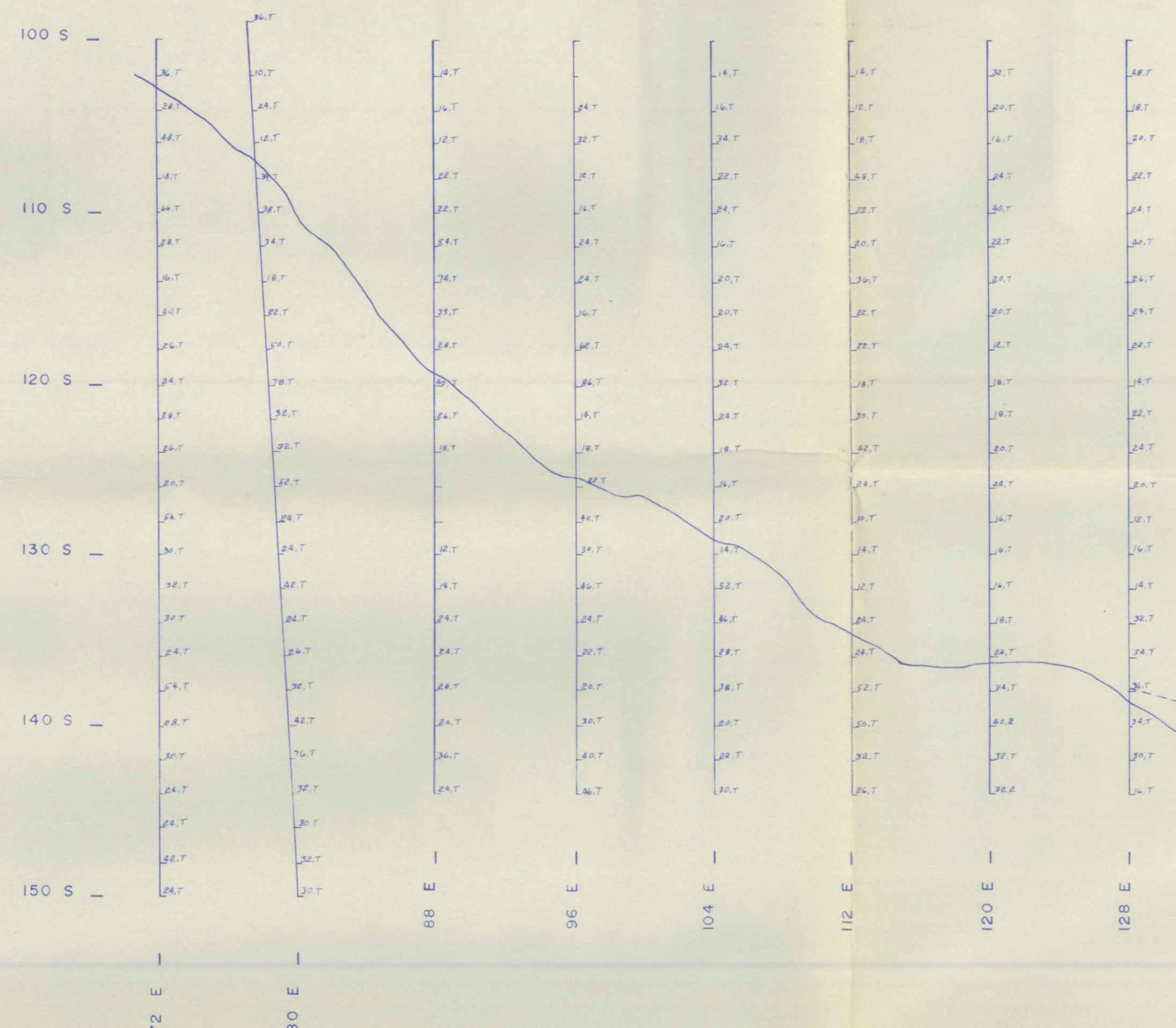


LEAD PLOT, 1970

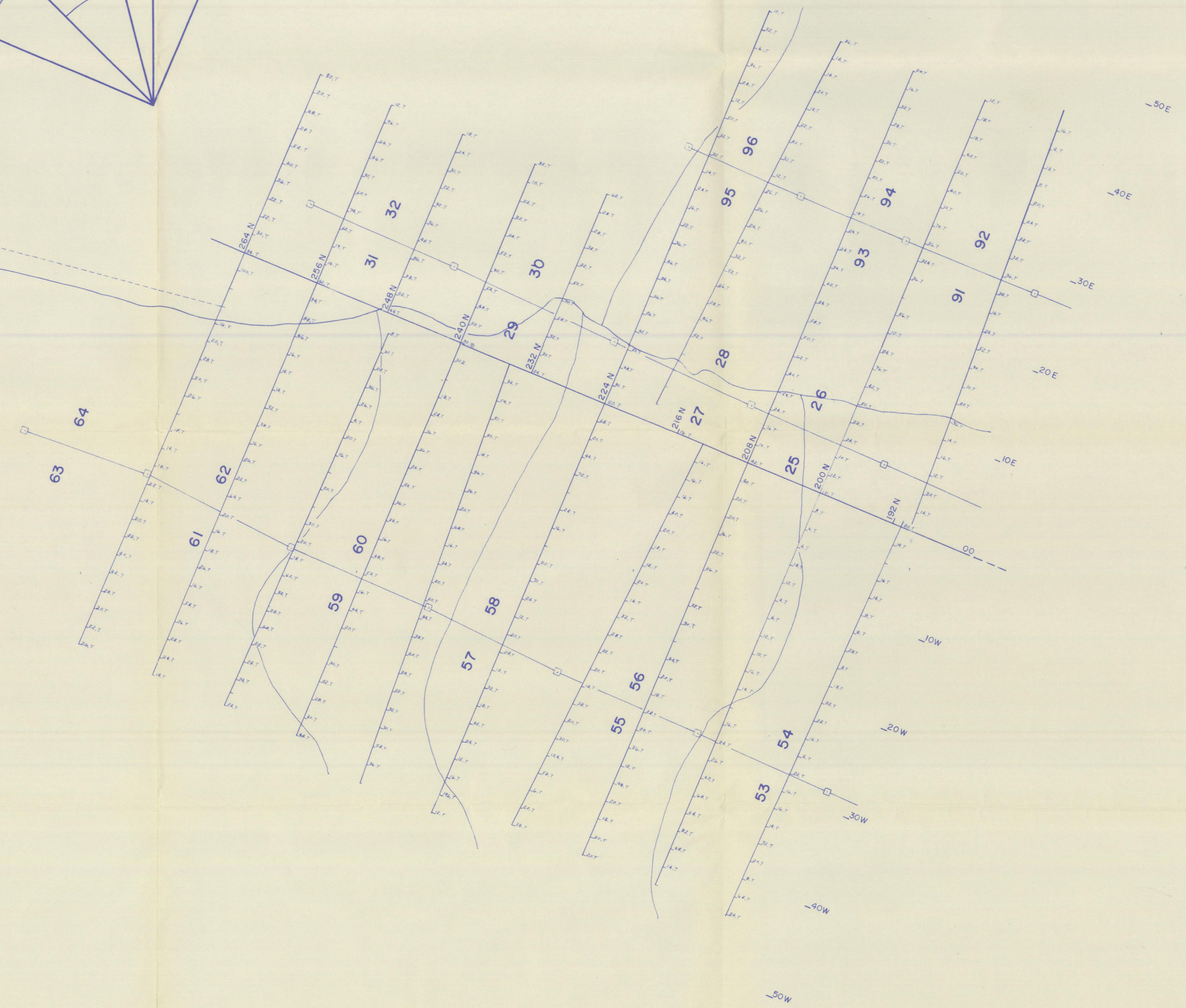
MAP No. 4

Sample Location - Pb (ppm)

Claim Post and Line Location



5055 Feet at 330°



**INTERNATIONAL MINE SERVICES LIMITED**

**TAD & FROG CLAIM GROUPS**

DAWSON RANGE, YUKON TERRITORY

Claim Sheet No. 115-1-5

Scale: 1" = 600'



COPPER-MOLYBDENUM PLOT, 1970

MAP No. 2

- 28.T Sample Location - Cu, Mo (ppm)

□ Claim Post and Line Location