EXPLORATION MANAGERS COPY

VANCOUVER OFFICE

013811

ATLAS EXPLORATIONS LIMITED

SHELDON PROJECT REPORT

JANUARY, 1967

CLYDE L. SMITH
SENIOR EXPLORATION GEOLOGIST

TABLE OF CONTENTS

		Page
I.	PIKE GROUP	
A.	INTRODUCTION	1
	Summary	1
	List of Claims	1
	Claim Acquisition	1
	Location and Access	2
B.	WORK DONE - DESCRIPTION OF METHODS	3
	Summary	3
	Line Cutting on Pike Grid	3
	Geochemical Soil Sampling	4
	Ground Magnetics	4
	Ground Electromagnetics	4
	Induced Polarization	5
	Trenching with D6 Cat	5
	Surveying	6
	Sampling	6
	Geologic Mapping	6
	Winkie Drilling	7
C.	RESULTS AND INTERPRETATION	8
	Summary	8
	Geology:	10
	Regional Geologic Setting	10
	Geology of Pike Grid	10
	Detailed Trench Geology	11
	Economics of Current Pike Situation	13
	Geochemistry	15
	Ground Magnetics	17
	Ground Electromagnetics (EM)	19
	Induced Polarization	20
D.	AIR MAGNETIC AND ELECTROMAGNETIC SURVEYS IN PIKE REGION (by J. S. Brock)	
E.	PROPOSED WORK	

Page

II. SHELDON REGION GROUPS

A. INTRODUCTION 1
B. NAR GROUP 1
C. PAY GROUP 3
D. JAKE GROUP 5
E. TED GROUP 7
F. BILL GROUP 8
G. RIS GROUP 9
H. SPUD GROUP 10
I. TOY GROUP 11
J. PROPOSED WORK 12

III. SHELDON REGION OUTSIDE EXPLORATION

A. INTRODUCTION 1
B. GEOLOGY 1
Summary 1
Regional Geologic Setting 2
Types of Mineralization 3
Similarities with Major Mining Districts 4
C. WORK DONE 5
D. PROPOSED WORK 6

IV. OUTLINE OF ESTIMATED WORK, PERSONNEL, COSTS

A. PIKE GROUP 1
B. SHELDON REGION GROUPS 5
C. SHELDON REGION OUTSIDE EXPLORATION 8
D. NOTES 10

V. CASH FLOW - TO ACCOMPANY ESTIMATED WORK, PERSONNEL, COSTS

LIST OF FIGURES

Figure		Page
1.	Claim map of Pike Group	
2.	Geologic map of Pike grid area, 1" = 400'	
3.	Geologic map of Pike showings area, zone 1, 1" = 100'	
4.	Geologic map of Trench 43aW, zone 1, 1" = 10'	
5.	" " " " 43 W " "	
6.	" " " " 43 W " "	
7.	" " " " 45 W " "	
8.	" " " " 46 W " "	
9.	" " " " 48 W " "	
10.	" " " " 48 W " "	
11.	" " " " 50 W " "	
12.	" " " " 56 W " "	
13.	" " " " 24 E, zone 2, 1" = 10'	
14.	Assay results for Au, Ag, Pb, Zn, Cu, in trenches, zone 1, Pike Group, 1" = 20'	
15.	Geochemical values map of Pike grid area, 1" = 400'	
16.	Geochemical anomalous outlines map for Cu, Pb, Zn, Pike grid area, 1" = 400'	
17.	Geochemical anomalous values and outlines map for Cu, Pike grid area, 1" = 400'	
18.	Geochemical anomalous values and outlines map for Pb, Pike grid area, 1" = 400'	
19.	Geochemical anomalous values and outline map for Zn, Pike grid area, 1" = 400'	
20.	Geochemical profile map across anomalous zones for Cu, Pike grid area, 1" = 400'	
21.	Geochemical profile map across anomalous zones for Pb, Pike grid area 1" = 400'	
22.	Geochemical profile map across anomalous zones for Zn, Pike grid area 1" = 400'	

Figure | Page

23. Frequency distribution curve for Cu, Pike grid area
24. Frequency distribution curve for Pb, Pike grid area
25. Frequency distribution curve for Zn, Pike grid area
26. Ground magnetic contour map, Pike grid area, 1" = 400'
27. Ground magnetic values and profile map, Pike grid area, 1" = 400'
28. Modified ground magnetic profile map, Pike grid area, 1" = 400'
29. Ground electromagnetic high frequency contour map, Pike grid area, 1" = 400'
30. Ground electromagnetic high and low frequency values and profile map, Pike grid area, 1" = 400'
31. Induced polarization values map for five lines, Pike grid area, 1" = 400'
32. Aeromagnetic map, Traffic Mountain area, 1" - 1320' ($\frac{1}{4}$ mile)
33. Air electromagnetic map, Traffic Mountain area, 1" = 1320' ($\frac{1}{4}$ mile)
34. Aeromagnetic map, Traffic Mountain area (Sheet 1), 1" = 2640' approx. ($\frac{1}{2}$ mile)
35. Aeromagnetic map, Traffic Mountain area (Sheet 2, 35 miles west of Traffic Mt.), 1" = 2640' approx. ($\frac{1}{2}$ mile)
36. Aeromagnetic map, Traffic Mountain area (Sheet 3, 35 miles west of Traffic Mt.), 1" = 2640' approx. ($\frac{1}{2}$ mile)
37. Aeromagnetic profile map, Traffic Mountain area, 1" = 2640' ($\frac{1}{2}$ mile)
38. Claim group location map, Sheldon region, 1" = 4 miles
39. Geologic, occurrence and assay map of Nar group, 1" = $\frac{1}{2}$ mile
40. Claim map of Nar group, 1" = $\frac{1}{2}$ mile
41. Geochemical map of Nar group area, 1" = $\frac{1}{2}$ mile
42. Claim map of Pay group, 1" = $\frac{1}{2}$ mile

Figure | Page

43. Geologic, showings and assay sketch map of claims 9 and 10, Pay group, 1" = 200'

45. Claim map of Jake group, 1" = ½ mile

46. Geochemical, showings and assay map of Jake group area, 1" = ½ mile

47. Claim map of Ted group, 1" = ½ mile

48. Geochemical, showings map of Ted group area, 1" = ½ mile

49. Claim map of Bill group, 1" = ½ mile

50. Geochemical map of Bill group area, 1" = ½ mile

51. Claim map of Ris and Spud groups, 1" = ½ mile

52. Geochemical, showings map of Ris and Spud groups area, 1" = ½ mile

53. Claim map of Toy group, 1" = ½ mile

54. Geologic, geochemical, showings, assay and claim group map of sheet 105 G 16 (1" = ½ mile)

55. Geologic, geochemical, showings, assay and claim group map of portion of sheet 105 H 13 (1" = ½ mile)

56. Geologic, geochemical, showings, assay and claim group map of portion of sheet 105 I 4 (1" = ½ mile)

57. Geologic, geochemical, showings, assay and claim group map of sheet 105 J 1 (1" = ½ mile)

58. Geologic, geochemical, showings, assay and claim group map of sheet 105 J 2 (1" = ½ mile)

59. Geologic, geochemical, showings, assay and claim group map of sheet 105 J 7 (1" = ½ mile)

60. Pay group - Composite Geochemical, Geological, Aeromagnetic, and Showings Map.

I. PIKE GROUP

A. INTRODUCTION

Summary

1. Atlas Explorations Limited staked 776 claims, and optioned 32 claims in the Pike Lake area between mid-June and mid-September of 1966, to cover showings and anomalous geochemical results.

2. Interest in the area prompted by earlier prospecting discovery of 20 oz. Ag mineralization in porphyry by Al Kulan, as well as by nearby staking in 1966.

3. Air magnetic and electromagnetic survey conducted in early June followed by prospecting, hand trenching, and geochemical silt sampling.

4. Pike group located 52 air-line miles east of Ross River, just west of Traffic Mountain; access by float aircraft from Ross River.

List of Claims

Claim Number	Grant Number	Date Recorded
PIKE 1 - 24	Y13149 - Y13172	July 4, 1966
25 - 88	Y13443 - Y13506	August 10, 1966
89 - 152	Y13682 - Y13745	August 30, 1966
153 - 608	Y13763 - Y16204	Sept. 9, 1966
609 - 776	Y16727 - Y16894	Oct. 17, 1966
PIKE FR. 1-6, 8-9, 14-22	Y17243 - Y17259	Nov. 21, 1966
EM 1 - 8, 17 - 24	Y 7954 - Y 7969	June 2, 1966
EMU 1 - 16	Y 7938 - Y 7953	June 2, 1966

Claim Acquisition

Atlas Explorations Limited became interested in the Pike Lake area during June, 1966. Interest was prompted primarily by an earlier prospecting discovery by Al Kulan of Cu-Ag mineralization in porphyry, running about 20 ounces Ag, in the area of Pike Lake, as well as the re-staking of a small group, previously drilled under the direction of J. Hirshorn, by Herman Forst, north of the Pike Lake area. An airborne magnetic and electromagnetic survey, under contract to Lockwood Survey Corporation, was conducted in a 35 square mile area west of Traffic Mountain in early June, and prospectors J. Hundere and B. Watson began prospecting, trenching and geochemical silt sampling anomalous magnetic areas.

A 24-claim group was staked in mid-June to cover showings and anomalous geochemical results discovered by Hundere and Watson. The Pike group was increased to 152 claims in mid-July to cover the area surrounding the showings, as well as newly discovered high geochemical results. During an Atlas staff meeting in mid-August, the decision was made to increase the Pike group to 608 total claims to cover scattered high geochemical results as well as an area of apparently significant structural geology. A 168-claim addition was staked in mid-September, bringing the Pike group total to 776 claims, to cover an area of related favourable geology and anomalous geochemistry, as well as to acquire the intervening ground between the previous Pike claims and the EM-EMU group (32 claims) obtained under option agreement from Herman Forst on August 16, 1966.

Location and Access

The Pike group is centered roughly at latitude 62°08' North and longitude 130°40' West, and covers much of the north half of topographic sheet 105J-2, and a western portion of sheet 105J-1. The group is elongate in a westerly direction, and extends from the south slopes of Traffic Mountain to a point 15 miles to the west. Three small groups adjoin the Pike claims on the west end: Star 1 - 40, and Cree 1 - 32 held by A. Rasicot, and Oxo 1 - 40 held by C. Poli.

Access to the property is by aircraft from Ross River; air-line mileage is 52 miles. Beavers on floats have been used, and landings made on 3/4-mile long Pike Lake. A temporary camp was established on the north side of Pike Lake, from which supplies were transported to the base camp, $1\frac{1}{2}$ miles to the west, by helicopter or D6 Cat. Pike Lake is connected with the base camp by a Cat road.

Early work on the property was administered by A. Harman from the base camp; after September 1 work was administered by C. L. Smith from the Pike base camp and the Pelly Lakes base camp. Communication was by single sideband radio (call number CJV 694) to Ross River.

B. WORK DONE - DESCRIPTION OF METHODS

Summary

1. Total of 140, 000 feet of line cut on grid with 2, 000 foot long base line and 1, 000 to 3, 000 foot long perpendicular cross lines.

2. Soil samples taken at 100 foot stations on Pike grid and analyzed for Cu, Pb, Zn.

3. Magnetics done with Jalander 46-65 at 100 foot stations on Pike grid; survey looped and corrected for drift and diurnal variations.

4. EM done with Crone JEM duel frequency unit, using horizontal loop configuration and recording both high and low frequency readings at 100 foot stations on Pike grid.

5. Five I.P. profile lines done under direction of D. W. Smellie across geochemical zones.

6. Total of eleven Cat trenches satisfactorily exposed bedrock in zones 1 and 2, but D6 Cat found inadequate for dealing with deeper overburden and permafrost of zone 2.

7. Pike 1 - 24 claim posts surveyed, fractions defined and staked. Zone 1 trenches surveyed and tied to grid base line and claim posts.

8. Zone 1 trenches and two zone 2 trenches chip sampled in five foot sections, samples assayed for Au, Ag, Pb, Zn, Cu.

9. Pike grid area and trenches geologically mapped.

10. One Winkie drill hole put down in zone 1 (43W) to depth of 78 feet; drilling suspended due to mechanical breakdowns, water problems, cold weather.

Line Cutting on Pike Grid

During the period June 29 - July 11, a total of 140, 000 feet of line were cut in the area of showings found by Hundere and Watson. The grid consists of a base line over 10, 000 feet long, which extends from claim Pike 11 to claim Pike 36 on a N 70°W bearing. Crosslines

are at 400-foot spacings from 80W to 56E and perpendicular to base line. Between 80W and O crosslines run 2, 000 feet north and 3, 000 feet south of base line. Between O and 56E crosslines run 1, 000 feet north and 3, 000 feet south of base line.

Geochemical Soil Sampling

Over 2, 000 soil samples were taken on the Pike grid at 100 foot sample stations; in anomalous zones 50 foot samples on 200 foot spaced lines were taken. Collection began June 30, and continued intermittently until September 15.

Samples were normally taken with mattock from the upper B-horizon at a depth of about 6 inches; where local swamp or permafrost conditions were encountered, A-horizon may have been sampled. Samples were placed in Kraft soil envelopes and numbered by grid position; stations were flagged. Samples were run in the Atlas lab for Cu, Pb, Zn, and results plotted on 400-foot scale maps of the Pike grid.

Ground Magnetics

Ground magnetics was done with a Jalander 46-65 magnetometer by R. Lucas, over the entire Pike grid during July 1 to July 12 and August 1 to August 15. The Jalander is hand held and measures the vertical magnetic component by means of an automatic levelling oil-dampened fluxgate. Instrument range is 10 to 25, 000 gammas over five sensitivity ranges; gamma values are determined by conversion from scale readings.

Base line stations were re-read periodically during line surveying and corrections applied for drift and diurnal variations so that the entire survey was tied to an original base line survey. Corrected gamma values were plotted on 400-foot scale maps of the Pike grid.

Ground Electromagnetics

Ground electromagnetics (E.M) was done with a Crone JEM dual frequency unit with P. Sandaluk as chief operator, on Pike grid lines 80W to 20E during July 1 - 12 and August 1 - 12. The Crone apparatus is an inductive type and may be used as a horizontal or vertical loop. Resultant dip angle of the field and the width of null or out of phase component are measured. Maximum coil spread is 300 feet, and

frequencies of 480 and 1,800 cycles per second (c.p.s.) are used. Effective depth penetration for flat lying conductors is 300 feet using maximum coil spread; 100 feet for vertical conductors.

Horizontal loop configuration was used with a 300 foot coil spacing and 100 foot station readings. Both high (1,800 c.p.s.) and low (480 c.p.s.) frequency readings were taken.

Readings were plotted on 400 foot scale maps of the Pike grid. High frequency contour maps and combined high and low frequency profile maps were made.

Induced Polarization

An induced polarization survey was conducted between July 29 and August 4 on a contract basis under the direction of D. W. Smellie, and a report was submitted dated August 12. The survey consisted of five profile lines run across geochemically anomalous zones at 60W, 56W, 44W, 32W, and 16W.

The following is an excerpt from Smellie's report describing instrumentation and field procedure:

> "The induced polarization equipment was manufactured by Geoscience Incorporated of Lexington, Massachusetts. The Sender supplies a preset constant current that is applied to the ground through two electrodes. The voltage between two potential electrodes is passed into the Receiver. A meter is nulled at one frequency and gives a direct reading of the percent frequency effect at a second frequency. From the applied current and received potential, the apparent resistivity of the medium may be calculated.
>
> "The electrodes are in a collinear array, with the current electrodes separated by a distance "a". The potential electrodes are also separated by a distance "a". The nearest current and potential electrodes are separated by a distance "Na", where N = 1, 2 or 3. By varying N, the sender-receiver spacing, one obtains a depth-probing effect, since the effective depth of exploration varies with this spacing."

Trenching with D6 Cat

A D6 Cat, under contract from Liard Construction, was walked into the Pike area in early August. A road was put in from Pike Lake

to the base camp, base line on the Pike grid was cleared and extended to 90E, and trenches were put across zones of anomalous geochemistry and surface exposures. Two shifts of 10 hours were run for 2 - 3 weeks and one shift of 10 hours for the duration of the work.

Geochemical zone 1 (38W - 55W and 1S - 6S) was satisfactorily trenched, being cut by seven trenches of average length 200 feet and average depth about 8 feet. Late in October some stripping of cover was begun in zone 1. Twelve trenches were attempted across zone 2 (40W - 40E and 8S - 28S), but only four exposed bedrock (14W, 12W, 4E, 24E) adequately enough for mapping or sampling. Trenching difficulties in zone 2 were caused by deep overburden, ground water, and permafrost. In general, conditions were too extreme for a D6, although it is believed that a D7E with ripper may operate effectively in places in zone 2.

Surveying

In late September, A. Harman did a claim post survey of Pike claims 1 - 24 as well as a survey of trenches in zone 1. Fractions between claims were located and proposed fraction staking outlined. Fractions were staked in mid-October. Trenches were tied to base line and claim posts and outlines of trenches defined as well as trench hub locations spotted.

Sampling

All trenches in zone 1 (43aW, 43W, 45W, 46W, 48W, 50W, 56W and hand trenches 44W and 47W) as well as zone 2 trenches 12W and 24E, were chip sampled in 5 foot secrions by T. Skonseng during October. Chips were taken at maximum intervals of 6 inches and uniformity of size and non-selectivity of material was reasonably adhered to.

Five foot sample sections were assayed at the Whitehorse Assay Office for Au, Ag, Pb, Zn, Cu and results plotted on a 1-inch = 20 feet trench map.

Geologic Mapping

The Pike grid area was geologically mapped at 400 foot scale by A. Sangster during July and August. Sangster also mapped zone 1 at 100 foot scale. Three geologic units were defined, major faults noted, and outcrop, float, and blast hole locations shown.

All zone 1 trenches and trench 24E in zone 2 were geologically mapped at 10 foot scale by J. Staniford. Contacts, rock units, fracture attitudes, and mineral percentages are shown. Trenches 43W and 48W in zone 1 were mapped at 10 foot scale by C. L. Smith in order to work out typical zonations across intrusive host rock of alteration, fracture type, and mineralization character.

Winkie Drilling

A Winkie drill was purchased by Atlas early in October and drilling was begun at Pike on October 9. The drill hole was spotted 29 feet S 7°W of Hub 3 in trench 43W, or latitude 29 feet S, departure 4 feet W of Hub 3. The hole was drilled at N 10°E, - 60° for a depth of 78 feet.

The driller was C. Richardson, and he was assisted by W. Barr. Drilling was at the slow average rate of 5 feet/day due to several mechanical breakdowns, water problems, and cold weather. On October 24 drilling was suspended due to slow progress.

Air Magnetics and Electromagnetics

See accompanying report by J.S. Brock.

C. RESULTS AND INTERPRETATION

Summary

Geology

1) Pike region lies within major northwesterly-striking wrench fault zone and is underlain by steeply-dipping early Paleozoic cherts and shales folded around northwest-southeast striking axes and intruded by a Cretaceous granitic stock.

2) Portion of Pike grid underlain by steeply-dipping, N70°W-striking, partially chilled biotite granite dyke, ranging from few feet to 500 feet wide, with length of about 2 miles, which appears to be offshoot of underlying Pike stock.

3) Porphyry Cu-Ag mineralization with minor Pb-Zn veins, occurs throughout much of the hydrothermally altered (silica, chlorite, clay-sericite, and biotite), chilled biotite granite dyke of the Pike grid.

Economics of Current Pike Situation

1) Mineralized granitic host rock in zone 1 was chip sampled in 5 foot intervals across seven Cat and two hand trenches.

2) Area of mineralization 615 feet long, averages 46 feet wide (discontinuous across one trench) for total area of 27,672 feet; using tonnage volume factor of 11, gives 2,515 tons/vertical foot.

3) Averages over total area: 0.61% Cu, 2.44 oz/ton Ag; taking prices $0.45/lb. for Cu and $1.40/oz. for Ag, area has value of $8.91/ton.

4) Tonnage potential of zone 1 believed low, however anomalous Cu geochemical areas in zone 2 total about twice the size of anomalous Cu area in zone 1.

5) Assay results believed very significant in that potentially economic grade found in only locale examined in Pike region; suggests that numerous other geochemical and magnetic targets may be of importance.

Geochemistry

1) Geochemical environment one of free oxidation, thorough leaching, and limited secondary dispersion with metal cations held in upper

B-horizon of residual soil in gently rolling, sluggishly-drained terrain.

2) Threshold values: 120 ppm for Cu, 90 ppm for Pb, 250 ppm for Zn.

3) Two anomalous zones defined by superimposed anomalous Cu, Pb, Zn values below which mineralization found in nearly all cases.

4) Geochemical soil sampling currently best tool for Pike exploration but believed seriously limited in depth potential - reason why effective geophysical tool needed.

Ground Magnetics

1) Broad, sinuous, negative magnetic anomaly (background average 1100 gammas) trends N70°W, runs across entire Pike grid, and appears to reflect buried granitic intrusive.

2) Pyrrhotite (prominent mineral in Pike assemblage) mineralization believed reflected in areas where positively anomalous zones with relatively small, isolated, intense troughs occur near small, isolated, intense peaks in the negative magnetic band; erratic magnetics perhaps indicate epigenetic mineralization.

3) Magnetics valuable for defining broad targets in Pike area, although not satisfactory for location of drill targets; more detailed magnetics to be attempted this season.

Ground Electromagnetics

1) Two broad anomalous zones of less than -15° resultant dip angles reflect steeply-dipping, northwest-striking carbonaceous sediments in western Pike grid.

2) Conductive anomalous zones cut by northwest-trending non-conductive band of 1,000 - 2,600 feet wide believed to reflect granitic intrusive.

3) Mineralized zones 1 and 2 lie at margin of non-conductive intrusive band.

Induced Polarization

1) Broad, low resistivity - moderate P.F.E. anomalies probably indicate carbonaceous sediments; high resistivity areas apparently indicate intrusive rock.

2) Porphyry mineralization appears to be reflected only by combined high resistivity - relatively higher P. F. E. values (as on lines 44W and 56W).

3) Only one IP line run across known mineralization; IP test not adequate to assess value of method in Pike area.

Geology

Regional Geologic Setting. The Pike area is located within, or just north of, a major northwesterly-striking wrench fault, here termed the Traffic Mt. Fault. The Traffic Mt. Fault is topographically and geologically recognizable over a distance of about 100 miles from AndersonCreek in the southeast to Big Timber Creek in the northwest, and is well exposed along the south slope of Traffic Mt. where it brings older, Precambrian or Cambrian, quartzites to the north against Lower Mississippian shales and cherts to the south. Northwest of Traffic Mt., in the Pike area, linears are recognizable on air photos which parallel the major fault and suggest that the Pike area lies within a zone of strong dislocation.

The Pike area is underlain by a succession of Ordovician and Silurian black and gray cherts and shales (unit 3 on G.S.C. Sheldon Lake sheet) which lies along the axis of a northwesterly-plunging tight syncline. The syncline is broken by north-south, apparently normal faults (one of which follows the valley of the Pelly River east of Pike, the other forms a topographic escarpment on the west end of the Pike group) along which western blocks have been down-dropped. Precambrian quartzites exposed to the east may well underlie much of the Pike group.

The deformed sedimentary rocks of the Pike area have been intruded by a granitic stock of probable Cretaceous age, which outcrops locally on the property, and to the east on Traffic Mt., and occurs at the northwest end of a linear intrusive belt which extends southeasterly through the Logan Mountains. The Pike stock is outlined by an area of anomalous air magnetics which is largely covered by the Pike group, although extensions occur to the west, northwest, and east of the group. The stock is only slightly unroofed and outcrops may be only dykes and cupolas.

Geology of the Pike Grid. A. Sangster mapped much of the Pike grid at a scale of 1" = 400' (Fig. 2), zone 1 at scale of 1" = 100' (Fig. 3), and submitted a brief report dated July 17, 1966. The following is a synopsis of Sangster's findings, but consists mainly of notes made by C. L. Smith during brief outcrop examinations:

The dominant geologic feature of the grid area is a N70°W trending, steeply-dipping biotite granite dyke. The dyke is exposed over widths of a few feet to over 500 feet, and over a length of about 2 miles. The intrusion is relatively resistant to erosion and underlies a low-lying ridge on the property. Country rocks are steeply-dipping and consist of interbedded cherts, quartzites, and slates to the north of the intrusion and black slates and minor limestone to the south. Contact metamorphism and alteration are mild, although the silica-rich country rocks may not record the intensity of thermal effects. It is notable that cherts along the northern dyke contact on line 43W contain grossularite garnet and are brecciated and locally mineralized.

Most exposed granite is chilled and contains angular quartz eyes in a fine-grained matrix; central portions of the intrusion consist of medium-grained biotite granite. East of the grid area two additional parallel east-west trending dykes were noted.

The granite dyke is offset up to 400 feet by northerly-trending faults. Sangster mapped an east-west offsetting fault between zone 1 (lines 43W to 56W) and zone 2; although the fault is topographically apparent, ground magnetics and EM suggest that the underlying intrusive structure is probably continuous between zone 1 and zone 2.

Ground magnetic and EM data indicate that the granitic dyke of the Pike grid is an offshoot of the underlying Pike stock. Position of the dyke may have been controlled by a fault for the intrusion trends parallel to the Traffic Mt. Fault fracture system.

Detailed Trench Geology. Remarks on trench geology are included in a July 17, 1966 report by A. Sangster; J. Staniford mapped all trenches in zone 1 (figures 4, 5, 7, 8, 9, 11, 12, 13), and trench maps were made by C. L. Smith at 43W and 48W in zone 1 (figures 6, 10). The following statements are drawn mainly from Smith's observations in zone 1.

Copper-silver, with minor lead-zinc mineralization of potential economic grade occurs over narrow widths in the hydrothermally altered, chilled granitic dyke of the Pike grid area.

Mineralization is predominantly of the porphyry copper type with the rather unusual mineral assemblage, arsenopyrite, pyrrhotite, pyrite, chalcopyrite, tetrahedrite, and minor enstatite, bornite, sphalerite, and galena occurring as disseminations and veinlets in zonally altered intrusive. Narrow ladder veins occur perpendicular to dyke contacts along the north and south margins and carry nearly all of the significant lead-zinc.

The intrusive contains irregular alteration-mineral type zones which roughly parallel dyke contacts. Alteration minerals are silica (quartz), chlorite, clay - sericite, and biotite.

Higher copper grades appear to be related to silification. Relative mineral percentages and character of veinlets vary between zones; veinlets are less common in more intensely altered zones; most copper mineralization occurs as disseminations.

In addition to veinlet sets, which commonly have consistent trends within zones, three fracture types are recognizable: (1) movement set - consisting of rusty gouge zones of crushed quartz which parallel dyke contacts and run across the intrusive at low angles, (2) mineralized set - carrying arsenopyrite, chalcopyrite, sphalerite, galena, striking N15°W - N10°E, dipping steeply to the west, locally opening into ladder veins up to one foot wide, (3) barren set - planar fractures striking N25°W, dipping steeply to the east, have no control on mineralization. Sets (2) and (3) appear to be tensional cracks, which opened late in the cooling history of the dyke.

A trench across the dyke at line 24E exposed negligible copper mineralization, although narrow sections of Pb-Zn-Ag were found along north and south contacts. Anomalous Pb and Zn geochemistry overlie mineralization at 24E, and it is notable that anomalous Cu geochemical values are lacking. In general, geochemistry at the Pike accurately reflects the character of underlying mineralization.

F.A. Campbell did a brief polished section study of type specimens from Pike which suggests the following paragenetic relations: sphalerite (early), arsenopyrite, chalcopyrite, tetrahedrite, arsenopyrite (late). It is notable that some sphalerite contains exsolution chalcopyrite which may be difficult to recover; however, sphalerite is a minor mineral in the assemblage, and the amount of exsolution copper lost would probably be negligible.

Pike mineralization appears to be of the typical mesothermal porphyry copper type, although the association between tetrahedrite and arsenopyrite suggests that the deposit is telescoped - has formed at a relatively shallow crustal level. However, the Pike area has several features in common with the rich Ag-Pb-Zn-Cu vein deposits of the Coeur d'Alene district of northern Idaho, as well as with the Sn-Cu-Pb-Zn deposits of Cornwall, England. The rather unusual mineral assemblage is identical with the Coeur d'Alene, with arsenopyrite being a guide to ore, and the silver content occurring mainly in

tetrahedrite (freibergite) rather than galena; mineralization occurs associated with a granitic pluton within a major wrench fault zone; country rocks are quartzites and argillites. Because of the fundamental similarities between the Coeur d'Alene and Pike, the possibility of vein deposits at the Pike should not be overlooked. Furthermore, the Coeur d'Alene district is zoned from north to south across the fault zone from Au in the north to Pb-Zn in the centre, to Cu-Ag in the south, and possibilities of mineral zonation across the Pike should be investigated. The Pike mineral assemblage is similar to that of the copper-arsenic-tungsten zone of the stockworks deposits at Cornwall. Again, this similarity suggests the possibilities of district zoning at Pike as well as the possibility of tungsten mineralization in the area.

Economics of Current Pike Situation

Two potentially economic zones were defined by anomalous geochemistry on the Pike group, and trenching was begun in August on these zones. It became apparent late in the season, however, that due to the lack of time remaining for a comprehensive trenching program, as well as to the difficulty of trenching in zone 2, the best means of evaluating the potential economics of the Pike situation would be to put several trenches across zone 1, map the trenches in detail and sample them at 5-foot intervals. From this base it was hoped to extrapolate information gathered about zone 1 to areas of similar geochemical-geological characteristics in zone 2.

Figure 14 is a trench-assay map of zone 1 with potentially economic widths connected from trench to trench to define potentially economic areas. The total area has a length of 615 feet and averages 46 feet wide; it is discontinuous, being broken at trench 45. The following table gives area-value factors for blocks A-G shown on the figure. Total area is 27,672 feet, with averages of 0.61% Cu and 2.44 oz/ton Ag. Using a tonnage-volume factor of 11, this gives 2,515 tons per vertical foot; e.g. assuming a depth of 100 feet, tonnage for zone 1 would be roughly $\frac{1}{4}$ million tons. Taking the prices \$0.45/lb. for Cu and \$1.40/oz. for Ag, the area has a value of \$8.91/ton.

Copper and silver assay values increase and decrease in crude relation to each other across the trenches, indicating that silver values are most likely carried in tetrahedrite, which occurs with chalcopyrite. It is notable that galena is absent across widths of relatively high silver value, and that other silver-bearing minerals have not been recognized.

Any hope of tonnage in zone 1 lies in depth. However, two factors suggest that depth may not be great. One is that in trench 43A it can be seen that the dyke host rock appears to come to a peak and

TABLE I

AREA, VALUE, ASSAY FIGURES FOR ZONE 1

	Area sq. ft.	Values	Cu Area x Value	Width (feet)	Ag Area x Value
A	4,950	2.48 oz/ton Ag 0.61% Cu	3,020	35	12,276
B	8,800	3.86 oz/ton Ag 0.44% Cu	3,872	70	33,968
C	3,410	2.20 oz/ton Ag 1.21% Cu	4,126	63	7,502
D	1,762	1.20 oz/ton Ag 0.45% Cu	793	20	2,114
E	2,250	0.93 oz/ton Ag 0.40% Cu	900	50	2,092
F	3,500	1.44 oz/ton Ag 0.57% Cu	1,995	45	5,044
G	3,000	1.50 oz/ton Ag 0.69% Cu	2,070	38	4,500
TOTALS	27,672		16,776	321	67,496

Average % Cu $= \frac{16,776}{27,672} =$ 0.61%

Average oz/ton Ag $= \frac{67,496}{27,672} =$ 2.44 oz/ton

@ 45¢/lb. for Cu and $1.40/oz for Ag, Value = $5.49 plus $3.42 = $8.91

Average width = 45.86 ft.
Average length = 614.93 ft.
Total area = 27,672 sq.ft.

Tonnage per vertical foot $= \frac{\text{total area}}{\text{tonnage-volume factor}} = \frac{27,672}{11} =$ 2,515 tons per vertical foot

plunges to the east beneath barren country rock; if this is indeed the "top" of the dyke, it may be that mineralization is confined only to its uppermost portion. The other factor which bears consideration is the gap in the mineralized area at trench 45, which suggests discontinuity in the zone in depth as well as laterally.

Although tonnage possibilities in zone 1 are probably not good, zone 2 contains areas of anomalous Cu geochemistry totalling about twice the size of the anomalous Cu area in zone 1. Cu geochemical values are nowhere as high as in zone 1, however. One trench was made across a Cu geochemical anomaly in zone 2 at 12W and only low Cu-Ag assay values were obtained.

The significance of assay results to date at the Pike is that it has been demonstrated that Cu-Ag ore of potential economic grade does exist and is detectable geochemically, and perhaps magnetically, within a large area which is anomalous in air magnetics (the probable Pike stock).

Geochemistry

The Pike grid area covers gently rolling, sluggishly drained terrain underlain by outcrop, residual soils, thin glacial cover, and local swamps. Residual soils vary from 0 - 15 feet thick in areas examined, and the water table is commonly found at depths of a few feet in non-outcrop areas. Soil profiles appear to be normal, with a black A-horizon averaging 6 inches thick, underlain by a brown, orange-brown or red B-horizon which grades abruptly downward into bedrock rubble. The rubble is composed of angular blocks which are only slightly rotated, and it passes abruptly into an underlying stratum of typical B-horizon material mixed with fine bedrock chips. This division plane between overlying rubble and underlying soil and chips appears to have been formed during a period of higher water table during which soils developed beneath the table more rapidly than above. The environment in general is one of free oxidation, thorough leaching and limited secondary dispersion in which metal ions are held in clay minerals and hydrous oxides in an upper B-horizon of residual soil.

Frequency distribution curves were plotted (Figures 23, 24, 25) for all Cu, Pb, Zn values in the Pike grid area in an attempt to define threshold between background and anomalous values. Although curves suggest that three levels of values exist (regional background level, local background level and anomalous peaks), the fact that mineralization has been found in nearly all cases in the Pike area

immediately beneath geochemical values greater than regional threshold indicates that all values above the established regional threshold for a given metal are significant. Threshold values determined by frequency distribution curves are as follows: 120 ppm for Cu, 90 ppm for Pb, and 250 ppm for Zn. These values are taken at or above three standard deviations of the mean of the curves (although geochemistry texts commonly define two standard deviations as anomalous).

Two anomalous geochemical zones occur in the Pike grid (Figures 15, 16, 17, 18, 19, 20, 21, 22): zone 1 lies between 55W - 39W and 1S - 6S, and zone 2 between 40W - 40E and 8S - 26S. Both zones are defined over most of their areas by superimposed anomalous values in Cu, Pb and Zn. Where the zones have been trenched, mineralization has been found immediately beneath zones and commonly throughout the cross-sectional limits of the zones. This feature indicates that very little secondary dispersion has occurred.

The largest Cu anomaly occurs in zone 1 in association with more restricted Pb-Zn anomalies. Peak Cu value is 2024 ppm and two others are above 1000 ppm - these are the highest values in the Pike grid. Zone 1 has been thoroughly trenched and it has been found that Cu geochemistry is related to porphyry Cu-Ag mineralization. Six smaller and unconnected Cu anomalies occur in zone 2 in association with a nearly continuous Pb-Zn anomaly. Peak Cu value in zone 2 is 580 ppm, but most values are only somewhat above background. A trench at 12W across the heart of a Cu anomaly returned only minor assay results. The suggestion is that zone 2 contains lesser amounts of Cu mineralization in connection with more abundant Pb-Zn mineralization than occurs in zone 1.

Zone 2 is composed of a nearly continuous Pb anomaly with peak value of 1200 ppm, and with most anomalous values below 400 ppm. Where high Pb values have been trenched in zone 2, such as 12W and 24E, minor galena mineralization has been found in veins and small shear zone replacements; best results were obtained over two 5-foot sections at the southern intrusive contact in trench 24E where combined Pb-Zn assay values of 8.3% and 10.6%, with 6.6 and 10.1 oz. Ag, respectively, were obtained. Also, in zone 1 small Pb-Zn veins occur along intrusive contacts and are reflected by moderate Pb geochemical values. Although zone 2 has not been adequately trenched, it appears at this point that in the Pike area Pb cations have a greater ability to disperse than Cu (an abnormal geochemical phenomenon) and that small amounts of galena can generate impressive Pb geochemical

anomalies so that results should be interpreted with restraint.

Zn geochemical results correspond closely with those of Pb, zone 2 being a nearly continuous Zn anomaly. Peak value is 6200 ppm although most anomalous values are below 1000 ppm. The similarity between Zn and Pb geochemical distribution attests to the unusually limited mobility of Zn - in most terrains Zn travels much greater distances than Pb. This feature again indicates the true residual character of the soil in the Pike area. Although the presence of sphalerite can probably be reliably predicted by anomalous Zn values, as with Pb it appears that small amounts of mineralization are capable of producing impressive results.

Geochemical zones 1 and 2 can be related to geology - mineralization occurring in intrusive - as well as to ground magnetics (see following section).

At this point in the exploration of the Pike area, geochemistry has proved to be the most valuable tool available. Geochemical results accurately reflect locations of near surface, oxidized mineralization. The depth of geochemical detection, however, is questionable; it is entirely possible that where mineralization is covered by barren country rock, glacial clays, permafrost, or a stable water table, lack of oxidation or ground water flow may drastically restrict dispersion either vertically or laterally.

The probable limited depth potential of geochemistry underlines the need for a satisfactory geophysical tool. In short, geochemical techniques should be used to the utmost, but results should never be regarded as definitive of the presence or absence of mineralization in the Pike area.

Ground Magnetics

The Pike grid area has a background level of about 1100 gammas; the level slopes southward from an average of 1200 gammas in the north to 1000 gammas in the south. The most pronounced anomalous feature in plan (Fig. 26) or profile (Figures 27, 28) is a broad, sinuous band of below-background values which trends N70°W and runs across the entire grid area. Within the band values range up to 3000 gammas below background, but average about 500 gammas below background. Although the zone of low magnetics is contiguous, its appearance, relative to the nearly smooth background profile level, is erratic for it is composed of isolated troughs with widely varying values. The

strong contrast between the zone and areas of background allows it to be defined as an apparently distinct geologic unit.

The negative magnetic zone is bordered by two small positively anomalous zones which lie within the following co-ordinates: 54W - 44W, 4N - 5S, and 24W - 16E, 12S - 30S, and generally correspond with geochemical-mineralization zones 1 and 2. Values in the positive zones range up to 8000 gammas above background, but average about 200 gammas above background. As in the negative anomalous zone, the profile is erratic and composed of isolated peaks.

Similar patterns are reflected by air and ground magnetics in that airborne profiles show a relatively negative east-west trending trough bordered to the south by a positively anomalous zone; the positive zone is of much larger extent, however, and spreads to the south and southwest of the Pike grid area.

A comparison of ground EM and ground magnetics shows that the outline of an area of EM values greater than 35° corresponds with the zone of magnetic lows. EM and magnetics are closely related in the eastern half of the map area, but a divergence occurs in the western half where the EM shows only a narrow band of $+5^{o}$ values. By contrast, the zone of magnetic lows broadens to the west and encompasses more than half of the grid area. It is believed that the granitic intrusion, being reflected by magnetics, widens to the west and in most of the area lies beneath a cover of conductive country rocks which respond to EM with values of -10° and lower. It is possible, however, that portions of the magnetically anomalous terrain consist of pure quartzites or cherts known to occur in the stratigraphic section of the area.

A comparison between outcrop geology and ground magnetics shows that a narrow dyke-like, $N70^{o}W$-trending granitic intrusive underlies a portion of the magnetically negative zone. In the eastern grid area the dyke corresponds roughly with the southern margin of the magnetically low zone, although the far eastern end of the dyke nearly bisects the zone. In the western grid area the dyke occurs in the midst of the much broader magnetic zone and appears to bear no particular spatial relation to it. In brief, relations between outcrop geology and ground magnetics suggest that the dyke is a small offshoot of a much larger underlying granitic mass.

It is notable that what are probably successively lower levels of the Pike granitic intrusion are reflected by outcrop geology, ground EM,

and ground magnetics. The geologic map shows a dyke-like structure of 100 to 600 feet wide. EM indicates a broad non-conductive structure underlying the dyke with widths between 1,000-2,600 feet. The zone of low magnetics underlies not only the dyke and the EM non-conductive area, but expands into the western grid area where it occurs over at least half of the grid area. The discrepancy between EM and magnetics is perhaps best explained by the presence of conductive country rock capping most of the granitic intrusive in the western grid area.

Mineralized zones 1 and 2 are crudely reflected by ground magnetics. In zone 1 mineralization occurs near or just south of a contact between negatively anomalous magnetics (intrusive) and positively anomalous magnetics (probably pyrrhotite-bearing mineralization) associated with smaller and more intense troughs and peaks than occur elsewhere in the grid area. Zone 2 shows a similar relation to magnetics, although large parts of the zone occur up to 600 feet from the contact between positive and negative anomalous areas.

In general, the contact association between negative anomalous zones (granitic intrusive) with sharp troughs, and smaller positive anomalous zones with sharp peaks, appears to reliably reflect erratically distributed pyrrhotite mineralization. Although the relations between pyrrhotite and Cu-Ag-Pb-Zn are not well known, pyrrhotite is a prominent mineral in the zone 1 assemblage, and in parts of zone 2. In summary, where magnetic patterns similar to those in zones 1 and 2 are found in the Pike area, they may probably be reliably interpreted as broad targets within which potentially economic mineralization may occur.

To date, magnetics appears to be the most reliable geophysical tool for the Pike area. However, it cannot be used as an accurate locator of mineralization for the definition of drilling targets. An attempt will be made this coming season to do more detailed magnetic surveys in areas of known mineralization in hopes of finding more distinctive patterns. Closely-spaced readings will be made with the Jalander 46-65 and an Askania magnetometer will be tried.

Ground Electromagnetics (EM)

Much of the Pike grid area shows electromagnetic conductance with high frequency (1,800 c. p. s.) resultant dip angles ranging from -5° to -30° (Figures 29, 30). Two broad anomalous zones of less

than -15° dips occur between the following co-ordinates: 50W - 26W, 4N - 16N and 80W - 40W, 4S - 26S. Both anomalies are characterized by small elongate troughs of - 25° and -30° dips which range in length from 100 to 1,000 feet and strike N50°-70°W. The two anomalies are separated by a northwest-striking non-conductive band of about 1,500 feet wide; if connected, the two anomalies have a combined northeasterly trend. Dips of conducting units within the anomalies are steep - a particularly good example occurring on line 56W between 4S and 12S where a sub-outcrop positive hump occurs between two equally-spaced troughs of -15° and -30°.

Because the EM anomalies are broad, occur within a large EM conductive area, and correspond in location and attitude with known carbonaceous sediments, they are believed to reflect conductive country rocks. Individual conductive units strike N70°W, but the total conductive zone strikes northeasterly, indicating that the units are lens-like and lie within a stratigraphically transgressive zone.

The non-conductive band (+5° to -5° values) ranges in width from 1,000 - 2,600 feet and trends N45°W through the grid area. Because this band corresponds closely with outcropping granitic intrusive and a negative magnetic anomalous zone (interpreted as indicating intrusive) it too is believed to reflect intrusive rock.

Mineralization zones 1 and 2 lie close to the south margin of the non-conductive band; this relation reflects, as does ground magnetics, that mineralization occurs along the contact of the granitic intrusive of the Pike grid.

Induced Polarization (IP)

Five profile lines were run in the western Pike grid area on lines 60W, 56W, 44W, 32W and 16W. Electrode spacing was a = 100 feet (except for line 60W where a = 200) and high frequency of 3 c.p.s. and low frequency of 0.1 c.p.s. were used.

Smellie notes that the lines consist of central IP lows (reflected by negative P.F.E., or percent frequency effect, which is directly proportional to metal factor) with extended anomalous (in P.F.E.) areas to the north and south; these low points lie north of mineralized intrusive. Because of an extensive P.F.E. anomaly south of the central low and its cursory relation to mineralization, Smellie recommends trenching south of known mineralization as well as an investigation of the extensive northern anomaly.

An investigation of the relations between IP and known geology, geochemistry, EM and magnetics, makes Smellie's conclusions doubtful, however. In general, the low resistivity areas appear to reflect conductive country rock (carbonaceous sediments) and high resistivity areas, intrusive or pure quartzite or cherts. (The only line crossing outcropping granite, however, is 44W, where only moderate resistivity values are shown). Because mineralization is known to occur in intrusive, the first requisite of significant P.F.E. anomalies would seem to be a correspondence with high resistivity. The extensive anomalies cited by Smellie correspond only locally with high resistivities, and are therefore probably caused by carbonaceous material. Only one point of P.F.E. rise corresponds with high resistivity, and this is on line 56W at the western edge of zone 1 where mineralization could be reliably predicted.

This reflection of apparent mineralization at line 56W as well as the fact that only two of the five lines run were put across known mineralization, means that IP should be further considered as a possible geophysical tool in the Pike region. The ability of IP is not adequately known to exclude it from possible use, although the abundance of carbon-bearing sediments may make interpretation difficult.

E. PROPOSED WORK

Work to date in the Pike area has demonstrated the effetiveness of geochemical-geological exploration in locating near surface mineralization, as well as the ability of air and ground magnetics to define crude target areas. EM and IP are of doubtful value at this point, but neither technique should be excluded from consideration in the area.

As a basis for future exploration it is recommended that all significant anomalous air magnetic areas be investigated with detailed geologic mapping - prospecting, soil geochemistry, ground magnetics, and ground electromagnetics. Where near surface geochemical-geologic targets are found, an attempt should be made to trench with a D7E Cat, if significant mineralization is uncovered diamond drilling should be considered.

Also, an attempt should be made to locate targets occurring at such a depth that they are not detectable geochemically. The basis of this attempt should be a detailed magnetic and electromagnetic (and perhaps IP) investigation of known mineralized zones with the intent of defining significant patterns which could be applied to the location of depth targets.

Although the specifics of work for the coming season have not yet been determined, the program is envisioned as one of flexibility, consisting roughly of the following categories and amounts of work (see section IV - Outline of estimated work, personnel, costs):

Line cutting - 300 claims, 400 foot spaced lines or equivalent.

Geochemical soil sampling - 300 claims on 400 foot spaced lines or equivalent; 500 claims, or equivalent, on reconnaissance basis.

Magnetics and EM - 300 claims on 400 foot spaced lines or equivalent.

D7E Cat trenching and drill site preparation - 2 months.

Geologic mapping - all outcrop in claim area, trenches and showings on detail scales.

Surveying - trenches, showings, important claim lines.

Diamond drilling - 7,000 feet budgeted; contingent on results.

Details of proposed work will be worked out in the near future.

II SHELDON REGION GROUPS

A. INTRODUCTION

Summary

1) In early August, 1966, Atlas Explorations Limited initiated a program of aerial geologic reconnaissance - gossan sampling, prospecting, and geochemical sampling - in the Pelly Lakes region, located 75 air-line miles east of Ross River.

Because of growing interest in the potential of the Pike area during June and July of the 1966 season, it was decided to undertake a reconnaissance exploration program southeast of the Pike area. On about August 7, a base camp was established at the abandoned Pelly Lakes trading post. A combined program of aerial geologic reconnaissance and gossan sampling, prospecting, and geochemical sampling was initiated. Several prospecting discoveries were made and four were staked (Nar, Jake, Ris and Ted groups), two groups were examined, optioned and more staking done around them (Pay and Toy groups) and two groups and one extension were staked over three of the several geochemical anomalies discovered (Bill and Spud groups and Pay western extension).

The Pelly Lakes base camp was located on the south shore of the eastern Pelly Lakes; access was by Beaver aircraft from Ross River, 75 air-line miles to the west. Early work was under the supervision of A. E. Aho, F. Campbell and T. Sadlier-Brown; after September 1 until closing of the camp on October 25, under supervision of C. L. Smith. Communication was by single side band radio (call sign Mobile 3) to Ross River.

B. NAR GROUP

Summary

1) Seventy-two claims staked in late August to cover numerous Pb-Zn-Cu showings discovered by P. Risby and E. Dick on a mountain $12\frac{1}{2}$ miles east of Pelly Lakes base camp.

2) Area underlain by steeply-dipping, east-west striking, sediments domed by granitic pluton similar in appearance to Pike granite.

3) Three main types of mineralization, two of which are pyrrhotite skarn with disseminated base metals.

4) High Ag and high Cu assays obtained in two locales.

Claim Numbers	Grant Numbers	Date Recorded
NAR 1 - 72	Y16294 - Y16365	September 21, 1966

In mid-August, P. Risby and E. Dick made a prospecting discovery of Pb-Zn-Cu mineralization on the west slope of a mountain located $12\frac{1}{2}$ miles east of Pelly Lakes base camp. The area was prospected because of the sighting of gossans on the mountain, as well as the presence of a nearby claim group. Subsequent prospecting by Risby, Dick and J. French revealed showings on the northwest, north and southeast sides of the mountain. On August 27-28 a 72-claim group was staked to cover all known showings.

Figure 39 is a geologic, occurrence and assay map of the Nar group area (geology by T. Sadlier-Brown). This area is underlain by a steeply-dipping, east-west striking succession of sediments and possible volcanics (unit 1 on G.S.C. Nahanni sheet) intruded and locally metamorphosed to hornfels and skarn by granite which is locally chilled.

Granite is light gray to faint pink in colour, porphyritic in places and closely resembles granite in the Pike area - the Nar and Pike granites are believed derived from the same magma series. The Nar group mountain appears to be underlain by an intrusive cored dome, although the structure is not apparent from mapped surface geology.

Types of mineralization may be grouped into the following three categories (Fig. 39):

i) pyrrhotite skarn with disseminated chalcopyrite and arsenopyrite, local massive zones and scattered veins of chalcopyrite and arsenopyrite;

ii) pyrrhotite skarn with disseminated galena, sphalerite and chalcopyrite;

iii) altered granitic intrusive and quartzite breccia with massive and disseminated galena, sphalerite, chalcopyrite, pyrite and pyrrhotite.

Type (i) occurs on the north slope of the mountain, and types (ii) and (iii) along the west and south slopes.

A small area of Pb-Zn float on the southeast slope was found by J. French and responded with high geochemical values (Fig. 41) as well as high assays - up to 118.9 oz/ton Ag.

Nine grab samples from showings were assayed (Fig. 39). Three pyrrhotite skarn samples with chalcopyrite ran 1.9, 2.0, and 2.5% Cu. Samples assayed for Pb-Zn-Ag ranged from 6.6 - 38.9% combined Pb-Zn and from 0.91 - 118.9 oz/ton Ag.

Only a cursory prospecting-geological-geochemical treatment was given the Nar group due to the importance of other areas, as well as the fact that the discovery was made late in the season - all showings were covered with snow by the first week in September.

Investigation of the Nar group this coming season will consist of detailed geologic mapping - prospecting, line cutting, geochemical soil sampling, hand trenching, magnetics, electromagnetics and possible diamond drilling of favourable targets.

C. PAY GROUP

Summary

1) Sixteen claims optioned from R. McBean in late August to acquire numerous small base metal replacement and arsenopyrite vein (with Au, Ag values) showings located east of Fortin Lake.

2) Seventy claims staked to more adequately surround showings and to cover scattered geochemical highs.

3) Large Zn geochemical anomaly discovered west of group covered by 80 additional claims.

4) Zn anomaly related to air magnetic anomaly and occurs in favourable geologic setting in which dolomite host rock may occur.

Claim Numbers	Grant Numbers	Dates Recorded
PAY 1 - 16	Y13133 - Y13148	July 4, 1966
17 - 32	Y16523 - Y16538	October 11, 1966
33 - 40	Y17137 - Y17144	November 14, 1966
41 - 86	Y16539 - Y16584	October 11, 1966
87 - 166	Y16981 - Y17060	November 7, 1966

The Pay 1 - 16 group was optioned from R. McBean on August 13, 1966, following an examination by Al Kulan and discussions with P. Risby, who made the initial discovery. Payments are due at yearly intervals on September 1 beginning in 1967. C.J. Brown made a brief examination of the property in July 1966; some of the following statements are taken from Brown's report as well as from remarks made by Risby.

The Pay 1 - 16 group consists of 14 contiguous claims, elongate in a northwesterly direction, and two separate claims northwest of the main group, located east of Fortin Lake and about 60 miles east of Ross River. The area is underlain by a Proterozoic or Cambrian succession of quartzite, banded chert and argillite, most of which has been metamorphosed to hornfels (unit 2, G.S.C. Finlayson Lake sheet) which strikes northwest-southeast and dips steeply to the northeast. Nine showings were examined by Brown, all of which were described as conformable, bedded replacements of white pyrite, arsenopyrite, galena, sphalerite and chalcopyrite in hornfelsic calcareous units along a contact between argillite and quartzite-chert. No showings seen were more than a few inches thick or more than a few tens of feet long, although outcrop in the area is reasonably plentiful. Of four assay samples taken by Brown, one ran 0.16 oz Au, the one run for Ag was 0.14 - 3.88 oz/ton Ag, and the one sample run for base metals ran 1.5% Pb (Fig. 43). Although Brown's observations suggest little of importance, Risby reported that Brown saw only a small portion of the mineralized area and did not visit two showings from which assays of 20 oz/ton Ag (now covered by Claims PAY 61 - 62) and 0.76 oz/ton Au (PAY 15 - 16) were obtained by Risby at the time of staking. Risby described these occurrences and others in the area as arsenopyrite veins, one of which ran up to six feet wide.

At Risby's suggestion, and in order to honour an informal agreement with him, an additional 70 claims were staked around the original 1 - 16 group. Some scattered showings and anomalous geochemical results were covered by the new claims.

During a regional geochemical soil sampling program in the Pay Group area in September, a large area of highly anomalous Zn values was discovered and detailed on the west side of the Pay Group (Fig. 42). The western Pay extension of 80 claims (Pay 87 - 166) was staked in late October to cover this anomaly.

Background for Zn in the area is 250 ppm, peak value is 4,000 ppm. A northwesterly-trending contiguous anomaly of over 500 ppm runs for over 3 miles from a point about one mile east of the north end of Fortin

Lake to a point about $2\frac{1}{2}$ miles east of the centre of the lake; the anomaly ranges from $\frac{1}{4}$ - $\frac{1}{2}$ mile wide. Within the 500 ppm anomaly are two 1,000 ppm peaks of one mile in length which trend almost east-west.

Slopes are gentle and outcrop in the west Pay area is sparse, although overburden is thin and appears to consist mainly of residual soil.

The west Pay area lies directly on strike with a Silurian and Devonian, thick-bedded dolomite unit, which outcrops about six miles to the southeast (unit 4 G.S.C. Finlayson Lake sheet), and near the nose of a plunging granitic body outcropping about four miles to the east. It is notable that dolomite frequently acts as a favourable host rock for Zn mineralization.

The G.S.C. aeromagnetic map (1" = 1 mile) of McEvoy Lake (sheet 105C16) shows an area of anomalous magnetics east of Fortin Lake. A broad northwesterly-trending anomaly in this area lies just upslope to the east of the Zn geochemical anomaly.

In brief, the close association between favourable geologic setting, the possible occurrence of favourable host rock, anomalous air magnetics and extensive anomalous Zn geochemistry causes the potential of the west Pay area to be rated high.

Investigation of the Pay group this coming season will consist of detailed geologic mapping - prospecting, line cutting, detailed geochemical soil sampling in known anomalous areas, magnetics, electromagnetics and possible trenching and/or diamond drilling of favourable targets.

D. JAKE GROUP

Summary

1) Eighty claims staked in mid-September to cover several Pb-Zn-Cu showings discovered by J. Hundere about 4 miles southeast of McEvoy Lake.

2) Five main types of mineralization, three of which are disseminated Pb-Zn-Cu in intrusive or quartz-rich country rock, one of which is massive chalcopyrite.

3) Air magnetic anomaly in south half of group near numerous showings.

Claim Numbers	Grant Numbers	Date Recorded
JAKE 1 - 80	Y16443 - Y16522	October 11, 1966

Late in August, J. Hundere discovered several showings in a rugged cirque area centred about $4\frac{1}{2}$ miles southeast of the east end of McEvoy Lake. The showings were covered by an 80-claim group staked under the direction of B. Watson during the second week in September.

Bedrock in the Jake group area consists of massively bedded quartzites, cherts, limestones, and hornfels, striking northerly and dipping moderately to the east (units 2 and 5, G.S.C. Finlayson Lake sheet). Hundere noted granitic intrusive and some greenstone in the area.

Figure 46 is a geochemical, showings, and assay map of the Jake group. Five basic types of occurrences were noted in over 20 locations by Hundere: (1) disseminated galena and sphalerite in altered intrusive, (2) disseminated chalcopyrite, arsenopyrite, galena and sphalerite in altered intrusive, with or without calcite alteration or veining, (3) massive replacements of chalcopyrite in limestone near quartzite contacts, (4) disseminated galena in quartzite, disseminated sphalerite in chert, (5) scattered veins of galena or pyrite, sphalerite, chalcopyrite with calcite. Pyrrhotite occurs locally. Nothing examined was of large size, although few showings could be traced due to thick talus cover.

All geochemical silt samples taken in a north-trending valley draining most of the group were anomalous; peak values being 3,000 for Cu, 10,000 for Pb, 7,000 for Zn - such values are to be expected in areas of abundant showings, however.

Selected assays (Fig. 46) had the following ranges: 2.4 - 14.3 oz/ton Ag, 0.2 - 9.2% Pb, Tr - 3.6% Zn, 0.18 - 16.2% Cu. Cadmium was expected in two samples, but assay results have not been received.

The G.S.C. aeromagnetic map (1" = 1 mile) of McEvoy Lake (sheet 105G16) shows a one-mile long, east-west trending magnetic anomaly along the south margin of the Jake group in an area of several showings.

Initial examination of the Jake group will consist of detailed geologic mapping and prospecting with selected geochemical contour line sampling. Line cutting, magnetics, and electromagnetics will be done in areas of showings.

E. TED GROUP

Summary

1) Twenty claims were staked in late September to cover a 5 - 10 foot wide barite vein and associated smaller showings six miles northwest of the north end of Frances Lake.

2) Barite showings associated with high geochemical silt results, possibility of neighbouring base metals to be considered.

3) Barite in demand; depending on grade of material, prices range from $12 - $49/ton; Ted group barite to be analyzed for quality and grade.

Claim Numbers	Grant Numbers	Date Recorded
TED 1 - 20	Y16585 - Y16604	October 11, 1966

T. Skonseng discovered barite showings on a northerly-trending ridge six miles northwest of the north end of Frances Lake in late August. T. Sadlier-Brown visited the showings in mid-September, wrote a brief report, collected samples, and recommended staking. In late September, 20 claims were staked to cover all known barite showings in the area (Fig. 47).

One showing is a 5 - 10 foot wide, N25°E striking, steeply-dipping, vein of apparently massive, coarse-grained barite which cuts quartzite country rock (unit 13, G.S.C. Frances Lake sheet). Barite can be traced in float for about 300 feet along strike. Several smaller showings are scattered over an area in the south end of the Ted group, but they are not aligned; Sadlier-Brown noted that they could represent several small veins or one very wide vein or body.

Quartz veins occur in the area of barite showings, and many geochemical silt samples south of the showings gave anomalous results. Because barite is a common gangue for vein deposits, the Ted group area should be prospected for base metals.

Barite is in demand in the paint, oil-well drilling, and chemical industries. Price varies with quality of material. The following prices are quoted from Engineering and Mining Journal, December 1966:

Barytes; st, f.o.b. ship. pt. crude Chemical grade:

Hand picked: 95% $BaSO_4$, 1% Fe	$18.50
Flotation, magnetic 96 - 97½%	$19.00 - $23.50
Water ground: 99½%, 325 mesh	$45.00 - $49.00
Drilling mud grade: 83 - 93% $BaSO_4$, 3 - 12% Fe, sp.gr. 4.20 - 4.30	$12.00 - $16.00
Ground	$23.00 - $26.00

Samples of the Ted group barite are now in Ross River, but inquiries as to procedure for grade and quality determination will be made and the material sent to Vancouver and evaluated in the near future.

Preliminary work this coming season should consist of prospecting, geologic mapping, and hand trenching with Cat trenching, gravity surveying, and diamond drilling considered contingent on favourable preliminary results.

F. BILL GROUP

Summary

1) Ninety-four claims staked in late September to cover scattered high geochemical results in area 1 - 4 miles southeast of Pelly Lakes base camp.

2) Follow-up prospecting not successful in locating significant mineralization.

Claim Numbers	Grant Numbers	Dates Recorded
BILL 1 - 48	Y16633 - Y16680	October 17, 1966
PELLY 49 - 64	Y16681 - Y16696	October 17, 1966
BILL 65 - 94	Y16697 - Y16726	October 17, 1966

As a result of reconnaissance geochemical silt and soil sampling traverses by T. Skonseng, J. Graham, W. Waugh and P. Tegart, scattered geochemical highs were located in an area from one to four miles southeast of the Pelly Lakes base camp. Some detailed geochemical soil lines were run to more accurately locate anomalies and

a group of 94 claims was staked in late September to cover the important anomalies. Prospecting traverses were made by B. Watson and W. Waugh, but no showings other than disseminated marcasite and pyrite in slate were found.

An eastern extension of 26 claims was planned for staking, but deep snow on steep slopes prevented it. Staking of this extension is planned for early next season.

The geochemical anomalies occur in mountain country of moderate slopes, underlain by quartzite and hornfels, which strike northwesterly and are steeply dipping, near the nose of a northwesterly plunging linear granitic stock.

Preliminary investigations will consist of prospecting, geological mapping and detailed soil geochemistry; geophysical surveys will be considered contingent on preliminary results.

G. RIS GROUP

Summary

1) Twenty-four claims staked in mid-October to cover five or six 5 - 15 feet wide chalcopyrite-bearing quartz veins associated with high Cu-Pb-Zn geochemical values, 11 miles south of Pelly Lakes base camp.

Claim Numbers	Grant Numbers	Dates Recorded
RIS 1 - 12	Y17061 - Y17072	November 7, 1966
19 - 30	Y17073 - Y17084	November 7, 1966

In late August P. Risby and E. Dick discovered five or six chalcopyrite-bearing quartz veins in a locale 11 miles south of the Pelly Lakes base camp and 10 miles southeast of the south end of Fortin Lake. The veins occur in a parallel set, strike northwest, dip vertically, range from 5 - 15 feet wide and may be traced along strike for up to 200 feet. Country rock is northwesterly-striking, southwesterly dipping, phyllite and hornfels, which lies along the southwest flank of a linear, 10-mile long, northwesterly-trending granitic body. An assay of the chalcopyrite vein material ran .005 oz/ton Au, .72 oz/ton Ag, and 2.6% Cu. Other small showings were noted in the area which contained a peculiar sulfide which appeared to be pale chalcopyrite - two assays returned only Tr. and .16% Cu, however.

In early September the area of showings was included in a regional reconnaissance geochemical soil survey. The area responded with scattered anomalous geochemical values in Cu, Pb, Zn.

Because of the size of the showings and the association with scattered high geochemical results, the decision was made to stake 24 claims in mid-October. The claims are of low priority at this stage, but initial detailed geologic mapping, prospecting and soil geochemistry are believed justified.

H. SPUD GROUP

Summary

1) Thirty-two claims staked in late October to cover area of anomalous Cu-Pb-Zn geochemical values associated with crest of linear air magnetic anomaly 10 miles south of Pelly Lakes base camp.

Claim Numbers	Grant Numbers	Dates Recorded
SPUD 1 - 32	Y17085 - Y17116	November 7, 1966

During a reconnaissance survey of anomalous air magnetic areas shown on G.S.C. Aeromagnetic maps (1" = 1 mile) in the region south of Pelly Lakes, high geochemical results in Cu, Pb and Zn were obtained in a locale 10 miles due south of the Pelly Lakes base camp and about 3 miles east of the RIS group. The area lies on the northeast flank of a northwesterly-trending mountain ridge underlain by steeply-dipping phyllites and hornfels intruded by a linear granitic body. Work was done in mid-October while the ground was snow-covered, but the impression of the field crew was that outcrop is sparse or lacking. It is notable, however, that a float sample of disseminated chalcopyrite in altered granitic intrusive was found by Mike Smith just southwest of the high geochemical area. The geochemical highs were covered by 32 claims staked in late October.

Geochemical results (Fig. 52) are anomalous mainly in Zn which has a peak value of 11,800 ppm associated with 20 other values of greater than 500 ppm; background in the region is about 250 ppm. Only a few Pb results are anomalous but several Cu highs are associated with Zn highs; peak Cu value is 1,560 ppm in a background of about 60 ppm.

The Spud group covers a portion of the crest of a northwest-trending linear air magnetic anomaly which lies east of the linear granitic intrusive mentioned above. Anomalous geochemical results correspond closely with the air magnetic crest.

Preliminary investigation of the Spud group will consist of detailed soil geochemistry, magnetics, and electromagnetics; if outcrop is found in the area it will be geologically mapped and prospected.

I. TOY GROUP

Summary

1) Six claims optioned from H. Brodell in early October to acquire massive sulfide zone of at least 8 feet in width associated with neighbouring showings.

2) Eighty-two surrounding claims staked in late October to cover other nearby showings described by Brodell.

Claim Numbers	Grant Numbers	Dates Recorded
TOY 1 - 6	Y16366 - Y16371	September 22, 1966
7 - 88	Y17145 - Y17226	November 15, 1966

The Toy 1 - 6 group was optioned from H. Brodell on October 1, 1966, following an examination and recommendation by R. E. G. Davis. Payments are due at yearly intervals on October 1, beginning in 1967.

The Toy 1 - 6 group is located five miles east of the east end of Anderson Lake, about 58 miles southeast of Pelly Lakes base camp and about 12 miles west of the Cantung Road. The claims are situated on the steep south slope of an east-west valley.

Due to inclement weather, Davis's examination of the showings was brief; he described a steeply dipping, northwesterly-striking zone of massive sulfides, with a minimum width of about eight feet. Brodell described smaller showings in the immediate area and the decision was made to stake 82 surrounding claims; this was done in late October.

Brodell provided the following five assay results:

	Gold oz/ton	Silver oz/ton	Lead	Zinc	Copper	Nickel
Toy #1	Tr	8.00	10.6	9.5	.73	Tr
Toy #2	Tr	1.00	6.8	9.9	.45	Tr
Toy #3	.005	13.2	.2	10.5	.39	Tr
Toy #4	Tr	1.20	14.4	10.9	.37	Tr
(No #)	.03	44.5	78.0			

Preliminary work on the Toy group will consist of detailed geologic mapping, prospecting, soil geochemistry, and possible hand trenching; magnetics and electromagnetics will be considered contingent on preliminary results.

J. PROPOSED WORK

Brief statements regarding proposed work may be found near the end of the above claim group descriptions. Work on each group will be designed to evaluate as economically and thoroughly as possible the potential of targets staked.

Although the specifics for each group have not yet been determined, work will consist roughly of the following categories and amounts of work (see Section IV - Outline of Estimated Work, Personnel, Costs):

Ling cutting - 300 claims, 400 foot spaced lines or equivalent

Geochemical soil sampling - 300 claims on 400 foot spaced lines or equivalent; 250 claims, or equivalent, on reconnaissance basis.

Magnetics and EM - 300 claims on 400 foot spaced lines or equivalent.

D7E Cat trenching and drill site preparation - 1 month.

Geologic mapping - all outcrops in claim areas, trenches and showings on detailed scales.

Surveying - trenches, showings, important claim lines.

Diamond drilling - 3,000 feet budgeted, contingent on results.

III SHELDON REGION OUTSIDE EXPLORATION

A. INTRODUCTION

Summary

1) Atlas Explorations Limited carried out a reconnaissance exploration program out of Pelly Lakes beginning in August 1966.

2) As a result of the discovery if widespread mineralization in the Sheldon region, a more extensive and thorough program is planned for this coming season.

A combined program of aerial geologic reconnaissance and gossan sampling, prospecting, and geochemical sampling was carried on out of a base camp at Pelly Lakes from August 7 to October 24. A total of six groups were staked as a result of prospecting and geochemical discoveries (see Sheldon Region Groups).

It became apparent late in the season that the Sheldon Region is blessed with an abundance of mineralization; showings were located on nearly every prospecting traverse and anomalous geochemical results are widespread. Because of the apparent potential of the region, much of the 1967 Sheldon Project will be devoted to a more thorough and widespread surface exploration program than was possible during the 1966 season.

B. GEOLOGY

Summary

1) The Sheldon region is a geologic province elongate in a northwest-southeast direction, consisting of about 4, 000 square miles, centred at Pelly Lakes.

2) Province consists of tightly-moderately folded, wrench faulted, Proterozoic- Lower Paleozoic sediments and metasediments intruded by two linear belts of Cretaceous (?) granitic intrusives.

3) Known types of mineralization fit three categories:

   i) skarn Zn, Cu, Pb, Ag, and W deposits in calcareous host rocks;

ii) porphyry Cu, Ag, Pb and Zn deposits in altered granitic or quartzose rocks;

iii) veins and small shear-fillings of Cu, Pb, Zn, Ag, Au.

4) Sheldon province bears similarities to Coeur d'Alene, Potosi, Cornwall, and Hanover, N. M., mining districts.

Regional Setting

The Sheldon region is a geologic province which may be roughly defined as a 4, 000 square mile area lying between the Ross River on the northwest, Anderson Creek on the southeast, the Prevost, Woodside and Hyland rivers on the northeast, and a line connecting Marjorie Lake, Slate Rapids and Finlayson River on the southwest. As such, the region is bounded on at least three sides by major wrench faults. The province is composed of moderately-to tightly-folded northwesterly-striking Proterozoic-Lower Paleozoic sediments and metasediments which have been invaded by two linear, northwesterly-trending granitic batholiths or belts of aligned stocks which are reflected by anomalous air magnetics. The region bears the rhombic fracture pattern which is the characteristic imprint of wrench fault tectonics in the central Yukon. The region is limited on the southeast only for exploration purposes; as a geological province it continues to the south almost to Watson Lake. When considered in its entirety, it is notable that the province bends sharply at Anderson Creek from a northerly trend in the south to a northwesterly trend in the north. This may be in part a function of the intensity of wrench faulting along the Anderson Creek lineament, but it appears to be more of a regional bend along a northeasterly cross axis.

The Sheldon region is bisected through most of its extent by the Traffic Mt. Fault, which may be traced geologically and topographically from west of the Pike group to Anderson Creek. Northeast of the Traffic Mt. Fault the terrain is mountainous and rugged and underlain principally by tightly-folded Proterozoic, fine to medium-grained clastic sediments and limestone in large part metamorphosed to quartzites, slates, phyllites, marbles and, to the southeast, schists and high grade gneisses. These rocks are cut by a major intrusive belt (Logan batholith) which consists of a granitic mass of about 250 square miles, north of Anderson Creek, which plunges to the northwest and is reflected in a series of aligned granitic stocks outcropping as far west as the Pike group. A narrow, 30-mile long intrusive belt

occurs north of the major mass and is a probable offshoot from it. Both intrusive belts are reflected by anomalous air magnetics, which may indicate pyrrhotite content in the granitic rocks or associated pyrrhotite- or magnetite-bearing mineralization; the homogeneous appearance of the magnetics suggests the former.

Southwest of the Traffic Mt. Fault the terrain is mostly gently rolling, with local mountainous areas, underlain by Cambrian to Mississippian phyllites, dolomites, shales, slates, graywackes, and intermediate-basic composition volcanics. A linear intrusive belt (Fortin intrusive) runs from south of McEvoy Lake to the Pike area; it appears to join the Logan belt north of the fault at Traffic Mt. The Fortin intrusive differs from the Logan belt in the following ways: (i) it is margined by converging-diverging faults of horst-like character, (ii) associated air magnetic anomalies do not overlie intrusive, but lie marginal to it, (iii) intrusives are linear rather than domal, as they are in the northwest portion of the Logan belt.

Types of Mineralization

The following three broad categories of mineralization occur in the Sheldon region and to the south in similar geologic terrain:

(1) Skarn or bedded replacements of calcareous host rocks by Zn, Cu, Pb, Ag, and W, associated with pyrrhotite and commonly with arsenopyrite (Zn - Norquest deposit west of Hyland River, possibly west Pay; Cu - Nar group; W - Cantung Mine, showings recently staked by Cassiar north of Anderson Lake)

(2) Porphyry (or disseminated) replacements of granitic intrusive or quartzose metasediments by Cu, Ag, Pb and Zn, commonly associated with pyrrhotite and/or arsenopyrite (Cu, Ag - Pike group; Pb, Zn, Ag - Nar group, Jake group)

(3) Veins and small shear fillings or massive replacements in shear zones of Cu, Pb, Zn, Ag, Au, commonly with arsenopyrite (almost every mineralized area examined).

Skarn mineralization occurs near, or in close proximity to, intrusive contacts and commonly contains high temperature minerals such as pyrrhotite, arsenopyrite, scheelite, and Fe-rich sphalerite (blackjack or wurtzite).

Porphyry types of mineralization are somewhat unusual: firstly because of the occurrence of galena and sphalerite in sizeable masses as true disseminations in altered intrusive rock, and secondly because

of the occurrence of both low temperature (tetrahedrite) and high temperature (arsenopyrite, pyrrhotite) minerals in the same assemblage. It is notable that in contrast to skarn mineralization associated with deeply unroofed intrusives in the southeastern Sheldon region, porphyry mineralization to the northwest occurs in small, isolated, domal, altered and chilled granitic stocks. These stocks appear to have come to rest in relatively high crustal levels - a fact which could explain the association of low and high temperature minerals by telescoping (xenothermal mineralization), and disseminated Pb-Zn by rapid quenching of hydrothermal fluids - e. g. insufficient time for concentration of residual fluids.

Major Districts Similar to Sheldon Province

Because it is often of value to make comparative studies in economic geology, it is believed worthwhile to briefly mention notable similarities between the Sheldon belt and some of the well-known mining districts of the world. These brief statements are included only as a means of stimulating discussion and study of possibly similar districts.

Coeur d'Alene District, Northern Idaho - Deposits are Pb-Zn-Ag-Cu-Au veins in Proterozoic quartzites, argillites, and calcareous rocks of low metamorphic grade intruded by Cretaceous granitic stocks and occurring within a major wrench fault zone (Osborne Fault). Mineral assemblage is galena, sphalerite, tetrahedrite, chalcopyrite, pyrrhotite, magnetite, arsenopyrite, minor bornite, scheelite, etc.; arsenopyrite is guide to ore; gangue minerals are quartz, siderite, pyrite, barite, etc. Most silver is in tetrahedrite rather than galena. K-feldspar and sericite alteration zones are guides to ore and are related to parallel folds and faults. District is zoned from north to south from Au in north, to Pb-Zn in centre, to Cu-Ag in the south.

Most of the above features of the Coeur d'Alene district are found in the Sheldon belt. For those features which are not known, such as major vein deposits, regional alteration patterns, and district zoning, it is well to be on the lookout for them.

Potosi District, Bolivia - Deposits are Sn-Ag-W-Zn-Sb-Au composite veins, sheeted zones, and stockworks in Tertiary altered granitic stocks within an extensive 150-mile long belt; ore bodies occur near major bend in the belt. Deposits are xenothermal - contain cassiterite, wolframite, arsenopyrite, and pyrrhotite with medium to low temperature minerals; all of which formed in stocks intruded to shallow crustal levels.

The Sheldon belt is somewhat similar to the Potosi belt - the major difference, of course, being the lack of recognized cassiterite. It is notable, however, that Sn occurs with galena disseminated in altered granitic rock due east of Frances Lake across the Northwest Territories border, not many miles from the Sheldon belt (Cliff Turner, oral communication).

Cornwall, England - The intermediate Cu-As-W zone of the Cornwall tin deposits bears a rough similarity to the Pike area. Ore bodies occur in fissures and stockworks in altered granitic stocks and have the following assemblage: chalcopyrite, sphalerite, wolframite, arsenopyrite, pyrite.

The main reason for mentioning Cornwall is the importance of zoning in that district, from a Sn zone within and near the stock, to an intermediate Cu zone, to a Pb-Zn zone farthest from the stock. Zoning should be recognized as a possibility in the Pike area and throughout the Sheldon belt.

Hanover (Central) District, New Mexico - Deposits of disseminated copper, zinc replacements in skarnitized limestone, and Zn-Pb-Cu veins occur within and associated with three aligned Tertiary altered granitic stocks which are domal and have invaded a complex fault zone.

All of the above features are common to the Sheldon belt, and it is believed that the Hanover district is deserving of a thorough comparative study.

C. WORK DONE

Summary

1) During August the project consisted of prospecting and silt sampling in mountainous outcrop areas.

2) During September and October project consisted mainly of geochemical silt and soil sampling in area bounded by McEvoy Lake, Pelly Lakes, Fortin Lake, and western Pike group.

In late August, A. E. Aho made a fixed-wing geologic reconnaissance of a part of the Sheldon region, directed prospecting based on his observations, and made recommendations for future work. T. Sadlier-Brown and F. Campbell did some helicopter reconnaissance near Pelly Lakes

during this time, as well as sampling gossans spotted from the air.

A team of eight prospectors was employed from early August until mid-September. Work was done mainly in mountainous areas of abundant outcrop where intrusive rocks had been recognized. Most work was done within a radius of about 15 miles from the Pelly Lakes base camp. Prospectors also took silt samples for geochemical analysis.

Early in September it became apparent that the Sheldon region was too large to cover adequately with prospecting in the time remaining in the season, that large gaps were being left between traverse areas, and that almost all coverage was in high outcrop country. At this time the decision was made to shift the basis of exploration to one of geochemical silt and soil sampling in areas of favourable geology and air magnetics in lower country. A cursory structural analysis, as well as a concern for expedient and thorough exploration, found the Fortin intrusive belt and the Pike area to be most favourable. It was decided to postpone exploration in the Logan belt until next season - primarily because intrusives occur widely separated in high mountainous country, but also because it was felt that if competitors were to come into the region, they would be led to only one intrusive belt and not to both. An area of about 300 square miles lying between McEvoy Lake, Pelly Lakes, Fortin Lake and the western Pike group was covered with about 500 line miles of geochemical sampling in September and October (Figures 54 - 59). Sampling was designed to test given areas with such a density that potential major targets would not be missed. Three claim groups and two large extensions were staked to cover targets discovered during this geochemical program. Anomalous results were found in many locales and several will be followed up in detail this season.

D. PROPOSED WORK

As noted above, there are three main classes of mineralization known to date in the Sheldon region. Any future exploration should be designed primarily to locating these types, and as such, should be guided by geological criteria.

Skarn deposits may be expected in carbonate host rocks near granitic intrusives, and should in most cases have sufficient pyrrhotite (or magnetite) content to cause anomalous magnetics. Porphyry mineralization may be expected in or near altered and chilled granitic stocks which have been only slightly unroofed by erosion; if the Pike stock is typical, associated air magnetic anomalies may occur. Most

veins thus far located are near granitic contacts, but it is notable that little exploration has been done at a distance from contacts. If the great similarities of the Sheldon region with the Coeur d'Alene district are meaningful, perhaps vein deposits should be expected where major fault zones cut quartzose country rocks; again, assuming that pyrrhotite would be a member of such vein assemblages, veins might be reflected by anomalous magnetics.

In short, exploration in the early stages of the 1967 season should be confined to areas of favourable geology associated with anomalous air magnetics. As more precise definitions of characteristics of mineralized areas are developed they should be applied to later work. Although the details of areas and types of exploration have not yet been outlined, the program will consist roughly of the following categories of work (see section IV - Outline of Estimated Work, Personnel, Costs):

- Geological mapping - $\frac{1}{2}$ mile scale in intrusive belts

  Prospecting - geochemical silt sampling

  Geochemical soil and silt sampling

  Ground magnetic and EM follow-up of targets located by above methods.

SHELDON PROJECT

OUTLINE OF ESTIMATED WORK, PERSONNEL, COSTS

I) PIKE GROUP:

(776 current claims, 32 under option, 150 proposed for immediate staking: total - 958 claims)

	Men	Costs
1. Staking (March 15 - March 31)		$
A magnetic anomaly west of the EM Group (north end of Pike group) should probably be staked in March; 150 proposed claims at $50/ claim. (Ross R. Indians - temporary employees)		7,500
2. Line Cutting (May 15 - August 23)		
Say 300 selected claims to be cut. Because of difficulty in scheduling for Cat, advisable to do all cutting with men. Assuming $1\frac{1}{2}$ claims/ 2 men/day for 400 foot spaced lines, 300 claims could be cut in 200 - 2 man crew days.		
Requires 4 men for 100 days at salary of $600/ month, support cost of $360/month	4	7,920 4,750 12,670
3. Geochemical Soil Sampling (May 23 - Sept. 15)		
Say 300 selected claims to be sampled on 400 foot spaced lines and 100 foot spaced samples (56 samples/claim). At 80 samples/man/day = $1\frac{1}{2}$ claims/man/day; 300 claims could be covered in 200 may/days		
Say 500 claims could be sampled on reconnaissance basis (10-20 samples/claim) by 2 men		
Requires total of 4 men for 110 days at salary of $400/month, support cost of $360/month	4	5,600 5,040
Total number of samples to be analysed approximately 25,000 at estimated cost of $1.00/sample		25,000 35,640

		Men	Costs
4.	Magnetics and EM (May 15 - Sept. 23)		$
	Say 300 claims selected to test air magnetic and geochemical targets. At $2\frac{1}{2}$ claims covered/ 3 man crew/day, 300 claims could be completed in 120 day season. Requires 3 men at salary of $450/month, support cost of $360/month.	3	4,995 3,995 8,990
5.	Diamond drilling supervision, core logging, geologic mapping, trench layout, etc. (May 15 - October 31)		
	Claim group at 1/2 mile and/or 400' scale and trenches and showings at detailed scales with plane table. One good geologist-property manager at salary of $700/month, plus $360/month support costs for 170 day season	1	3,850 1,980 5,830
6.	Trenching and drill site preparation with D7E Cat with ripper (July 15 - Sept. 15)		
	Say 2 months of trenching in Zone 2, in areas of other showings, geochemical targets with shallow cover. At monthly rental-purchase rate of $5,500/month plus $1,800/month for fuel (60 gals/ day, $1.00/gal.)		11,000 3,600
	Operator at $3.25/hr., 10 hr. day, 30 day month, plus $360/month support cost.	1	1,950 720 17,270
7	Junior Surveyor to handle transit and alidade (both Pike and Sheldon region groups) (May 15 - July 15)		
	Trench surveys, plane table mapping of showings, compass and chain surveys of important claim lines, part time geologist's assistant. One man (perhaps P. Sandaluk) at $450/month, plus support costs of $360/month (one-half of $1,800 and one-half of $1,440)	1	900 720 1,620

		Men	Costs
8.	Diamond drilling (see note below) (July 15 - Oct. 31)		$
	Say 7,000 feet of total 10,000 foot Sheldon region contract at total cost of $15/foot. Drilling scheduled from mid-July to end of October (100 days). (At rate of 50 feet/day one machine could complete 5,000 feet, additional 2,000 feet could be done by second machine after 3,000 feet drilling on other Sheldon region groups completed)	4	105,000
	Assay costs at $1.00/foot		7,000
			112,000
9.	Cookhouse (May 15 - October 31)		
	Require one cook for 170 days, one flunkie for 120 days. Cook's salary $550/month, flunkie's salary $300/month, plus $360/month support costs	2	3,025
			1,200
			1,980
			1,440
			7,645
10.	Bombardiers (May 15 - October 31)		
	Purchase price for one bombardier $7,000 fob Ross River. Operating cost about $0.20/mile; at maximum average of 20 miles/day for 170 day season = $700 operating cost.		7,000
			700
	Experienced operator-mechanic at $600/month plus support cost of $360/month	1	3,300
			1,980
			12,980
11.	Helicopter (May 15 - October 31)		
	Should require no more than 50 hours of total 400 hours on Sheldon project. At rate of $120/hour (fuel included).		6,000
	Support costs for pilot and mechanic at $360/month for 21 days		505
			6,505
12.	Travel for 14 men (May 15 - 31 and Sept. 1 - October 31)		
	Vancouver to Ross River - round trip fare $212.00		2,970
13.	Cost of general supervision (May 31 - Oct. 31)		
	Smith - 1½ months; Brock - ½ month; Chisholm - ½ month; Aho, Kulan, Davis - ½ month.		4,500
	Smith - support costs $360/month.		540
			5,040

	Men	Costs
14. Geophysical Supervisor, Administrative Assistant (May 15 - Sept. 15)		
All-around man (probably P. Neilson) to supervise geophysical procedure, personnel, compilation of data, compile administrative data, compile and draft field data, etc. Salary of $600/month plus support costs of $360/month. One third of total 4-month cost		1,280
15. Accounting and Administration Costs (May 31 - October 31)		
Figured at 15% of total salaries of $30,000		7,500
16. Contingencies and Miscellaneous (May 31 - Oct. 31)		
At 10% of total project costs		24,545
SUBTOTALS (regular men)	21	
		$269,985

II) SHELDON REGION GROUPS:

(572 current claims in 8 groups, 56 (Nar Group) and 26 (Bill group) proposed for early season staking; total = 652 claims)

	Men	Costs
1. Staking (March 15 - March 31)		$
A 56 claim addition on the south and east sides of the Nar group has to be staked, as well as a 26 claim addition to the east end of the Bill group and a 32 claim addition to the Toy group - total of 114 claims to be staked early in season at cost of $50/claim (Ross R. Indians - temporary)		5,700
2. Line Cutting (May 16 - August 23)		
Say 300 selected claims to be cut. Assuming $1\frac{1}{2}$ claims/2 man crew/day for 400 foot spaced lines, 300 claims could be cut in 200 - 2 man crew days.		
Requires 4 men for 100 days at salary of $600/month	4	7,920
support costs of $360/month		4,750
		12,670
3. Geochemical Soil Sampling (May 23 - Sept. 15)		
Say 300 selected claims to be sampled on 400 foot spaced lines and 100 foot spaced samples (56 samples/claim) at 80 samples/man/day = $1\frac{1}{2}$ claims/man/day: 300 claims could be covered in 200 may/days		
Say 250 claims could be sampled on reconnaissance basis (10-20 samples/claim) by 1 man. Requires		
total of 3 men for 110 days at salary of $400/month,	3	4,440
support costs of $360/month		4,000
Total number of samples to be analysed, approximately 20,000 at estimated cost of $1.00/sample		20,000
		28,440
4. Magnetics and EM (May 15 - Sept. 23)		
Say 300 claims to be covered on 400 foot spaced lines. At $2\frac{1}{2}$ claims/3 man crew/day, 300 claims could be completed in 120 day season. Requires		
3 men at salary of $450/month, support cost of	3	4,995
$360/month		3,995
		8,990

		Men	Costs
5.	Diamond drilling supervision, core logging, geologic mapping, trench layout, etc. (May 15 - October 31)		$
	Claim groups at 1/2 mile and/or 400 foot scale, and trenches and showings at detailed scales with plan table. One good geologist-property manager at salary of $700/month, plus $360/ month support costs for 170-day season	1	3,850 1,980 5,830
6.	Trenching with D7E Cat with ripper		
	Contingent on results as well as accessibility of locations to be trenched. Say 1 month of trenching. At monthly rental-purchase rate of $5,500/month plus $1,800/month for fuel (60 gals/day, $1.00/gal.)		5,500 1,800 7,300
	Operator costs included in Pike group description.		
7.	Junior Surveyor to handle transit and alidade (July 15 - Sept. 15)		
	Trench surveys, plane table mapping of showings, compass and chain surveys of important claim lines, part-time geologist's assistant. One man at $450/month plus support costs of $360/month. One-half of $1,800, and one-half of $1,440.		900 720 1,620
8.	Diamond drilling (see note below) (July 15 - Sept. 15)		
	Say 3,000 feet of total 10,000 foot Sheldon region contract at cost of $15/foot. At rate of 50 feet/day one machine could complete 3,000 feet in about 60 days. This would leave the second machine free to complete 2,000 feet of drilling at Pike late in season. Assay costs at $1.00/foot	4	45,000 3,000 48,000
9.	Cookhouse May 15 - October 31)		
	Require one cook for 170 days and one flunkie for 120 days. Cook's salary $550/month, flunkie's salary $300/month, plus $360/month support costs	2	3,025 1,200 1,980 1,440 7,645

		Men	Costs
10.	Helicopter (May 15 - October 31)		
	Should require about 150 hours of total 400 hours on Sheldon project. At rate of $120/hour (fuel included).		18,000
	Support costs for pilot and mechanic at $360/month for 55 days		1,295
			19,295
11.	Travel for 12 men (May 15 - 31 and Sept. 1 - Oct. 31)		
	Vancouver to Ross River - round trip fare $212.00		2,545
12.	Cost of General Supervision (May 31 - Oct. 31)		
	Smith - 1½ months, (support costs $360/month); Brock - ½ month; Chisholm - ¼ month; Aho, Kulan, Davis - ½ month		4,500
			540
13.	Geophysical Supervisor, Administrative Assistant (May 15 - Sept. 15)		5,040
	All around man (probably P. Neilson) to supervise geophysical procedures, personnel, compilation of data, compile administrative data, compile and draft field data, etc. Salary of $600/month plus support costs of $360/month. One-third of total 4-month cost		1,280
14.	Accounting and Administration Costs (May 15 - Oct. 15)		
	Figured at 15% of total salaries of $28,000		4,200
15.	Contingency and Miscellaneous (May 15 - Oct. 15)		
	At 10% of total project cost		13,795
	SUBTOTALS (regular crew)	17	
			$172,370

III) SHELDON REGION OUTSIDE EXPLORATION	Men	Costs
Proposed areas for outside exploration have not yet been outlined. In brief, however, it is believed that geologic mapping ($\frac{1}{2}$ mile scale), prospecting, geochemical sampling and some magnetics-EM surveying should be done in selected geologically and magnetically favourable areas of the intrusive belts in the Sheldon region. A minimum requirement for such a crew would probably be the following (for 110 day season):		
1. Geologists (June 1 - Sept. 15)		
One very good mapping geologist and one assistant who is capable of working alone. Salaries of $900/		3,150
month and $700/month, plus support costs of	2	2,400
$360/month		2,520
		8,070
2. Prospectors (June 1 - Sept. 15)		
Three experienced prospectors to work with three		
assistants who do geochemical sampling in areas	6	6,300
being prospected; salaries of $600/month and		4,200
$400/month, plus $360/month support costs		7,080
Surface assay costs at about $700/month		2,450
		20,030
3. Geochemical Sampling (June 1 - Sept. 15)		
Three men to do reconnaissance sampling,		
salaries $400/month plus $360/month support	3	4,200
costs		3,780
		7,980
4. Cookhouse (Jule 1 - Sept. 15)		
Require one cook at salary of $550/month plus		1,925
$360/month support costs	1	1,260
		3,185
5. Helicopter (June 1 - Sept. 15)		
Probably require 200 hours of total 400 hours for Sheldon project. At rate of $120/hour (fuel included)		24,000
Support costs for pilot and mechanic at $360/month for 85 days		1,980
		25,980

		Men	Costs
6.	Travel for 12 men (May 15 - June 1 and September 15 - 30)		
	Vancouver to Ross River - round trip fare $212		$ 2,545
7.	Cost of general supervision (June 1 - Sept. 15)		
	Smith - 2 months (support costs $360/month);		4,800
	Brock - ½ month; Chisholm - ¼ month; Aho, Kulan, Davis - ½ month		720
			5,520
8.	Accounting and Administration Costs (June 1 - September 15)		
	Figured at 15% of total salaries of $28,000		4,200
9.	Claim Staking (July 15 - Sept. 15)		
	Allowance for staking 200 claims at cost of $40/claim		8,000
10.	Contingencies and Miscellaneous (June 1 - Sept. 15)		
	At 10% of total project cost		8,380
	SUBTOTALS (regular crew)	12	
			$93,890

SHELDON REGION PROJECT TOTALS:

Pike Group	21 (regular men)	269,985
Sheldon Region Group	17 (regular men)	172,370
Sheldon Region - outside exploration	12 (regular men)	93,890
TOTALS	50 (regular men)	$536,245

IV) NOTES

1. Diamond Drilling

At this date, there are few drilling targets in the Sheldon region, however, it is believed that several will be developed during the early part of this coming season. Based on the obvious high potential of the region, it is believed feasible to contract for a minimum of 10, 000 feet of diamond drilling to begin about mid-July. At an average rate of 50 feet/day, this is a total of 200 days of drilling; using two machines 10, 000 feet could be completed by the end of October.

Using a total cost figure of $15/ft., contract would total about $150, 000. It is notable that at a cost figure of $7/foot a minimum contract footage of 25, 000 feet of high air pressure rotary drilling (total cost $175, 000) could be done. However, for the following reasons it is believed that diamond drilling is preferable at this stage in the Sheldon region:

i) Many targets would be inaccessible to a track driven rotary drill vehicle

ii) Diamond drill rigs are more readily movable over an area the size of the Sheldon region

iii) Angle holes may be desirable in many cases; rotary rigs drill only vertical holes

iv) Grade estimation may be critical as with porphyry copper at Pike - rotary recovery cannot be fully relied upon

v) Structural interpretation may be important; structural work with diamond drill core is easier than with chips from a rotary drill

vi) Overburden problems are not anticipated and diamond drilling would probably be adequate in all cases.

2. Fuel Requirements and Haulage

a) Helicopter - 400 hours at 3 hours/45 gal. = 6, 000 gallons, or 135 x 45 gallon drums

b) D7E Cat - 90 days at $1\frac{1}{2}$ x 45 gallon drums/day = 135 x 45 gallon drums

c) Two diamond drills - 100 days at 2 x 45 gallon drums/2 drills/day = 200 drums

d) Bombardier - 170 days at maximum average of 20 miles/day and 5 miles/gallon = 700 gallons or 15 x 45 gallon drums

Total 45 gallon drums required = 485, say 500

Probably one half of fuel would go to Pike Lake (105 miles round trip from Ross River) and one half to Pelly Lakes (150 miles round trip from Ross River). Average round trip for all fuel = 125 miles.

a) Beaver (capacity 3 x 45 gallon drums; rate $0.75/mile) for 500 drums would take 166 trips at $94/trip = $15,600

b) Otter (capacity 5 x 45 gallon drums; rate $1.20/mile) for 500 drums would take 100 trips at $150/trip = $15,000

c) DC-3 (capacity 13 x 45 gallon drums; rate $1.30/mile) for 500 drums would take 39 trips at $166/trip = $6,350. Great Northern Airways recently informed that DC-3 available only on wheels, however.

3. Air Magnetic Survey

Approximately 1,300 line miles of air magnetics (and 500 line miles of EM) have been covered in the Pike area in two surveys. An additional 2,000 line miles was planned but it is recommended that completion of this work be delayed contingent on examination of known anomalous areas in and near the Pike group.

Clyde L. Smith
January . 1967

BOOK 2-B.

XCA

F I G U R E

1. Claim map of Pike Group
2. Geologic map of Pike grid area, 1" = 400'
3. Geologic map of Pike showings area, zone 1, 1" = 100'
4. Geologic map of Trench 43aW, zone 1, 1" = 10'

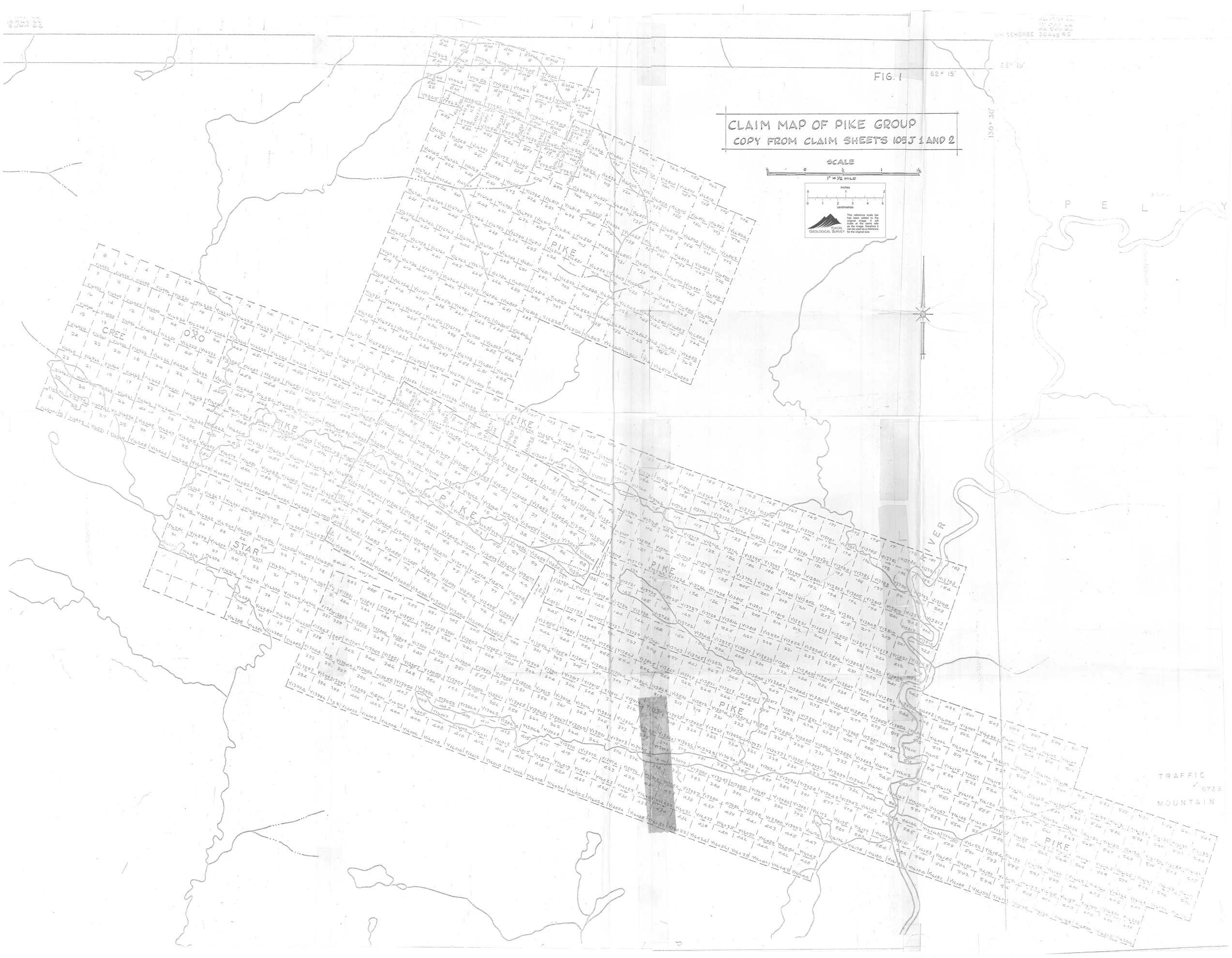


FIG. 1
CLAIM MAP OF PIKE GROUP
COPY FROM CLAIM SHEETS 105J 1 AND 2
SCALE
1" = 1/2 MILE
inches
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY
62° 15'
130° 30'
WHITEHORSE 30 Aug 66
PELLY
RIVER
PIKE
CREE
OXO
STAR
TRAFFIC
MOUNTAIN
6739

FIG. 2.

ATLAS EXPLORATIONS LTD
VANCOUVER, B. C.
PIKE MINERAL CLAIMS
GEOLOGY UP TO AUGUST, 1966

LEGEND

SLATE	1	GRANITE	3
QUARTZITE	2	FOLIATION	
FAULT		FLOAT	
BLASTHOLE	0	OUTCROP	

DATE : NOV 21, 1966
DRAWN BY : J.H.B.
MAPPED BY : A.L. SANGSTER
SCALE : 1" = 400'

SCALE
400 0 400 800 1200
1 inch to 400 feet

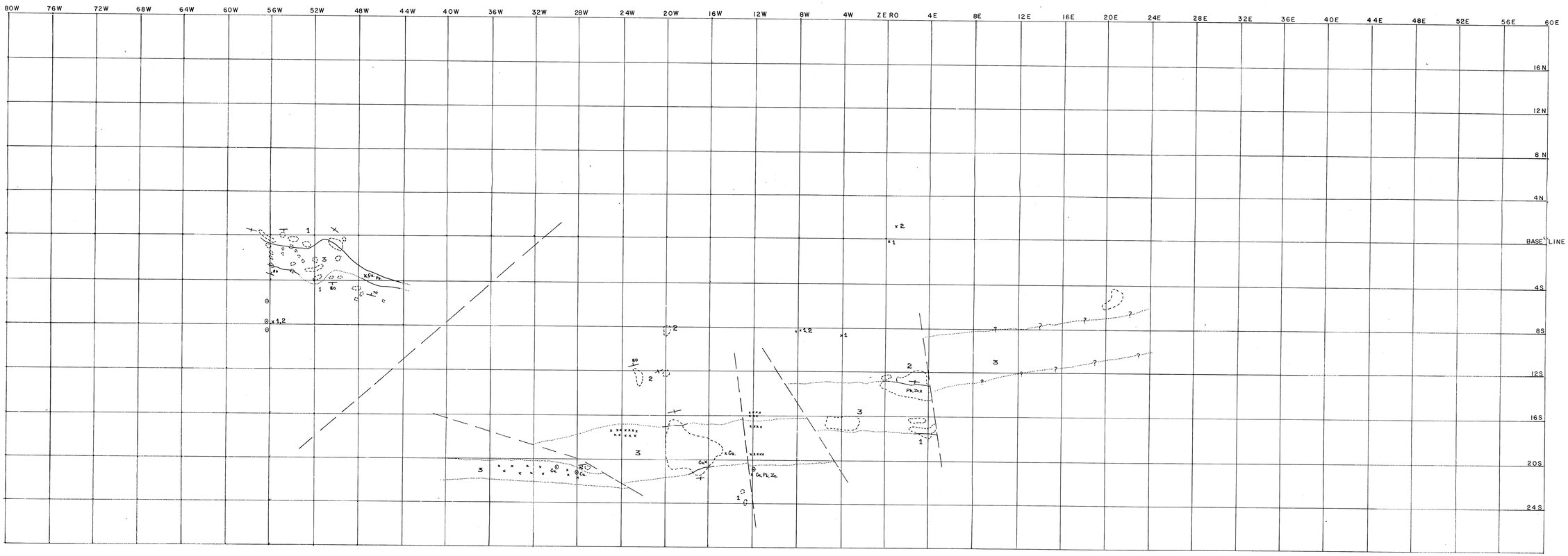


FIG. 3

BASE LINE

SLATE

GRANITE

SLATE

Trace Cph.

Cpy

Cpy

Float

Cu, Pb, Zn.

Trench

Cu

70

80

75

80

70

56+00S

54+00S

52+00S

50+00S

48+00S

46+00S

44+00S

N

inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

ATLAS EXPLORATION LTD
ROSS RIVER, YUKON.
PIKE SHOWING GEOLOGY

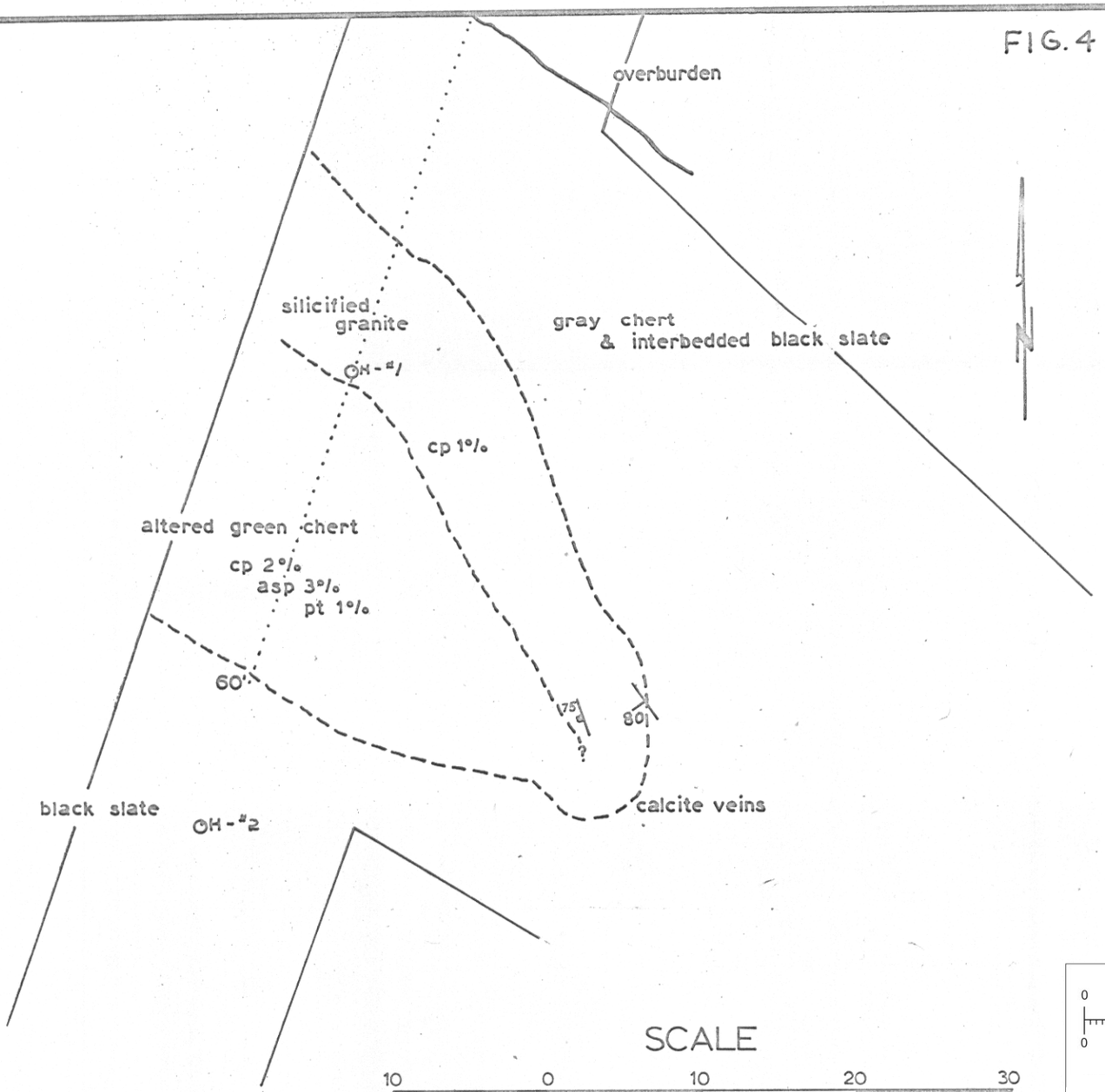
SCALE

400 0 400 800 1200

1 inch to 400 feet

DRAWING No: RI / /2
DRAWN BY: J.N.B.
DATE: JULY 15/66

FIG. 4



SCALE

10 0 10 20 30

1 inch to 10 feet

inches
0 1
0 1 2
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

ATLAS EXPLORATIONS LTD.

ROSS RIVER, YUKON

TRAFFIC MOUNTAIN AREA
PIKE MINERAL CLAIMS

Geologic Map of Trench 43a

Scale: 1" = 10'

Date: Sept., 1966

Geology by: J. Staniford

Drawn by: Jay Staniford

Contact (±1 ft) ----------

Control Hub H-1

Strike & Dip of Contact 60 / 15

Strike & Dip of Fractures

Chip Sample Line .....

Visual Estimate of Mineralization
asp = arsenopyrite cp = chalcopyrite
pt = pyrrhotite

F I G U R E

5. Geologic map of Trench 43 W, zone 1, 1" = 10'

6. Geologic map of Trench 43 W, zone 1, 1" = 10'

7. Geologic map of Trench 45 W, zone 1, 1" = 10'

8. Geologic map of Trench 46 W, zone 1, 1" = 10'

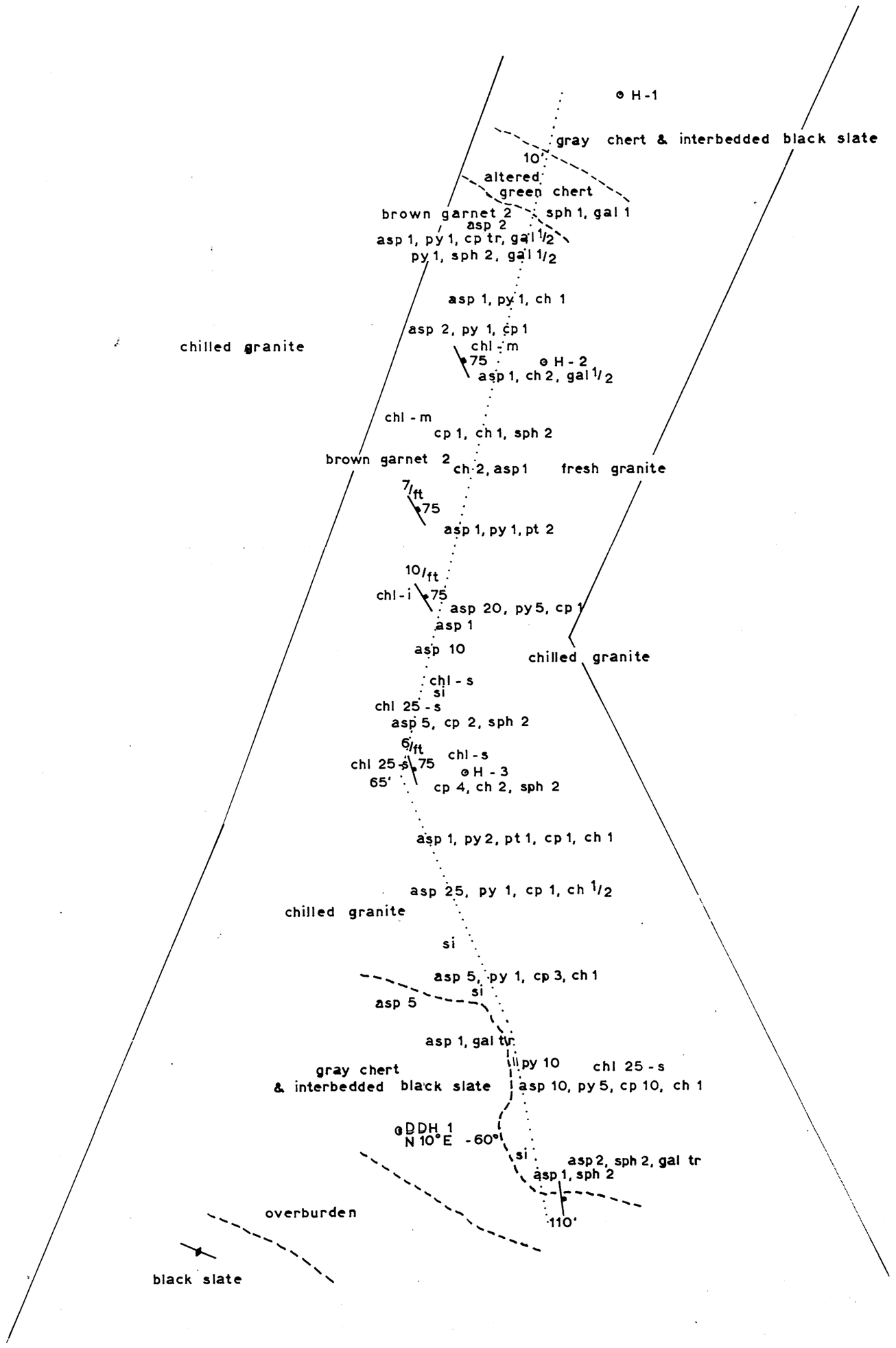
9. Geologic map of Trench 48 W, zone 1, 1" = 10'

10. Geologic map of Trench 48 W, zone 1, 1" = 10'

11. Geologic map of Trench 50 W, zone 1, 1" = 10'

12, Geologic map of Trench 56 W, zone 1, 1" = 10'

FIG. 5



SCALE

10 0 10 20 30

1 inch to 1 foot

inches
0 1
0 1 2
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
TRAFFIC MOUNTAIN AREA
PIKE MINERAL CLAIMS

Geologic Map of Trench 43

Scale 1" = 10'
Geology by: J. Staniford

Date: Sept., 1966
Drawn by: Jay Staniford

Contact (± 1 ft)
Control Hub H - 2

Strike & Dip of Foliation 70 / ∞ / 1 ft
Strike & Dip of Fractures 45

Chip Sample Line .....

Visual Estimate of Mineralization
- asp = arsenopyrite
- cp = chalcopyrite
- py = pyrite
- pt = pyrrhotite
- gal = galena
- sph = sphalerite
- ch = chalcocite

DDH = diamond drill hole

Alteration
- chl = chloritization
- si = silicification
- m = mild
- i = intermediate
- s = strong

FIG. 6

ATLAS EXPLORATIONS LTD.

ROSS RIVER YUKON

TRAFFIC MOUNTAIN AREA
PIKE MINERAL CLAIMS

Geology Map Of Trench 43W

Scale: 1"=10' Date: Oct. 10, 1966

Geology by. C.L. Smith. Drawn by: C.L.S.

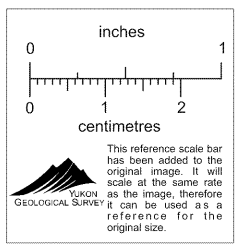
Vein

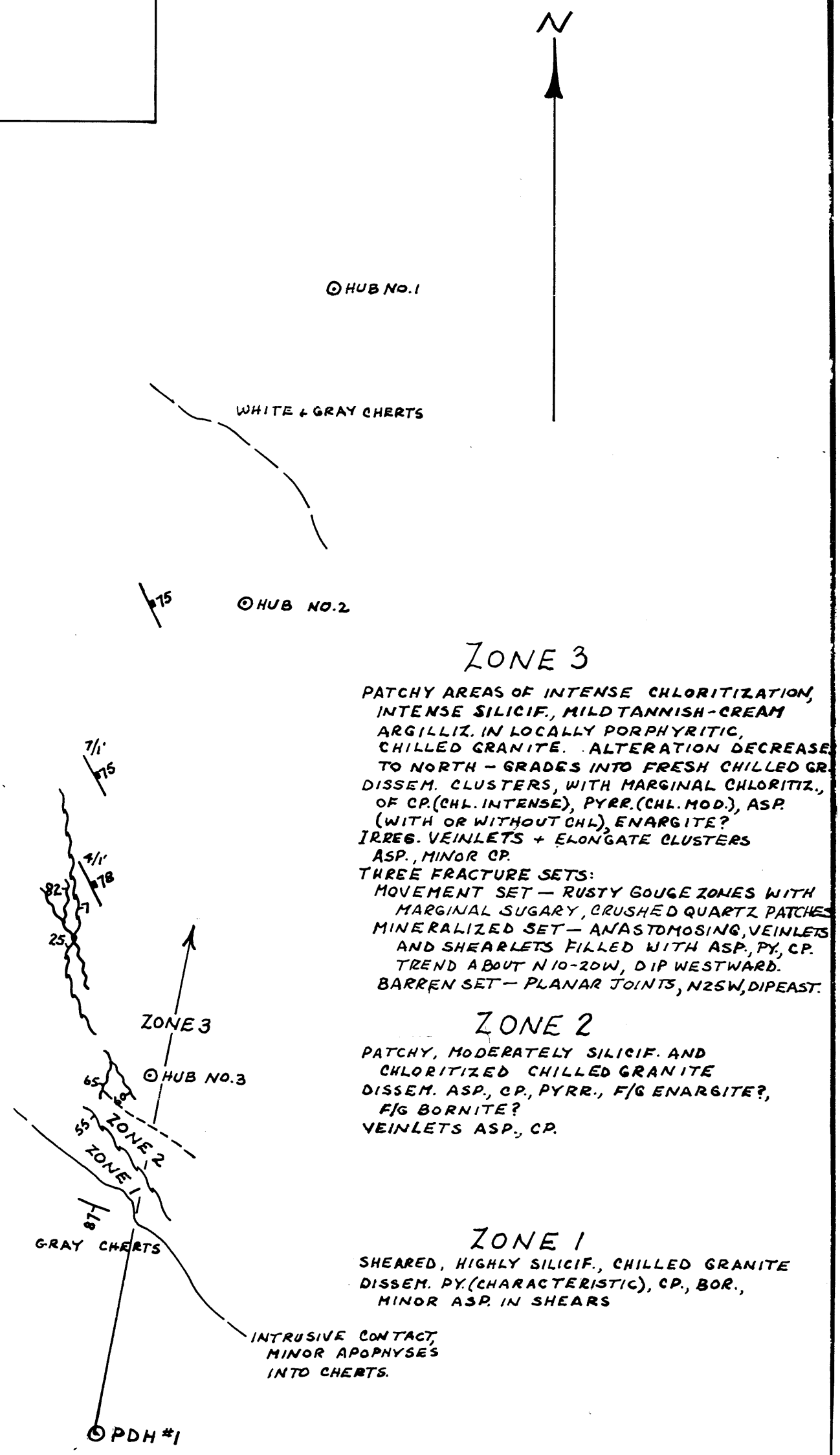
Shear Zone

Zone Contact

Contact

Barren Planar Fractures 75



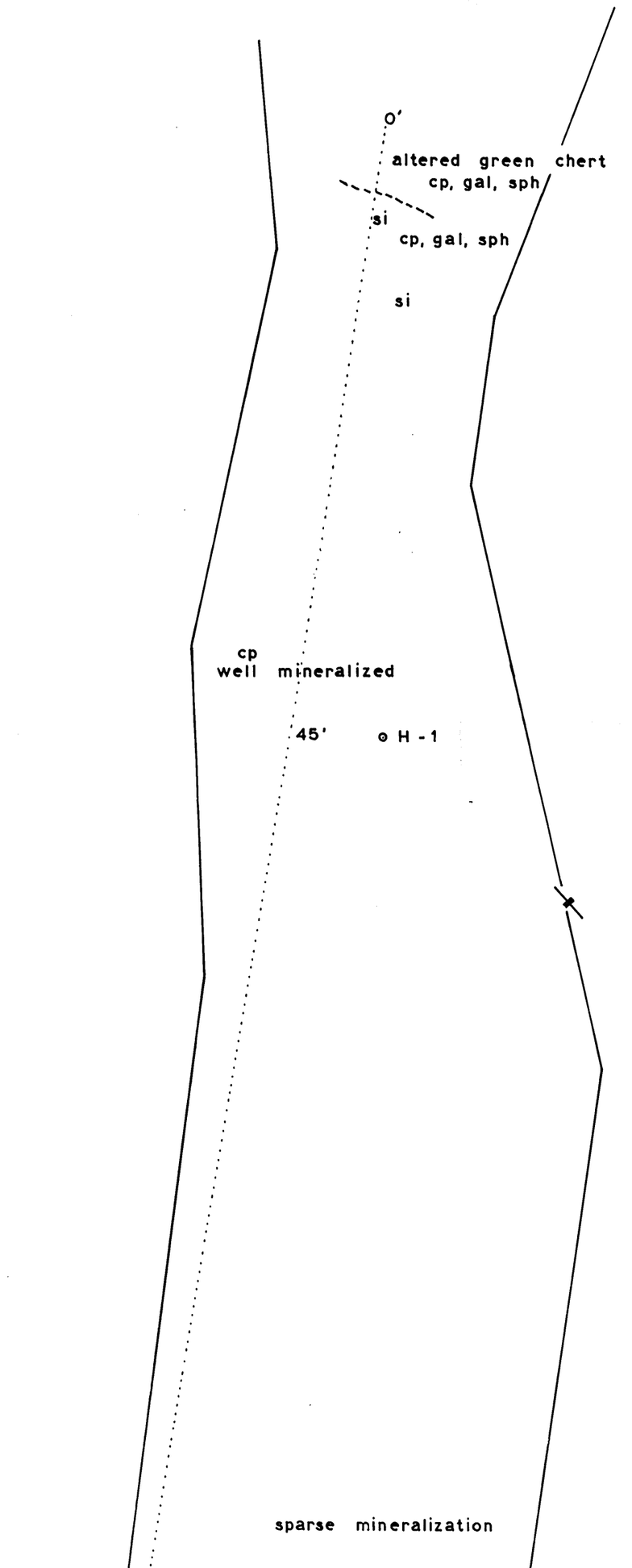


SCALE

10 0 10 20 30

1 inch to 10 feet

FIG. 7



SCALE

10 0 10 20 30

1 inch to 10 feet

inches

0 1

0 1 2

centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

ATLAS EXPLORATIONS LTD.

ROSS RIVER, YUKON

TRAFFIC MOUNTAIN AREA
PIKE MINERAL CLAIMS

Geologic Map of Trench 45

Scale: 1" = 10'

Date: Sept., 1966

Geology by: J. Staniford

Drawn by: Jay Staniford

Contact (± 1 ft) - - - - - -

Control Hub H - 2

Strike & Dip of Foliation 70 / #/ft

Strike & Dip of Fractures 45

Chip Sample Line .....

Visual Estimate of Mineralization

cp = chalcopyrite

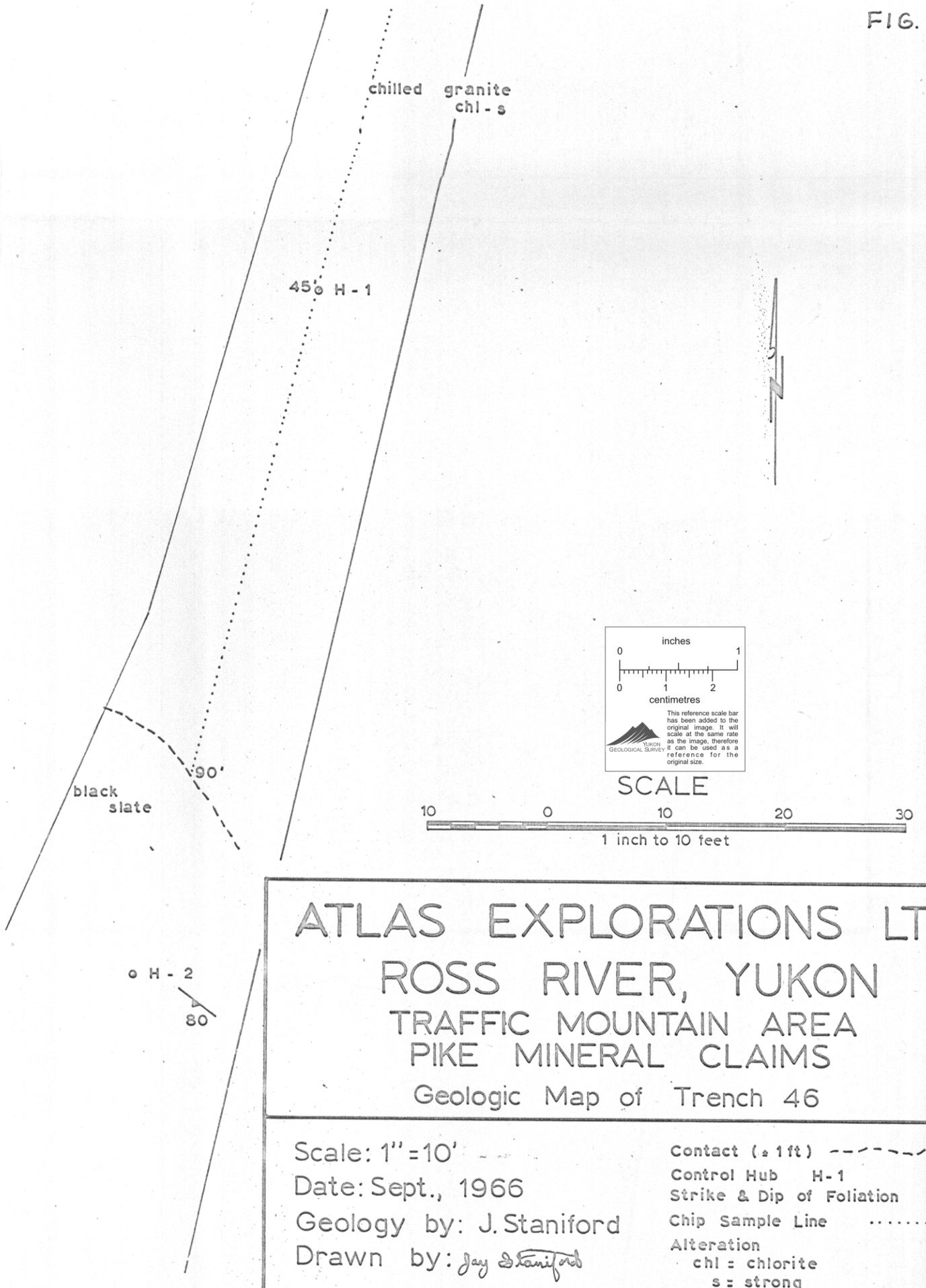
gal = galena

sph = sphalerite

Alteration

si = silicification

FIG. 8



ATLAS EXPLORATIONS LTD.

ROSS RIVER, YUKON

TRAFFIC MOUNTAIN AREA
PIKE MINERAL CLAIMS

Geologic Map of Trench 46

Scale: 1" = 10'

Date: Sept., 1966

Geology by: J. Staniford

Drawn by: Jay Staniford

Contact (± 1 ft) - - - - -

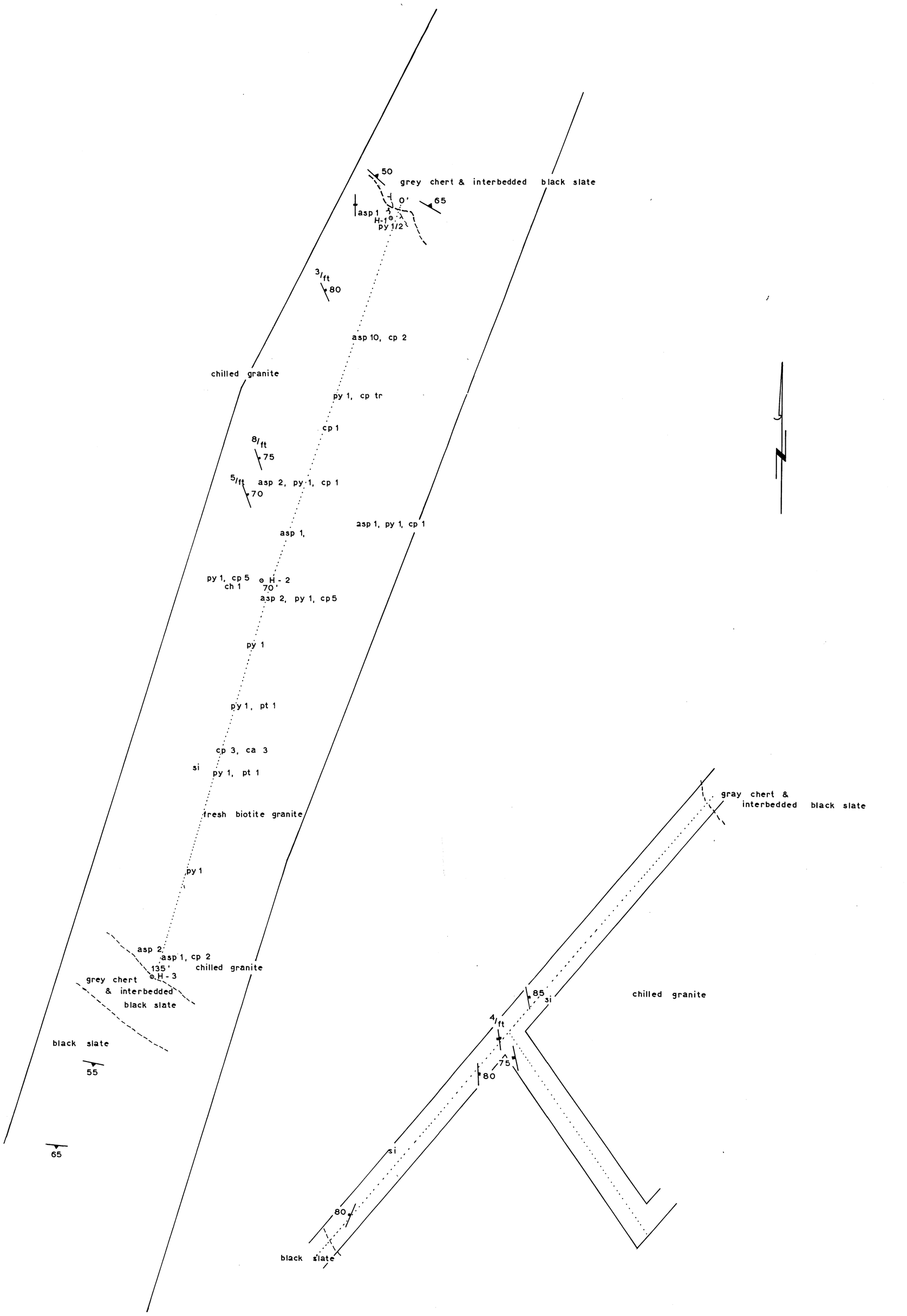
Control Hub H-1

Strike & Dip of Foliation

Chip Sample Line .....

Alteration
chl = chlorite
s = strong

FIG. 9



SCALE

10 0 10 20 30

1 inch to 10 feet

inches 0 1

centimetres 0 1 2

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
TRAFFIC MOUNTAIN AREA
PIKE MINERAL CLAIMS
Geologic Map of Trench 48

Scale 1"=10' Date: Sept., 1966

Geology by: J. Staniford Drawn by: Jay J Staniford

Contact (± 1ft)

Control Hub H-2

Chip Sample Line .....

Strike & Dip of Foliation 70/ 4/ft

Strike & Dip of Fractures 45°

Visual Estimate of Mineralization

asp = arsenopyrite
cp = chalcopyrite
py = pyrite
pt = pyrrhotite
gal = galena
sph = sphalerite
ch = chalcocite

Alteration

si = silicification

FIG. 10

ZONE 7

PATCHY AREAS OF INTENSE SILICIF., MILD TANNISH-CREAM ARGILLIZ. IN OTHERWISE FRESH, LOCALLY PORPHYRITIC, CHILLED GRANITE
DISSEM. ASP., PYRR., F/G GAL., F/G SPHAL.
VEINLETS ASP., PY., CP.

ZONE 6

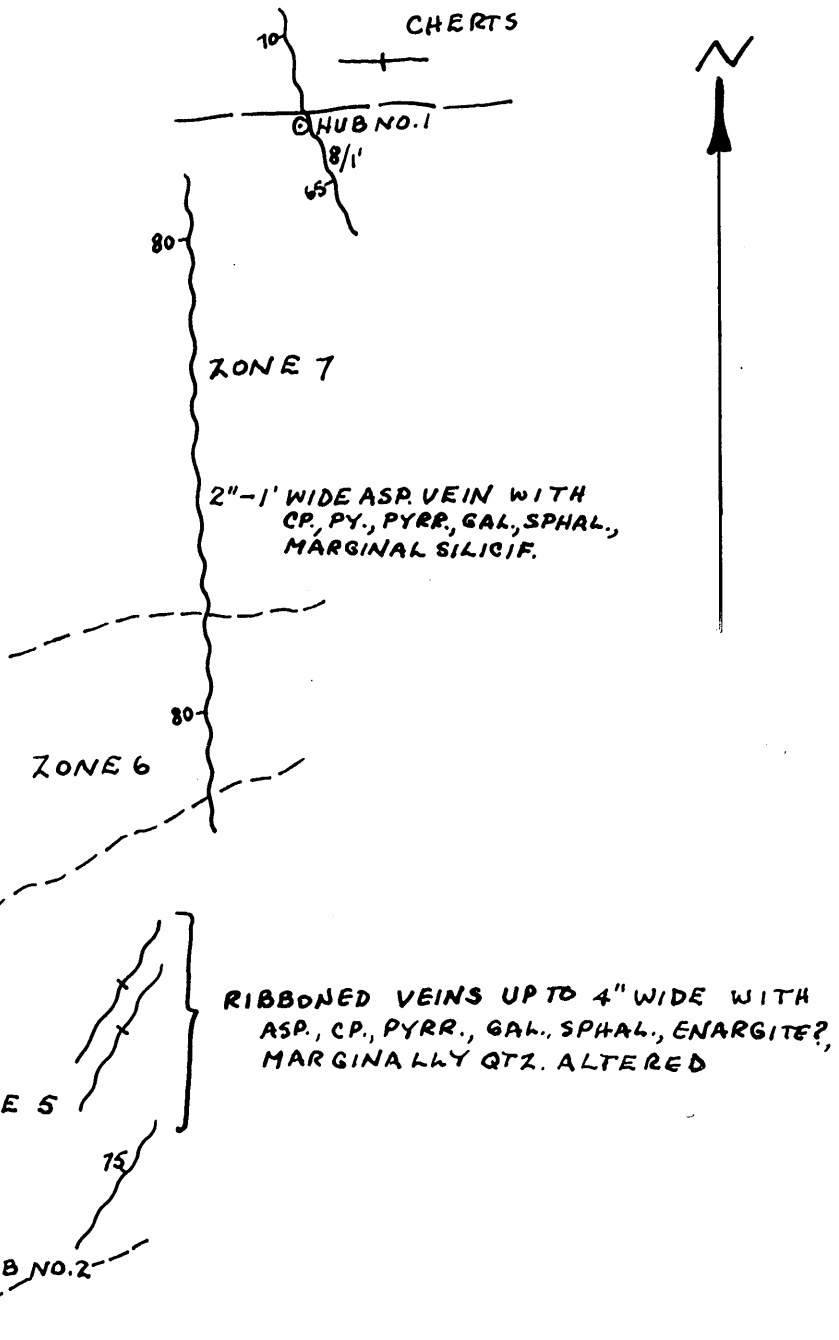
FRESH, PORPHYRITIC, CHILLED GRANITE
DISSEM. MINOR PYRR.
VEINLETS MINOR ASP., CP.

ZONE 5

YELLOWISH-STAINED, HIGHLY SILICIFIED CHILLED GRANITE
DISSEM. CP. (ABUNDANT), PY., ASP., MINOR BORNITE, LOCAL VUGS SOOTY CHALCOCITE

ZONE 4

PATCHY AREAS OF MILD CHLORITIZATION, MODERATE F/G BIOTITIZATION IN OTHERWISE FRESH PORPHYRITIC, CHILLED GRANITE
DISSEM. PYRR. (CHARACTERISTIC), ASP., CP.
IRREG. VEINLETS CP. WITH MARGINAL CHLORITE (STOCKWORK TYPE MINERALIZ.) ZONE 4



ZONE 3

YELLOWISH-STAINED, HIGHLY SILICIFIED, LOCALLY F/G BIOTITIZED, HIGHLY FRACTURED, PORPHYRITIC CHILLED GRANITE
DISSEM. CP. (ABUNDANT), BORNITE? WITH MARGINAL F/G BIOTITE
2' ON N.W. SIDE OF ZONE RICH IN CP. WITH INTENSE SILICIFICATION (50%), CHLORITIZATION (50%).

ZONE 2

MIXED ZONE OF MODERATELY CHLORITIZED AND FRESH PORPHYRITIC CHILLED GRANITE
IRREG. DISSEM. CP. (MARGINAL CHLORITE), PYRR., ASP.
VEINLETS OF CP. WITH MARGINAL CHLORITE 1-2" WIDE; 2 SETS: N20°E, 90; N85°E, 70S-90.

ZONE 2a

HIGHLY SILICIFIED, MINOR TANNISH-CREAM ARGILLIZED, PORPHYRITIC, CHILLED GRANITE
DISSEM. ASP., PYR., CP., MINOR SPHAL.

ZONE 1

FRESH, PORPHYRITIC, CHILLED GRANITE (BIO., QTZ., PLAG. PHENOCRYSTS).
DISSEM. PYRR. MINOR.
VEINLETS OF CP., N20°E, 60-80° W.

ATLAS EXPLORATIONS LTD.

ROSS RIVER YUKON

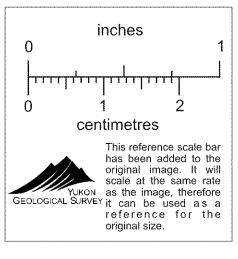
TRAFFIC MOUNTAIN AREA.

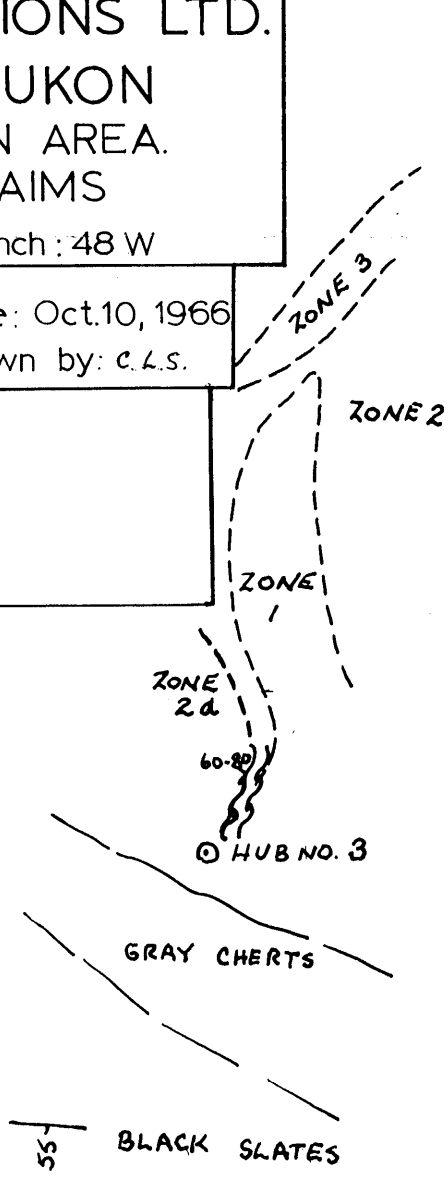
PIKE MINERAL CLAIMS

Geology Map Of Trench: 48 W

Scale: 1" = 10' Date: Oct. 10, 1966
Geology by C.L. Smith Drawn by: C.L.S.

Vein
Shear Zone
Zone Contact
Contact



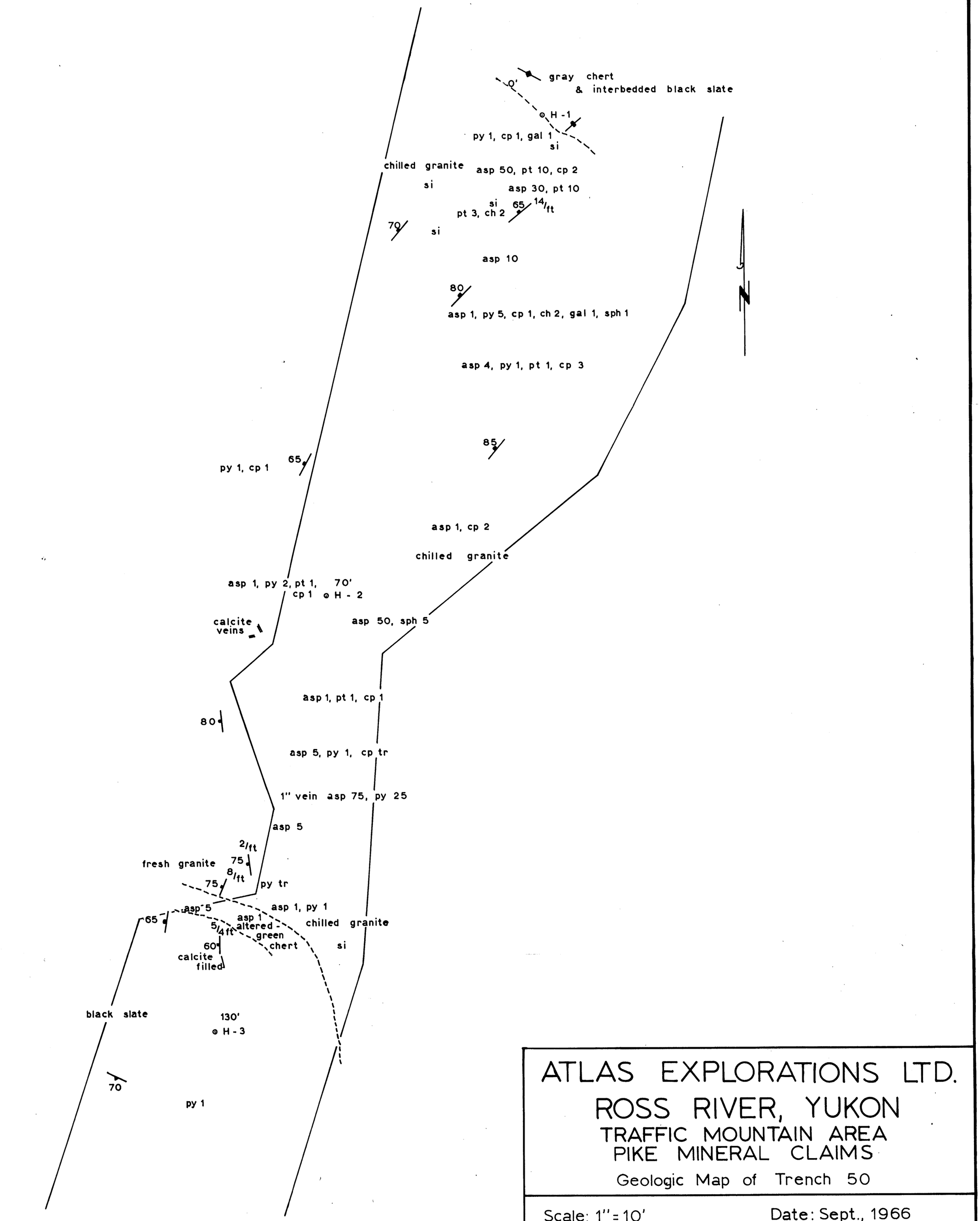


SCALE

10 0 10 20 30

1 inch to 10 feet

FIG. 11



SCALE

10 0 10 20 30

1 inch to 10 feet

inches
0 1
0 1 2
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

ATLAS EXPLORATIONS LTD.

ROSS RIVER, YUKON

TRAFFIC MOUNTAIN AREA
PIKE MINERAL CLAIMS

Geologic Map of Trench 50

Scale: 1" = 10'

Date: Sept., 1966

Geology by: J. Staniford

Drawn by: Jay Staniford

Contact (± 1ft) - - - - - -

Control Hub H - 2

Strike & Dip of Foliation 70/#/ft

Strike & Dip of Fractures 45

Chip Sample Line .....

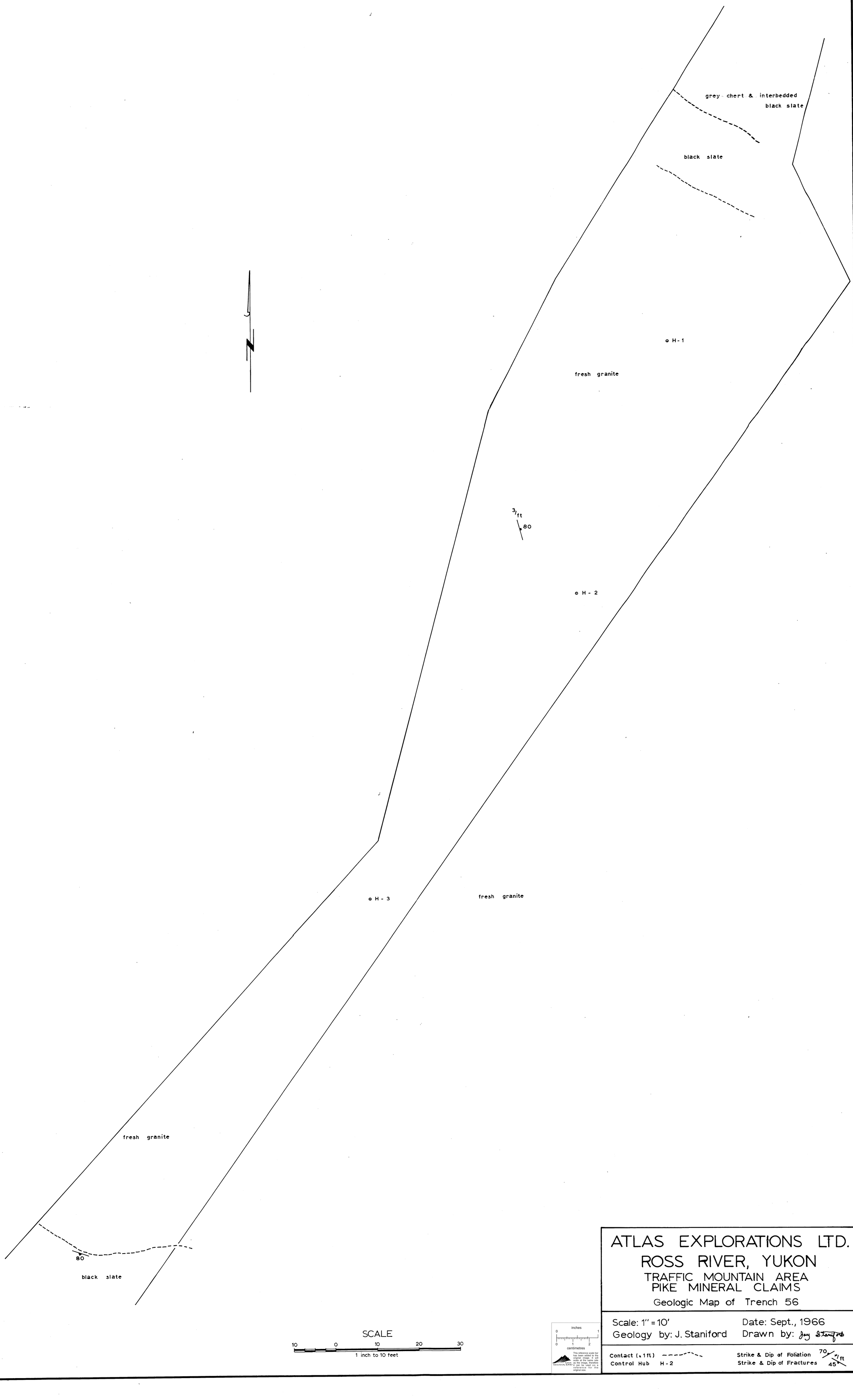
Visual Estimate of Mineralization

asp : arsenopyrite
cp : chalcopyrite
py : pyrite
pt : pyrrhotite
gal : galena
sph : sphalerite
ch : chalcocite

Alteration

si : silicification

FIG. 12



SCALE

10 0 10 20 30

1 inch to 10 feet

inches 0 1

0 1 2 centimetres

This reference scale bar has been added to the original image. It will scale at the same ratio as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

ATLAS EXPLORATIONS LTD.

ROSS RIVER, YUKON

TRAFFIC MOUNTAIN AREA
PIKE MINERAL CLAIMS

Geologic Map of Trench 56

Scale: 1" = 10'

Date: Sept., 1966

Geology by: J. Staniford

Drawn by: Jay Staniford

Contact (± 1 ft)

Control Hub H - 2

Strike & Dip of Foliation 70° +/- 1 ft

Strike & Dip of Fractures 45°

13. Geologic map of Trench 24 E, zone 2, 1" = 10'

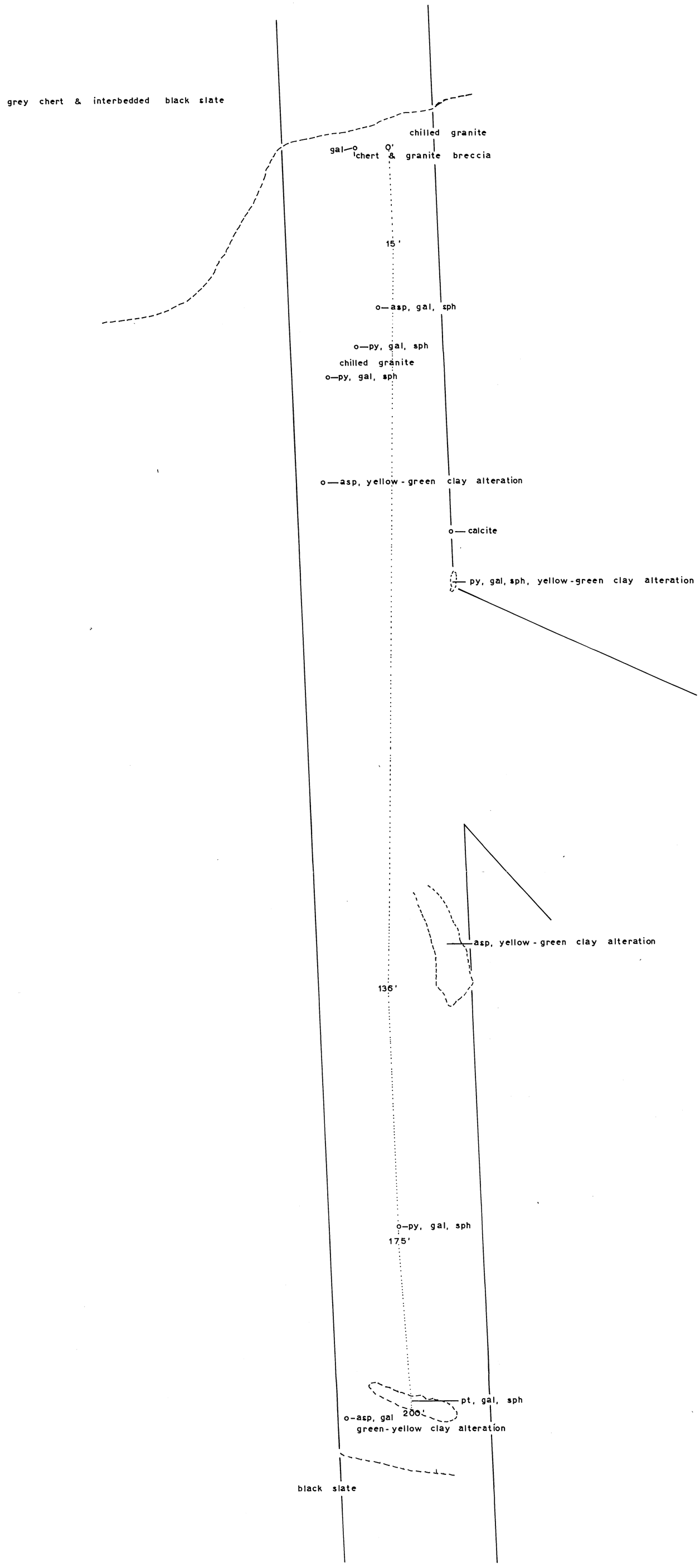
14. Assay results for Au, Ag, Pb, Zn, Cu, in trenches, zone 1, Pike Group, 1" = 20'

F I G U R E

15, Geochemical values map of Pike grid area, 1" = 400'

16. Geochemical anomalous outlines map for Cu, Pb, Zn, Pike grid area, 1" = 400'

FIG. 13



SCALE

10 0 10 20 30

1 inch to 10 feet

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
TRAFFIC MOUNTAIN AREA
PIKE MINERAL CLAIMS
Geologic Map of Trench 24

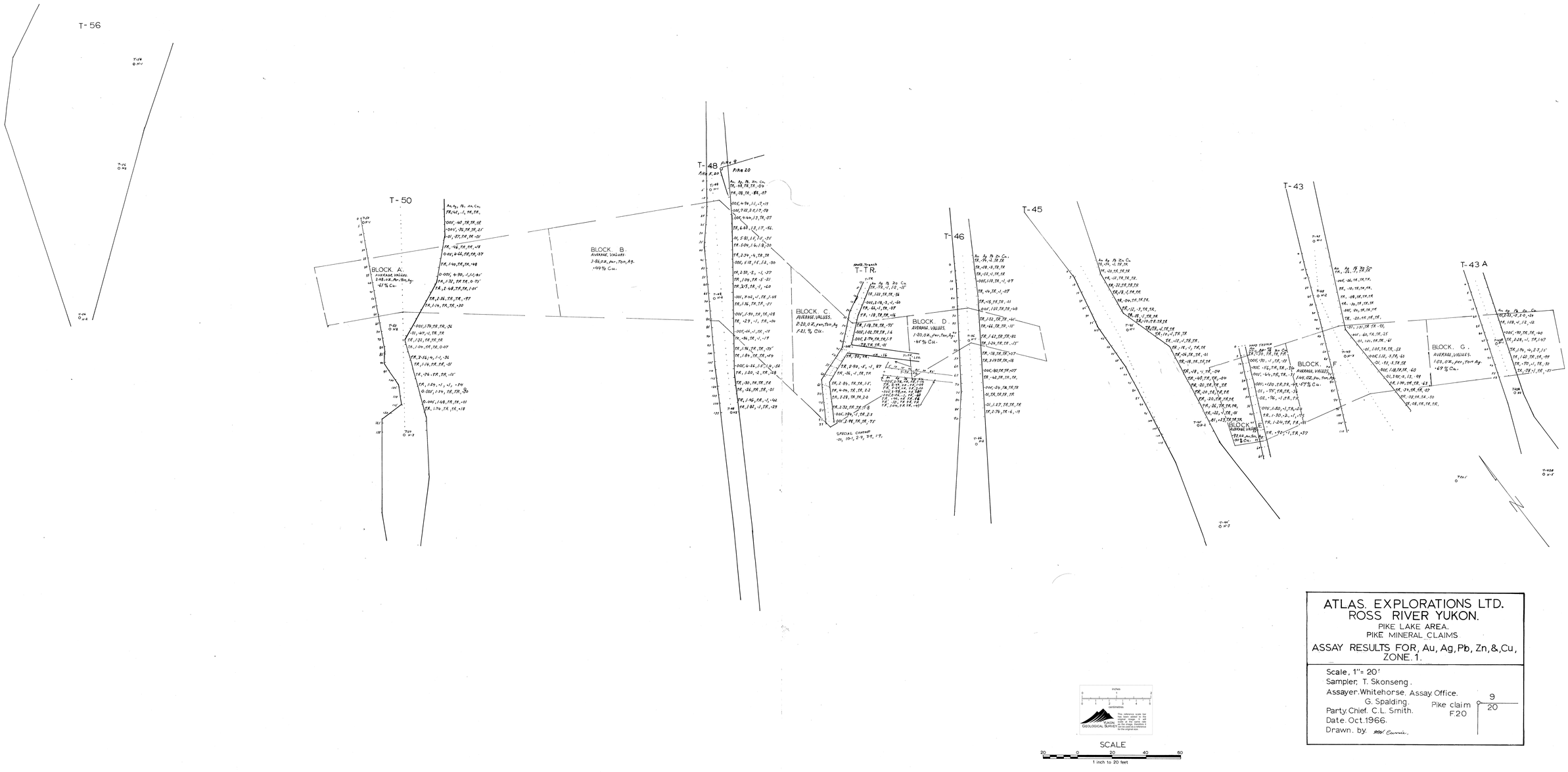
Scale: 1" = 10'
Date: Sept., 1966
Geology by: J. Staniford
Drawn by: Jay Staniford

Contact (± 1 ft) ~~~~~
Chip Sample Line .....

Mineralization
- asp : arsenopyrite
- py : pyrite
- pt : pyrrhotite
- gal : galena
- sph : sphalerite

inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

FIG. 14



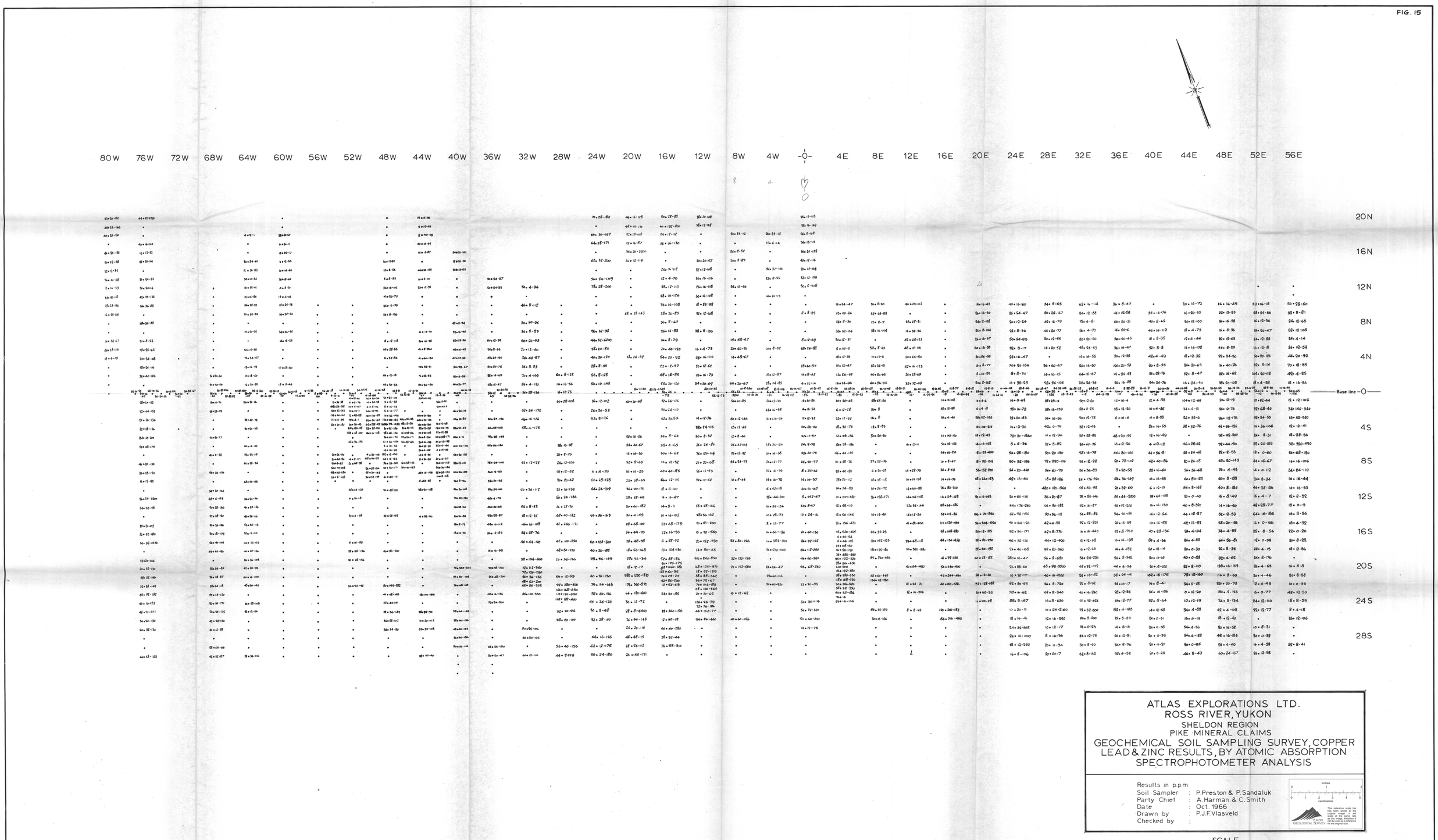
ATLAS. EXPLORATIONS LTD.
ROSS RIVER YUKON.
PIKE LAKE AREA.
PIKE MINERAL CLAIMS
ASSAY RESULTS FOR, Au, Ag, Pb, Zn, &, Cu, ZONE. 1.

Scale, 1" = 20'
Sampler, T. Skonseng.
Assayer. Whitehorse. Assay. Office.
G. Spalding.
Party. Chief. C.L. Smith.
Date. Oct. 1966.
Drawn. by. [signature]

Pike claim F.20

9
20

FIG. 15



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
SHELDON REGION
PIKE MINERAL CLAIMS
GEOCHEMICAL SOIL SAMPLING SURVEY, COPPER LEAD & ZINC RESULTS, BY ATOMIC ABSORPTION SPECTROPHOTOMETER ANALYSIS

Results in p.p.m.
Soil Sampler : P.Preston & P.Sandaluk
Party Chief : A.Harman & C.Smith
Date : Oct. 1966
Drawn by : P.J.F.Vlasveld
Checked by :

inches
0 1 2
0 1 2 3 4 5
centimetres

YUKON GEOLOGICAL SURVEY

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

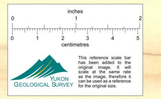
SCALE
400 0 400 800 1200
1 inch to 400 feet

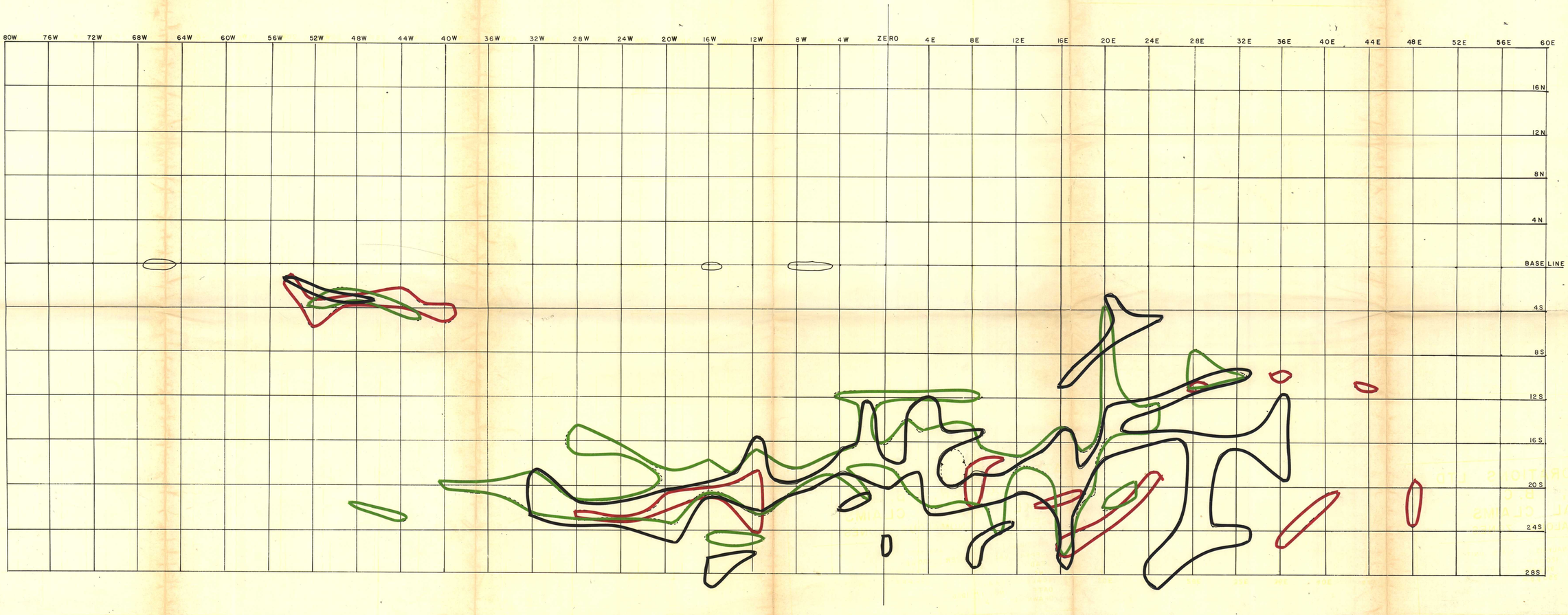
FIG. 16

ATLAS EXPLORATIONS LTD
VANCOUVER, B.C
PIKE MINERAL CLAIMS
GEOCHEM. ANOMALOUS ZONES

INSTRUMENT USED FOR ANALYSIS : A.A.S. UNIT
COPPER VALUES OVER 120 p.p.m
LEAD " " 90 p.p.m
ZINC " " 250 p.p.m
SCALE : 1" = 400'.
DATE : NOV. 17, 1966
DRAWN BY : J.N.B.

SCALE
400 0 400 800 1200
1 inch to 400 feet





F I G U R E

17. Geochemical anomalous values and outlines map for Cu, Pike grid area, 1" = 400'

18. Geochemical anomalous values and outlines map for Pb, Pike grid area, 1" = 400'

19. Geochemical anomalous values and outline map for Zn, Pike grid area, 1" = 400'

F I G U R E

20, Geochemical profile map across anomalous zones for Cu, Pike grid area, 1" =400'

21. Geochemical profile map across anomalous zones for Pb, Pike grid area, 1" = 400'

22. Geochemical profile map across anomalous zones for Zn, Pike grid area, 1" =400'

F I G U R E

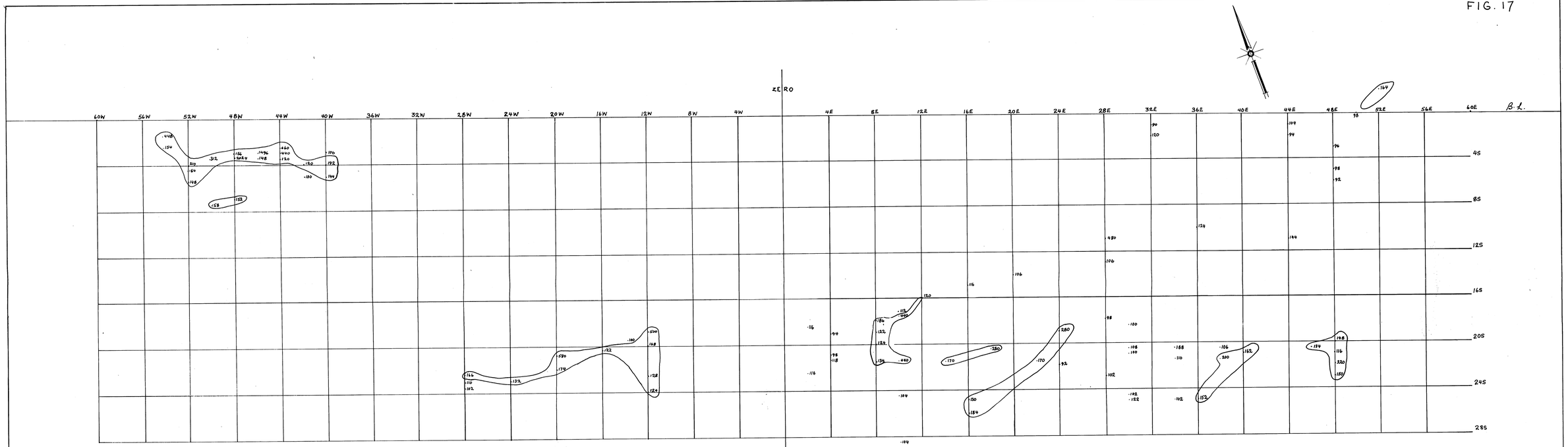
23. Frequency distribution curve for Cu, Pike grid area

24. Frequency distribution curve for Pb, Pike grid area

25. Frequency distribution curve for Zn, Pike grid area

017 - 022

FIG. 17

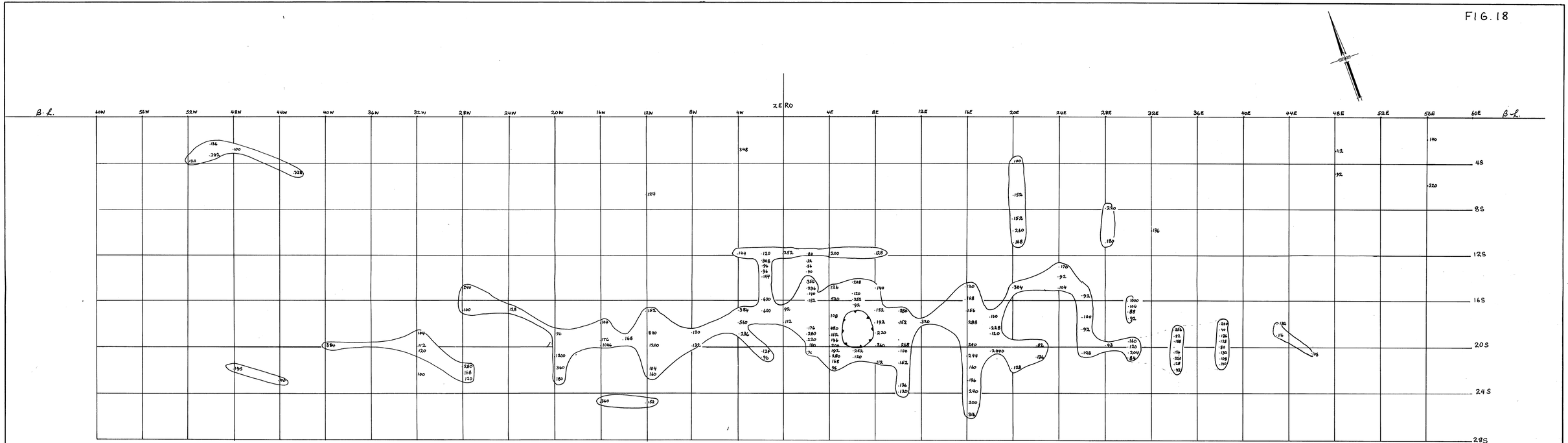


ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
SHELDON REGION
PIKE MINERAL CLAIMS
OUTLINE OF ANOMALOUS CU VALUES
(above threshold of 120 ppm.)

SCALE
400 0 400 800 1200
1 inch to 400 feet

inches
centimetres
YUKON GEOLOGICAL SURVEY
This reference scale bar has been added to the original figure. If the scale at the same ratio as the image, therefore it can be used as a reference for the original size.

FIG. 18



SCALE

400 0 400 800 1200

1 inch to 400 feet

inches

0 1 2

0 1 2 3 4 5

centimetres

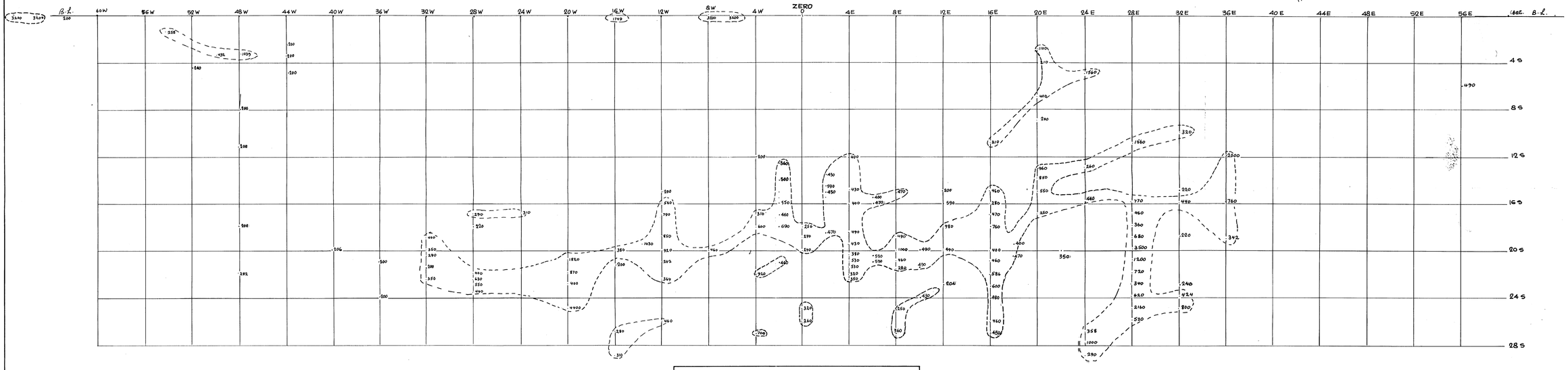
This reference scale bar has been added to the original image. It will therefore change as well as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
SHELDON REGION
PIKE MINERAL CLAIMS

OUTLINE OF ANOMALOUS PB VALUES
(above threshold of 90 ppm.)

FIG. 19



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
SHELDON REGION
PIKE MINERAL CLAIMS

OUTLINE OF ANOMALOUS ZN VALUES
(above threshold of 250 ppm.)

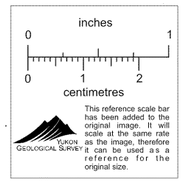
SCALE
400 0 400 800 1200
1 inch to 400 feet

inches
0 1 2
0 1 2 3 4 5
centimetres

YUKON GEOLOGICAL SURVEY

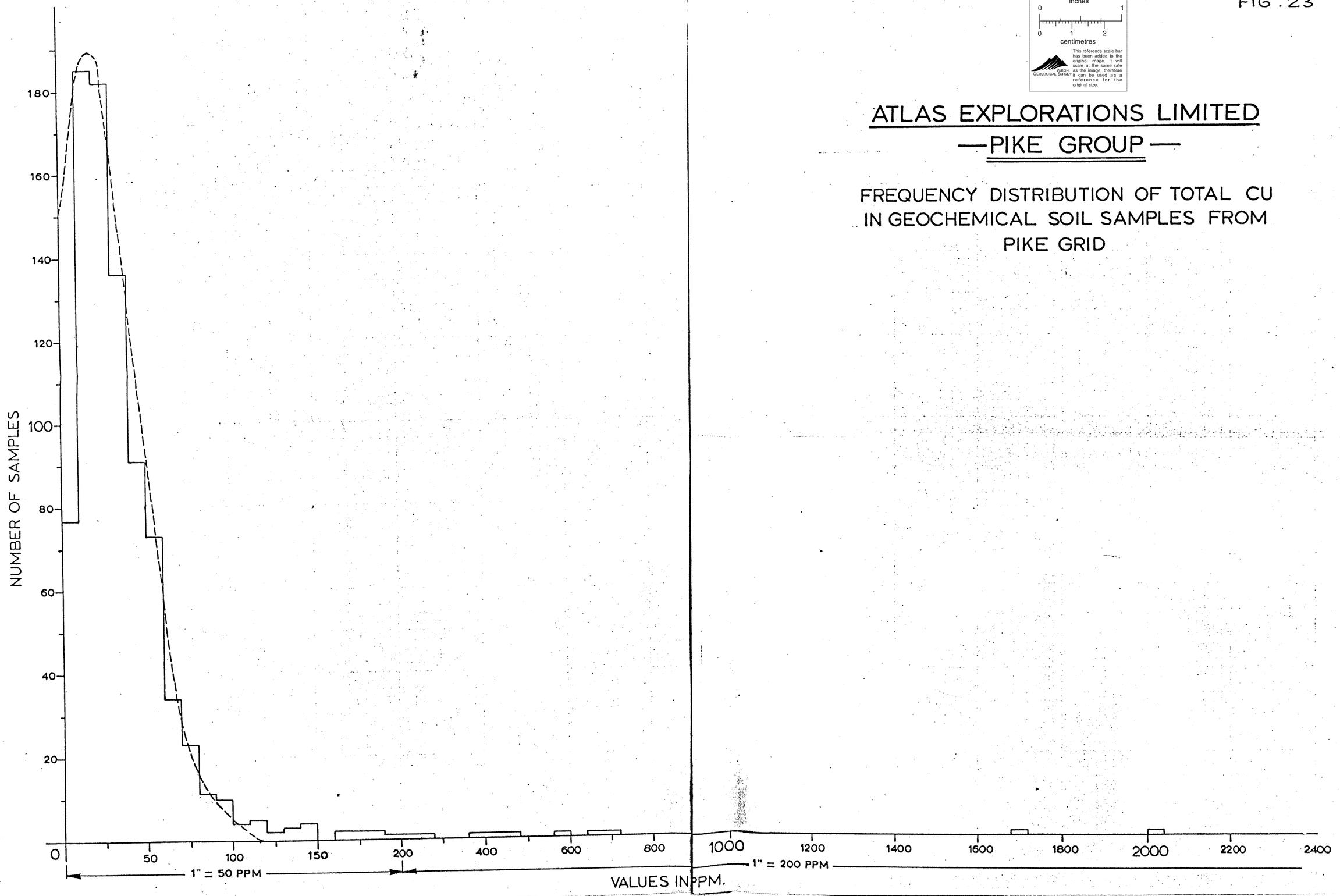
This reference scale bar has been added to the original image. It will change if the image is resized on the page, therefore it can be used as a reference for the original size.

FIG. 23



ATLAS EXPLORATIONS LIMITED
—PIKE GROUP—

FREQUENCY DISTRIBUTION OF TOTAL CU IN GEOCHEMICAL SOIL SAMPLES FROM PIKE GRID



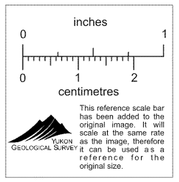


FIG. 24

ATLAS EXPLORATIONS LIMITED
—PIKE GROUP—

FREQUENCY DISTRIBUTION OF TOTAL PB IN GEOCHEMICAL SOIL SAMPLES FROM PIKE GRID

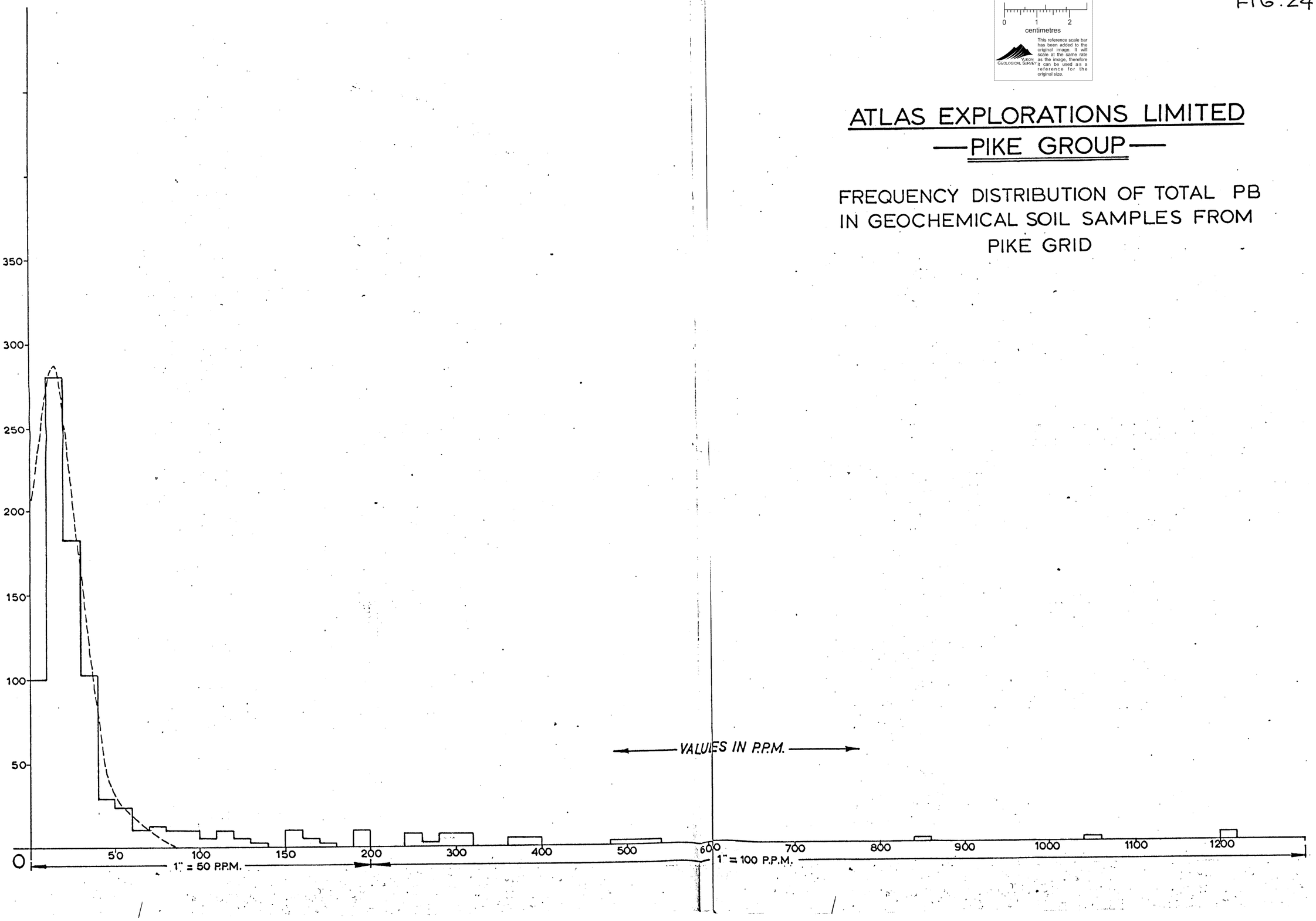
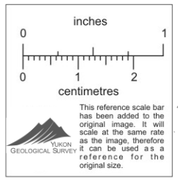
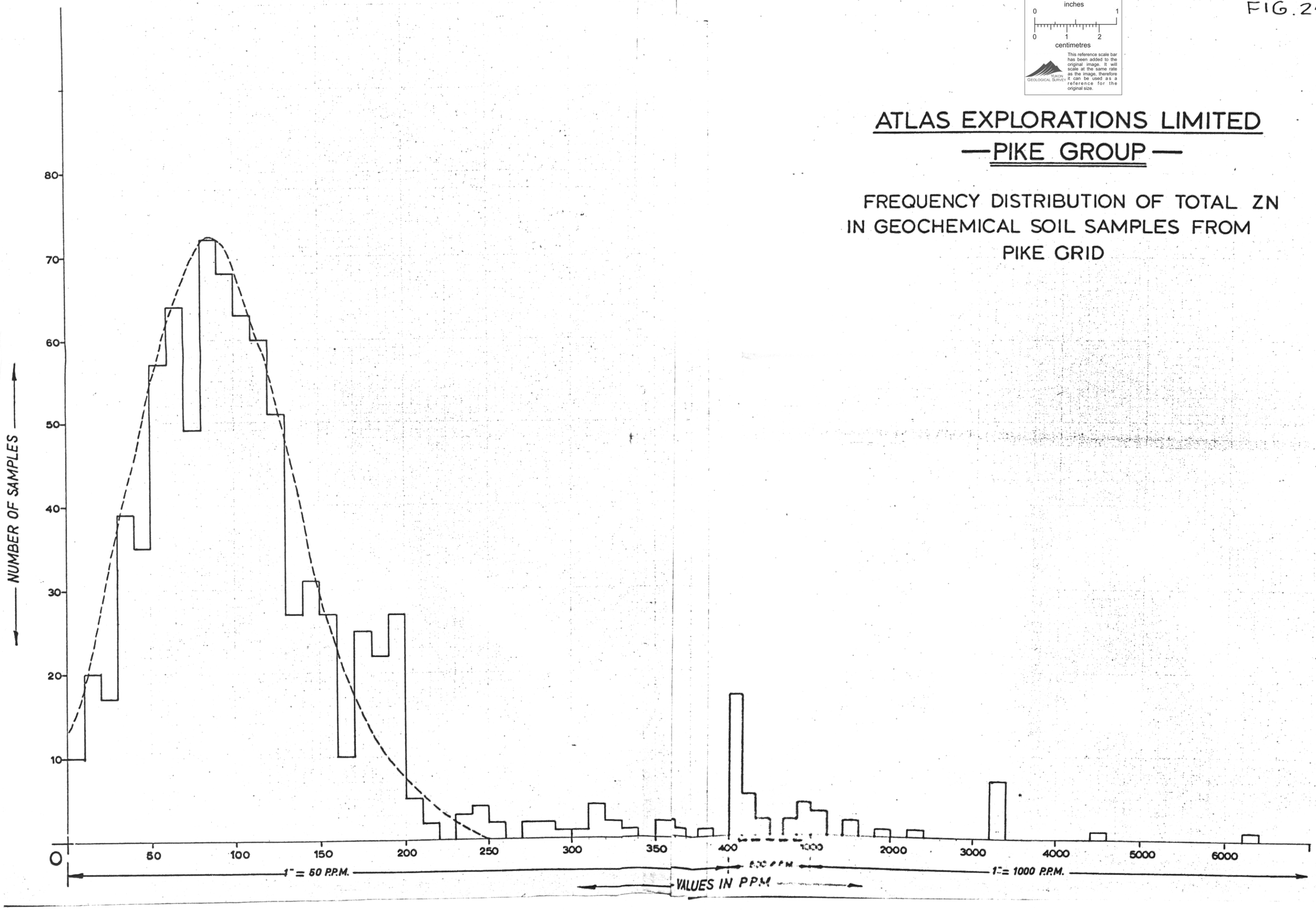


FIG. 25



ATLAS EXPLORATIONS LIMITED
—PIKE GROUP—

FREQUENCY DISTRIBUTION OF TOTAL ZN IN GEOCHEMICAL SOIL SAMPLES FROM PIKE GRID



F I G U R E

26. Ground magnetic contour map, Pike grid area, 1" = 400'

27. Ground magnetic values and profile map, Pike grid area, 1" = 400'

28. Modified ground magnetic profile map, Pike grid area, 1" = 400'

29. Ground electromagnetic high frequency contour map, Pike grid area, 1" = 400'

023-
026

FIG.26

ATLAS EXPLORATIONS LTD.
ROSS RIVER YUKON
TRAFFIC MTN. AREA
PIKE MINERAL CLAIMS

GROUND MAGNETOMETER SURVEY
CONTOUR MAP

Date : August 1966
Instrument : Jalander
Contour interval : 200 gammas
Surveyed by: P.Sandaluk
Party chief : A.Hammer
Drawn by:

SCALE

400 0 400 800 1200

1 inch to 400 feet

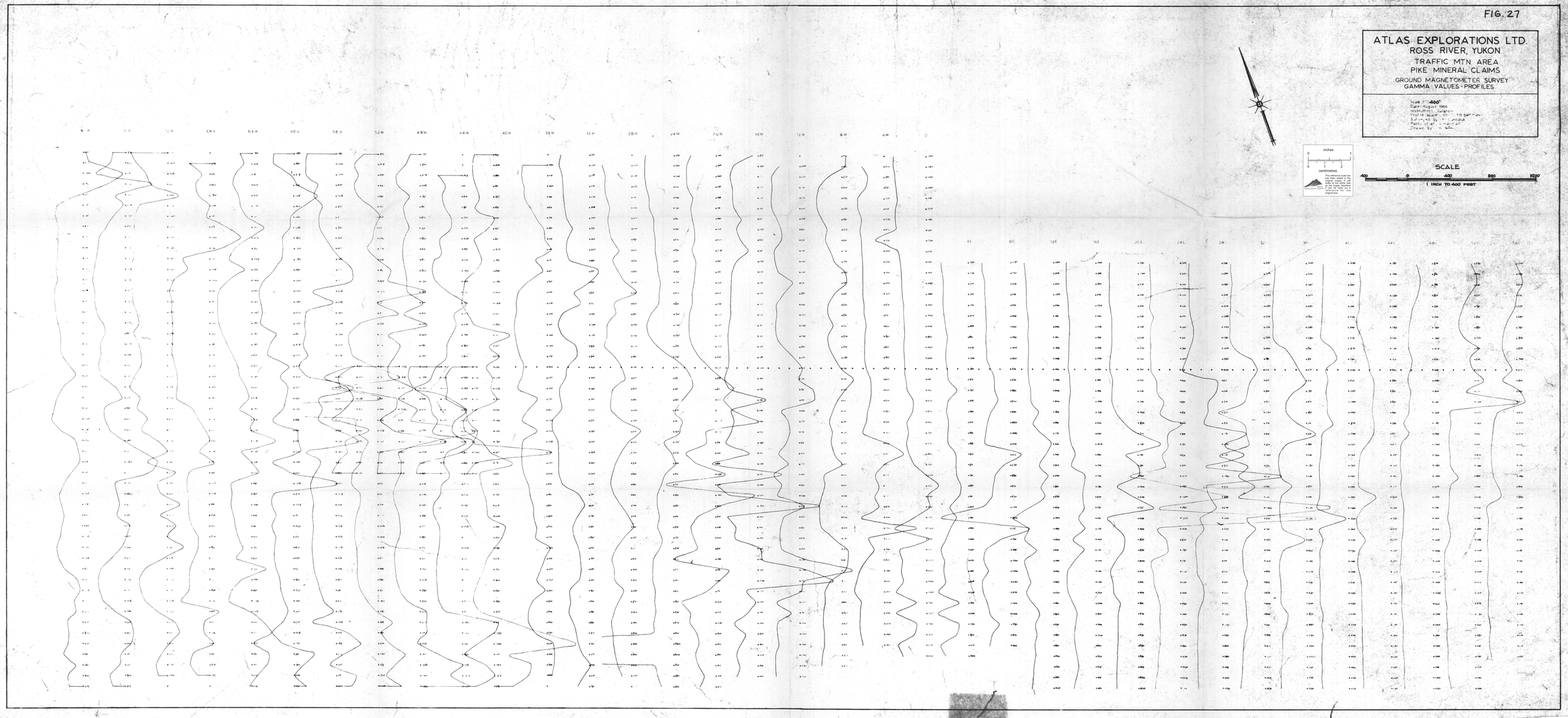


FIG. 27
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
TRAFFIC MTN. AREA
PIKE MINERAL CLAIMS
GROUND MAGNETOMETER SURVEY
GAMMA VALUES - PROFILES
Scale 1" = 400'
Date: August 1966
Instrument: Gulshan
Profile Scale: 1 inch = 50 gammas
Surveyed by: R. Lundaus
Part. Chief: [illegible]
Drawn by: [illegible]
SCALE
400 0 400 800 1200
1 INCH TO 400 FEET
inches
centimetres
This reference scale for the latest scale is the original image. It will be used as a reference for the image. Therefore, the scale of the image is not a reference for the original size.

FIG. 28

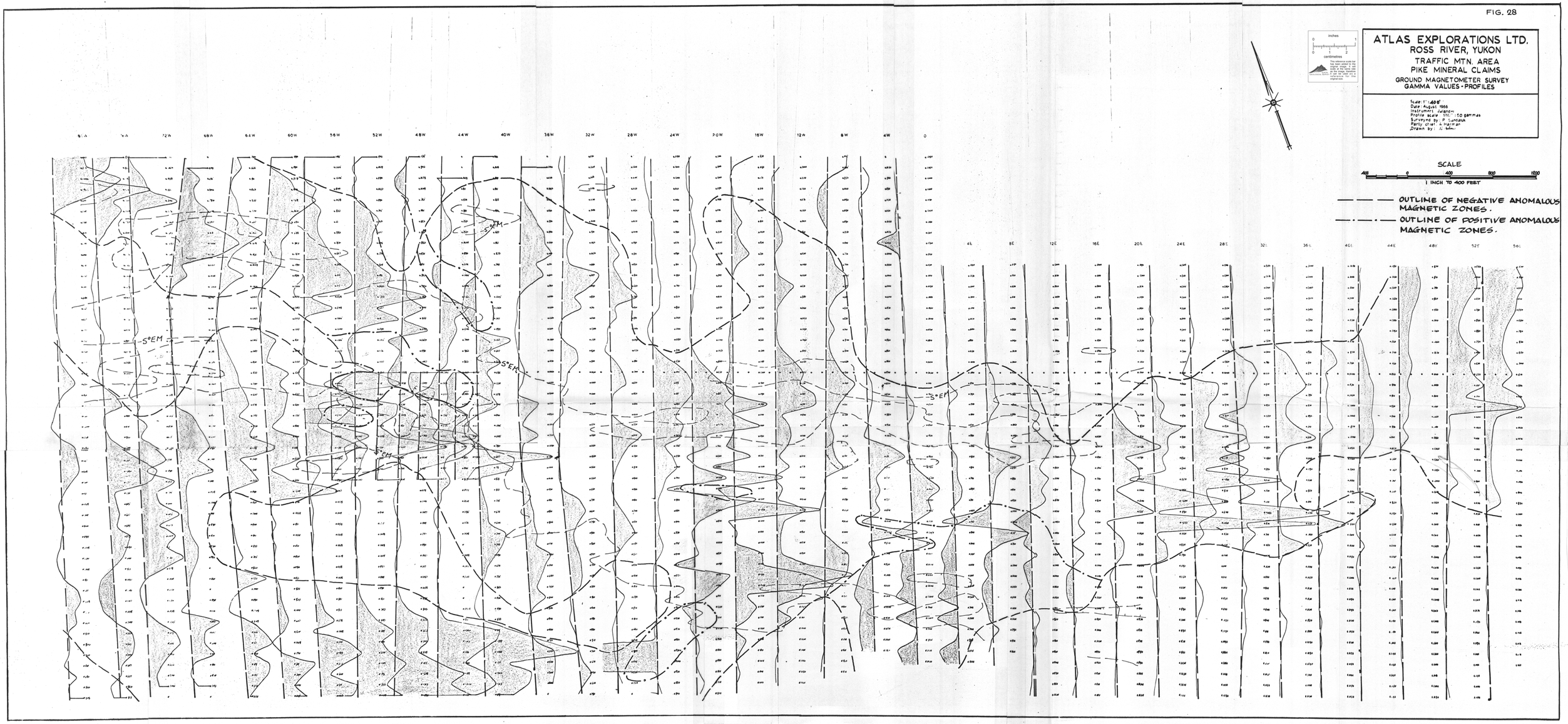

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
TRAFFIC MTN. AREA
PIKE MINERAL CLAIMS
GROUND MAGNETOMETER SURVEY
GAMMA VALUES - PROFILES
Scale: 1" = 400'
Date: August 1966
Instrument: Jalanow
Profile scale: 1/10" = 50 gammas
Surveyed by: P. Sandaua
Party chief: A. Harman
Drawn by:
SCALE
400 0 400 800 1200
1 INCH TO 400 FEET
OUTLINE OF NEGATIVE ANOMALOUS MAGNETIC ZONES.
OUTLINE OF POSITIVE ANOMALOUS MAGNETIC ZONES.
S°EM
S°EM
S°EM
S°EM
S°EM
72W
68W
64W
60W
56W
52W
48W
44W
40W
36W
32W
28W
24W
20W
16W
12W
8W
4W
0
4E
8E
12E
16E
20E
24E
28E
32E
36E
40E
44E
48E
52E
56E

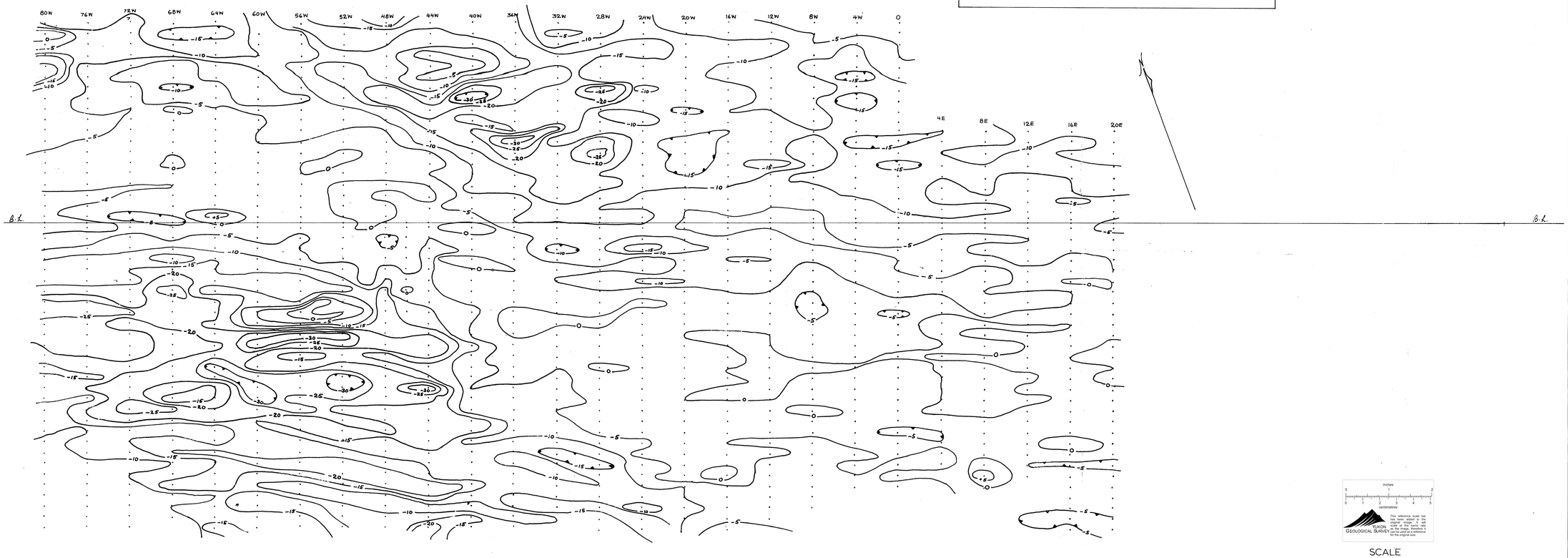
FIG. 29

ATLAS EXPLORATIONS LTD
VANCOUVER, B C
PIKE MINERAL CLAIMS

GROUND ELECTROMAGNETIC SURVEY
HIGH FREQ RESULTANT DIP ANGLE CONTOURS

INSTRUMENT : CRONE JEM
OPERATORS : P DEAN, D PRESTON
DATE : JULY, 1966
CONTOUR INTERVAL : 5°

SCALE : 1" = 400'



inches
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

SCALE
400 0 400 800 1200
1 inch to 400 feet

30. Ground electromagnetic high and low frequency values and profile map, Pike grid area, 1" = 400'

31. Induced polarization values m ap for five lines, Pike grid area, 1" = 400'

For figures 30 & 31
See: Compilation Report on
PIKE M.C.
By W. Roberts Jan/75

MISSING

Book 2-C

TCA

FIGURE

32. Aeromagnetic map, Traffic Mountain area, 1" = 1320') ($\frac{1}{4}$ mile)

33. Air electromagnetic map, Traffic Mountain area, 1" = 1320' $9\frac{1}{4}$ mile.

34. Aeromagnetic map, Traffic Mountain area, (Sheet 1,) 1" - 2640 approx. ($\frac{1}{2}$ mile)

35. Aeromagnetic map, Traffic Mountain area, (Sheet2 ,) 35 miles west of Traffic Mt.) 1" = 2640' Approx ($\frac{1}{2}$ mile)

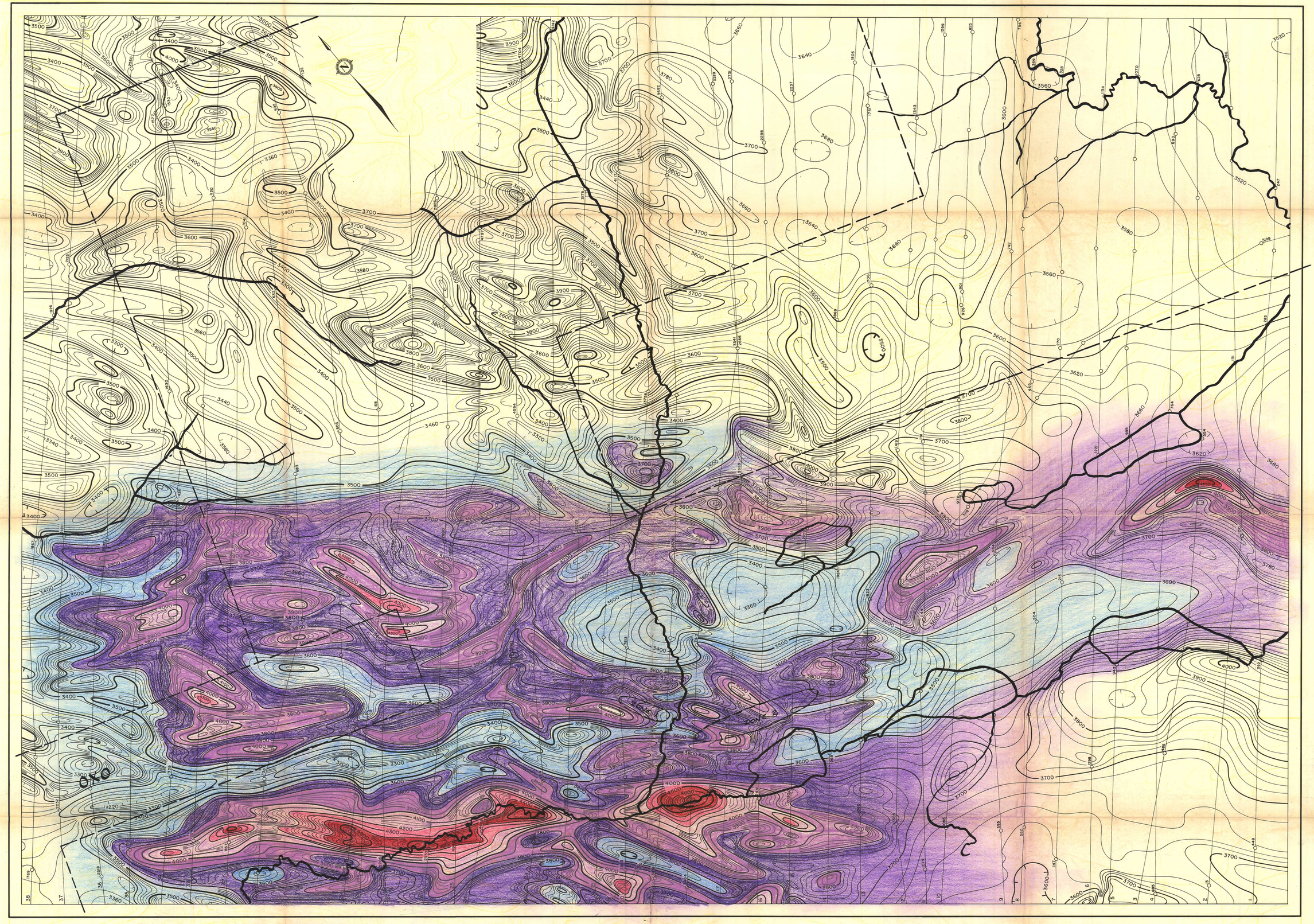
027-
030

FIGURE
27 - 30

FIG. 32

ATLAS EXPLORATION LIMITED

AIRBORNE GEOPHYSICAL SURVEY



CONTOUR INTERVAL	20 GAMMA
MEAN FLIGHT LINE SPACING	1000 FEET
MEAN TERRAIN CLEARANCE	200 FEET
500 GAMMA CONTOUR	
100 GAMMA CONTOUR	
20 GAMMA CONTOUR	
MAGNETIC LOW	
FIDUCIAL POINTS	3690
FLIGHT LINES	

FEATURES:
1. SCHIST CAST-MAC IN AREA OF YUKON MINERAL (PULL)
2. CORRELATION TO 'MAC LINEAR SHOWN WITH

TRAFFIC MOUNTAIN AREA

YUKON TERRITORY

SCALE

1000 0 1000 2000 3000 4000 5000

FEET FEET

1 Inch to 1320 Feet (Approx.)

AEROMAGNETIC MAP

inches 0 1 2

0 1 2 3 4 5 centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

Flown and Compiled by

LOCKWOOD SURVEY CORPORATION LIMITED

TORONTO, CANADA

1966

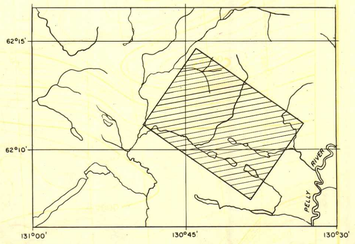
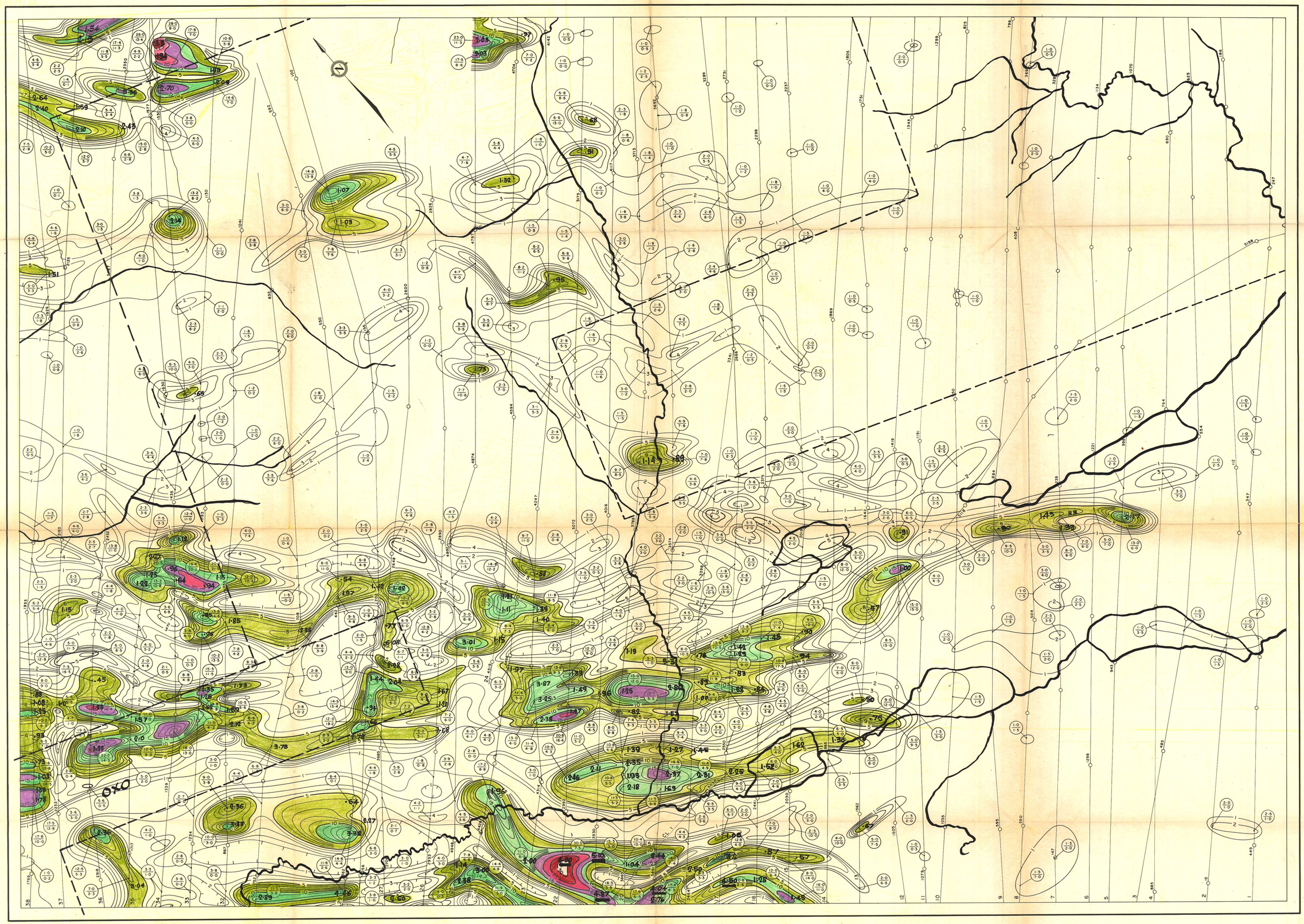


FIG. 33

ATLAS EXPLORATION LIMITED

AIRBORNE GEOPHYSICAL SURVEY



MEAN FLIGHT LINE SPACING ..... 1000 FEET
MEAN TERRAIN CLEARANCE ..... 200 FEET
ELECTROMAGNETIC CONTOURS 5, 10, 15 etc. .....
1, 2, 3, 4 etc. .....
NEGATIVE CONTOURS −5, −10 etc. .....
−1, −2, −3, −4 etc. .....
FIDUCIAL POINTS ..... O 3690
FLIGHT LINES .....

The contours represent amplitude of in phase response of the resultant field expressed in parts per million of the primary. The figures (2.3 / 0.2) represent amplitude in phase component / quadrature component. The frequency of the primary current is 4000 cycles per second.

TRAFFIC MOUNTAIN AREA

YUKON TERRITORY

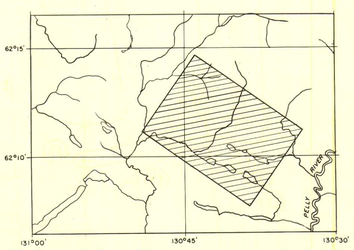
SCALE

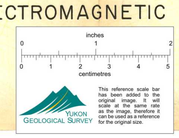
1000 FEET 0 1000 2000 3000 4000 5000 FEET

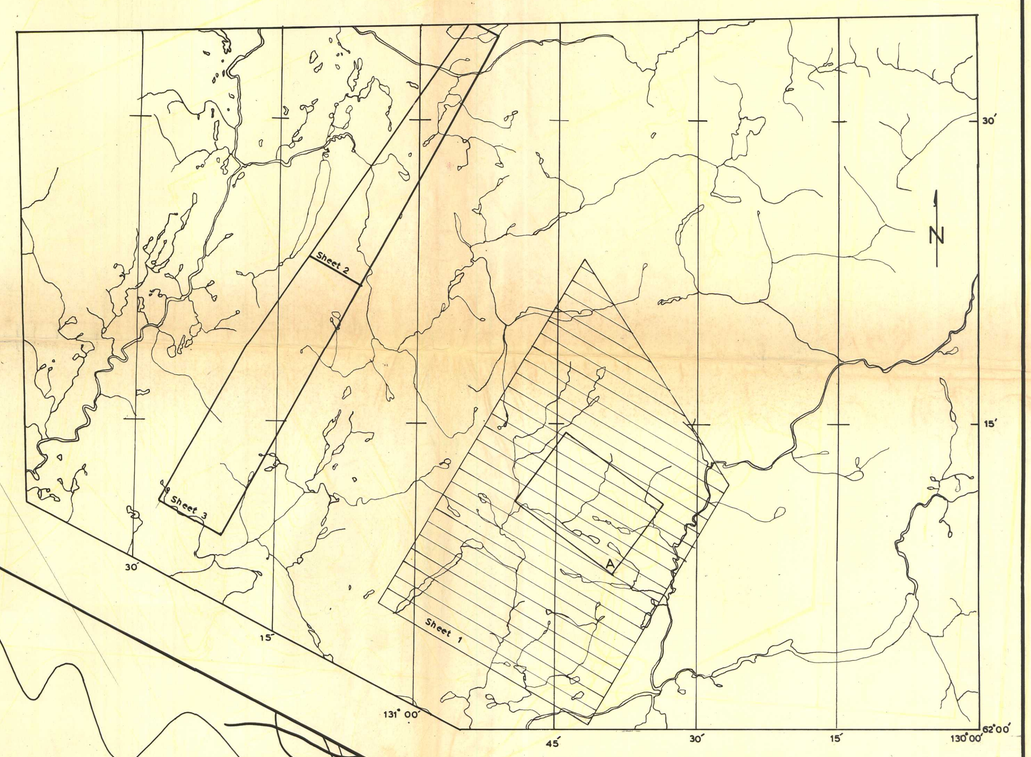
1 Inch to 1320 Feet (Approx.)

ELECTROMAGNETIC MAP

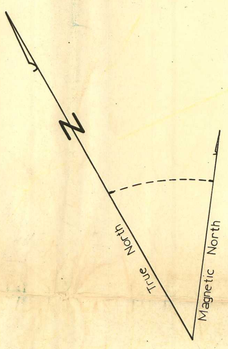
Flown and Compiled by
LOCKWOOD SURVEY CORPORATION LIMITED
TORONTO, CANADA
1966







A - Area previously done by Lockwood Survey Corporation Ltd.



60
30
15 obsd min strike

70 measurable anomaly

EM EMU GROUP

CREE GROUP

OXO GROUP

STAR GROUP

GEOCHEMICAL ZONE 1

GEOCHEMICAL ZONE 2

OUTLINE OF NORTH PIKE GRIDE

OUTLINE OF SOUTH PIKE GRIDE

OUTLINE OF PIKE GROUP

OUTLINE OF 1"=¼ MILE AEROMAGNETIC AREA

- ANOMALOUS CU GEOCHEMICAL RESULT
- ANOMALOUS PB GEOCHEMICAL RESULT
- ANOMALOUS ZN GEOCHEMICAL RESULT

Line 178

Line 120

CONTOUR INTERVAL ..... 20 GAMMA
MEAN FLIGHT LINE SPACING ..... 1320 FEET
MEAN TERRAIN CLEARANCE ..... 400 FEET
500 GAMMA CONTOUR
100 GAMMA CONTOUR
20 GAMMA CONTOUR
MAGNETIC LOW

TRAFFIC MOUNTAIN AREA

YUKON TERRITORY

SCALE

2000 0 2000 4000 6000 8000 10000

1 Inch to 2640 Feet (Approx)

AEROMAGNETIC MAP

inches
0 1 2
0 1 2 3 4 5
centimetres

This reference scale bar has been added to the original figure. It is to scale at the same ratio as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

FIG. 34

ATLAS EXPLORATION LIMITED

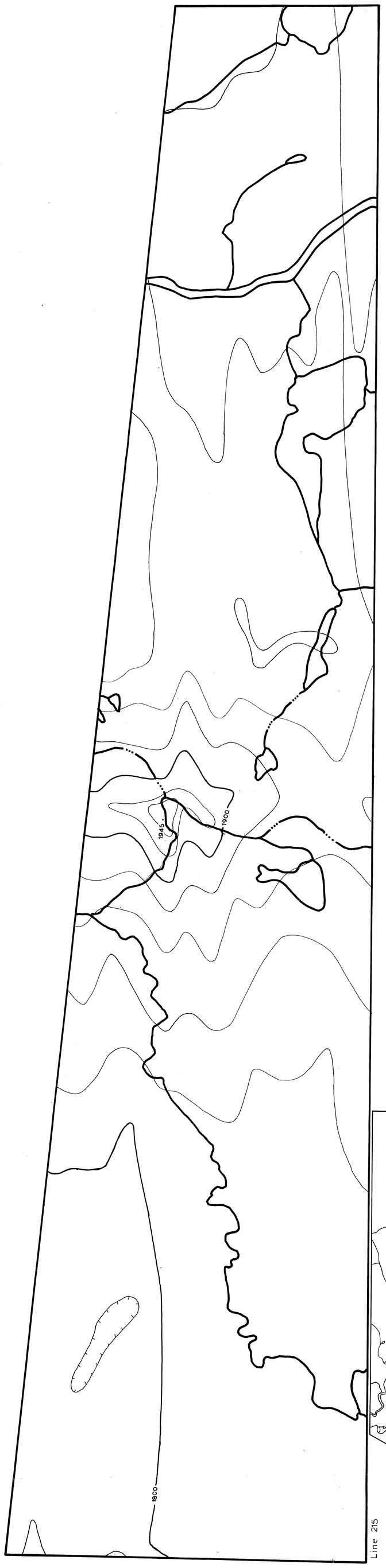
AIRBORNE GEOPHYSICAL SURVEY

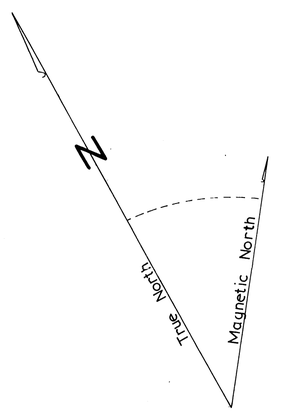
Flown by

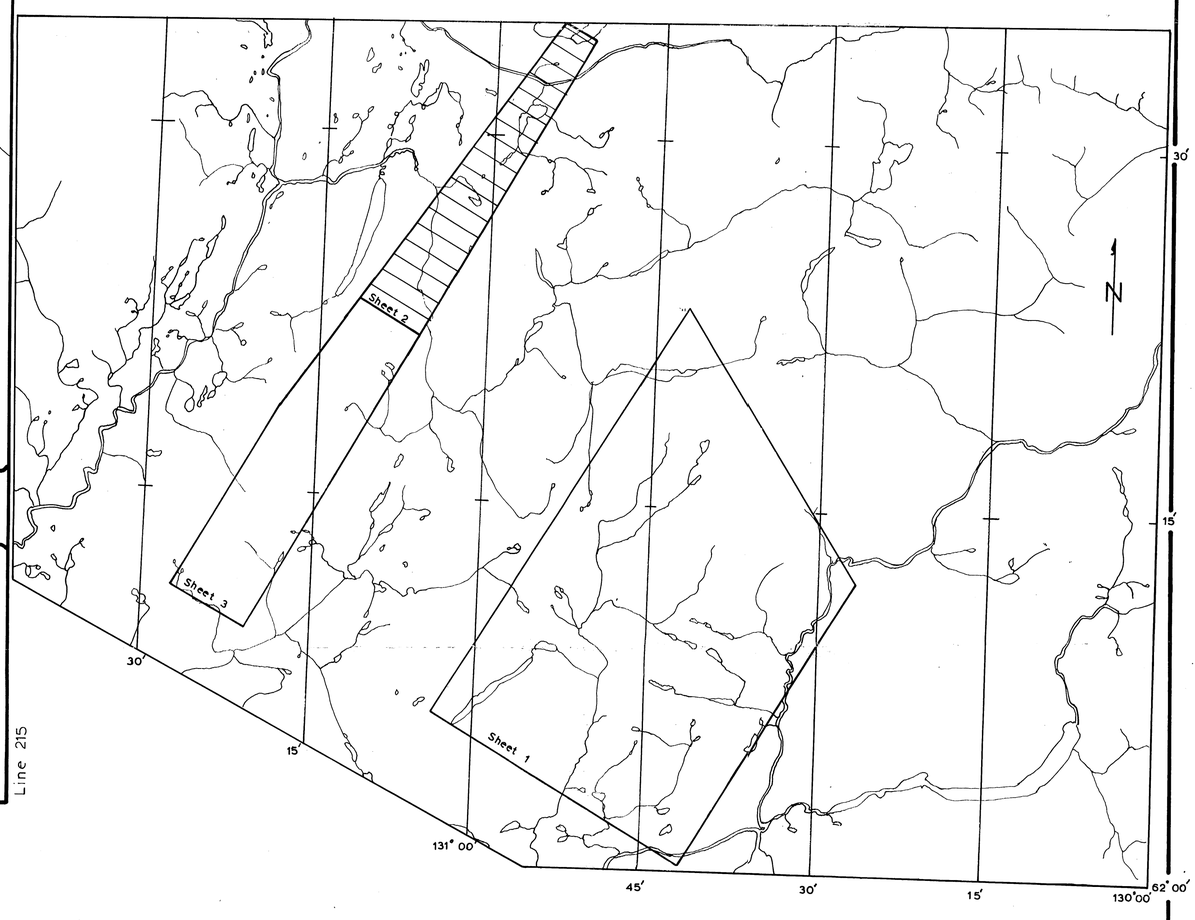
LOCKWOOD SURVEY CORPORATION LTD.

Compiled by

ATLAS EXPLORATION LIMITED







CONTOUR INTERVAL _____ 20 GAMMA
MEAN FLIGHT LINE SPACING _____ 1320 FEET
MEAN TERRAIN CLEARANCE _____ 400 FEET
500 GAMMA CONTOUR _____
100 GAMMA CONTOUR _____
20 GAMMA CONTOUR _____
MAGNETIC LOW _____

TRAFFIC MOUNTAIN AREA

YUKON TERRITORY

SCALE

2000 0 2000 4000 6000 8000 10000

1 Inch to 2640 Feet (Approx)

AEROMAGNETIC MAP

inches 0 1 2
centimetres 0 1 2 3 4 5

YUKON GEOLOGICAL SURVEY

This reference scale bar has been added to the original drawing. It was not at the same ratio as the image, therefore it can be used as a reference for the original size.

FIG. 35

ATLAS EXPLORATION LIMITED

AIRBORNE GEOPHYSICAL SURVEY

Flown by

LOCKWOOD SURVEY CORPORATION LTD.

Compiled by

ATLAS EXPLORATION LIMITED

1966

FIGURE

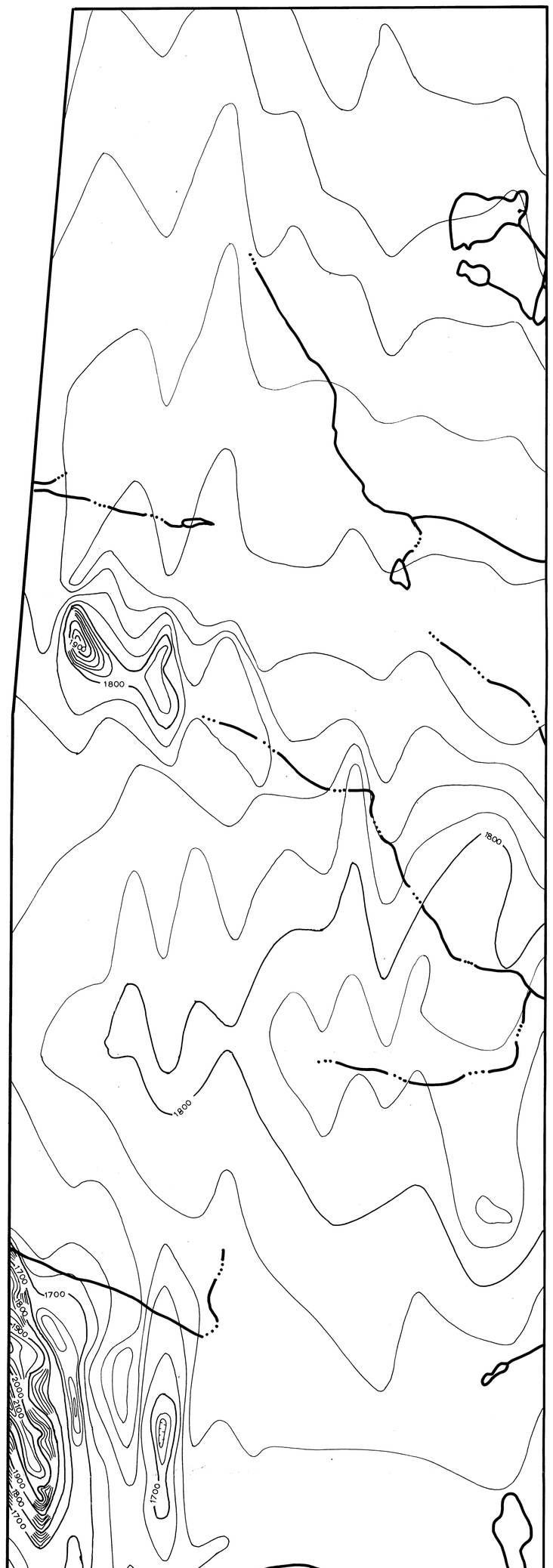
36. Aeromagnetic map, Traffic Mountain area, (Sheet 3, 35 miles west of Traffic Mt.) 1" = 2640'

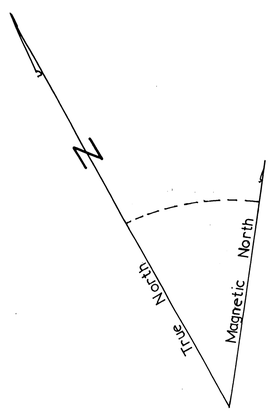
37. Aeromagnetic profile map, Traffic Mountain area, 1" = 2640' ($\frac{1}{2}$ mile)

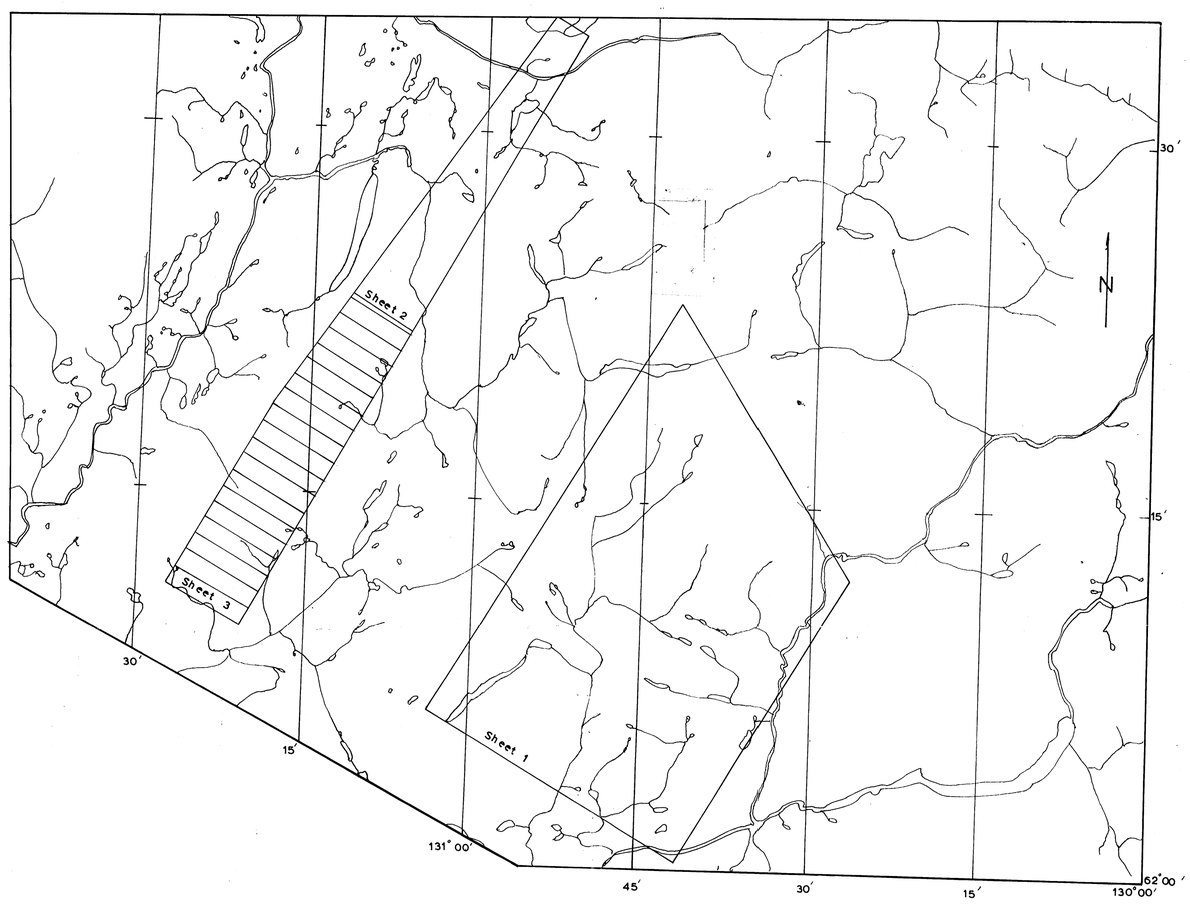
38. Claim group location map, Sheldon region, 1" = 4 miles.

031—
033

FIGURE
31-33







CONTOUR INTERVAL 20 GAMMA
MEAN FLIGHT LINE SPACING 1320 FEET
MEAN TERRAIN CLEARANCE 400 FEET
500 GAMMA CONTOUR
100 GAMMA CONTOUR
20 GAMMA CONTOUR
MAGNETIC LOW

TRAFFIC MOUNTAIN AREA

YUKON TERRITORY

SCALE

2000 0 2000 4000 6000 8000 10000

1 Inch to 2640 Feet (Approx)

AEROMAGNETIC MAP

inches 0 1 2
0 1 2 3 4 5 centimetres

YUKON GEOLOGICAL SURVEY

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

FIG. 36

ATLAS EXPLORATION LIMITED

AIRBORNE GEOPHYSICAL SURVEY

Flown by

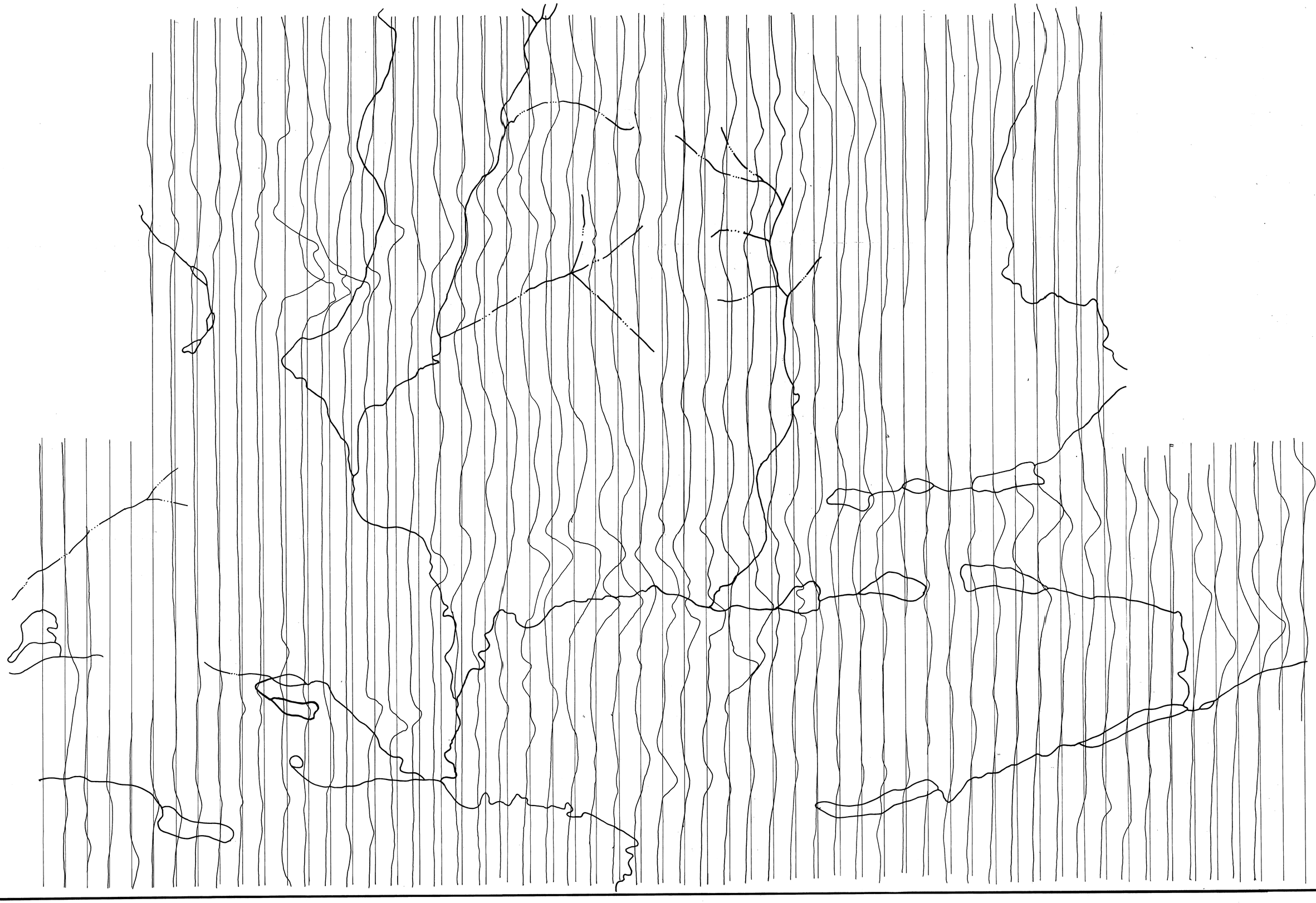
LOCKWOOD SURVEY CORPORATAION LTD.

Compiled by

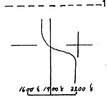
ATLAS EXPLORATION LIMITED

1966

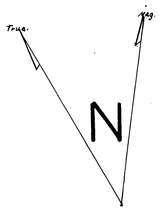
FIG. 37



PROFILE SCALE. 1 INCH _____ 1000. GAMMAS
MEAN FLIGHT LINE SPACING _____ 1320 FEET
MEAN TERRAIN CLEARANCE _____ 400 FEET
BACK GROUND _____ 1900. GAMMAS



DRAWN BY M.V. Currie



TRAFFIC MOUNTAIN AREA

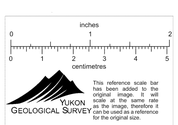
YUKON TERRITORY

SCALE

2000 0 2000 4000 6000 8000 10000

1 Inch to 2640 Feet. (Approx)

AEROMAGNETIC MAP



ATLAS EXPLORATION LIMITED

AIRBORNE GEOPHYSICAL SURVEY

Flown by

LOCKWOOD SURVEY CORPORATION LTD.

Compiled by

ATLAS EXPLORATION LIMITED

FIG. 38

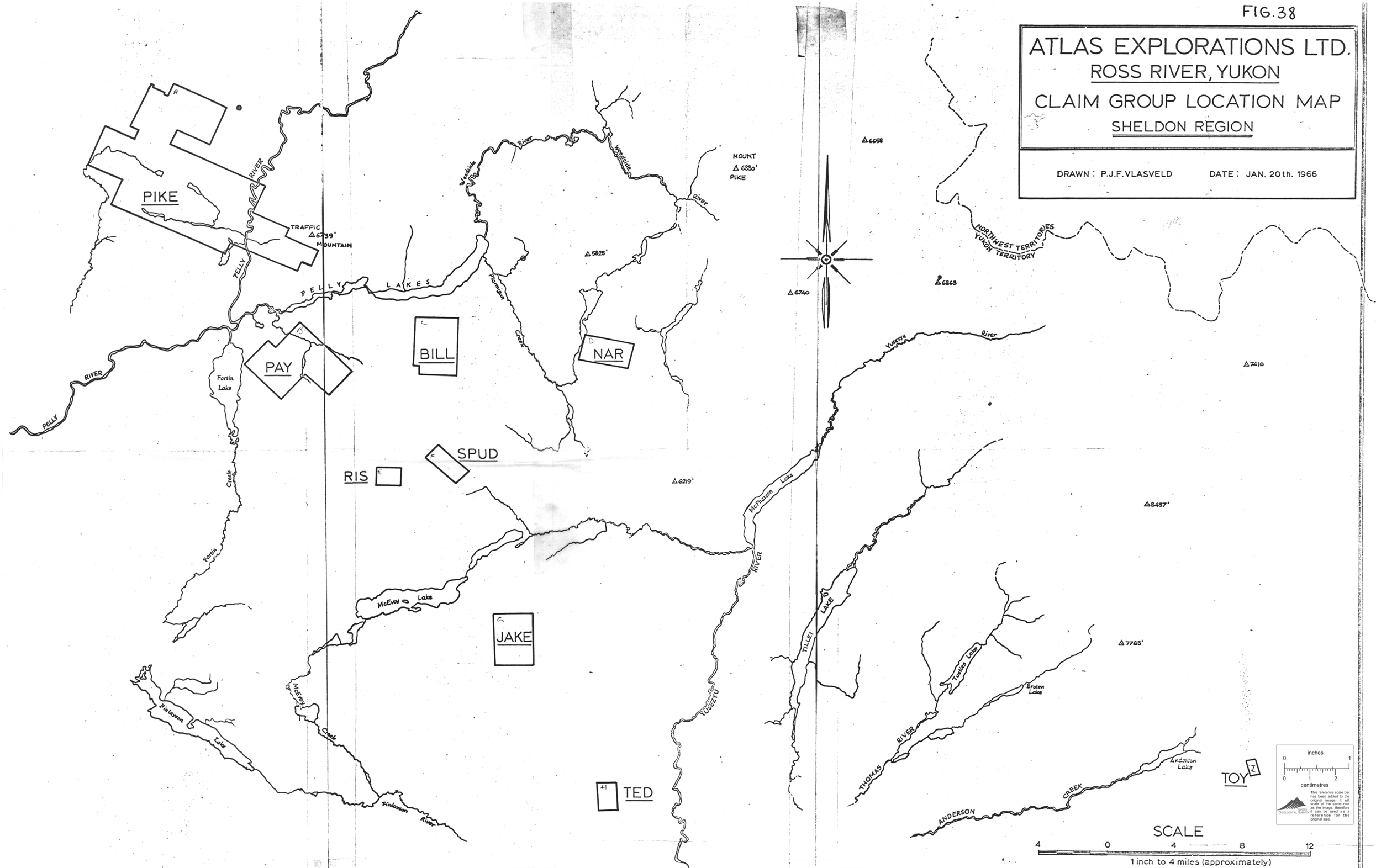
ATLAS EXPLORATIONS LTD.

ROSS RIVER, YUKON

CLAIM GROUP LOCATION MAP

SHELDON REGION

DRAWN: P.J.F. VLASVELD DATE: JAN. 20th. 1966



F I G U R E

39. Geologic occurrence and assay map of Nar group, 1" = $\frac{1}{2}$ mile

40. Claim map of Nar group, 1" = $\frac{1}{2}$ mile

41. Geochemical map of Nar group area, 1" = $\frac{1}{2}$ mile

42. Claim map of group PAY, 1" = $\frac{1}{2}$ mile

43. Geologic, showings and assay sketch map of claims 9 and 10, Pay group, 1' = 200'

45. Cliam map of Jake group, 1" = $\frac{1}{2}$ mile

46. Geochemical, showings and assay map of Jake group area, 1" = $\frac{1}{2}$ mile.

47. Claim map of Ted group, 1" = $\frac{1}{2}$ mile

034-042

FIGURE 34-42

FIG. 39

GEOLOGIC, OCCURRENCE, AND ASSAY MAP OF NAR GP.

LEGEND. (Stratigraphic relations not known)

GRANITE, LOCALLY CHILLED	5
DOLOMITE	4
CHERT, QTZITE, LS, SS, HORNFELS	3
LS, QTZITE, RHYOLITE ?	2
SHALE	1

FAULT ~ ~

BEDDING ATTITUDE ⁄

APPROX. CONTACT - - - -

MINERALIZED SHEAR ZONES ~~~~

TYPES OF MINERALIZATION

○ Pyrrhotite skarn with disseminated chalcopyrite and arsenopyrite. Local massive zones and scattered veins of chalcopyrite and arsenopyrite in skarn.

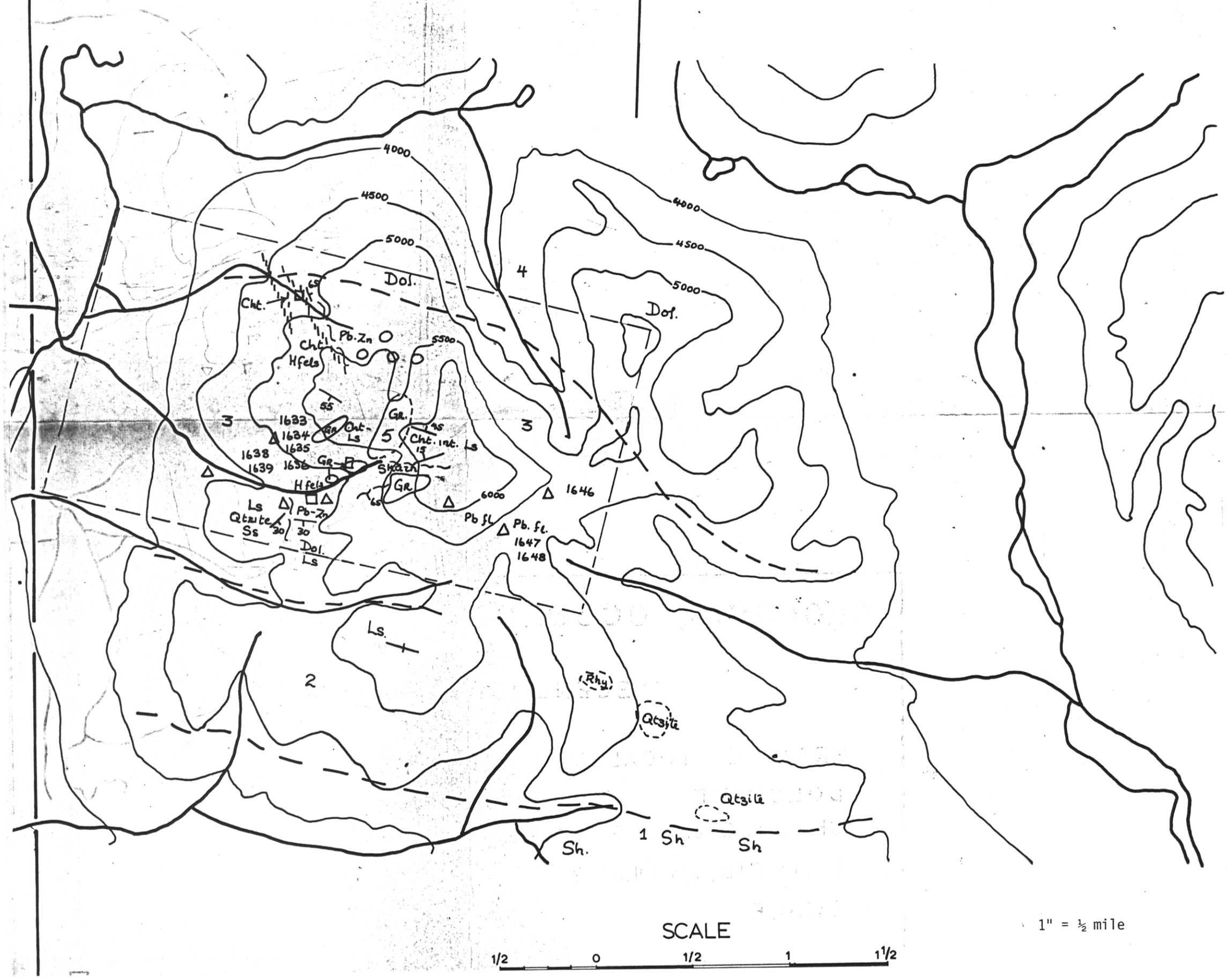
□ Pyrrhotite skarn with disseminated galena, sphalerite, and chalcopyrite.

△ Altered granitic (minor intermediate) intrusive and quartzite breccia with massive and disseminated galena, sphalerite, chalcopyrite, pyrite, pyrrhotite. Granitic intrusive closely resembles host rock at Pike group.

ASSAY RESULTS

	Au (oz./T)	Ag (oz./T)	Pb —	Zn —	Cu —
1633	Tr.	0.76			2.5
1634	Tr.	3.68	3.5	3.1	0.24
1635	0.01	0.91		14.8	
1636	Tr.	8.68		10.2	0.73
1638	0.01	1.63			2.0
1639	0.01	1.35		Tr.	1.9
1646		35.1	11.5		
1647		118.9	18.9	2.2	
1648		21.9	35.5	3.4	

Scale: 1" = 1/2 mile



SCALE

1/2 0 1/2 1 1 1/2

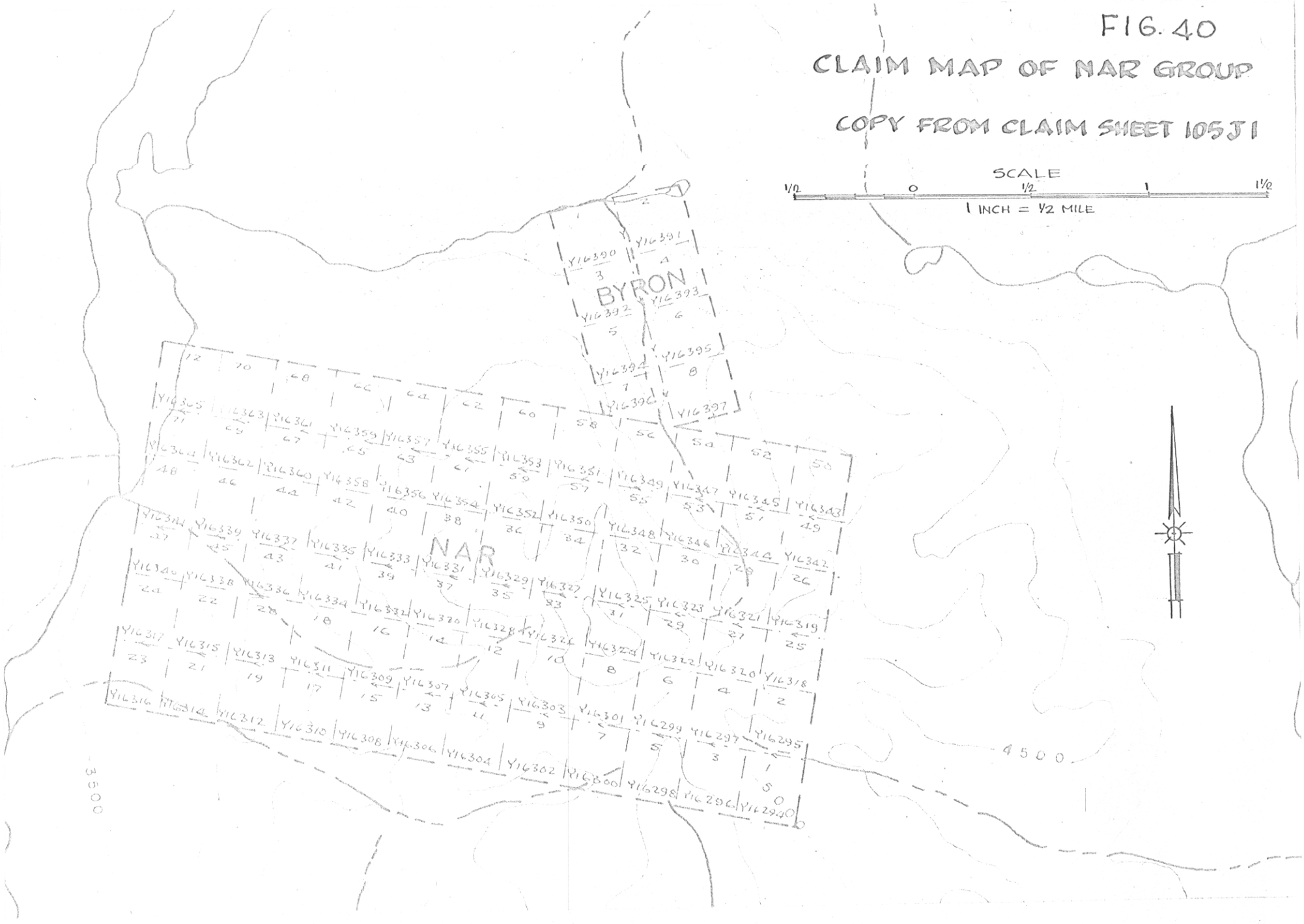
1" = ½ mile

inches 0 1

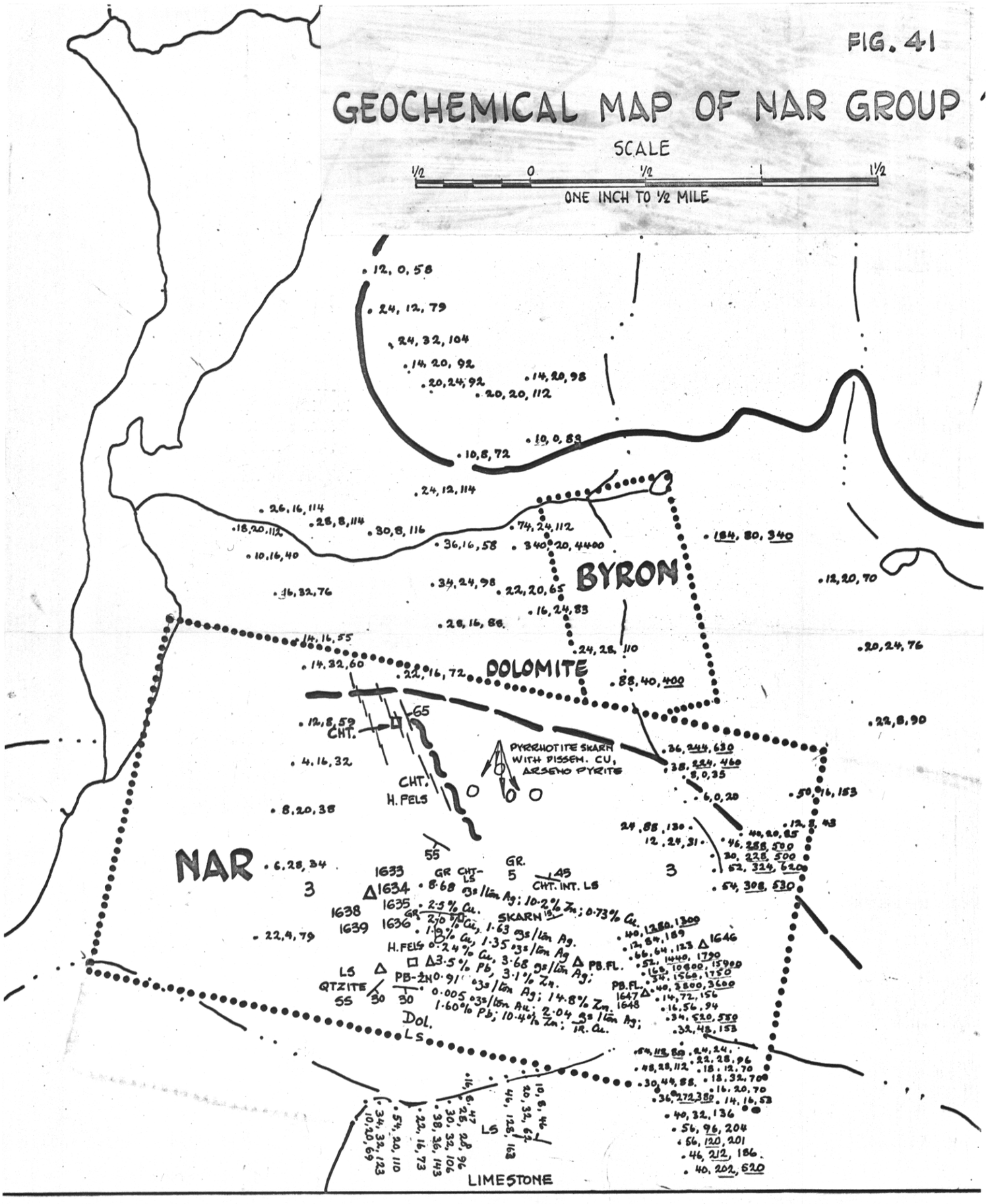
0 1 2 centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY



inches
0 1
0 1 2
centimetres
YUKON GEOLOGICAL SURVEY
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.



inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

Fig. 42

CLAIM MAP OF PAY GROUP

COPY FROM CLAIM SHEETS 105 G 15,16
J 1,2

PAY

130° 30'

62° 00'

SCALE

1/2 0 1/2 1 1 1/2

1 INCH TO 1/2 MILE

inches
0 1
0 1 2
centimetres

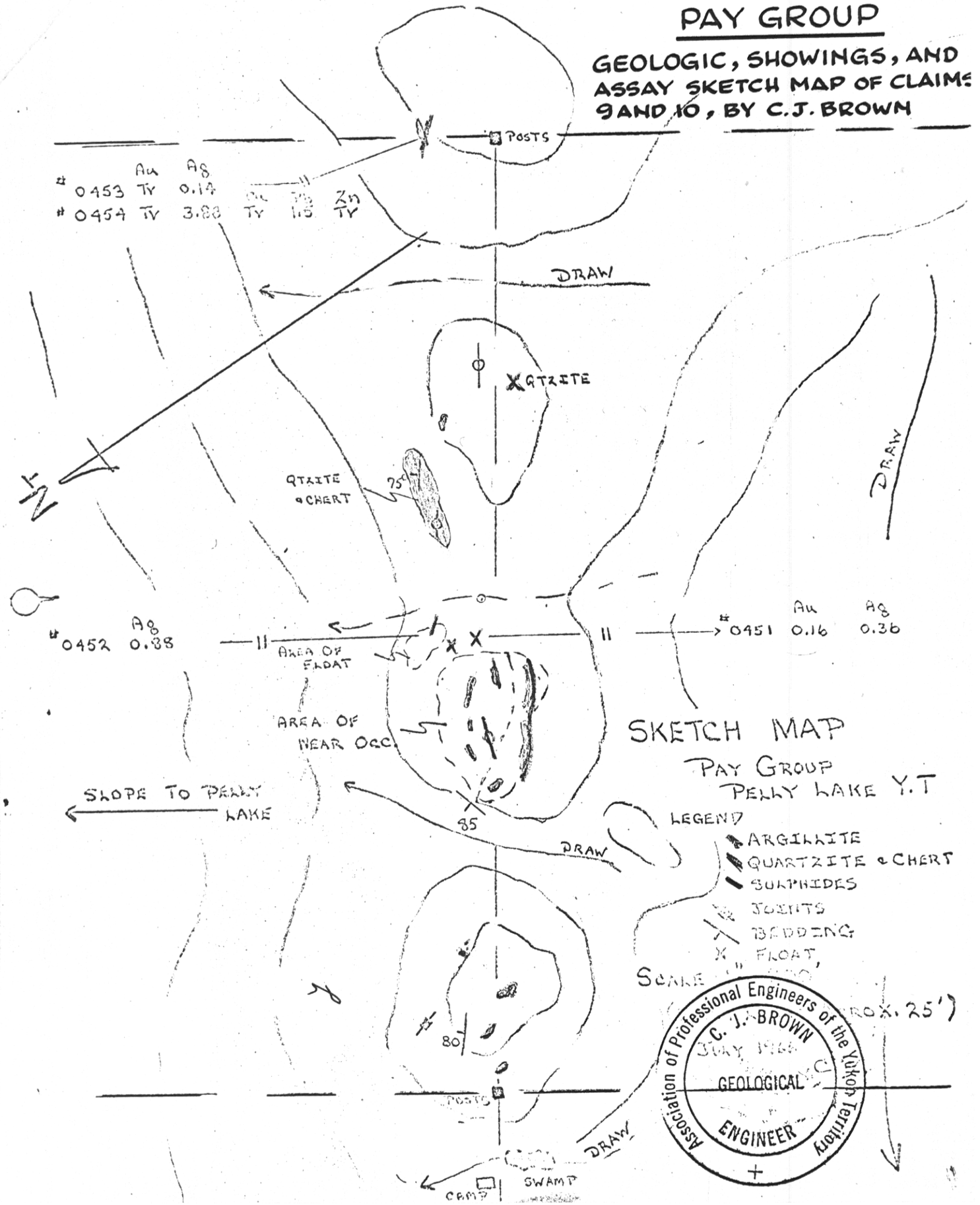
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

FIG. 43

PAY GROUP

GEOLOGIC, SHOWINGS, AND ASSAY SKETCH MAP OF CLAIMS 9 AND 10, BY C.J. BROWN



inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

FIG. 44

ATLAS EXPLORATIONS LTD.

SHELDON REGION

PAY MINERAL CLAIMS

GEOCHEMICAL SOIL SAMPLING SURVEY,
COPPER, LEAD, AND ZINC RESULTS, BY
ATOMIC ABSORPTION
SPECTROPHOTOMETER ANALYSIS

RESULTS IN P.P.M.
SAMPLER------: I.HILL, R.ETZEL ETC.
PARTY CHIEF---: C. SMITH
DATE---------: OCT. 1966

DRAWN BY:

PELLY LAKES

PELLY RIVER

PELLY RIVER

FORTIN LAKE

PAY

inches
0 1
0 1 2
centimetres

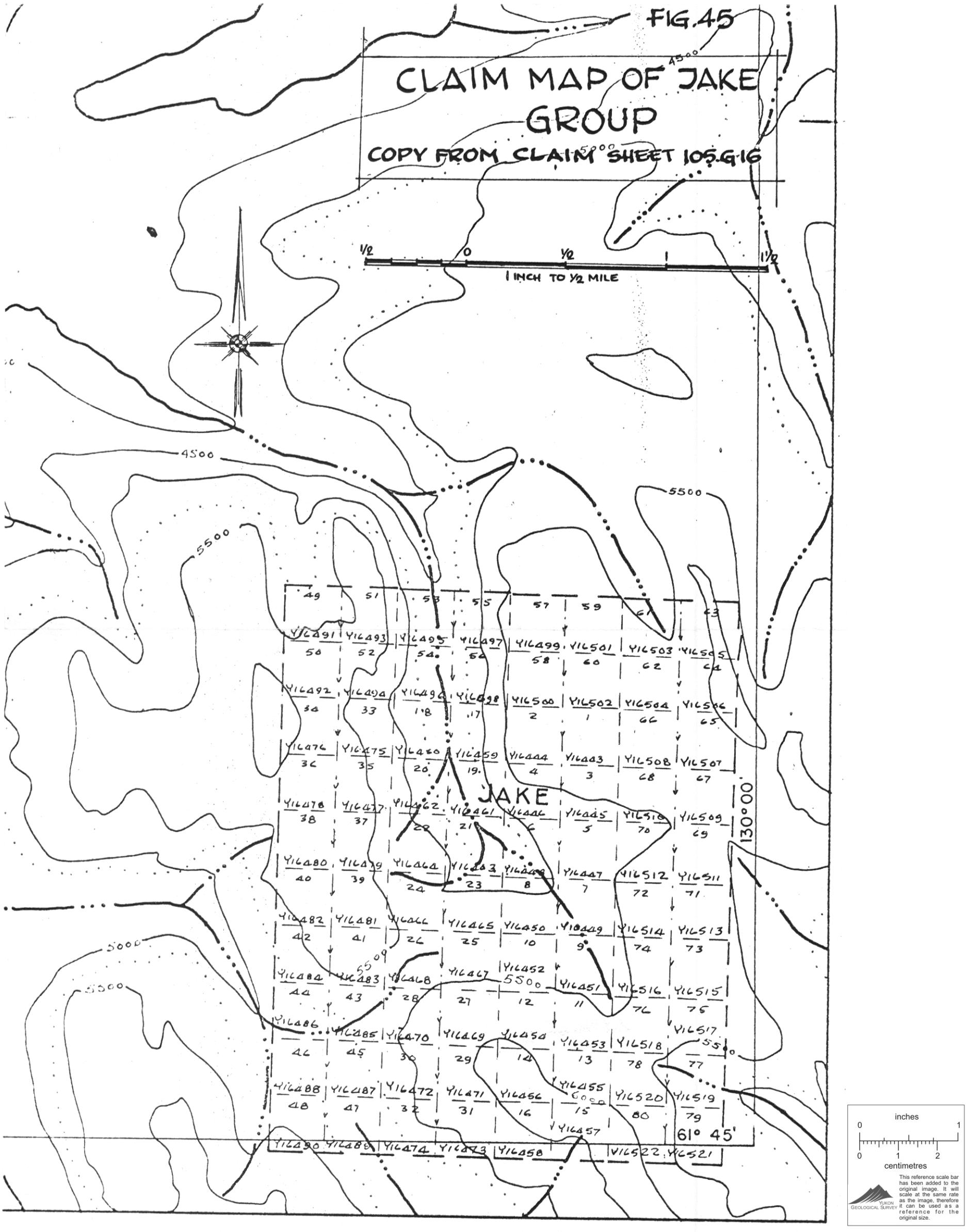
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

SCALE

1/2 0 1/2 1 1 1/2

1 inch to 1/2 mile



inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

FIG. 46

GEOCHEMICAL, SHOWINGS AND ASSAY MAP OF JAKE GROUP AREA

SCALE

1/2 0 1/2 1 1 1/2

ONE INCH TO 1/2 MILE

(ALL SHOWINGS BY HUNDERE)

JAKE

2h

5

4

4S

P40

61° 45' W

129° 30' N

54, 72, 126

62, 116, 670

40, 40, 530

FLOAT ④ DISSEM ZN. IN ALTERED BRECCIATED CHERT

ZN-CU IN APPARENT SHEAR PYRRHOTITE IN CHERT BRECCIA CO? STAIN ②

60, 96, 880

74, 36, 830

PB-ZN-CU, 4-5' WIDE IN INTRUSIVE AND SCHIST

36, 224, 590

② 62, 68, 940

2400, 2200, 7000

82, 156, 200

DISSEM CU-PB, PYRITE IN QUARTZ BASALT

6, 16, 4

⑤ MASSIVE PB, CALCITE, VEIN

257 ① DISSEM. PB-ZN, CO? IN ALTERED INTRUSIVE

92, 68, 650

70, 212, 1430

③ PB-ZN, PYRITE IN LIMESTONE REPL. LIMESTONE

132, 100, 880

28, 76, 360

74, 168, 530

3000, 10,000, 6800

PB-ZN VEIN

102, 200, 760

⑤ ① DISSEM, PB-ZN, CALCITE PYRRHOTITE IN ALTERED INTRUSIVE (CHILLED)

③ DISSEM CU IN ALTERED INTRUSIVE (CHILLED)

② MASSIVE CU IN QUARTZITE

DISSEM CU-PB-ZN ARSENO, PYRRHOTITE IN ALTERED INTRUSIVE

DISSEM CU, ARSENO, IN ALTERED INTRUSIVE

255 256

TETRAHEDRITE IN QUARTZ VEIN

16, 108, 182

1642 1649

QUARTZITE

DISSEM PB IN QUARTZITE

DISSEM PB-ZN IN QUARTZITE BRECCIA

22, 20, 182

14, 36, 100

76, 48, 62

46, 40, 159

50, 12, 36

146, 368, 620

⑤ ZN-CU-PB IN QUARTZ VEIN

⑤ CU, ARSENO, PYRRHOTITE IN QUARTZ VEIN FLOAT

④ DISSEM. PB-ZN-CU

inches 0 1 0 1 2 centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

FIG. 47

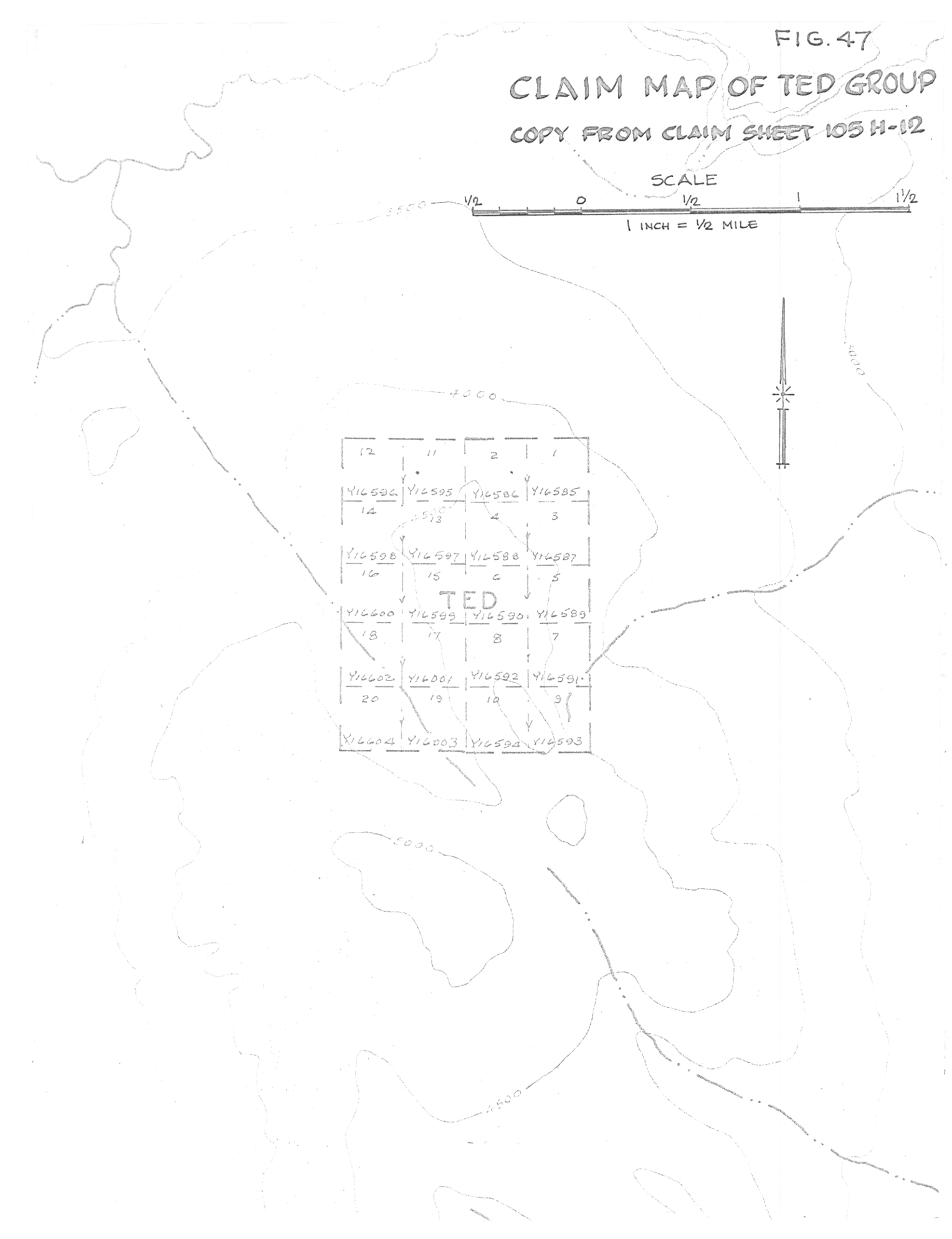
CLAIM MAP OF TED GROUP

COPY FROM CLAIM SHEET 105 H-12

SCALE

1/2 0 1/2 1 1 1/2

1 INCH = 1/2 MILE



inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

F I G U R E

48. Geochemical, showing map of Ted group area, 1" = $\frac{1}{2}$ mile

49. Claim map of Bill group, 1" = $\frac{1}{2}$ mile

50. Geochemical ,map of Bill group area, 1" = $\frac{1}{2}$ mile

51. Claim map of Ris and Spud groups, 1" = $\frac{1}{2}$ mile

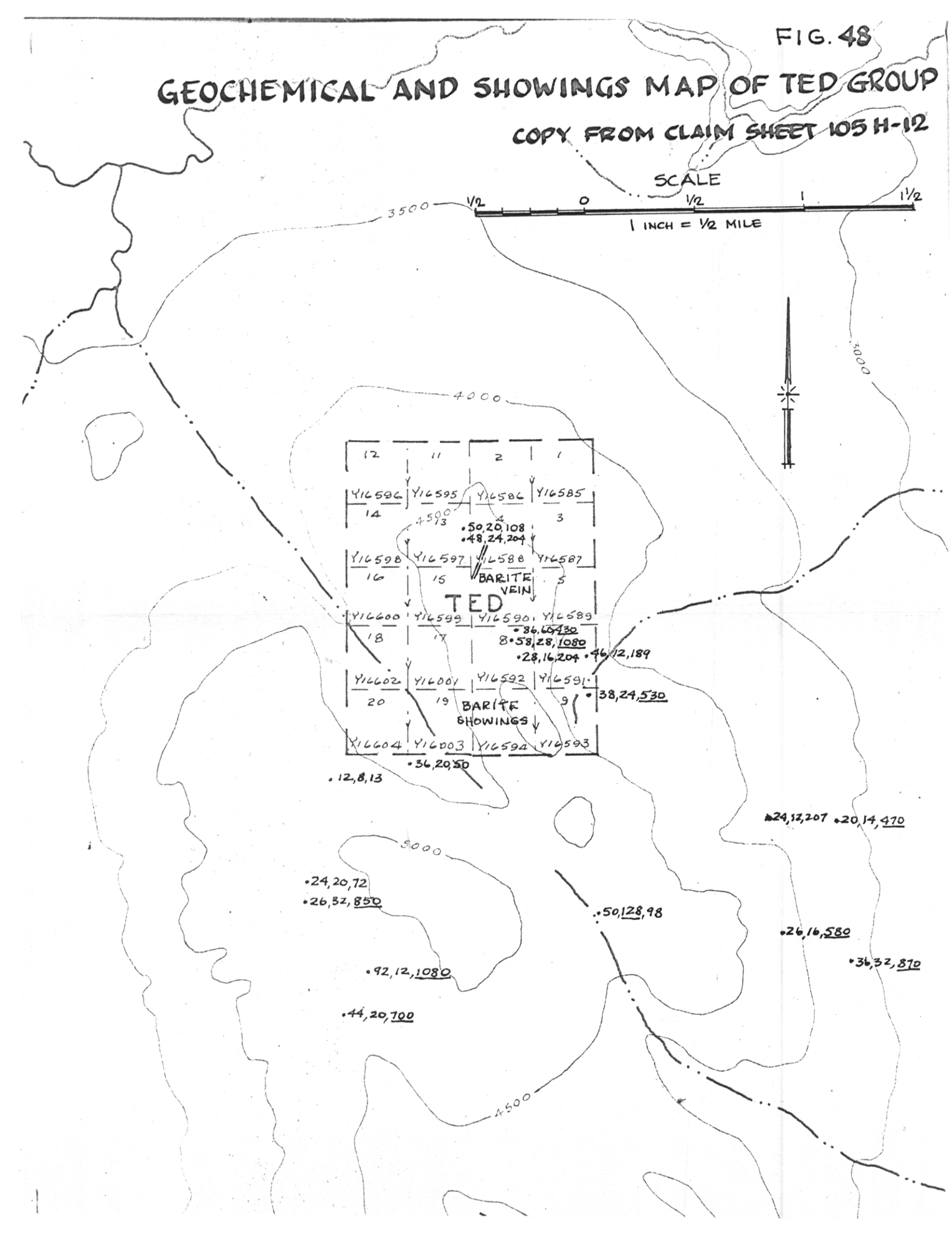
52. Geochemical, showings map of Ris and Spud group s area, 1" = $\frac{1}{2}$ mile.

043 - 047
FIGURE 43 - 47

FIG. 48

GEOCHEMICAL AND SHOWINGS MAP OF TED GROUP

COPY FROM CLAIM SHEET 105 H-12



inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

FIG 49

CLAIM MAP OF BILL GROUP

COPY FROM CLAIM SHEET 105-J-1

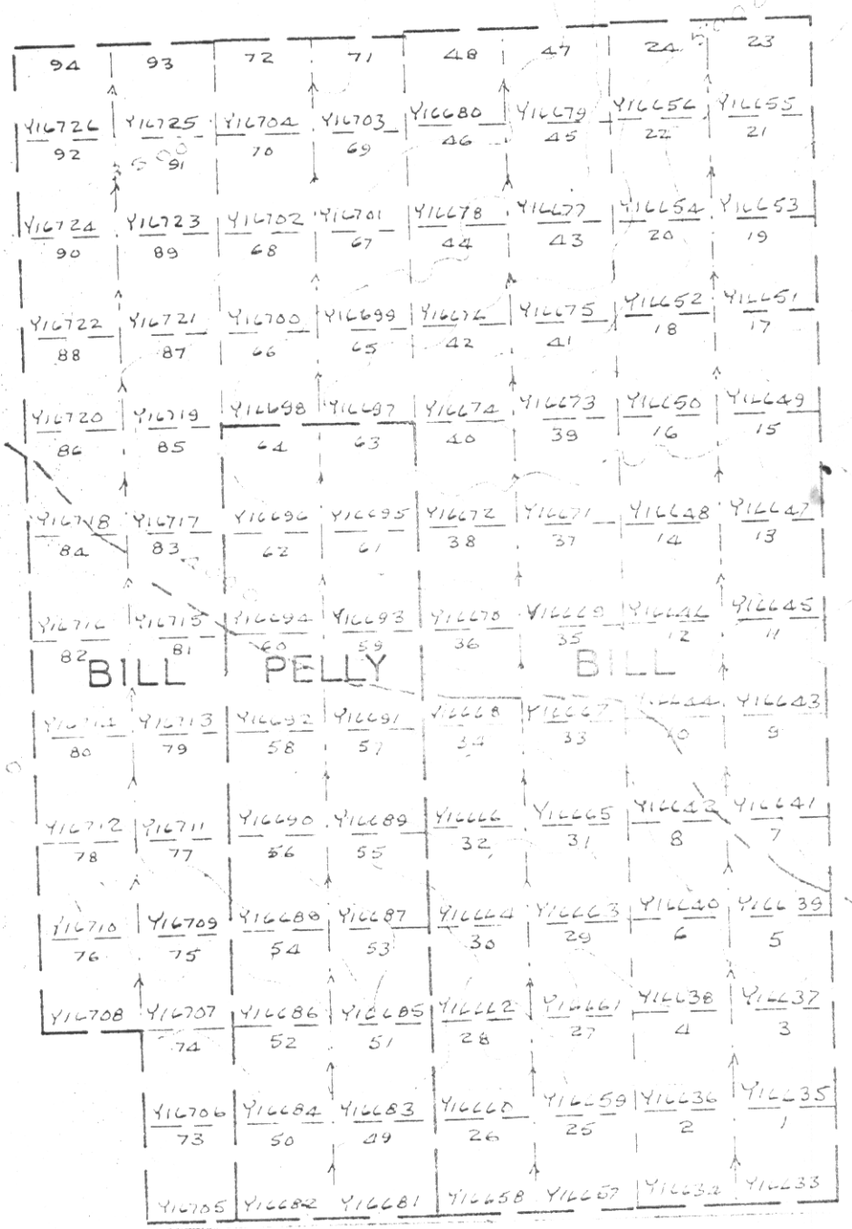
2900

Pelly Lakes

SCALE

½ 0 ½ 1 1½

1 INCH TO ½ MILE



105J-1

inches 0 1

0 1 2 centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

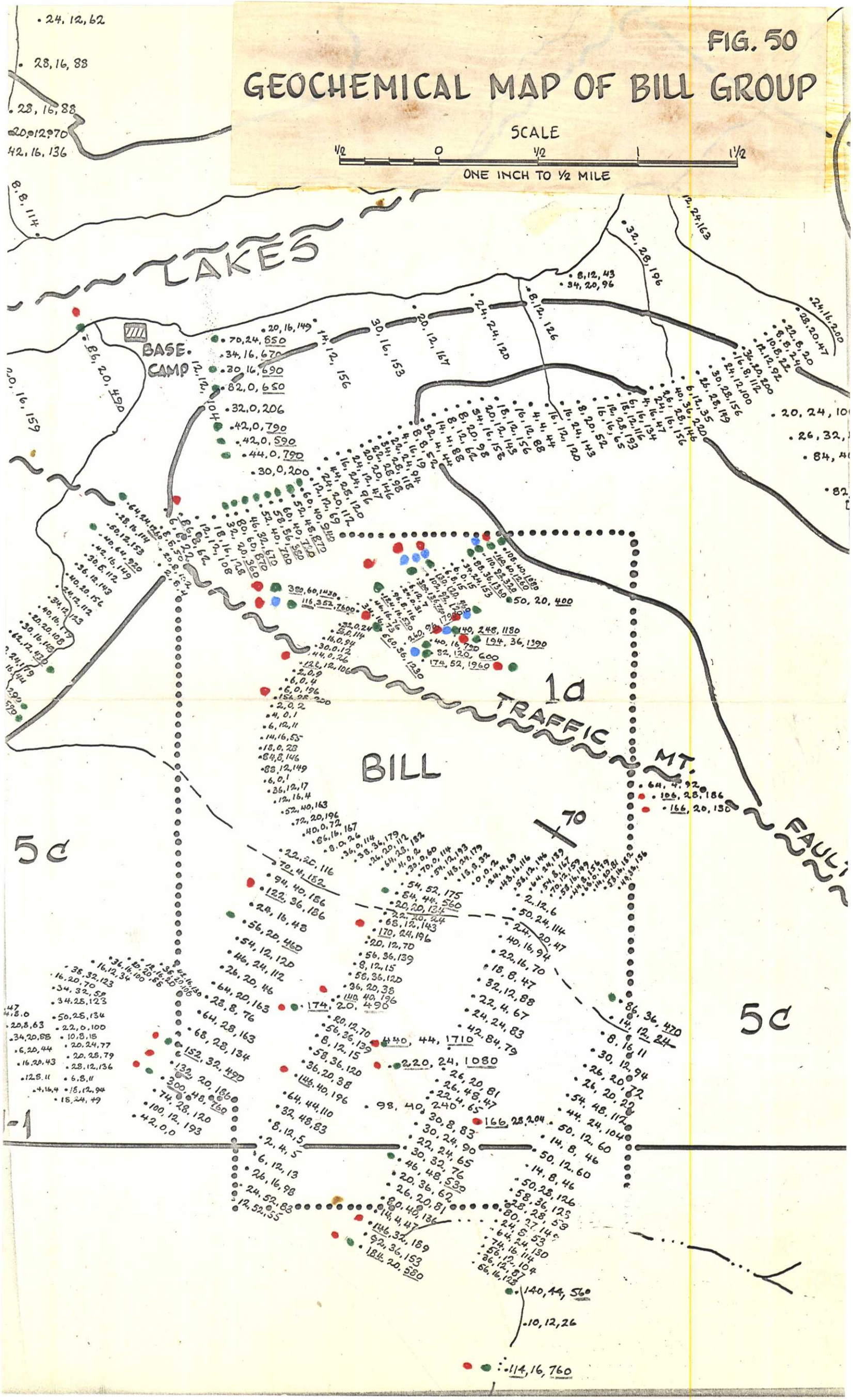


FIG. 50
GEOCHEMICAL MAP OF BILL GROUP
SCALE
1/2 0 1/2 1 1 1/2
ONE INCH TO 1/2 MILE
LAKES
BASE CAMP
BILL
TRAFFIC MT.
FAULT
1a
5c
5c
70

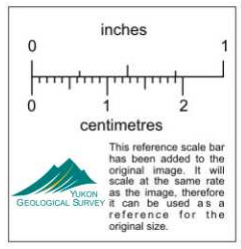

inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
YUKON GEOLOGICAL SURVEY

FIG. 51

CLAIM MAP OF RIS AND SPUD GROUPS

COPY FROM CLAIM SHEET 105-G-16

RIS

SPUD

SCALE 1" TO ½ MILE

inches
0 1
0 1 2
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

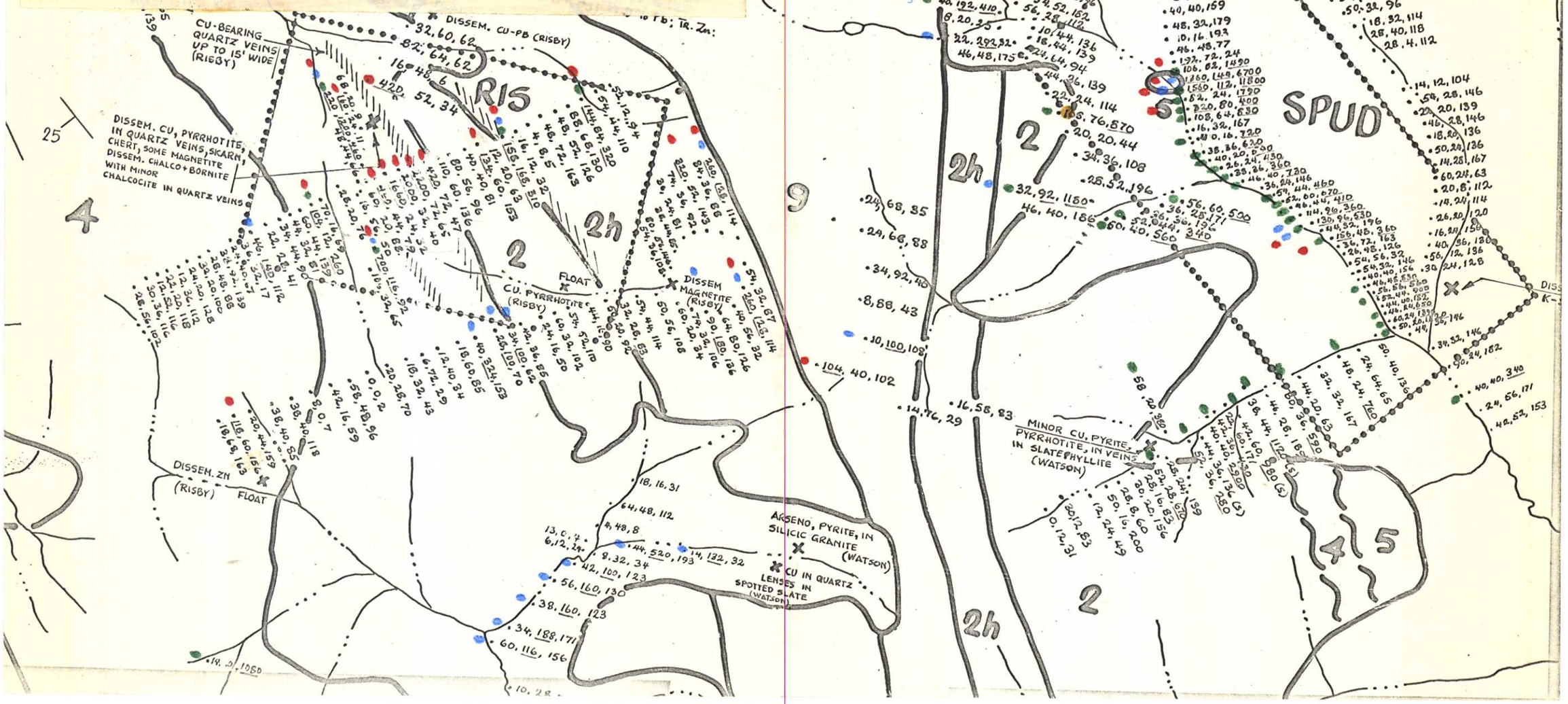
FIG. 52

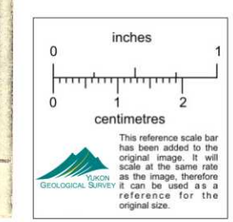
GEOCHEMICAL AND SHOWINGS MAP OF RIS AND SPUD GROUPS.

SCALE

1/2 0 1/2 1 1 1/2

ONE INCH TO 1/2 MILE





F I G U R E

53. Claim map of Toy group, 1" = $\frac{1}{2}$ mile

54. Geologic, geochemical, showings, assay and claim group map of sheet 105 G 16 (1" = $\frac{1}{2}$ mile)

55. Geologic, geochemical, showings, assay and claim group map of portion of sheet 105 H 13, 1" = $\frac{1}{2}$ mile

56. Gelogic, geochemical, showings, assay and claim group map of portion of sheet 105 14 1" = $\frac{1}{2}$ mile.

048-051

FIGURE 48-51

FIG. 53

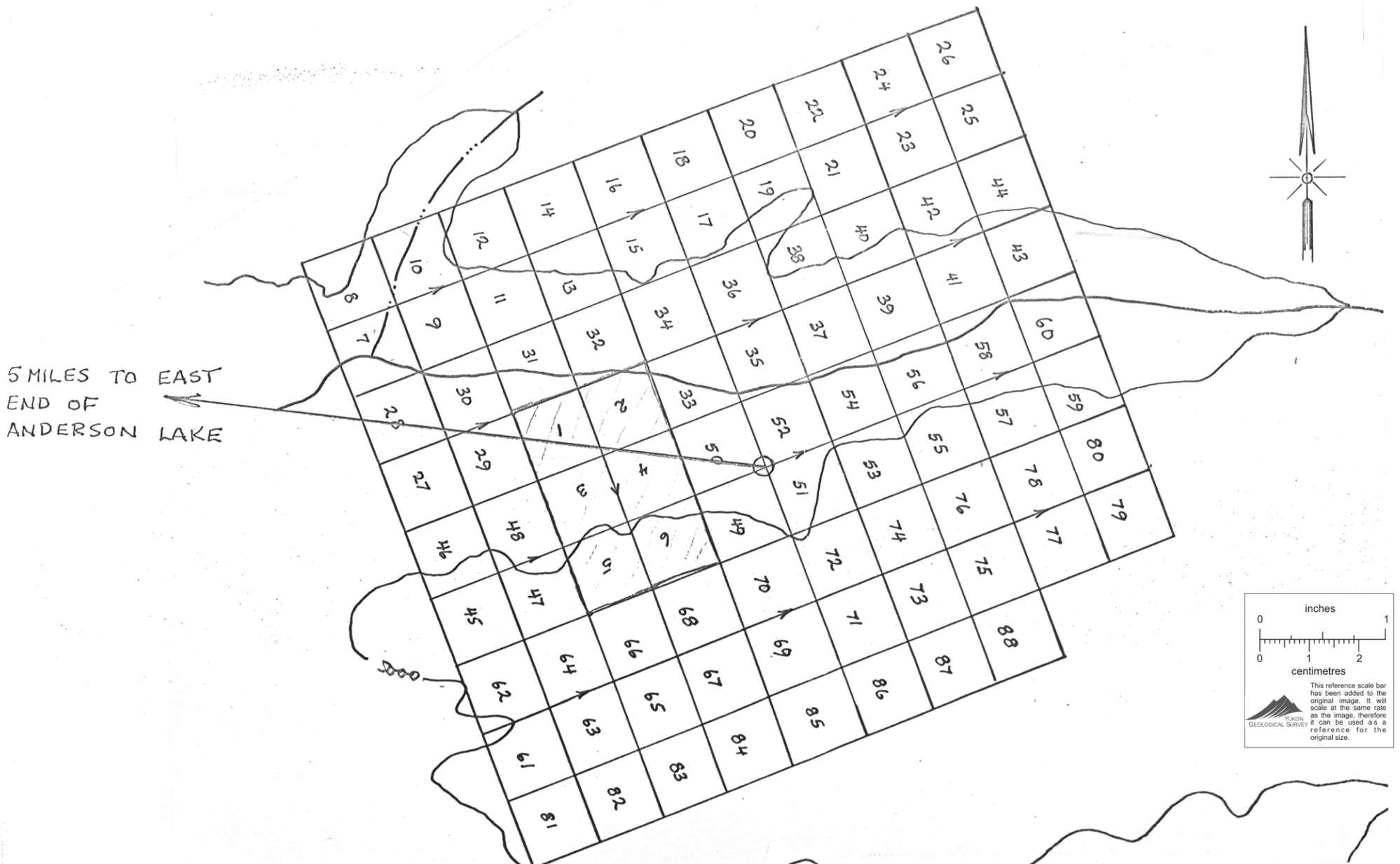
CLAIM MAP OF TOY GROUP

COPY FROM CLAIM SHEET 105 H-10

SCALE

1/2 0 1/2 1 1 1/2

1" = 1/2 MILE



inches

0 1

0 1 2

centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

62° 00' N

130° 30' W

105 G-16

PAY

BILL

SPUD

JAKE

LAKE

McEVOY

LIMESTONE

FIG. 54

ATLAS EXPLORATIONS LTD.
ROSS RIVER YUKON
GEOLOGIC, GEOCHEMICAL, SHOWINGS, ASSAY AND CLAIM GROUP MAP OF SHEET 105 H-13 G-16

105G16

GEOLOGIC UNITS

CRETACEOUS (?)

(9) Granodiorite, Quartz Monzonite

MISSISSIPPIAN

(6a) Greenstone

(5) Slate, Shale, Chert, Graywacke

SILURIAN-DEVONIAN

(4) Dolomite

CAMBRIAN

(2h) Hornfels

(2) Phyllite

SCALE

1/2 0 1/2 1 1 1/2

1" = 1/2 MILE

105-3-2 | 105-J-1 | 105-1-4
105-G-15 | 105-G-16 | 105-H-13
105-G-14 | 105-G-9 | 105-H-12

105-G-16

61° 45' N

105 H-13

130° 00' N

129° 30' N

69° 00' W

61° 45' W

TIM GP.

DIARMIGAN

PTARMIGAN LAKE

CREEK

Lake Reclaimed June 30

PROSPECT MAP IN DETAIL

DON

DISSEM CU IN PYRRHOTITE SKARN ZONE.

DISSEM. CU-PB-ZN IN PYRRHOTITE SKARN ZONE 4-10' WIDE

1627 • 15 As; 0.16 oz/ton Ag Ta. Pb; 3.7% Zn; 3.8% Cu.

1628 • Ta. As; 0.24 oz/ton Ag; 2.0% Pb; Ta. Zn; 0.01% Cu.

1629 • Ta. As; 0.86 oz/ton Ag; 5.1% Pb; 2.0% Zn; 2.0% Cu.

1630 • 0.005 oz/ton As; 2.72 oz/ton Ag Ta. Pb; Ta. Zn; 0.60% Cu

1631 • Ta. As; 0.82 oz/ton Ag; 1.5% Pb; 2.3% Zn; 0.4% Cu.

1623 ● 1.10 oz/ton Ag; 2.4% Pb; Ta. Zn.

1627 ● As; 0.44 oz/ton Ag; Ta. Zn, 0.22 % Cu.

NARCHILLA BROOK

McPHERSON LAKE

YUSEZYU RIVER

TILLEI LAKE

105H13

GEOLOGIC UNITS

CRETACEOUS (?)

(15) Quartz Monzonite, Granodiorite

DEVONIAN-MISSISSIPPIAN

(13) Shale, Chert, Quartzite, Graywacke

PROTEROZOIC

(16) Limestone

(1a) Limestone

(1) Shale, Phyllite, Quartzite

ATLAS EXPLORATIONS LIMITED

ROSS RIVER, YUKON FIG 55

GEOLOGIC, GEOCHEMICAL SHOWINGS, ASSAY AND CLAIM GROUP MAP OF SHEET 105-H-13

SCALE

ONE INCH TO ½ MILE

This reference scale bar has been added to the original image. It will therefore change ratio to the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

105-J-1 | 105-I-4 | 105-I-3
105-G-16 | 105-H-13 | 105-H-14
105-G-9 | 105-H-12 | 105-H-11

105 H-13

105 I-4

FIG. 56

130° 00' W

62° 15' N

129° 30' W

62° 15' N

ATLAS EXPLORATIONS LIMITED

ROSS RIVER, YUKON

GEOLOGIC, GEOCHEMICAL, SHOWINGS, ASSAY AND CLAIM GROUP MAP OF SHEET 105 I 4

SCALE

1/2 0 1/2 1 1 1/2

1 INCH TO 1/2 MILE

WOODSIDE

RIVER

1

NAR

BYRON

DOLOMITE

LIMESTONE

MARCHILLA BROOK

105 I-4

62° 00' N

130° 00' W

129° 30' W

62° 00' N

FIGURE

57. Geologic, geochemical, showings, assay and claim group map of sheet 105 J 1 (1" = $\frac{1}{2}$ mile)

58. Geologic, geochemical, showings, assay and claim group map of sheet 105 J 2 (1" = $\frac{1}{2}$ mile)

59. Geologic, geochemical, showings, assay and claim group map of sheet 105 J 7 (1" = $\frac{1}{2}$ mile)

60. Composite, Geochem, Geolog Airmag.

052-055

FIGURE 52-55

FIG. 57

105-J-1

62° 15' N

130° 30' W

130° 00' W

62° 00' N

ATLAS EXPLORATIONS LTD.

ROSS RIVER, YUKON

GEOLOGIC GEOCHEMICAL, SHOWINGS ASSAY AND CLAIM GROUP MAP OF SHEET 105-J-1

SCALE
ONE INCH TO ½ MILE

½ 0 ½ 1 1½

inches 0 1

centimetres 0 1 2

This reference scale bar has been added to the original plan. Use the scale at the same ratio as the image, therefore 1 cm = 1 cm on the reference. For 1:1 original size.

GEOLOGIC UNITS

QUATERNARY

(15b) Glacial and Alluvial Deposits

CRETACEOUS (?)

(11) Quartz Monzonite, Granodiorite

DEVONIAN-MISSISSIPPIAN

(5c) Slate, Shale, Sandstone

(5b) Chert Shale, Quartzite

PROTEROZOIC

(1c, d) Quartzite, Shale, Slate, Phyllite

(1a) Quartzite, Hornfels, Granulite

PELLY RIVER

GENTLE

TRAFFIC MT. FAULT

PIKE

TRAFFIC MOUNTAIN Δ 6739'

PELLY LAKES

SWAMP

BASE CAMP

BILL

TRAFFIC MT. FAULT

WOODSIDE RIVER

PTARMIGAN CREEK

ABO

PAY

0.38 OZ/T AU (RISBY)

CU, PB, ARSENOPYRITE IN QUARTZ VEIN.

PB, ZN, ARSENOPYRITE, PYRRHOTITE IN VEINS UP TO 15' WIDE (RISBY)

62° 15' N

105-J-2

62° 15' N

130° 00' W

150° 30' W

CREE (RACICOT)

OXO (POLI)

STAR (RACICOT)

PIKE

PELLY RIVER

FORTIN LAKE

EM-EMU

DISSEM. CU-ZN. IN INTRUSIVE

ZONE 1 CHERT SLATE GRANITE SLATE

ZONE 2 QUARTZITE GRANITE QUARTZITE

11

3

14

5c

1a

30

65

4?

FIG. 58

ATLAS EXPLORATIONS LIMITED

ROSS RIVER, YUKON

GEOLOGIC, GEOCHEMICAL SHOWINGS, ASSAY AND CLAIM GROUP MAP OF SHEET 105 J 2

SCALE

ONE INCH TO ½ MILE

105J-2

GEOLOGIC UNITS

CRETACEOUS (?) or TERTIARY (G.S.C.)

(14) Chilled Granite or Andesite, Dacite (G.S.C.)

CRETACEOUS (?)

(11) Quartz Monzonite, Granodiorite

DEVONIAN-MISSISSIPPIAN

(5c) Slate, Shale, Sandstone, Graywacke

SILURIAN-DEVONIAN

(4) Dalomite

ORDOVICIAN-SILURIAN

(3) Chert, Shale

105-J-6	105-J-7	105-J-8
105-J-3	105-J-2	105-J-1
105-G-14	105-G-15	105-G-16

FOR GEOLOGICAL INFORMATION REF. MAP NO T/105 J/16

105-J-2

105-J-7

62° 30' N

131° 00' W

130° 30' W

62° 15' N

1c, 1d

3

1

OTTER CREEK

1a

1d

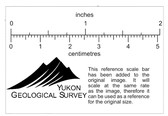
FIG. 59

ATLAS EXPLORATIONS LIMITED
ROSS RIVER, YUKON
GEOLOGIC, GEOCHEMICAL SHOWINGS ASSAY AND CLAIM GROUP MAP OF SHEET 105-J-7

SCALE

1/2 0 1/2 1 1/2

1 INCH TO 1/2 MILE



105J-7

GEOLOGIC UNITS

ORDOVICIAN-SILURIAN

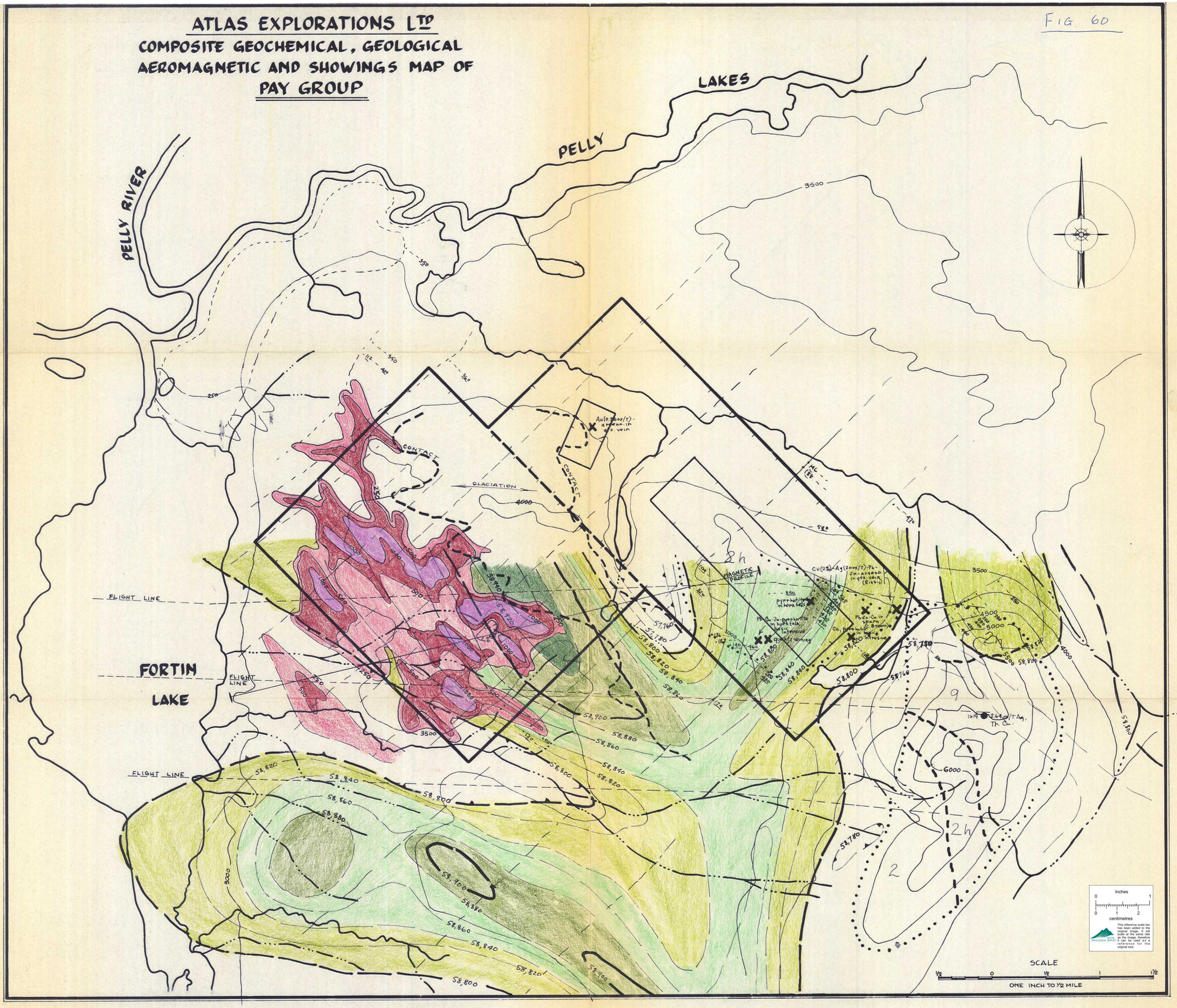
(3) Chert, Shale

PROTEROZOIC

(1c,d) Shale, Slate, Phyllite, Quartzite

(1a) Quartzite, Hornfels, Granulite

(1) Quartzite, Shale, Slate, Phyllite


ATLAS EXPLORATIONS LTD
COMPOSITE GEOCHEMICAL, GEOLOGICAL AEROMAGNETIC AND SHOWINGS MAP OF PAY GROUP
FIG. 60
PELLY LAKES
PELLY RIVER
FORTIN LAKE
FLIGHT LINE
CONTACT
GLACIATION
MAGNETIC PROFILE
SCALE
ONE INCH TO 1/2 MILE
inches
centimetres