This report has been examined by the Geological Evaluation Unit.
Approved as to technical worth by:
RESIDENT GEOLOGIST
Approved as cost in the amount of: $ 9019.35
RESIDENT MINING ENGINEER
Accepted as representation work under Section 53(4) Yukon Quartz Mining Act.
COMMISSIONER OF YUKON

MAGNETIC AND ELECTROMAGNETIC GEOPHYSICAL SURVEYS

LIARD MINERAL CLAIM GROUP
Old Gold Area
Watson Lake Mining Division
Yukon Territory

Lat. 61°00' North
Long. 130°38' West

by

John S. Brock
Atlas Explorations Limited

Respectfully Submitted
John S. Brock

GEOLOGICAL SURVEY
APR 17 1967
Resident Geologist
Whitehorse, Y. T.

MAGNETIC AND ELECTROMAGNETIC

GEOPHYSICAL SURVEYS

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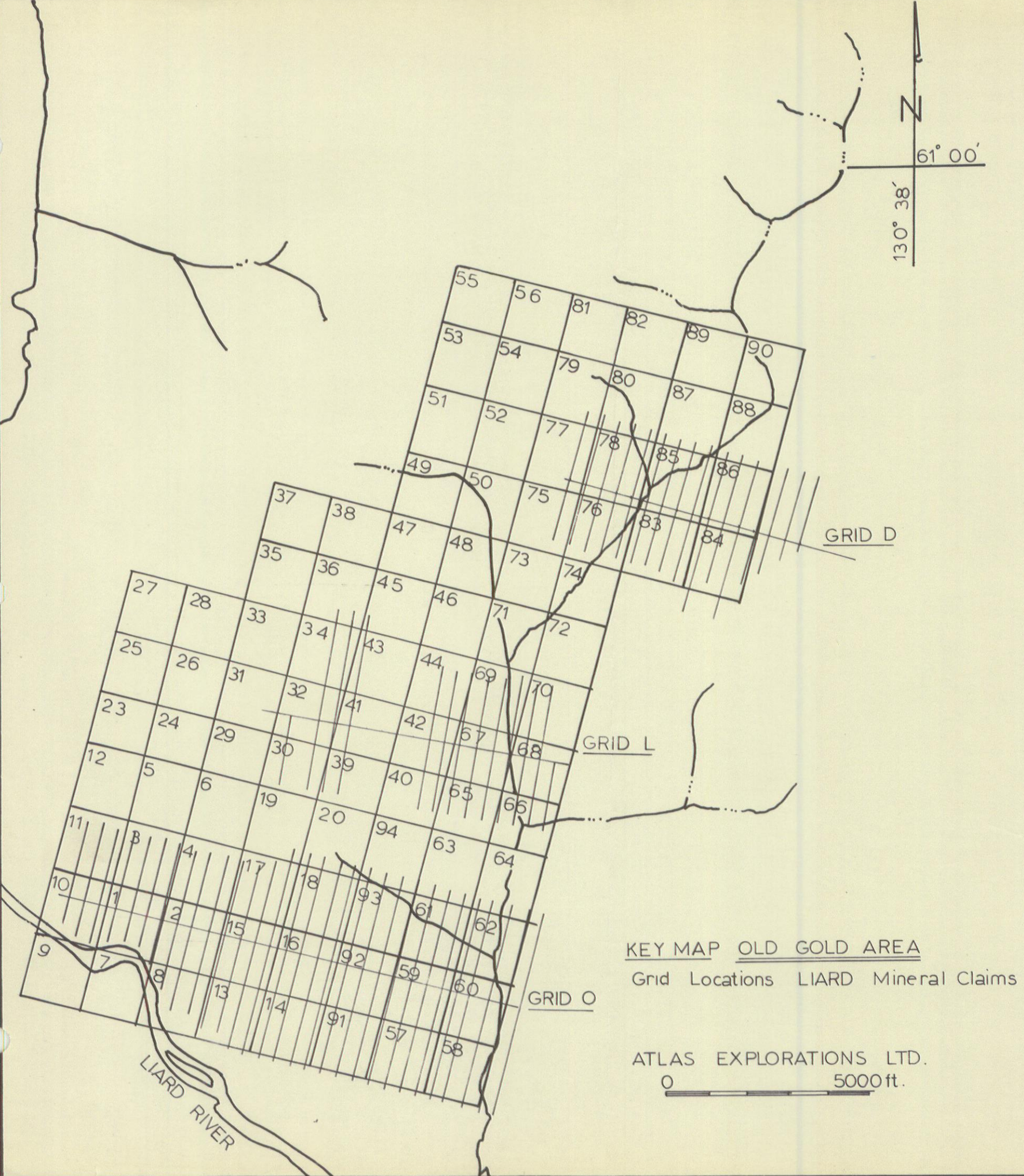
KEY MAP


N
61° 00'
130° 38'
GRID D
GRID L
GRID O
LIARD RIVER
KEY MAP OLD GOLD AREA
Grid Locations LIARD Mineral Claims
ATLAS EXPLORATIONS LTD.
0
5000 ft.

LIST OF CLAIMS

Claim No.	Grant Nos.	Date
Liard 1 - 4	89244 - 89247	Assessment work filed to August 9, 1966
Liard 5 - 20	89908 - 89923	Recorded January 31, 1966
Liard 23 - 94	Y7265 - Y7336	Recorded April 27, 1966

INTRODUCTION

Under an agreement with G.E. "Bud" Stephens, prospector, and Atlas Copper Ltd., the Liard Claims 1 to 4 were acquired for the purposes of carrying out further exploration in order to determine the extent of known copper mineralization in the area. It was understood that Liard Claims 5 to 20 would be staked by Stephens in order that further protection of ground around the original Liard claims may be had. During March of 1966 Atlas Explorations flew airborne electromagnetic and magnetic surveys over the Old Gold area which included coverage of the Liard Mineral Claim Group. Due to results obtained through this survey, additional claims were staked, bringing the total claims in number to 92.

From May 25, 1966 to July 12, 1966, a ground follow-up crew consisting of a geologist, party chief, soil sampler, geophysical operators, linecutters and cook, were moved to the Liard Claim Group to commence operations within the area. It was proposed that the crew would detail airborne geophysical anomalies and examine areas of known mineralization for possible extensions. It was hoped that the ground surveys would also assist in correlation of airborne geophysical results to target zones within the claim group.

Three grids, the 'D', 'L' and 'O' (see key map), were laid out over areas of interest. Geophysical work was done only on the 'L' and 'O' grids in order to delineate airborne anomalies and reported float occurrences. Electromagnetic, magnetic, geochemical and geologic survey information were correlated from these areas to aid in interpretations that would aid in leading to further mineral discoveries.

The geophysical program in conjunction with the geochemical and geologic work revealed no targets of immediate significance, although further work is recommended.

LOCATION AND ACCESS

The Old Gold area is located approximately 100 miles south of Ross River on the eastern limits of the upper Liard River, five miles west of the Tintina Trench. The Liard mineral claims are located on the west limit of Rainbow Creek (map sheet 105 B15) at 61°00' North latitude and 130°38' West longitude.

Access to the property was most conveniently made by helicopter from Ross River. The camp move into the area was originally made by Beaver aircraft on floats from Ross River. The Liard River, at the junction of Rainbow Creek, is only suitable during 'high water'

season for float-equipped aircraft. Aircraft may land on Wasson Lake, some ten miles to the southeast. A trail connects Wasson Lake to the Liard property. Normal supply runs to the property were made by helicopter for supervisory and support purposes.

A total of three camps were established for work on each grid area. Each camp was set up in close proximity to the grid so that crew travel time was kept to a minimum.

Constant communication was kept with Ross River by single sideband radio; all field administration and expediting were carried out from company offices at this location.

PREVIOUS WORK

The Old Gold copper showings include some areas of mineralization that were originally explored by Newmont Mining in 1957. These did not constitute features of primary interest to Atlas Explorations. Some previous work in the form of prospecting, geochemistry and dip needle surveys was done by prospector Bud Stephens during 1965.

METHOD OF SURVEY

Instruments Used: For the magnetometer survey, a Jalander 46-65 magnetometer was used, the instrument is hand held and measures the vertical magnetic component by use of an oil-dampened fluxgate which automatically levels itself in the vertical direction. The range of this instrument is 10 to 250,000 gammas over five sensitivity ranges, the

lowest being 10 gammas per scale division. The instrument is of light weight and readings can be obtained quickly, a conversion factor is necessary before gamma values can be determined.

For the electromagnetic survey, a Crone JEM dual frequency unit was employed. The Crone unit is of the inductive type and may be either used as a horizontal or vertical loop apparatus. Measurements are made of the resultant dip angle of the field and the width of null or out of phase component. It is designed to be operated with a maximum coil spread of 300 feet on frequencies of 480 and 1800 cycles per second with no inter-connecting cables. The effective depth penetration is 300 feet for a horizontal conductor with maximum coil spread (no skin effect allowance) and 100 feet for a vertical conductor. The effective lateral coverage is a direct function of the spread under ideal conditions. The equipment was chosen in order to give reliable information on the attitude and configuration of a conductor, the physical properties of the host rock, dimensions of the conductor and results free from error due to topographic relief.

Survey Method:

Linecutting: All grids designed for ground geophysical and geochemical surveys were laid out using eight hundred foot line spacing with one hundred foot station intervals. Over

areas of interest four hundred foot spacing was used and two hundred foot line spacing was used over areas requiring detailed information. Central base lines were used for control, all cross lines were surveyed by picket and chain methods. Linecutters were hired from the native settlement of Ross River, survey control was checked by the party chief.

Magnetometer Survey: Prior to the actual magnetometer survey, readings were taken along the central base line at cross line intersection points. These stations were looped and re-read every hour as a means of controlling drift and diurnal variations. With base stations of an established value serving as reference points for each cross line portion of the survey, a rapid and precise check was kept on magnetic variations and the entire survey was thus kept on a relative basis during day to day operation. Each cross line was read with re-checks at the base station within every hour, this method provided an internal control for detecting diurnal and drift variations. The survey was done by one operator using the same instrument.

Electromagnetic Survey: All surveys were run with horizontal loop configuration and 300 foot coil spacing in order that highest response could be obtained from flat-lying sulphide bodies. Both 1800 and 480 cycles per second readings were taken at each station. The coil configuration was not

adaptable to conditions of conductive overburden and maximum response from such was expected. All traverses were by the "in line method" and done on the same grid as the magnetometer and geochemical surveys. In some cases shorter spacing was adopted for better resolution of shallow conductors, for the same reason line spacing was reduced to 200 feet over areas of interest. The two man EM crew did all their ground work in coincidence with the magnetometer and soil sampling crew.

Treatment of Data:

Magnetic Results: Magnetic results were corrected for diurnal and drift each night by the field operator. The final gamma values were then plotted on a grid plan using scale of 400 feet to 1 inch. This data was presented to the party chief who profiled and contoured the data on overlay material in order that he could remain familiar with day to day results and progress of the survey, direct its course and have results available for comparison with electromagnetic and geological-geochemical data. Field plots of this information were forwarded to the base office at Ross River at the end of the survey for final plotting and examination on a scale of 1 inch to 200 feet. Magnetic data is presented in this report on such maps showing gamma values - profiles and contoured results (see Appendix). All maps show major topographic features and locations of mineral claim posts.

Electromagnetic Results: All results as derived in the field were plotted each night by the EM operators on a grid plan using a scale of 1 inch to 400 feet. High and low frequency results were presented to the party chief for inspection and profiling in order that this data be compared with the other surveys and the course of the electromagnetic survey be directed on a daily basis. Plots of readings and profiles were sent to Ross River base at the end of the survey for final plotting and compilation on grid plans similar to those used for the magnetic maps. Electromagnetic data is presented in this report showing values-profiles (1800 and 480 cps), and a contour map of high and low frequency dip angles.

GEOLOGY

Introduction

The Old Gold Area is located in the southeastern corner of the Yukon Territory. The mapped area lies to the north of the Liard River between Old Gold and Rainbow creeks. The southern portion of the area is heavily forested and has a gentle topography which affords few rock exposures. The Old Gold and Rainbow creeks are deeply entrenched in the southern portion of the area, however, and do provide very good exposures along their courses and those of their tributaries. To the north the topography is

one of extremely steep relief, much of which is above timberline. The rock exposure in the northern portion of the area is consequently far better than in the southern portion.

Rock Units

The rocks of the Old Gold Area are predominantly grey thin-bedded phyllites which are locally graphitic. These rocks form a thick section which underlies most of the mapped area. These phyllites are interbedded with greywakes, argillites, slates, and very rarely with argillacious limestones. To the north of these rocks is a thinner section of interbedded rhyolite and argillaceous tuff. These extrusive rocks are in contact with granodiorite to the north. The granodiorite is part of a major batholith which forms the core of the very rugged mountains in the northern portion of the Old Gold Area.

Structural Geology

The rocks of the Old Gold Area strike to the northwest and are predominantly south dipping. Regional folding has produced some local north dipping strata. Faulting in the area would seem to be considerably less than indicated by the air photo interpretation done previously. According to air photo geologic interpretation nearly every stream was mapped as a fault. Evidence for

this correlation is lacking and in fact much of the structural control on the course of streams in the area is due to the strike of the bedding.

Economic Geology

Because the predominant structural dip is away from the plutonic intrusion to the north, and because very little faulting is indicated in the area, the Old Gold property would appear to be unfavourable for extensive mineralization. The rock types encountered are not those typically thought of as favourable to economic mineralization. The steeply dipping nearly homoclinal strata of the area offers little in the way of ore traps.

On grid 'D' an area of several hundred square feet has been intruded by quartz and calcite veins. The quartz appears to be predominantly barren, but it does contain scattered chalcopyrite. An EM anomaly located on lines 56 West and 60 West of grid 'D' is apparently associated with this quartz and calcite. Within the quartz, blocks of float containing high grade calcopyrite mineralization were found which seemed to indicate a vein two or three in width. It would seem that the mineralization indicated here is quite limited. A second smaller anomaly was located to the north on line 56 West. Some very sparse mineralization was found here also. A small showing of

chalcopyrite mineralization is located on the north bank of the Liard River in the southern portion of the area. It would also appear to be of very limited extent.

Conclusion

It is believed that any mineralization in the Old Gold area would be limited to narrow veins and fracture fillings, as indicated by the known showings in the area. The geology of the area would seem to make it very improbable that a major replacement ore body would be found.

Most of the EM anomalies within the area appear to be due to graphitic phyllites. The magnetic anomalies are apparently due to pyrrhotite which is found in many of the argillaceous rocks.

GEOPHYSICAL OBSERVATIONS

'D' Grid

The 'D' grid was laid out to delineate two airborne electromagnetic anomalies and its possible associations to reported mineralized float in the same area. No aeromagnetics of any coincidence were obtained, except for a closure over the most western portion of the electromagnetic anomaly.

The magnetic contour map, when examined (see Appendix), shows four areas of closure of moderate intensity. The most isolated and obvious, reaches a peak intensity of

300 gammas above background on line 16W at station 7+00N. This anomaly is one of three on strike from the base line to the northeast from 1600 feet to 16W - 7+00N. The other two anomalies on this trend reach peak values of 150 gammas each. The fourth anomaly is located at Line 32W - 5+00S and reaches a peak of 150 gammas above background; this anomaly is also on strike with the others and if all were considered, the total strike length of the trend would be in the order of 2,500 feet.

A profile study of the magnetics on the 'D' grid is more suitable, considering the low intensity features. The northeast trend as mentioned above is inconsistent in altitude but generally appears to dip steeply to the south. Lower intensity and less complex profiles to the northern half of the survey area reflect a marked change in susceptibility of formations there.

Electromagnetic profiles show a marked conductive trend with probable southerly dip between lines 48W and 60W, north of the baseline and striking northwest. Between lines 44W and 60W and south of the baseline, stronger electromagnetic response is significant of a well defined conductor. In the area of the Rainbow Creek tributary junction, electromagnetic values reflect an irregular conductor on line 16W.

Both 1800 cps and 480 cps resultant dip angle results were contoured. No other major anomalies were noted other than results mentioned above. The 1800 cps contours outline conductive areas represented by negative dip angles as mentioned above.

'L' Grid

The 'L' grid was designed to cover a large electromagnetic anomaly on the west limit of Rainbow Creek. The southern part of the anomaly was of high conducting ratio and, therefore, work was concentrated on this region. The second electromagnetic anomaly to be investigated on the same grid was at the western end; it is of lower intensity and apparent conductivity. No aeromagnetic response of higher intensity was noted.

Electromagnetic response is strong on high and low frequencies at the northeast and northwest extremities of the 'L' grid, thus reflecting the airborne results with well defined negative resultant dip angles. No defined magnetic anomalies or trends are evident in coincidence with the electromagnetics; however, there is some weak response of irregular nature of 50 gamma variance between line 52W and 60W at 20+00N.

A stronger magnetic trend runs between line 52W and 50W at about 4+00S; no EM coincidence is apparent.

GEOPHYSICAL INTERPRETATION

'D' Grid

Analysis of aeromagnetic and electromagnetic results show that the major electromagnetic anomaly at the southeast end of the grid is probably due to graphitic and phyllitic horizons as mapped geologically and followed up with ground EM. The airborne EM anomaly at the northwest end of the grid was delineated by ground EM and is located over known copper mineralization. Graphitic schists in this area probably complicate conductive measurements of apparent mineralization. The aeromagnetic response is weak and anomalies as shown in relation to 'D' grid do not appear to be of value.

High grade copper float of chalcopyrite mineralization may have a local source reflected by a weak (50 gamma) magnetic trend south of the baseline between lines 52W to 60W. The major northeast magnetic trend as shown from line 39W to 32W, south of the baseline and 24W to 16W north of the baseline, appears to be due to an andesitic dyke carrying pyrrhotite mineralization. No electromagnetic evidence of sulphide mineralization occurs over these zones.

Good negative dip angles were recorded over a zone of chalcopyrite mineralization found in place, north of the baseline between lines 52W and 60W. Conductivity

measurements of mineralization could be masked by phyllitic horizons noted in this area.

The major electromagnetic anomaly on the 'D' grid as reflected by airborne and ground surveys is coincident with graphitic schists and a drainage confluence that causes much wet ground which may also act as a minor conductor.

'L' Grid

The northeastern electromagnetic anomaly over the 'L' grid is of large negative angle response. The conductor appears to have a gentle southerly dip and is thought to be a graphitic horizon. The absence of magnetics of any sort would tend to confirm this assumption.

The northwestern electromagnetic anomaly is also of negative dip angle values and is interpreted as a northerly dipping conductor. There is some magnetic irregularity over this zone, but geophysical results are typical of carbonaceous horizons carrying dissiminated pyrrhotite.

The magnetic trend between line 52W and 50W, south of the baseline, has no electromagnetic coincidence. No geologic information in this area assists in the explanation of the anomaly; however, the magnetics are similar in size and intensity to those obtained over dyke structures on the 'D' grid.

Other irregular and local EM responses obtained throughout the grid are typical of severe topographic and ground water conditions.

CONCLUSIONS AND RECOMMENDATIONS

Grid 'D' has the most favourable geophysical results, as the anomaly at the northwest end of the grid occurs over known mineralization. This anomaly is still open at the west end and should have surveys completed over it as indicated by the airborne results.

An aeromagnetic anomaly of high intensity and isolated characteristics is situated to the northeast of the 'D' grid. This anomaly is in an area of reported mineralogical float and should definitely be delineated on the ground.

If further work is planned over the Liard claims in general, the 'L' grid should be extended to the west to cover an aeromagnetic and electromagnetic anomaly of low intensity and partial coincidence.

WEEKLY LOGS

GEOLOGIC SURVEYS

GEOPHYSICAL SURVEYS

GEOCHEMICAL SURVEYS

LINECUTTING

PROJECT ..... Liard (Old Gold) ATEAS EXPLORATIONS LIMITED PERIOD From ..... May 25 .....
To ..... May 29 .....

CLAIM GROUP Liard

PARTY CHIEF ... Bob Harvey .....

PERSONNEL	POSITION	TIME	WAGE
Ted Skonseng	Prospector		$5.00
Vic Wright	(EM)		375
Paul Cartwright	(EM)		375
Bill Markin	(Mag)		
Ike Johnston	Linecutters		$5 + $5 / 1000 ft. over 3000 ft. by me
Pat Johnny			
Herman Asp			
Jack Ledue			
Bob Harvey	Party Chief		$5.00

Day Of Week	HELICOPTER Job	HELICOPTER Hrs.	FIXED WING Job	FIXED WING Hrs.	LINECUTTING Lines	LINECUTTING Feet	GROUND Lines	GROUND No. Samples Taken	GEOPHYSICS E.M. Lines	GEOPHYSICS E.M. Ft.	GEOPHYSICS MAG. Lines	GEOPHYSICS MAG. Ft.	GENERAL
Mon.													
Tues.													
Wed. May 25			Flying camp gear + fuel cache	5½ approx									
Thurs. 26			Flying in men + camp gear	7 approx									Setting up camp + Sawyer gear Dawn river
Fri. 27													Setting up camp.
Sat. 28					B.L. 36E	4200'							Snow in morning
Sun. May 29					BL. 42E→92E 30E→18E 32E 17+59 2DS 20N 0→ 32E 0→ 20N	10,100							
TOTAL				12½ hrs		14,300'							

↑ away

PROJECT ...Lord (Old Gold) ATEMS EXPLORATIONS LIMITED PERIOD From May 30
To June 5

CLAIM GROUP Lord

PARTY CHIEF Peter Harvey

PERSONNEL	POSITION	TIME	WAGE
Ted Shonsey	Prospector		400
Vic Wright	EM		375
Paul Cartwright	EM		375
Bill Harkin	Mag		375
Abe Johnston	Line-cutters		15 dollars/day + $5/1000 ft
Pat Johnny			
Herman Asp			
Jack Ladue			
Bob Hervey	Party Chief		550

Day Of Week's	HELICOPTER Job	HELICOPTER Hrs.	FIXED WING Job	FIXED WING Hrs.	LINECUTTING Lines	LINECUTTING Feet	GEOCHEM. Lines	GEOCHEM. No. Samples Taken	GEOPHYSICS E.M. Lines	GEOPHYSICS E.M. Hrs.	GEOPHYSICS MAG. Lines	GEOPHYSICS MAG. Hrs.	GENERAL
Mon. May 30					32E, 85→205 36E, 205→255 40E, 00→255 Bl. 19E→12E 12E, 255→205 40E, 00→205	10,100'							
Tues. 31						11,700'							
Wed. June 1						15,700'							
Thurs. 2						18,600							
Fri. 3						18,560							
Sat. 4	Scouting & cutting camp-etc.	40 min				15,400							
Sun. June 5						14,200							
TOTAL		40 min				104,200							

plus visit to camp by Gordon Davis

over for linecutting

Line cutting

May 30
Herman Asp ($20/day)
Ike Johnston ($20/day) } 4700'
Vic Wright

Pat Johnny ($20/day)
Jack Ladue ($20/day) } 5400'
Paul Carturight
Bill Markin

May 31
Herman Asp ($20/day)
Ike Johnston } 5000'
Vic Wright

Pat Johnny } 4000'
Jack Ladue

Bill Markin } 2700
Paul Carturight

June 1
Herman Asp
Ike Johnston } 5000'

Pat Johnny } 6500'
Jack Ladue

Bill Markin
Paul Carturight } 42
Vic Wright

June 2
} 8000'

} 6000'

Bill Markin
Paul Carturight } 460
Vic Wright

June 3
} 7500'

} 7500'

Bill Markin
Paul Carturight } 350
(Wright is sick)

June 4
} 7500'

} 5400'

Bill Markin
Paul Carturight } 250
(Wright is sick)

June 5
} 4800'

} 5000'

Bill Markin
Paul Carturight } 44
(Wright working around camp)

32800'

30400

Bill Markin
Paul Carturight } 16,20

Pay Markin & Carturight line-cutting wages

And give Wright same pay for this period.

Line Cutting Wages: $5 per man per 1000' feet cut by a crew of two

PROJECT... Mt. Gold... ATLAS EXPLORATIO. LIMITED PERIOD From... June 6...
To... June 12...

CLAIM GROUP... Mt. Gold...

PARTY CHIEF... Bob Harvey...

PERSONNEL	POSITION	TIME	WAGE
Ted Showing	Prospector		$20
Bob Harvey	Party Chief		375
Paul Cartwright	EM op		37.5
V. Wright	EM op		375
Bill Markle	Magnetometer		$15 per day plus $5/1000' for over 3000' by one
Pat Johnny	Linecutter		
Jack Johnston			
Herman Asp			
Jack Ladue			
Mrs. Tizya	Cook		$20 a day

Day Of Week	DRILLING Job	DRILLING Labor	FOOD UNIT Job	FOOD UNIT Labor	TRENCHING Labor	TRENCHING Feet	GEOCHEM. Labor	GEOCHEM. No. Samples Taken	GEOPHYSICS E.M. Labor	GEOPHYSICS E.M. Ft.	GEOPHYSICS VLF Labor	GEOPHYSICS VLF Ft.	GENERAL
Mon. June 6						13,400'							
Tues. 7						10,600'							
Wed. 8	Moving camp	7 hrs											Moving Camp.
Thurs. 9						8,200'							
Fri. 10						9,600'							
Sat. 11	Bringing Supt Serge & wife in 9:40 pm	3 hrs				8,200'							
Sun. June 12						4,000'		44 samples		2,000'		6300'	
TOTAL		11				54,000		44		2,000		6,300	

Fri June 6	Herman Rapp } 8400' line Ira Johnston }	Jack Lasher } 4800' line Pat Johnny }	Bill Parker } Paul Carter } 3000' Vic Wright }
Tue June 7	} 5400' line	} 2400' line	} 3000'
Wed June 8	Morning camp. Each of line-cutters get $20 day.		
Thurs June 9.	Herman Rapp } 4000' line Ira Johnston }	Jack Lasher } 4200' line Pat Johnny }	Bill Parker } Paul Carter } Vic Wright }
Fri June 10	} 4000' line	} 2400'	} 2400'
Sat June 11	} 4000' line	} 3000'	} 1200'
Sun June 12	Herman Rapp } 4000' line Ira Johnston }	Jack Lasher } works with Rapp-Johnston Pat Johnny } work with	
	Bonus on 8400'	Bonus on 3000'	

PROJECT Gd Pocahontas ATLAS EXPLORATIO LIMITED PERIOD From Jan 8
To Jan 19

CLAIM GROUP Pocahontas Group "L"

PARTY CHIEF Bob Harvey

PERSONNEL	POSITION	TIME	WAGE
Ted Sleeping	Prospector		500
Bob Harvey	Party Chief		375
Pete Costanzo Jr	E.M. op.		300
Vic Wong	E.M. op.		
Bill Moulton	Mag op.		
Peter Johnston	Line cutters		4.5/hour and board
Pete Johnston Jr	Line cutters		4.5/hour and board
Heather Bay			
Moe Cartwright	Cook		550
Percy Spencer	Geol assist		600
	Geol assist		500

Day Of Week	DEPARTURE Job	DEPARTURE Loc.	FOOD USED Job	FOOD USED Loc.	EXTRAPOLATION Lines	EXTRAPOLATION Feet	GEOCHEM. Lines	GEOCHEM. No. Samples Taken	GEOPHYSICS Bell Lines	GEOPHYSICS Log Ft.	GEOPHYSICS Log Lines	GEOPHYSICS Misc.	GENERAL
Mon. Jan 13						6,600		45		4500		6,000	P.J. Johnson sick.
Tues 14	Jack Blais outcamp	3 1/2 hr				5,400		54		2,000		2,000	Helicopter in with Bruce Pikes out to Fyre with Pete
Wed 15	Moe injured	4 hr				3,000		45		1,000		4 hour	Jack Lodge heart trouble Johnson out by chopper
Thurs 16						5,000		88		4,000		8,000	
Fri 17						5,000		48		6,000		6,000	
Sat 18						4,000		108		10,000		12,500	
Sun 19						—		60		4,000		2,000	Grid "L" - linecutting & Mag finished
TOTAL		7 1/2 hr				19,000		448		42500		38500	

PROJECT ... Laird ... ARIES EXPLORATIC LIMITED PERIOD From ... June 7 ... 1966
To ... June 26 ... 1966

CLAIM GROUP ... Laird

PARTY CHIEF ... Bob ... Harvey

PERSONNEL	POSITION	TIME	WAGE
Ted Skowszeg	Prospector	Left on June 22	$ 450.
Vic Wright	E.M.		375.
Bill Makin	Mag.		375
Paul Cartwright	E.M.		300
Bernie Spenier	Soil Samples		600.
Jay Stanford	Geologist		$ 5 per hour
+ Omar Haig	Line-cutter		
Ike Johnston	Line-cutter		
B. le Maney	Party Chief		550.

Day Of Week	TRANSPORT JCD	TRANSPORT Miles	PACK UNIT JCD	PACK UNIT Miles	TRENCHING Lines	TRENCHING Feet	GEOLOGY Lines	GEOLOGY No. Samples Taken	GEOPHYSICS E.M. Lines	GEOPHYSICS E.M. Ft.	GEOPHYSICS MAG. Lines	GEOPHYSICS MAG. Ft.	GENERAL
Mon. 20								70	grid L 60W 56W	5000	12,100	grid O BL. 116-92E 116E, 112E 108E	
Tues. 21					Grid D BL. 0-52W	4000'		grid O" 72	grid L 52W	5,000	grid O 108E, 114E 100E	12,500'	
Wed. 22	Moving Camp.	5 hrs.			Camp Cook	Cook							Moved to grid "D" + set up camp.
Thurs. 23					28W, 24W 20W	6800'							
Fri.					28W, 32W 36W, BL. 40W, 60W 60W	10,000'		73					
Sat.					Grid 56W, 52W	Cancelled 4500'		67	28W, 24W	6000'	BL. 0-42W	4200'	
Sun. finished					52W, 48W, 44W	5,900'		60	56W, 60W	45-0'		9300'	
TOTAL						30,300		342		29,500		39,100'	

Heinz

PROJECT Lead

From J e 61
To [illegible]

CLAIM GROUP Lead and U

PARTY CHIEF [illegible]

PERSONNEL [illegible]

Day of Week.	HELICOPTER		FIXED WING		LINECUTTING		GEOCHEM		GEOPHYSICS				GENERAL
[illegible]					[illegible]	[illegible]			56 J 52 J 48 J	[illegible]	[illegible]	[illegible]	
[illegible]					[illegible]	[illegible]	48 J 44 J 40 J	15	Ball. Line 48 J 44 J	[illegible]			[illegible]
[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	28 J 36 J 32 J	[illegible]	8 J 44 J 36 J	[illegible]			
[illegible]					[illegible]	[illegible]	32 J 28 J 20 J 16 J	75	36 J 32 J 28 J	[illegible]			[illegible]
[illegible]								75	24 J 16 J 12 J	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					[illegible]			20	8 J 4 J 2 J	[illegible]	[illegible]	[illegible]	
[illegible]													[illegible]
		[illegible]			[illegible]			[illegible]		[illegible]		[illegible]	

PROJECT ...t -1..... ATE'S EXPLORATIC LIMITED PERIOD From ...July 4... .....
To ...October 10.....

CLAIM GROUP ...Lizard.....

PARTY CHIEF ...Bar Mooring.....

PERSONNEL	POSITION	TIME	WAGE
Bernie Sp...n	Soil Sa...l		25/ [illegible]
Hu... Ro...	[illegible]		
Ila Johnston	[illegible]		5/85
N.A. Gillis	Mag		5/85
Paul Lortie	E.M.		6/00
Jim Cleland	Geologist		5/00
M... Ca...	Cook		5/50
Vic Voight (Comes from Fyre L. in July 5th)	Pilot-Mech.		

Day Of Week	Project Set Up		Food Dig		Diamond Drilling		Geochem		Geophysics				General
	Job	Time	Job	Time	Lines	Feet	Lines	No. Samples Taken	Field Lines	Field Time	Office Lines	Office Time	
Mon. 1							T.F. 1>56	56					Checked out C.E. and set V.L. 2 [illegible] Top m[illegible] Li[illegible]
Tues. 2	Fly camp	6 hrs	Gas for stoves	1									Main camp moved [illegible] Fly camp set up [illegible] V.L. 2 [illegible] camps.
Wed. 6							grid '0'	262					Magnetic storm
Thurs. 7							grid '0'	336					Magnetic Storm.
Fri. 8							grid '0'	389					Magnetic Storm
Sat. 9							grid '0'	346					Magnetic Storm
Sun. July 10	Moving Fly-camp	3 hrs.						50	grid '0'	6,000			Fly camp moved [illegible] to [illegible] Rope stretched into R.E. camp.
TOTAL								1459					

Liard: July 11 to July 12

{Grass Lakes Camp}: July 13 to July 17

Party Chief: Bob Harvey.

From July 11
To July 17

PERSONEL

Barnard Spanier	Soil Sampler	$300
~~Hennessy Rapp~~	} Linecutters	
Ike Johnston		
Michael Shorty		
Bill Markin	Magnetometer	$400
Paul Courtwright	E.M.	$375
Mrs. Clara Tizya	Cook.	$500
Bob Harvey	Party Chief	$550
Vic Wright	E.M.	$400

Day	HELICOPTER Job	Hrs	FIXED WING Job	Hrs	LINECUTTING Lines	Ft.	GEOCHEM Lines	No. of Samples	GEOPHYSICS E.M. Lines	Ft.	Mag Lines	Ft.	GENERAL
Mon July 11									T.F. grid	5400'			Mag storm Liard 91→99, 39, 40, 1→12 tagged. 23→28, 29→38
12									96E 100E 104E 12E	7600'			All claims in area tagged except Liard 83→90 + Val-Rabagp.
13	Move camp to Wasson Lk	~7	Move camp from Wasson Lk to Grass Lks	13									Moving to Grass Lakes.
14					120W	7500'							Start linecutting on Grid Z
15					B.L.	8500'	120W	75	120W	7500'			
16					B.L & 112W	7500'	B.L.	80	B.L.	8000	B.L.	8000'	
Sun July 17					112W 104W	11,000'	B.L.	40	112W	4000'			Mag. Storm.
Total		7		13		34,500'		195		30,500		8,000	

SUMMARY OF COSTS

MAGNETIC AND ELECTROMAGNETIC GEOPHYSICAL SURVEYS

LIARD CLAIM GROUP

SUMMARY OF COSTS

GEOPHYSICAL SURVEYS

LIARD MINERAL CLAIMS

A.	'D' GRID COVERING	Liard	75,76,77,78,79,80 83,84,85,86,87,88
	1) Linecutting		
	54,000 feet = 10.2 line miles @ $70/line mile		$ 714.00
	Cost includes camp costs, supervision, administration, wages.		
	2) Magnetometer Survey		
	10.11 line miles @ $50/line mile		505.50
	Cost includes camp costs, supervision, administration, equipment rental, wages.		
	3) Electromagnetic Survey		
	10.11 line miles @ $110/line mile		1,112.10
	Cost includes camp costs, supervision, administration, equipment rental, wages.		
		Sub-total	$2,331.60

B. 'L' GRID COVERING — Liard Claims 30, 32, 34, 36 39 - 45 inclusive 65 - 70 inclusive

1) Linecutting

60,000 feet = 11.10 line miles
@ $70/line mile — $ 780.00

Cost includes camp costs, administration, supervision, wages.

2) Magnetometer Survey

11.10 line miles
@ $50/line mile — 550.00

Cost includes camp costs, supervision, administration, equipment rental, wages.

3) Electromagnetic Survey

11.10 line miles
@ $110/line mile — 1,221.00

Cost includes camp costs, supervision, administration, equipment rental, wages.

Sub-total — $2,551.00

C. GENERAL COSTS - LIARD GROUP

1) Aircraft Support

a) Fixed wing charters for camp mobilization and demobilization, plus support:

Great Northern Airways

Date	Charter Ticket	Cost	
Jul 5/66	3978	$ 78.00	
May 19/66	5641	31.00	
Jun 2/66	3552	183.00	
Jun 6/66	3367	246.00	538.00

b) Helicopter support for camp mobilization and demobilization, plus support:

Klondike Helicopters Ltd.

Date	Charter	Hours
June 3	5090	:40
June 4	5091	1:15
June 8	5094	7:10
June 11	5097	6:05
June 14	5101	2:05
June 15	5102	3:40
June 23	5107	7:40
		27:55 hours

@ $111.00/hour $3,098.75

2. Presentation of Data and Report 500.00

Sub-total $4,136.75

TOTAL $9,019.35

AFFIDAVIT SUPPORTING

SUMMARY OF COSTS

TELEPHONE 685-4331

ATLAS EXPLORATIONS LIMITED
(N.P.L.)
330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

AFFIDAVIT SUPPORTING SUMMARY OF COSTS:

I, John S. Brock, Assistant Exploration Manager of Atlas Explorations Limited, of Ross River, Yukon Territory. do hereby state that to the best of my knowledge and belief the statement of costs as presented in this report "Magnetic and Electromagnetic Geophysical Surveys - Liard Mineral Claim Groups" (Appendix II) is both correct and true.

John S. Brock

Jan 25, 1967
Date

A Commissioner of Oaths
in and for the Yukon
Territory

PERSONNEL

LINECUTTERS

1) Herman Asp — Watson Lake, Yukon
2) Ike Johnston — Whitehorse, Yukon
3) Michael Shorty — Ross River, Yukon
4) Jack Ladue — Ross River, Yukon

MAGNETOMETER OPERATOR

1) Bill Markiw

EM OPERATORS

1) Paul Cartwright
2) Vic Wright

PARTY CHIEF

1) Robert Harvey

FIELD SUPERVISOR

1) John S. Brock — Ross River, Yukon

AIRBORNE ELECTROMAGNETIC-MAGNETIC GEOPHYSICAL SURVEY

OLD GOLD AREA, YUKON TERRITORY

March 12 - April 3, 1966

LOCATION: LIARD RIVER AREA
130° - 30'W. Long.
61° - 00'N. Lat.

Claim Sheet 105B & 105G-2

Val-Rabo M.C. Group

Submitted by: John S. Brock
June 3, 1966

METHOD OF SURVEY

Instrumentation

A Gulf Plungpot Magnetometer Mark III and a Mark III electromagnetic unit consisting of a vertical coaxial transmitter and receiver coils mounted on a thirty foot boom were used for the entire survey. The instruments and operator were provided under a contract agreement with Lockwood Survey Corporation. The survey was conducted with a Bell G3 helicopter as fixed wing aircraft were judged to be unsuitable for some of the regions of more rugged terrain.

For the electromagnetic apparatus amplitudes of in-phase and out of phase response of the resultant field are measured in parts per million of the primary field, the frequency of the primary current is 4000 cycles per second. The magnetometer has a sensitivity of 1200 gammas and measures total magnetic field.

Survey Methods

The geophysical instruments were towed at a mean terrain clearance of 100 feet over flight lines of 1000 foot spacing which was narrowed to 500 foot spacing over areas of known mineralization in order that more survey detail might be obtained. Effective ground control was maintained by the use of aerial photographs with predetermined flight lines for navigational purposes. The helicopter was equipped with APN-1 radio altimeter and stop motion 35 mm camera for further ground control and recording of fiducial points. All flight lines were orientated perpendicular to geologic strike.

PLOTTING OF RESULTS

Flight records were processed in the field by the staff of Atlas Explorations as no plotting of results is done by the contractor during the actual survey. All airborne information was plotted on plastic overlays showing drainage, existing claim group locations and photo-geologic interpretation to a scale of one inch to one-quarter mile. Flight lines and fiducial points are shown on the compilation. Magnetic data was contoured for all results above regional background.

Electromagnetic data was shown by contoured in-phase and quadrature response. At a later date Atlas Explorations will receive a final plot of all geophysical results prepared by Lockwood Survey Corporation.

INTERPRETATION OF RESULTS

Liard Mineral Claim Area

All magnetic anomalies obtained in this area are of isolated nature and have apparent relation to fault control. The magnetics are of low magnitude but may be significant of mineralization as reported on the original Liard Claims. At the northern end of the claim group two electromagnetic anomalies occur in areas of recently discovered galena float. Some spot electromagnetic response is recorded in coincidence with the magnetics. No geophysical anomalies were obtained over the Liard mineral showing.

General Survey Area

To the northwest of the Liard Claims, continous and well defined electromagnetic results were obtained, no magnetic coincidence is apparent. The anomalies appear to be of formational nature and in coincidence with what has been described as an area of graphitic schists. The area, however, warrants geochemical prospecting and further mapping in the event that major fault structures in the graphitic formations may provide ore bearing zones. A high in-phase electromagnetic anomaly centered in a paralled fault system on Old Gold Creek requires further ground investigation.

At a later date the boundaries of the Old Gold survey should be extended west to the Dome Creek area in order that sedimentary formations in which mineralization has been reported may be surveyed.

To the south of the survey area a coincident magnetic-electromagnetic anomaly was recorded over Quartz Creek while the airborne equipment was being ferried to base camp. This area also requires ground follow-up as it may be in the vicinity of reported sulphides.

Summary and Conclusions

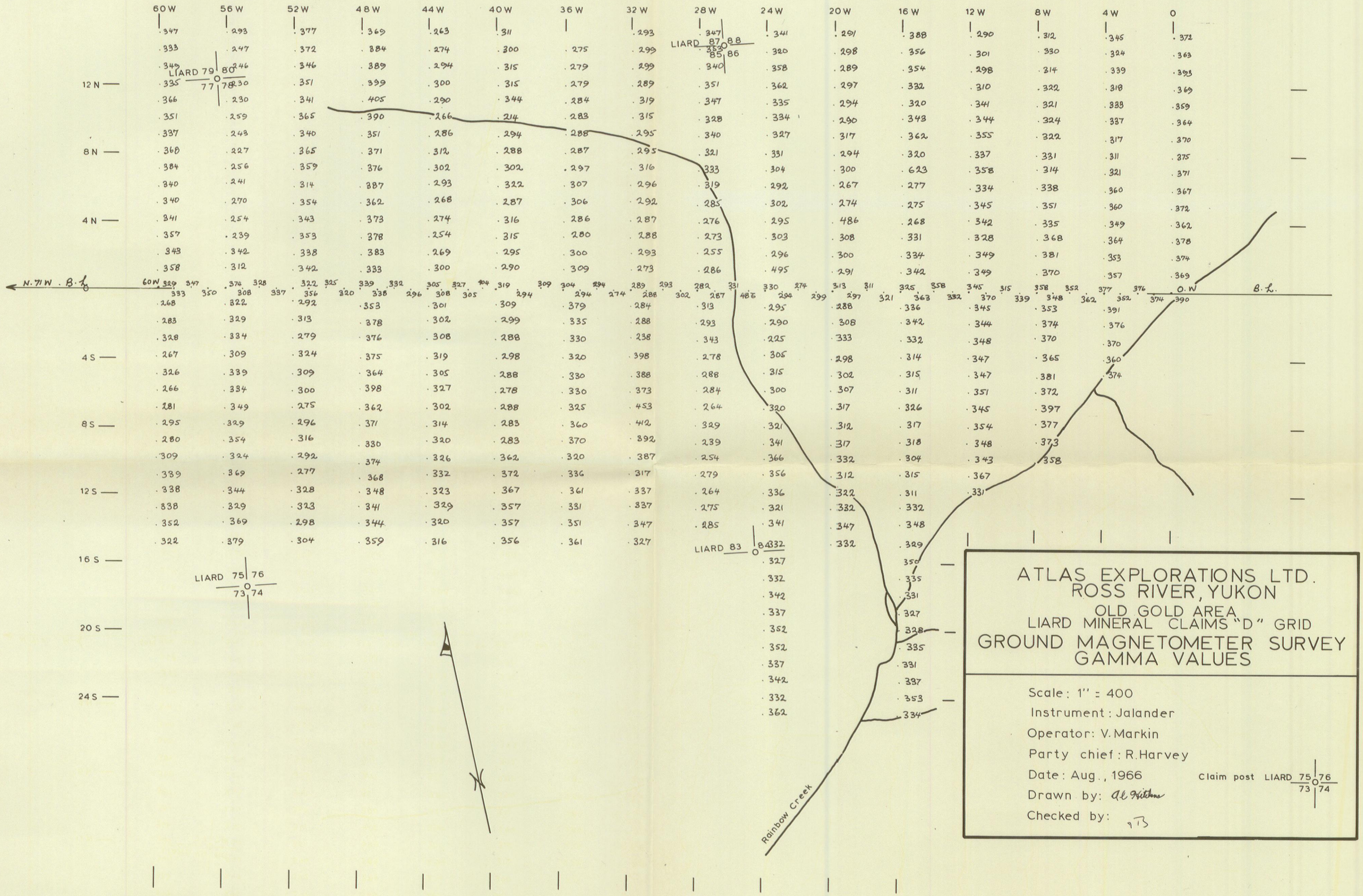
The Old Gold area warrants a ground follow-up program based on airborne geophysical results obtained to date. Electromagnetic and magnetic anomalies obtained in the vicinity of the LIARD and YAK-RIDGE mineral claims should be protected by additional staking of mineral claims. Coincident Mag-EM anomalies centered within northwest - northeast cross faults and magnetic and electromagnetic anomalies in the vicinity of known mineralization are of immediate interest.

Further treatment and interpretation of airborne data will be carried out upon receipt of final data reductions from Lockwood Survey Corporation.

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GROUND MAGNETOMETER SURVEY
GAMMA VALUES

Scale: 1" = 400
Instrument: Jalander
Operator: V. Markin
Party chief: R. Harvey
Date: Aug., 1966
Drawn by: Al Fitchner
Checked by: RJB

Claim post LIARD 75 | 76 / 73 | 74



60W 56W 52W 48W 44W 39W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0

12N
8N
4N
0
4S
8S
12S
16S
20S

LIARD 79 80 / 77 78

LIARD 87 88 / 85 86

LIARD 75 76 / 73 74

LIARD 83 84

Base line

Rainbow creek

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GROUND MAGNETOMETER SURVEY
GAMMA VALUES - PROFILES

Scale: 1" = 400'

Profile scale: 1" = 200 γ

Operator: V. Markin

Party chief: R. Harvey

Date: Aug., 1966

Drawn by: Al Fitchner

Checked by:

500 300 100

Claim post LIARD 75 76 / 73 74

60W 56W 52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0

16N 12N 8N 4N 0 4S 8S 12S 16S 20S

LIARD 79 | 80 / 77 | 78

LIARD 87 | 88 / 85 | 86

LIARD 75 | 76 / 73 | 74

LIARD 83 | 84

T80° Blast Hole Silicification Sparse Cu.

Graphitic Phyllites

Silicification Sparse Cu.

CREST OF HILL

N. 72° W

B. L. 60W

Qtz. vein with sparce Cu.

Silification

Barren qtz. veins.

High grade Cu. Float — Massive chalcopyrite.

Minor phyrrotite in andesite dike.

CREST OF HILL

Minor phyrrotite in andesite dike

73° Phyllites

O.W. B.L.

RAINBOW CREEK

55° Phyllites with graphitic lenses.

Carbonaceous

N

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOLOGIC MAP

Scale: 1" = 400'

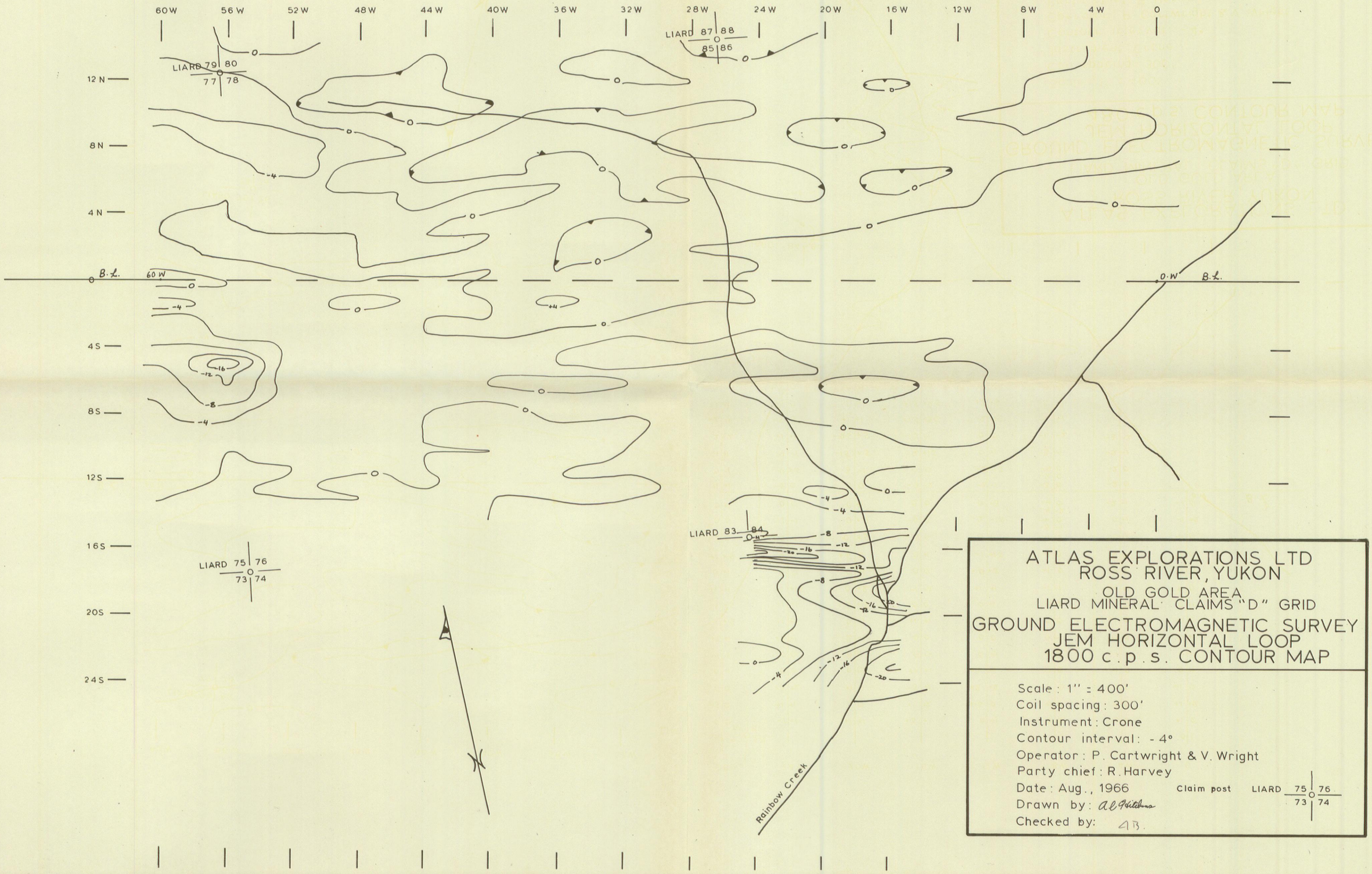
Strike and dip —80°

Mapped by: R. Harvey

Date: June, 1966

Drawn by: [illegible]

Checked by:



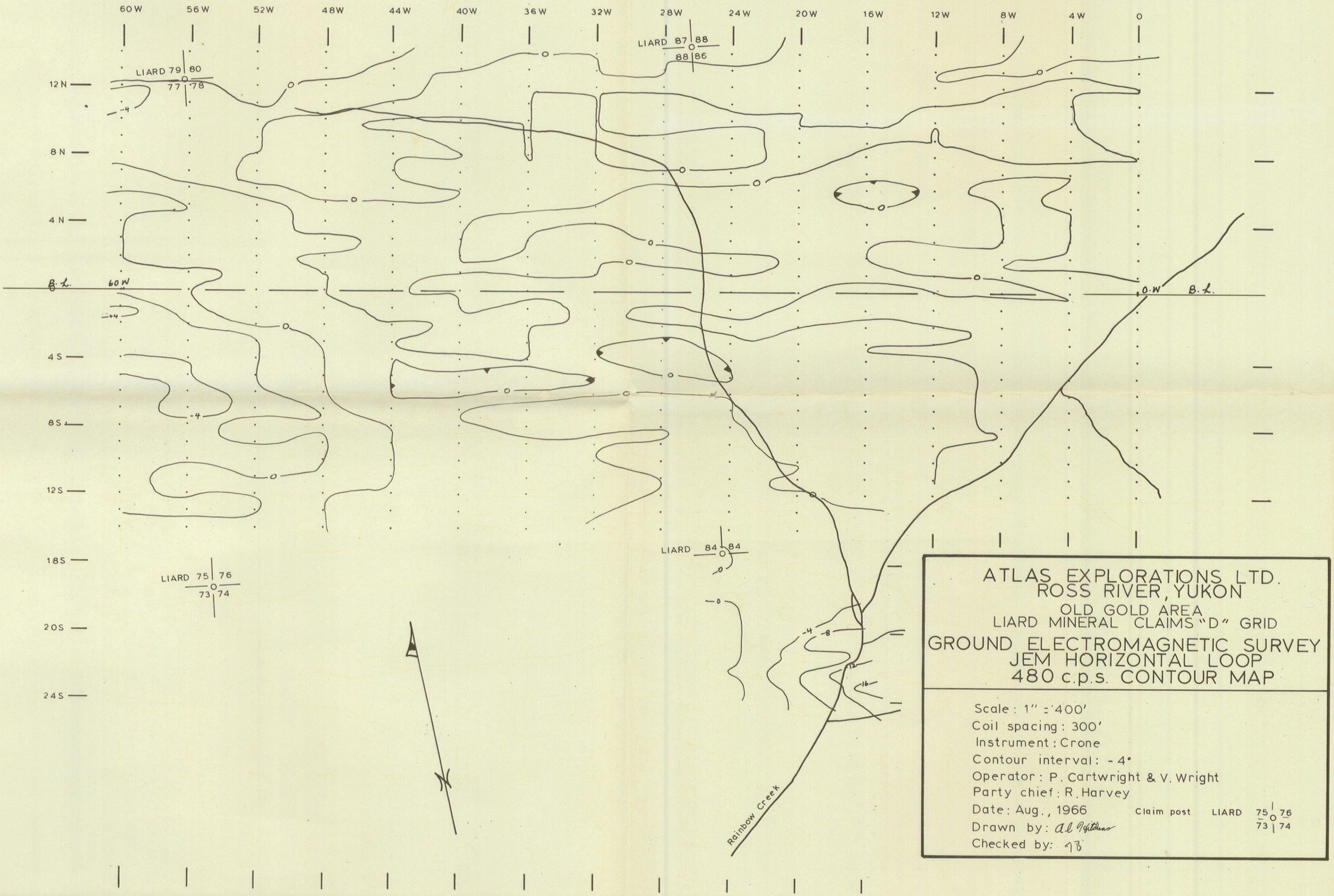
ATLAS EXPLORATIONS LTD
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID

GROUND ELECTROMAGNETIC SURVEY
JEM HORIZONTAL LOOP
1800 c.p.s. CONTOUR MAP

Scale: 1" = 400'
Coil spacing: 300'
Instrument: Crone
Contour interval: - 4°
Operator: P. Cartwright & V. Wright
Party chief: R. Harvey
Date: Aug., 1966
Drawn by: al Hitchins
Checked by: AB.

Claim post LIARD 75 76 / 73 74



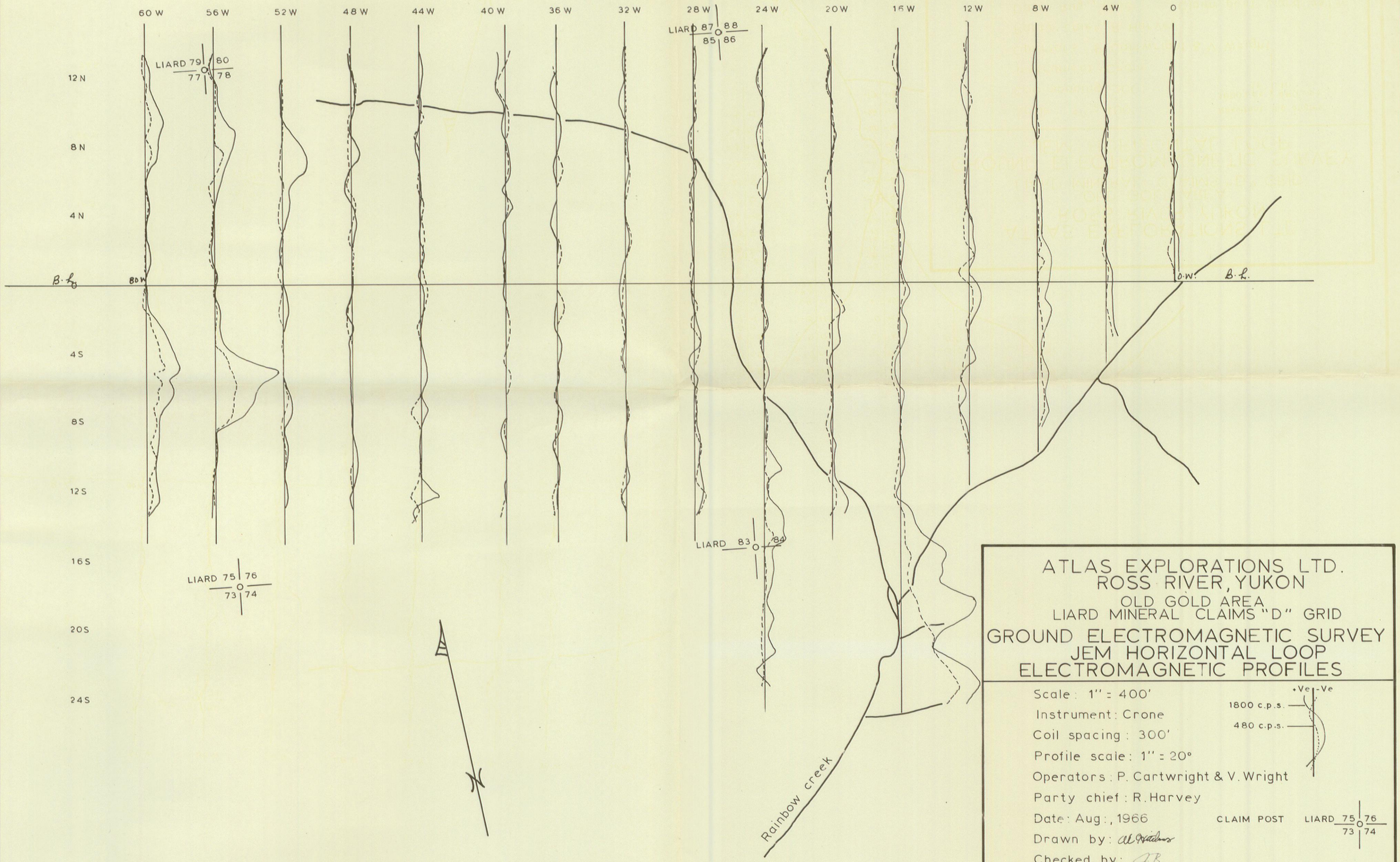
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID

GROUND ELECTROMAGNETIC SURVEY
JEM HORIZONTAL LOOP
480 c.p.s. CONTOUR MAP

Scale: 1" = 400'
Coil spacing: 300'
Instrument: Crone
Contour interval: - 4°
Operator: P. Cartwright & V. Wright
Party chief: R. Harvey
Date: Aug., 1966
Drawn by: Al Gilchrist
Checked by: GB

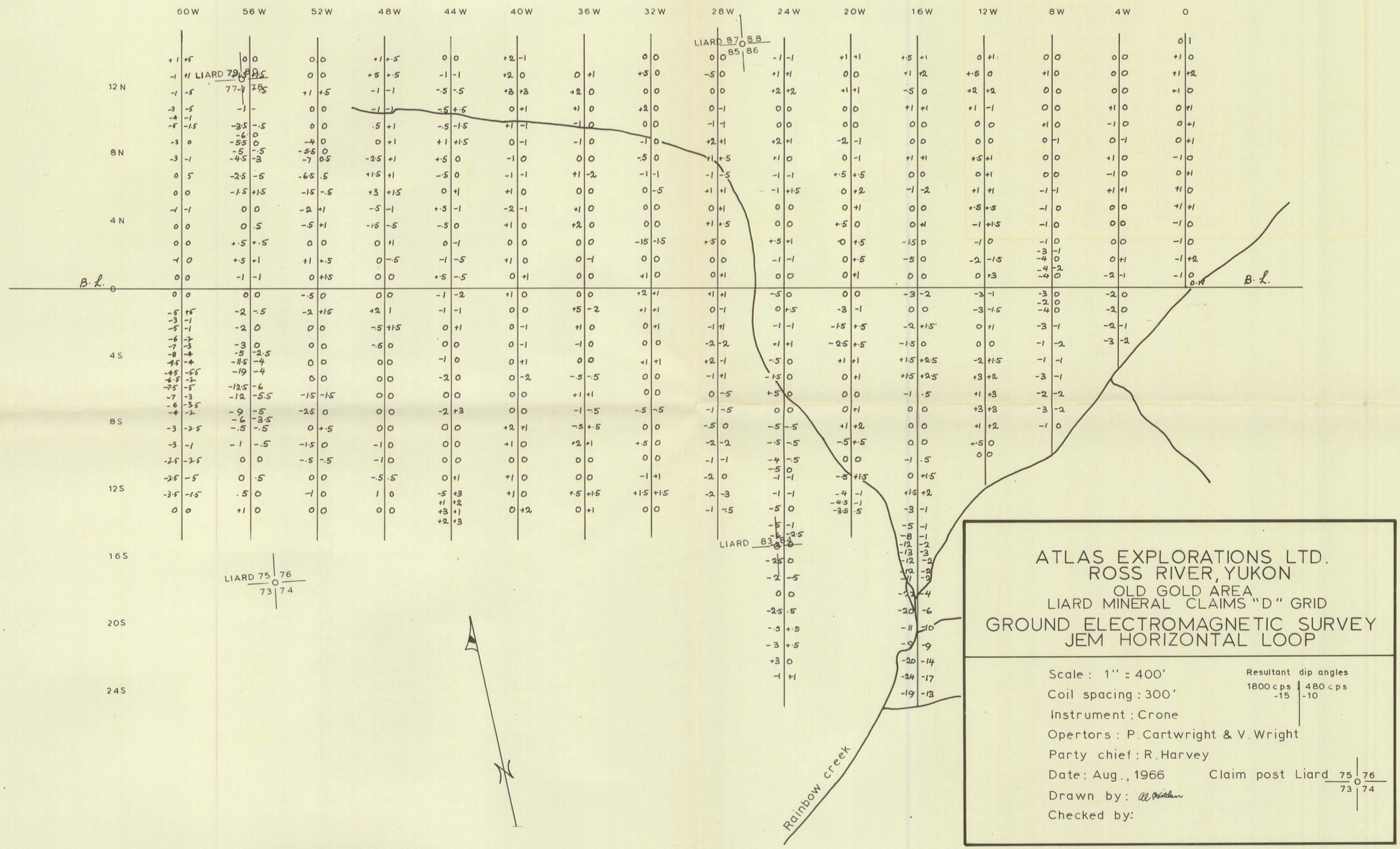
Claim post LIARD 75 | 76 / 73 | 74



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GROUND ELECTROMAGNETIC SURVEY
JEM HORIZONTAL LOOP
ELECTROMAGNETIC PROFILES

Scale: 1" = 400'
Instrument: Crone
Coil spacing: 300'
Profile scale: 1" = 20°
Operators: P. Cartwright & V. Wright
Party chief: R. Harvey
Date: Aug:, 1966
Drawn by: al Hawkins
Checked by: GB.

CLAIM POST LIARD 75 76 / 73 74



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GROUND ELECTROMAGNETIC SURVEY
JEM HORIZONTAL LOOP

Scale : 1" = 400'

Coil spacing : 300'

Instrument : Crone

Operators : P. Cartwright & V. Wright

Party chief : R. Harvey

Date : Aug., 1966

Drawn by :

Checked by:

Resultant dip angles

1800 cps	480 cps
-15	-10

Claim post Liard 75 | 76 / 73 | 74

EXPLANATION

- Qal — Quaternary alluvium
- Qgl — Quaternary glacial deposits
- And — Andesite containing phyrrhotite
- Grd — Granodiorite
- Rhy — Rhyolite and tuff
- Gphy — Graphitic phyllites
- Arg — Argellite
- Phy — Phyllites, slates, and argellites
- Qtz — Quartz vein
- Silicification and quartz intrusions
- Copper showing

Geologic Contacts

Attitudes
strike & dip of bedding
strike & dip of fractures

Faults

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD, VAL, & RABO MINERAL CLAIMS
Geologic Map

Scale: 1" = 1320'
Date: June, 1966
Geology by: J. Staniford
Drawn by: Jay Stanford

OLD GOLD LAKE AREA

YUKON TERRITORY

LIARD MINERAL CLAIMS

SCALE

1000 0 1000 2000 3000 4000 5000

FEET FEET

1 Inch to 1320 Feet

AEROMAGNETIC MAP

N

T.F. GRID

GRID "D"

GRID "L"

GRID "O"

Raimbow Creek

Creek

OLD GOLD LAKE AREA

YUKON TERRITORY

LIARD MINERAL CLAIMS

SCALE

1000 0 1000 2000 3000 4000 5000

FEET FEET

1 Inch to 1320 Feet

AERO-ELECTROMAGNETIC MAP

N

GRID "D"

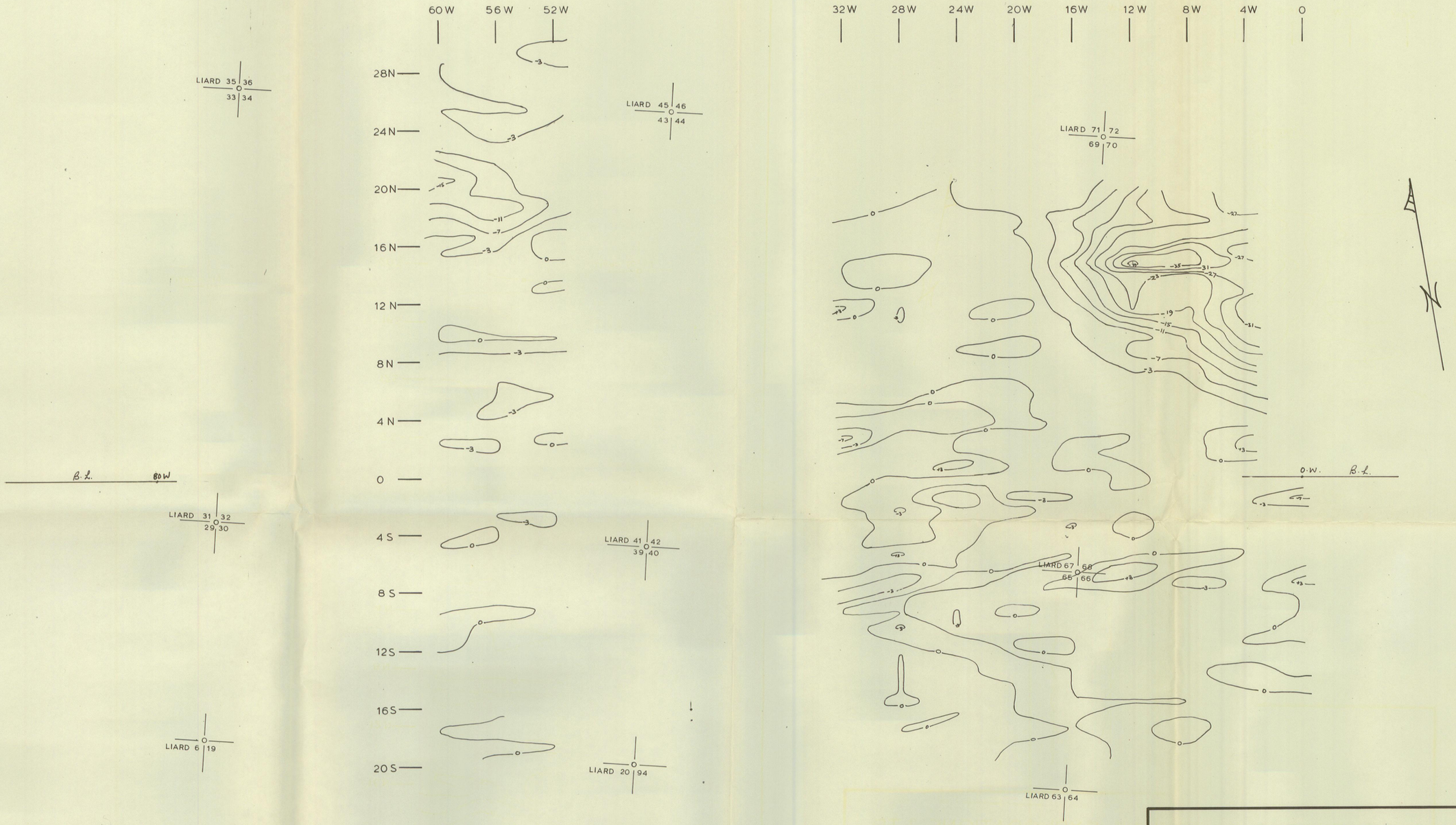
GRID "L"

GRID "O"

T.F. GRID

Rainbow Creek

Creek



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA

LIARD MINERAL CLAIMS "L" GRID

GROUND ELECTROMAGNETIC SURVEY
JEM HORIZONTAL LOOP
HIGH FREQUENCY CONTOUR MAP

Scale: 1" = 400' Contour interval: - 4°

Instrument: Crone

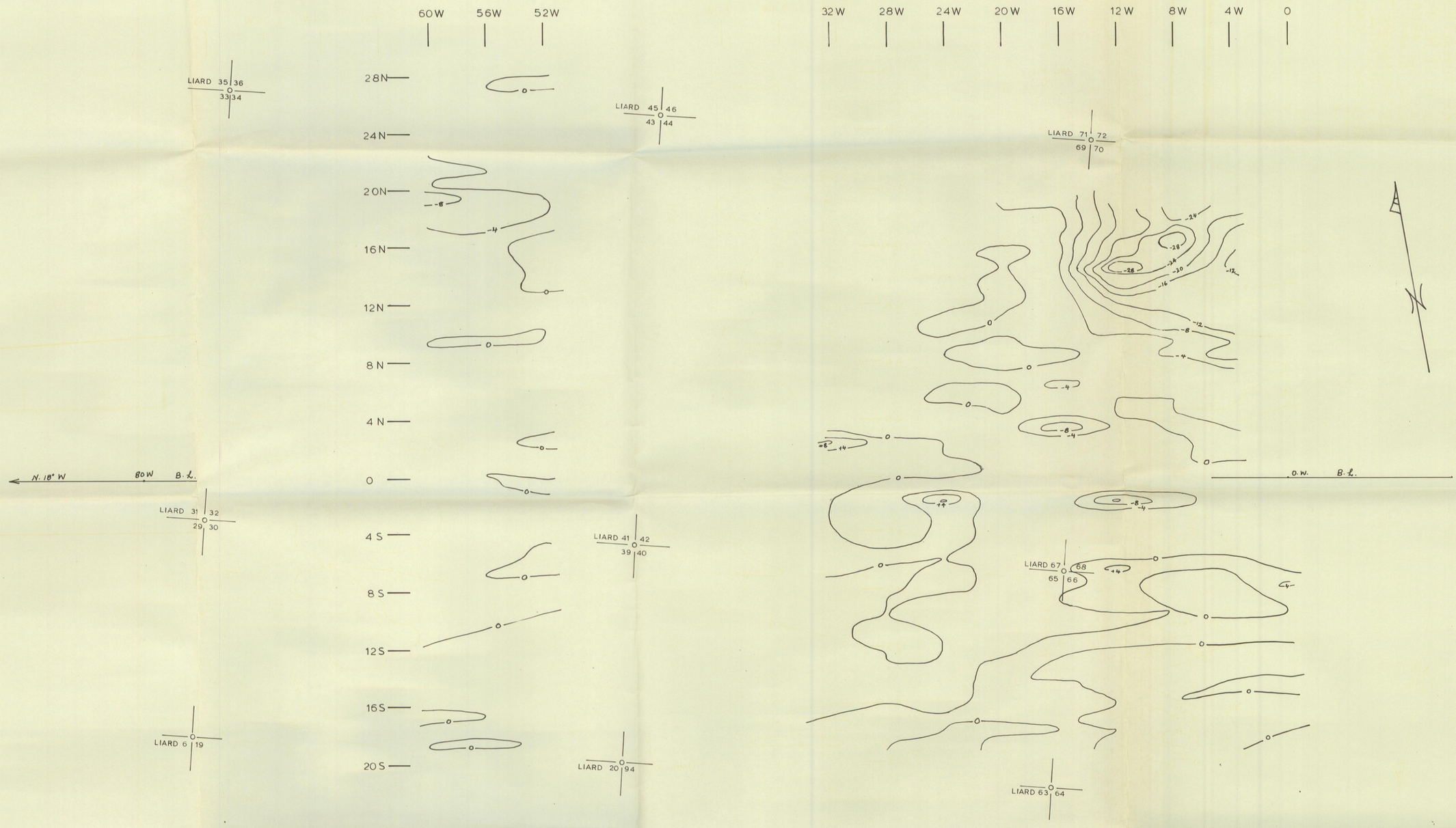
Coil spacing: 300'

Operators: P. Cartwright & V. Wright

Party chief: R. Harvey Claim post Liard 77 | 78 / 75 | 76

Date: June, 1966

Drawn by: Al Gibbons



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID

GROUND ELECTROMAGNETIC SURVEY
JEM HORIZONTAL LOOP
LOW FREQUENCY CONTOUR MAP

Scale: 1" = 400'. Contour interval: -4°
Instrument: Crone
Coil spacing: 300'
Operators: P. Cartwright & V. Wright
Party chief: R. Harvey
Date: June, 1966
Drawn by: A.L. Hitchens

Claim post Liard 77 78 / 75 76

#66-33

	60W		56W		52W	
					-2	-2
					-5	-4
	-3	-1	-1	-2	-3	-2
28N	-3	-2	-2	0	-1	+1
	-4	-3	-2	0	-3	-3
	-3	-3	-4	-3	-2	0
	-5	-3	-1	-1	-3	-2
24N	-6	-3	-2	-1	-5	-3
	-7	-4	-6	-2	-4	0
	-12	-3	-7	-4	-4	0
	-16	-4	-8	-3	-4	-3
20N	-13	-10	-9	-5	-5	-4
	-9	-4	-15	-5	-6	-5
	-5	-4	-11	-5	-1	-1
	-2	0	-4	-1	+1	+2
16 N	-3	-2	-3	-2	+2	+3
	-2	-1	-1	-2	-2	+1
	-3	-3	-2	-2	+1	+2
	-1	-1	-3	-3	-2	-2
12 N	-2	0	-2	0	-1	-1
	0	0	-1	-1	-1	0
	0	0	0	+1	0	0
	-3	-2	-3	-4	-3	-2
8 N	-1	-1	-1	-1	0	-1
	-1	-1	-3	-1	-1	-1
	0	+1	-3	-2	-3	-1
	0	-1	-4	-2	0	0
4N	-1	-1	-2	-2	-1	-2
	-3	-3	-3	-3	+1	+1
	-1	-1	-3	-3	-2	-1
	-1	0	-1	0	-1	-1
0	-1	-1	-1	-1	+1	+1
	-1	-2	-1	-1	0	-2
	0	0	-3	-3	-3	-1
	-1	-2	0	-2	-3	-1
4S	0	-1	0	0	-2	0
	-1	-1	-2	-2	-2	+1
	-2	-1	0	0	-3	+2
	-2	-1	-2	-2	-1	-2
8S	-3	-1	-2	-2	-3	-1
	0	0	+2	+1	-1	0
	+1	+1	-1	0	-3	-3
	+2	0	-2	-1	-2	-1
12S	-1	-1	0	-3	-3	-3
	0	0	-1	0	-2	-1
	0	-1	0	0	-4	-3
	-2	-1	-1	0	-3	-3
16S	-1	+1	0	0	-1	-1
	0	-1	-2	-2	-4	-2
	+1	0	+2	+1	0	-1
			-2	-2		
20S						

32W	28W	24W	20W	16W	12W	8W	4W	0
-1	0	0	0	-3	-2	-6	-4	-4	-4	-18	-17	-25	-25	-29	-23
0	0	-1	-1	-1	-1	-2	-1	-11	-3	-16	-16	-22	-24	-25	-17
-1	0	-2	-2	-2	-1	-3	-1	-9	-4	-26	-20	-25	-31	-28	-13
-2	-2	-1	-1	-2	-2	0	+2	-10	-3	-29	-23	-35	-26	-25	-12
0	+1	+2	+2	-1	-1	-2	0	-15	-4	-39	-32	-36	-22	-30	-11
0	0	+1	+1	-2	-1	-1	+1	-10	-3	-26	-21	-20	-14	-29	-14
-2	-2	-1	-2	-1	-2	-1	+1	-8	-2	-24	-15	-19	-12	-27	-14
+3	+3	-3	-3	-1	0	+2	0	-6	-1	-24	-8	-19	-12	-36	-16
-1	-1	-3	-2	0	+2	-1	-1	-3	-2	-13	-7	-17	-9	-31	-15
0	0	0	0	-1	-1	0	+.5	-3	-1	-5	-2	-11	-4	-30	-8
-1	0	-1	-1	0	0	+1	+4	-1	+1	-8	-2	-11	-5	-24	-11
-1	-1	-2	-2	-1	-1	-1	0	-1	-1	-4	-1	-4	-2	-17	-3
-1	-1	-1	-1	0	0	0	0	-1.5	-.5	-2	-2	-3	-2	-13	-3
-2	-3	-1	-2	+1	+1	+1	+1	-2	-1	0	0	-1	0	-6	-2
+1	-1	0	-1	-1	-2	+1	0	-2	-2	-1	0	0	0	-2	-2
-1	-1	-2	-2	-2	-1	+1	0	-1	-11	-3	-3	-1	+1	-1	0
-7	+8	+1	+1	0	0	-1	0	0	0	0	-1	-2	-1	+3	+3
0	0	+1	0	0	0	-3	-3	+1	-1	-1	-1	-1	-1	+3	+3
+1	+2	+2	+2	+4	+4	-1	-2	+1	0	0	+1	-1	-2	-1	-2
+1	+1	-1	-1	-1	-1	-1	-1	-2	-1	+1	0	-2	-3	-1	-1
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+1	0	-3	-2	+1	+1	+1	-1	-2	-2	0	0	-2	-3.5	-2	-1
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+1	+1	-2	-2	+1	+1	-2	-1	-2	-2	0	0	-2	-3	-2	-1
+2	+1	+3	+3	0	0	-1	-1	0	-1	0	-1	0	0	0	0
+2	+1	-2	-1	0	+2	0	-1	0	-1	+5	+5	0	0	0	0
-2	-2	-5	-4	+1	+1	-1	-1	-2	-1	+2	+1	-.5	-2	-2	-2
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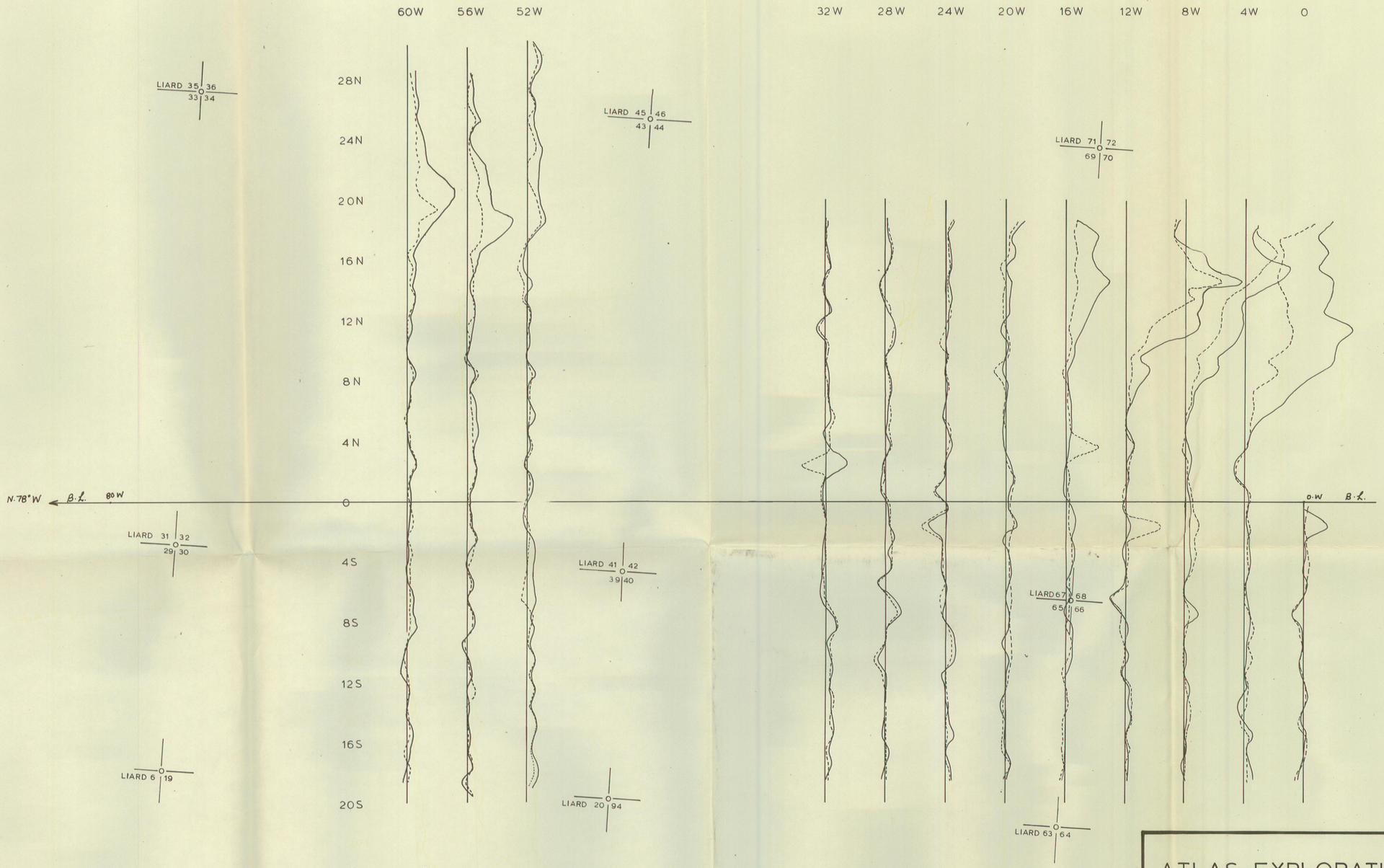
-3	-3	+1	0	-3	-1	0	+1	0	+1	0	0	0	0	-3	-2
-1	0	-1	0	0	0	0	+1	0	+1	-1	-1.5	-1	0	-1	-1
-2	-1	0	0	-1	0	-2	-2	0	0	-1	0	+1	0	-2	-1
0	-1	-1	0	-2	-2	0	+1	+1	+2	-1	-1	0	0	-3	-1

0.W	B.L.
-1	-1
0	0
-1	-1
-1	-1
0	-2
-1	-1
-1	-1
+2	+3
+1	+2
+1	+1
+1	+1
+1	+1



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA

LIARD MINERAL CLAIMS "L" GRID

GROUND ELECTROMAGNETIC SURVEY

JEM HORIZONTAL LOOP

Scale: 1" = 400'

Profile scale: 1" = 20°

Instrument: Crone

Coil spacing: 300'

Operators: P. Cartwright, V. Wright

Party chief: R. Harvey

Date: June, 1966

Drawn by: A.L. Williams

+ve -ve

1800 c.p.s.

480 c.p.s.

Claim post Liard 77 78 75 76

#66-32

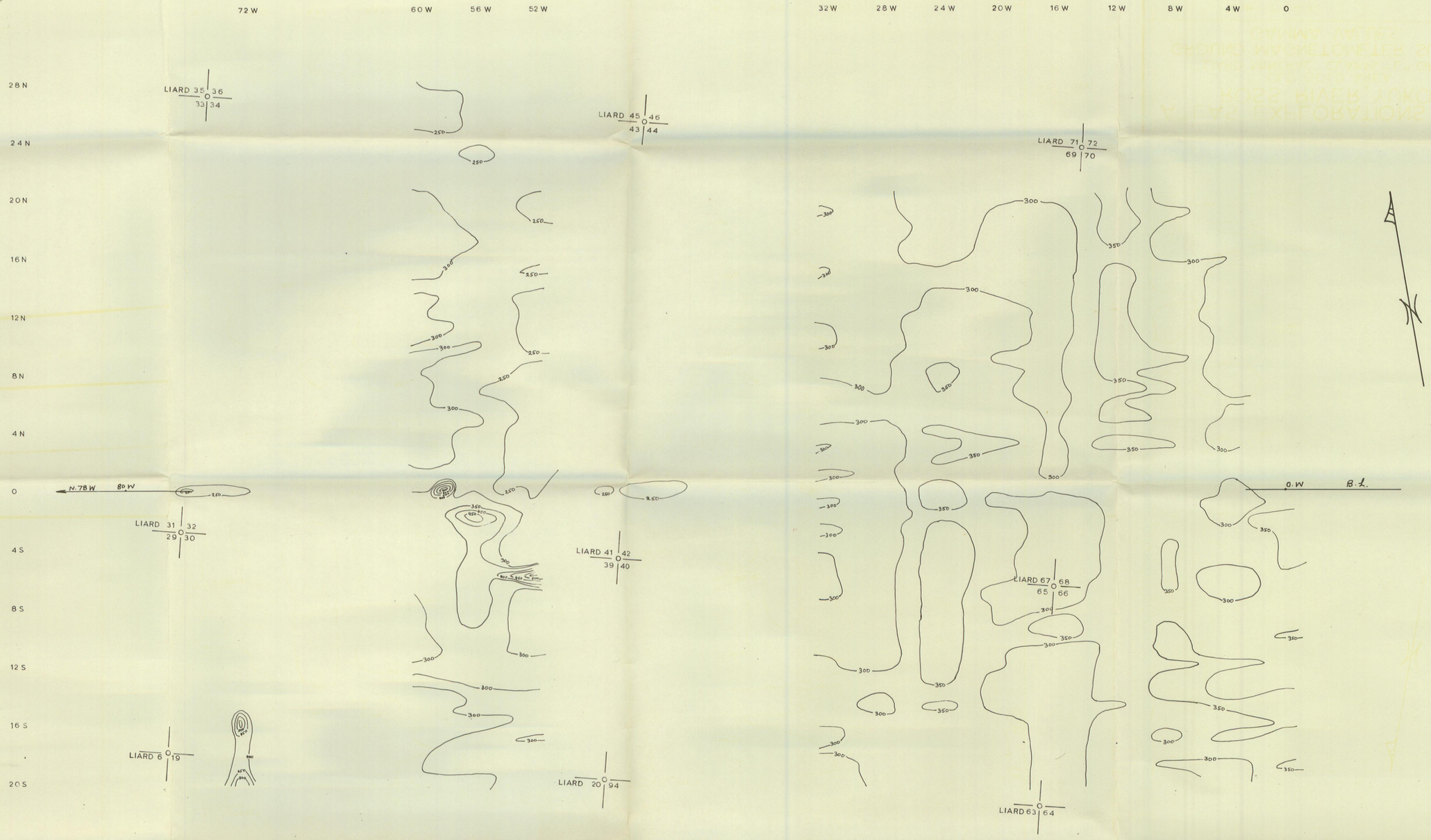
	72W	60W	56W	52W	32W	28W	24W	20W	16W	12W	8W	4W	0
			300										
		245	257	250									
		255	253	243									
28 N	LIARD 35 | 36 / 33 | 34	250	265	216									
		235	282	240			LIARD 45 | 46 / 43 | 44						
		209	261	244									
		249	251	262									
24 N		254	262	276					LIARD 71 | 72 / 69 | 70				
		273	239	279									
		268	256	282									
		253	272	270									
20 N		337	264	248	268	294	311	306	302	358	284	257	
		348	261	246	303	294	327	295	292	358	318	274	
		371	287	255	298	284	332	285	276	380	296	276	
		347	304	258	298	274	318	284	285	356	299	268	
16 N		364	276	262	278	294	323	289	284	341	293	300	
		316	278	245	303	269	298	289	274	357	311	291	
		288	280	258	298	284	299	293	278	363	325	284	
		336	286	217	283	279	319	303	277	358	308	296	
12 N		303	283	220	273	289	339	342	271	354	312	283	
		323	294	229	318	279	340	347	260	375	312	295	
		299	301	242	303	274	335	332	280	365	322	292	
		312	293	256	297	295	330	296	283	382	353	273	
8 N		301	285	234	292	285	371	306	293	376	304	294	
		330	251	207	312	295	351	306	297	349	356	285	
		308	282	235	297	315	342	320	261	352	337	302	
		311	309	219	322	310	347	320	291	354	348	298	
4 N		314	290	207	292	280	362	324	296	343	325	289	
		327	276	206	302	275	343	369	290	375	351	280	
		328	292	206	292	285	353	328	294	339	312	322	
		284	298	224	312	295	343	303	299	326	348	308	
0	N.78W. 80W 313 191 218 238 269 241 232 267 303 294 298 734 299 248 242 268 270 252 213 204 255 250 256 278 284 280 297 274 276 255 308 344 346 303 327 325 303 310 309 306 306 308 303 303 325 284 293 302 332 0.W B.L.												
	256 294 352 214												
	LIARD 31 | 32 / 29 | 30	309	329	253	307	270	387	289	258	321	337	225	340
		279	478	289	287	270	336	330	248	312	347	286	359
		300	377	270	307	260	385	322	277	303	321	326	354
4 S		315	351	246	277	260	370	328	237	324	356	287	358
		300	360	252	303	255	372	314	277	315	356	318	358
		320	374	551	308	265	372	320	266	306	355	259	348
		305	359	248	313	260	375	287	LIARD 67 | 68 / 65 | 66	328	354	265	348
8 S		295	378	264	293	280	368	298	286	329	314	305	347
		291	362	259	298	260	387	294	376	320	344	321	342
		291	336	280	298	270	381	330	385	306	363	312	351
		287	341	276	293	270	392	311	236	308	373	320	346
12 S		316	330	357	308	280	372	308	253	327	342	368	341
		290	324	397	318	320	362	294	249	317	384	339	326
		319	298	288	333	300	320	286	266	327	382	312	351
		328	283	279	318	290	365	292	287	297	330	368	356
16 S		307	321	285	308	310	329	348	274	318	303	306	351
		321	291	305	288	320	347	314	275	318	296	362	331
	LIARD 6 | 19	310	266	261	303	309	331	335	271	328	334	339	346
		304	290	257	283	319	335	342	268	329	297	276	351
20 S		303	309	268 LIARD 20 | 94	289	309	353	327	275	309	344	263	331
								304					
								LIARD 63 | 64					

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID
GROUND MAGNETOMETER SURVEY
GAMMA VALUES

Scale : 1" = 400'
Instrument : Jalander
Operator : W. Markin
Party chief : R. Harvey
Date : June, 1966
Drawn by : GL Fletcher

Claim post Liard 77 | 78 / 75 | 76

#6635



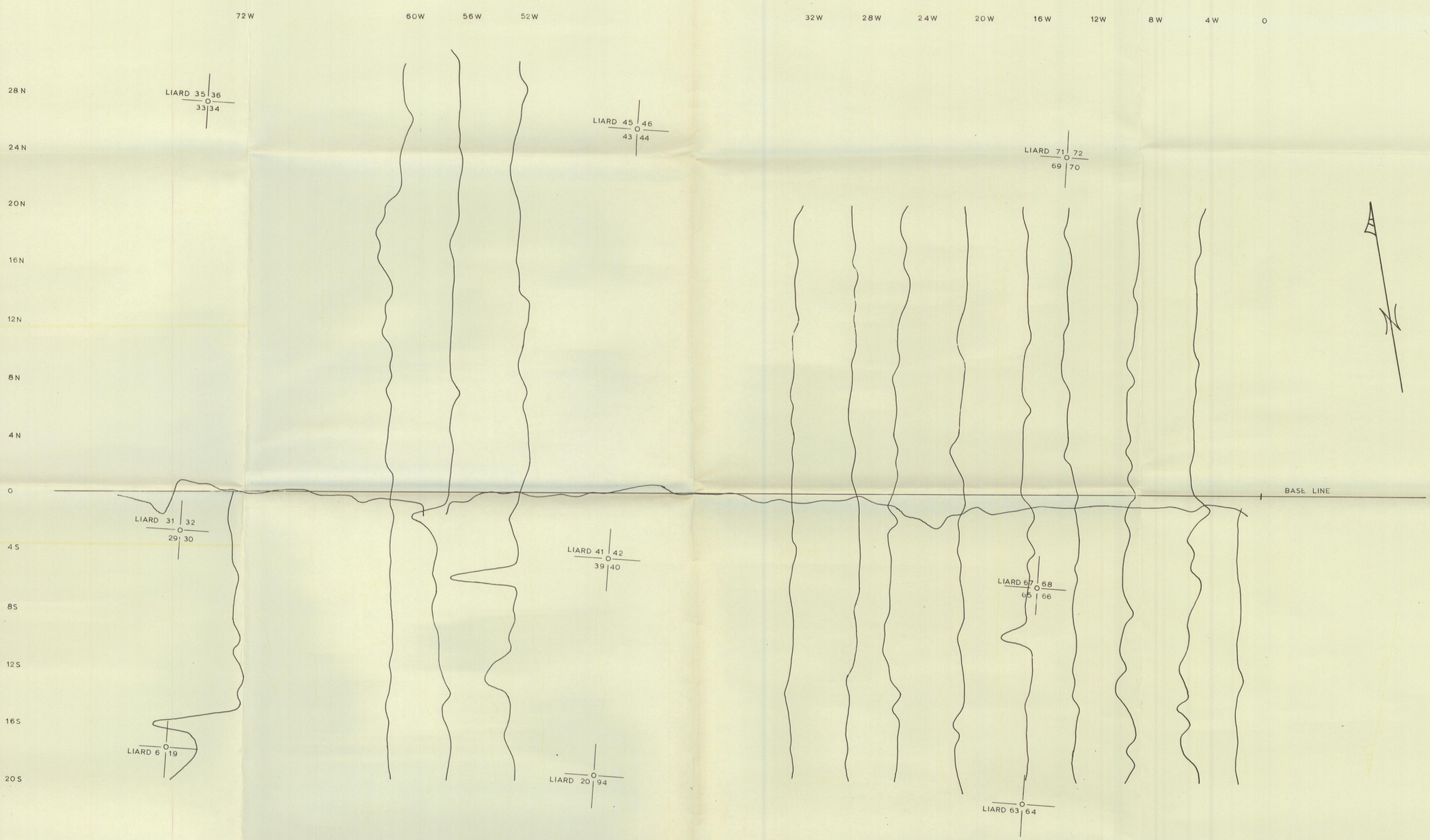
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID

GROUND MAGNETOMETER SURVEY
GAMMA VALUES - CONTOURS

Scale : 1" = 400'
Contour interval : 50 gammas
Instrument : Jalander
Operator : W. Markin
Party chief : R. Harvey
Date : June, 1966
Drawn by: Al Hoffman

Claim post LIARD 41 42 / 39 40



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID
GROUND MAGNETOMETER SURVEY
GAMMA VALUES-PROFILES

Scale: 1" = 400' Profile interval: 1/10" = 258

Instrument: Jalander

Operator: W. Markin

Party chief: R. Harvey

Date: June, 1966

Drawn by: [illegible]

CLAIM POST LIARD 41 | 42
39 | 40

This report has been examined by the Geological Evaluation Unit.
Approved as to technical worth by:
RESIDENT GEOLOGIST
Approved as to cost in the amount of: $ 8714.00
for MINING ENGINEER
Accepted as representation work under Section 53(4) Yukon Quartz Mining Act.
COMMISSIONER OF YUKON

GEOCHEMICAL SOIL SAMPLING SURVEY

LIARD MINERAL CLAIMS

OLD GOLD AREA
Watson Lake Mining Division
Yukon Territory

Long. 130° 40' West
Lat. 59° 50' North

by

John S. Brock
Atlas Explorations Limited

May 25 - July 12, 1966

GEOLOGICAL SURVEY
APR 1967
Resident Geologist,
Whitehorse, Y. T.

GEOCHEMICAL SOIL SAMPLING SURVEY
LIARD MINERAL CLAIM GROUP

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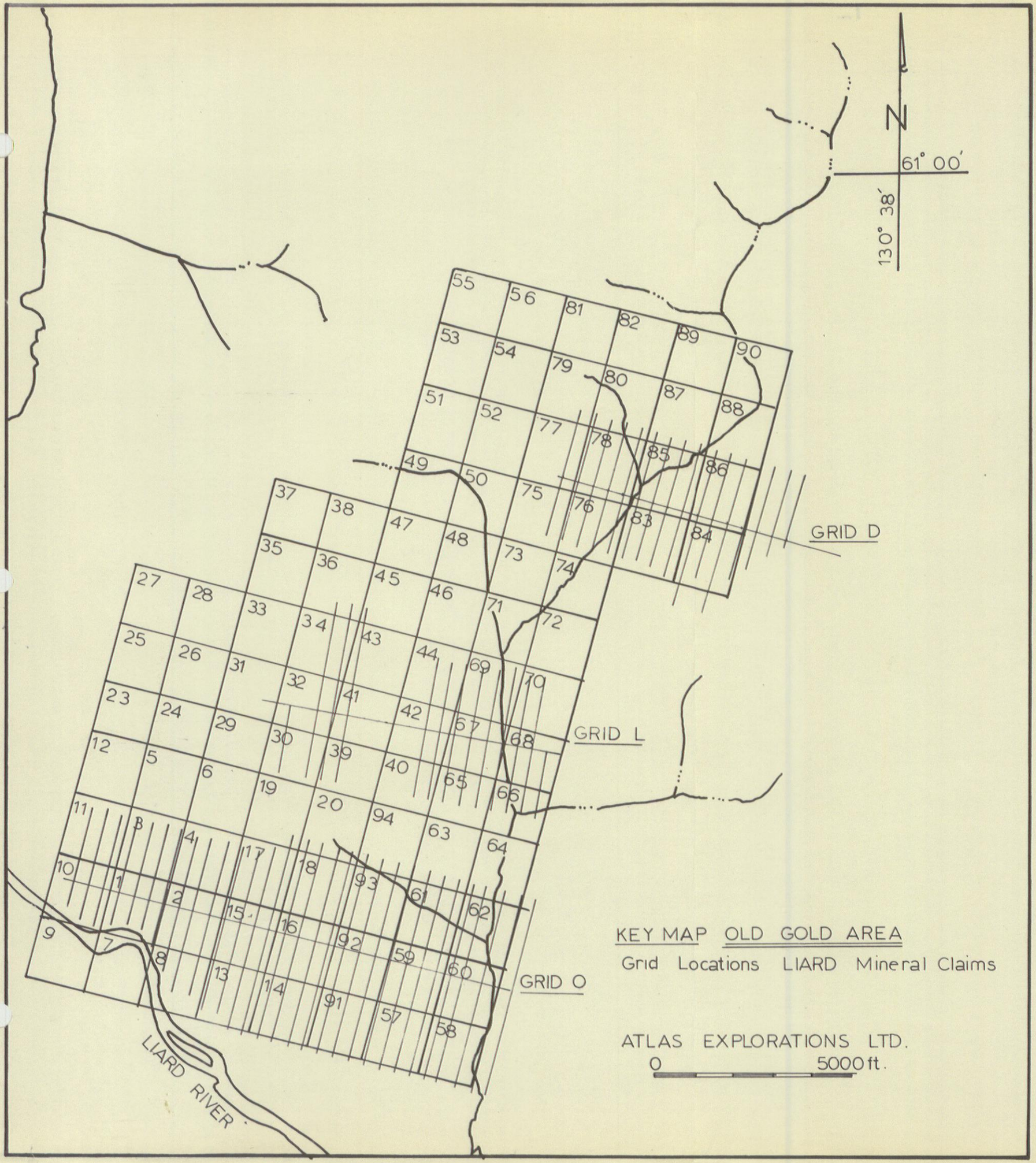
KEY MAP


N
61° 00'
130° 38'
GRID D
GRID L
GRID O
LIARD RIVER
KEY MAP OLD GOLD AREA
Grid Locations LIARD Mineral Claims
ATLAS EXPLORATIONS LTD.
0 5000 ft.

LIST OF CLAIMS

Claim No.	Grant Nos.	Date
Liard 1 - 4	89244 - 89247	Assessment work filed to August 9, 1966
Liard 5 - 20	89908 - 89923	Recorded January 31, 1966
Liard 23 - 94	Y7265 - Y7336	Recorded April 27, 1966

TELEPHONE 685-4331

ATLAS EXPLORATIONS LIMITED
(N. P. L.)
330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

INTRODUCTION

Under an agreement with G.E. "Bud" Stephens, prospector, and Atlas Copper Ltd., the Liard Claims 1 to 4 were acquired for the purposes of carrying out further exploration in order to determine the extent of known copper mineralization in the area. It was understood that Liard Claims 5 to 20 would be staked by Stephens in order that further protection of ground around the original Liard claims may be had. During March of 1966, Atlas Explorations flew airborne electromagnetic and magnetic surveys over the Old Gold Area which included coverage of the Liard Mineral Claim Group. Due to results obtained through this survey, additional claims were staked, bringing the total claims in number to 92.

From May 25, 1966 to July 12, 1966, a ground follow-up crew consisting of a geologist, party chief, soil sampler, geophysical operators, linecutters and cook, were moved to the Liard Claim Group to commence operations within the area. It was proposed that the crew would detail airborne geophysical anomalies and examine areas of known mineralization for possible extensions. It was hoped that the ground surveys would also assist in correlation of airborne geophysical results to target zones within the claim group.

Three grids, the 'D', 'L' and 'O' (see key map), were laid out over areas of interest. Geochemical soil sampling surveys were done on all grids in order to delineate airborne anomalies and reported float occurrences. Geochemical, geophysical and geologic survey information were correlated from these areas to aid in interpretations that would aid in leading to further mineral discoveries.

The geochemical program,in conjunction with the geophysical and geologic work, revealed no targets of immediate significance, although further work is recommended.

LOCATION AND ACCESS

The Old Gold Area is located approximately 100 miles south of Ross River on the eastern limits of the upper Liard River, five miles west of the Tintina Trench. The Liard mineral claims are located on the west limit of Rainbow Creek (map sheet 105 B15) at 61°00' North latitude and 130°38' West longitude.

Access to the property was most conveniently made by helicopter from Ross River. The camp move into the area was originally made by Beaver aircraft on floats from Ross River. The Liard River, at the junction of Rainbow Creek, is only suitable during 'high water' season for float-equipped aircraft. Aircraft may land on

Wasson Lake, some ten miles to the southeast. A trail connects Wasson Lake to the Liard property. Normal supply runs to the property were made by helicopter for supervisory and support purposes.

A total of three camps were established for work on each grid area. Each camp was set up in close proximity to the grid so that crew travel time was kept to a minimum.

Constant communication was kept with Ross River by single sideband radio; all field administration and expediting were carried out from company offices at this location.

PREVIOUS WORK

The Old Gold copper showings include some areas of mineralization that were originally explored by Newmont Mining in 1957. These did not constitute features of primary interest to Atlas Explorations. Some previous work in the form of prospecting, geochemistry and dip needle surveys was done by prospector Bud Stephens during 1965.

GEOLOGY

Introduction

The Old Gold Area is located in the southeastern corner of the Yukon Territory. The mapped area lies to the north of the Liard River between Old Gold and Rainbow

creeks. The southern portion of the area is heavily forested and has a gentle topography which affords few rock exposures. The Old Gold and Rainbow creeks are deeply entrenched in the southern portion of the area, however, and do provide very good exposures along their courses and those of their tributaries. To the north the topography is one of extremely steep relief, much of which is above timberline. The rock exposure in the northern portion of the area is consequently far better than in the southern portion.

Rock Units

The rocks of the Old Gold Area are predominantly gray thin-bedded phyllites which are locally graphitic. These rocks form a thick section which underlies most of the mapped area. These phyllites are interbedded with greywakes, argillites, slates, and very rarely with argillaceous limestones. To the north of these rocks is a thinner section of interbedded rhyolite and argillaceous tuff. These extrusive rocks are in contact with granodiorite to the north. The granodiorite is part of a major batholith which forms the core of the very rugged mountains in the northern portion of the Old Gold Area.

Structural Geology

The rocks of the Old Gold Area strike to the

northwest and are predominantly south dipping. Regional folding has produced some local north dipping strata. Faulting in the area would seem to be considerably less than indicated by the air photo interpretation done previously. According to air photo geologic interpretation, nearly every stream was mapped as a fault. Evidence for this correlation is lacking and, in fact, much of the structural control on the course of streams in the area is due to the strike of the bedding.

Economic Geology

Because the predominant structural dip is away from the plutonic intrusion to the north and because very little faulting is indicated in the area, the Old Gold property would appear to be unfavourable for extensive mineralization. The rock types encountered are not those typically thought of as favourable to economic mineralization. The steeply dipping, nearly homoclinal, strata of the area offers little in the way of ore traps.

On grid 'D', an area of several hundred square feet has been intruded by quartz and calcite veins. The quartz appears to be predominantly barren, but it does contain scattered chalcopyrite. An EM anomaly located on lines 56 West and 60 West of grid 'D' is apparently associated with this quartz and calcite. Within the quartz,

blocks of float containing high grade chalcopyrite mineralization were found which seemed to indicate a vein two or three in width. It would seem that the mineralization indicated here is quite limited. A second smaller anomaly was located to the north on line 56 West. Some very sparse mineralization was found here also. A small showing of chalcopyrite mineralization is located on the north bank of the Liard River in the southern portion of the area. It would also appear to be of very limited extent.

Conclusion

It is believed that any mineralization in the Old Gold Area would be limited to narrow veins and fracture fillings, as indicated by the known showings in the area. The geology of the area would seem to make it very improbable that a major replacement ore body would be found.

Most of the EM anomalies within the area appear to be due to graphitic phyllites. The magnetic anomalies are apparently due to pyrrhotite which is found in many of the argillaceous rocks.

TOPOGRAPHY AND GROUND CONDITIONS

The Liard Mineral Claims lie on the eastern slopes running into the Liard River. Elevations are from 3,000 feet at the Liard River to approximately 4,500 feet above sea level at the eastern extremity of the claim group. The

southwestern portion of the claim group is of gentle relief as reflected from the Liard River Valley. Local accumulations of glacial deposition provide some topographic irregularities in the form of eskers and moraines. Glaciation is apparently from the northwest to southeast. There is no estimate of overburden thickness throughout the area, although it obviously varies over the claim group. Well defined drainage, such as Rainbow Creek and Old Gold Creek to the northwest, are deeply entrenched and provide good exposure of rock units throughout their length.

Other local and tributary drainage is,in most cases, not well defined and commonly consists of swampy depressions and channels formed by seasonal run-off conditions. Most drainage patterns are to the southwest or down slope.

Some development of soil horizons is apparent, even though the major part of the overburden is not remnant. The 'B' horizon is partially developed and the 'C' horizon, comprised of parental material, is usually well developed, although the source of parental material in some cases is unknown due to glaciation. A thick layer of muskeg over some areas provides generation for a well-defined 'A' horizon or organic zone which, at times, makes sampling of lower soil profiles difficult. Due to irregularities in

local topography, vegetational cover, drainage systems and some permafrost, soil types are not well defined, thus preventing proper sampling.

Vegetation consisted of heavy spruce cover over most of the survey area, with dense patches of dwarf birch predominating in more open regions. Ground in the vicinity of topographic depressions and swamp regions usually has thick muskeg cover.

SURVEY TECHNIQUES

Linecutting

The soil sampling survey was conducted over the same grids as used for the geophysical surveys, no extra linecutting was required other than that done for the magnetic and electromagnetic work[1], except for grid 'O'.

Soil Sampling

The soil sampling survey was carried out in conjunction with the electromagnetic and magnetic survey. One soil sampler was employed for the entire survey.

The samples were obtained by use of a prospector's grub hoe, which was found adequate as a tool for cutting through heavy layers of organic material overlying the soil. Samples were taken at 100 foot stations over the same grid area as geophysical data was obtained from.

Due to the inconsistency of specific soil horizons

1 See Report, "Magnetic and Electromagnetic Geophysical Surveys, Liard Mineral Claim Group".

as well as variable depths to favourable horizons, samples were taken from an average depth of approximately one and one-half feet. Soils of the upper 'B' horizon were usually encountered, except in areas of much glacial till and overburden. Soils of large organic content were not sampled; in areas of immature soils, the 'C' horizon was samples. Approximately 100 grams of soil from each sample site were placed in Kraft bags which were then periodically shipped to the soil testing laboratory at Ross River.

Method of Analysis

All samples were analysed at a complete testing laboratory at Ross River. When the samples were received, each was dried while in its Kraft bag, then screened to 80 mesh, weighed out to 0.5 grams and digested in hot aqua regia. Samples were then diluted, clarified for 20 hours and then tested for copper, lead and zinc content on an atomic absorption spectrophotometer. The 'AA' unit used was a Perkins Elmer Model 290 and accuracy of the instrument ideally is 1% of the amount of metal present. Individual cathode lamps were used for each element being tested and two determinations per minute can be made with ease.

Treatment of Data

All results of geochemical tests were returned to the field as soon as possible. Results in parts per

million (ppm) were plotted on field data sheets kept by the field soil sampler. The field data sheets were kept as a record of each sample taken, noting particulars concerning drainage, topography, physiography, soil type and depth of sample. This information was compiled for use in further detailed geochemical studies.

Separate maps were prepared[1] using a scale of 1":400', as was used for geophysical data, showing values obtained for copper, lead and zinc, profiles of values and contoured values. Contour intervals varied according to results obtained in parts per million. Maps for each element were compiled separately in order to aid in comparative study of geophysical, geologic and geochemical results.

GEOCHEMICAL OBSERVATIONS

'D' Grid

There are no major anomalous geochemical coincidences between copper, lead and zinc values obtained over the 'D' grid. As copper mineralization was being searched for, emphasis has been given to the copper content of soils sampled.

Due to varying depths of overburden and drainage, all copper values above 80 ppm were considered as above 'threshold'. One anomaly of major dimension was outlined

[1] See Appendix: Map File

between line 32W and 60W, south of the baseline (see Development map). This zone is still 'open' at its western extremity. The anomaly flanks an electromagnetic conductive zone and is partially coincident at its eastern end with a magnetic anomaly. There is also partial coincidence with a zone of lead 'highs' above 40 ppm between lines 32W and 44W, south of the baseline. The copper anomaly is probably directly associated with massive chalcopyrite float found in the area of lines 52W and 56W, at 9+00S. This float discovery is situated on the western flanks of a small hill that trends northwest-southeast through the anomalous copper area. As the copper values are also on the eastern flanks of this hill, it is assumed that the mineralization is fairly widespread.

There are other scattered copper 'highs' throughout the grid area at the following coordinates:

60W, 1N
56W-52W, 2S
44W-48W, 9N
40W,15S
24W, 8N
20W, B.L.

All are of lesser areal dimensions than thought to be significant of widely mineralized areas. One is coincident with a lead high at 20W and the baseline.

Lead anomalies at 32W to 44W at 9S and 8W to 24W at approximately 12S, are coincident with quartz vein

structures noted within the same area. As galena float of a vein-type origin was found in Rainbow Creek, it has been assumed that the lead (above 40 ppm) anomalies may be direct reflections of the float source.

Zinc (above 100 ppm) occurs in coincidence with the best defined lead anomaly (values above 40 ppm) at 20W - 28W and 12N. No explanation is offered geologically and no geophysical response was mapped over this area.

'L' Grid

A development map of 'L' grid was prepared in order to assess geophysical and geochemical results as a whole. Geophysical results have been examined and commented upon in report, "Electromagnetic and Magnetic Geophysical Surveys, Liard Mineral Claims", by J.S. Brock. No copper geochemical 'highs' of any significance or areal extent were noted.

'O' Grid

No geophysical surveys were done over the 'O' grid, other than an electromagnetic test over a known copper showing. Lead results are not conclusive; however, copper and zinc results are widespread.

Over the known showing in the vicinity of lines 80E to 92E at 13N and at line 72E and 13N, results above 80 ppm zinc were also outlined. As overburden depths appear

to vary considerably , a lower threshold for each element was chosen. There is generally good copper-zinc coincidence in this area, assuming that zinc is more easily mobilized and, therefore, more widely dispersed. From line 0 to 60E, a series of copper 'highs' strikes in a northwesterly direction. This could be a reflection of copper mineralization controlled by recognized northwest striking cross faults and/or the glaciation trend. A well-defined copper-zinc coincidence at line 108E on the baseline could possibly represent extension of known mineralization.

CONCLUSIONS AND RECOMMENDATIONS

'D' Grid

The main geochemical anomaly of interest is the extensive zone of copper 'highs' between lines 32W and 60W, south of the baseline. As further follow-up work is recommended for geophysical surveys to the west of the present grid, it is also recommended that more soil sampling be also done at this time in order to trace the western extension of the above-mentioned copper anomaly. This anomaly has been attributed to copper float found within its limits, but due to the topographic conditions and direction of glaciation, it is felt that its boundaries are in excess of those as could be due to known mineralization.

The lead anomalies should be investigated only if assays of galena float found in the area prove to be of economic value.

'L' Grid

No further geochemical work should be considered in this are, unless it is used as an integrated part of a geophysical follow-up program or on a regional coverage basis of the Old Gold Area.

'O' Grid

The geochemical copper and zinc values appear to represent the known mineralization well. Further work should be done to the east where there is reported to be more mineralized copper float and also to cover possible eastern extension of the anomaly already outlined.

Although some geophysical tests were conducted over the known showing, the other areas of geochemical interest should be examined with electromagnetic and magnetic surveys. This would assist in determining if faulting does control possible mineralization, as assumed by the northwesterly alignment of copper anomalies between lines 0 and 60E.

Respectfully submitted,

John S. Brock
Assistant Exploration Manager
Atlas Explorations Limited

January, 1967

WEEKLY LOGS

GEOLOGIC SURVEYS

GEOPHYSICAL SURVEYS

GEOCHEMICAL SURVEYS

LINECUTTING

PROJECT....(Laird...(Old...Gold) ATEMS EXPLORATIC LIMITED PERIOD From....May 25.....
To....May 29.....

CLAIM GROUP...Laird.....

PARTY CHIEF...Bob Harvey.....

PERSONNEL	POSITION	TIME	WAGE
Ted Skonseng	Prospector		400
Vic Wright	(EM)		375
Paul Cartwright	(EM)		375
Bill Markin	(Mag)		
Ike Johnston	} Linecutters		} +15 dollars/day
Pat Johnny			+$5/1000 lin. ft
Herman Bosh			over 3000 ft. by one crew
Jack Ladue			
Bob Harvey	Party Chief		450

Day Of Week	HELICOPTER Job	HELICOPTER Hrs.	FIXED WING Job	FIXED WING Hrs.	LINECUTTING Lines	LINECUTTING Feet	GEOCHEM. Lines	GEOCHEM. No. Samples Taken	GEOPHYSICS E.M. Lines	GEOPHYSICS E.M. Ft.	GEOPHYSICS MAG. Lines	GEOPHYSICS MAG. Ft.	GENERAL
Mon.													
Tues.													
Wed. May 25			Flying camp gear + fuel cache	5½ approx									
Thurs. 26			Flying in men + camp gear	7 approx									Setting up camp + Surveying gear down river
Fri. 27													Setting up camp.
Sat. 28					B.L. +36E	4200'							Snow in morning
Sun. May 29					BL. 42E→92E 30E LINE 36E 12+34 → 0 32E 0 → 12N	10,100							
TOTAL				12½ hrs		14,300'							

Note: Until the line-cutting crews get down to two men per crew, each line-cutter should get $20/day (from May 25 to May 31st inclusive.)

The three students (Markin, Wright, Canturight) should be payed their agreed upon wages until May 31st. After which they should receive line-cutting wages.

PROJECT....Ward...(Old...Gold) ATLAS EXPLORATION LIMITED PERIOD From....May 30.....
To.....June 5.....

CLAIM GROUP..Ward.....

PARTY CHIEF..Bob...Harvey.....

PERSONNEL	POSITION	TIME	WAGE
Ted Skonseng	Prospector		400
Vic Wright	EM		375
Paul Cartwright	EM		375
Bill Markin	Mag		
Ike Johnston	Line-cutters		~~15 dollars/day~~ + $5/1000 ft & each 3000 ft by one man
Pat Johnny			
Herman Asp			
Jack Ladue			
Bob Harvey	Party Chief		550

Day Of Week	HELICOPTER Job	HELICOPTER Hrs.	FIXED WING Job	FIXED WING Hrs.	LINECUTTING Lines	LINECUTTING Feet	GEOCHEM. Lines	GEOCHEM. No. Samples Taken	GEOPHYSICS E.M. Lines	GEOPHYSICS E.M. Ft.	GEOPHYSICS MAG. Lines	GEOPHYSICS MAG. Ft.	GENERAL
Mon. May 30					32E, 85→55 36E, 120→55 40E, 00→55 Ol. 19E→12E 12E, 120→20 40E, 00→00	10,100'							
Tues. 31						11,700'							
Wed. June 1						15,700'							
Thurs. 2						18,600							
Fri. 3						18,500							
Sat. 4	Scouting & routine camp-activ.	40 min				15,400							
Sun. June 5						14,200							
TOTAL		40 min				104,200							

also visit to camp by Gordon Davis

over for linecutting

Line cutting

May 30
Herman Asp ($20/day)
Ike Johnston ($20/day) } 4700'
Vic Wright

Pat Johnny ($20/day)
Jack Ladue ($20/day) 5400'
Paul Canturight
Bill Markin

May 31
Herman Asp
Ike Johnston } $20/day 5000'
Vic Wright

Pat Johnny } 4000'
Jack Ladue

Bill Markin } 2700'
Paul Canturight

June 1
Herman Asp
Ike Johnston } 5000'

Pat Johnny } 6500'
Jack Ladue

Bill Markin
Paul Canturight } 4200'
Vic Wright

June 2
} 8000'

} 6000'

Bill Markin
Paul Canturight } 4600'
Vic Wright

June 3
} 7500'

} 7500'

Bill Markin
Paul Canturight 3500'
(Wright is sick)

June 4
} 7500'

} 5400'

Bill Markin
Paul Canturight } 2500'
(Wright is sick)

June 5
} 4800'

} 5000'

Bill Markin
Paul Canturight } 4400'
(Wright working around camp)

32,800'

30,400

Bill Markin
Paul Canturight } 16,200

Pay Markin & Carturight line-cutting wages.

And give Wright same pay for this period.

re Cutting Wages: $5 per man per 1000' feet cut by a crew of two

PROJECT...Gil...Gold..... ATLAS EXPLORATION LIMITED PERIOD From.....June 6.....
To.....June 12.....

CLAIM GROUP...Heard.....

PARTY CHIEF...Bob...Harvey...

PERSONNEL	POSITION	TIME	WAGE
Ted Skonseng	Prospector		550
Bob Harvey	Party Chief		375
Paul Cartwright	EM op		375
Vic Wright	EM op		375
Bill Markin	Magnetometer		
Pat Johnny	Linecutters		$15 per day plus $5/1000' line cut over 3000' by crew of two men
Ike Johnston			
Herman Asp			
Jack Isadnz			
Mrs Fizya.	Cook		500 a month

Day Of Week	HELICOPTER Job	HELICOPTER Hrs.	FIXED WING Job	FIXED WING Hrs.	LINECUTTING Lines	LINECUTTING Feet	GEOCHEM. Lines	GEOCHEM. No. Samples Taken	GEOPHYSICS E.M. Lines	GEOPHYSICS E.M. Ft.	GEOPHYSICS MAG. Lines	GEOPHYSICS MAG. Ft.	GENERAL
Mon. June 6						13,400'							
Tues. 7						10,600'							
Wed. 8	Moving camp	7 hrs											Moving Camp.
Thurs. 9						8,200'							
Fri. 10						9,600'							
Sat. 11	Bringing Sigi Jorge & Family	3 hrs 9:40 am				8,200'							
Sun. June 12						4,000'		44 samples		2000'		6300'	
TOTAL		11				54,000		44		2,000		6,300	

Mon. June 6	Herman Asp, Ike Johnston } 5400' line	Jack Ladue, Pat Johnny } 4800' line	Bill Hankins, Paul Cartwright, Vic Wright } 320
Tues, June 7	} 5000' line.	} 2600' line	} 300
Wed June 8	Morning camp. Each of line-cutters get $20 day.		
Thurs June 9.	Herman Asp, Ike Johnston } 4000' line	Jack Ladue, Pat Johnny } 4200' line	Bill Hankins, Paul Cartwright, Vic Wright } Work in camp
Fri June 10	} 4000' line	} 2800'	} 2800'
Sat June 11	} 4000' line	} 3000'	} 1200'
Sun June 12	Herman Asp, Ike Johnston } 4000' line	Jack Ladue } work with Asp & Johnston	
	Bonus on 8400'	Pat Johnny sick Bonus on 3000'	

PROJECT...Oh ....GOLD..... ATEAS EXPLORATION LIMITED PERIOD From.....June.13. .....
To.....June.19.....

CLAIM GROUP...Lind..Snowy..Grid "L"

PARTY CHIEF..Bob...Harvey.....

PERSONNEL	POSITION	TIME	WAGE
Ted Stenseng	Prospector		$50.
Bob Harvey	Party Chief		375.
Paul Cartwright	E.M. op.		$100
Vic Wright	E.M. op.		
Bill Macklin	Mag op		
Pete Johnston	Linecutters		$4.5/1000' & 6
Pat Johnny Jack Ladue			by 1000 ft bonus
Herman Asp			
Mrs. C. Tiszyc	Cook		5cc.
Jay	Geologist		600.
Richie Spencer	Sml Sampler		300.

Day Of Week's	HELICOPTER Job	HELICOPTER Hrs.	FIXED WING Job	FIXED WING Hrs.	LINECUTTING Lines	LINECUTTING Feet	GEOCHEM. Lines	GEOCHEM. No. Samples Taken	GEOPHYSICS E.M. Lines	GEOPHYSICS E.M. Ft.	GEOPHYSICS MAG. Lines	GEOPHYSICS MAG. Ft.	GENERAL
Mon. June 13						6,600		45		4500		6,000	Pat Johnny sick.
Tues. 14	J.S. B checks camp	3 1/2 hrs				5,400		54		8,000		8,000	Helicopter in with J. Brack Flies out to Fyre with Pat Johnny
Wed. 15	Man injured	4 hrs.				3,000		45		4,000		4,000	Jack Ladue hurt badly flown out by chopper.
Thurs. 16						5,000		88.		6,000		8,000	
Fri. 17						5,000		48		6,000		6,000	
Sat. 18						4,000		108		10,000		12,400	
Sun. June 19						—		60		4,000		2,000	Grid "L" - linecutting & Mag finished
TOTAL		7 1/2 hrs				29,000		448		42500		56,400	

PROJECT...Ird rd..... ATEMS EXPLORATION LIMITED PERIOD From...June 2. 1966....
To...June 26. 1966....

CLAIM GROUP..Liard.....

PARTY CHIEF..Bob...Harvey....

PERSONNEL	POSITION	TIME	WAGE
Ted Skonseng	Prospector	3 Left on June 22	$400.
Vic Wright	E.M.		375.
Bill Markham	Mag.		375
Paul Cartwright	E.M.		300
Bernie Spanier	Soil Sampler		600.
Jay Stanford	Geologist		$5 per thousand
Herman Asp.	Line-cutter		
Ike Johnston	Line-cutter		550.
Bob Harvey	Party Chief		

Day Of Week	HELICOPTER Job	HELICOPTER Hrs.	FIXED WING Job	FIXED WING Hrs.	LINECUTTING Lines	LINECUTTING Feet	GEOCHEM. Lines	GEOCHEM. No. Samples Taken	GEOPHYSICS E.M. Lines	GEOPHYSICS E.M. Ft.	GEOPHYSICS MAG. Lines	GEOPHYSICS MAG. Ft.	GENERAL
Mon. 20								70	grid L 60W 56W	5000	12,100	grid O BL. 116S92E 116E, 112E 108E	
Tues. 21					grid D BL. 0→40W	4000'		grid "O" 72	grid L 52W	5,000'	grid O 108E, 112E 100E.	12,500'	
Wed. 22	Moving Camp.	5 hrs.			[illegible]	[illegible]							Moved to grid "D" + set up camp.
Thurs. 23					28W, 29W 20W	6800'							
Fri.					28W, 32W 36W, BL. 40W→60W 68W	10,000'		73					
Sat.					~~56W~~ 56W, 52W	~~9500'~~ 9500'		67	28W, 29W	6000'	BL.0→ 42W	4200'	
Sun. [illegible]					52W, 48W, 44W	5000'		60	56W, 60W	4500'		9300'	
TOTAL						30,300		342		20,500		39,100'	

Atlas

PROJECT Lind

From June 27
To July 3

CLAIM GROUP Lind Grid D

PARTY CHIEF Bob Avery.

PERSONNEL Bernie Spanier — Soil Samples
Herman Arp — & Linecutters
Ike Edmiston — Mags
Bill Parkin — E.M.
Paul Cartwright — Geologist
Jay [illegible] — Cook
Mac [illegible] — Party Chief
[illegible]

360
$5/1000' cut log
crew of 2.
375
375
500
550
550

Day of Week.	HELICOPTER		FIXED WING		LINECUTTING		GEOCHEM		GEOPHYSICS				GENERAL
									E.M.		Mag		
									Lines	Ft.	Lines	Ft.	
									56 N 52 N 48 N	6,000			
					32 N 28 N 10 N	5,000	48 N 44 N 40 N	75	B.H. Line 48 N 44 N	5,000			Magnetometer broken down
						7,000	28 N 36 N 32 N	60	32 N 44 N 40 N	6,000			
						6,375	36 N 32 N 28 N 10 N	75	36 N 32 N 28 N	5,100			Line cutting on grid D Finished (essentially)
								75	28 N 10 N 12 N	5,000	36 N 32 N 28 N 24 N 20 N	14,000'	Soil sampling finished
						2000'		20	8 N 4 N 0 4 N	1,500	16 N 12 N 8 N 4,0 N	approx 1 grid	
													Drifters
		+				4,075		205		5,000		6,000	

PROJECT...Lind..... ATEAS EXPLORATION LIMITED PERIOD From...July 4.....
To.....July 10.....

CLAIM GROUP..Lind.....

PARTY CHIEF..Bob Hoover.....

PERSONNEL	POSITION	TIME	WAGE
Bessie Spence	Soil Sampler		300
Hesmon Arp	Linecutter		$5/ 10hrs
Ike Johnston	Linecutter		
Bill Nelson	Mag		375
Fred Cartwright	E.M.		375
Jay Stamford	Geologist		600
Mario Tizya	Cook		500
Bob Hoover	Party Chief		500
Vic Wright (Comes from Fyre L. on July 5)			

Day Of Week	HELICOPTER Job	HELICOPTER Hrs.	FIXED WING Job	FIXED WING Hrs.	LINECUTTING Lines	LINECUTTING Feet	GEOCHEM. Lines	GEOCHEM. No. Samples Taken	GEOPHYSICS E.M. Lines	GEOPHYSICS E.M. Ft.	GEOPHYSICS MAG. Lines	GEOPHYSICS MAG. Ft.	GENERAL
Mon. 4							T.F. 1>56.	56					Cleared out to S.E. end of Val-R 18 grid.
Tues. 5	Move camp.	6½	Gas for Copter	1									Tags in claims Lind #1>56, 70>90. Main camp moved from 'D' to 'O'. Fly camp set up on NW of Val-Rita grid.
Wed. 6							grid 'O'	262					Magnetic storm
Thurs. 7							grid 'O'	336					Magnetic Storm.
Fri. 8							grid 'O'	389					Magnetic Storm.
Sat. 9							grid 'O'	346					Magnetic Storm
Sun. July 10	Moving Fly-camp	3 hrs.						50	grid 'O'	6,000'			Fly camp moved from 'O' to 'D' camp. Ops. suspended at Stamford to R.R.
TOTAL								1459					

Liard: July 11 to July 12

{Grass Lakes Camp}: July 13 to July 17

Party Chief: Bob Harvey.

From July 11
To July 17

PERSONEL

Bernard Spanier	Soil Sampler	$300
~~Hannagy Hays~~	} Linecutters	
Ike Johnston		
Michael Shorty		
Bill Markin	Magnetometer	$400
Paul Cartwright	E.M.	$375
Mrs. Clara Tieya	Cook.	$500
Bob Harvey	Party Chief	$550
Vic Wright	E.M.	$400

Day	HELICOPOPPER Job	Hrs	FIXED WING Job	Hrs	LINECUTTING Lines	Ft.	GEOCHEM Lines	No. of Samples	GEOPHYSICS E.M. Lines	Ft.	Mag Lines	Ft.	GENERAL
Mon July 11									T.F. grid	3400'			Mag storm Liard 91⇒94, 39, 40, 1⇒12 tagged. 23⇒28, 29⇒38
12									96E 100E 104E 12E	7600'			All claims in area tagged except Liard 83⇒90 + Val-Rabaga
13	Move camp to Wasson Lk	~7	Move camp from Wasson to Grass Lks	~13									Moving to Grass Lakes.
14					120W	7500'							Start linecutting on Grid Z
15					B.L.	8500'	120W	75	120W	7500'			
16					B.L. & 112W	7500'	B.L.	80	B.L.	8000	B.L.	8000'	
Sun July 17					112W 104W	11,000'	B.L.	40	112W	4000'			Mag. Storm.
Total		7		13		34,500'		195		39,500		8,000	

PERSONNEL

B. Spanier	Soil Sampler, Vancouver, B.C.
R.W. Harvey	Party Chief, Vancouver, B.C.
J.S. Brock	Assistant Exploration Manager, Ross River, Y.T.
E. Clegg	Chief Soils Analyst, Ottawa, Ontario

All above-mentioned employees were under the employ of Atlas Explorations Limited as field exploration personnel for the year of 1966.

BIBLIOGRAPHY

1) GEOLOGIC SURVEY, THE OLD GOLD AREA AND LIARD MINERAL CLAIMS, J.W. STANIFORD — A private report to Atlas Explorations

2) MAGNETIC AND ELECTRO-MAGNETIC GEOPHYSICAL SURVEYS, LIARD MINERAL CLAIM GROUP J.S. BROCK — A private report to Atlas Explorations

3) GEOCHEMICAL SURVEYS, DUB AND ZOT GROUPS, J.S. BROCK — A private report to Atlas Explorations

SUMMARY OF COSTS

1)	Wages and Salary May 25 - July 12, 1966 48 days @ $20/day		$ 960.00
2)	Subsistence, Room and Board in the Field @ $12/man/day		576.00
3)	Overall Supervision of Sampling Survey @ pro-rated cost of $10/man/day		480.00
4)	Aircraft Support Charges, included in Report "Magnetic and Electro-magnetic Geophysical Surveys, Liard Claim Group"		--
5)	Total Cost Analysis of Samples for Trace Element Content by Atomic Absorption Photospectometer Method:		
	a) 'D' Grid	534 samples @ $2.50	1,335.00
	b) 'L' Grid	590 samples @ $2.50	1,475.00
	c) 'O' Grid	1,355 samples @ $2.50	3,388.00
6)	Preparation of Report and Presentation of Data		500.00
		TOTAL	$8,714.00

APPENDIX V

TELEPHONE 685-4331

ATLAS EXPLORATIONS LIMITED
(N. P. L.)
330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

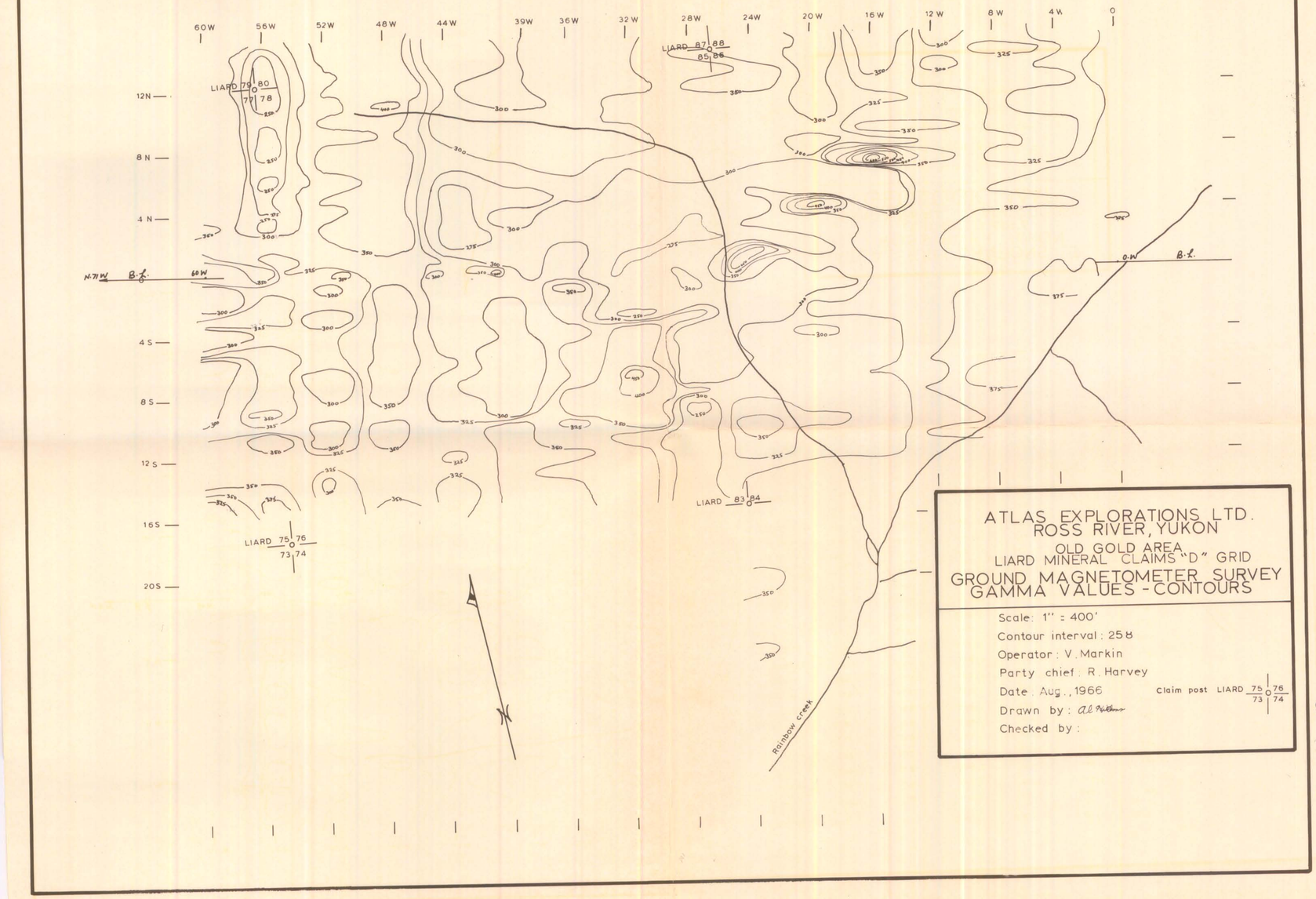
AFFIDAVIT SUPPORTING SUMMARY OF COSTS:

I, John S. Brock, Assistant Exploration Manager of Atlas Explorations Limited, of Ross River, Yukon Territory, do hereby state that to the best of my knowledge and belief the statement of costs as presented in this report, "Geochemical Soil Sampling Survey - Liard Mineral Claim Group", Appendix IV, is both correct and true.

John S. Brock

Jan 27/67
Date

A Commissioner of Oaths
in and for the Yukon
Territory



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID

GROUND MAGNETOMETER SURVEY
GAMMA VALUES - CONTOURS

Scale: 1" = 400'
Contour interval: 25ϒ
Operator: V. Markin
Party chief: R. Harvey
Date: Aug., 1966
Drawn by: A.L. Patterson
Checked by:

Claim post LIARD 75/73 O 76/74

017963

0 | 4E | 8E | 12E | 16E | 20E | 24E | 28E | 32E | 36E | 40E | 44E | 48E | 52E | 56E | 60E | 64E | 68E | 72E | 76E | 80E | 84E | 88E | 92E | 96E | 100E | 104E | 108E

LIARD 12 | 5

LIARD 6 | 3 | 4 | 9

LIARD 20 | 94

LIARD 63 | 16 | 64

LIARD 11 | 3 | 10 | 1

LIARD 4 | 2 | 17 | 2 | 16 | 15

LIARD 18 | 93 | 16 | 92

LIARD 61 | 59 | 60 | 62

LIARD 9 | 7

LIARD 8 | 28 | 13 | 11

LIARD 14 | 20 | 91 | 12

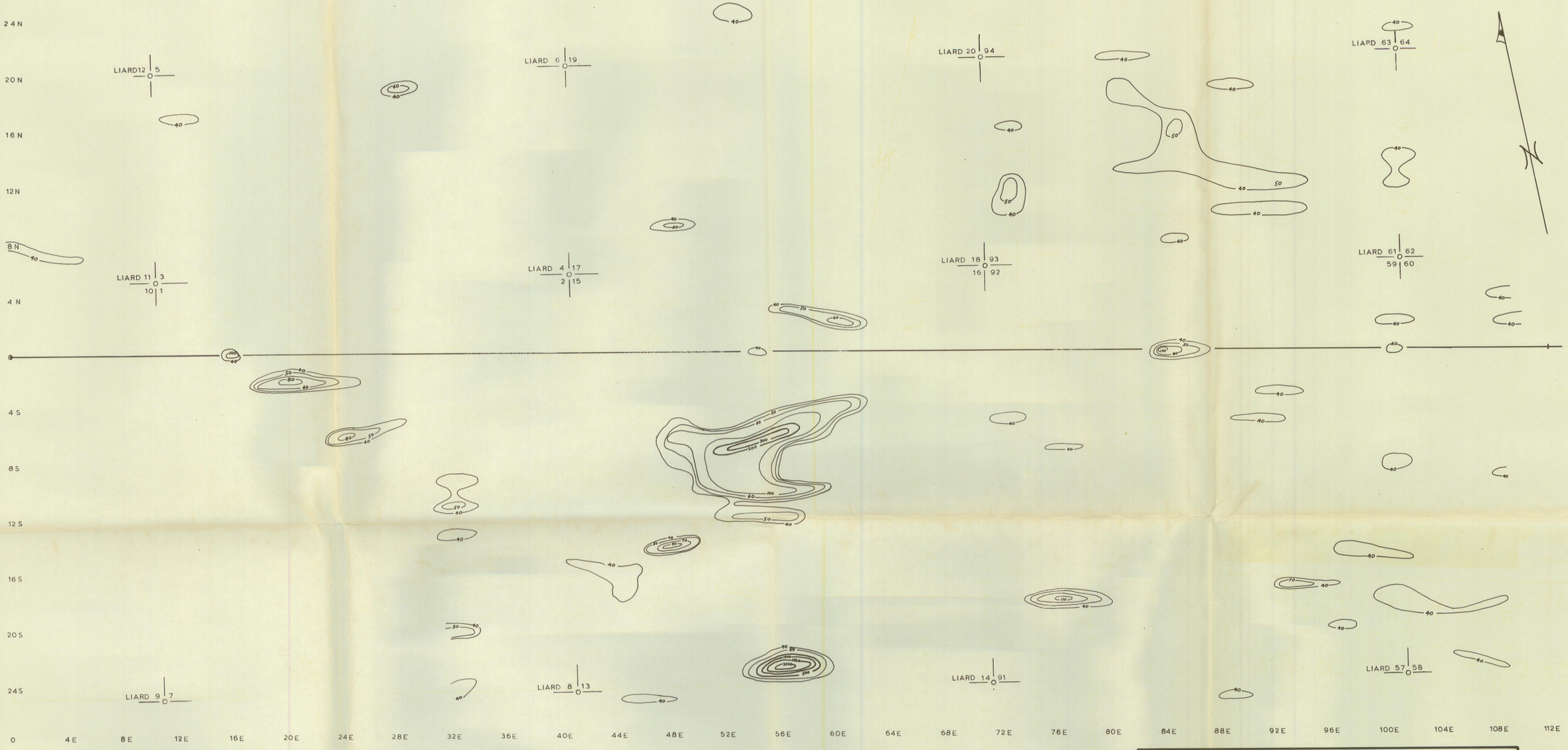
LIARD 57 | 58

24 N
20N
16N
12N
8N
4N
4S
8S
12S
16S
20S
24S

	0	4E	8E	12E	16E	20E	24E	28E	32E	36E	40E	44E	48E	52E	56E	60E	64E	68E	72E	76E	80E	84E	88E	92E	96E	100E	104E	108E	
24 N											.3	.12	.22	.40	.4	.14	.25	.40	.22	.16	.22	.30	.26	.10	.6	.10	.28	.50	
											.7	.0	.24	.46	.24	.12	.22	.36	.32	.6	.21	.	.28	.28	.6	.22	.14	.38	
											.10	.16	.12	.30	.16	.	.10	.32	.26	.8	.26	.28	.	.14	.0	.42	.14	.20	
											.4	.18	.18	.14	.10	.8	.32	.2	.24	.18	.20	.32	.40	.22	.8	.16	.18	.2	
20N	.16	.2	.8	.20	.16	.16	.4	.20	.4	.16	.28	.16	.24	.40	.26	.20	.20	.12	.12	.10	.16	.22	.20	.16	.9	.12	.10	.16	
	.92	.0	.26	.28	.4	.14	.18	.68	.7	.10	.16	.	.20	.18	.6	.6	.8	.22	.10	.12	.98	.28	.42	.24	.8	.16	.22	.16	
	.14	.4	.16	.7	.10	.24	.22	.18	.12	.34	.12	.22	.4	.30	.6	.2	.18	.15	.20	.28	.44	.26	.34	.30	.15	.18	.16	.36	
16N	.20	.6	.7	.42	.10	.0	.22	.12	.14	.20	.22	.26	.18	.8	.20	.26	.20	.36	.16	.26	.6	.42	.24	.12	.14	.34	.10	.16	
	.16	.14	.10	.18	.4	.6	.20	.36	.18	.4	.15	.30	.16	.2	.22	.20	.2	.8	.44	.12	.20	.52	.36	.40	.12	.26	.20	.42	
	.32	.12	.9	.16	.14	.20	.14	.16	.10	.12	.22	.20	.2	.0	.8	.30	.16	.23	.38	.16	.34	.44	.28	.22	.6	.22	.22	.16	
12N	.56	.20	.20	.15	.14	.18	.13	.18	.8	.4	.18	.24	.5	.1	.20	.22	.34	.31	.38	.8	.18	.50	.14	.14	.4	.42	.14	.2	
	.68	.8	.16	.18	.16	.16	.20	.20	.20	.5	.14	.22	.6	.4	.18	.12	.16	.20	.30	.6	.44	.46	.42	.30	.15	.40	.22	.10	
	.28	.10	.2	.28	.4	.16	.12	.10	.8	.7	.20	.16	.14	.22	.2	.16	.6	.14	.54	.0	.10	.12	.40	.58	.14	.50	.12	.14	
8N	.14	.8	.3	.7	.18	.20	.15	.24	.10	.16	.14	.14	.16	.13	.5	.14	.16	.32	.52	.	.20	.22	.28	.34	.16	.18	.24	.30	
	.32	.18	.20	.14	.10	.18	.12	.14	.14	.20	.30	.16	.10	.	.6	.12	.18	.26	.44	.14	.36	.20	.42	.46	.18	.17	.12	.36	
	.18	.10	.2	.10	.18	.16	.8	.18	.16	.10	.12	.8	.60	.10	.12	.14	.12	.12	.30	.10	.36	.20	.28	.4	.12	.26	.20	.20	
	.42	.16	.20	.8	.38	.23	.10	.32	.16	.18	.10	.28	.10	.22	.10	.2	.0	.14	.14	.10	.30	.92	.26	.30	.16	.24	.18	.19	
4N	.	.04	.14	.8	.6	.18	.15	.20	.34	.16	.20	.20	.10	.30	.12	.6	.16	.12	.7	.12	.28	.24	.20	.18	.16	.20	.20	.40	
	.	.24	.18	.15	.4	.18	.14	.10	.13	.20	.10	.16	.6	.14	.14	.16	.12	.16	.12	.7	.28	.18	.40	.26	.10	.60	.14	.	
	.	.26	.8	.7	.7	.16	.32	.14	.8	.12	.14	.10	.24	.10	.22	.28	.20	.28	.17	.8	.28	.24	.32	.32	.	.40	.30	.10	
	.	.12	.24	.24	.8	.30	.34	.4	.10	.5	.8	.20	.38	.18	.18	.18	.12	.32	.3	.6	.24	.6	.30	.10	.12	.25	.22	.44	
4S		.14	.20	.23	.24	.10	.30	.2	.24	.18	.38	.14	.10	.16	.56	.12	.28	.22	.8	.14	.	.34	.32	.30	.13	.32	.	.38	
	.4	.1	.30	.0	.14	.23	.8	.26	.4	.2	.19	.16	.14	.24	.26	.70	.18	.20	.14	.8	.	.34	.34	.6	.14	.48	.12	.42	
	.6	.18	.18	.28	.20	.28	.14	.2	.8	.22	.18	.30	.20	.22	.28	.38	.12	.	.9	.10	.20	.	.28	.20	.16	.32	.16	.12	
8S	.12	.6	.0	.34	.30	.40	.	.12	.84	.10	.18	.6	.26	.24	.21	.8	.8	.26	.16	.8	.3	.26	.32	.30	.30	.3	.36	.18	
	.12	.2	.16	.20	.28	.86	.44	.30	.16	.6	.13	.8	.12	.16	.27	.12	.22	.20	.12	.16	.12	.10	.28	.22	.30	.7	.8	.12	
	.6	.2	.2	.18	.20	.26	.30	.16	.	.3	.8	.34	.20	.10	.26	.28	.20	.	.8	.5	.0	.7	.28	.44	.18	.3	.12	.16	
	.10	.6	.6	.28	.32	.21	.30	.20	.16	.14	.16	.10	.30	.2	.40	.70	.18	.14	.38	.22	.4	.8	.30	.32	.23	.3	.20	.40	
12S	.7	.8	.8	.28	.34	.6	.28	.42	.18	.10	.24	.4	.42	.8	.178	.10	.12	.16	.44	.17	.6	.8	.40	.40	.20	.90	.26	.34	
	.6	.1	.16	.10	.30	.11	.86	.24	.24	.18	.24	.14	.68	.94	.350	.4	.38	.28	.38	.9	.6	.6	.34	.34	.	.54	.32	.34	
	.22	.1	.18	.4	.12	.22	.22	.28	.24	.8	.16	.14	.54	.380	.10	.26	.10	.	.14	.92	.5	.7	.16	.28	.	.25	.30	.26	
16S	.20	.	.36	.4	.4	.10	.12	.16	.30	.8	.8	.6	.46	.170	.12	.30	.20	.27	.18	.0	.6	.2	.12	.40	.18	.42	.24	.30	
		.40	.4	.10	.6	.18	.	.16	.46	.16	.6	.18	.16	.180	.20	.	.30	.34	.22	.32	.4	.14	.10	.38	.7	.40	.34	.92	
				.11	.28	.16	.	.24	.40	.8	.20	.4	.18	.116	.108	.24	.36	.17	.16	.20	.7	.2	.30	.94	.27	.16	.24	.24	
				.23	.	.	.	.20	.54	.20	.16	.16	.18	.40	.38	.9	.12	.24	.2	.18	.10	.10	.10	.24	.36	.16	.26	.28	
20S				.16	.	.	.	.	.28	.12	.30	.7	.14	.50	.54	.20	.	.30	.7	.12	.38	.6	.12	.16	.20	.12	.20	.28	
									.48	.7	.14	.22	.26	.16	.36	.10	.13	.29	.10	.6	.12	.24	.6	.16	.24	.10	.14	.28	
									.28	.12	.22	.18	.90	.26	.34	.10	.20	.39	.16	.20	.6	.16	.8	.8	.40	.22	.16	.30	
									.38	.10	.40	.26	.12	.40	.10	.16	.8	.	.28	.14	.16	.14	.8	.24	.40	.44	.36	.34	
									.14	.20	.12	.50	.12	.14	.25	.10	.18	.12	.32	.18	.10	.4	.12	.20	.36	.24	.14	.30	
24S									.21	.8	.6	.48	.22	.10	.4	.8	.10	.32	.36	.22	.20	.2	.56	.72	.40	.40	.38	.28	
									.16	.8	.14	.40	.24	.14	.10	.14	.4	.20	.8	.40	.7	.0	.4	.8	.33	.60	.36	.40	
									.16	.18	.34	.20	.38	.46	.13	.4	.10	.18	.12	.0	.32	.32	.28	.4	.15		.40	.28	
									.56	.36	.36	.6	.48	.26	.14	.16	.24	.26	.12	.2	.12	.16	.34	.4	.44		.38	.30	
									.30	.12	.14	.18	.22	.16	.30	.24	.20	.12	.16	.0	.3	.20	.22	.8	.10		.30	.26	
									.32	.6	.22	.10	.46	.16	.62	.30	.20	.8	.20	.5	.5	.4	.18	.12	.27	.32	.40	.24	
									.20	.4	.8	.2	.24	.0	.2,100	.14	.34	.20	.16	.8	.10	.18	.28	.6	.	.30	.40	
									.44	.6	.14	.6	.48	.6	.20	.12	.16	.26	.12	.14	.14	.17	.28	.12		.20	.32	
									.40	.30	.11	.6	.12	.12	.10	.0	.18	.18	.25	.20	.	.	.44	.18		.28	.30	
												.18	.10	.12	.10	.	.											
												.30	.12	.12	.8	.	.											
												.40	.16	.16	.8	.	.											
												.16	.14	.16	.18													
												.34	.16	.18	.8	.	.											

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "O" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
COPPER RESULTS BY ATOMIC ABSORPTION SPECTROPHOTOMETER ANALYSIS

Scale: 1" = 400'
Results in p.p.m.
Soil sampler: R. Spanier
Party chief: R. Harvey
Date: Aug., 1966
Drawn by: A. Hitchens



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "O" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
CONTOUR MAP, COPPER RESULTS

Scale : 1" = 400'
Contour interval : above 40 p.p.m.
Soil sampler : R. Spanier
Party chief : R. Harvey
Date : Aug., 1966
Drawn by : Al Fichter

Claim post LIARD 4 17 / 2 15

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "O" GRID

GEOCHEMICAL SOIL SAMPLING SURVEY
LEAD RESULTS BY ATOMIC ABSORPTION
SPECTROPHOTOMETER ANALYSIS

Scale : 1" = 400'

Soil sampler: R. Spanier

Party chief: R. Harvey

Date : Aug., 1966

Drawn by: Al Ritchie

Claim post LIARD 4 | 17 / 2 | 15

LIARD 12 | 5 / 10 | 1

LIARD 11 | 3 / 4 | 16

LIARD 9 | 7

LIARD 6 | 19 / 18 | 20

LIARD 4 | 20 / 17 / 22 | 15

LIARD 8 | 28 / 13 / 18

LIARD 20 | 94 / 18

LIARD 18 | 93 / 16 | 92

LIARD 14 | 91 / 28

LIARD 63 | 64 / 60

LIARD 61 | 62 / 59

LIARD 57 | 58

B.L.

24N
20N
16N
12N
8N
4N
4S
8S
12S
16S
20S
24S

0 4E 8E 12E 16E 20E 24E 28E 32E 36E 40E 44E 48E 52E 56E 60E 64E 68E 72E 76E 80E 84E 88E 92E 96E 100E 104E 108E 112E 116E

0 4E 8E 12E 16E 20E 24E 28E 32E 36E 40E 44E 48E 52E 56E 60E 64E 68E 72E 76E 80E 84E 88E 92E 96E 100E 104E 108E 112E 116E

24 N
20 N
16 N
12 N
8 N
4 N
BASE LINE
4 S
8 S
12 S
16 S
20 S
24 S

LIARD 12 | 5

LIARD 6 | 19

LIARD 20 | 94

63 | 64

LIARD 11 | 3
10 | 1

LIARD 4 | 17
2 | 15

LIARD 18 | 93
16 | 92

61 | 62
59 | 60

LIARD 9 | 7

LIARD 8 | 13

LIARD 14 | 91

LIARD 57 | 58

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "O" GRID

GEOCHEMICAL SOIL SAMPLING SURVEY
LEAD RESULTS - CONTOUR MAP

Scale : 1" = 400
Contour interval : Above 10 p.p.m.
Soil sampler : R. Spanier
Party chief : R. Harvey
Date : Aug., 1966
Drawn by : A. L. Hitchens

CLAIM POST LIARD 4 | 17
O
2 | 15

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "O" GRID

GEOCHEMICAL SOIL SAMPLING SURVEY
ZINC RESULTS BY ATOMIC ABSORPTION
SPECTROPHOTOMETER ANALYSIS

Scale: 1" = 400'
Soil sampler: R. Spanier
Party chief: R. Harvey
Date: Aug., 1966
Drawn by: al Fichtner

Claim post LIARD 4 | 17 / 2 | 15

N

LIARD 12 | 5 / 10 | 1
LIARD 11 | 3
LIARD 6 | 89
LIARD 4 | 17 / 24 | 15
LIARD 8 | 80 | 13
LIARD 9 | 7
LIARD 20 | 94 / 91
LIARD 18 | 93 / 16 | 92
LIARD 14 | 91
LIARD 63 | 64 / 25
LIARD 61 | 62 / 59 | 60
LIARD 57 | 58

0E	4E	8E	12E	16E	20E	24E	28E	32E	36E	40E	44E	48E	52E	56E	60E	64E	68E	72E	76E	80E	84E	88E	92E	96E	100E	104E	108E	
.55	.15	.34	.25	.35	.44	.19	.36	.24	.38	.26	.47	.44	.79	.29	.40	.88	.72	.19	.49	.56	.102	.47	.31	.44	.19	.47	.49	
.70	.12	.19	.53	.19	.28	.22	.43	.22	.18	.58	.2	.55	.92	.49	.43	.4300	.77	.83	.8	.67		.90	.62	.49	.76	.31	.6	24N
.13	.24	.26	.9	.22	.70	.32	.32	.34	.62	.43	.32	.20	.52	.47	.	.40	.79	.79	.24	.73	.85	.	.55	.29	.67	.49	.55	
.70	.22	.14	.50	.32	.11	.34	.20	.30	.56	.19	.58	.63	.63	.73	.11	.79	.32	.65	.29	.67	.116	.78	.65	.40	.47	.73	.6	
.69	.32	.14	.63	.28	.53	.52	.9	.49	.35	.40	.55	.59	.43	.77	.81	.72	.31	.65	.94	.92	.110	.52	.49	.35	.25	.55	.30	
.114	.36	.32	.18	.31	.52	.52	.24	.46	.53	.46	.55	.55	.62	.90	.38	.92	.126	.19	.53	.49	.112	.47	.46	.28	.28	.6	.55	20N
.65	.26	.44	.22	.18	.40	.29	.34	.35	.36	.55	.56	.26	.24	.12	.7	.9	.71	.83	.69	.88	.123	.67	.65	.62	.25	.26	.72	
.72	.19	.48	.34	.25	.35	.47	.15	.47	.26	.53	.63	.24	.31	.15	.6	.79	.49	.47	.77	.96	.73	.59	.72	.38	.58	.22	.85	
.46	.25	.17	.31	.7	.34	.29	.38	.24	.29	.59	.18	.14	.36	.62	.77	.4	.136	.34	.102	.19	.100	.62	.31	.34	.60	.29	.52	
.76	.17	.14	.17	.11	.25	.53	.46	.18	.38	.43	.8	.31	.15	.43	.47	.	.79	.43	.47	.50	.104	.62	.92	.70	.46	.35	.72	16N
.73	.13	.44	.52	.36	.35	.36	.26	.25	.36	.53	.49	.32	.	.37	.65	.52	.118	.38	.73	.85	.108	.63	.88	.59	.46	.49	.82	
.47	.17	.17	.32	.35	.20	.19	.29	.31	.31	.31	.34	.35	.19	.35	.28	.55	.108	.43	.60	.77	.110	.40	.92	.46	.96	.29	.11	
.73	.18	.35	.59	.63	.53	.32	.53	.36	.25	.34	.36	.19	.44	.35	.35	.29	.60	.69	.29	.116	.114	.146	.104	.50	.94	.56	.52	
.	.24	.55	.52	.9	.47	.35	.36	.50	.24	.48	.52	.35	.32	.15	.52	.48	.62	.90	.6	.35	.12	.126	.136	.40	.139	.52	.31	12N
.	.35	.50	.43	.9	.58	.29	.20	.32	.19	.53	.49	.32	.	.24	.38	.23	.70	.47	.	.98	.88	.104	.90	.60	.55	.36	.73	
.	.41	.63	.32	.65	.38	.31	.15	.25	.25	.34	.9	.46	.35	.20	.29	.50	.65	.32	.63	.47	.25	.126	.140	.72	.59	.47	.76	
.	.40	.59	.60	.34	.56	.59	.17	.22	.19	.19	.52	.36	.41	.41	.35	.29	.38	.44	.73	.56	.104	.76	.76	.34	.70	.32	.46	
.49	.55	.26	.46	.67	.53	.60	.12	.38	.17	.62	.25	.32	.34	.43	.17	.38	.33	.5	.52	.75	.70	.73	.108	.52	.76	.36	.72	8N
.49	.14	.60	.4	.52	.49	.25	.43	.20	.8	.43	.28	.9	.50	.55	.26	.28	.40	.12	.62	.35	.88	.53	.63	.65	.41	.87	
.	.46	.44	.54	.38	.55	.35	.31	.35	.24	.35	.32	.67	.50	.55	.49	.	.29	.35	.35	.22	.83	.102	.	.41	.35	.	
.18	.2	.11	.55	.55	.53	.67	.55	.53	.47	.28	.25	.67	.44	.40	.39	.	.36	.20	.17	.24	.20	.123	.85	.55	.85	.81	.60	
.40	.9	.45	.11	.53	.52	.67	.55	.47	.38	.14	.31	.46	.28	.38	.50	.46	.36	.13	.4	.24	.36	.100	.170	.60	.108	.35	.48	
.29	.19	.28	.62	.53	.31	.60	.26	.	.39	.17	.63	.46	.26	.38	.50	.46	.36	.17	.34	.29	.114	.76	.80	.41	.73	.26	.36	
.30	.6	.29	.70	.63	.28	.60	.55	.35	.44	.24	.49	.76	.5	.44	.60	.53	.37	.17	.43	.30	.52	.106	.104	.28	.79	.47	.73	4S
.13	.9	.52	.79	.56	.12	.62	.88	.60	.88	.25	.14	.72	.26	.52	.18	.32	.26	.60	.43	.30	.52	.88	.41	.	.81	.81	.52	
.14	.4	.44	.46	.83	.34	.81	.28	.56	.41	.40	.17	.72	.28	.38	.15	.46	.41	.18	.19	.34	.53	.85	.53	.	.70	.79	.67	
.19	.11	.42	.28	.52	.53	.60	.62	.65	.12	.43	.79	.58	.32	.88	.24	.	.	.7	.25	.29	.28	.	.79	.11	.73	.52	.70	
.52	.41	.67	.17	.17	.46	.60	.30	.70	.49	.53	.30	.63	.38	.27	.58	.43	.44	.20	.1	.18	.26	.81	.40	.4	.63	.62	.94	8S
	.41	.18	.31	.32	.43		.103	.47	.26	.38	.10	.62	.50	.35	.	.44	.52	.50	.32	.22	.28	.70	.92	.31	.34	.50	.60	
	.		.34	.85	.58		.60	.32	.18	.50	.36	.46	.40	.62	.72	.	.83	.49	.47	.18	.24	.79	.76	.40	.17	.40	.47	
	.11		.63				.46	.52	.50	.28	.49	.46	.31	.40	.19	.	.41	.6	.58	.32	.25	.85	.80	.11	.36	.34	.36	12S
	.18		.60					.56	.38	.53	.20	.65	.29	.58	.18	.	.55	.12	.32	.47	.11	.85	.92	.24	.20	.44	.40	
	.							.85	.32	.19	.29	.58	.41	.46	.24	.15	.36	.22	.56	.44	.47	.88	.36	.47	.38	.55	.55	
	.							.87	.28	.43	.50	.50	.60	.55	.25	.32	.5600	.22	.62	.43	.20	.73	.58	.18	.55	.26	.46	
	.							.79	.4	.49	.46	.55	.45	.42	.29	.18	.	.34	.5	.38	.49	.62	.52	.52	.34	.19	.41	16S
	.25							.41	.77	.56	.50	.40	.58	.62	.32	.35	.32	.41	.22	.28	.55	.70	.80	.11	.36	.34	.50	
	.40							.79	.26	.13	.46	.46	.13	.38	.40	.	.79	.69	.23	.32	.34	.92	.80	.24	.49	.49	.50	
								.70	.34	.49	.32	.62	.29	.35	.	.62	.62	.31	.19	.14	.11	.15	.38	.24	.50	.53	.52	
								.65	.49	.43	.47	.36	.60	.58	.14	.38	.40	.34	.24	.35	.38	.18	.36	.19	.	.52	.52	
								.52	.60	.47	.15	.40	.52	.47	.29	.53	.69	.15	.32	.28	.15	.88	.34	.	.	.59	.47	20S
								.	.20	.49	.26	.45	.29	.58	.41	.43	.49	.76	.40	.11	.22	.70	.28	.41	.	.40	.36	
								.100	.12	.53	.96	.49	.31	.52	.43	.29	.35	.50	.60	.22	.18	.62	.62	.29	.41	.58	.25	
								.83	.14	.53	.88	.67	.46	.47	.20	.26	.26	.34	.72	.29	.34	.100	.25	.59	.57	.53	.40	
								.90	.46	.54	.70	.46	.56	.32	.	.56	.81	.39	.9	.14	.9	.70	.62	.	.	.40	.40	24S
								.76	.38	.49	.62	.36	.24	.26	.15	.36	.31	.47	.41	.	.47	.110	.53	.	.	.32	.49	
											.96	.40	.35	.26	.17													
											.96	.55	.25	.46	.25													
											.70	.25	.46	.29	.29													
											.88	.32	.50	.47	.46													
											.70	.70	.47	.29	.29													
											.62	.60	.52	.29	.29													
0	4E	8E	12E	16E	20E	24E	28E	32E	36E	40E	44E	48E	52E	56E	60E	64E	68E	72E	76E	80E	84E	88E	92E	96E	100E	104E	108E	

0 4E 8E 12E 16E 20E 24E 28E 32E 36E 40E 44E 48E 52E 56E 60E 64E 68E 72E 76E 80E 84E 88E 92E 96E 100E 104E 108E

24 N
20 N
16 N
12 N
8 N
4 N
0
4 S
8 S
12 S
16 S
20 S
24 S

LIARD 12 | 5

LIARD 8 | 9

LIARD 20 | 94

LIARD 63 | 64

LIARD 11 | 3
10 | 4

LIARD 4 | 17
2 | 15

LIARD 18 | 93
16 | 92

LIARD 61 | 62
59 | 60

LIARD 9 | 7

LIARD 8 | 13

LIARD 14 | 91

LIARD 57 | 58

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "O" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
ZINC RESULTS - CONTOUR MAP

Scale: 1" = 400'
Contour interval: Above 40 p.p.m.
Soil sampler: R. Spanier
Party chief: R. Harvey
Date: Aug., 1966
Drawn by: Al Fletcher

CLAIM POST LIARD 4 | 17 / 2 | 15

72W 60W 56W 52W 32W 28W 24W 20W 16W 12W 8W 4W 0

28N
24N
20N
16N
12N
8N
4N
0
4S
8S
12S
16S
20S

LIARD 35 | 36 / 33 | 34

LIARD 45 | 46 / 43 | 44

LIARD 71 | 72 / 69 | 70

LIARD 31 | 32 / 29 | 30

LIARD 41 | 42 / 39 | 40

LIARD 6 | 19

LIARD 20 | 94

LIARD 67 | 68 / 65 | 66

LIARD 63 | 64

B.L. 80N 0 10 20 18 5 5 5 5 12 10 0 20 30 20 0 30 22 0 0 10 15 8 8 15 10 20 8 6 12 15 20 4 1 12 5 7 10 14 39 5 24 9 21 5 9 22 16 18 20 35 18 4 10 28 30 16 38 10 45 20 18 10 2 12 8 28 10 2 0W B.L.

	60W	56W	52W	32W	28W	24W	20W	16W	12W	8W	4W	0
28N	.0		.5									
	.2	.19	.19									
	.16	.0	.15									
	.	.12	.2									
	.15	.14	.18									
	.10	.	.20									
24N	.14	.38	.4									
	.13	.22	.0									
	.	.6	.18									
	.7	.24	.2									
20N	.	.0	.15	.6	.15	.3	.16	.15	.35	.38	.20	
	.0	.5	.0	.10	.0	.21	.21	.35	.32	.0	.25	
	.25	.	.9	.25	.8	.	.0	.47	.25	.10	.20	
	.8	.	.18	.15	.6	.	.20	.0	.25	.36	.12	
16N	.15	.0	.15	.10	.11	.9	.24	.0	.38	.5	.30	
	.22	.	.5	.6	.10	.19	.4	.6	.54	.22	.6	
	.35	.	.20	.5	.4	.23	.20	.0	.15	.20	.0	
	.5	.	.18	.10	.6	.11	.13	.7	.19	.0	.22	
12N	.22	.	.18	.6	.10	.5	.12	.38	.0	.12	.22	
	.	.	.18	.	.7	.15	.5	.13	.1	.20	.20	
	.0	.12	.16	.4	.21	.18	.24	.12	.0	.20	.20	
	.70	.5	.22	.13	.11	.13	.18	.17	.20	.5	.18	
8N	.18	.18	.21	.0	.12	.13	.24	.7	.0	.0	.20	
	.2	.15	.0	.20	.38	.13	.13	.18	.10	.25	.30	
	.15	.18	.20	.20	.6	.2	.25	.19	.30	.30	.26	
	.16	.7	.16	.34	.13	.	.23	.11	.35	.5	.25	
4N	.0	.12	.14	.16	. . . .	.35	.	.21	.32	.2	.22	
	.18	.7	.16	.47	.29	.34	.	.14	.8	.0	.20	
	.18	.10	.4	.16	.6	.19	.38	.25	.38	.8	.30	
	.6	.8	.20	.6	.15	.13	.	.28	.25	.20	.6	
0												
	.18	.25	.35	.11	.10	.12	.12	.24	.25	.9	.5	.15
	.26	.27	.12	.6	.29	.8	.22	.12	.10	.15	.0	.19
	.4	.28	.12	.10	.18	.14	.10	.10	.10	.2	.0	.14
4S	.6	.16	.14	.15	.6	.16	.3	.14	.30	.12	.2	.20	.25
	.0	.4	.25	.15	.12	.20	.16	.8	.19	.22	.3	.32	.22
	.15	.0	.8	.20	.7	.16	.11	.2	.16	.10	.0	.22	.18
	.10	.0	.22	.15	.3	.13	.4	.10	.8	.0	.25	.20
8S	.15	.16	.15	.20	.11	.18	.5	.10	.12	.6	.	.5	.12
	.0	.25	.10	.15	.10	.20	.18	.12	.5	.20	.7	.30	.5
	.16	.15	.28	.15	.0	.8	.14	.9	.2	.0	.0	.2	.0
	.8	.15	.15	.16	.11	.20	.	.8	.0	.12	.15	.2	.16
12S	.14	.0	.32	.22	.11	.5	.0	.8	.6	.8	.1	.20	.14
	.17	.2	.18	.0	.0	.	.18	.10	.10	.8	.15	.18	.16
	.30	.36	.2	.22	.13	.5	.15	.6	.10	.5	.15	.16	.26
	.30	.12	.	.32	.33	.6	.19	.10	.12	.18	.15	.8	.16
16S	.20	.15	.0	.33	.12	.0	.0	.6	.20	.10	.25	.10	.14
	.15	.35	.22	.22	.0	.20	.0	.5	.18	.20	.0	.38	.
	.20	.14	.32	.25	.11	.12	.12	.5	.10	.10	.0	.35	.14
	.20	.1	.0	.5	.22	.0	.110	.6	.4	.2	.8	.35	.
20S	.16	.15	.15	.25	.8	.23	.39	.6	.8	.20	.8	.30	.3

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
COPPER RESULTS BY ATOMIC ABSORPTION
SPECTROPHOTOMETER ANALYSIS

Scale: 1" = 400'
Soil sampler: R. Spanier
Party chief: R. Harvey
Date: June, 1966
Drawn by: A. Pritchard

CLAIM POST LIARD 41 | 42 / 39 | 40

72W 60W 56W 52W 32W 28W 24W 20W 16W 12W 8W 4W 0

28N 24N 20N 16N 12N 8N 4N 0 4S 8S 12S 16S 20S

LIARD 35 36 / 33 34

LIARD 45 46 / 43 44

LIARD 71 72 / 69 70

B.L. 80N

LIARD 31 32 / 29 30

LIARD 41 42 / 39 40

LIARD 67 68 / 65 66

LIARD 6 19

LIARD 20 94

LIARD 63 64

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID

GEOCHEMICAL SOIL SAMPLING SURVEY
COPPER RESULTS, CONTOUR MAP

Scale: 1" = 400'
Contour interval: 10 p.p.m. cu.
Soil sampler: R. Spanier
Party chief: R. Harvey
Date: June, 1966
Drawn by: A. Gilchrist

Claim post LIARD 71 72 / 69 70

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA

LIARD MINERAL CLAIMS "L" GRID

GEOCHEMICAL SOIL SAMPLING SURVEY
LEAD RESULTS BY ATOMIC ABSORPTION SPECTROPHOTOMETER ANALYSIS

Scale: 1" = 400'

Soil sampler: R. Spanier

Party chief: R. Harvey

Date: June, 1966

Drawn by: Al Gibbons

Mineral claims LIARD 41 42 39 40

LIARD 45 46 43 44

LIARD 71 72 69 70

LIARD 31 32 29 30

LIARD 41 42 39 40

LIARD 67 68 65 66

LIARD 6 19

LIARD 20 94

LIARD 63 64

B.L. 80W 10 1 3 3 4 1 1 0 0 5 0 0 12 13 12 5 2 20 20 7 0 0 5 15 6 5 10 0 0 14 0 6 6 3 0 0 0 0 0 0 6 3 0 5 1 13 0 1 0 9 9 3 3 3 1 2 5 25 5 2 0 0 0 2 4 2 0 0 4 1 0 0 0 10 3 0 0W B.L. 0

	72W	60W	56W	52W	32W	28W	24W	20W	16W	12W	8W	4W	0	
	.0	.0	.0											
	.0	.0	.8											
	.1	.	.6											
	.4	.5	.0											
	.1	.0	.0											
	.1	.1	.4											
	.5	.5	.0											
	.4	.2	.0											
	.2	.4	.2											
	.0	.4	.0											
	.0	.0	.1		.0	.4	.0	.1	.6	.6	.20	.1		20N
	.0	.5	.2		.0	.0	.0	.0	.0	.5	.14	.2		
	.0	.3	.0		.1	.	.	.1	.8	.4	.14	.0		
	.0	.1	.4		.3	.0	.	.0	.0	.0	.18	.0		
	.2	.8	.2		.2	.6	.1	.5	.1	.5	.12	.0		16N
	.0	.1	.4		.0	.4	.1	.0	.0	.10	.21	.4		
	.0	.0	.5		.2	.0	.0	.1	.2	.8	.20	.0		
	.0	.0	.2		.1	.0	.0	.	.4	.20	.0	.0		
	.1	.1	.5		.0	.3	.1	.6	.7	.8	.20	.10		12N
	.8	.15	.2		.4	.1	.0	.0	.10	.0	.10	.10		
	.0	.8	.5		.0	.9	.1	.0	.5	.6	.12	.6		
	.0	.0	.6		.0	.0	.	.0	.6	.3	.10	.5		
	.0	.1	.5		.3	.4	.0	.2	.6	.0	.2	.8		8N
	.1	.0	.0		.4	.8	.3	.0	.12	.0	.12	.0		
	.3	.5	.2		.4	.0	.0	.0	.8	.6	.8	.5		
	.0	.2	.2		.5	.5	.0	.0	.5	.10	.20	.8		
	.1	.1	.0		.1	.	.4	.0	.0	.0	.8	.5		4N
	.1	.1	.10		.3	.1	.1	.0	.4	.0	.1	.0		
	.4	.6	.2		.0	.0	.3	.1	.12	.8	.5	.6		
	.0	.3	.3		.4	.0	.0	.	.6	.0	.1	.0		
	.4		.7		.0	.0	.0	.0	.2	.3	.0	.5	.2	
	.5		.0		.0	.0	.1	.2	.2	.0	.5	.5	.0	
	.5		.8		.0	.5	.1	.5	.2	.0	.0	.0	.0	
	.6		.5		.0	.0	.0	.0	.1	.1	.0	.8	.0	4S
	.0		.5		.3	.0	.3	.0	.1	.8	.0	.8	.2	
	.4		.6		.0	.0	.4	.0	.3	.3	.0	.8	.0	
	.6		.1		.4	.0	.0	.0	.1	.4	.0	.10	.2	
	.1		.0		.0	.0	.3	.5	.1	.4	.0	.5	.0	8S
	.0		.0		.0	.2	.0	.0	.1	.0	.2	.10	.4	
	.0		.0		.0	.2	.3	.0	.0	.0	.3	.3	.1	
	.0		.0		.3	.0	.	.3	.4	.4	.8	.6	.4	
	.3		.0		.0	.	.0	.5	.3	.10	.0	.15	.3	12S
	.2		.0		.0	.0	.0	.2	.3	.4	.5	.6	.4	
	.3		.0		.4	.0	.6	.5	.2	.0	.4	.6	.2	
	.3		.12		.3	.0	.0	.3	.1	.16	.20	.0	.0	
	.0		.8		.0	.0	.0	.4	.1	.2	.0	.30	.4	16S
	.0		.5		.3	.3	.2	.1	.1	.6	.10	.15	.	
	.3		.5		.	.3	.4	.1	.1	.0	.2	.15	.5	
	.3		.0		.2	.0	.1	.0	.1	.0	.2	.15	.	
	.2		.4		.0	.1	.0	.0	.10	.3	.8	.6	.4	20S

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID

GEOCHEMICAL SOIL SAMPLING SURVEY
ZINC RESULTS BY ATOMIC ABSORPTION SPECTROPHOTOMETER ANALYSIS

Scale : 1" = 400
Soil sampler : R. Spanier
Party chief : R. Harvey
Date : June, 1966
Drawn by: [illegible]

CLAIM POST LIARD 41 / 42 / 39 / 40

LIARD 35 / 36 / 33 / 34

LIARD 45 / 46 / 43 / 44

LIARD 71 / 72 / 69 / 70

LIARD 31 / 32 / 29 / 30

LIARD 41 / 42 / 39 / 40

LIARD 67 / 68 / 65 / 66

LIARD 6 / 19

LIARD 20 / 94

LIARD 63 / 64

80 N 32 10 14 22 26 18 20 54 28 20 16 50 12 57 56 50 50 46 58 60 20 26 20 22 34 32 12 20 30 6 22 42 24 24 8 34 54 48 20 16 12 24 26 24 54 46 12 26 44 31 78 20 26 8 58 28 28 20 16 24 24 0 28 24 26 2 28 8 36 8 28 8 20 12 20 24 32 0 N A.L.

	72W	60W	56W	52W	32W	28W	24W	20W	16W	12W	8W	4W	0	
	.22	.	.12		.28	.32	.12	.20	.32	.36	.60	.68		28N
	.26	.26	.56		.12	.	.15	.5	.10	.40	.60	.64		
	.0	.20	.46		.15	.0	.	.20	.56	.40	.24	.68		
	.28	.56	.72		.22	.13	.	.24	.30	.60	.50	.64		
	.32	.42	.60		.16	.65	.20	.	.20	.24	.44	.60		16N
	.8	.	.10		.30	.40	.26	.34	.10	.32	.52	.36		
	.38	.60	.52		.12	.13	.65	.12	.40	.40	.24	.36		
	.28	.44	.60		.10	.52	.26	.13	.30	.36	.20	.40		
	.32	.28	.54		.26	.16	.12	.42	.36	.24	.36	.42		12N
	.44	.48	.10		.10	.22	.40	.20	.30	.12	.56	.50		
	.44	.44	.8		.20	.73	.78	.51	.20	.40	.66	.36		
	.52	.38	.18		.52	.	.52	.26	.4	.20	.64	.36		
	.44	.2	.22		.51	.26	.52	.42	.16	.32	.10	.44		8N
	.42	.12	.74		.50	.26	.47	.51	.80	.30	.60	.42		
	.16	.12	.24		.18	.31	.20	.50	.44	.30	.60	.36		
	.8	.14	.12		.28	.26	.65	.13	.42	.44	.60	.44		
	.26	.52	.56		.20	.	.26	.50	.40	.52	.50	.60		4N
	.44	.52	.40		.13	.13	.28	.52	.30	.32	.44	.44		
	.8	.16	.20		.16	.5	.39	.0	.70	.40	.76	.70		
	.46	.56	.34		.13	.6	.52	.	.50	.48	.16	.50		
	.50	.26	.42		.10	.6	.13	.5	.70	.22	.4	.24	.48	0
	.60	.20	.44		.8	.15	.	.3	.50	.8	.8	.40	.46	
	.8	.40	.112		.18	.44	.6	.3	.48	.10	.10	.0	.40	
	.0	.4	.28		.18	.10	.42	.5	.92	.10	.50	.36	.56	4S
	.44	.34	.10		.42	.54	.31	.3	.14	.24	.32	.44	.42	
	.20	.12	.16		.20	.38	.31	.15	.16	.24	.16	.40	.54	
	.24	.32	.12		.10	.20	.12	.0	.52	.12	.36	.36	.50	
	.8	.22	.24		.26	.13	.14	.24	.42	.40	.	.32	.42	8S
	.38	.46	.26		.22	.4	.5	.4	.20	.60	.40	.28	.44	
	.28	.20	.32		.13	.20	.10	.16	.30	.10	.30	.16	.74	
	.30	.36	.72	.48	.15	.36	.32	.12	.60	.10	.36	.40	.58	
	.38	.40	.44		.13	.24	.28	.12	.40	.20	.28	.60	.64	12S
	.60	.34	.32		.5	.46	.40	.16	.20	.20	.44	.80	.22	
	.48	.10	.48		.52	.0	.	.20	.36	.32	.56	.44	.60	
	.48	.80	.52		.36	.10	.39	.6	.32	.32	.28	.40	.62	
	.50	.46	.46		.54	.42	.40	.6	.76	.0	.32	.34	.54	16S
	.48	.56	.12		.10	.13	.12	.26	.16	.36	.40	.40	.	
	.20	.32	.32		.20	.32	.10	.2	.20	.32	.30	.50	.36	
	.34	.60	.14		.46	.52	.	.2	.20	.48	.16	.72	.	
	.44	.40	.16		.10	.20	.13	.6	.28	.44	.12	.24	.48	20S
	.22	.22	.48											
	.54	.12	.16											
	.44	.56	.58											
	.18	.42	.80											
	.20	.50	.28											
	.12	.40	.32											
	.58	.52	.46											
	.42	.46	.48											
	.14	.62	.44											
	.26	.56	.46											

72W 60W 56W 52W 32W 28W 24W 20W 16W 12W 8W 4W 0

28N 24N 20N 16N 12N 8N 4N 0 4S 8S 12S 16S 20S

LIARD 35 36 33 34

LIARD 45 46 43 44

LIARD 71 72 69 70

LIARD 31 32 29 30

LIARD 41 42 39 40

LIARD 67 68 65 66

LIARD 6 19

LIARD 20 94

LIARD 63 64

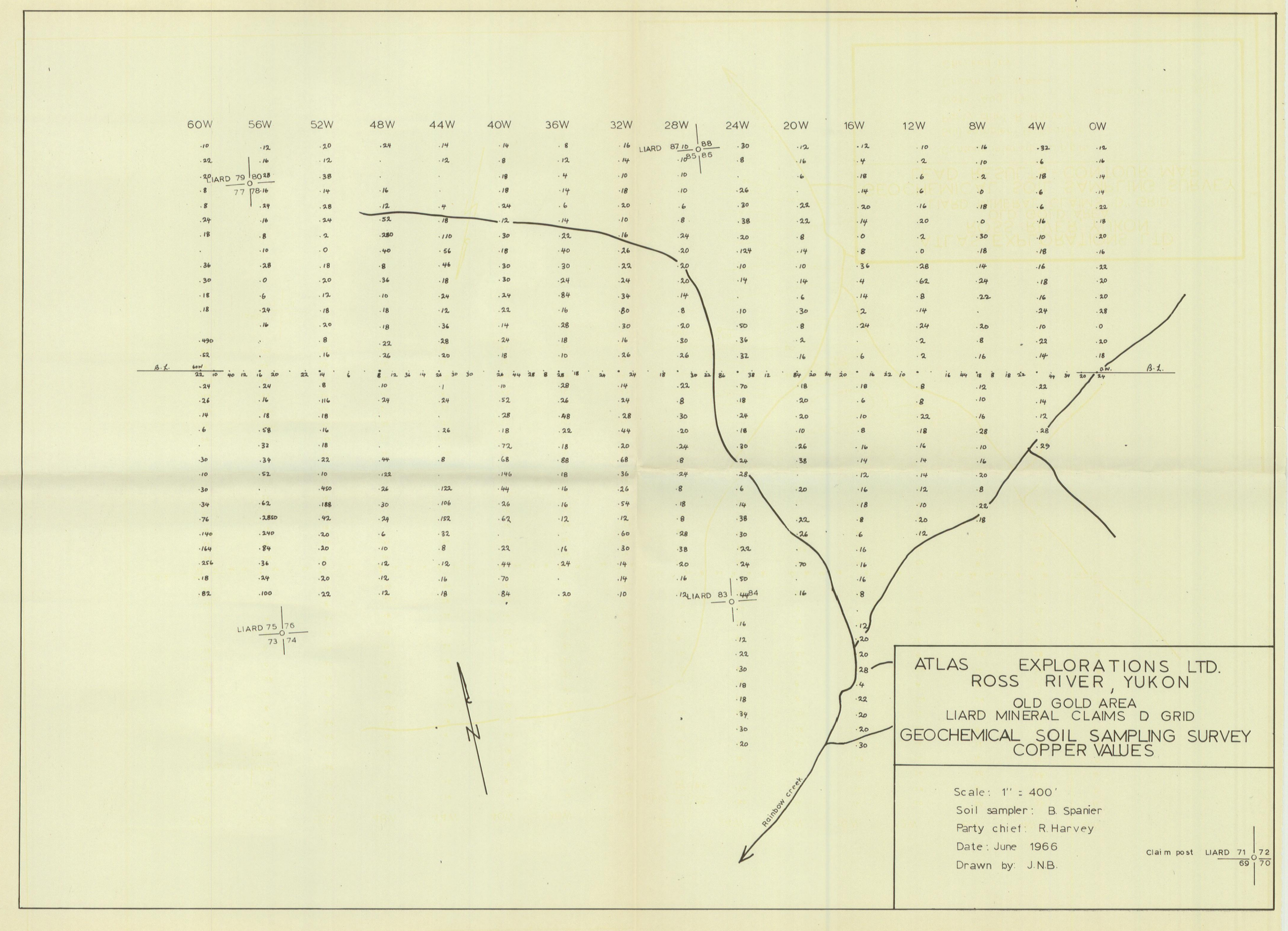
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

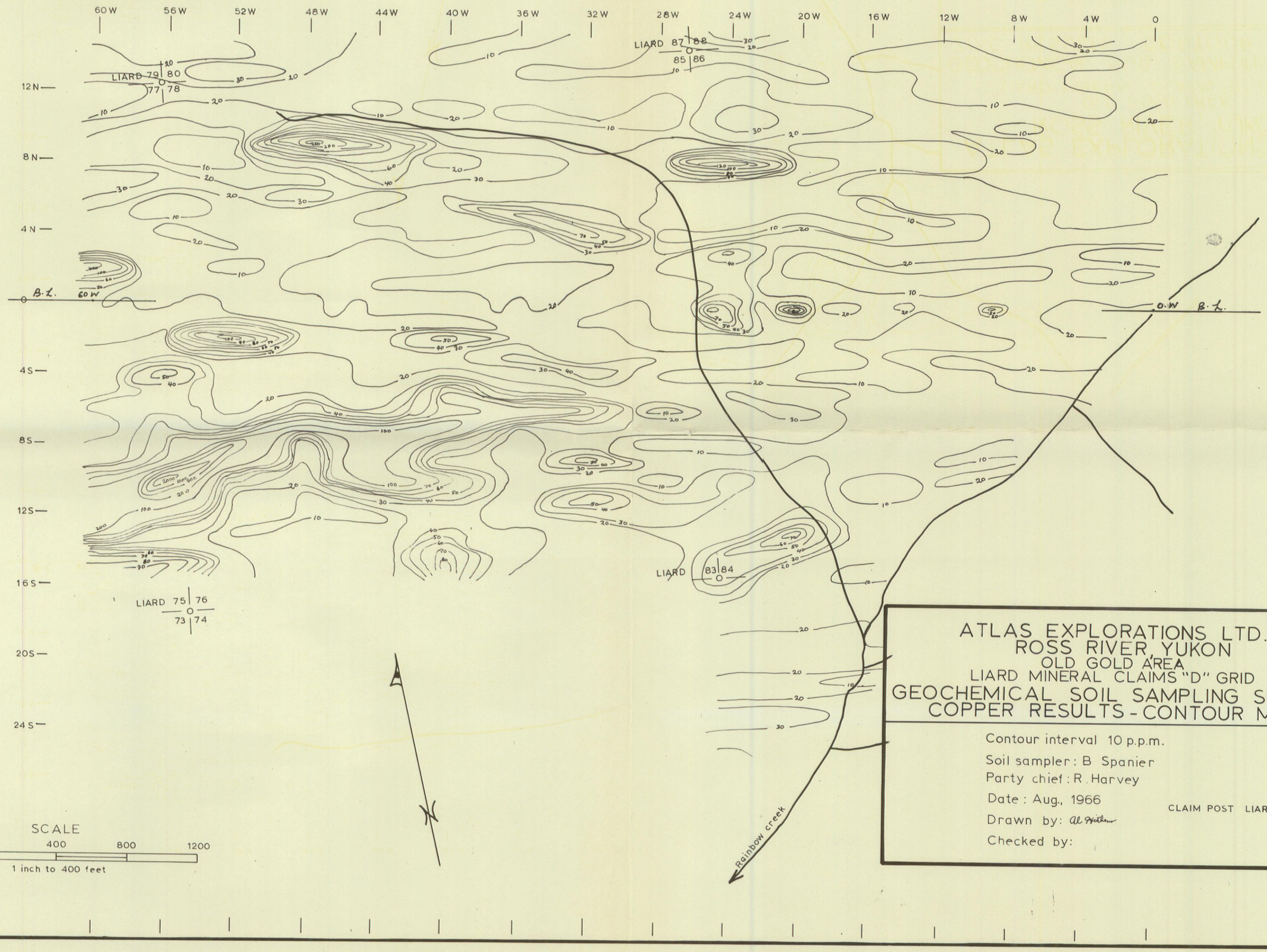
OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID

GEOCHEMICAL SOIL SAMPLING SURVEY
ZINC RESULTS, CONTOUR MAP

Scale : 1" = 400'
Contour interval : 10 p.p.m.
Soil sampler : R. Spanier
Party chief . R. Harvey
Date : June 1966
Drawn by : Al Hitchon

Claim post LIARD 41 42 39 40


60W 56W 52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0W
LIARD 79 80 77 78
LIARD 87 10 88 85 86
LIARD 75 76 73 74
LIARD 83 84
B.L. B.L.
Rainbow creek
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS D GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
COPPER VALUES
Scale: 1" = 400'
Soil sampler: B. Spanier
Party chief: R. Harvey
Date: June 1966
Drawn by: J.N.B.
Claim post LIARD 71 72 69 70



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
COPPER RESULTS - CONTOUR MAP

Contour interval 10 p.p.m.

Soil sampler: B Spanier

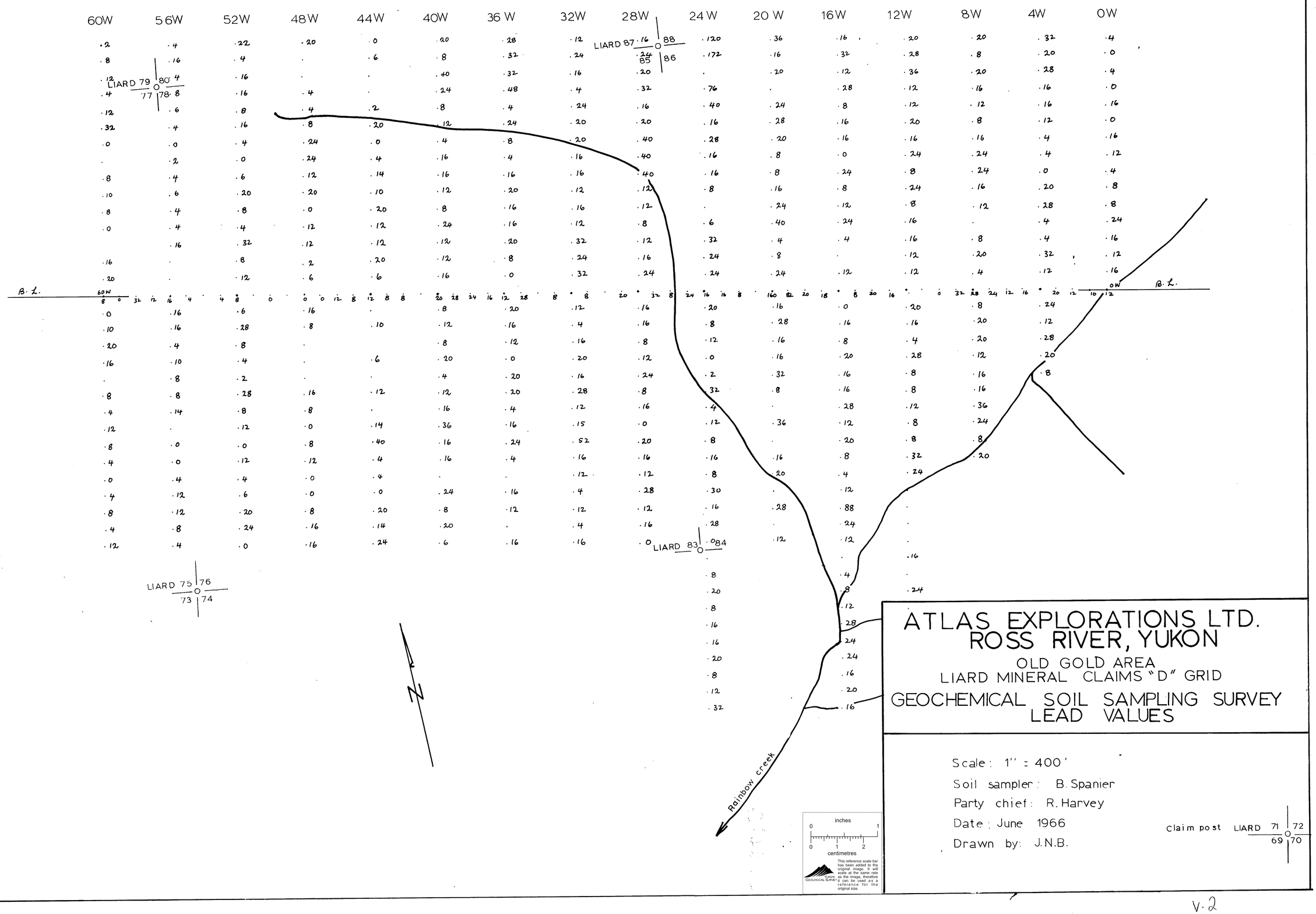
Party chief: R. Harvey

Date: Aug., 1966

Drawn by: Al Smith

Checked by:

CLAIM POST LIARD 75 | 76 / 73 | 74



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID

GEOCHEMICAL SOIL SAMPLING SURVEY
LEAD VALUES

Scale: 1" = 400'

Soil sampler: B. Spanier

Party chief: R. Harvey

Date: June 1966

Drawn by: J.N.B.

Claim post LIARD 71 72 69 70

inches 0 1
centimetres 0 1 2
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.

V-2

017963

60 W 56 W 52 W 48 W 44 W 40 W 36 W 32 W 28 W 24 W 20 W 16 W 12 W 8 W 4 W 0

12 N
8 N
4 N
0
4 S
8 S
12 S
16 S
20 S
24 S

B.L. 60 W

0 W B.L.

LIARD 79 | 80 / 77 | 78

LIARD 87 | 88 / 85 | 86

LIARD 83 | 84

LIARD 75 | 76 / 73 | 74

Rainbow creek

SCALE
400 0 400 800 1200
1 inch to 400 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
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
LEAD RESULTS - CONTOUR MAP

Contour interval 10 p.p.m.
Soil sampler: B. Spanier
Party chief: R. Harvey
Date: Aug., 1966
Drawn by:
Checked by:

CLAIM POST LIARD 75 | 76 / 73 | 74

V.2

D1795

60W 56W 52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0W

LIARD 79 | 80 / 77 | 78 | 18 | 19

LIARD 87 | 88 / 85 | 86

LIARD 75 | 76 / 73 | 74

LIARD 83 | 84

B.L. B.L.

Rainbow creek

N

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID

GEOCHEMICAL SOIL SAMPLING SURVEY
ZINC VALUES.

Scale: 1" = 400'
Soil sampler: B Spanier
Party chief: R. Harvey
Date: June 1966
Drawn by, J.N.B.

Claim post LIARD 71 | 72 / 69 | 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

V.2

017268

LIARD 79 | 80
77 | 78

LIARD 87 | 88

LIARD 75 | 76
73 | 74

LIARD 83 | 84

B.L. 60 W

0 W B.L.

Rainbow creek

N

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
ZINC RESULTS, CONTOUR MAP

Scale: 1" = 400'

Contour interval: 10 p.p.m.

Soil sampler: B Spanier

Party chief: R. Harvey

Date: June 1966

Drawn by: J.N.B.

Claim post LIARD 71 | 72
69 | 70

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

V-2.

93 E/5 E

60W 56W 52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0

16N 12N 8N 4N 4S 8S 12S 16S 20S

LIARD 79 | 80 / 77 | 78

LIARD 87 | 88 / 85 | 86

LIARD 75 | 76 / 73 | 74

LIARD 83 | 84

80° Blast Hole Silicification Sparse Cu.

Graphitic Phyllites

Silicification Sparse Cu.

CREST OF HILL

N. 72°W B.L. 60W

Qtz. vein with sparce Cu.

silicification

Barren qtz. veins.

High grade Cu. Float — Massive chalcopyrite.

Minor phyrrotite in andesite dike.

CREST OF HILL

Minor phyrrotite in andesite dike

O.W. B.L.

73° Phyllites

RAINBOW CREEK

53° Phyllites with graphitic lenses.

Carbonaceous

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOLOGIC MAP

Scale: 1" = 400'

Strike and dip 80°

Mapped by: R. Harvey

Date: June, 1966

Drawn by: al Gritsons

Checked by:

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

V·2

72 W 60W 56W 52W 32W 28W 24W 20W 16W 12W 8W 4W 0

LIARD 35 | 36 / 33 | 34

LIARD 45 | 46 / 43 | 44

LIARD 71 | 72 / 69 | 70

BASE LINE

LIARD 31 | 32 / 29 | 30

LIARD 41 | 42 / 39 | 40

LIARD 67 | 68 / 65 | 66

LIARD 6 | 19

LIARD 20 | 94

LIARD 63 | 64

16 N
12 N
8 N
4 N
0
4 S
8 S
12 S
16 S

017963

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID
DEVELOPMENT MAP

—— Magnetic Anomaly

—— E.M. Anomaly

—— Cu. above 40 p.p.m.

CLAIM POST LIARD 41 | 42 / 39 | 40

inches 0 1
centimetres 0 1 2

This reference scale bar has been added to the original plan. If reduced or enlarged in scale at the same rate as the image, therefore it can be used as a reference for the original size.

V-2

0 4E 8E 12E 16E 20E 24E 28E 32E 36E 46E 44E 48E 52E 56E 60E 64E 66E 72E 76E 80E 84E 88E 92E 96E 100E 104E 108E

LIARD 4 5

LIARD 11 3 10 1

LIARD 6 19

LIARD 4 17 2 15

LIARD 20 94

LIARD 18 93 16 92

63 LIARD 64

LIARD 61 62 59 60

B.L.

LIARD 8 13

LIARD 14 91

LIARD 57 58

017963

DEVELOPMENT MAP
OLD GOLD AREA
LIARD MINERAL CLAIMS
"O" GRID

SCALE: 400' = 1"

Cu above 40 p.p.m.:

Zn above 80 p.p.m.:

inches 0 1

centimetres 0 1 2

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

V-2

017963

60W 56W 52W 48W 44W 40W 36W 32W 28 W 24W 20W 16W 12W 8W 4W 0

LIARD 79 80 / 77 78

LIARD 87 88 / 85 86

B.L.

LIARD 75 76 / 73 74

LIARD 83 84

N

DEVELOPMENT MAP

OLD GOLD AREA

LIARD MINERAL CLAIMS

"D" GRID

SCALE 400'= 1"

MAG:

E.M. :

Pb above 40 p.p.m:

Cu above 80 p.p.m:

Zn above 100 p.p.m:

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

017963 v.2

This report has been examined by the Geological Evaluation Unit.
Approved as to technical worth by:
RESIDENT GEOLOGIST
Approved as to cost in the amount of: $ 1123.00
for RESIDENT MINING ENGINEER
Accepted as representation work under Section 53(4) Yukon Quartz Mining Act.
COMMISSIONER OF YUKON

GEOLOGIC SURVEY OF THE OLD GOLD AREA AND LIARD MINERAL CLAIMS

WATSON LAKE MINING DIVISION
Yukon Territory

Long. 130° 40' West
Lat. 59° 50' North

by

Joseph W. Staniford, Geologist
Atlas Explorations Limited

June 22 - July 10, 1966

GEOLOGICAL SURVEY
APR 17 1967
Resident Geologist
Whitehorse, Y. T.

GEOLOGIC SURVEY

THE OLD GOLD AREA

AND LIARD MINERAL CLAIMS

TABLE OF CONTENTS

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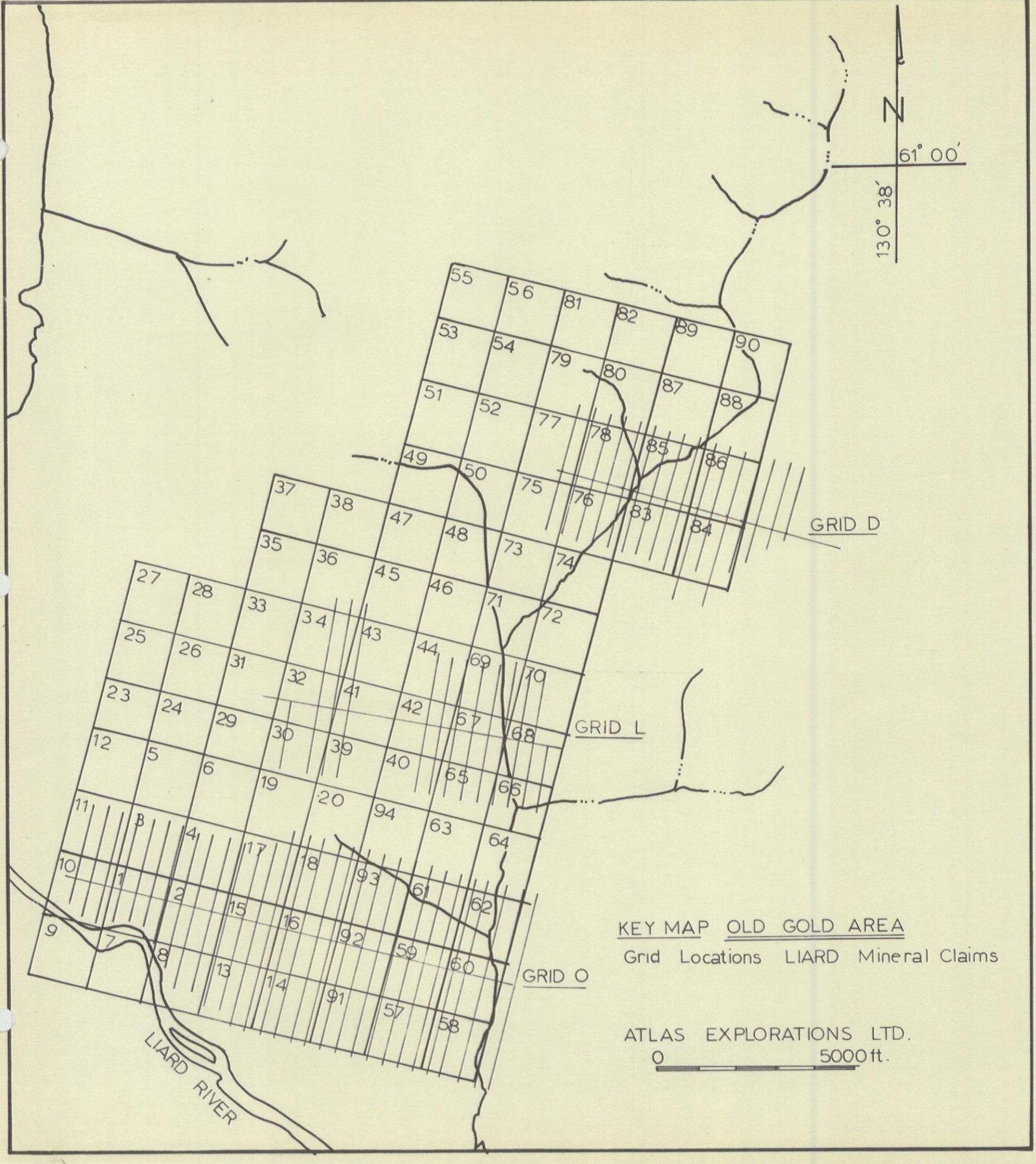
KEY MAP


N
61° 00'
130° 38'
GRID D
GRID L
GRID O
LIARD RIVER
KEY MAP OLD GOLD AREA
Grid Locations LIARD Mineral Claims
ATLAS EXPLORATIONS LTD.
0 5000 ft.

LIST OF CLAIMS

Claim No.	Grant Nos.	Date
Liard 1 - 4	89244 - 89247	Assessment work filed to August 9, 1966
Liard 5 - 20	89908 - 89923	Recorded January 31, 1966
Liard 23 - 94	Y7265 - Y7336	Recorded April 27, 1966

TELEPHONE 685-4331

ATLAS EXPLORATIONS LIMITED
(N.P.L.)
330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

INTRODUCTION

The Old Gold Area is located in the southeastern corner of the Yukon Territory. The mapped area lies to the north of the Liard River between Old Gold and Rainbow creeks. The southern portion of the area is heavily forested and has a gentle topography which affords few rock exposures. The Old Gold and Rainbow creeks are deeply entrenched in the southern portion of the area, however, and do provide very good exposures along their courses and those of their tributaries. To the north, the topography is one of extremely steep relief, much of which is above timberline. The rock exposure in the northern portion of the area is consequently far better than in the southern portion.

ROCK UNITS

The rocks of the Old Gold Area are predominantly grey thin-bedded phyllites which are locally graphitic. These rocks form a thick section which underlies most of the mapped area. These phyllites are interbedded with greywakes, argillites, slates, and very rarely with argillaceous limestones. To the north of these rocks is a

thinner section of interbedded rhyolite and argillaceous tuff. These extrusive rocks are in contact with granodiorite to the north. The granodiorite is part of a major batholith which forms the core of the very rugged mountains in the northern portion of the Old Gold Area.

STRUCTURAL GEOLOGY

The rocks of the Old Gold Area strike to the northwest and are predominantly south dipping. Regional folding has produced some local north dipping strata. Faulting in the area would seem to be considerably less than indicated by the air photo interpretation done previously. According to air photo geologic interpretation, nearly every stream was mapped as a fault. Evidence for this correlation is lacking and, in fact, much of the structural control on the course of streams in the area is due to the strike of the bedding.

ECONOMIC GEOLOGY

Because the predominant structural dip is away from the plutonic intrusion to the north and because very little faulting is indicated in the area, the Old Gold property would appear to be unfavourable for extensive mineralization. The rock types encountered are not those typically thought of as favourable to economic mineralization. The steeply dipping, nearly homoclinal, strata of

the area offers little in the way of ore traps.

On grid 'D', an area of several hundred square feet has been intruded by quartz and calcite veins. The quartz appears to be predominantly barren, but it does contain scattered chalcopyrite. An EM anomaly, located on lines 56 West and 60 West of grid 'D', is apparently associated with this quartz and calcite. Within the quartz blocks of float containing high grade chalcopyrite mineralization was found which seemed to indicate a vein two or three in width. It would seem that the mineralization indicated here is quite limited. A second smaller anomaly was located to the north on line 56 West. Some very sparse mineralization was found here also. A small showing of chalcopyrite mineralization is located on the north bank of the Liard River in the southern portion of the area. It would also appear to be of very limited extent.

The largest showing of the Old Gold Area, and by far the most interesting, is the showing drilled by Newmont Mines in 1956. This showing is located in the northern portion of the area in the rhyolitic and tuffaceous rocks. The showing is indicated for a considerable distance by surface gossans. It would seem to be quite narrow on the bases of the Newmont drilling, and it is believed that the mineralization is limited to a narrow favourable rock

unit, probably in limestone, and to a few north trending fractures.

CONCLUSION

It is believed that any mineralization in the Old Gold Area would be limited to narrow veins and fracture fillings, as indicated by the known showings in the area. The geology of the area would seem to make it very improbable that a major replacement ore body would be found.

Most of the EM anomalies within the area appear to be due to graphitic phyllites. The magnetic anomalies are apparently due to phyrrhotite which is found in many of the argillaceous rocks.

Respectfully submitted,

J W Staniford

Joseph W. Staniford
Geologist
Atlas Explorations Ltd.

GEOLOGIC SURVEY
OF
THE OLD GOLD AREA
AND LIARD MINERAL CLAIMS

SUMMARY OF COSTS

1)	Salary, 1 Geologist, 19 days @ $30/diem	$ 570.00
2)	Camp costs and subsistence @ $12/diem	228.00
3)	Compilation and presentation of report	325.00
4)	Helicopter costs - included in geophysical costs, Liard Group	
5)	Fixed wing support costs - included in geophysical costs, Liard Group	
	TOTAL	$1,123.00
	Say	$1,100.00

TELEPHONE 685-4331

ATLAS EXPLORATIONS LIMITED
(N.P.L.)
330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

AFFIDAVIT SUPPORTING SUMMARY OF COSTS:

GEOLOGIC SURVEY
THE OLD GOLD AREA
AND LIARD MINERAL CLAIMS

I, John S. Brock, Assistant Exploration Manager of Atlas Explorations Limited, of Vancouver, do hereby state that to the best of my knowledge and belief, the statement of costs as presented in Appendix I of this Report, "Geologic Survey, Old Gold Area and Liard Claims", by J.W. Staniford, is both correct and true.

John S. Brock

Jan 25/67.
Date

A Commissioner of Oaths
in and for the
Yukon Territory

PERSONNEL

GEOLOGIST

J.W. Staniford,
Whitehorse, Yukon Territory

A geologist under the employ of Atlas Explorations Limited for the 1966 field season. Staniford is a graduate geologist with a B.Sc. degree obtained in 1966 from the University of California.

APPENDIX IV

PHOTO GEOLOGIC STUDY

OLD GOLD AREA

GEOLOGY

OLD GOLD AREA

YUKON TERRITORY

ATLAS EXPLORATION LIMITED

-by-

W. WALKER, P.G.A.C.

Chow-Walker Associates
164 Nipigon Avenue,
Willowdale, Ontario.

24th. February, 1966

GEOLOGY

OLD GOLD AREA, YUKON TERRITORY

-by-

W. WALKER, F.G.A.C.

SUMMARY

The Old Gold area is crossed by the Liard River which follows the north end of the Rocky Mountain Trench. Southwest of the break is a sequence of Lower Cambrian quartzites and limestones, dipping uniformly 20 to 30 degrees S.S.W. and crossed by many minor faults. Northeast of the break is a uniform series of Middle Cambrian to Middle Silurian beds, now largely phyllites and argillites with limy interbeds. A normal pattern of wrench faulting was imposed on these beds. N.W. faults are anomalous and may indicate a change in direction of pressures.

Mineralisation is principally replacement type. The intersections of major N.W. and left hand (E.N.E.) faults appears to be the favoured structure, and investigation of these at stratigraphic traps, e.g. argillite over limestone, is recommended.

INTRODUCTION

The Old Gold area is one of several selected for exploration by Atlas. The present photogeologic study is based on published data.

The area, location and access

Two mineral deposits are known in the area, a chalcopyrite deposit at the head of Old Gold Creek, and a deposit on the north bank of the Liard, between the mouths of Old Gold and Rainbow Creeks. The Liard River divides the Simpson Range of the Folly Mountains from the north end of the Cassiar Mountains. The area straddles the 61°N line at 130° 45'W. Aerial photographs have been studied for the area between the Black River (E), hills on the west bank of the Liard (W), Watson Lake (S) and the main N.E. to S.E. bend in the Liard.

The Alaska Highway at Fine Lake airstrip is about 60 air miles to the south, the Watson Lake to Ross River road is about 50 miles to the east, and the road from Ross River to Carcross and the railway is about 75 miles to the west.

Previous work

Newmont Corporation explored the property at the head of Old Gold Creek from 1955 to 1957, but no records are available to the writer.

Work in preparation for the 4 mile series of

maps of the southern Yukon, begun by Bostock in the 1930's, was started in the Wolf Lake area by Poole in 1951 and completed by Roddick and Green in 1959 (G.S.C. Map 10-1960). The 1959 workers also helped complete work in the Finlayson Lake area to the north, started by Wheeler in 1953. The data were not available therefore for the 1957 map of the Yukon Territory (1040A), but are incorporated on the 1963 compilation of the Yukon and Northwest Territories (Map 30-1963) and Gabrielse and Wheeler's Tectonic Framework of Southern Yukon and N.W. British Columbia (Paper 60-24).

Aeromagnetic sheets 1349G to 1351G and 1360G to 1362G, at the one mile scale, and the 4 mile compilations, 7001G and 7006G, cover the area.

The history of the prospect on the north bank of the Liard is not known.

Canwest's Tintina Silver Mines Ltd. prospect is about 10 miles to the northwest (W.W. Moorhouse, Proceedings Geol. Assoc. Canada, Vol.15 part 2, May, 1964).

GENERAL GEOLOGY (after Gabrielse and Wheeler)

That part of the Cordilleran region which includes the southern Yukon Territory, may be divided into three northwesterly trending belts of relatively unmetamorphosed stratified rocks separated by two

zones of crystalline metamorphic and granitic rocks.

Lithology

The Old Gold area falls within the eastern belt of stratified rocks which embodies the Selly, Cassiar, and northern Rocky Mountains. This belt is underlain mainly by Mississippian and older rocks in regularly bedded formations traceable for many miles.

The eastern belt was mainly miogeosynclinal during the late Proterozoic and early Palaeozoic. Non-volcanic marine sediments deposited in late Proterozoic time are probably more than 7,500 feet thick and those deposited between early Cambrian and pre-late Devonian time probably total no more than 9,000 feet in thickness.

A relatively thick and widespread quartzite member was deposited as the basal member of the Cambrian succession. Perhaps the quartzite represents the basal beds of an easterly transgressing sea. A relatively thin unit of shale commonly overlies the quartzite sequence and is in turn overlain by fossiliferous limestone of early Cambrian age. The limestone was apparently deposited in shallow, well-aerated seas. Minor green volcanic breccia and tuff interbedded with Middle and Upper Cambrian phyllites indicate some volcanism at this time.

Granitic rocks probably represent intrusions accompanying successive disturbances throughout much

of late Palaeozoic and Mesozoic time.

Structure

The middle Cambrian to middle Silurian rocks are generally highly folded and commonly form the loci of major faults. Within the map area, the Liard River follows the north end of the Rocky Mountain Trench, and the south end of the Tintina Fault lies just northeast of the area.

The Palaeozoic sediments form a flanking syncline to the Cassiar batholith anticlinal area. A short distance northwest of the Old Gold area thrusting parallels the Tintina Fault. The Porcupine thrust is mapped in the Finlayson Lake area and Moorhouse has described thrusting at the Tintina Silver property. Southwest of the Porcupine thrust the structure is characterized by moderate dips and extensive low-angle thrusts, some apparently folded. Northeast of the Porcupine thrust the structures are featured by steep dips, tight upright folds, and fault slices, bounded by steep faults.

LOCAL GEOLOGY

Lithology

The oldest known relatively unmetamorphosed rocks in the Old Gold area are to the southwest of the Liard River (Rocky Mountain Trench). Thick-bedded, reddish, grey, and white-weathering quartzites (1a) contain interbeds of phyllite and slate. The sequence appears to be several thousand feet thick. The unit is acc-

ompanied by thick-bedded, light gray limestone (1c), and it is not clear whether it is above or below unit 1a.

The sediments to the northeast of the Liard are probably Middle and Upper Cambrian, thin-bedded buff and gray phyllite and limestone (Unit 2) in part hornfels, limestone and skarn. They have been intruded, at the north boundary of the Old Gold area, by one of the granitic bosses which lie on the south flank of the Tintina Trench.

This much is evident from published data: to it one may add evidence from aerial photographs.

The hills within the right-angled bend of the Liard in the N.W. corner of the area give good exposures of the lower Cambrian formations. These appear to dip more or less uniformly S.S.W. at 20 to 30 degrees, with much minor faulting: one may envisage a series of limestone-quartzite cyclothems, and anticipate that some of the lower ground is occupied by shale.

The western outcrops of the phyllites of unit 2 are on the west bank of the Liard, i.e., west of the main break, and one has the impression that they were deposited against a fault-scarp shoreline. The implication is that the Rocky Mountain Trench was already in existence in Cambrian times.

In the Liard plain, although outcrop is scarce,

the effect of bedrock control on the terrain is clearly evident in the southeast trending ridges, which follow the bedding, broken up by cross-faulting. Glacial scouring and deposition, along this readily travelled southeast valley, has obscured much detail. The few recognisable bedding surfaces dip S.E., and there is probably repetition of beds by bedding-plane faulting.

To the northeast, where the granite has hornfelsed the sediments, and the terrain is mountainous, there is no perceptable change in the structural pattern.

One may nevertheless consider that the sediments in the lower ground were principally faulted by horizontal pressures, and that the sediments in the hills, while also subjected to these movements, were also jiggled by the more or less vertical intrusion of the granitic stock: the form of the stock, both as mapped and as outlined by the aeromagnetic data, suggests forceful emplacement.

Most of the faults can be readily reconciled with a system of wrench fault tectonics acting under N.E-S.W. pressures. Bedding and strike faults trend N.W. right hand faults trend N-S (and are followed by the lower parts of Old Gold and Rainbow creeks, for example) and left hand faults trend E.N.E. (see Dome Creek). N.E. faults are presumably tensional.

A strong N.W. set of faults is anomalous to this strike and primary wrench fault pattern, and may well reflect a later changed direction of pressure. Several reaches of the Liard, Quartz Creek and depressions between Rainbow and Old Gold creeks provide examples.

ECONOMIC GEOLOGY

The main impression one gets of the geology of the area is of regularity. In such an environment one would expect that mineral deposits would be of the replacement type, where faults provide channelways and shales provide traps so that underlying limestones and sandstones can be replaced.

At the Tintina Silver deposit Moorhouse (p.74 op. cit.) noted "The silver-bearing lead zinc mineralization occurs in the limestone units as lenses, streaks and disseminations immediately below an argillite contact, in highly sheared zones in the argillaceous unit close to the thrust planes, in faults in the argillaceous limestone, and in shears in the two lower limestones".

And: "Chalcopyrite has replaced hornfels at the head of Old Gold Creek on a property explored by Newmont Corp., from 1955 to 1957 (J.O. Wheeler et al, Map 8-1960).

The Old Gold deposit appears to be associated with one of the many left hand (E.N.E.) wrenches; the deposit on the north bank of the Liard between Old Gold and Rainbow creeks is associated with a N.W.

fault and minor tension faults. These structures are far from unique, and appears that in utilising geology in the search for deposits we must next look for stratigraphic traps, either by mapping on the ground or by using geophysics to differentiate rock types.

As much of the drainage is structure-controlled, the writer would wish to utilise stream sediment sampling to direct attention to the more important areas. Testing directly for copper and zinc is recommended, bearing in mind that because of mechanical weathering, the dispersion pattern of zinc is likely to be smaller than in warmer, chemically weathered areas.

On the evidence of the Keno Hill and Anvil Mountains areas, E.N.E. faults control ore deposition. Rose Creek at the foot of the Anvil Mountains follows a N.W. parallel subsidiary of the Tintina fault, and has several deposits along it at the junction with E.N.E. faults. Several of the principal creeks of the area, Little Scurvy, Quartz, Dome, etc., have lower reaches on E.N.E. faults which intersect the N.W. Rocky Mountain trench (and its subsidiaries) followed by the Liard.

It is therefore recommended that the airborne geophysical programme about to commence be studied not only for direct guidance to sulphide deposits,

but also to map potential stratigraphic traps, e.g., shale and argillite over limestone, and the stream sediments be sampled for analysis initially for zinc and copper.

Respectfully submitted,

CHEW-WALKER ASSOCIATES,

WW:S

W. WALKER, F.G.A.C.

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD, VAL, & RABO MINERAL CLAIMS
Geologic Map

Scale: 1" = 1320' Date: June, 1966
Geology by: J. Staniford Drawn by: Jay Staniford

EXPLANATION

Qal	Quaternary alluvium
Qgl	Quaternary glacial deposits
And	Andesite containing phyrrhotite
Grd	Granodiorite
Rhy	Rhyolite and tuff
Gphy	Graphitic phyllites
Arg	Argellite
Phy	Phyllites, slates, and argellites
Qtz	Quartz vein
	Silicification and quartz intrusions
	Copper showing

Geologic Contacts

Attitudes
strike & dip of bedding
strike & dip of fractures

Faults

OLD GOLD CREEK
RAINBOW CK.
LIARD RIVER

OLD GOLD LAKE AREA

YUKON TERRITORY

LIARD MINERAL CLAIMS

SCALE

1000 0 1000 2000 3000 4000 5000

FEET FEET

1 Inch to 1320 Feet

AEROMAGNETIC MAP

T.F. GRID

GRID "L"

GRID "D"

Rainbow Creek

Creek

OLD GOLD LAKE AREA

YUKON TERRITORY

LIARD MINERAL CLAIMS

SCALE

1000 0 1000 2000 3000 4000 5000

FEET FEET

1 Inch to 1320 Feet

AERO-ELECTROMAGNETIC MAP

GRID "O"

GRID "L"

GRID "D"

T.F. GRID

Rainbow Creek

Creek

60W 56W 52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0

16N 12N 8N 4N 0.W. B.L. 4S 8S 12S 16S 20S

LIARD 79 | 80 / 77 | 78

LIARD 87 | 88 / 85 | 86

LIARD 75 | 76 / 73 | 74

LIARD 83 | 84

T60° Blast Hole Silicification Sparse Cu.

Graphitic Phyllites

Silicification Sparse Cu.

CREST OF HILL

N. 72°W B.L. 60W

Qtz. vein with sparse Cu.

Silification

Barren qtz. veins.

High grade Cu. Float — Massive chalcopyrite.

Minor phyrrotite in andesite dike.

CREST OF HILL

Minor phyrrotite in andesite dike

73° Phyllites

RAINBOW CREEK

55° Phyllites with graphitic lenses.

Carbonaceous

N

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOLOGIC MAP

Scale: 1" = 400'

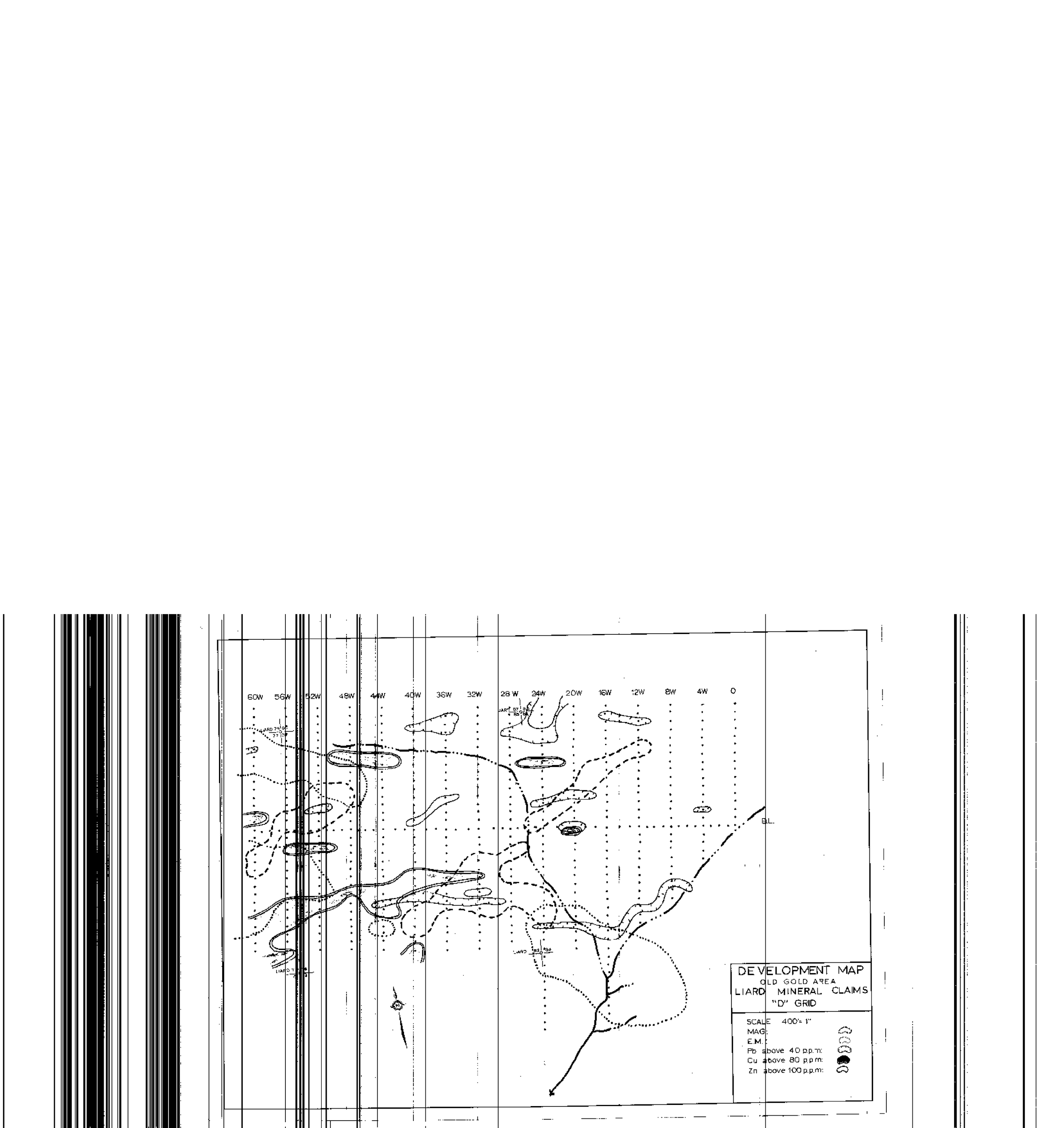
Strike and dip 80°

Mapped by: R. Harvey

Date: June, 1966

Drawn by: al Fritchman

Checked by: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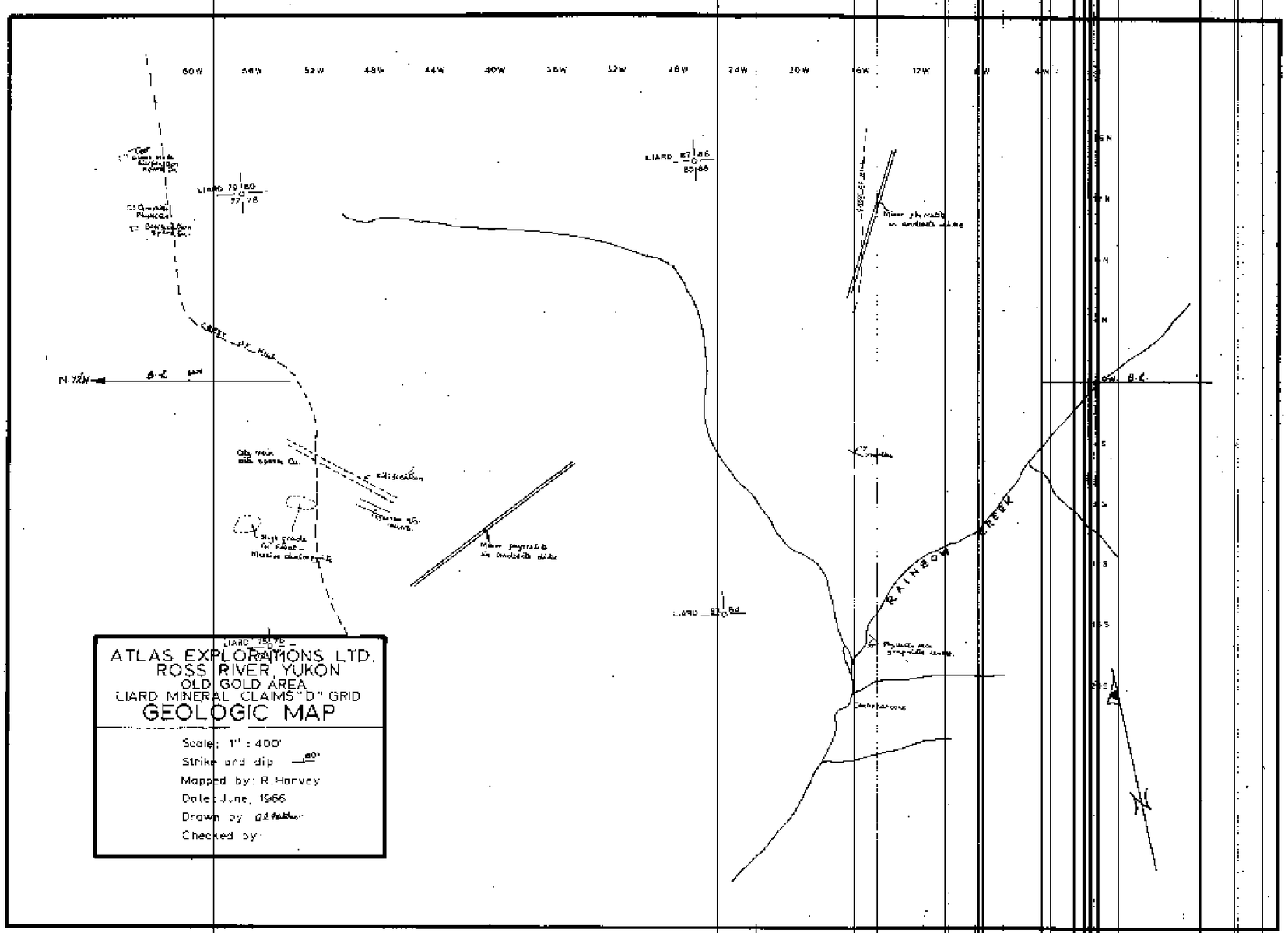
36W
32W
28 W
24W
20W
16W
12W
8W
4W
0
B.L.
DEVELOPMENT MAP
OLD GOLD AREA
LIARD MINERAL CLAIMS
"D" GRID
SCALE 400'= 1"
MAG.
E.M.
Pb above 40 p.p.m:
Cu above 80 p.p.m:
Zn above 100 p.p.m: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4W
6N
5N
4N
3N
2N
1N
0
1S
2S
N 72½W
B.L.
RAINBOW CREEK
LIARD 79 80 77 78
LIARD 87 86 85 88
LIARD 35 75
LIARD 93 94
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOLOGIC MAP
Scale: 1" = 400'
Strike and dip
Mapped by: R. Harvey
Date: June, 1966
Drawn by
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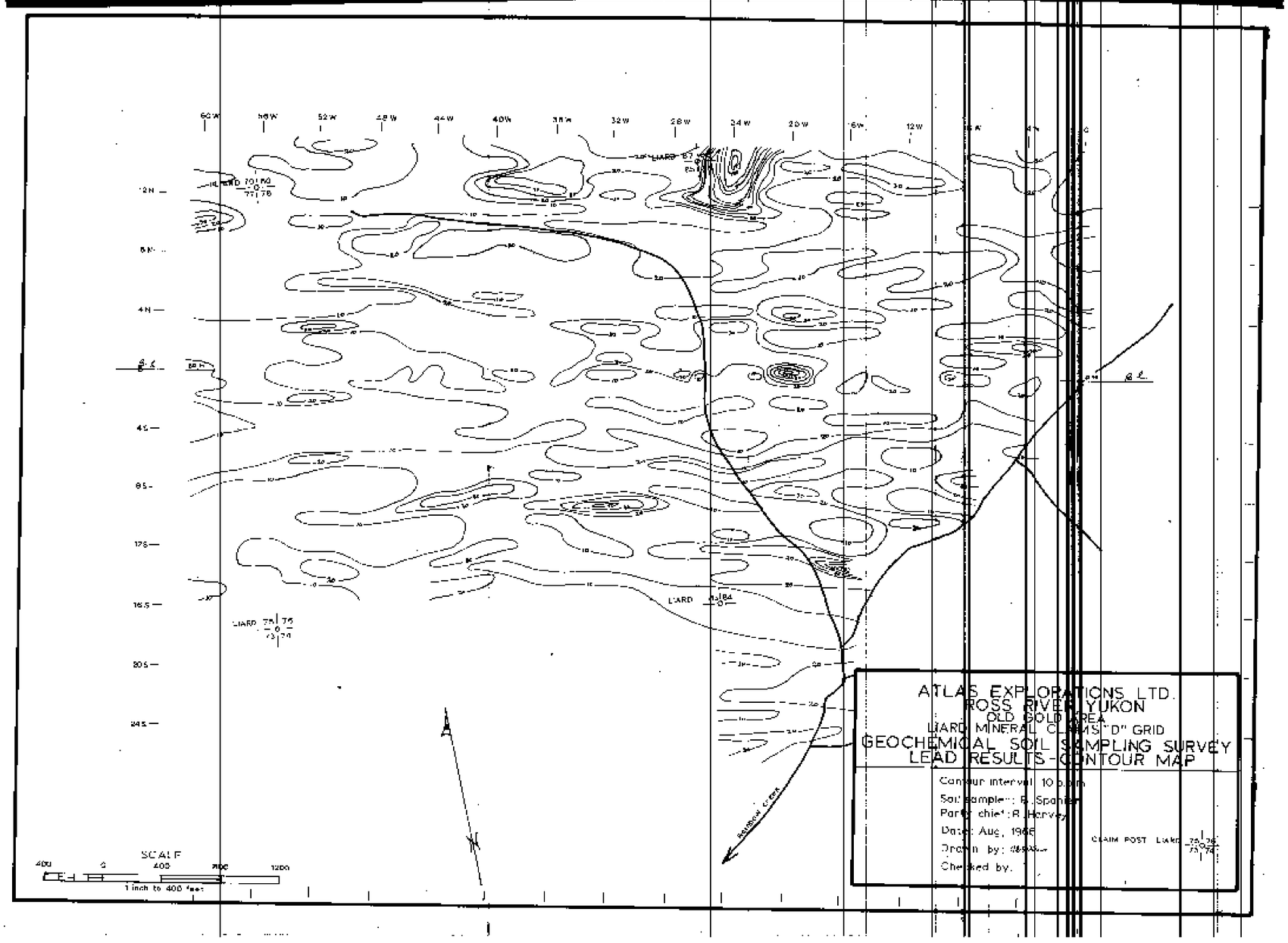
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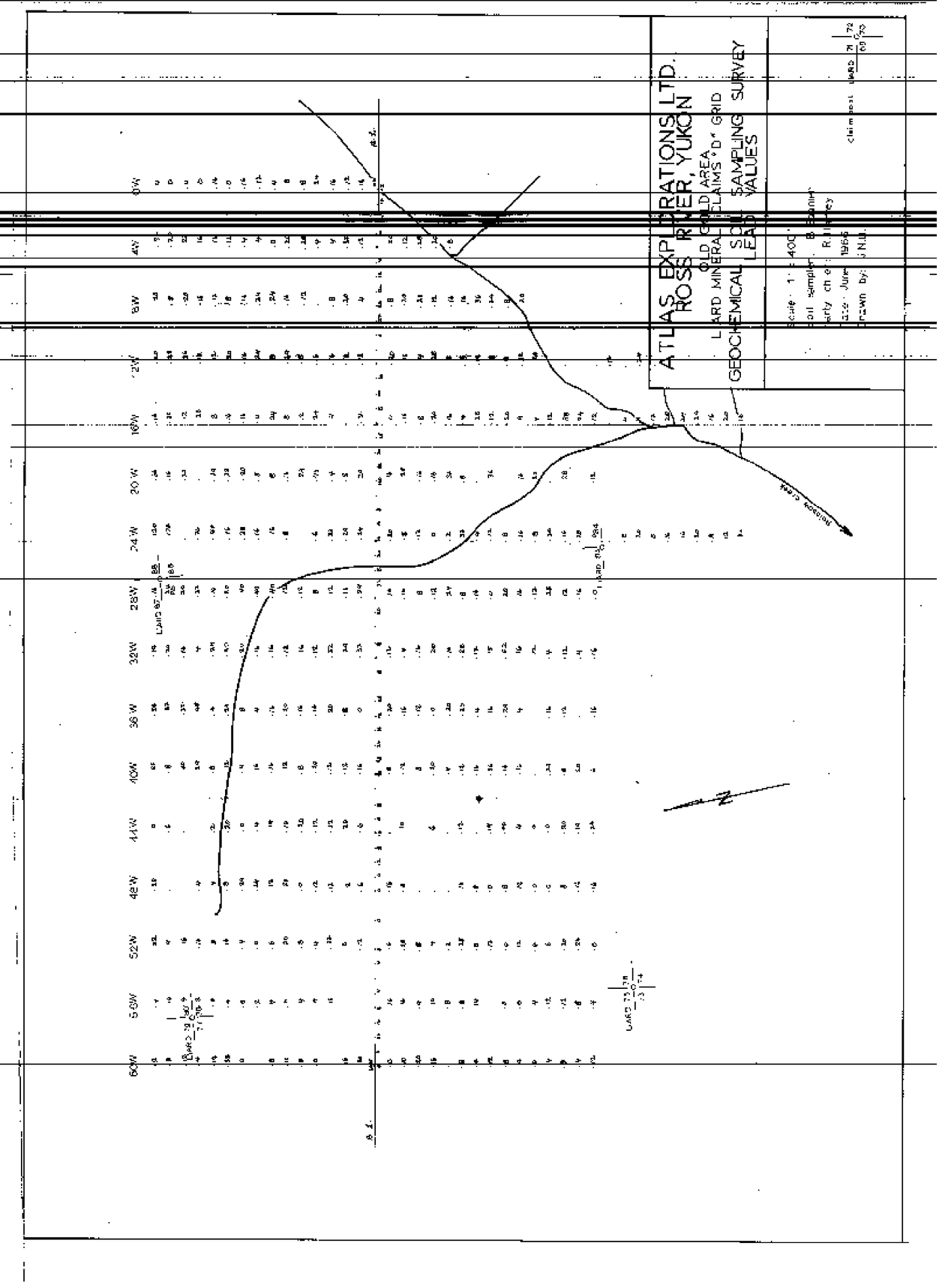
8W
4W
2N
4N
6S
8S
10S
12S
14S
16S
18S
20S
24S
LIARD
Rainbow Creek
SCALE
400 0 400 800 1200
1 inch to 400 feet
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
LEAD RESULTS - CONTOUR MAP
Contour interval 10 p.p.m.
Soil samples: R. Spaner
Party chief: R. Harvey
Date: Aug, 1966
Drawn by:
Checked by.
CLAIM POST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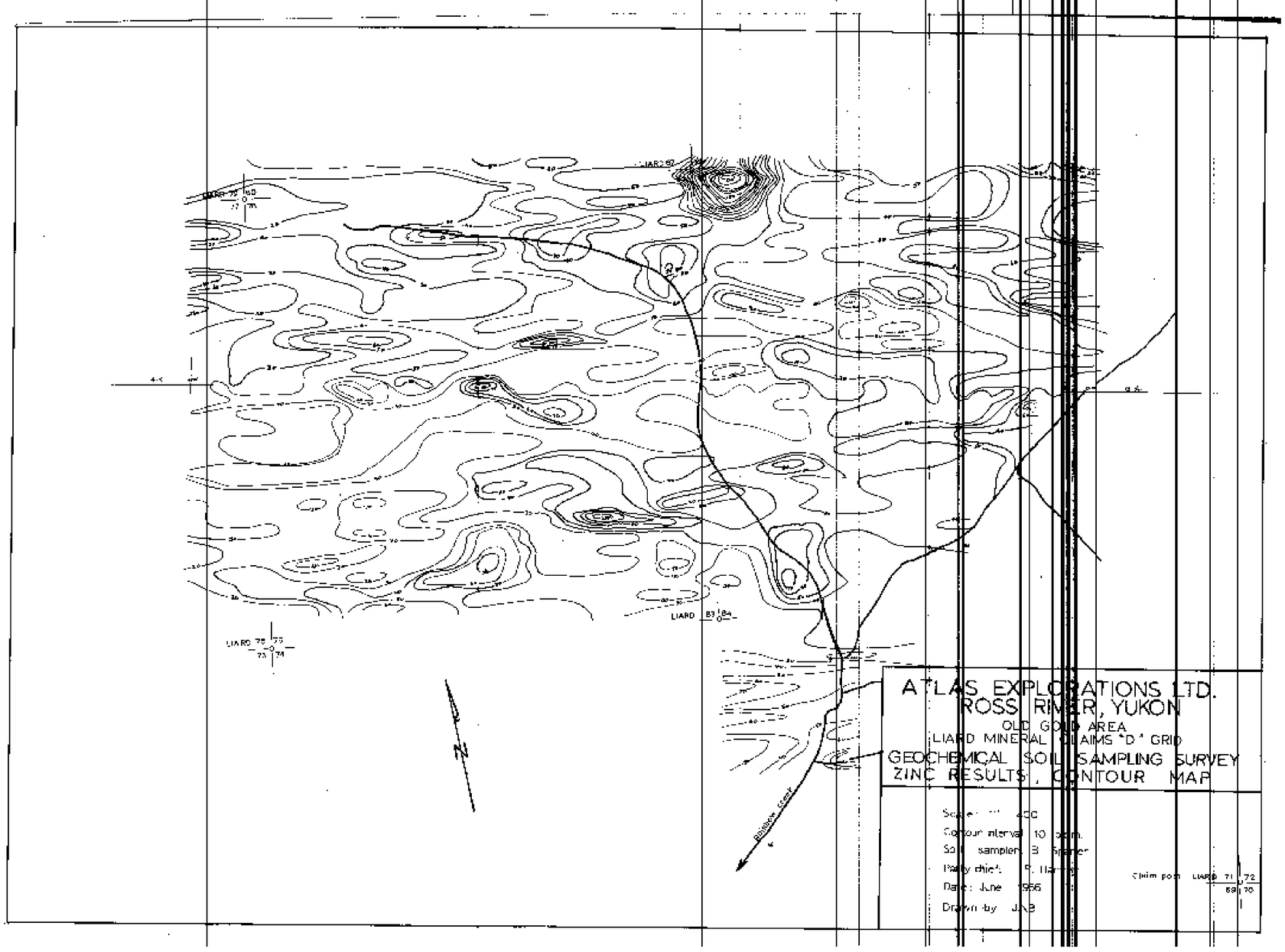
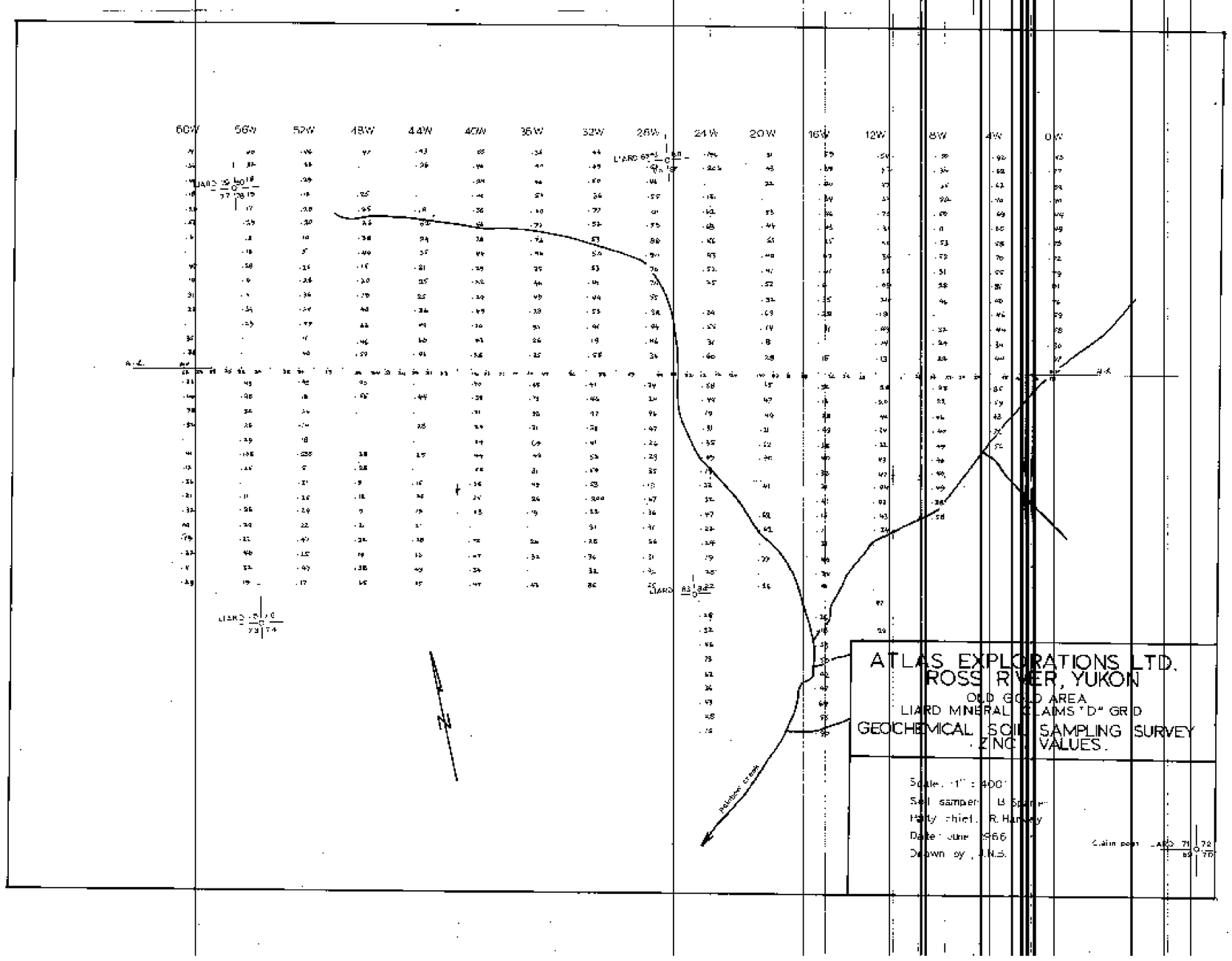
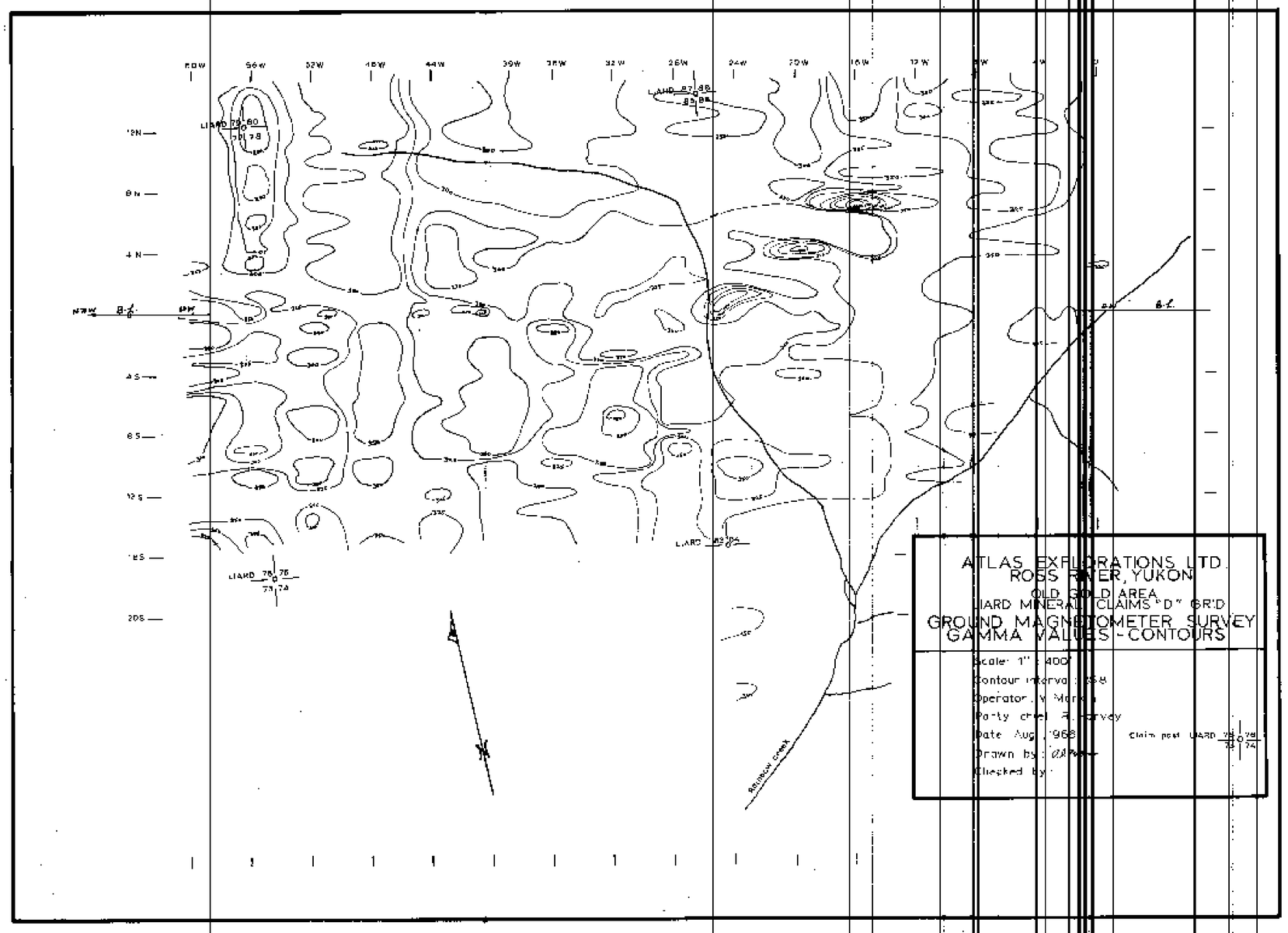
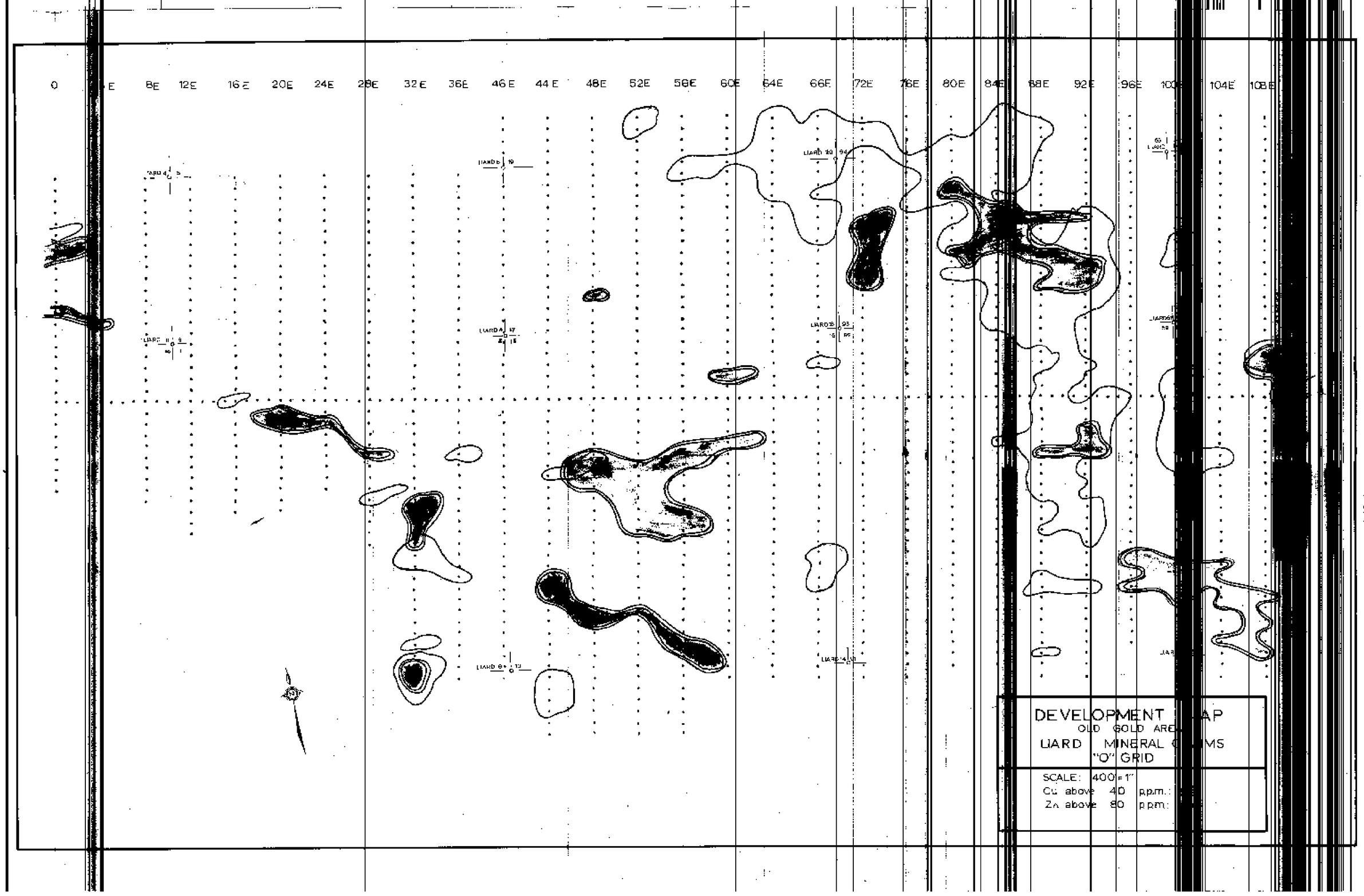
ROSS RIVER, YUKON
OLD GOLD AREA
LAIRD MINERAL CLAIMS 'D' GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
LEAD VALUES
Scale - 1" = 400'
Soil samples by Beaudin
Party ch'd by R.J. Hussey
Date - June 1966
Drawn by J.N.L.
Claim post
Ross River
Laird Road
Laird 97-A
Laird 98
Laird 99
Laird 100
Laird 101
Laird 102
Laird 103
Laird 104
Laird 105
Laird 106
Laird 107
Laird 108
Laird 109
Laird 110
Laird 111
Laird 112
Laird 113
Laird 114
Laird 115
Laird 116
Laird 117
Laird


LIARD 75 73 73 74
LIARD 83 84
Rainbow Creek
N
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
ZINC RESULTS, CONTOUR MAP
Scale 1" = 400'
Contour interval 10 p.p.m.
Soil samples: B Horizon
Party chief: R. Hardy
Date: June 1966
Drawn by: J.K.B.
Claim post LIARD 71 72
69 70


60W
56W
52W
48W
44W
40W
36W
32W
28W
24W
20W
16W
12W
8W
4W
0W
LIARD
N
Portion of road
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GRID
GEOCHEMICAL SOIL SAMPLING SURVEY
ZINC VALUES.
Scale: 1" = 400'
Soil sampled by: B. Spence
Party chief: R. Hardy
Date: June 1966
Drawn by: J.N.S.
Claim post


ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "D" GR'D
GROUND MAGNETOMETER SURVEY
GAMMA VALUES - CONTOURS
Scale: 1" = 400'
Contour interval: 25 g
Operator: V. Mark
Party chief: R. Harvey
Date: Aug. 1968
Drawn by: ØM
Checked by:
Claim post LIARD 75 76 / 73 74
LIARD 75 80 / 78 78
LIARD 87 88 / 85 86
LIARD 75 76 / 73 74
LIARD 82 85
56W
52W
48W
44W
40W
36W
32W
28W
24W
20W
16W
12W
12N
8N
4N
AS
8S
12S
16S
20S
Robinson Creek

72 W
60 W
56 W
52 W
32 W
28 W
24 W
20 W
16 W
12 W
8 W
4 W
0
BASE LINE
15 N
12 N
8 N
4 N
0
4 S
8 S
12 S
16 S
LIARD 35 | 8 / 33 | 34
LIARD 42 | 46 / 43 | 44
LIARD 71 | 78 / 89 | 77
LIARD 31 | 32 / 28 | 30
LIARD 41 | 42 / 39 | 40
LIARD 67 | 68 / 65 | 66
LIARD 9 | 10
LIARD 20 | 24
LIARD 63 | 64
ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
OLD GOLD AREA
LIARD MINERAL CLAIMS "L" GRID
DEVELOPMENT MAP
Magnetic Anomaly
E.M. Anomaly
Cu. above 40 p.p.m.
CLAIM POST LIARD 41 | 42 / 39 | 40


0
4E
8E
12E
16E
20E
24E
28E
32E
36E
46E
44E
48E
52E
56E
60E
64E
66E
72E
76E
80E
84E
88E
92E
96E
100E
104E
108E
LIARD 4 0 5
LIARD 6 0 10
LIARD 10 0 94
LIARD 11 0 9
LIARD 8 0 17
LIARD 13 0 93
LIARD 9 0 13
LIARD 14 0 10
DEVELOPMENT MAP
OLD GOLD AREA
LIARD MINERAL CLAIMS
"O" GRID
SCALE: 400 = 1"
Cu above 40 p.p.m.:
Zn above 80 p.p.m.:

ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

EXPLANATION

OLD GOLD CREEK