

ATLAS EXPLORATIONS LIMITED

(N.P.L.)

330 MARINE BUILDING

365 BURRARD STREET

VANCOUVER 1, B.C.

MEMO TO: Dr. A. E. Aho
Mr. R. E. G. Davis
Mr. E. O. Chisholm
Mr. J. S. Brock

FROM: C. L. Smith

DATE: April 25, 1967.

Subject: SHELDON PROJECT - PROGRESS REPORT #1

This is the first in a series of progress reports which will be written at two-week intervals until field work begins and then at one-week intervals after that.

The following are pertinent events which have transpired within the last couple of weeks:

- (1) The tote trail to Pike Lake has been completed. A few minor extensions are being put in now and Liard Construction should have its crew out in a few days. The attached map shows the road location. The cost estimate by Jock Christofferson is about \$340/mile plus about \$25/mile for fuel, which is being supplied by us. Total mileage for the road will be about 60 miles; total cost about \$30,000. Cost to Atlas will be about \$6,000 after payment of Tote Trail Assistance and Northern Mineral Exploration Assistance.
- (2) The following fuel has been delivered by White Pass:
 - Pike Lake - 35 drums 100/130 aviation gas.
60 drums regular gas - drills, bombardier, etc.
5 drums stove oil.
 - Pelly Lakes - 35 drums 100/130 aviation gas.
15 drums regular gas.
5 drums stove oil.
 - Pay Lake - 45 drums regular gas.

- (3) Road condition is entirely adequate for bombardier access. Only problem in route will occur crossing Pelly River. Log bridge is now located at crossing point, but after break-up the bombardier will have to be floated or rafted and swung across on cables.
- (4) A trenching program was outlined for Zone 2 on the Pike group but after seeing mineralization in the first trench, the program was cancelled except for opening one other partial trench. The purpose of the trenching was to see if significant Cu-Ag grade could be established beneath a Cu geochemical anomaly on the west end of Zone 2. The anomaly stretches from line 12W to 28W and most intense peaks occur at 12W and 20W. A trench was put in on 12W last October and assay results were very low in Cu-Ag. Last week a trench was put across 20W and visual Cu is of lower grade than that in 12W. It now appears that the Pike geochem. zones should no longer be considered to have important Cu-Ag potential unless extreme depth can be developed in Zone 1 - a prospect which is highly unlikely.

Zone 2 is in the main a Pb-Zn geochemical zone but wherever Pb-Zn mineralization has been observed it is in the form of narrow vein as replacements or minor disseminated sphalerite. Silver-lead ratios are below 1:1. Locations of veins cannot be predicted by geochem. peaks so that development of any significant tonnage would require an intensive and expensive trenching program. A total of twelve partial and complete trenches now exist across the zone and hand trenching could be successfully done in several partial trenches. In conclusion, it is recommended that no further work be done on Zone 2 until several other targets in the Pike area have been investigated; should it develop that nothing else of importance is found, and Atlas has an interest in developing a small tonnage of Pb-Zn-Ag, further trenching could be laid on at that time.

- (5) Snow in Pike area is now 3 - 4 feet deep and melting slowly. Brock is to inform Smith when depth is about 1 foot so that a crew may be sent up to take care of camp construction, begin line cutting, and do a small amount of staking. This crew will consist of:

Phil Neilson	(Party Chief)
Tom Adamson	(Camp const. - staking with Brodell)
Ted Skonseng	(Camp const.)
Hugo Brodell	(Staking PAY addition, HUGO group, TIM group)
4 Indians	(Line cutters)
Pat Lundt	(Bombardier driver)
D. J. Bellfontaine or Spud McMurphy	(Cook)

About 40 claims need to be cut on the PAY (instructions will be given to Neilson here), which should take 4 men about 2 weeks. After completion of work on the PAY group, the crew should move to the PIKE group, construct camp, and begin line cutting.

Men, equipment and supplies should be transported by bombardier from the tote trail turn-off north of Finlayson Lake.

- (6) A list of equipment required for the project will be sent to Brock this week so that major items may be gotten into the area soon.

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VANCOUVER 1, B.C.

MEMO TO: Dr. A. E. Aho
Mr. R. E. G. Davis
Mr. E. O. Chisholm
Mr. J. S. Brock
Mr. L. Lees

FROM: C. L. Smith

DATE: June 3, 1967.

SHELDON PROGRESS REPORT #2

PAY GROUP

General

First work on the PAY group began about May 12 when a 5-man party under the direction of Phil Nielson departed Ross River by bombardier. They arrived at the PAY group about May 19, established camp at the north end of Pay Lake and began line cutting the grid laid out to cover the mag-geochem anomalies on the west Pay group. The trip in was extremely slow due to high water in creeks crossing the road (this was caused by damming of water behind windrows pushed up by the cats during the road construction) as well as failure of fan belts on the bombardier. The fan belts failed only when the bombardier was pulling a loaded trailer.

An attempt was made to get the bombardier across the Pelly narrows but due to high water and lack of buoyancy of the machine when 6 empty fuel drums and logs were attached, the crossing could not be made. It was decided to use the bombardier only on the south side of the lakes early in the season, and if need be cross to Pike later in the season.

On May 30 the bombardier was stuck in a flooding stream just north of Pay. It was winched out on June 1 and is now being drained and repaired. Until flooding ceases it will be used only locally in the Pay area. A bombardier man will be sent in to check the machine in about one week.

The complete crew is now at the Pay group and work is progressing satisfactorily.

Line Cutting

Eleven lines of 6000 feet length have been cut on the southeast end of the grid between lines 8W and 48W. This is a total of about 13 line miles. Total grid to cut is 43 line miles. At current rate of 2 line miles per day for 4 men, grid should be completed about May 17 - this is according to previous schedule.

Magnetics

Magnetic base stations were established and grid surveying begun on May 29 but base readings have been fluctuating strongly and erratically due to a magnetic storm. Constant checks are being kept and as soon as fluctuations cease, surveying will begin.

EM

EM crew to arrive June 3 and begin work June 4.

Geology - Prospecting

Due to delay in arrival of 1000-foot scale air photos from Lockwood, detailed mapping has been delayed. They are to arrive at property June 2.

I spent one day with R. Darney doing reccy. and feel that he is adequately checked out to begin mapping.

Reccy. traverse in area of west Pay grid revealed tightly-folded (dips 60° - 90°) gently northwesterly-plunging anticlinal structure apparently extending northwestward from the Fortin stock anticline. Stratigraphy of fold consists roughly of creamy-colored, crenulated, banded, low grade meta-chert (oldest), interbedded argillite, gray chert with minor carbonate lenses, and gray-black limestone (youngest). The limestone crops out in the northeast limb of the anticline — if projected over the structure it would sub-outcrop in the area of the Zn geochem anomaly.

A piece of mineralized float was found on the base line at about 45W. It consists of replacement Zn-Pb-Cu in skarn. Visual estimate of combined Zn-Pb is 10%. Assay to be sent out.

P. Risby is now prospecting in the area of the anomalies.

H. Brodell began staking additional PAY claims May 31 but will come out June 3 to visit Expo group with E. O. Chisholm. A. Lake will complete staking.

PIKE GROUP

General

Crew arrived at property May 26. Old camp was dismantled and new camp constructed on shore of Pike Lake by May 29. Helicopter was used for transport of men and supplies.

Line Cutting

A total of about 4 line miles of a total 800-foot line spacing grid of 17 line miles have been cut on the south-east end of the grid laid out to cover the major airborne mag-EM target. At current average rate of 2 line miles per day, grid should be completed on about June 10.

(The new grid is an extension south and west from the original Pike grid. While cutting south on line 52W, a stake marked 43S was found at a chained distance of 52S on the south cat base line put in last November. This base line was used for the mag-EM survey done last November and December. The 900-foot discrepancy found on the stations explains the lack of correlation between results on the original grid and the south grid done last winter. This 900-foot gap will be filled and all previous surveys tied together.)

Mag-EM

Magnetic base stations were established June 2 but due to fluctuations in readings noted in Pay area, surveying will have to be delayed until conditions become more stable.

EM will begin June 3 with the Rånka 16.

Geology

A reccy. traverse was made with Adamson and he is checked out to begin 1000-foot scale mapping. The traverse was made west of Zone 1 and a N60-80W-striking, steeply-dipping, succession of chert, argillite, and limestone units was

traced along strike to a point just north of the center of the major anomaly. Here the sediments are cut by a small body of Pike quartz monzonite. The southern contact of the intrusive is with greenstone. The greenstone occurs at the north edge of the magnetic anomaly — however, the rock is definitely non-magnetic and is probably not the cause of the magnetics.

Geochemistry

Geochemical soil lines at 300-foot stations on 1000-foot spaced lines across magnetically anomalous portions of the Pike area were begun in high country in the center of the group on June 3.

It is believed that accurate results will be obtained in higher country because the area is definitely one of residual soils and only minimum run-off is now occurring. In short, ground water transport is not required for mobilization of ions. In valleys, where this is the case, geochem sampling will be delayed until run-off has stabilized.

In summary, the project is in full swing as of this date. A more definite report of preliminary survey results will be forthcoming next week. Also, personnel movements and man/day summaries will be included next week.

MEMO TO: Dr. A. E. Aho
Mr. R. E. G. Davis
Mr. E. O. Chisholm
Mr. J. S. Brock
Mr. L. Lees

FROM: C. L. Smith

DATE: June 10, 1967.

SHELDON PROGRESS REPORT #3

PAY GROUP

General

The bombardier is still not in use due to lack of a fuel pump which has been expected daily from Prince George. Lack of the fuel pump has seriously hampered transportation in the Pay group area. Fly camps have been set out for line cutters and magnetic operator in the grid area.

Prospecting - Geology

P. Risby began prospecting in the west Pay area on June 2. To date he has located three important showings in the eastern corner of the Pay grid. Two of the showings lie 1000 feet apart and consist of Pb-Zn-Cu mineralization in banded chert breccia. The breccia occurs along the axis of a tight northwesterly-plunging anticline. The breccia consists of rotated angular fragments with a matrix of fine particles cemented and replaced by chlorite and quartz. Sphalerite, galena, arsenopyrite, pyrrhotite, and minor chalcopyrite occur in the matrix and locally replace fragments. All metallics are extremely variable in percentage. The third showing is a set of three wide arsenopyrite veins in the northeast limb of the anticline about $\frac{1}{4}$ mile northeast of the two Pb-Zn showings. An assay of arsenopyrite in veins in this area taken by Risby last year ran 0.76 oz. Au. Samples from all showings have been sent out for assay and results will be reported as soon as available.

More detailed mapping has been done in the area of the anticline.

Line Cutting

About two-thirds of the Pay grid has been completed. Lines on the east side of the grid are now being extended so that an EM anomaly may be closed. Cutting is now being held up so that only areas on strike with existent anomalies will be completed - this will cut down the total line to be cut.

Magnetics

All cut line has been surveyed. An anomalous area has been located on strike northwest and southwest of the Pb-Zn-Cu showings mentioned above. Because of the abundance of pyrrhotite in the mineralization it is possible that the magnetics is indicating mineralization.

EM

EM coverage has been completed over about one-half of the Pay grid. A large northwesterly-trending anomaly occurs in the south corner of the grid with dip angles up to over 20 degrees. A small anomaly occurs just northeast of the showings.

Geochemistry

Soil geochemistry was begun yesterday in the area of the showings. The previously located Zn geochem. anomaly apparently lies about $\frac{1}{4}$ mile downslope from the showings; however, this may be a function of mislocating sample locations last season. The soil geochem. now being done will hopefully give a clearer relationship to the geophysics.

PIKE GROUP

Prospecting - Geology

Prospecting has now been carried out in nearly all areas of anomalous air magnetics and previously located high geochem. values in the Pike group area. No mineralization has been found even though outcrop is abundant in several of these areas. It appears that the magnetics are caused in most places by pyrrhotite-bearing granitic intrusive.

Geology is being done along the north side of the major magnetic anomaly where a steeply dipping, N 70° W -

striking succession of cherts, slates, phyllites, and limestones, locally cut by biotite quartz monzonite porphyry dikes and greenstone dikes, is being worked out.

Line Cutting

The entire Pike number 2 grid of 17 line miles has been cut. Line cutters are now doing reconnaissance soil sampling. Extension lines may have to be cut depending on mag-EM results.

Magnetics

Surveying began yesterday on the west end of the grid. J. S. Brock has reviewed the magnetics in the Pike area and discovered that last year's ground survey on the number 1 grid was plotted backwards and inconsistently. In most cases, lows can be regarded as highs, but this does not hold throughout the grid. Current survey technique has been firmly established and work should now proceed without further delays.

EM

Brock has also established survey techniques to be used with the Ranka EM 16 and surveying began yesterday.

Geochemistry

Soil sampling on the grid began two days ago and is slow going due to permafrost and low ground.

A total of 100 line miles of soil sampling on 1000-foot spaced lines has been completed in the south Pike group area.

Surveying

The east end of the number 2 grid has been surveyed by P. Sandaluk and the west end is now being done. Sandaluk will move to Pay in about 3 days to survey the grid there.

note: please view sketch maps enclosed
and forwarded to EOC, FSB,
and U.S.

TO: Dr. A. E. Aho ✓
Mr. R. E. G. Davis ✓
Mr. E. O. Chisholm
Mr. J. S. Brock
Mr. L. Lees ✓

FROM: C. L. Smith

DATE: June 17, 1967

SUBJECT: Sheldon Progress Report #4

PAY GROUP

General

The Pay camp has been increased from 12 men to 18 men within the last week in order to develop results there as fast as possible. The camp is now being satisfactorily supported by the bombardier.

Geology-Prospecting

A geologic and reccy. geochem. map is enclosed. Geologic structure consists of a steeply-dipping, westerly-striking sequence of banded chert (oldest), massive dolomite, sericitic phyllite, and phyllite (youngest). In the southern part of the grid area the phyllite is spotted with cordierite and andalusite attesting to the contact action of a near-by intrusive (probably granitic). The section is broken by a probable normal fault along the south side of Grid Lake which has apparently dropped the southern block.

There is now some question as to the accuracy of location of stations sampled for reccy geochem. last season; however, it appears that the 1000 ppm. Zn contour lies close to the area of outcrop of dolomite south of the fault. The dolomite is exposed only locally and no mineralization has been observed in the unit. Detailed soil sampling has been done across this area and results are now being awaited. It is hoped that a more accurate correlation may be made between rock units and anomalous geochem.

Just for the sake of argument, it is notable that Pb-Zn-Cu mineralization in chert breccia east of Grid Lake occurs along the axis of a tight anticline. Should the anticlinal section south of the fault be the downdropped upward extension

of the fold north of the fault, then prior to normal faulting, the dolomite would have overlain the chert. Upward migrating solutions may have reached the overlying dolomite which would be the logical host unit in the stratigraphic section.

Two new showings have been found recently in the grid area. One occurs on the base line at 132 W and consists of irregular galena replacements and stringers in quartz and barite gangue. Barite was also found in the south corner of the grid. Both showings will be opened by blasting. One previously located Pb-Zn-Cu showing was opened by blasting and found to be of apparently small size.

The original showings located by P. Risby in the Pay 1-16 area were visited yesterday and a plan for geochem. and magnetic profile surveys outlined. Showings consist of replacement Pb-Zn-Cu in chert breccia (and locally dolomite) in a steeply-dipping succession of cherts and phyllites. Every outcrop examined was mineralized with varying percentages of galena, sphalerite, pyrrhotite, arsenopyrite, and chalcopryrite. It is estimated that mineralization occurs over a distance of greater than 3000 feet oblique to strike; stratigraphic thickness traversed was at least 200-300 feet. The area has definite merit. Eleven assay samples were taken - all showings were sampled. If grade turns out to be significant and geochem.-magnetic anomalies can be located in the area, hand trenching and blasting will be instigated.

Magnetics

A total of 126,600 feet of survey has been completed. Two apparently significant anomalies have been located (see sketch map enclosed). One is a narrow 4000 foot long anomaly trending westerly through the south end of Grid Lake - it lies just south of two previously described Pb-Zn showings. The second is a broad anomaly in the south corner of the grid - this lies close to a reccy geochem. anomaly. Significance of anomalies will have to be determined after detailed geochem. results have been received.

EM

A total of 144,500 feet of survey has been completed. Three anomalies have been located. One is a broad 5000 foot anomaly up to 35° dips trending northwesterly in the south corner of the grid. The size is so large that it is obviously a rock unit; furthermore, black slate float was found near the anomaly and is the apparent cause. A small 10° anomaly lies between the two Pb-Zn-Cu showings east of Grid Lake. More EM

detail is planned for this area and blasting will be used on the anomaly soon. The third anomaly lies north of Grid Lake and its source is not known - outcrop in the area has not been mapped as yet.

Geochemistry

Over 1000 samples have been taken on the grid in the area south of Grid Lake. Results are being awaited.

Line Cutting

A total of 169,600 feet has been cut on the grid. Extensions have been added to the grid northeast of Grid Lake and on the south corner of the grid.

Staking

A total of 37 claims (Pay 167-203) were staked around the perimeter of the West Pay group for purposes of protecting outlying geochem. anomalies. A-forms are being sent in for recording today.

PIKE GROUP

General

The Pike camp has been decreased from 20 to 11 men during the past week. Work is being rapidly concluded and men have been moved to Pay, Bill, and OEX areas. Results in all areas have been discouraging. Magnetism appears to be reflecting basic dykes, EM does not appear to be superimposed on magnetism (as is the case from airborne data) and only insignificant mineralization has been found by prospectors or geologists. An attempt is being made to write the group off as fast as possible. It is currently planned to move the Pike base camp to Pelly Lakes on or about June 26. Work at Pike will be nearly completed (except for some geochemical sampling to be handled out of a fly camp) and the center of the project will again be the Pelly Lakes area. The base camp there will be mainly an administrative center, for work on outlying groups will be carried on simultaneously from fly camps in up to 5 or 6 areas.

Geology

The enclosed map shows the rough distribution of rock units in the Pike grid area. Outcrops are too scarce to put together a map. In general the area is underlain by a tightly-folded, N 70° W - striking, gently-plunging succession of black slates,

black limestones, shales, and cherts cut locally by biotite quartz monzonite porphyry cupolas and a set of compositionally complex dykes or sills consisting of alkali diabase, lamprophyre, gray aplite, and greenstone.

The only mineralization occurs as disseminations and veinlets in altered porphyry. Only pyrrhotite, arsenopyrite, and pyrite have been noted, however.

Magnetics

A total of 87,100 feet of magnetics has been completed. Anomalies occur at the north margin of the grid, are long and narrow and rise above 2500 γ in a background of 500 γ . They appear to accurately represent aeromagnetic anomalies in shape and orientation.

It is suspected that anomalies may be reflecting basic dykes for they have been noted both west and east on strike with anomalies.

Ronka EM

A total of 47,400 feet of EM with the Ronka unit has been completed. Due to a lack of familiarity with profiles for the instrument it is difficult to be certain about interpretations; however, there do not appear to be any significant anomalies superimposed on the magnetic highs - as is the case with the airborne data. J. S. Brock will make an interpretation of EM data this week.

Geochemistry

Over 1400 soil samples have been taken on the grid (300') and on 1000-foot spaced regional lines. Results are still awaited. The area of anomalous magnetics has been sampled and should no encouraging results be obtained, and should EM results also be unencouraging, all further work on the Pike grid will be called to a halt. The amount of proposed regional geochem. coverage has been cut down so that less than 100 more line miles of soil sampling will be done and these only across areas of previous geochem. highs or obvious magnetic targets. After the base camp move, the geochem. will be done by two or three men out of a mobile fly camp.

BILL GROUP

A four-man crew consisting of geologist, prospector and two geochemical assistants started work on the Bill group on the 14th. Results will be checked tomorrow.

TIM GROUP

The Tim group of 43 claims was completed staking on the 15th. The group covers a pronounced magnetic anomaly southwest of the Nar group. Investigation will be held until work on the Nar group has been completed.

EFFIE LAKE

A gossan sampled by A. E. Aho last summer on the east shore of Effie Lake, located northwest of Pike group, was investigated by a two-man crew. The area is one of almost no outcrop. Geochem. soil lines were run along the entire length of the east side of the lake. Further work will be done depending on geochem. results.

NAR GROUP

A flight was made yesterday to check snow cover on the Nar group. The large gossan on the west side is adequately exposed for investigation. A four-man crew will begin mapping, prospecting, and hand trenching on these showings this week.

DETAIL SUMMARY OF WORK COMPLETED
(To June 16, 1967)

DIKE

Line Cut:	to June 10	-	92,400 feet
	additional	-	<u>3,000 feet</u>
	total to June 16		<u>95,400 feet</u>
Magnetometer Survey (began June 11):			
	June 11 to 16 read		<u>87,100 feet</u>
EM Survey:	to June 10	-	30,700 feet
	additional	-	<u>47,400 feet</u>
	Total to June 16	-	<u>78,100 feet</u>
Geochem. (soil sampling):			
	to June 10 - 856	(samples from 1000' spaced soil lines)	
	additional - 558		
Total to June 16	<u>1,414</u>	(includes 1,109 from soil lines 305 from grid)	
Surveying:	to June 10 - 24,300	feet of grid surveyed	
	additional - 22,400	" "	" "
	total to June 16 - <u>46,700</u>	" "	" "
Pike grid survey completed and grid tied into local topography on June 16.			
Pike Chopper Time:	Hours used in May		14.7
	" "	• June 1-11 (incl)	18.9
	" "	• June 12-16 (incl)	7.6
		Total to date	<u>41.2 hours</u>

PAY

Line Cut:	to June 10	-	134,500 feet
	additional	-	<u>35,100 feet</u>
	total to June 16	-	<u>169,600 feet</u>
Magnetometer Survey:	to June 10	-	111,500 feet
	additional	-	<u>15,100 feet</u>
	total to June 16	-	<u>126,600 feet</u>
EM Survey:	to June 10	-	70,400 feet
	additional	-	<u>74,100 feet</u>
			<u>144,500 feet</u>
Geochem: (soil sampling)			
	to June 10 - 95	samples	
	additional - 863	"	
	total to June 16 - <u>958</u>	grid samples	

Survey of Pay Grid begins June 17, 1967.

Pay Chopper Time:	Hours used in May	12.3
	" " June 1-11 (incl)	10.6
	" " June 12-16 (incl)	6.7
	Total to date	<u>29.6</u> hours

A dominant portion of Pay chopper time is the result of ferry time from Pike to Pay. This will be eliminated after the move to the Pelly Lakes camp.

CHOPPER TIME

TIM: The staking of this group accounts for 2.8 hours of chopper time.

BILL: Has used 2. hours of chopper time.

NAR: Has used .7 hours of chopper time.

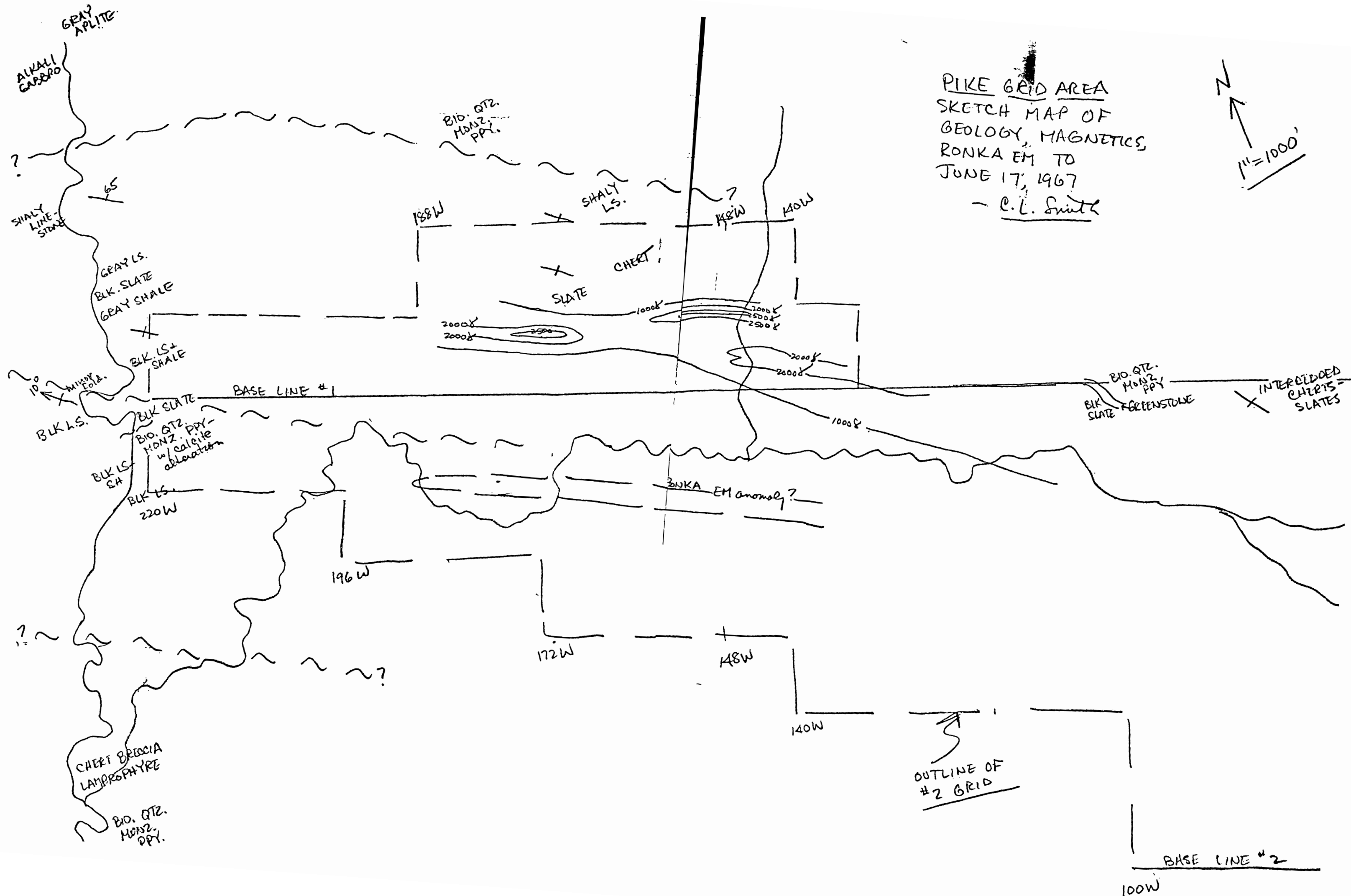
Total chopper time to date (for Atlas):

Pike	41.2
Pay	29.6
Bill	2.
Tim	2.8
Nar	<u>.7</u>
	76.3 hours flown to June 16, 1967

June average - 48 hours/16 days = 3 hours per day

Overall average - 76.3 hours/23 days = 3.32 hours per day

$1'' = 1000'$



BASE
LINE

30°
30° EM

1" = 1000'

N
↑

10°

GRID
LAKE

10° EM

500'
1200'
1200'
500'

500'

500' 500' 500'

1200'

500'

500'
900'

500'

1100'

EM

BLACK
SLATE
FLOAT

20°

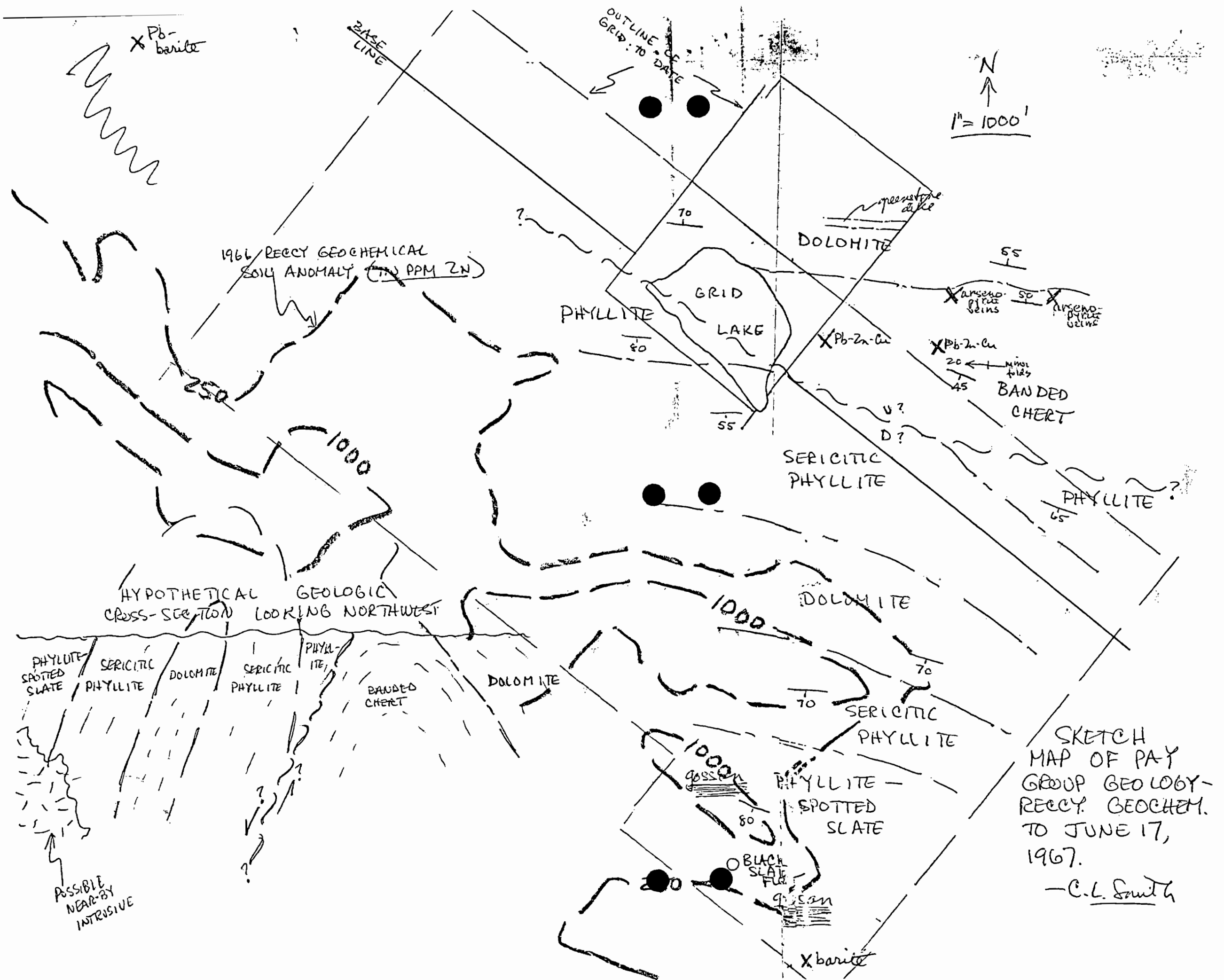
500'

20°

30°
30°

20°

SKETCH
MAP OF PAY
MAG. + EM.
TO JUNE 17,
1967
- C. L. Smith



X Pb-barite

BASE LINE

OUTLINE OF GRID TO DATE

N
1" = 1000'

1966 REEY GEOCHEMICAL
SOIL ANOMALY (100 PPM ZN)

greenstone dike
DOLomite

GRID LAKE

X arsenopyrite veins

X Pb-Zn-Cu

X Pb-Zn-Cu

minor folds

BANDED CHERT

SERICITIC PHYLLITE

PHYLLITE?

HYPOTHETICAL GEOLOGIC
CROSS-SECTION LOOKING NORTHWEST

PHYLLITE SPOTTED SLATE
SERICITIC PHYLLITE
DOLomite
SERICITIC PHYLLITE
PHYLLITE
BANDED CHERT

DOLomite

DOLomite

SERICITIC PHYLLITE

PHYLLITE - SPOTTED SLATE

BLACK SLATE

X barite

POSSIBLE NEAR-BY INTRUSIVE

SKETCH
MAP OF PAY
GROUP GEOLOGY-
REEY GEOCHEM.
TO JUNE 17,
1967.

-C.L. Smith

TO: Dr. A. E. Aho
Mr. R. E. G. Davis
Mr. E. O. Chisholm ✓
Mr. J. S. Brock
Mr. L. Lees

FROM: C. L. Smith

DATE: June 29, 1967

SUBJECT: Sheldon Progress Report #5

PAY GROUP

General

Five situations have now been developed within the Pay group. The following is a summary of current status of each.

Situation #1

A broad area of anomalous Zn geochemistry stretches from line 0 to 76W between 40S and 50S. Background averages about 150 ppm. in the area and numerous closed contours above 300 ppm. occur. Peak values are over 2000 ppm. The anomalous area is still open on all sides but the northeast. This geochemical zone lies in an area of very sparse outcrop along the southwestern limb of an isoclinal anticline. Scattered outcrop of phyllite and sericitic phyllite have been noted in the area.

Where geochem. peaks have been checked, no explanation for highs has been found. Small amounts of black carbonaceous phyllite occur but not apparently in sufficient quantity to cause such high Zn results. Anomalies do not occur in topographic lows or basins of ground water accumulation but frequently occur over gently sloping narrow ridges in which bedrock is near surface. Bedrock chips have been taken from geochem soil holes and from outcrop in areas of high geochem. and will be run through the lab.

In addition, a broad EM anomaly nearly corresponds with much of the geochem anomaly strongly suggesting that a graphitic unit underlies the area and is high in background Zn and is supplying it to the soils. Again, however, where checks for outcrop have been made graphitic material has been very rare or non-existent. No mineralization other than rare pyrite in quartz veins has been noted in the area.

Magnetics are low, being below 500 gammas in a region where peaks reach 1200 gammas. One elongate isolated anomaly lies parallel and just upslope from the superimposed geochem-EM anomaly. Outcrop on the peak consists of uninteresting looking sericitic phyllite.

In short, geochemically and geophysically the area is still attractive but this is due only to a lack of success in explaining anomalies with geology. The current plan is to drill a few Winkie holes on selected targets within the broad anomalies.

Situation #2

East of Grid Lake along the axis of an anticline previously described three small Pb-Zn showings have been located. Blasting in one proved it to be a 1-foot wide shear zone cutting normal to bedding and containing Pb-Zn in the matrix of a chert breccia. Assays have not been returned for these showings.

An elongate magnetic anomaly trends westerly from the main showing and broadens to about 300 feet wide with a peak value of over 1200 gammas. An EM anomaly of similar size and of $\approx$ 10 degree dip angles is superimposed on the magnetics. Geochemistry in this locale is not anomalous, perhaps due to thick alluvium cover. This coincident geophysical anomaly is now being drilled with the Winkie; current progress is 37 feet of overburden.

Situation #3

Trenching has been carried out on a galena-barite showing on the base line at 132W. A $1\frac{1}{2}$ foot wide vein was located. Assays are questionable (having gone through the Atlas lab) but returned only 10% Pb and 2.562 Ag. Work has been terminated and will not be resumed unless very high Ag assays are received or a broad Pb geochem. anomaly (results awaited) occurs in the area.

Situation #4

Just south of the galena-barite showing an 800 x 700 foot Zn geochem anomaly with peak value of 2250 ppm. has been located. An EM anomaly with ratios of 1 or better coincides with the geochem anomaly. One blast hole brought up carbonaceous chert, however, and this may be the cause of both anomalies. Another hole will be blasted on the geochem. peak tomorrow.

Situation #5

A 20,000 foot grid with 800 foot spaced lines was cut over the western end of showings located by P. Risby on the original Pay 1-16 group. Due to an inaccurate location of the grid, only a portion of the interesting ground was covered. Extensions are being made to the east now to cover the main showings.

Assays taken from showings were run through the Atlas lab and, therefore, results are questionable. Results were low in Pb-Zn although over 5% combined could be estimated in several samples. Two Ag assays ran 12 and 15 oz.

Geology in the area consists of a steeply-dipping, westerly-striking sequence of cherts (with interbedded chert breccias and dolomite) and black slates. Mineralization occurs in chert breccias and locally in dolomite. Geochemistry results are erratic and do not define clear-cut anomalies although 2 good Cu results (over 190 ppm.) and 2 good Zn results (over 1000 ppm.) were returned.

The entire grid area is anomalous in EM (apparently reflecting black slates) but an area of high low-to-high frequency ratios occurs in the northwest corner of the grid. Magnetism is anomalous in this same locale (peaks reaching over 2300 gammas above a background average of 500 gammas). More geology remains to be done for outcrop is relatively abundant. Hand trenching and blasting will be started this week.

In summary, at least three potentially important situations still exist on the Pay group. Every attempt is being made to evaluate each as rapidly as possible.

PIKE GROUP

General

Work was terminated on the Pike group on June 23 and the camp moved to Pelly Lakes the following day. The Pelly Lakes base camp is now an administrative center, all work being done either out of the Pay base camp or out of fly camps.

Detailed geological examinations of outcrop at geophysical stations revealed that coincident magnetic-EM anomalies within the major Pike anomaly lay immediately over

steeply-dipping black carbonaceous slates at points where slates have a magnetic content of one percent or better. Slates were crushed and tested for magnetics on stations across the three major mag anomalies in the area and a very close correspondence between variations in magnetometer profiles and percentage of magnetic material in the slates was found. Ground EM anomalies are abundant and may be unquestionably explained by the black slates.

Because the main Pike target had been written off and because no significant prospecting finds had been made in anomalous magnetic areas where outcrop is abundant, the decision was made to terminate work on the Pike group. Some additional geochemical soil sampling remains to be done but due to the lowering of priority of the Pike area this work will be postponed until higher priority areas have been studied.

NAR GROUP

A four man crew began prospecting and geologic mapping on the west Nar group on June 22.

The geology is complex but appears to consist of a recumbent westerly-striking isoclinal anticline into which a stratigraphically complex sequence of cherts, quartzites, rhyolites (possibly sills), and limestones are folded. Sediments are apparently low-grade metamorphics and commonly contain disseminated pyrrhotite and arsenopyrite.

Two varieties of intrusive occur mainly in a sparse outcrop area along the north cirque wall in which work is being done. One variety is a medium grained, pale greenish (montmorillonite) altered monzonite which in every outcrop examined over an area of at least 1000 feet by 300 feet contains disseminated clusters and anastomosing networks of sphalerite and pyrrhotite. Sphalerite content is commonly as high as 15-20 percent. No silver minerals were noted. All outcrops were sampled and assay returns are awaited.

The crew was increased to eight men on June 23 and line cutting of a 10,000 foot grid on 800 foot spaced lines will be completed today. Magnetics began today also. The intent is to define a magnetic anomaly and to hand trench as much of the areas as possible. Winkie drilling will be considered dependent on results.

The Nar group appears to hold perhaps more potential than other areas being worked now and more work will be done as soon as men are available from other jobs.

SPUD GROUP

A geochemical soil survey across the Spud anomaly will be completed today. Future work will be planned upon receipt of results.

BILL GROUP

All Bill group geochem. samples were lost in a fire in the sample prep. tent in Ross River. Samples will be re-collected this week.

OEX

Art Lake and McLary Acklack have been doing prospecting and soil sampling for a few weeks in the area between the Pay group and the Spud group and to the northeast of that area. Nothing of significance has been found. They will be moved to the Tim group and Don group area tomorrow.

JAKE

H. Brodell and R. Munsmore will begin work on the Jake group tomorrow after returning from a job staking the Don group - a tungsten deposit drilled previously by Canex and brought to our attention by Brodell.

DETAIL SUMMARY OF WORK COMPLETED
(To June 30, 1967)

PIKE

Line Cut: to June 16 95,400 feet
additional 15,700 feet
total to June 21 111,100 feet = 21 miles
Pike linecutting was completed June 21, 1967.

Magnetometer Survey: to June 16 87,100 feet
additional 28,700 feet
total to June 21 115,800 feet
Magnetometer survey for Pike was completed June 21, 1967.

EM Survey: to June 16 78,100 feet
additional 38,300 feet
total to June 21 116,400 feet

Geochem: to June 16 1,414
additional 424
total to June 22 1,838 (includes
586 from the Grid and 1,252 from soil lines)

Pike Chopper Time: hours used in May 14.7 hours
hours used June 1-16 (incl) 26.5 hours
additional 6.3 hours
total to June 22 47.5 hours

Hours used by Pike in June (32.8 hours).
Pike operation completed June 23.

PAY

Line Cut: to June 16 169,600 feet
additional 61,800 feet
total to June 30 (incl) 231,400 feet = 43.8 miles

Magnetometer Survey: to June 16 126,600 feet
additional 57,300 feet
total to June 27 (incl) 183,900 feet
Mag went to Nar on June 29.

EM Survey: to June 16 144,500 feet
additional 94,500 feet
total to June 30 239,000 feet

Geochem: to June 16 958 (grid samples)
additional 774
total to June 30 1,732 samples

Survey: June 17 to 30 (incl) 35,500 feet

The drill crew began to set up operations at Pay on June 24.

<u>Pay Chopper Time:</u>	hours used in May	12.3 hours
	hours used June 1-16 (incl)	17.3 hours
	additional	<u>9.2 hours</u>
	total to June 30 (incl)	38.8 hours

Hours used by Pay in June (25.5).

CHOPPER TIME

Total chopper time to date for Atlas:

Pike	47.5
Pay	37.4
Bill	5.
Nar	5.6
Spud	2.
Oex	2.6
Jake	.5
Pelly Camp	<u>.8</u>
	101.4 total to June 30 (incl)

Total flown in June for Atlas (77.3 hours).

Overall average for season 101.4/37 days = 2.74 hours
Average for June, 1967, 77.3/30 days = 2.57 hours

ATLAS EXPLORATIONS LIMITED

(N. P. L.)

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

MEMO TO: Dr. A. E. Aho
Mr. R. E. G. Davis

FROM: E. O. Chisholm

DATE: July 7, 1967.

Re: Interim Progress Report No. 2,
Atlas' Pelly Lake Camps, July 1, 1967.

The Pelly Lake camp has been rehabilitated as an exploration center for the various groups of claims in the area, such as the PAY, NAR, BILL, TED, etc. Clyde Smith, Senior Geologist, makes his headquarters there and supervises the fly camps at the various properties and the other main base on the PAY group of claims. The helicopter is based at Pelly Lakes and serves as communication with the various fly camps and transporting them back and forth on completion of their tasks. The larger camps are served by two-way single-side band radio. The PAY camp and the NAR camp are connected to the Pelly Lakes camp by bulldozer road and the bombardier drives between these two camps and Pelly Lakes with supplies and drill equipment, food, etc. This considerably lightens the helicopter load. The bombardier at this stage seems to be working satisfactorily and is a very useful aid to the exploration. No. 1 Winkie drill hole was started on June 26 on the PAY grid to test a combined EM and magnetic anomaly near an arsenopyrite vein deposit containing appreciable values in gold. As of July 1 the hole was down 30 feet in overburden and bedrock had not been reached.

Ten claims named NIP 1 - 10 were staked in the Nahanni district, N.W.T., at co-ordinates approximately 15° 22' North and 128° 38' West. These claims cover a scheelite showing discovered by Hugo Brodell and subsequently staked by Canex Explorations in the year 1961 during the scheelite rush in the Cantung area. The group lies approximately 45 miles northwest of the present Cantung mine and is accessible by the Flat River bed. A landing lake is located approximately 4 miles west of the showings. Hugo Brodell informed me last month that the claims had come open in February of this year and I thought it advisable to stake them for investigation in view of the advancing prices for scheelite which now have reached \$50 U.S. per unit of WO₃. Geologist Ron Dunsmore

accompanied Hugo Brodell in the staking and described the showing as a pyrrhotite zone at least 1000 feet in length and averaging perhaps 20 feet in width. Five holes had been drilled in the showing by Canadian Exploration in 1961. Brodell advised that one of these holes had assayed 2.3% scheelite over a width of 22 feet. A sample of fresh pyrrhotite brought back from the showing by Dunsmore showed plentiful scheelite in massive pyrrhotite and will probably assay 2% WO_3 . Dunsmore advised that perhaps 4 additional claims are needed to protect the strike of the scheelite zone. The showing warrants further exploration after government assessment reports are reviewed. Samples from last year's program were lamped and at least one of these samples, a massive pyrrhotite sample collected by prospector T. Skonseng from the Ptarmigan Mountain area, showed what appears to be scheelite in amounts up to 2% to 3%. This showing will be examined at the first opportunity.

ADMINISTRATION

The following points of administration and policy were decided upon after conversation with C. L. Smith:

1. No claims will be staked in future on the basis of geochemical results alone. The results on the BILL group and the JAKE group are confusing and without further evidence of mineralization the general staking of these types of anomalies is not warranted without further substantiating evidence of mineralization.
2. The present crew can be reduced by 4 bodies in the next two weeks due to a completion of many of the line cutting tasks.
3. Geophysical interpretation and correlation of all results will be tabulated and kept up to date by J. S. Brock as the work progresses.
4. The PIKE assessment work reports will be compiled and submitted before July 4 when the claims become due on the original PIKE 1 - 24 claims only. The rest of the large claim group totalling some 600 claims will be dropped due to the poor results obtained in the exploration work to date. The geophysical anomalies were proved to be due to a combination of magnetite in extensive graphitic schist bands with no economic minerals present. This will considerably lighten our exploration load this season and leave us more time to concentrate on the 7 important showings in the Traffic Mountain Folly Lakes section.

5. Claims staking in the general area will be kept to a minimum for the balance of the summer unless finds of unusual merit show up.
6. Due to the plentiful supply of Indian labour in the Ross River area this year, an attempt will be made to reduce the monthly salary for line cutters from \$20 a day to \$15 a day.

ATLAS EXPLORATIONS LIMITED

(N. P. L.)

330 MARINE BUILDING

355 BURRARD STREET

VANCOUVER 1, B.C.

MEMO TO: Dr. A. E. Aho
Mr. R. E. G. Davis

FROM: E. O. Chisholm

DATE: July 7, 1967.

INTERIM PROGRESS REPORT No. 3 - PELLY LAKES CLAIMS - JULY 3, 1967

Exploration

The NAR group 12 miles east of the Pelly Lakes camp was visited by E. O. Chisholm and C. L. Smith July 1st. A mineralized zone approximately 1000 feet long by 300 feet wide has been outlined by scattered pits blasted through the shallow overburden. Mineralized quartzite is exposed in 24 pits within the zone. The mineralization consists of disseminated sphalerite and pyrite in joints and fractures in the quartzite. It is erratically distributed and the overall grade is possibly quite low. Representative grab samples from 7 of the pits averaged 7% zinc with low values in silver and copper (less than .1% silver and less than 0.2% copper). The zone is on a 30° mountain slope in a cirque and is accessible by helicopter only at this time. The nearest water available for drilling would be approximately 1 mile distant.

A preliminary magnetometer survey has been completed over the zone and shows a series of highs and lows over short distances. These probably reflect the variable magnetite content of the quartzite beds and does not appear to reflect the mineralization itself. More detailed work is required in magnetics and geochemistry. The electromagnetic method would not appear to be useful due to the disseminated nature of the mineralization and the predominance of sphalerite. The occurrence appears intensive enough to warrant further detailed work by stripping and trenching followed by Winkie drilling.

Elsewhere on the claim group two miles distant from the above showing two high grade float occurrences

containing heavy lead-zinc replacement mineralization were uncovered in last year's work and appear to warrant immediate follow-up by trenching, geochemical survey and Winkie drilling. There appears to be sufficient water in this area to carry out the drilling.

The large zone of massive mineralization described by Risby last year has not yet been located and Risby is at present looking for this.

A crew of 4 men headed by geologist Bob Adamson is at work on the ground.

ATLAS EXPLORATIONS LIMITED

(N. P. L.)

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

MEMO TO: Dr. A. E. Aho
Mr. R. E. G. Davis
Mr. G. K. Allan

FROM: E. O. Chisholm

DATE: July 14, 1967.

Re: Interim Memo from the Period Wednesday, June 28
to Friday, June 30.

June 28 left Vancouver 6:30 p.m., arrived Whitehorse 10:30 p.m.

On arrival Whitehorse, discussion with Tim Sadlier-Brown regarding progress on his Ketchikan report. Brown completed his final report on the ARM property, Ketchikan, the following day. Copies of this report were mailed Friday, June 30, to Gordon Davis in Vancouver for distribution to:

- 1) Jerry Noel, Utah Construction Co.
- 2) James Dodge, Mitsui Mining Co.
- and 3) Len White, Homestake Mining Co.

Brown's report on the ARM group is optimistic. He points out that structural conditions for the deposition of a large copper deposit are favorable; a large area of altered intrusive and volcanics exist on the property in which potassium feldspar alteration is generally pervasive over the entire property. This potassium feldspar alteration is a characteristic of many other large porphyry copper types of deposits found in the Cordillera. There also exists numerous veins and disseminations containing minor chalcopyrite and molybdenum. The property is covered with a blanket of shallow rain forest type overburden that effectively obscures many areas of interest. Brown is convinced that an IP survey should be made of four areas of interest on the property. A new find containing vein type molybdenum and disseminated molybdenum in an altered monzonite was discovered in the extreme northeast corner of the property. Additional claims will be necessary to protect this area and it is advisable that these claims be staked before any detailed examination is made of the property by outside interests. Brown should be available in two weeks' time to accompany any interested parties to examine the property.

NASS CREEK EXPLORATION

Tim Sadlier-Brown and prospector Jake Hundere were sent to investigate the reported magnetic anomalies in this area. They will check the locations with a MF1 magnetometer and prospect the areas of the reported anomalies. They will fly to the area by Cessna 180 from Mayo and set up camp on a small landing rig located within two to three miles of the locations. They are expected to complete this investigation in approximately 10 days' time and should arrive back in Whitehorse on or about July 10.

EMPRESS MINES PROJECT

This project was visited by E. O. Chisholm on Thursday, June 29. Investigation of the targets in the Twin Lakes area has been completed and camp was moved to the Buffalo Lake area to investigate targets in that area. This phase of the exploration is expected to be completed by July 15 when the party will be moved by Beaver aircraft back to Twin Lakes and thence will drive by truck to the Aishihik road targets on the southern part of the area. It will be necessary to send a truck to Twin Lakes on or about July 15 to move the party. Arrangements will be made by radio phone with Ivor Mast. The job is proceeding satisfactorily under the direction of Richard Vogwill and targets are being investigated at the rate of about one per week. The preliminary results of the geochemical sampling received to date indicate that an anomalous area exists in the northeast corner of Target X4, or Claim Group AH 13 - 28. This anomaly was located on the grid and is approximately 4000 feet in length by 2000 feet in width. Values averaging approximately 100 to 125 ppm in copper were obtained which represents 3 to 4 times the background for copper of the area. It is located in an area of basic intrusive rocks and may indicate a higher than normal copper content in them. It is coincident with the mag high of 3500 gammas on Sheet 115H9, Map 3346G, Kirkland Creek area. This magnetic anomaly is 200 gammas over the background for the area and is possibly reflecting the basic rock itself. The surrounding rocks are various types of andesite and volcanic breccia. It will be necessary to re-assess the cause of these anomalies on the ground following investigation of the nature of the other priority targets in the project. The other areas investigated do not appear important, although one high 100 ppm copper determination on Target X3, Claims AH 1 - 12, should be investigated at a later date.

I proceeded to Ross River on June 30 to investigate the progress of exploration in this area.

File

ATLAS EXPLORATIONS LIMITED

(N. P. L.)

330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.TO: Dr. A. E. Aho ✓
Mr. R. E. G. Davis ✓
Mr. E. O. Chisholm
Mr. J. S. Brock
Mr. L. Lees ✓

DATE: July 17, 1967

FRO

FROM: C. L. Smith

SUBJECT: Sheldon Progress Report #6

PAY GROUPGeneral

On July 1 zinc mineralization was discovered near Line 48W, 53S in a low-lying outcrop adjacent to a linear Zn geochem anomaly. Trenching and Winkie drilling were started the following day and a trench of about 100 feet in length across the strike of the host unit has exposed nearly continuous sphalerite mineralization in a brecciated silicified dolomite. Visual grade of mineralization is variable but ranges locally up to 10-12%. Two assays have been returned: they were 6% in what appears to be very average grade for the exposure, and 1.9% for obviously low grade material.

To date, eighteen small trenches and pits have been put down between 38W and 57W in the area of the linear Zn geochem anomaly. Zinc mineralization has been found in most trenches and pits although usually in the form of coarse angular rubble; bedrock has been reached in only four pits.

Winkie drilling has met with limited success mainly due to caving. The following is a summary of holes to date in the area of the exposure:

- WDH#2 (125 feet, S80°E of L48W, 53S)
 - 18 feet of bedrock rubble, hole stopped because of caving.
- WDH#3 (10 feet north of WDH#2)
 - 8 feet of bedrock rubble, hole stopped because of caving.
- WDH#4 (4 feet west of WDH#3)
 - 8 feet of bedrock rubble, hole stopped because of caving.

- WDH#5 (75 feet southwest of WDH#2, set-up in trench on bedrock)
- 6 feet of bedrock rubble, hole stopped because of caving.
- WDH#6 (L32W, 45S; on coincident geochem-EM anomaly)
- 33 feet of overburden, 16 feet of graphitic phyllite with pyrite lenses.
- WDH#7 (150 feet northwest of WDH#6)
- 41 feet of overburden, 17 feet of black dolomite with pyrite lenses.
- WDH#8 (50 feet northwest of WDH#7)
- 40 feet of overburden, 15 feet of black dolomite with pyrite lenses.
(progress to July 15)

Although more success is being had getting holes down, progress is very slow and it is debatable whether the Winkie can handle the amount of drilling required in the early stages.

It has not been possible to date to predict the location of the host dolomite either geochemically or geophysically ~~or geophysically~~ and several holes will be put down across coincident anomalous zones in an attempt to determine some kind of control. However, anomalies are so large and variable in character, that a great deal of time could be lost in attempting to establish such a control in some locale, only to discover that it does not apply throughout the mineralized zone.

Because it has been demonstrated to date that a geochemical zone of over 8,800 feet in length is reflecting zinc mineralization of marginal grade, and because current methods of trenching and drilling are probably not going to be successful in determining grade and extent, it is recommended that a major diamond drilling program be considered for the near future. Based on depth of bedrock in several Winkie holes, cat trenching is not recommended for cover is most likely too deep over the majority of the zone.

Geology

Mineralogy is simple, consisting of light purplish-brown, fine to medium-grained sphalerite, galena in quartz veins, pyrite, rare chalcopyrite and chalcocite (?). Gangue consists of quartz, calcite, minor siderite, and rare barite. Hydrothermal alteration is erratic and not pervasive, consisting of

silicification and minor pyritization. Textures are characteristic of open-space filling in quartz-carbonate veins and of true disseminated replacement by sphalerite and pyrite. Host rock is brecciated, erratically silicified gray dolomite. The dolomite bed where exposed appears to be about 100 feet thick, strikes N70°W (parallel to regional strike as well as trend of geochem and EM anomalies) and dips about 50° south.

Genetically the deposit is obviously of the telethermal class (Mississippi Valley lead-zinc, Tennessee zinc, and Polish lead-zinc types). Accordingly, every attempt is being made to trace the "host dolomite" outward from the Pay area using geology and reccy geochem for telethermal types are commonly of great extent and stratigraphically controlled. The same unit has already been located 10 miles southeast on Dolomite Ridge where it has the same brecciated, quartz veined character - rare sphalerite and barite in fractures have been noted in this locale.

Geochemistry

The total extent of the south Pay geochemical anomaly is now 8,800 feet in length, and is open on either end. The anomaly lies between OW-88W and averages about 1200 feet wide. The zone consists of at least five elongate highs of over 1000 ppm Zn; peak values in the highs range between 3000-4000 ppm and highest value is 9000 ppm. Statistically determined threshold is 300 ppm and anomalies have steep gradients commonly climbing abruptly from 300 ppm to peak values in distance of less than 200^{ft} horizontal distance.

Continuity between peaks is remarkable for the three highest spots lie on a straight line which corresponds accurately with local strike of bedrock.

Minor anomalies of up to 800 ppm lie close to the main zone. Lead geochem is erratic but in one place a value of 11,800 ppm Pb corresponds with a minor Zn anomaly. Lead appears to be extremely limited in geochem mobility for even in areas of exposed galena-bearing veins only one or two Pb geochem highs occur.

Line cutting and sampling are continuing daily in an attempt to enclose anomalies.

An isolated Zn anomaly occurs along 6136W. It extends for at least 2000 feet with a width of about 600 feet. Peak value is 9000 ppm Zn. The anomaly lies just downslope from a galena-barite-quartz vein (previously described as situation #3) with marginal disseminations of galena.

EM

Relationships between Crone and Ronka EM anomalies (occurring in the area of the geochem zone) are not definitive. However, a Crone high-to-low frequency ratio contour map indicates that high ratios are apparently coincident with a high geochem zone within the main anomaly. Studies are being made in an attempt to correlate EM with the geochem.

Magnetics

The geochem zone appears to lie between two elongate aeromagnetic highs. This relationship is borne out by ground magnetics. No significant relationship can be seen between geochem and magnetics.

NAR GROUP

West Nar

Work was temporarily suspended on the west Nar on July 4 due to apparent lack of high enough grade zinc, small scattered showings of apparently limited size, and apparent lack of success in tracing mineralization magnetically. Although the locale is one of lower priority on the Nar, the grid will be geochem sampled and more magnetics and EM done after other situations have been evaluated. Geology consists of steeply-dipping interbedded cherts, rhyolites, and quartzites cut by thin monzonite sills containing sphalerite and pyrrhotite. Assays from selected exposures and floats ran 0.95-16% Zn with an average of about 6%; Cu, Pb, and Ag ran only minor amounts. Magnetic results were inconclusive although it appears that a mag high may overlies the locale of most abundant float.

North Nar

A narrow (up to 2 feet wide) band of diopside-pyrrhotite skarn interbedded in a steeply-dipping, east-west striking succession of chert, limestone, dolomite, and skarn, contains massive Pb, Zn, Cu over a width of about two feet. Float occurs westerly from the area of exposure over a distance of about 1000 feet. Marginal to the band is a 15 x 200 foot lens of low grade chalcopyrite-bearing crystalline limestone. A geochem grid was put over an area of most abundant float west of the exposure. The locale is of little significance at this time.

South Nar

Previously discovered (by J. French and W. Waugh) float locations were re-located and more were found along the steep talus slope on the south side of Nar mountain. French's showing appears to be vein material; no width is visible. Waugh's float is massive Pb-Zn-Cu in diopside-pyrrhotite skarn; more was found in the immediate area. All material has been sent for assay. Due to talus cover, no exposures are present. A grid will be put over the float areas and geochem sampled; magnetics and EM done also. Anomalies will be blasted open and hand trenched. This locale appears to hold more potential than others due to high silver assays obtained last year.

BILL GROUP

Geochemical results appear encouraging. Two northwesterly-trending Zn anomalies each of over 4000 feet in length lie on-strike to the northwest of a rusty dolomite-limestone unit adjacent to an intrusive contact. Peak values are 1000 ppm Zn; anomalies have steep gradients rising abruptly from a threshold of less than 300 ppm.

A 49,000-foot grid with 800-foot spaced cross lines has been laid out. Cutting will begin this week. Magnetism, EM, and 100-foot geochem sampling will be done on the grid.

SPUD GROUP

Geochemical results from the Spud group are not outstanding. A narrow elongate Zn anomaly of about 4000 feet in length reaches a peak of 670 ppm Zn; it strikes northwesterly, parallel to structure. Geology and prospecting will be done in the anomaly area in the near future.

JAKE GROUP

Geology, prospecting, and local geochem soil sampling have been completed on the Jake group. Results are not encouraging. Almost all showings located by Hundere last season were found, by Brodell, to be very small situations - most consisting of veins and minor disseminations. Hundere and Dunsmore will check all showings this week.

Addition to Pay Group (July 18)

Further to recommendation to consider diamond drilling in the near future, it should be mentioned that portions of the anomalous zones lie in suboutcrop areas and that cat trenching could be successfully done in these areas. If it is felt that a more thorough preliminary investigation of the zone should be made prior to diamond drilling, cat trenching is strongly recommended. Two weeks of trenching with a D8 and ripper could probably give a good picture of thickness of the host unit as well as grade in some portions of the zone.

No hand trenches to date have reached firm bedrock and all rubble brought up is oxidized to a considerable extent (limonite and smithsonite (?) in white caliche-like coatings after sphalerite) so that accurate grade can not be determined from trench sampling. Winkie drilling is going much too slowly.

In view of the above it is recommended that either cat trenching or drilling be laid on as soon as possible.

DETAILED SUMMARY OF WORK COMPLETED
(To July 15, 1967)

PAY

<u>Line Cut:</u>	to June 30	231,400 feet	
	additional	<u>72,700 feet</u>	
	total to July 15 (incl)	304,100 feet	= 57.6 miles

<u>Magnetometer Survey:</u>	to June 27	183,900 feet	
	additional	<u>113,900 feet</u>	
	total to July 15 (incl)	297,800 feet	

<u>EM Survey:</u> (Crone)	to June 30	239,000 feet	
	additional	<u>77,500 feet</u>	
	total to July 15 (incl)	316,500 feet	

(Ronka 16) began July 6, 1967			
	total to July 15 (incl)	67,300 feet	

<u>Geochem:</u>	to June 30	1,732 samples	
	additional	<u>1,020 samples</u>	
	total to July 15 (incl)	2,752 samples	

<u>Survey:</u>	to June 30	35,500 feet	
	additional	<u>10,800 feet</u>	
	total to July 15 (incl)	46,300 feet	

A survey of claims was also made from July 1 to 15, 1967.

<u>Pay Chopper Time:</u>	hours used May 25-30	12.3 hours	
	hours used in June	25.1 hours	
	additional	<u>10.5 hours</u>	
	total to July 15 (incl)	47.9 hours	
	(excluding Pay OEX hours)		

<u>NAR</u>	Began June 23, 1967.		
	Completed to July 15:		
	<u>Mag Survey:</u>	19,000 feet	
	<u>Line Cut:</u>	19,000 feet	

Some trenching and a considerable amount of geology and prospecting was also completed. T. Adamson, Geologist, P. Risby, Prospector

<u>Nar Chopper Time:</u>	to June 30	5.6 hours	
	additional	<u>8.4 hours</u>	
	total to July 15 (incl)	14.0 hours	

JAKE

Began July 3, 1967.

Geochem: 159 samples on soil lines.

Jake Chopper Time: to July 15 (incl) 8.3 hours

Geology and prospecting were also done. Geologist, R. Dunsmore;
Prospector, H. Brodell

NIP

June 27-30, 1967.

Staked 10 claims and did a brief property examination.

Fixed wing support was used.

Geologist, R. Dunsmore; Prospector, H. Brodell

RIS

Began July 7, 1967.

Property examination and recently geochem survey began.

Ris Chopper Time: to July 15 (incl) 2.1 hours

Prospector, A. Lake; Helper and Sampler, M. Acklack

BILL

June 14 to June 20, 1967.

Geochem: (redone due to first batch being burned)
July 3 to 5, 1967 118 samples

Bill Chopper Time: to July 15 (incl) 5.2 hours

Geologist, R. Dunsmore; Prospector, H. Brodell

TIM

July 1 to July 6, 1967.

TIM (cont'd)

An examination of the property and geochem survey was made.

Geochem: 179 samples

Tim Chopper Time: .4 hours

Prospector, A. Lake; Helper and Sampler, M. Acklack

OEX

Moto Sakurai, Geologist; C. Fleming, Helper, have been in OEX since June 9, 1967.

A. Lake and M. Acklack were in OEX from June 15 to June 29, 1967.

Geochem: 253 samples (taken by M. Acklack)

<u>OEX Chopper Time:</u>	to June 30	1.2 hours
	additional	6.8 hours
	total to July 15 (incl)	8.0 hours

SPUD

June 26 to June 30, 1967.

Geochem Survey: 191 samples

Spud Chopper Time: 2 hours

Geochem Samplers: Gerry Hayne, Val Pratico, Charlie Wicks.

CHOPPER TIME (Overall Sheldon)

PIKE	49.6 hours
PAY	47.9 hours
PAY OEX	1.8 hours*
BILL	5.2 hours
NAR	14.0 hours
SPUD	2.0 hours
OEX	8.0 hours*
JAKE	8.3 hours
PELLY (camp support)	1.6 hours

*1.4 hours was included in straight OEX and in individual Pay breakdown for June 30 report.

CHOPPER TIME (cont'd)

TIM	.4 hours
RIS	2.1 hours
TOY	1.3 hours
RIO	3.5 hours

145.7 hours (total to July 15, 1967)

Hours flown in May (25-30)	24.1 hours/6 = 4 hours/day
" " " June	77.3 hours/30 = 2.57 hours/day
" " " July (1-15)	44.3 hours/15 = 3.0 hours/day
	<u>145.7 hours</u>

Overall average for 1967 season $145.7 \text{ hours} / 61 \text{ days} = 2.86 \text{ hrs/day}$
Daily average at 80 hours/month minimum = $2/67 \text{ hours/day}$

W. Callison

Very sent from U.S.

ATLAS EXPLORATIONS LIMITED

(N.P.L.)

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

TO: Dr. A. E. Aho
Mr. R. E. G. Davis
Mr. E. O. Chisholm✓
Mr. J. S. Brock
Mr. L. Lees

DATE: July 26, 1967

FROM: C. L. Smith

SUBJECT: Sheldon Progress Report #7

PAY GROUP

General

Numerous additional hand trenches and pits have been put down on geochem highs between 32W and 62W. Several were successful in locating zinc mineralization in dolomite float but none reached bedrock. A 100-foot scale map is being made of this area including trench, pit, and drill hole locations, elevations, geochem soil profiles, soil and rock chip types, drill logs, etc. An interpretation will be included in next week's report.

A chip sample of all bedrock rubble (typical mineralized host dolomite) over a 5-foot width in trench #2 (L40W, 47S) ran 8.4% Zn with minor Cu and Pb. This material was felt to be representative of much seen in the geochem zone. Degree of oxidation to limonite-smithsonite (?) was moderate but significant enough that some Zn has definitely been leached out.

Winkie drilling is still proceeding slowly. WDH#8 (reported in July 17 report) was stopped at 97 feet in black carbonaceous dolomite. WDH#9 is now drilling on a 9000 ppm. geochem high at L88W, 72S. Progress to 25th: 55 feet in carbonaceous dolomite. It is obvious from drilling results to date that it is not yet possible to predict location of the host dolomite in the carbonaceous dolomite sequence. It is believed, however, that the carbonaceous dolomites drilled to date overlie the host unit. Most set-ups have been on geochem highs and it is becoming apparent that down slope dispersion beneath a transported soil blanket has occurred over much of the zone (see "geochemistry" below). To date EM has been of little help in locating targets. WDH's 6-8 were drilled across an EM-geochem profile but the host was still not located. The

profile was not completed because of the priority of new extremely high geochem results on L83W. An attempt will now be made to complete a profile with 100-200 foot spaced holes to locate the unit on L88W.

Cat trenching contracted to Liard Construction will begin July 27 - August 1 with a D7E with ripper. Details of contract to be forwarded by J. S. Brock. First trench will be put across the east end of the discovery exposure. Other trenches will be planned contingent on results. Should trenching prove unsatisfactory, work will be halted and additional trenching costs saved.

Again, it appears that the only means of successfully investigating the anomalies will be through a major diamond drilling program. Since the discovery of mineralization, work has proceeded much too slowly due to the inadequacy of Winkie drilling and hand trenching methods to penetrate overburden and bedrock rubble. It is believed that geochemical, geophysical, and geological surveys and interpretations will be completed before mid-August and that a diamond drilling program should begin shortly thereafter. General estimates of number of holes, depth of holes, and total footage to be contracted will be made during early August.

Geology

A hypothetical geologic cross-section map is enclosed. Structure consists of three structural blocks separated by two steeply southwesterly-dipping normal faults. The northeasterly block consists of an open, 20° northwesterly-plunging, anticline cored by banded chert which is locally brecciated and mineralized along the axis.

Style of folding changes to the southeast and is expressed by a tight isoclinal fold plunging 20° northwesterly within the central block. This fold is cored by dolomite and has broad limbs of phyllite.

Southeast of the Boundary Fault the isoclinal style is apparently retained but folds are of lesser amplitude and appear to have responded with greater incompetence for minor folds appear in sericitic phyllite in an anticlinal core. Outcrops in this southwesterly block are very rare and contacts of carbonaceous dolomite are plotted at points of 20° EM dips; values between 20° dip points are greater and exceed 40°. The host dolomite appears to be interbedded in the carbonaceous dolomite sequence; the only reliable exposure gives a dip of 50° southwest. Zones of major geochemical importance developed to date

occur mainly over the northeasterly syncline, south of the Boundary Fault. Smaller anomalies to the southwest may indicate location of the host rock in the southwesterly syncline. Most of the anomalous area outlined by the reccy survey of 1966 has been enclosed (lines are now being extended to Fortin Lake) and the correspondence between anomaly outlines is very close. The dual, bifurcating character of anomalies in the northeasterly limb suggests that both limbs of the tight structure are mineralized. It appears that the mineralization cuts out to the northwest and southeast along strike but 1966 reccy lines were so widely spaced that this is not definite. Reccy lines are being done in both directions but no anomalous values have been located yet.

Geochemistry

A general tracing of the Pay Zn geochemical contour map is enclosed. A description of anomalies east of L88W was included in the July 17 report. Since that time the largest contiguous anomaly in the zone has been outlined. It occurs between L80W-L132W and averages about 800 feet wide (between 1000 ppm contours). Values climb fairly abruptly from 300 ppm threshold to 1000 ppm. Peaks are 20,000 ppm (!) and occur at three separate points along the northeasterly (upslope) side of the anomaly.

Soils in the anomalous area are of mixed origin. Residual types occur locally - as at the discovery exposure where geochem and mineralization correspond exactly. In general, however, soils are transported, though of local origin, consisting mainly of angular phyllite chips with only rare granitic or foreign debris. Mineralized host dolomite float is also commonly found in transported soils. Anomalies in these transported soils could be the product of glacial trains or oblique ground water dispersion. Glacial scouring directions are east-west and meet anomaly trends at from 0-70 degrees. This cross-cutting relation between glacial and geochem trends, the steep gradient (non-dispersed) character of the anomalies, and other features strongly indicate that factors other than glacial transport are involved. Lateral ground water dispersion does not appear to solve the mystery for anomaly peaks occur on elongate humps and ridges and not in near-by hollows and valleys where ground water can be seen emerging. Some form of oblique downslope migration must be involved.

Geophysics

J. S. Brock has made a recent interpretation of magnetic

and EM data and should be completing a report soon. In general, it appears that EM is reflecting the carbonaceous dolomite sequence but that location of the host within the sequence cannot yet be done.

SOUTH NAR

The magnetics, EM, and geochem have recently been completed and 20,000-foot, 200-foot line spacing grid on the south Nar talus slope.

Pb soil anomalies are numerous, have general downslope trends, and reach peak values of over 3000 ppm. The largest Pb anomaly (as well as a small magnetic anomaly) occurs over the Waugh float. However, the length parallel to strike in the area (along the slope contour) is no more than 400-500 feet. Magnetic anomaly over the float is 200-300 feet wide along strike.

Assays are awaited from Whitehorse. Should high Ag be reported, propagation trenching will be attempted across anomalies to get size estimates.

BILL GROUP

A 49,000-foot, 800-foot line spacing grid will be completed today over previously located Zn geochem anomalies. EM is being done now and soil geochem and mag will begin in a few days. Detailed geology and prospecting have been completed and what appears to be host dolomite of the Pay variety (interbedded in a carbonaceous sequence) has been found directly on-strike with anomalies about 400 feet away. Pb-Zn-Cu-arsenopyrite replacement mineralization in dolomite and limestone has also been located about 400 feet from edge of one anomaly. Two assays returned 2.35% and 3.65% combined Pb-Zn with minor Cu and Ag. At present the Bill situation appears to be an excellent prospect - mainly because of its similarity with the Pay.

JAKE

A geochem soil grid over a 1966 geochem high on the east Jake defined an elongate east-west Pb and Zn anomaly of about 1500 feet long and open to the east. Pb peak value is 7600 ppm and zinc is 2000 ppm. Minor Pb-Zn replacement in quartzite west

of the anomaly has been located. Detailed geology, prospecting, and extension of the geochem grid are being done now.

FROM

E. O. Chisholm

DEPARTMENT

Vancouver, B. C.

Dr. C. L. Smith, Copy: J. S. Brock

DATE

July 31, 1967.

Atlas Explorations Limited,

SUBJECT

Whithorse, T.

MESSAGE

Dear Clyde:

Regarding your Sheldon Progress Report No. 7, you will find enclosed comments on John Brock's report covering the PAY group of claims on July 26. The only comments I have to add to your report on the PAY is that the difficulty in interpreting the geochemical survey may be due to the fact that the overburden appears to be of mixed glacial and residual overburden. However, for recce. purposes it is, of course, a very valuable tool and we should push ahead the outward extensions of these zones on a recce. basis in the area. I plan to be in your area shortly.

USE LOWER PORTION FOR REPLY

REPLY FROM

DATE

MEMO TO: Mr. J. S. Brock

COPY: Dr. C. L. Smith

FROM: E. O. Chisholm

DATE: July 31, 1967.

Your Progress Report dated July 25 received today and read with interest. Clyde Smith's report of July 26 entitled "Sheldon Progress Report No. 7" also arrived.

In general, the two reports are in fair agreement regarding the interpretation of the electromagnetic, geo-chemical, magnetic, and geological data gathered to date. Both reports point out the difficulty in interpreting the indirect geophysical evidence over flat-lying structures that are covered with widespread but shallow overburden. I can only agree with the conclusions of both reports that direct evidence of bedrock conditions by trenching or diamond drilling is an immediate necessity. The best locations to obtain this would appear to be trenching in the area of the discovery trench where overburden conditions are known, or in the area of the new anomaly at 80°W where conditions will soon be evident from the results of diamond drill hole WDH 11. We should defer the decision on heavier drilling until the results of this trenching and the Winkie diamond drilling now in progress are completed. The availability of a large diamond drill should be scouted at once in case we embark on major drilling in August. The two first firms to be contacted should be Arsenault Diamond Drilling and Midwest Diamond Drilling. Normal contract bids should be sent to these two firms in the near future. If possible, the contractors should bid firmly on the transportation costs from Ross River, as this appears to be one of the major bones of contention in these contracts. Since there is now limited access to the area by bulldozer road, it should be possible for the contractors to firm this bid.

Regarding the electromagnetic surveys, I would agree with Clyde Smith that these surveys provide very little direct evidence of mineralization, but also agree with you that they provide very valuable information on the underlying graphitic horizons and in this type of work are valuable. I think, however, until their interpretation has been clarified by more work

that we should concentrate more on the geochemical recce. in the area to find out the lateral extent of the horizons outside the claim area and suggest that the personnel engaged in electromagnetic and magnetic work should be transferred to geochemical work to speed this phase up. In this regard, more parameters regarding the soil types, the drainage, the nature of the overburden, etc., should be provided in the geochemical data, if it has not already been done.

In your recommendation (1) regarding the extension of the grid, this would appear to be in order on an 800-foot line spacing basis. Recommendation (2) regarding the Winkie drilling should be attempted, but should be dependent upon the results of the coring itself. Recommendation (3) regarding the biogeochemical sampling is a good idea and should be followed up immediately. If the dwarf birch samples are taken, please ensure that the twigs are uniformly taken from this year's growth. You can consult procedures outlined by Warren on this point. The proper ashing techniques should also be followed. Recommendation (4) regarding airborne survey can be re-assessed at a later date, as you suggest. Recommendation (5) - Bulldozer Trenching: I think both areas, that is the discovery area and the long trenches over Zone 2, should be tried while the cat is on the ground. The bombardier should be available for servicing at the time this is carried out. Recommendation (6): I would agree that the PAY camp should be moved to Fortin Lake better to service this area and that a cat trail be constructed between Pay Lake and Fortin Lake to facilitate the moves by bombardier.

Let me congratulate you on the thoroughness and thought you have put into this report. I do not believe there is much more we can do with the data on hand until further direct evidence is obtained. Structural interpretations are necessarily dicey at this stage of the development, but certainly some general guidelines have been indicated.

I think this report should serve as the basis for the completion of Phase II of exploration on the PAY group of claims and that we should submit it to the government for reclaiming our portion of the exploration costs. If it is acceptable it will save us a great deal of effort in preparing detailed maps as were prepared in the last grant report on the Pike claims.