

ATLAS EXPLORATIONS LIMITED

(N. P. L.)

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

July 16, 1969

PROGRESS REPORT - HESS OEX

PERIOD: May 26 to June 30, 1969

TECHNICAL REPORT

Geology

Geological mapping completed to date is as follows:

Reconnaissance:

(a) Laforce Lake Area

- (i) Additional 1" = $\frac{1}{2}$ mile mapping in the vicinity of Laforce Lake (105-K-9).
- (ii) Continuation mapping at a scale of 1" = $\frac{1}{2}$ mile in N.T.S. areas 105-J-12 and 13 and 105-K-16. (That part of the Lad Group - May Group mineralized belt which lies southeast of the South Macmillan River).

(b) West Lake Area

- (i) Mapping at a scale of 1" = 1 mile for the area covered by stream-sediment geochem. (Parts of the following sheets, see 4 mile maps enclosed)
105-N-9; 105-N-16; 105-O-12; 105-O-13

Detailed Geological Mapping:

(a) Laforce Lake Area

- (i) Mapping of the May Group - Box Group Area at a scale of 1" = $\frac{1}{4}$ mile (Don Francis)
- (ii) Mapping in the vicinity of Peak 6923 (Sanford).

(b) West Lake Area

- (i) Mapping in the Bob Group - Mount Aho area; Stratigraphic section and structural mapping.
- (ii) Mapping in the vicinity of anomalous geochem values detected during the 1968 season (Sanford).

The mapping completed in the Lad Group - May Group belt provides adequate coverage to insure that a mineralized area detectable by conventional (or unconventional) reconnaissance survey procedures, has not been overlooked.

Reconnaissance mapping in the West Lake area was done in sufficient detail to provide a good control for the associated geochemical surveys.

Geochemical Surveys

Conducted on the following basis:

Reconnaissance:

(a) Laforce Lake Area

- (i) All of the tributaries of the Riddell River near its confluence with the South Macmillan.

(b) West Lake Area

- (i) Stream-sediment sampling in parts of N.T.S. areas 105-N-9; 105-N-16; 105-O-12.

Detailed Geochem:

(a) Laforce Lake Area

- (i) Soil sample grids in the May Group - Box Group area. Line cut: 24,200 ft. Soil sampling at 100 ft. intervals.

(b) West Lake Area

- (i) Contour sampling in area of high Pb values southeast of Mount Aho.
- (ii) Cross-strike geochem profile east of the Bob Group Area in an attempt to locate anomalous source bed.

Geochemical values for the Box and May Groups have been received but only scattered anomalous values were noted.

The area west of Spearhead Mtn. (6923) yielded anomalous Pb values on one minor drainage and in one soil sample. In view of the magnitude of the anomaly (500 to 1750 ppm) and the number of samples (5), the area is still of interest although no mineralization was seen during the geological and prospecting work this spring.

Geophysics

Laforce Lake Area

Magnetometer surveys were conducted over existing grids on the May and Box Groups and will shortly be ready for presentation. The results have been reduced and are ready to be plotted and contoured.

Several of the anomalies on N.T.S. sheet 105-J were checked with helicopter-borne Jalander magnetometer but the readings were erratic and it was my opinion that the instrument was too position-sensitive to be relied on for accurate results.

Ground magnetometer tests by Sanford in the vicinity of an airborne anomaly north of Peak 6923 proved to be unreliable (defective magnetometer).

West Lake Area

Gerry Sanford conducted a magnetic survey in the vicinity of Goechem Anomaly #90 on Pleasant Creek north of Swan Lake. A grid with 1200 ft. baseline and 1000 ft. cross lines was cut over the anomaly area, and magnetometer readings were taken at 100 ft. stations on the cross-lines. (My personal opinion of this survey is that the observed drift recorded by Sanford in his baseline loop (450 gammas) is much too high to yield meaningful results).

Prospect Development

(a) Laforce Lake Area

Geology has been done in the immediate vicinity of the areas thought to be of interest after the 1968 field season. (In particular, areas of anomalous Pb geochemistry). Contour soil sampling has been performed on the slopes adjoining anomalous stream-sediment sample sites. Anomalous sites examined include:

#154
#157 and #158
#161 to #164
#176

(b) West Lake Area

Anomalous areas treated include:

#3 to #5
#34 and #35
#94, 95 and 96
#102

Prospecting

During the latter part of May and early June, Brodell and Etzel were both attached to the May and Box Group Area. Their work required more time than originally planned because prospectors assistants were not available for a part of the time.

Numerous small showings of pyrite and minor chalcopyrite were found in the vicinity of a quartz-monzonite stock northeast of the Box Group. Eight assay samples were taken (4001 to 4008) and most yielded low Cu and precious metal values. The best were:

No. 4004 - 1.8% Cu
No. 4008 - 0.16 oz/ton Ag

June 13th, Brodell left the May-Box Area for Stokes Lake to examine an area of extensive gossan discovered in the course of airborne recce (fixed-wing; Coates-Godwin). This work was interrupted by the forest fire hazard in the third week of June when Brodell was pulled out of the forest. Returning to the area on June 20th, he completed the work by June 26th. The only sulphide mineralization turned up was pyrite in a chert pebble conglomerate horizon. June 26th to 28th Brodell spent at Canoe Lake. June 29th Brodell moved to Big Kalzas Lake to construct a base camp.

West Lake Area: Etzel, upon completing work in the May Group - Box Group area, moved to the Bob Group - Mount Aho area. The only mineralization discovered during his work in the area was pyrite in bedded carbonaceous chert and chert pebble conglomerate.

PERSONNEL

<u>Name</u>	<u>Rate</u>	<u>Job</u>	<u>Days</u>	<u>Salary</u>	<u>Totals</u>
Coates	\$1,000/mo.	102-06-1	15	500.00	
		-08-1	10	333.33	
		-02-1	5	166.67	
		-21-1	6	193.56	
		Pr-OT		179.03	\$ 1,372.59
Francis	\$750/mo.	102-06-1	36	895.16	
		Pr-OT		134.28	\$ 1,029.44
Sanford	\$700/mo.	102-06-1	50	1,151.61	
		Pr-OT		172.74	\$ 1,324.25
Waldner	\$600/mo.	102-06-1	36	716.30	
		Pr-OT		107.25	\$ 823.55
Smith	\$425/mo.	102-21-1	24	340.01	
		-08-1	8	113.34	
		-06-1	4	56.67	
		Pr-OT		76.32	\$ 586.34
Gunville	\$600/mo.	102-21-1	30	600.00	\$ 600.00
Thomas	\$450/mo.	102-06-1	36	537.10	
		Pr-OT		80.56	\$ 617.66
Etzel	\$600/mo.	102-02-1	42	832.26	\$ 832.26
Brodell	\$650/mo.	102-02-1	29	628.33	
		-03-1	3	63.63	\$ 691.96
Smith J.	\$600/mo.	102-21-1	7	135.27	\$ 135.27
Ladue	\$600/mo.	102-08-1	42	832.26	\$ 832.26
Acklack	\$20/day	102-02-1	29	580.00	
		-03-1	3	60.00	\$ 640.00
Hain- eault	\$400/mo.	102-08-1	18	240.00	
		Pr-OT		36.00	\$ 276.00
Shorty	\$20/day	102-08-1	19	380.00	\$ 380.00
Johnny	\$20/day	102-08-1	13	260.00	\$ 260.00
Vlasveld	\$600/mo.	102-21-1	3	60.00	
		Pr-OT		9.00	\$ 69.00
TOTAL WAGES					\$10,471.78

HESS OEXHELICOPTER

			<u>Totals</u>
May 26 to	102-06-3 (Geology)	9.65 hr.	
June 1	102-08-3 (Geochem)	7.05 hr.	
	102-02-3 (Prospecting)	4.7 hr.	
	102-22-3 (local Trans.)	0.8 hr.	\$ 3,596.40
June 2 to	102-06-3	6.2 hr.	\$ 1,004.40
June 8			
June 9 to	102-06-3	7.6 hr.	
June 15	102-08-3	6.3 hr.	
	102-02-3	6.6 hr.	\$ 3,321.00
June 16 to	102-06-3	6.6 hr.	
June 22	102-08-3	3.1 hr.	
	102-02-3	2.8 hr.	
	102-22-3	1.4 hr.	\$ 2,251.20
June 23 to	102-06-3	10.4 hr.	
June 29	102-08-3	19.3 hr.	
	102-02-3	1.4 hr.	\$ 5,038.20
June 30	102-06-3	1.4 hr.	\$ <u>226.80</u>
			TOTAL HESS OEX
			\$15,438.00

LAD GROUP

June 10	2.9 hr.
June 11	4.0 hr.
June 20	4.0 hr.

* TOTAL LAD GROUP \$ 1,765.80

* Total includes fuel and fuel haul costs

FIXED-WING FLIGHTS

	<u>Mileage</u>	<u>Coding</u>	<u>Cost</u>
May 26 to	Otter 540 mi.	102-22-4	
June 1st	Beaver 120 mi.	102-22-4	\$ 858.00
June 2 to	Beaver 115 mi.	102-22-4	\$ 97.92
June 8	Recce	102-02-3	\$1,250.00 \$1,347.92
June 9 to	Otter 120 mi.	102-22-4	
June 15	Beaver 240 mi.	102-22-4	\$ 372.00
June 16 to	Beaver 1,570 mi.	102-22-4	\$1,334.50
June 22			
June 23 to	Beaver 150 mi.	102-02-3	\$ 127.50
June 30	Beaver 230 mi.	102-22-4	\$ 195.50
	Beaver 230 mi.	102-22-4	\$ 195.50
	Beaver 290 mi.	102-02-3	\$ 246.50 \$ 765.00
TOTAL HESS OEX *			<u>\$4,677.42</u>

Fuel Flights (for reference only)

June 16 to	Beaver 1,400 mi.	\$1,190.00
June 22		

* Total fixed-wing flights do not include fuel flights as they are included in helicopter costs.

CAMP COSTS: At present I do not have the necessary invoices, statements, etc. to make an accurate estimate. Making a rough estimate at \$10/man-day costs are:

450 man-days \$ 4,500.00

GEOCHEMICAL ANALYSIS 1491 samples @ \$2.00/sample \$ 2,982.00

ASSAYS 9 samples @ \$5.00/sample \$ 45.00

TOTALS:

Wages	\$10,471.78
Helicopter	\$15,438.00
Camp Costs	\$ 4,500.00
Assays	\$ 45.00
Geochemical Lab	\$ 2,982.00
Fixed-Wing	\$ <u>4,677.42</u>
Total	\$38,114.20
Plus 10% Overhead	\$ <u>3,811.42</u>
GRAND TOTAL	\$41,925.62

GENERAL SUMMARY

Hess Outside Exploration

The author spent from July 22 to July 26 in the Hess Area reviewing work done to date and future program.

All prospecting, geochemical sampling and geologic mapping will be completed out of the Swan Lakes base camp by the first week of August. A brief report on this work has been submitted by Party Chief, Tim Coates. To date no results of significance have been obtained through the geochemical and prospecting program. Detailed study of geochemical results from the entire area and their relationships to known geology after all results have been compiled will likely reveal areas warranting follow-up. It has been suggested that the 'Vole Creek' area will receive priority in further investigation of high silt and soil samples obtained from gossan areas in that region.

During the month of August the base camp will move to LaForce Lake where similar exploration will be done over the Sheldon, Ridell, Dragon, Selous belt. Work will consist mainly of investigation of intrusive granites into the Proterozoic as well as follow-up of some reported mineral occurrences.

Better coverage of drainage areas will be achieved by supporting the geochemical sampling program on a daily basis by helicopter from base camp where greater supervision can be exercised.

Hess Properties

During the month of July the Tom, Scot and Art Mineral Claims were examined in detail by Party Chief, Tom Adamson, and his crew.

The Tom Group was found to contain a thick section of Ordovician-Devonian black cherts and shales. No sulphides other than pyrite were found and it has been recommended that the claims be allowed to lapse.

The Scot Mineral Claims were detailed with soil sampling, magnetic and electromagnetic surveys as well as geologic mapping. A large and yet unexplained zinc geochemical anomaly has been outlined and more work is recommended.

The Art Mineral Claims were evaluated with geochemistry and geophysical surveys (EM and Mag.). No significant sulphide mineralization was seen in either float or in place.

There is no apparent coincidence between geophysical and geochemical responses. Geochemical anomalies appear to be over black cherts. It is recommended that the claims be allowed to lapse.

For the month of August work will be concentrated on the Lad Mineral Claims where magnetic and electromagnetic surveys will be carried out in conjunction with a soil sampling program. Further prospecting done over the Lad Group this season located further zones of sulphide mineralization (galena, chalcopyrite) in altered shear zones. Additional staking of these areas (Rob Group) has been carried out.

Detailed silt sampling of all drainages in the Lad Region is to be done and plans for an airborne Mag-EM survey over the area are being made for late August.

Respectfully submitted,

John S. Brock,
Operations Manager-Yukon,

YUKON EXPLORATION PROGRAM

Summary of Expenditures - July, 1968

		<u>Estimated Expenditures</u>	<u>Budget Amount</u>
SHELDON PROJECT	Pay Drilling	\$22,000.00	\$ 32,000.00
	Phil Group	1,200.00	
	Sheldon OEX	6,000.00	15,000.00
HESS PROJECT	Hess Properties	18,000.00	30,000.00
	Hes OEX	25,000.00	30,000.00
YUKON OEX	Nip Group	4,500.00	3,300.00
	AH Claims (not completed)		
ROSS RIVER	Expediting & Geochem	3,500.00	4,200.00
WHITEHORSE	Details not available		
	TOTAL	<u>\$80,200.00</u>	<u>\$114,500.00</u>

Underbudget figure due to:

- (1) Contingent expenditures not being used.
- (2) Overhead charges (Vancouver Office) not included.
- (3) Pro-rated charges such as expediting, geochem lab and fuel caches not being used.

HESS PROPERTIES REPORT

TOM MINERAL CLAIMS

The Tom Group was evaluated by a Hess Properties Crew consisting of geologist and two student assistants during the period July 16 to July 22, 1968.

The claim group is above timberline and outcrop exposure is close to 100 percent throughout. Because of this, no geochemical or geophysical work was considered necessary for preliminary evaluation. The work done consisted of detailed mapping and prospecting.

The area was investigated last year by a geologist and prospector. The soil sampling was done by the geologist while mapping. For this reason, nearly all soils collected in 1967 were from areas of good outcrop exposure. The only sulphides found last year consisted of one piece of vein quartz float containing tetrahedrite. There is also some pyritization in the hornfels surrounding the intrusive.

This season's (1968) work only confirmed the mapping and prospecting done last year. No sulphides other than pyrite were noted.

Geology

The claim group is within a thick Ordovician-Devonian section of black chert and shales, chert pebble conglomerate and minor graphitic dolomite as well as grey argillite and grey shale. The regional strike is about 130° , and dips are moderate to steep to the southeast. A Cretaceous granitic intrusive is located to the northeast of the claim group. The southwest half of the claim group is composed of pebble conglomerate (unit 3d). This rock is very clean, compact and massive. The northeast claim group area is mainly black chert and black shale with extensions further to the northeast from the property. There are also some narrow units of rusty grey shale and graphitic dolomite.

Intense hornfelsic alteration was noted around the intrusive. In this area bedding attitudes are variable. The hornfels is banded, pyrite rich and siliceous. It is generally quite rusty.

A number of fine to medium grained intrusive dykes were also noted around the intrusive but there was no associated sulphide mineralization.

A barite vein and a number of narrow quartz-calcite veins were found east of the claim group but again no associated sulphide mineralization was seen.

Conclusions

The area was mapped and prospected in detail. There were no encouraging results. The claims should be allowed to lapse.

SCOT MINERAL CLAIMS

The Hess Properties crew spent from June 21 to July 5 evaluating the Scot Group. The crew consisted of a geologist, 2 studentassistants, 2 linecutters and cook. An additional 3 days were spent on the property (July 13-15) by a magnetometer operator and a linecutter/soil sampler doing follow-up work.

The purpose of the investigation was to evaluate an area of high zinc values in soils obtained by reconnaissance soil sampling during the 1967 season.

A grid was cut over the area of interest (total 67,200 feet). Geology was mapped over the grid area. Soil samples were taken at 100 foot intervals on the grid lines of 800 foot spacing. Electromagnetic and magnetic surveys were also done. Silt samples were collected from all drainages coming off the area of high reconnaissance soil geochemistry.

Geology.

Regionally, the claim group is within a thick Ordovician-Devonian section composed mainly of black chert, black shales and slates, minor limestone, quartzite and phyllite. The sediments are quite uniformly steeply dipping and strike in an easterly to southeasterly direction.

Over the grid area, outcrop is very limited. The following units were noted:

- | | |
|----|---|
| 3d | Buff to white fine-grained quartzite |
| 3c | Grey phyllite and shale |
| 3b | Calcareous phyllite and minor black limestone |
| 3a | Black chert, black slate and shale. |

Unit 3a is by far the most abundant. All the units are thin and interbedded. Because of the narrowness of the units, the interbedding and the very small amount of outcrop, it is only possible to make an outcrop map of the area. That is, it is impossible to interpolate units or contacts outside of the immediate outcrop area.

Tetrahedrite (minor) in a quartz-calcite vein cutting across black chert, shale and limestone, outcropped in one small area in the northwest portion of the claim group and grid area. Similar vein material as float was discovered about 400 feet laterally along slope from the outcrop area. No other sulphide mineralization was noted on the claim group or surrounding area.

There is very little outcrop in the eastern grid area. Centred at BL 8+00 W, is an area of about 400 by 500 feet in which carbonate rich ground waters have emerged to the surface, depositing a light porous chemical sediment of calcium carbonate (travertine). Much moss and other organic material in this area is replaced by carbonate. Travertine float was found over a wide area in the eastern part of the grid.

Geochemistry

Silt samples were taken from all drainages in the claim group area. A zone of very high zinc values was found on the west facing slope east of Jake Lake Creek.

Soil samples were taken at 100 foot intervals over the grid. These soil samples outlined a large zinc anomaly (approximately 3200 by 1600 feet) with values ranging from 5000 to 35,000 parts per million zinc. Three small anomalies are located north of the main anomaly. There are no outcrops in the anomalous area. The nearest outcrops are black cherts and grey shales. The carbonate seepage area at BL, 8+00 W. is within the anomalous area. Travertine float was found close to nearly all high zinc values.

A rock geochemical test of the travertine ran 4000 parts per million zinc.

Geophysics

Magnetometer Survey - A magnetometer survey was run over the eastern grid area, which included the zinc anomaly. All gamma values obtained were uniform and of a 'flat' nature. No anomalous or above background trends were recorded.

Electromagnetic Survey - Crone JEM horizontal loop was run over the entire grid. All resultant dips ranged from low to high negative angles. -A 480/1800 cps frequency ratio of dip angle values analysis was attempted to determine relative conductivity trends, however no meaningful correlation with other geochemical-geophysical results was observed. It was impossible to correlate electromagnetic results with any of magnetics, geology or geochemistry.

Summary and Conclusions

A large zinc geochemical anomaly was outlined by soil sampling. This area was also detailed by silt sampling. There is no outcrop over the anomalous zone. On the geochemical anomaly there is a seepage of carbonate-rich water depositing a porous chemical sediment of calcium carbonate on the surface. Float of this travertine is found over much of the geochemical anomaly area. The travertine has a zinc content of 4000 ppm zinc as determined by rock geochemistry. Geophysical surveys failed to provide any conclusive results.

Recommendations

More work is justified on the Scot Group because:

- (1) Large unexplained zinc geochemical anomaly.
- (2) High zinc values in soils (peak values in excess of 35,000 ppm).
- (3) High zinc values in silts (peak values in excess of 8000 ppm).
- (4) The indicated presence of a host rock suitable for replacement (carbonate) coinciding with the soils anomaly.

The following additional work is recommended:

- (1) Linecutting to reduce line spacing in the anomalous area to 400 feet.
- (2) Soil sampling of above lines.
- (3) Detailed search for outcrop in the anomalous area. Sinking of prospect pits on geochem highs.
- (4) Geophysics (more detailed magnetics as an aid to mapping).
- (5) Small diameter core drilling.

Survey Maps

- | | |
|--|--------|
| (1) Claims and Grid Key Map | 1:2640 |
| (2) Silt Sample Results (Cu, Zn) | 1:2640 |
| (3) Geology - Regional | 1:2640 |
| (4) Geology - Grid | 1: 400 |
| (5) Soil Geochemical Values (Cu,Pb,Zn) | 1: 400 |

Survey Maps (Cont'd.)

(6)	Contoured Zn Values	1: 400
(7)	EM Values and Profiles	1: 400
(8)	EM Dip Angle Ratios	1: 400
(9)	Magnetics Gamma Values	1: 400

ART MINERAL CLAIMS

The Art Group was evaluated by the Hess Properties crew during the period of July 6 to July 15, 1968. The crew consisted of a geologist, 2 student assistants, 2 line-cutters and a cook.

The Art Group was staked in 1967 on the basis of high copper, lead and zinc values in soils obtained on a reconnaissance soil sample traverse along the valley bottom.

A grid was cut over the area of interest (800 foot line spacing, total footage 41,000 feet). Over this grid geology was mapped and soil samples were collected at 100 foot intervals on all grid lines. Magnetic and electromagnetic surveys were also run.

Geology

The grid area is underlain by Ordovician-Devonian, unit 3a. This unit has been broken down to include:

- 3a-i Dark grey to black graphitic chert.
- 3a-ii Light to dark grey massively bedded argillite.

The general strike is about 115° and dipping steeply to the north or south. A number of aplitic sills have intruded the above units. A small granitic intrusive is located just west of the grid area. The granitic intrusive has produced strong hornfelsic alteration in the western grid area. The hornfels is thinly banded, light to dark grey and very siliceous. The black cherts tend to become bleached and re-crystallized near the intrusive contact. In places the hornfels is quite pyrite-rich and rusty. Other than pyrite in the hornfels, no sulphides were seen in the area.

Geochemistry

A total of 326 soil samples were taken at 100 foot intervals on the grid with 800 foot line spacing. Copper and zinc values were found to be quite high in the hornfelsed northwest section of the grid. A small coincident copper-zinc anomaly centred at line 72W, 5+00 S is in an area of highly fractured black chert laced with small quartz veinlets. Again no sulphides other than very minor pyrite was noted. In other places on the grid there are a few small random high copper and zinc values but none that are coincident.

Geophysics

A magnetometer survey was run over the grid. Background appears to be about 1900 gammas. The area of hornfelsic alteration is all above magnetic background with values ranging from 2000 to 2500 gammas. A large anomaly (3200 by 800 feet) with values ranging from 2000 to 3000 gammas is located over the south-central grid area. There is no outcrop over the peak of the magnetic response. Outcrop noted near the flanks of the anomaly consists of unaltered black cherts and argillite. This anomaly is 'open' to the southeast. The magnetics do not coincide with any of the geochemical anomalies.

Crone EM (JEM) horizontal loop was also run over the grid. Results over most of the grid area are small to large negative dip angles. A few high intensity positive dip angles were recorded in the western grid area and could be attributed to high pyrite content in the hornfels. No significant trends could be deduced from the electro-magnetic results.

Summary and Conclusions

No significant sulphide mineralization was seen in the area, either in place or in float.

Outcrop over the best coincident copper and zinc geochemistry consists of fractured graphitic chert laced with quartz stringers.

No coincidence is apparent between geophysical and geochemical responses.

Electromagnetic results showed no significant conductive trends.

On the basis of the above conclusions it is recommended that the Art Mineral Claims be allowed to lapse.

HESS PROPERTIES CREW
Estimated Expenditure Summary
July 1 - 31, 1968

July 1-5	Scot Group	001	600.00	
		002	200.00	
		15% Overhead	<u>120.00</u>	\$ 920.00
July 13-15	Scot Group	001	40.00	
		002	50.00	
		005	24.00	
		021	91.00	
		15% Overhead	<u>31.00</u>	236.00
	Scot Group TOTAL June 21-July 15			4,299.00
July 12	Ivor Group examination	001	35.00	
		005	182.00	
		021	48.00	
		15% Overhead	<u>40.00</u>	305.00
July 14	Lad Group examination (Coates & Arteaga)	001	35.00	
		005	51.00	
		021	195.00	
		15% Overhead	<u>42.00</u>	323.00
July 6-15	Art Group	001	875.00	
		002	300.00	
		005	300.00	
		008	48.00	
		009	50.00	
		021	1,157.00	
		15% Overhead	<u>410.00</u>	3,140.00
July 16-22	Tom Group	001	420.00	
		002	150.00	
		005	197.00	
		008	96.00	
		009	25.00	
		021	754.00	
		15% Overhead	<u>250.00</u>	1,892.00
July 23-31	Lad Group	001	1,650.00	
		002	543.00	
		003	116.00	
		005	350.00	
		008	393.00	
		009	50.00	
		021	1,339.00	
		15% Overhead	<u>666.00</u>	5,107.00
TOTAL HESS PROPERTIES EXPENDITURES JULY, 1968				\$16,222.00

HESS OEX

TECHNICAL REPORT

Geology

Reconnaissance geological mapping of the Hess River Area will be completed by August 10th. Outcrop mapping has been carried out in the following N.T.S. sectors:

105-N-5
105-N-6
105-N-7
105-N-8
105-N-9
105-N-10
105-N-11
105-N-12
105-N-14
105-N-15

105-O-11

Intensive mapping has been done in the vicinity of newly discovered granitic plutons (Sheets 105-N-5, 6, 7, 15 and 105-O-11) to delineate the contacts and to determine the character of mineralization.

The Proterozoic-Paleozoic contact has been traced throughout the area of exploration. Geochemical data are currently being compared across the contacts between the various rock-types to determine the effectiveness of the lithologic maps as a base-control.

A report on the geology of a copper occurrence in the Arrowhead Pass Area has been prepared by Kyosti Heinanen and is included in this report. A copy of this report should be filed with a previous description of the occurrence, done by M. O. Hampton, for the Dynasty Syndicate, 1963.

Geochemistry

A comprehensive coverage of secondary and tertiary drainages will be completed by August 10. Sampling of minor drainages has been stressed. To July 31, approximately 2500 silt samples and 500 soil samples have been taken in the area. Geochemical maps are currently being updated and should be complete by August 31.

Frequency distributions for Cu and Zn concentrations in stream sediments from representative areas in the Proterozoic and Paleozoic sequences have been prepared and are included in this report.

To date, the geochemical results have delineated a high zinc front in N.T.S. area 105-N-9, southwest of Mount Aho. These anomalous values are associated with a ridge of grey chert and carbonaceous argillite and include those discovered at the Bob Group in the 1967 season.

A similar area of high Zn geochemistry is present on the south flank of Mount Selous, about 5 miles south of the Lad Group. Re-runs to determine Pb concentration gave negative results in both cases.

Geochemical values from the Arrowhead Pass Area will probably require separate interpretation. The average copper content of silts in the region (105-O-11) is notably higher than in other parts of the explored area. Factors which may influence the copper concentration in the area are:

- (1) Bedrock in the area is of different age (Ordovician-Silurian).
- (2) Granitic plutons in the area have small associated copper occurrences.

Prospecting

The localities of prime interest in the Hess River Area have been prospected in detail. Mineral occurrences discovered are as follows:

- (1) Pyrrhotite and pyrite veins in the Proterozoic quartzite north of Mount Brock.
- (2) Chalcopyrite localized in small fractures in the southern and eastern parts of the main stock, Lansing Range.
- (3) Four small occurrences of molybdenite with cobalt bloom, in float, east end of Lansing Range. Molybdenite is coarse grained and occurs in quartzose vein-material.
- (4) Bornite and chalcopyrite in narrow veins near the western end of Arrowhead Pass.
- (5) Chalcopyrite-pyrrhotite-scheelite in garnet-diopside skarn zone, Plateau Mountain area (105-N-5).

None of the occurrences mentioned above appear to be of economic significance in their own right.

OUTLINE OF PROPOSED AUGUST-SEPTEMBER PROGRAM

Commencing on August 12, a geological, geochemical and prospecting survey will be conducted in the Laforce Lake-Mount Selous area. Work done in the Hess River Area will be treated separately.

Primary efforts in the new area will be directed as follows:

Geological Work

- (1) Spot-check work to determine the accuracy of geological mapping in the vicinity of indicated Proterozoic contacts.
- (2) Geological mapping in the vicinity of known granitic plutons which have not been accurately outlined to date.
- (3) Air photo interpretation in areas of outcrop (contingent on arrival of the necessary photographs).

Geochemistry

A comprehensive drainage survey in areas of Proterozoic sub-crop and granitic intrusion. Soil sampling may be done as a follow-up technique.

Prospecting

The first prospecting will be done in the areas surrounding the known intrusive plugs. By the time this work has been completed, it is hoped that the geochemistry will have turned up some favourable prospecting localities.

REPORT ON ARROWHEAD PASS COPPER SHOWING
FOR ATLAS EXPLORATIONS
June, 1968

Kyosti Heinanen - Geologist

LOCATION

The showing concerned is located in the SW end of Arrowhead Pass, about 3/4 mi. from Old Cabin Creek, in the SE wall of a canyon.

PREVIOUS WORK DONE

The showing was previously examined by M. O. Hampton of Dynasty Syndicate in September, 1963.

The writer was accompanied to the area by T. Skonseng, prospector. In all, 10 days (June 21 to June 30) were spent in the area.

TOPOGRAPHY

Topographic relief in the area is approximately 3000 feet. The canyon has a width of 30 feet, and the height of the SW wall is 20 feet.

GEOLOGY

The most common rocks in the area are black and grey chert, and cherty argellite. The rocks are folded with about southeast trending axes. General strike is NE-SW dipping northerly. In the bottom of the canyon dip is 60-70, but higher up in the NW wall it is 20-30. About 1/2 mi. from the showing there is a gossan above which there are granodiorite outcrops. Mineralization is in light coloured, fine grained quartzite which is a narrow (6 feet) sheet in black chert. Foliation in the quartzite is at right angles to the general strike. Similar rusty quartzite is also about 1000 feet SW from the showing.

MINERALIZATION

Pyrite is very common in the quartzite and also at some places in the chert. Copper mineralization is confined to four veins about 1 foot in width and 50 feet in length. The veins are composed of about 25% quartz and 75% sulfides. Sulfides present are chalcopyrite and bornite with minor arsenopyrite. All copper samples are taken from one vein. The other three veins, which occur higher up the rock wall, were not accessible without mountain-climbing equipment and consequently were not examined.

AIR SUPPORT

Helicopter

July 1-7	809-021	8.1	
	807-021	8.5	
	803-021	6.1	
	Art Group	6.9	
July 8-14	809-021.....	5.7	
	807-021.....	3.7	
	803-021.....	6.2	
	Ivor Group ...	1.4	
	Art Group ...	2.7	
	Lad Group ...	1.5	
	Yukon OEX ...	4.7	
	806-13-021-Fuel	0.3	
	806-13-021.....	4.5	-Arteaga Recce
July 15-21	809-021	6.3	
	807-021	2.6	
	803-021	6.9	
	Tom Group.....	5.8	
	860-13-021.....	2.9	- Fuel
	860-13-021.....	1.1	- Arteaga
July 22-28	809-021	3.5	
	807-021	2.1	
	803-021	2.6	
	Lad Group	10.3	
	Sheldon OEX...	6.1	
	860-13-021 ...	0.3	- Fuel
July 29-31	809-021	3.9	
	807-021.....	1.7	
	803-021	1.1	
<hr/>			
Total helicopter time		112.7	hours
Total chargeable to Hess OEX.....		78.1	hours
Total chargeable to - Geology		27.5	hours
	Geochem	22.3	hours
	Prospecting ...	19.2	hours
Total chargeable to Hess Properties..		28.6	hours
Total Cost to Hess OEX		\$9,372.00	

PERSONNEL

M. E. Coates	- Administration	20 days	
	Geological	11 days	900.00
Heinanen	- Geological	31 days	600.00
Sanford	- Geological	31 days	550.00
Claridge	- Geological	31 days	500.00
Skonseng	- Prospecting	31 days	600.00
Dean	- Prospecting	31 days	600.00
Brodell	- Prospecting	31 days	600.00
J. Acklack	- Prosp. Asst.	24 days	480.00
M. Ladue	- Prosp. Asst.	31 days	600.00
R. Etzel	- Prosp. Asst.	31 days	620.00
P. Vlasveld	- Draftsman	31 days	575.00
G. Gray	- Cook	17 days	340.00
G. Gall	- Cook	14 days	280.00
G. Mandell	- Cook	2 days	40.00
A. Charlie	- Sampler	11 days	220.00
F. Charlie	- Sampler	7 days	140.00
T. Charlie	- Sampler	7 days	140.00
S. MacLeod	- Sampler	17 days	340.00
B. Waugh	- Sampler	15 days	<u>300.00</u>
	Total Man-days - 30.0	Total Cost	\$8,425.00



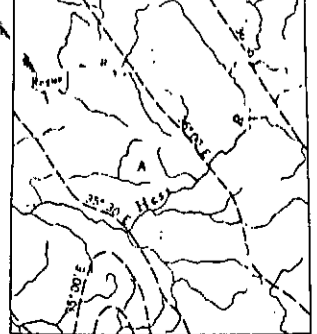
LIMIT 1" = 1 MILE
GEOLOGIC
MAPPING

QUARTZ
MONZONITE

Gossan Samples
TC-67-67-67

Gossan Sample
TC-69-66

THE DECLINATION OF THE COMPASS NEEDLE 1957



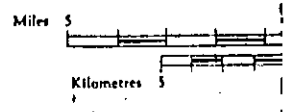
The declination of the compass needle at any place along a broken line is the declination given on that broken line. At other places the declination is between those given on the neighbouring broken lines; thus at the place marked A, the declination is between 35° 30' E and 36° 00' E. The declination of the compass needle is decreasing 5 minutes annually.

Produced and printed by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF MINES AND TECHNICAL SURVEYS, 1958; from air photographs taken in 1949 and 1954.

Universal Transverse Mercator Projection

REFERENCE

- Wagon or winter road
- Trail or portage
- Boundary provincial
- Village or settlement
- Post office
- Building or cabin
- Horizontal control point
- Astronomical position
- Spot elevation (in feet)



Geochem Anomaly # 90
HESS RIVER AREA

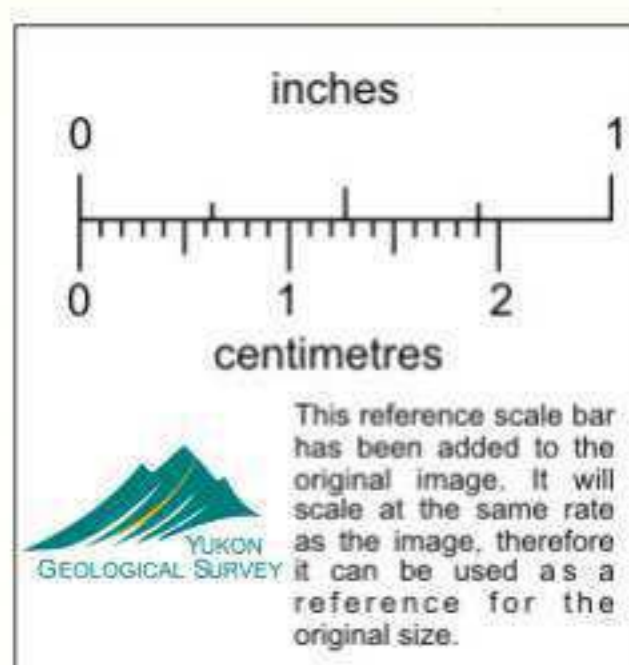
AREA COVERED
BY 1" = 1 MILE
GEOLOGICAL
MAPPING

Geochem Anomalies
94, 95, 96
HESS RIVER AREA

- contour soil sampling near the headwaters of southflowing streams
- silt sampling of the north-flowing drainage
- detailed geological mapping of area

Geochem Anomalies
102
HESS RIVER AREA

- contour soil sampling
- stream sediment check
- sampling
- detailed geological mapping of area



Geochem Anomalies
34 & 35
HESS RIVER AREA

- soil sample profiles on either bank of stream in the immediate vicinity of anomaly

