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DEPARTMENT OF ENERGY,
MINES AND RESOURCES

PAPER 70-47

GEOLOGICAL EXPLORATION IN THE COPPERMINE RIVER AREA, NORTHWEST TERRITORIES, 1966-1968

R. I. Thorpe

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ABSTRACT

The Coppermine River area, long-known for its native copper showings, was extensively staked between 1966 and 1968 and geological exploration was extremely active. This report consists of summaries of the work carried out on 121 properties and to a large extent is based on technical reports submitted by the various companies.

INTRODUCTION

Interest in the Coppermine River area was re-generated in 1966, after almost a decade of complete neglect, by extensive staking by PCE Explorations following a season of reconnaissance investigation of copper showings in the area. The first staking covered the main known and newly-located showings, and then spread out to cover a large part of the basalts of the Coppermine River Group lying between the Teshierpi and Herb-Dixon Faults. This staking sparked a major rush to the area.

Staking in the Coppermine River area was generally restricted to the basalt sequence of the Coppermine River Group, although the immediately overlying sediments were covered to some extent. The staking was done within three 4-mile topographic sheets (86 M, N and O) and extended along the basalt belt for a length of 135 miles with widths from roughly 14 to 35 miles. However, exploration was concentrated along a length of 100 miles and little attention was devoted to claims at the western end of the belt, except for some groups on claim sheet 86-M-9. This neglect of the west end of the outcrop area of the basalts was apparently due to the much poorer exposure in relation to the remainder of the belt and to the weakly mineralized nature of the copper occurrences that were found by reconnaissance. In excess of 45,000 claims were staked in the area from early 1966 through 1968, and more than 100 companies held properties or a substantial interest in properties.

Coppermine River Ltd., formed for the exploration of the large number of claims staked by PCE Explorations, carried out an extensive exploration program in 1967. Other companies conducted smaller programs, many of them of a preliminary nature. The summer of 1968 was the season of most concerted exploration in the area. A number of the exploration programs that season were of enormous size, with exploration budgets of the order of $500,000 or more, and were conducted by consortiums of companies. Exploration on this scale was prompted by the drilling success of Coppermine River Ltd. on the No. 47 zone in 1967.

An electromagnetic-magnetic airborne survey was organized on a joint basis, with more than 50 companies participating, for early in the 1968 season. The survey was contracted with Huntec Ltd. and Lockwood Survey Corporation (see summary of exploration for the property of Coppermine River Ltd.). The ground exploration procedures had become standardized by

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early in the summer of 1968. Radio-frequency electromagnetic surveys and magnetometer surveys were being used over entire claim groups or in areas of favourable fault structure. Zones that were magnetically low were generally considered to be zones of hematitization, through oxidation of magnetite in the basalt flows along faults, and were considered favourable. When a good electromagnetic conductor was found in association with a magnetic low, the zone was generally considered to warrant testing with an induced polarization survey. This method was the most highly regarded, but was used less extensively due to its much greater cost. Induced polarization surveys were done over wider areas in a few cases, where the areas were judged to have potential on other than geophysical evidence.

However, it must be noted that neither induced polarization surveys nor a combination of geophysical methods provided an infallible procedure for detecting economic mineralization. Drilling of many good induced polarization anomalies indicated the presence of barren fault or shear zones, in many cases altered by chloritization and/or hematitization. Some of the drilling on such anomalies indicated the presence of minor copper mineralization or pyrite.

This report consists of summaries of exploration results on 121 properties. Only a very small number of the properties described in this report were visited by the author and the greater proportion of the information incorporated in the descriptions of most of the properties has been derived from technical reports submitted by the various companies as Representation Work on their claims. Insofar as this is true, the summaries presented here may usefully serve as a guide to what information is available from this source. Such reports are kept on file and may be examined or copies obtained, following a three-year confidential period, at the Yellowknife or Ottawa offices of the Department of Indian Affairs and Northern Development. Some information for this report was also derived from published sources.

The accuracy of these accounts of properties and exploration programs is, therefore, very dependent on the accuracy of the source reports and therefore the reader should be wary of accepting all of the descriptions of showings, for example, as entirely factual and of equal quality. In addition, the author has no doubt introduced errors, by misinterpretation or by accident, that were not present in his sources of information.

The latitudes and longitudes that are given in the heading of each property summary represent, as closely as feasible, the centres of the properties. These locations have been taken from the plotted locations of the claim groups on the Mineral Claim Sheets for the area, and will not necessarily correspond with the actual property locations.

PROPERTY DESCRIPTIONS

Adera Mining Ltd. and Silver Arrow Explorations Ltd. (NOR 1-26 and WIL 1-72 claims) (86-N-9; about 67°31'30"N, 116°13'W)

Prior to the 1968 season Adera Mining Ltd. entered into an agreement whereby it could earn a 50 per cent interest in the 98-claim property of Silver Arrow Explorations by paying 50 per cent of the exploration expenses. It was announced (Western Miner, April, 1968, p. 261) that a preliminary program including a photogeological study, geological mapping, surface prospecting, trenching and soil sampling would be undertaken as recommended by G. L. Kirwan, consultant. This program was carried out on the property from June 12 to July 10 by William P. McGill and Associates Ltd.

The claim group lies about one mile northwest of the Teshierpi Fault and the south boundary of the group joins claims of Coppermine River Ltd. which extend northeast along this fault. The property, entirely underlain by basalt, is largely covered by overburden; outcrop is present on only about 36 claims. Prospecting was carried out on the property by traversing lines spaced at 400-foot intervals. About two-thirds of the property was covered by a reconnaissance geochemical soil survey using these lines. A detailed geochemical survey was carried out over a small area where a later very limited electromagnetic survey (3 lines covered with a "Radem" EM 16 instrument) indicated a conductor. A total of 1,513 soil samples were taken at depths of 6 to 40 inches. Geochemical anomalies at greater than 50 ppm Cu were outlined which covered part or all claims WIL 10, 12, 13, 24, 29, 30, 35, 41, 42, 43, 44, 54, 57 and 58, and NOR 6 and 9. The electromagnetic conductor was located on and near claim WIL 57.

A broad syncline in the lavas is reported to have a northwest-southeast axis which crosses the centre of the property, and to plunge to the southeast. Several minor copper occurrences were noted in outcrop near the axis of the syncline and the geophysical and detailed geochemical work were in this area. A number of faults are known on the property and more are inferred. A junction of possible faults on claim T28167 is of possible interest since copper mineralization in float was found in overburden at that locality. The broad, generally-anomalous area indicated by the geochemical survey, is inferred to be in close proximity to a northeast-trending fault (Western Miner, August, 1968, p. 19).

An immediate diamond drilling test of the electromagnetic conductor was recommended. An electromagnetic survey of the entire property was also recommended. The diamond drilling program, to consist of a minimum of 2,500 feet of drilling in at least 10 holes, was undertaken later in the season. The results of this drilling are not known. Further detailed geochemical soil sampling was also carried out later in the season (The Financial Post, August 17, 1968, p. 21). The share of 1968 exploration expenses to be borne by Silver Arrow Explorations was estimated (The Northern Miner, Nov. 14, 1968, p. 11) at $15,600.

Adera Mining Ltd. and Hardy Minerals Ltd. (MM 1-72 claims) (86-O-5; about 67°18'30"N, 115°40'W)

Adera Mining Ltd. entered into an agreement prior to the 1968 season whereby it could earn a 50 per cent interest in this property by payment of 50 per cent of the exploration expenses. An exploration program was recommended, and later carried out on the property by Advance Geology and Geophysics Ltd. (consulting company of G. L. Kirwan). Prospecting and very preliminary geological investigations were carried out on the property in the period July 3-14, 1968.

Outcrop is present on approximately 5 per cent of the property and occurs in small proportion on 29 of the 72 claims. Copper occurrences were located on about 14 of the claims and copper-bearing float on about 10 additional claims. Mineralization consisted largely of native copper, although chalcocite was present in a few cases and chalcopyrite-bearing float was found on one claim. No major faults, fractures, or shatter zones were detected by work on the property or by study of aerial photographs. From the results of prospecting on the property, three areas were considered to be of interest. The first area covers part of claims MM 67, 68 and 57 where six occurrences of native copper in place were located along a length of 3,000 feet. In area 2 on claims MM 14 and 37 native copper and minor chalcocite were found in three places over a distance of 2,000 feet. Area 3 on claim MM 43 includes two copper occurrences where native copper was found in plate form.

Geochemical soil sampling of the three selected areas and their possible extensions, on lines spaced at 200-foot intervals, was recommended. Further exploration on the property was anticipated for the 1969 season.

Adera Mining Ltd. and Central Point Resources Ltd. (WATER 1-36 and SWAK 1-30 claims) (86-N-8; about 67°27'N, 116°02'W)

This 66-claim property of Central Point Resources is one of six on which Adera Mining Ltd. entered into an exploration agreement, prior to the 1968 season, by which it could earn a 50 per cent interest in the properties by payment of 50 per cent of the exploration expenses. A program consisting of prospecting and geological mapping was carried out on the property June 10-20, 1968, by Advance Geology and Geophysics Ltd. Five prospectors were employed in the program.

This property is located near the axis of the regional synclinal structure formed by basalts of the Coppermine River Group where an interlayered sequence of lavas and sandstones has been mapped by Baragar (1967) overlying the main lava sequence. Geological mapping in 1968 was at a scale of 1,000 feet to the inch. About 15 per cent of the property consists of outcrop of basalt and light red sandstone. On the north part of the property these rocks dip 3-4 degrees to the north whereas on the south part of the property they dip 20-25 degrees to the north. No major faults, fractures or shatter zones were located in the field or indicated by study of aerial photographs.

Prospecting on the property indicated 5 showings of which 3 are located on claim WATER 22. Showings 1A and 1B are flat-lying zones of the flow-top type. The zones are both about 4 feet thick, are both exposed over an area of 300 feet east-west by 200 feet north-south, and are separated by a

3-foot thickness of basalt. The two showings are well exposed on the southern face of a ridge which is 20 feet high and which is composed essentially of sandstone and interlayered basaltic material. Mineralization in the two zones consists of blebs of chalcocite and secondary malachite. The zones are also characterized by the presence of calcite-filled fractures. Showing 2 consists of plates of native copper, some up to 6 inches in maximum dimension, along a northeast-striking fracture zone in basalt. This fracture zone is about 40 feet wide and is exposed on the southern face of a cliff near the north boundary of the claim. The basalt cut by this fracture zone is probably interlayered with sandstone.

Showing 3 is located on claim SWAK 2, T28019, toward the east boundary, and is similar to showing 2. Native copper in plate form is present in a northeast-striking fracture zone, 10 to 12 feet wide, which appears to lie along the contact between basalt and a sandstone lens. The zone is exposed for a length of 42 feet before passing under overburden.

Showing 4 consists of considerable amounts of chalcocite mineralization in 'frost boil' basalt material over an area about 200 feet in diameter. The showing is located near the northwest corner of claim WATER 2, T27974.

Diamond drilling, to consist of 3 vertical holes each to a depth of 100 feet, was recommended to test the flat-lying mineralized zones. Trenching and sampling is recommended for showings 2 and 3 and a geochemical survey for showing 4. It appeared likely that the drilling program would be carried out during the 1969 season.

Adera Mining Ltd. and Gyro Explorations Ltd. (OOK claims) (86-N-9; about 67°31'N, 116°20'W)

This 52-claim property consists of claims OOK 1-14, 20, 21, 27-34, 40, 41 and 47-72. Along its east boundary the property joins a group of claims held by Cambridge Mines; it is located just northeast of the main block of claims held by Coppermine River Ltd., about 1 mile west of the property of Adera Mining and Silver Arrow Explorations, and about 4 miles northwest of the Teshierpi Fault. Prior to the 1968 season Adera Mining entered into an exploration agreement whereby it could earn a 50 per cent interest in the property by payment of 50 per cent of the exploration expenses. An exploration program consisting of prospecting and preliminary geological mapping was carried out on the property June 21 to July 1, 1968, by Advance Geology and Geophysics Ltd. Five prospectors were employed in the program.

Less than 2 per cent of the property is rock outcrop and 13 claims have neither outcrop nor frost-heaved boulder fields. Outcrop consists of flat-lying basalt and minor erosional remnants of sandstone, which apparently conformably overlies the basalt flows. No major faults, fractures or shatter zones were located in the field or indicated by study of aerial photographs.

Copper mineralization in place was located on 5 claims and in float on 4 additional claims. Three areas were considered to be of some interest. On claim OOK 9 minor native copper is present in narrow carbonate veins which are separated by a few inches to a few feet of basalt. The veins are up to about 1 inch wide and have been traced north-northeast for a distance of 750 feet.

The second area of interest consists of minor native copper disseminated in basalt near the east boundary of claim OOK 32. Mineralization was noted over an area about 450 feet in diameter. The third area is similar and is located on claims OOK 57 and 58. Mineralization in the latter area was traced for a distance of approximately 1,500 feet.

Based on the results of exploration it was concluded that no further work appeared warranted.

Adera Mining Ltd. and Copper Soo Mining Co. Ltd. (TIK, IKK and OOPIK claims) (86-N-9; about 67°37'30"N, 116°27'W)

Prior to the 1968 season Adera Mining entered into an agreement to pay 50 per cent of the cost of exploration on the property of Copper Soo Mining Co. in order to earn a 50 per cent interest in the property. This property consists of claims TIK 1-36, IKK 1-8 and OOPIK 1-8. The property is located about 4 miles north of the northeast corner of the main block of claims of Coppermine River Ltd. and according to previous regional mapping (Fraser, 1960), should be largely underlain by sediments which overlie the basalt sequence. An exploration program consisting of prospecting, geological mapping, and a geochemical survey was carried out in June and July, 1968, by William P. McGill and Associates Ltd.

The geological investigation confirmed that the northern part of the property is underlain by sediments and the southern part by basalts. There are only two small areas of outcrop on the property. In addition, areas of frost-heaved and glacial boulders are present on 14 claims in the northeast and southeast parts of the property. A number of faults, mostly on a northerly strike, are inferred to cross the property and copper-bearing float exists near interpreted fault intersections. Such an area of copper-bearing float was found on claim TIK 14.

The property was investigated by traversing east-west lines spaced at 500-foot intervals. The geochemical survey consisted of total heavy metal analyses on samples taken at 500-foot intervals along these lines. A total of 1,217 samples were taken at depths of 6 to 24 inches. Detailed grids with north-south lines were established in two anomalous areas which gave values up to 200 ppm total heavy metals. Samples from these grids were analyzed for copper and one anomaly gave a high value of 198 ppm Cu, with 33 ppm for an adjacent sample. A number of isolated samples gave 20 to 85 ppm copper.

A geophysical, either electromagnetic or induced polarization, survey was recommended for the property. The estimated approximate cost for such a survey was $7,500.

Adera Mining Ltd. and Commander Explorations Ltd. (100 claims) (86-N-9; about 67°35'N, 116°24'W)

This property consists of claims OOKPIK 3-18, 21-28, OOKPIC 9-36, OOK 15-19, 22-26, 35-39, 42-46 and IKK 9-36.

Adera Mining earned a 50 per cent interest in this property by paying 50 per cent of the cost of the 1968 exploration program. Prospecting,

geological mapping, and a geochemical survey were carried out July 2-31, 1968, by William P. McGill and Associates Ltd. A photogeological study of the property was done in May prior to the field work.

The east part of the property consists of 76 claims which form a block lying just south of the east part of the property of Adera Mining and Copper Soo Mining Co., immediately west of the property of Rayore Mines, and just northeast of the main claim block of Coppermine River Ltd. The west part of the property consists of a narrow east-west belt of 24 claims which joins the north boundary of the main claim block of Coppermine River Ltd. This narrow belt of claims is entirely lacking in outcrop. Thick massive flows of basalt are exposed on the east part of the property. Dips are northward on the south part of the property and southward on the north part of the property.

Numerous northerly-striking faults are inferred to cross the property from surface evidence, chiefly float containing products of mild alteration (carbonates, hematite, chlorite and epidote), as well as copper minerals and brecciated rock. The copper mineralization in the float is usually associated with calcite and consists of native copper, chalcocite and malachite.

About 1,200 geochemical soil samples were taken along lines spaced 500 feet apart and on more detailed grids which covered most of 4 claims, and small parts of 5 others. The reconnaissance samples were analyzed for total heavy metals and the samples from the detail grids (samples each 100 feet from lines spaced 200 feet apart) for copper. Only a very few samples gave greater than 1,000 ppm total heavy metals. Copper anomalies with peak values of greater than 50 ppm were outlined on claims IKK 15, 16, 18, 23 and OOKPIC 25.

Four geochemically anomalous zones were considered to be geologically favourable and an electromagnetic survey at an estimated cost of $7,000 was recommended to cover these zones.

Agassiz Mines Ltd. and Fundy Explorations Ltd. (15 TOM claims) (86-O-5; about 67°19'15"N, 115°52'W)

This property lies just west of the property of Quadrate Explorations and adjoins a small group of claims which has been held for more than 10 years by Pickle Crow Gold Mines. The claims have grant numbers N90986 to N91000. The main showing was visited August 13, 1967, in the company of Sherman Tough. The claims were held at that time by Mr. C. Robbins but were subsequently transferred to Agassiz Mines (45 per cent) and Fundy Explorations (45 per cent). Agassiz Mines may have later increased its interest to 90 per cent (The Northern Miner, February 15, 1968, p. 2), although one report (The Northern Miner, November 7, 1968, p. 19) after the close of the 1968 season indicated that Fundy Explorations still held a 45 per cent interest in these claims.

The main showing is near the north boundary of the property and consists of native silver, native copper, and minor chalcocite in calcite and quartz which is present as veins and breccia cement along a northeast-striking breccia-vein zone. This zone is exposed across a width of 4 to 6 feet and could be 30 feet or more in width in places. The zone has been traced by intermittent frost-heave north to Willow Creek, in which direction

it soon passes onto the SAM claims held by PCE Explorations. The latter claim group was transferred to Teshierpi Mines prior to the 1968 season. It was reported (The Northern Miner, February 15, 1968, p. 2) that six grab samples taken in 1967 from the silver-bearing vein assayed an average of 15.8 oz/ton Ag.

A program consisting of prospecting and geological mapping was conducted on the property in 1967 under the direction of Sherman Tough and Lorne Smith. When the strong linear which represents the above breccia-vein zone was traced 4,000 feet southward, a shatter zone 10 feet wide with good chalcocite veining was found. About 500 feet west of the silver-bearing vein another zone is present which contains chalcocite mineralization. The total width of this zone was not determined, but mineralization over a width of greater than 20 feet is evident in an outcrop on claim N90987. Another showing on the west boundary of claim N90996 contains good chalcocite across narrow widths along a relatively weak fracture zone. Grab samples from some of the showings on the property were reported to have assayed up to 47 1/2 per cent Cu.

Bernack Coppermine Exploration entered into an agreement with Agassiz Mines, prior to the 1968 season, to assist in the carrying out of a diamond drilling program on the property. Bernack was to provide $7,000 toward an initial program of $18,500 of drilling. Bernack was to earn 1 per cent interest in the property for each additional $1,000 expended, up to a maximum of $50,000 (The Northern Miner, May 16, 1968, p. 11).

Four holes totalling 1,000 feet were drilled by Bernack on the property in the period July 5-20, 1968. The first three holes tested the main silver-bearing zone (Zone 1) and the fourth tested the parallel copper-bearing zone 500 feet to the west (Zone 2). All the drilling was done on the same claim; the first hole was located near the northeast corner of the claim and the other holes were toward or near the south boundary. The baseline to which the hole locations were related was run on an azimuth of 029 degrees. The data for the drillholes follows on next page.

Minor native copper occurs as blebs and thin sheets scattered throughout the core, particularly in calcite stringers. Relatively minor chalcocite is also present, but no native silver is reported in the logs of the holes. Apparently only two samples, representing the interval 102.4 to 112.0 feet in the first hole, were assayed for silver. Both samples gave only 0.10 oz/ton silver.

Prior to the 1969 exploration season an option on the property was granted to Ranworth Exploration Ltd. This company may earn up to a 45 per cent interest in the property by carrying out exploration work.

Amalta Oils and Minerals Ltd. (SD 1-36, MCK 37-72 and NWA 73-108 claims) (86-O-10; about 67°35'30"N, 114°56'W)

This property is located about 14 miles east of the Coppermine River and near the northern boundary of the outcrop area of the basalts of the Coppermine River Group (Fraser, 1960), as well as toward the eastern extent of this belt of rocks in the Coppermine area. An exploration program

Hole No.	Latitude	Departure	Bearing	Inclination	Depth (feet)	Intersection	Sample width (feet)	% Cu
F1-01	1475	103E	295°	55°	217	35.2'-40.7'	5.5	0.73
						40.7'-46.9'	6.2	0.68
						102.4'-106.6'	4.2	0.36
						106.6'-112.0'	5.4	0.50
F2-01	1947S	176E	309°	45°	225	142.9'-157.8'	14.9	0.17
						157.8'-165.2'	7.4	0.12
F3-01	1598S	112E	297°	55°	249	57.9'-61.0'	3.1	0.26
						110.1'-116.0'	5.9	0.02
						137.7'-146.6'	8.9	0.12
						174.7'-178.2'	3.5	0.07
						224.0'-228.8'	4.8	0.05
F1-02	1885S	570W	290°	55°	309	139.0'-145.0'	6.0	0.30
						145.0'-152.4'	7.4	0.20

consisting of prospecting, a geochemical survey, and preliminary geological mapping, was performed on the property during the 1968 season by Advance Geology and Geophysics Ltd. Soil sampling was carried out each 400 feet along lines spaced at 400-foot intervals. Determinations were made for copper and intermediate lines were later established in anomalous areas and samples taken each 200 feet. About 100 line miles of grid were covered by the survey. Samples were taken from the 'B' horizon at a depth of about 4 inches.

The geochemical survey resulted in outlining 6 anomalies as follows:

Anomaly	Length (feet)	Strength (times background)	Remarks
A	3,200	>7	Open for extension eastward
B	2,000	> 8	
C	1,600	7	
D	2,000	6	Open for extension northeastward
E	1,400	>15	Open for extension to the north
F	900	8	

About 20 per cent of the property consists of basalt outcrops. North-northeast and north-northwest sets of linears are considered to probably represent faults. Prospecting on the property resulted in the discovery of 18 copper occurrences. Showing No. 1, associated with geochemical anomaly E, is considered the most significant and is located on the northern part of claim NWA 97. This is a quartz-calcite vein which occurs in a shear zone striking N30°E and dipping 80°E. The vein has been traced for a length of 180 feet, passes beneath overburden at each end, and contains 5-10 per cent chalcocite across a width of 4 feet at the south end and 30 per cent chalcocite across 2 feet at the north end.

Showing No. 2 is a calcite-quartz vein 4 feet wide which contains an estimated 10 per cent chalcocite and is exposed for a length of 20 feet on claim SD 10. Showing No. 3 includes two exposures of chalcocite-malachite mineralization along what is apparently a minor east-west fracture. These two showings are located within geochemical anomaly A. Showing 2 is considered to be of further interest, and showing 3 somewhat less so, although there is some potential for 3 since anomaly A is open eastward.

Showings 4, 5 and 6 are located within geochemical anomaly C. Showing 4 consists of chalcocite in a northeast-striking fractured zone that is 3-4 feet wide and exposed for a length of 40 feet. These three showings are considered of possible significance because they are related to good structures, and because anomaly C may indicate extension of the mineralization.

Showings 7 to 11 are clustered within an area about 500 feet across on the western part of claim NWA 79. Chalcocite and secondary malachite are present in tight fractures and narrow calcite veins which are concentrated in local areas but which show no regular arrangement or relationships. There is no associated geochemical anomaly.

Showings 12 and 13 each consist of veins of massive chalcocite, 3 inches in width, which appear to be on strike along a N45°E direction. The showings are 300 feet apart and are on claim MCK 38.

Showing 14 is on claim SD 17 and consists of chalcocite in calcite which is present as blebs in the host basalt across a width of 5 feet. The zone is exposed for a length of 22 feet. Showing 15 consists of a calcite vein 3 inches wide which contains good chalcocite mineralization. Showing 16 is located on claim SD 16 and consists of about 5 per cent chalcocite as blebs in the host basalt. Mineralization occurs across 10 to 20 feet but the total area is undefined due to overburden. This showing is not rated too highly due to the lack of an associated structure.

Showings 17 and 18 occur on claims NWA 69 and SD 16, respectively and consist of interesting, but likely uneconomic, amounts of native copper occurring as plates and stringers in basalt.

An induced polarization survey was recommended for each geochemical anomaly and each of the showings, and particularly the areas of coincidence.

Armore Mines Ltd. (SAL 1-100 claims) (86-O-5; about 67°16'N, 115°36'W)

This property is located within the bend of the Coppermine River north of the September Mountains. A program of surface prospecting and geological examination was recommended for the property for the 1967 season by J.O. McCannell, consulting geologist (Western Miner, July, 1967, p. 19).

The surface exploration program was carried out July 28 to August 9, 1967, by Shield Geophysics Ltd. of Timmins, Ontario. Most attention was devoted to the southern part of the property where the basalt flows, which underlie the property, are very well exposed. No signs of mineralization were noted in this work. Chalcopyrite and malachite are present in erratics on the northern part of the property near the No. 1 post of claim SAL 53.

An attempt to determine the source of the copper-bearing erratics was recommended if further work on the property was undertaken. It appears that no geophysical work was carried out on the property in 1967, in spite of a report to the contrary (The Northern Miner, October 5, 1967, p. 14). It was later reported (Mining in Canada, December, 1967, p. 35; Western Miner, May, 1968, p. 19) that an electromagnetic survey was to be carried out during the 1968 season. It is not known whether or not an exploration program was conducted on the property in 1968.

Artex Mines Ltd. (Ontario charter) (BOB 109-126 claims) (86-N-8; about 67°15'30"N, 116°24'30"W)

While this property was owned by Raejac Exploration Ltd. a copper-bearing quartz-calcite vein was located on the eastern part of claim BOB 125. This north-south vein is 4 to 16 inches wide and had been traced for a length of 600 feet. One trench on the vein gave assays of 7.18 per cent Cu and 3.01 per cent Cu and another gave 10.4 per cent Cu and 7.5 per cent Cu; the lower values in each case are reportedly from the wall-rock.

In 1968 a program of prospecting, preliminary geological investigation and geochemical surveying was supervised on the 18-claim property by D.J. Murray of Advance Geology and Geophysics Ltd. This work was done August 29 to September 8. The property is entirely underlain by basalts which dip 5 to 15 degrees in a direction from north to north-northeast. No shear zones or fractures were noted other than the fracture occupied by the vein described above (Showing No. 1).

Showing No. 2 consists of chalcocite in the calcite matrix to a basalt breccia. This material occurs as jagged float fragments at the base of a low cliff on claim BOB 123.

The soil geochemical survey consisted of analyzing samples from the B horizon for copper. A colorimetric method was used after extraction of the metal with hot nitric acid. A total of 327 samples were taken along east-west lines which were spaced 300 feet apart. Background was found to be about 5 ppm Cu. Three anomalies were located at the east end of the property. Anomalies A and B coincide with showings No. 1 and 2, respectively. Anomaly A is greater than 7 times background and is 800 feet long with the possibility of extension to the north. Anomaly C is 10 times background and is 300 feet long, but this strength is based on a single sample. Anomaly B is located on claim BOB 126 and is 300 feet long with a peak intensity of 20 times background, but the strength is again based on a single sample.

Three diamond-drill holes, each 200 feet deep, were recommended to test the No. 1 showing. Detailed geochemical soil sampling at 25 feet intervals along lines 50 feet apart was recommended to further assess geochemical anomalies B and C. Further work on the property was planned for the 1969 season.

Artex Mines Ltd. (B.C. charter) (HA 1-108 claims) (86-O-10; about 67°35'30"N, 114°50'W)

This property is located toward the east end of the basalt belt in the Coppermine area. To the east the property adjoins that of Amalta Oils and Minerals and to the south a property held by Provident Resources Management (2/3) and Rolling Hills Copper Mines (1/3). The name Artex Mines was changed to Tower Mines during 1968.

An exploration program was carried out on the property July 20 to August 19, 1968, by L.J. Manning and Associates Ltd. The program was supervised by G.R. Hilchey. Prospecting and geological mapping was done largely by a six-man crew which apparently spent the full period on the property. The work was done from a series of east-west lines which were established at 500-foot intervals. The cost of the 1968 program was $10,950.

The basalt flows, which are reported to be 40 to 60 feet thick, strike northeast and dip 5-8 degrees northwest. Three steeply-dipping faults with strikes of N20°E, N45°E and N70°E were mapped. Displacement of two northwesterly-trending diabase dykes indicates that the N45°E fault has a late right-hand strike-slip movement of 1,300 feet.

Showings of chalcocite and native copper on the property are considered significant. Chalcocite occurs as fracture fillings in faults and their related subsidiary fractures. Native copper is present as blebs and leaves in quartz-calcite veinlets.

Showing A consists of chalcocite in a narrow shear zone striking N70°E and dipping 82 degrees south. The shear is 5 feet wide at the east end but pinches to a width of 1 foot at the west end. Disseminated chalcocite and stringers up to nearly 10 inches wide, with associated calcite, quartz and epidote, are present along shear planes in the chlorite schist which occupies the shear zone. Four trenches were excavated on the showing.

Showing B consists of blebs of native copper and narrow stringers of chalcocite and native copper in talus fragments of hematitic flow-top material on the edge of an outcrop. The mineralization is probably related to fractures subsidiary to the N45°E fault that occupies a topographic depression adjacent to the showing.

Showing D comprises several native copper occurrences along the N20°E fault. Leaves and blebs of native copper are present in vertical quartz-calcite veins which are exposed in the bed of a creek.

An exploration program was recommended that would consist of magnetometer and Ronka EM16 electromagnetic surveys over favourable areas, induced polarization surveys in selected areas, detailed geological mapping, and preliminary diamond drilling to test geophysical anomalies.

Bernack Coppermine Exploration Co. Ltd. (86-O-6, 7, 11; about 67°27'N, 114°55'W)

In addition to options on properties held by Agassiz Mines-Fundy Explorations, Donalda Mines, Northlake Mines, and Pascar Oils, Bernack Coppermine Exploration also holds 800 claims in the Coppermine area. The company was formed by Rayrock Mines Ltd., Conwest Explorations, Frobex Ltd. and Consolidated Canadian Faraday Ltd. Each of these companies participated equally in the financing of Bernack Coppermine and a share interest in the company is held by Ranworth Exploration Ltd. Bernack had an exploration budget of about $500,000 for the 1968 season, with $205,000 committed by early March (The Northern Miner, March 14, 1968, p. 1) and possibly $915,000 contributed to the treasury by the participating companies before the end of the 1968 season (The Financial Post, August 17, 1968, p. 4).

Freight was moved into Willow Lake (approximately 67°22'15"N, 116°00'30"W) prior to breakup in conjunction with Coronation Gulf Mines and other companies. Diamond drilling equipment was moved in at the same time. The exploration program was directed by N.W. Byrne of Mackenzie Management and Engineering and was carried out by Precambrian Mining Services Ltd., all of Yellowknife. Approximately half of the claims held or optioned by the company had been prospected and geologically mapped by the end of July. Four prospecting-mapping crews and a geophysical crew carried out most of the exploration program under the onsite direction of

F.D. Gill of Precambrian Mining Services. The main exploration camp was visited on July 14 and again on July 30.

The location recorded in the heading to this section is for the main block of 719 claims that is held by the company. The latitude and longitude given are for the approximate centre of this block of claims. The property consists of the JUNE, BET, SOL, BER, PAL, JOS, ABE, DEL, CIS, WAR, RAM, YAM, TON, MIC, ACK, JOY, CIN and LIZ groups, each of 36 claims, and the 35-claim BOB group.

General Geology

During the 1968 season prospecting and geological mapping at a scale of 500 feet to the inch were carried out concurrently on the property. The work period was June 23 to August 28 and a 7-man crew was employed on the program.

The property, predominantly underlain by basalt flows, is located near the east end of the volcanic belt; it is thus on the east limb of a broad regional syncline which has its axis just west of the Coppermine River and the basalt flows consequently strike northeast and dip at a low angle to the northwest (Fraser, 1960; Baragar, 1967). Along the southern boundary of the property dolomite beds are exposed which underlie the basalt and belong to the Hornby Bay Group. These beds are present on groups BER, ABE, and ACK and are reported to be conformable with the overlying basalt flows.

A considerable number of diabase dykes, up to 100 feet wide, were mapped which cut the basalt sequence. These dykes are steeply dipping and most seem to strike north-south; in fact, major faulting in a north-south direction, or within 10-15 degrees, has been largely inferred from the presence of diabase dykes. A northerly-striking diabase dyke has been traced for a length of approximately 2 miles on the JOS, CIS and PAL groups. Diabase dykes are also present on the BER and SOL groups and elsewhere. A thick diabase sill is exposed in the northwest corner of the LIZ group.

A number of tension faults have been indicated by the geological mapping, mostly on the central and western parts of the property where the proportion of outcrop is highest. Most, as noted above, have been inferred from the presence of diabase dykes. This is not true for the northern part of the property, which consists of the JUNE, BET, LIZ and BOB groups, where a number of faults are exposed. The most prominent fault here is close to the west boundary of the claims and has been traced, by geological mapping and by aerial photograph interpretation, for about 3 miles from the north end of the JUNE group to the south end of the BET group. Significant copper mineralization is associated with this fault.

Mineralization

A number of copper showings were discovered during the course of the geological mapping. The four most significant are in the northern part of the property and are associated with the major fault described above. There is some evidence that the later tension faults, which strike northeast-southwest and northwest-southeast, may be an important secondary control.

The JUNE No. 1 showing consists of heavy chalcocite in float, in large blocks of frost-heaved material, and in place along a narrow linear which marks the prominent fault and shatter zone structure on the JUNE and

LIZ groups. The best mineralization, in highly fractured and brecciated basalt, was traced intermittently for approximately 720 feet along a strike slightly east of north. Widths of up to 15 feet are indicated at one place in outcrop toward the eastern edge of the linear, and the possibility of greater width is suggested by the intermittent occurrence of good mineralization in basalt outcrop on the western edge of the linear.

At the south end of the mineralized zone, which has been traced for an overall length of about 1,400 feet, chalcocite is present in a series of weak fractures on the west side of the narrow valley, which here is about 200 feet wide. A sample from frost-heaved mineralized blocks, over an area of about 20 by 20 feet, at this location assayed an average of 6.75 per cent Cu (The Northern Miner, August 15, 1968, p. 1). This is along the footwall of the mineralized zone; the zone dips about 65 degrees east (The Northern Miner, September 19, 1968, p. 1). A short distance north of this, at the south end of the 720-foot length of good mineralization, samples of mineralized basalt breccia from within the linear averaged 22.2 per cent Cu across widths of 18 feet. About 300 feet north of this a sample of mineralized breccia assayed 15.65 per cent Cu/4 feet, and 50 feet farther north two samples across a width of 14 feet averaged 12.8 per cent Cu. Several other mineralized frost-heaved boulders along the linear farther to the north complete the 720-foot length (The Northern Miner, August 15, 1968, p. 1).

At the northern end of the linear, some 700 feet north of the best-mineralized section, a zone of fine chalcocite-filled fractures has been traced for a length of 200 feet along the western edge of the linear depression. Surface samples taken across the exposed width of this zone from south to north assayed 2.35 per cent Cu/6 feet, 2.07 per cent/10 feet, 1.65 per cent/1 foot, and 3.45 per cent/2 feet. South of the section of best mineralization the fault zone is completely covered with overburden. However, some malachite is present on joint planes in basalt adjacent to the fault.

The BET No. 1 showing is located approximately 9,000 feet south of the JUNE No. 1 showing along the same structure. It occurs at the point of intersection of a northwesterly-trending tension fault with the main north-south fault. Chalcopyrite, bornite and minor chalcocite, largely as frost-heave and float, are present in shattered and brecciated basalt in an area of poor outcrop. The mineralization has been traced intermittently along strike for 800 feet and widths of up to 50 feet are suggested by frost-heaved material as well as mineralization in place (The Northern Miner, September 19, 1968, p. 1). The best exposure, close to the main fault, suggests a narrow zone trending northwest. To the west sporadic frost-heaved mineralization suggests that additional zones may be present. Grab samples from the zone assayed about 2.5 per cent Cu to over 15 per cent, with a number in the 8-10 per cent range (The Northern Miner, September 19, 1968, p. 1).

The LIZ No. 1 showing is close to the northwest corner of the LIZ group and about 6,000 feet south of the BET No. 1 showing. The showing consists of chalcocite in brecciated basalt along a northeast fault within a few hundred feet of its intersection with the main north-south fault. The mineralization occurs in place across a width of 18 inches and can be traced intermittently for 700 feet along strike. On the basis of frost-heaved material the width of the zone has been reported (The Northern Miner, September 19, 1968, p. 1) to be about 50 feet. Additional parallel zones may be indicated by the fact that in one area frost-heaved mineralization is found for some distance on either side of the fault.

The LIZ No. 2 showing consists of chalcocite mineralization in narrow stringers which can be traced for short distances adjacent to a northwest-striking tension fault. The showing is located close to the south boundary of the LIZ group and is about 4,000 feet south of the LIZ No. 1 showing. The fault with which the mineralization is associated can be traced for a distance of 800 feet.

The diabase dyke which occurs on the JOS, CIS and PAL groups is located about 3 miles or so south of the LIZ No. 2 showing and is approximately on strike with the major north-south fault with which the showings described above are associated. The diabase dyke may thus represent the southerly extension of this fault, or a closely parallel structure. Minor showings of chalcocite in stringers of quartz have been found adjacent to this dyke.

Frost-heaved material containing copper mineralization occurs on most of the claim groups making up the property. In most cases the mineralization is weak and the occurrences widely scattered.

Further Exploration

Following reconnaissance mapping, grids were established near the main showings on the JUNE, BET and LIZ groups. Geological maps were prepared of these grids at a scale of 200 feet to one inch, and geophysical surveys were conducted. The geophysical surveys were carried out in late July or during the first few weeks of August. A program of diamond drilling, consisting of about 3,200 feet in 12 holes was completed on the JUNE No. 1 showing between mid-August and September 30, 1968.

An induced polarization survey employing the gradient array configuration was carried out by Seigel Associates Ltd. which totalled about 3 1/2 line miles. The background chargeability in the area was found to be about 20 to 30 milliseconds. Three anomalous zones were outlined by the survey. Zone A strikes about N10°E and has a peak chargeability of 51 ms. The zone has a maximum length of about 1,600 feet and a maximum width of about 200 feet, and is also characterized by reduced resistivities, a strong magnetic low, and a pronounced radio-frequency electromagnetic anomaly. It was concluded that the source of the induced polarization anomaly was steeply dipping and at a depth of less than 75 feet. Hole No. 3 was the first one drilled beneath this anomaly (see below) and gave an intersection of good mineralization. Zone B is marked by a high chargeability and a flanking magnetic low. A diamond-drill hole 200 feet in depth and inclined at 45 degrees to the west was recommended to test this zone. Zone C consists of a poorly defined anomalous zone trending about N10°E. No magnetometer or Ronka EM 16 electromagnetic surveys were done over this zone.

The first two holes in the drill program were located near the north end of the main geophysical anomaly, which is 1,500 feet to 1,600 feet long, and intersected only mediocre mineralization. Hole No. 1 intersected 6.3 feet which assayed 2.0 per cent Cu and hole No. 2, drilled above this, gave an intersection of 12.2 feet with an average grade of 4.55 per cent (The Northern Miner, September 5, 1968, p. 16). The third hole was drilled 300 feet to the south beneath the peak of the induced polarization anomaly and succeeding holes were drilled in this vicinity along a length of only 550 feet. The drilling in this anomaly A area, all on claim T34472 was as follows:

Hole No.	Latitude	Departure	Inclination	Azimuth	Depth (feet)
3	11 + 50N	0 + 43E	37°	270°	250
4	11 + 50N	0 + 45E	55°	270°	181
5	9 + 50N	0 + 95E	47°	262°	252
6	9 + 50N	0 + 98E	70°	262°	247
7	7 + 50N	1 + 35E	45°	260°	106
8	11 + 45 1/2N	1 + 40E	54°	270°	305
9	10 + 50N	1 + 00E	51°	260°	204.5
10	10 + 50N	1 + 01E	82°	260°	320
11	11 + 50N	2 + 60E	66°	260°	470
12	13 + 00N	2 + 40E	66°	260°	430

The following table lists the main intersections, and some adjacent low grade sections, obtained in the drilling.

Hole No.	Intersection	Core Length (feet)	Cu (%)
3	76.8'-81.0'	4.2	5.70
	81.0'-85.0'	4.0	4.25
	85.0'-89.0'	4.0	4.15
	89.0'-91.7'	2.7	0.60
	91.7'-94.6'	2.9	2.75
	94.6'-98.0'	3.4	9.35
	98.0'-103.0'	5.0	3.30
4	55.4'-60.4'	5.0	2.50
	89.2'-92.2'	3.0	7.50
	92.2'-95.1'	2.9	7.00
	95.1'-98.1'	3.0	5.50
	98.1'-101.0'	2.9	12.60
	101.0'-104.1'	3.1	5.34
	104.1'-107.7'	3.6	0.50
	107.7'-111.6'	3.9	3.30
	111.6'-114.6'	3.0	6.10
	114.6'-117.5'	2.9	6.20
	117.5'-120.5'	3.0	3.90
	120.5'-123.5'	3.0	4.70
	123.5'-126.5'	3.0	4.40
	126.5'-129.5'	3.0	4.80
	129.5'-132.8'	3.3	1.90
5	21.6'-25.5'	3.9	1.80
	119.7'-122.7'	3.0	10.15
	122.7'-125.6'	2.9	1.60
	125.6'-128.6'	3.0	7.00
	128.6'-131.6'	3.0	1.80
	131.6'-135.4'	3.8	1.10

Hole No.	Intersection	Core Length (feet)	Cu (%)
6	19.6'-22.5'	2.9	7.80
	22.5'-25.5'	3.0	1.20
	25.5'-28.1'	2.6	3.30
	176.6'-179.1'	2.5	2.20
	179.1'-181.5'	2.5	2.40
8	128.1'-131.1'	3.0	1.90
	131.1'-133.7'	2.6	2.50
	202.0'-205.8'	3.8	1.40
	205.8'-209.9'	4.1	1.50
	209.9'-212.4'	2.5	6.10
	212.4'-214.9'	2.5	4.80
	214.9'-216.9'	2.0	10.40
	216.9'-219.8'	2.9	1.60
	219.8'-222.5'	2.7	1.10
9	31.5'-34.8'	3.3	3.70
	40.0'-43.6'	3.6	1.90
	43.6'-46.6'	3.0	3.60
10	76.0'-78.0'	2.0	15.20
	78.0'-81.0'	3.0	1.60
	81.0'-83.0'	2.0	0.30
	83.0'-86.0'	3.0	2.65
	112.5'-114.5'	2.0	2.40
	191.0'-193.5'	2.5	2.40
	193.5'-196.5'	3.0	1.20
	254.0'-258.0'	4.0	2.00
11	327.5'-330.5'	3.0	7.20
	330.5'-335.0'	4.5	7.00
	335.0'-340.0'	5.0	1.20
	379.0'-383.0'	4.0	2.50
	383.0'-387.0'	4.0	3.30
	387.0'-392.0'	5.0	1.90
	392.0'-397.0'	5.0	1.60
12	253.0'-255.0'	2.0	3.30
	255.0'-258.0'	3.0	1.00
	280.0'-285.0'	5.0	1.50
	285.0'-291.0'	6.0	1.70
	311.0'-317.5'	6.5	1.20
	317.5'-322.5'	5.0	3.70
	322.5'-327.0'	4.5	1.90
	357.5'-361.0'	3.5	5.90
	361.0'-364.0'	3.0	15.90
	373.0'-378.0'	5.0	2.40
	378.0'-380.0'	2.0	17.10
	413.0'-415.0'	2.0	5.40

The intersection obtained in hole 3 averaged 4.40 per cent Cu for a core length of 26.2 feet from 76.8 to 103.0 feet in the hole. Hole 4 averaged 5.11 per cent Cu from 89.2 to 132.8 feet in the hole, a core length of 43.6 feet. If the mineralized zone dips 65°E at this locality, these holes would represent true widths of good mineralization of 25.8 and 37.7 feet, respectively. The subsequent holes listed above did not match, with the exception of hole 12, these first successes. The results for these later holes, with intersections given as core length and with the depth in the hole recorded for the start of the intersection, were 6.30 per cent Cu/8.9 feet (or 5.17 per cent/11.9 feet) for hole 5 at a depth of 119.7 feet, 4.03 per cent/8.5 feet for hole 6 at 19.6 feet, 6.86 per cent/7 feet (or 3.60 per cent/17.8 feet) for hole 8 at 209.9 feet, 2.67 per cent/6.6 feet for hole 9 at 40.0 feet, 4.37 per cent/10.0 feet for hole 10 at 76.0 feet, 7.08 per cent/7.5 feet (or 4.73 per cent/12.5 feet) for hole 11 at 327.5 feet and a second intersection of 2.90 per cent/8 feet at 379 feet, and 2.85 per cent/9.5 feet for hole 12 at 317.5 feet, a second intersection of 10.51 per cent/6.5 feet at 357.5 feet and a third intersection of 6.60 per cent/7.0 feet (or 3.34 per cent/19.0 feet) at 373.0 feet. The second and third high-grade intersections of hole 12 can be combined for a grade of 4.29 per cent Cu/27.5 feet, with the 9-foot intervening section calculated at nil copper. The drilling indicated that the zone dips about 65°E (The Northern Miner, September 19, 1968, p. 1). Significant mineralization was not intersected in hole 7 and was thus indicated for a length of only 350 feet by the drill program.

Holes 11 and 12 were the deepest of the program and tested the mineralized zone at a depth of about 325 feet. The drilling seems to indicate that the zone is mineralized somewhat erratically but further drilling was recommended for the 1969 season to test the zone along strike to the north and south, and at depth. Further geophysical work and drilling were recommended for the showings on the LIZ and BET groups. Magnetometer and Ronka EM 16 electromagnetic surveys were also recommended in the vicinity of some of the large diabase dykes on the property.

Bernack Coppermine Exploration Co. Ltd. (NAN 1-36 claims) (86-O-6; about 67°29'30"N, 115°26'30"W)

This property is located just northeast of the so-called Tundra Lake property of Teshierpi Mines. Tundra Lake is a name which has been applied to a lake located at 67°26'N, 115°33'10"W. General information about the company and its 1968 exploration program in the Coppermine area have been given under the previous property description.

Prospecting, geological mapping, and geophysical surveying were carried out on the NAN group during the period June 19 to July 23, 1968. The geological mapping was at a scale of 500 feet to the inch.

Approximately 25 per cent of the property is occupied by outcrop. The basalt flows strike northeast and dip gently northwest. In the northeast corner of the property some of the flows terminate against a thick diabase sill which forms a prominent northwest-trending ridge. Red hematitic shaly sandstones occur at two horizons interbedded with basalt flows on the western part of the property. Tension faulting with little or no associated movement appears to be centred along a northeast-trending linear trough near the west boundary. Narrow quartz and quartz-carbonate veins, which also strike

northeast, occur intermittently in the western part of the property and are believed to occupy minor tension fractures.

A number of weak copper showings were found on the western part of the claim group. Mineralization, which consists of chalcocite or chalcocite and bornite, occurs in quartz and quartz-carbonate veins which have a maximum width of only 2 feet.

Weak chalcocite and bornite mineralization is present in narrow irregular quartz-carbonate veins along a zone of fracturing on the northwest part of the property. The zone of fracturing is locally up to 15 feet wide and was followed for several hundred feet along the edge of a basalt cliff.

Chalcocite occurs as irregular patches in silicified and hematized basalt near the east boundary of the property. This showing is not associated with any known structure. Sampling indicated a grade of less than 1 per cent Cu.

Following prospecting and reconnaissance mapping, a grid with lines at 400-foot intervals was established on the western half of the claim group. The grid was mapped geologically at 200 feet to the inch, and a magnetometer survey of the grid and a Ronka EM16 electromagnetic survey of the south part of the grid were carried out. The magnetometer survey failed to outline any well-defined linear lows which might correspond to strong faults. The electromagnetic survey indicated several conductors, thought to be due to conductive overburden, but none were in proximity to known showings.

No further work on the property was recommended.

Bernack Coppermine Exploration Co. Ltd. (PRO, HOK and KIL claims) (86-O-5; about 67°20'N, 115°39'30"W)

This property consists of claims PRO 1-9, HOK 16-36 and KIL 15-25, 34-36. Coppermine River lies along the southwest boundary of the property, and the claims of Donalda Mines, held under option by Bernack Coppermine during the 1968 season, lie east of the south part of the property.

A prospecting-mapping program was carried out on the property June 9-16, August 9, 10 and August 20-24, 1968. The geological mapping was at a scale of 500 feet to the inch and was done under the supervision of F.D. Gill of Precambrian Mining Services. The southwest part of property, adjacent to the Coppermine River, is completely covered with overburden. The remainder of the property is about 50 per cent outcrop.

The claims are entirely underlain by basalt. The basalt flows dip 8-12 degrees north and are 50 to 200 feet thick. Typically the flows are capped by a mixed mud zone and scoriaceous flow-top layer, 5 to 25 feet thick, which passes downward into an amygdaloidal zone and usually into a massive central zone. Usually the basal zone is also amygdaloidal and 10 to 20 feet thick. A series of prominent northeast-striking tension faults, and a less prominent northwest set cross the property.

An interflow sedimentary horizon is exposed in two localities in the east-central part of the property (see description of the property of Donalda Mines). Although these horizons are mineralized to some extent on the Donalda property, they were not recorded as mineralized on this property.

Chalcocite in stringers and veins of quartz and calcite along tension faults and fractures is the chief form of mineralization on the property.

Although locally of good grade, these showings are narrow and discontinuous. In the northwest corner of the property a quartz-calcite vein with included angular basalt fragments contains abundant chalcocite across a width of 2 feet. This is the best mineralization that was observed on the property. However, a few hundred feet along strike to the northeast the structure is represented by several narrow discontinuous quartz veins, up to 3 inches wide, which contain sparse chalcocite.

Grids were established in two selected areas and geological mapping was done at a scale of 200 feet to the inch. Some work was also done on these grids with a Ronka EM16 electromagnetic instrument. Attempts to trace showings in the southwest part of the property with this instrument proved unsuccessful.

No further work was recommended for the property.

Bracemac Mines Ltd. (KAT 1-61, 1A-5A claims) (86-O-4, 5; about 67°15'30"N, 115°51'30"W)

Most of the claims making up this property were staked in 1967 and lie just north of the Coppermine River in the section where it flows east along the north flank of the September Mountains. The property lies immediately east of that held by James Bay Mining Corp.

Geological mapping at a scale of 1,000 feet to one inch was done in July and August, 1967. The property is entirely underlain by basalt and outcrop is good, although the massive portions of flows are much better exposed than are the flow tops. The massive sections of flows average about 35 to 40 feet thick and the flow tops about 10 feet. Flow-top breccias were recognized, but their lateral extent is limited. Some north-striking diabase dykes are present near the east edge of the property.

The property is located near the axis of a broad regional syncline (Baragar, 1967). The lavas strike east-west and dip at a shallow angle to the north. Fractures and faults strike predominantly in north, northeast and east-west directions. Those faults striking within 20 degrees of north are sometimes occupied by diabase dykes. The east-west set of faults and fractures is relatively weak. A regional fault with a northeast strike crosses the northwest corner of the property. Toward the southwest this fault passes onto the property of James Bay Mining.

Showings 1 and 2 consist of disseminated native copper in massive grey-green basalt on claims KAT 20 and KAT 32, respectively. On showing 1 a single channel sample across a true thickness of 6 feet gave an assay of 0.2 per cent Cu as metallics and 0.24 per cent Cu in the pulp for a total content of 0.44 per cent Cu. A selected sample from No. 2 showing assayed 1.32 per cent Cu as metallics and 0.20 per cent Cu in the pulp. Shallow diamond drilling in 1968 included one hole on No. 1 showing, four holes on No. 2 showing, and two holes on L-3 showing (claim KAT 33), which can be considered as an extension of No. 2 showing. No intersections were obtained that were of economic interest.

Showing 3 consists of blebs and knots of chalcocite which occur across narrow widths in a series of parallel shear zones on claim KAT 37. These shears are up to 10 feet wide and have a strike of N10°E. Mineralization was observed over a vertical distance of 50 feet and for a length of 100

feet. Four holes were drilled on this zone in 1968. Three of these holes intersected minor copper, but the best section assayed only 1.82 per cent Cu/0.3 feet.

Showing No. 4 consists of chalcocite and secondary malachite mineralization in hematitized and brecciated basalt. The showing is on claim KAT 5 and is exposed for a length of 50 feet and a vertical extent of 15 feet.

Chalcocite also occurs with abundant secondary copper carbonate minerals in calcite-quartz stringers which fill fractures parallel and normal to the contacts of diabase dykes. Copper staining is also noted on joint surfaces and in some flow tops.

Drilling was recommended for 1968 on showings 1, 3 and 4. In the case of showing No. 2 chip sampling was recommended at regular intervals along the exposed cliff face.

Following the 1967 season claims KAT 46-61 were staked and became part of the property. In 1968 a program consisting of geological mapping, a Ronka EM16 electromagnetic survey, and a magnetometer survey were carried out by Watts, Griffis and McOuat Ltd. during the period June 15-July 27. Drilling, consisting of 938 feet in 11 holes with a Winkie drill, was done June 30-July 26 and an induced polarization survey was performed by McPhar Geophysics in the period July 26-30. The 1968 exploration was assisted by the Federal Government under the Northern Mineral Exploration Assistance Program.

The geological mapping was concentrated on the newly staked KAT 46-61 claims and on grids established in the vicinity of the 1, 2, 3 and L-3 showings. The showings were mapped at a scale of 200 feet to the inch. The Ronka EM16 electromagnetic survey was also done on these grids, and the magnetometer surveying was done on these grids and also on a grid in the vicinity of the "Calcite Vein Showing" (claim KAT 59) and on Grid 5 (claims KAT 1A and 2A). The induced polarization survey covered 7, 3 and 6 short lines on, respectively, grids 3, L-3 and 5. The diamond drilling is summarized as follows:

Hole No.	Showing	Depth (feet)	Inclination	Bearing
1	2	64	90°	---
2	2	77	45°	S20°E
3	2	61	46°	S60°W
4	2	74	51°	S50°W
5	L-3	76	46°	S50°E
6	L-3	57	47°	S75°E
7	3	118	45°	S60°E
8	3	77	47°	S55°E
9	3	81	45°	S55°E
10	3	114	46 1/2°	S64°E
11	1	139	90°	---

The L-3 showing on claim KAT 33 is similar to showings 1 and 2 and, as noted above, may be an extension of No. 2 showing. The showings are described as native copper disseminations, fine nodules, amygdule coatings, and plates on or associated with fractures in massive basalts. One hole on this showing assayed 0.1 per cent Cu for a core length of 40 feet, but the other hole was blank. No induced polarization anomalies were found in this vicinity.

The "Calcite Vein Showing" consists of blebs and massive replacements of chalcocite in a quartz-rich part of a quartz-calcite vein. A selected grab sample assayed 0.74 per cent Cu. A minor occurrence of chalcocite on claim KAT 53 is on strike with an electromagnetic conductor found on claim KAT 25. Minor disseminated native copper is present in massive basalt on claim KAT 55 and also near the base of a flow on claim KAT 50.

In addition to the work noted above, magnetometer and Ronka EM16 electromagnetic traverses of a reconnaissance nature were made across linears selected from a study of aerial photographs. The company also participated in the regional airborne survey flown by Lockwood Survey Corporation for a large number of participating companies. Preliminary plots of the data collected in this survey indicated an electromagnetic anomaly in the vicinity of the "Calcite Vein Showing". This was checked on the ground with inconclusive results.

It was recommended that no further work be done on the property at the present time.

Cambridge Mines Ltd. (CAM 1-103 claims) (86-N-9; about 67°33'N, 116°18'W)

Prospecting and geological mapping of this property was carried out by L.J. Manning and Associates Ltd. during the 1968 season. The property is just south of one held by Rayore Mines and just west and northwest of one held jointly by Silver Arrow Explorations and Adera Mining. The exploration work was done July 26-August 20.

The geological mapping of the property was at a scale of 1,000 feet to the inch. Outcrop occupies about 1 per cent of the property which is entirely underlain by basalts except for a few later diabase dykes. The outcrop is concentrated in the northeast part of the property where a major fault with associated hydrothermal alteration and copper mineralization occurs. The mineralization consists of chalcocite, and rarely native copper, that is largely present as float and is apparently associated with the fault which strikes N30°W. Along the northeast side of this fault zone is a zone of breccia which has been observed at intervals over a width of 500 feet and a strike length of one mile. It has been suggested that the breccia may be of explosive origin, although a tectonic origin has not been ruled out. Samples of the mineralized float (the last two samples are apparently from the CAM claims but the first four are from the Rayore property) gave assay results as follows:

Cu (%)	Ag (oz/ton)
6.20	0.20
6.20	0.44
29.5	1.35
1.18	0.07
28.5	0.64
5.90	0.22

A program of geological mapping, geophysical and geochemical surveys was recommended for the property. It was recommended that the geological mapping be at a scale at least as detailed as 400 feet to the inch,

and that the geophysical work should consist of magnetometer, electromagnetic and induced polarization surveys over the same grid with lines spaced at 500-foot intervals. A survey grid of approximately 33 line miles was considered and the cost of such an exploration program was estimated as about $40,000.

Canadian Goldale Corp. Ltd. (MAR 1-100 claims) (86-N-7; about 67°22'30"N, 116°48'30"W)

This property lies at the southwest corner of the main property of Coppermine River Ltd. The property covers part of the major north-south Herb-Dixon Fault which, about 16 miles to the north, passes through or near Bornite Lake. A preliminary exploration program under the supervision of Mr. Gordon Leliever was conducted on the property during the 1967 season.

Basalt flows, which underlie nearly all of the property, generally strike northwest and dip 0 to 11 degrees northeast. The flows appear to be 25 to 100 feet thick and are frequently capped by a hematitized flow-top layer. The top portion of flows and flow-top breccias are often amygdaloidal. In proximity to the Herb-Dixon Fault, on the west-central part of the property, there are a number of north-south faults and fractures. Four copper showings were found which were associated with fault and fracture zones.

Showing No. 1 consists of disseminated chalcocite and bornite in narrow quartz-calcite veinlets which are interlaced in a north-south zone of shearing and brecciation. The zone is 15 feet wide and was traced for a length of 200 feet. A representative grab sample from a trench gave an assay of 1.31 per cent Cu.

Showing No. 2 consists of chalcocite in a series of north-northeast-striking quartz-calcite fracture fillings along a zone that averages 16 to 17 feet wide. The zone was traced for a length of 600 feet. Two trenches were dug on the zone and a representative grab sample assayed 12.13 per cent Cu and 0.44 oz/ton Ag.

Showing No. 3 consists of chalcocite, bornite and minor chalcopyrite in quartz which cements a breccia zone in the basalt country rock. The zone is 6 to 7 feet wide and was traced for a length of 1,300 feet. A character grab sample from a trench on the zone gave an assay of 22.78 per cent Cu and 0.87 oz/ton Ag.

The mineralization of showing No. 4, chalcocite, bornite and minor quartz and calcite as a matrix to a basalt breccia, was not located in place. The high-grade mineralization was traced as float intermittently for a distance of 900 feet. A grab sample assayed 22.28 per cent Cu and 0.57 oz/ton Ag.

A program consisting of geological mapping, detailed sampling of showings, induced polarization and magnetometer surveys, and diamond drilling of the most important mineralized zones was recommended.

In 1968 a program of prospecting and magnetometer and electromagnetic surveys was carried out on the property by Anglo-Celtic Exploration Ltd. between the end of July and September 7. The contact between basalt and dolomite is reported to be on the south boundary of the claims. About half of the area underlain by basalt is represented by outcrop. The basalt flows generally strike about north-northwest and dip shallowly east-northeast. A prominent series of nearly-vertical faults and fractures

strike slightly west of north. The flows between these faults are highly fractured and cut by numerous quartz veins, some of which contain chalcocite or other copper minerals.

The electromagnetic and magnetometer surveys covered 95 miles of grid lines. These lines were spaced 400 feet apart and were established perpendicular to strike. Magnetic detailing of electromagnetic conductors totalled 15 line miles and was done on lines spaced 200 feet apart.

The areas around showings A, B and C were considered to be of greatest interest. However, due to the lack of a response or even negative slope, of the out-of-phase or quadrature component, it was concluded that all of the electromagnetic conductors were caused by conductive overburden or topographic features.

Showing A appears to correspond to showing No. 1 of the previous season. The showing consists of a quartz stockwork in fractured basalt along the east edge of a narrow north-south valley that is filled with overburden and corresponds to the location of a strong fault. The quartz stockwork can be traced for about 150 feet and is mineralized with chalcocite adjacent to the narrow valley. Showing B may correspond to showing No. 4 of the 1967 season, but this is uncertain. This showing consists of frost-heaved material containing approximately 5 per cent chalcocite which is also present along a northerly striking linear depression. The mineralized zone is at least 1 1/2 feet wide but is considered to be probably lenticular. The zone was traced intermittently for 200 feet along the depression and barren quartz veins were observed on both sides. Showing C is a lightly mineralized quartz vein which strikes parallel to the faults in the area.

Geological mapping of the complete property at 1,000 feet to the inch and detailed mapping of the showings was recommended. An induced polarization survey over showings A and B, and possibly over C, was also recommended.

Canadian Goldale Corp. Ltd. (MGB 325-396 claims) (86-N-8; about 67°20'N, 116°10'30"W)

This 72-claim property lies a short distance southeast of the main block of claims of Coppermine River Ltd., and the property of Komo Explorations adjoins to the west. Following the 1967 season it was reported (The Northern Miner, October 26, 1967, p. 16) that prospecting had been done on the property. The results of this work were not reported. A program of geological mapping, geophysical surveys and a geochemical survey, to be conducted by William P. McGill and Associates, was planned for the 1968 season. This work was completed except for the geochemical survey.

In late July, 1968, a photogeological study was done of the property. Field work was carried out in August. A grid with northwest-southeast lines spaced 500 feet apart was established, except in the southwest part of the property where the lines ran east-west. Prospecting, geological mapping and the geophysical surveys were all accomplished by traversing these lines.

Outcrop was found to be good, especially on the south half of the property. The basalt flows strike northwest and dip approximately 10 degrees northeast. The flows are generally 15 to 50 feet thick and are cut by a dominant set of northeast joints which occasionally show evidence of movement

and native copper mineralization. Many calcite veins are present in the basalt and most of them occupy northwesterly- or northeasterly-trending joints. Red oxidized flow tops sometimes mark the contacts between individual flows. Faults which strike east-west and northwest-southeast are present on the property but the strongest set strikes north-south.

A copper-bearing zone on claims MGB 338 and 359 is 8 to 10 feet wide, strikes northwest, and was traced for a length of 300 feet. A copper-bearing calcite-quartz vein 4 to 6 inches wide is present along the centre of the mineralized zone. The zone is open at both ends where it is covered by talus.

Copper-bearing veins are also present in two exposures on claim MGB 337. Minor occurrences of native copper are widespread on the property.

The electromagnetic survey with a "Radem" instrument resulted in the location of 10 conductors. Conductor 6 is close to the mineralized vein on claim MGB 338, where it is inferred that two faults intersect. Conductor 4 strikes a little west of north and is 7,000 feet long, although it is particularly strong near the boundary of claims MGB 333 and 334. The latter point is considered to be the locus of three faults. Although copper mineralization is closely associated with Conductor 3, the above locations are recommended as the initial targets for a 3,000-foot program of diamond drilling. This program was estimated to cost $50,000.

Magnetometer surveys were carried out only in areas which gave anomalous electromagnetic results. Magnetic lows were found to occur along and near certain sections of the north- and northwest-striking faults.

Canadian Lencourt Mines Ltd. (LEL claims) (86-O-7, 10; about 67°31'30"N, 114°50'W)

To the northeast this property adjoins the southern part of the main claim block of Bernack Coppermine Exploration and comprises claims LEL 87-160, 169-172, 181-183, 339-385, 464-493, 578-584 and 594-628, a total of 200 claims. A program consisting of prospecting, mapping and an electromagnetic survey was carried out on this property, and on two other properties held by the same company in the Coppermine area, by Anglo-Celtic Exploration Ltd. during the 1968 season. The work was done from early June to August 19. The reconnaissance mapping was at a scale of 1,000 feet to the inch.

The claims, located toward the eastern end of the volcanic belt, are underlain by basalt flows which strike northeast and dip 2-10 degrees northwest. Two diabase dykes were mapped which had a strike of N15°W. Outcrop is present on less than 10 per cent of the property. Several copper showings were located.

Native copper occurs as amygdule fillings and disseminated in certain basalt flows. An average grade of 0.23 per cent Cu was obtained for fine-grained mineralization of this type and coarser material assayed 0.43 per cent Cu. On claims LEL 370 and 371 mineralization of this type appeared to be distributed evenly for 200 feet along the strike of an amygdaloidal horizon.

On claims LEL 484 and 485 quartz and carbonate, with traces of chalcocite, form the matrix in a fault breccia zone which strikes east of

north and dips steeply east. Native copper in thin sheets in narrow carbonate veins along minor fractures or joints was also noted at places on the property.

The Ronka EM16 electromagnetic survey was done in July. Readings were taken at 200-foot intervals along east-west lines spaced 400 feet apart in three grid areas. The survey covered 20 line miles and located 7 weak anomalies without an out-of-phase or quadrature response.

Further examination of the showings and more geophysical work were recommended for the property. This additional geophysical work would include low-frequency electromagnetic, magnetometer and induced polarization surveys.

Canadian Lencourt Mines Ltd. (BUD claims) (86-O-5; about 67°24'30"N, 115°46'W)

The property consists of claims BUD 157-204, 249-288, 300, 301, 312-314, 319-324, 497, 516, 517 and 996-1044 for a total of 151 claims. The property lies along the west bank of Coppermine River north of the western part of the property of United Buffadison Mines. Prospecting was carried out on the property from June 1 to August 15, 1968, and a Ronka EM16 electromagnetic survey was conducted in certain areas August 12 to September 7 to check 5 electromagnetic anomalies obtained in the airborne survey by Lockwood Survey Corp.

The property is covered almost entirely by overburden, although some outcrop is present along two creeks which cross the property and on Coppermine River near the large, nearly-round island at the mouth of Willow Creek. From surface debris it is presumed that red sandstone and shale underlies the greater part of the property (Fraser, 1960).

A copper-bearing quartz vein cutting basalt was located on Coppermine River on claim BUD 1028. This vein strikes N40°E, dips steeply southeast, and is mineralized for 10 feet out of a total length of 100 feet. Chalcocite is confined to quartz lenses of which the largest is 6 feet long and 2 feet wide.

The ground geophysical survey covered 43 line miles and outlined 5 anomalies, but no correlation with the conductors was indicated by the airborne survey. Three of the airborne anomalies and a number of those indicated on the ground were eliminated as they seemed to be due to topographic features such as lakes, ponds and muskeg. The remaining two airborne anomalies are covered by deep overburden.

Conductors A, B and D were outlined by the Ronka EM16 survey. Conductor A trends north-northeast along a shatter zone. A reverse slope was obtained for the quadrature or out-of-phase component, which was considered to indicate that the conductor is due to a nonmetallic source. Conductor B trends north-northeast along the edge of an area of deep overburden. The conductor is weak and was interpreted as a horizontal body, possibly conductive overburden, but the quadrature component has a positive slope and further testing by a magnetometer survey was recommended. Conductor D has the same trend and is located in an area of deep overburden. This was interpreted as a deep conductor and a magnetometer survey was also recommended. It was suggested that intermediate grid lines be put in to give a spacing of 200 feet.

Canadian Lencourt Mines Ltd. (RIT 1-147 claims) (86-N-11, 12; about 67°36'N, 117°27'W)

Prospecting, mapping and geophysical surveys were carried out on this property during the 1968 season by Anglo-Celtic Exploration Ltd. of Yellowknife. The claims were staked in the autumn of 1967 and are about 6 miles north of the west arm of Dismal Lake and 15 miles west of the Herb-Dixon Fault.

Prospecting was done on the property during June and part of July. The property lies along the south contact of the basalt belt, and underlying dolomite of the Hornby Bay Group outcrops near its south boundary. The dolomite dips 10 degrees north and appears to be conformable with the basalts. Several faults and fractures with strikes from northeast to northwest were located on the property.

Chalcopyrite occurs in a stockwork of red carbonate, possibly rhodochrosite, near the southwest corner of claim RIT 118. This minor showing is in dolomite and is related to a fracture system, of which the main set strikes N20°W. Some veinlets open into barren brecciated lenses which are up to at least 2 feet wide and 50 feet long. The ESCAPE group, which shows some similar mineralization in dolomite, is located south of the west part of this group.

A Ronka EM16 electromagnetic survey was carried out along 31 line miles in August. The survey covered a strong fault structure and employed the signal broadcast from Seattle, Washington. A magnetometer survey tested the electromagnetic anomalies and totalled 6 line miles. Anomaly A was related to the fault but it showed no associated magnetic low. Most of the electromagnetic conductors were due to conductive overburden, swamps and creeks.

Canadore Mining and Development Corp. (60%) and Clero Mines Ltd. (40%) (VIC 1-32 claims) (86-N-8; about 67°19'15"N, 116°06'W)

This property was prospected in 1967 and again during the 1968 season. From June 15 to September 15, 1968 exploration consisting of prospecting, geological mapping, a magnetometer survey and 3,460 feet of drilling was carried out. The surface work in 1968 was done by Sherto Explorations Ltd. and the drilling by Watts Exploration Services. Geological mapping was at a scale of 400 feet to the inch and was done by Mr. Stewart Mason.

The property is underlain by basalts which are cut by a mineralized diabase dyke on claims T4580 and T4581. A number of showings were located in both 1967 and 1968. Faulting is evident in a number of places on the property, including the area in which the diabase dyke occurs. A number of occurrences of copper mineralization are associated with northwest-striking faults.

A magnetometer survey covering 38.4 line miles was carried out along north-south lines spaced at 400-foot intervals. The only distinct magnetic anomalies were considered to be due to topographic features. Drilling started on July 7 and a total of 3,460 feet was done in 17 holes as listed in the table following.

The main showing is an east-west zone, not apparently associated with faulting, on the most northeasterly claim of the group, No. T4577. This may correspond to a zone 50 feet wide which was located in 1967 and traced for a length of 100 feet, and which yielded a grab sample with a grade of 14.55 per cent Cu (The Northern Miner, September 14, 1967, p. 22). Holes 1, 2 and 9 tested this zone and gave intersections assaying 3.2 per cent Cu/3.3 feet, 2.6 per cent Cu/3.7 feet and 0.6 per cent Cu/2.0 feet, respectively.

Two other showings located in 1967 were reported to be 4 feet wide by 800 feet long and 50 feet wide by 800 feet long (The Northern Miner, September 14, 1967).

Holes 3, 4 and 5 were drilled beneath an east-west zone on claim T4587 in the southwest part of the property, but failed to intersect any mineralization. Likewise, holes 6 and 7, which tested a fault zone in this same area, gave negative results. Hole 8 tested a vein and fault zone on claim T4566 near the north-central boundary of the property and was also unsuccessful.

Hole No.	Latitude	Departure	Bearing	Inclination	Depth (feet)
1	12 + 58N	61 + 50E	N	45°	205
2	11 + 35N	63 + 50E	N	45°	204
3	1 + 15N	36 + 00W	S	45°	205
4	0 + 00	34 + 25W	N	45°	180
5	0 + 00	32 + 60W	N30°E	60°	199
6			N35°E	45°	172
7			N35°E	60°	202
8	27 + 90N	10 + 00E	S55°W	45°	158
9	13 + 75N	59 + 10E	S20°W	60°	320
10	8 + 70S	54 + 60E	S85°W	45°	252
11	9 + 85S	55 + 10E	S74°W	45°	205
12	12 + 12S	53 + 75E	N74°E	45°	165
13	14 + 20S	54 + 60E	N70°E	60°	80
14	5 + 90S	53 + 50E	S82°W	45°	232
15	4 + 10S	52 + 80E	S77°W	45°	230
16	2 + 20S	52 + 05E	S75°W	45°	227
17	0 + 50S	51 + 50E	S70°W	45°	224

Holes 10 to 17 were drilling along the chalcocite-bearing diabase dyke and gave average values of 0.41 per cent to 0.52 per cent Cu across widths of 20 to 55 feet. The holes were at roughly 200-foot intervals and only the most southerly one, No. 13, failed to intersect the dyke. The other holes, along a length of 1,160 feet, are reported to have indicated an average grade of 0.463 per cent Cu across a true width of 35.7 feet. The detailed assay results for these holes are presented in the table following. The dyke

Drill Results for Diabase Dyke

Hole No. 10

Intersection	Core Length (feet)	Cu (%)
200.5'-205'	4.5	0.85
205'-210'	5	0.50
210'-215'	5	0.45
215'-220'	5	0.45
220'-225'	5	0.40
225'-230'	5	0.40

Hole No. 11

Intersection	Core Length (feet)	Cu (%)
130'-135'	5	0.55
135'-140'	5	0.42
140'-145'	5	0.38
145'-150'	5	0.64
150'-155'	5	0.19
155'-160'	5	0.32
160'-165'	5	0.49
165'-170'	5	0.64

Hole No. 12

Intersection	Core Length (feet)	Cu (%)
60'-65'	5	0.40
65'-70'	5	0.60
70'-75'	5	0.35
75'-80'	5	0.35
80'-85'	5	0.30
85'-90'	5	0.50
90'-95'	5	0.40

Hole No. 14

Intersection	Core Length (feet)	Cu (%)
156'-160'	4	0.50
160'-165'	5	0.50
165'-170'	5	0.60
170'-175'	5	0.40
180'-185'	5	0.60
185'-190'	5	0.65
190'-195'	5	0.45
195'-200'	5	0.40
200'-205'	5	0.40
205'-210'	5	0.80
210'-215'	5	0.35
215'-220'	5	0.55
220'-225'	5	0.50

Hole No. 17

Intersection	Core Length (feet)	Cu (%)
180'-185'	5	0.30
185'-190'	5	0.40
190'-195'	5	0.40
195'-200'	5	0.30
200'-205'	5	0.45
205'-210'	5	0.55
210'-215'	5	0.45
215'-220'	5	0.45

Hole No. 15			Hole No. 16		
Intersection	Core Length (feet)	Cu (%)	Intersection	Core Length (feet)	Cu (%)
145'-150'	5	0.44	155'-160'	5	0.40
150'-157.5'	7.5	0.58	160'-165'	5	0.35
157.5'-162.5'	5	0.46	165'-170'	5	0.60
162.5'-167.5'	5	0.45	170'-175'	5	0.60
167.5'-172.5'	5	0.51	175'-180'	5	0.50
172.5'-177.5'	5	0.44	180'-185'	5	0.45
177.5'-182.5'	5	0.67	185'-190'	5	0.70
182.5'-187.5'	5	0.46	190'-195'	5	0.40
187.5'-192.5'	5	0.60	195'-200'	5	0.50
192.5'-197.5'	5	0.36	200'-205'	5	0.60
197.5'-202.5'	5	0.49	205'-210'	5	0.35
202.5'-207.5'	5	0.44	210'-215'	5	0.45
207.5'-212.5'	5	0.45	215'-220'	5	0.40
212.5'-217.5'	5	0.27	220'-221.8'	1.8	0.50
217.5'-222.5'	5	0.26			

strikes about N15°W and contains chalcocite as disseminated blebs and on the surfaces of minor fractures. The average width of the dyke is about 36 feet.

It was recommended that the eastern part of the property be retained in good standing and that further geophysical surveys be done along the extensions of the diabase dyke. Detailed magnetic and self-potential geophysical methods, and possibly induced polarization, were recommended.

Casino Silver Mines Ltd. (BUD claims) (86-O-12; about 67°33'30"N, 115°48'30"W)

This property consists of claims BUD 837-840, 847-850, 857-860, 867-924, and 966-995, a total of 100 claims. The property lies west of Coppermine River on or near the contact of the basalt sequence with overlying sediments (Fraser, 1960). According to mapping by Baragar (1967) the property should largely be underlain by a diabase sill but should also include a thin section of sediments, below the sill, that belongs to a sequence younger than and unconformably overlying the basalts. A sequence of sediments and interbedded flows, which is conformable with the basalt sequence, should also be present on the property.

Prospecting and geological mapping was carried out in June and July, 1968, under the supervision of C.K. O'Connor of Watts, Griffis and McOuat Ltd. This work appears to have confirmed the results obtained by Baragar. The diabase sill is reported to dip north at 4 degrees or less and

is up to about 50 feet thick. Thinly-laminated nearly-horizontal siltstone and shale form a band up to about 65 feet thick beneath the diabase sill. This band of sediment appears to thin both to the east and west. Some basalt is exposed beneath the diabase sill in the southeast and central parts of the property. Linear valleys are abundant on the property and are considered to be due to fault zones and diabase dykes. Both pre- and post-diabase faulting is recognized.

Native copper occurs as finely disseminated grains and chalcocite in very minor fractures in most outcrops of basalt. Similar chalcocite-filled fractures are present in sandstone in the northeast corner of the property, and sandstone float containing small specks of chalcocite lies on the diabase sill in the south-central part of the property.

Chalcocite occurs in the siltstone beneath the diabase sill as heavy disseminations in alternate laminae over thicknesses of 1/2 to 5 inches and for a maximum length of about 500 feet. This showing lies just south of the south boundary of the property but the mineralization no doubt extends north beneath the sill.

The company participated in the airborne survey flown by Lockwood Survey Corp. The results of this survey were to be interpreted by Chapman, Wood and Griswold Ltd. No further work was recommended on the property unless results of the airborne survey seemed promising or exploration on other properties along the north contact of the basalt belt was successful.

Late in the 1968 season it was reported (The Northern Miner, September 5, 1968, p. 1) that geophysical work was in progress on the property, with drilling planned for later in the season. The results of the geophysical work, which presumably tested anomalies obtained in the airborne survey, is not known, nor is it known whether or not drilling was done.

Chance Mining and Exploration Co. Ltd. (200 GDF claims) (86-O-5, 6; about 67°24'30"N, 115°28'W)

This property consists of claims GDF 1-100 (Grant No. T50801 et seq.), GDF 101-108 (T50989 et seq.), GDF 1-88 (T50901 et seq.), and GDF 97-100 (T50997 et seq.). These claims adjoin to the west-central part of the large block of claims held by East Coppermine Exploration Co. Ltd. An exploration program was carried out on these properties in 1968 under the management of Conwest Exploration Co. Ltd. The latter company holds a 45.4 per cent interest in Chance Mining and Central Patricia Gold Mines, and an associated exploration company, holds an 11.3 per cent interest.

The exploration program consisted of prospecting, geological mapping, ground geophysical surveys, and limited diamond drilling. The property was also covered by the joint airborne survey flown by Lockwood Survey Corp. The results of geological mapping on the property are not known, but the property should be underlain almost entirely by basalt flows (Fraser, 1960).

Two main showings were located on the property. A showing near Fokker Creek at about 67°23'10"N and 115°26'25"W consists of a zone with a potential size of 4,500 feet long by up to about 100 feet wide. A drill was being set up on this showing when it was visited on July 31, 1968. A northwest-striking fault or shear is host to shattered rock which contains good chalcocite mineralization. The mineralized zone is exposed across a

width of 6 to 7 feet and for a length of at least 30 feet, although the exposure is poor, especially elsewhere along the depression which marks the zone. The zone is apparently cut off at its southeast end by a fault which strikes N65°E and dips about 60 degrees south. A calcite vein has reportedly been found along this fault which contains up to about 10 per cent chalcocite.

The second mineralized zone of interest is on the north boundary of the property at about N67°25'35"N and 115°29'30"W. This zone extends north onto a property of Teshierpi Mines (Group 1) where it appears to be better mineralized and was tested by drilling. When the showing was visited drilling was in progress on the Teshierpi Mines section. On the Chance Mining property some chalcocite was noted in fractures in scattered areas on a narrow ridge of highly fractured or shattered basalt. This zone, which trends about north-south, was reported to have given good electromagnetic crossovers for a length of 700 feet. At its south end the zone is apparently cut off by a northwest-striking fault. The extent of drilling on either this or the first showing is not known, although only 3 holes were drilled in total.

Colonial Oil and Gas Ltd. (NOR, WIL and HOLE claims) (86-N-9; about 67°32'15"N, 116°05'W)

A program consisting of reconnaissance geological mapping and a geochemical survey was conducted over claims NOR 27-72, WIL 73-79 and HOLE 1-8, a total of 61 claims, by Advance Geology and Geophysics Ltd. However, the NOR and WIL claims had lapsed by the time reports were submitted as Representation Work. The exploration program was carried out August 1 to September 6, 1968.

Outcrop occupies about 15 per cent of the property. The property is underlain in part by basalts, but light grey to buff sandstone is present on the extreme southern part of the property. This sandstone belongs to what is mapped by Baragar (1967) as an upper sedimentary member, with interbedded basalt flows, of the Coppermine River Group. The dips of the rocks are reported to range from 20 degrees north to 20 degrees south, and in the western part of the property the dips are 20 degrees northeast. A gabbro dyke in the northwest part of the property is 120 feet wide and strikes N40°W.

A total of nine copper occurrences were located during investigation of the property. Showing No. 1 is the most significant and occurs on claim NOR 35. This showing consists of chalcocite in place, in float and in 'frost boils' over an area of about 600 by 400 feet that is near a strong linear. Showing No. 2 consists of heavy chalcocite as blebs and small veinlets in basalt fragments in 'frost boils' and has been traced for a length of 50 feet. Showing No. 3 consists of disseminated chalcocite and native copper in a very small outcrop of basalt on claim HOLE 2. The showing is adjacent to a gabbro dyke and on or near a prominent linear. Showing No. 4 consists of chalcocite in basalt float over a small area on claim NOR 29. The remaining occurrences are minor and consist of native copper as blebs, plates or fillings of vesicles.

Work on the property was carried out along east-west lines spaced at 400-foot intervals. The grid totalled about 84.4 line miles. The geochemical samples were taken each 400 feet along the survey lines and at a depth of about 4 inches. The samples were analyzed for copper at X-ray Assay Laboratory, Toronto, using the hot nitric acid extraction and

colorimetric analysis methods. An average background of about 7 ppm Cu was indicated. Seven anomalies 900 to 3,600 feet long and 5 to 10 times background were outlined on the east half of the property by the survey.

Anomalies C, E and G are in close proximity to a northwest-trending linear. Shearing and fracturing is associated with this linear near the inferred location of the Teshierpi Fault, which lies roughly 1/2 mile southeast of the Colonial Oil and Gas property. Anomaly G occurs adjacent to the strong linear with which the No. 1 showing appears to be associated.

Showing No. 2 lies 400 feet east of anomaly A which is elongated north-south and is 3,600 feet long. Showings 3 and 4 do not have associated geochemical anomalies. Two of the minor copper occurrences are associated with geochemical anomalies.

It was recommended that induced polarization surveys be carried out over each of the geochemical anomalies and copper showings. The company planned further work for the 1969 season.

Columbia Placers Ltd. (MAR claims) (86-N-10; about 67°34'30"N, 116°46'W)

This 50-claim property adjoins the northwest corner of the main block of claims held by Coppermine River Ltd. The property consists of claims MAR 322-325, 336-343, 354-361, 435-445, 450-462 and 469-474. Geological mapping, geophysical surveys, and a geochemical survey were done on the property during the 1968 season by Watts, Griffis and McOuat Ltd. The company also participated in the airborne survey by Lockwood Survey Corp.

Geological mapping of the property was done at a scale of 1,000 feet to one inch. Less than 5 per cent of the area of the property is outcrop. This outcrop is present largely in the southwest corner and on the east boundary of the property and consists of basalt and sandstone of the Coppermine River Group (Baragar, 1967). Sandstone as outcrop and areas of frost-heaved boulders at the eastern end of the property indicate a band of sediments 1 mile wide that has a north-northwest strike. The stratigraphically lower basalts on the southwest part of the property are assumed to strike N25°W and dip 0 to 10 degrees northeast. The rocks are jointed but no direct evidence of faulting was observed, probably largely due to extensive overburden.

The reconnaissance geochemical survey indicated a background of approximately 35 ppm Cu, but no geochemical anomalies were outlined.

Magnetometer and electromagnetic surveys were carried out on two grids, and some induced polarization profiles were done on one of these. The two grids were established to cover probable faults indicated by reconnaissance magnetometer work along east-west lines about 1,000 feet apart. One fault strikes north in the central part of the property and is at least 4,000 feet long, while the second strikes north-northwest across the east end of the property. An electromagnetic anomaly coincides with the north-south fault, but a weak anomaly near the second fault is interpreted as due to conductive overburden. No mineralization was detected by two induced polarization profiles across the north-striking fault.

No significant copper showings were found on the property. Minor amounts of native copper disseminated in basalt or as thin plates along joints were noted in the southwest corner of the property. Four samples chipped

along joint fractures for lengths of 1.5 to 2.5 feet assayed 0.08 per cent to 0.25 per cent Cu. Minor chalcocite and chalcopyrite are present as blebs and specks in quartz veins up to 2 inches wide along a cliff at the east end of the property. Chalcocite, bornite and chalcopyrite also occur in quartz float along a ridge extending southeast from the southeast corner of the property. The latter location is near the inferred position of a fault.

It was concluded that potential mineral-bearing structures are present on the property and that further work was warranted. Geophysical surveys over the entire property were considered necessary for a complete evaluation.

Consolidated Gem Explorations Ltd. (AND and WAL claims) (86-M-9; about 67°40'N, 118°24'W)

This property, which consists of claims AND 1-36 and WAL 1-36, was purchased for 100,000 shares prior to the 1968 season. Reconnaissance geological mapping and a geochemical survey were carried out on the property in August and September by William P. McGill and Associates Ltd. A photogeological study was done in August prior to the field work.

The property is entirely underlain by basalt. Much of the property is covered by overburden, however, and no mineralization was located in the scattered outcrops which are present. Two strong north-striking faults are present on the west part of the property, and a third parallel one is inferred.

Work on the property was done along lines spaced 500 feet apart. Soil samples were taken each 500 feet along these lines and analyzed colorimetrically for total heavy metals. A total of 626 samples were taken and 125 of these were anomalous and were further analyzed for copper in Toronto.

The soils contain erratically distributed concentrations of heavy metals, but most of these cannot be interpreted. Three anomalies, however, are of possible significance. Anomaly No. 1 occurs between the north-striking faults, but is of secondary importance as it is not a copper anomaly. Anomaly No. 2 is U-shaped and is generally anomalous for copper as well as total heavy metals. Anomaly No. 3 consists of two small weak zones on either side of a deep overburden zone along a strong fault. Because of its setting it was considered definitely favourable.

Detailed electromagnetic and magnetometer surveys were recommended in the vicinity of the three geochemical anomalies. The estimated cost of this work is $16,000. However, no further work was planned on the property in the immediate future (The Northern Miner, December 19, 1968, p. 2).

Consolidated Proprietary Mines Holdings Ltd. (COPPER LAMB 1-4 claims) (86-N-10; about 67°37'40"N, 116°52'W)

These claims are located at Bornite Lake and were staked in 1965 to cover part of the former B group (Lord, 1951, p. 77). Some showings are described by Thorpe (1966, p. 36). The Herb-Dixon Fault is located east of the property and may lie from very near to as much as one mile away.

Massive lenses of bornite, chalcocite and minor chalcopyrite occur in a major north-south striking quartz-carbonate vein which is up to 20 feet wide. The vein occupies a fault which is probably subsidiary to the Herb-Dixon break. Samples taken in an early investigation of the property from four trenches along a length of 250 feet indicated a grade of about 40 per cent Cu across an average width of 8.8 feet (The Northern Miner, March 3, 1966, p. 3). A total of 1,926 feet of drilling in 15 holes was done by Val d'Or Mineral Holdings in 1956. This drilling gave intersections of up to 12 feet of massive bornite or bornite plus chalcopyrite.

This property was optioned from Mr. G. Rapson by Consolidated Proprietary late in 1965 and a drilling program was carried out in the first few months of 1966. The object of the program was reportedly to outline perhaps 20,000 tons of high grade ore which could be profitably mined and shipped without concentration. The drilling consisted of 317 feet in 8 holes and was completed under difficult winter conditions. The drill program was conducted by Watts, Griffis and McOuat Ltd. of Toronto. This drilling indicated that the bornite-rich lenses were shallow features and the property was subsequently allowed to revert to Mr. Rapson.

Consolidated Proprietary Mines Holdings Ltd. (HARRY 5-40 claims) (86-N-10; about 67°38'30"N, 116°53'15"W)

The HARRY group adjoins the COPPER LAMB claims in the Bornite Lake sector of the Coppermine area. The claims were apparently staked for Consolidated Proprietary Mines Holdings by Watts, Griffis and McOuat Ltd. while a drilling program was in progress on the COPPER LAMB claims, or shortly after this. Apparently the group was under option to PCE Explorations during the 1966 season.

Some preliminary surface examination of the property was done by the Murray Watts interests during the 1966 season. A copper showing located at about 67°38'N, 116°53'15"W consists of chalcocite and bornite in a quartz vein. The vein strikes N20°E and is 10 to 15 inches wide where it is exposed in three pits along a length of 60 feet.

Consolidated Proprietary Mines Holdings Ltd. (VERA 1-20 claims) (86-O-5; about 67°18'20"N, 115°47'45"W)

This property is near Burnt Creek and adjoins four claims which formed part of the so-called South Burnt Group and which have been held by Pickle Crow Gold Mines for at least 12 years. These claims are 350, 360, 361 and 370 (Grant No. 5, 99850, 99860, 99861, and 99870) and the main showing on the claims was covered previously by the MARGE group of the American Metal Company of Canada. Four holes were drilled on the main showing, which is located at about 67°18'03"N and 115°48'W, by Pickle Crow Gold Mines in 1957. These holes tested the zone for a length of 300 feet and gave intersections of 7.96 per cent Cu/6 1/2 feet, 10.75 per cent/2 1/2 feet, 12.26 per cent/8 1/2 feet and 6.80 per cent/10 1/2 feet.

The VERA group was staked in 1966 by the Murray Watts interests during reconnaissance exploration in the area and was subsequently transferred to Consolidated Proprietary. A narrow quartz vein located at

about 67°18'07"N, 115°47'45"W was traced intermittently for about 4,000 feet along a strike of N58°E. The vein is probably related to that on the Pickle Crow property which is described above, and in some sections contains massive chalcocite across a width of about one foot. Three chip samples taken in 1966 along a length of 1,100 feet assayed 24.95 per cent Cu/1.7 feet, 24.35 per cent/1 foot and 31.8 per cent/2.9 feet.

A second showing on the VERA group has been known for many years. Channel sampling of this showing by American Metal Company of Canada resulted in an assay of 29.22 per cent Cu/3 feet. A sample taken by Dome Explorations farther northeast assayed 16.32 per cent Cu/2.8 feet. Chalcocite occurs with calcite and quartz as lenses or veins along a northeast-striking fracture zone which is up to 50 feet wide. About 12 mineralized sections up to 20 feet long and 5 feet wide occur along a length of 1,500 feet. The zone can be traced for about 4,000 feet. This showing is located at about 67°18'25"N, 115°48'35"W and was held some years by Vandoo Consolidated Explorations Ltd. as the NIC group.

Consolidated Proprietary Mines Holdings Ltd. (HUSKY 1-24 claims) (86-N-8; about 67°20'40"N, 116°07'30"W)

This company acquired an option on the Copper Lamb claims in the Bornite Lake sector of the Coppermine area in 1965 (Thorpe, 1966). Following drilling on these claims during the first few months of 1966, the option was allowed to lapse. The Murray Watts interests were active in reconnaissance exploration and staking in the Coppermine area during the 1966 season. A few of the groups that were staked, including the HUSKY group, were later acquired by Consolidated Proprietary Mines Holdings.

A showing on the property was trenched and mapped during the 1966 season. This showing is located at about 67°20'25"N, 116°07'15"W and consists of chalcocite in a fan-shaped fracture zone that is exposed for about 200 feet. The fracture zone trends north-south and pinches out at its south end. Samples from a trench across the zone at one point assayed 4.85 per cent Cu/30 feet (or 6.53 per cent Cu/20 feet), although only 30 feet farther along the zone to the north the grade is about 1 per cent Cu/22.3 feet.

Continental McKinney Mines Ltd. (XYZ, SON and SHEL claims) (86-N-10, 11; about 67°43'N, 117°03'W)

This property consists of claims XYZ 1-100, SON 1-36 and SHEL 1-39 (a total of 175 claims) and is located about 4 miles west of the Herb-Dixon Fault and, insofar as previous regional mapping is concerned (Fraser, 1960), almost entirely north of the northern contact of the basalt belt. This company held a total of 495 claims in 5 separate blocks in the Coppermine River area. The claims cost $148,500 (The Northern Miner, May 23, 1968, p. 1) and about $150,000 was budgeted for their exploration (The Financial Post, June 15, 1968, p. 8). A preliminary report on the properties by Precambrian Mining Services Ltd. suggested that bedded copper deposits might be present in sediments overlying the basalt sequence. A program of geological mapping and geophysical surveys, to be followed by drilling, was recommended to search for such deposits and for mineralized fault and

breccia zones in basalt at an estimated cost of $136,000. An exploration program on these properties was carried out by L.J. Manning and Associates Ltd. during the 1968 season. The company also participated in the airborne survey flown by Lockwood Survey Corp.

A camp was established by L.J. Manning and Associates Ltd. on a lake about 25 miles north of Hope Lake (Hope Lake is located at about 67°26'30"N, 116°27'45"W). A crew of 20 men, including 6 Eskimos, carried out the exploration program under the supervision of G.R. Hilchey, chief geologist, and G. Leech, field manager. The work was supported by a Cessna 180 airplane and a Hiller-12 helicopter. It is understood that about 400 of the 495 claims held by the company were covered in 1968 by prospecting and geological mapping. The AMO 73-108 and PIP 1-108 claims (86-M-9; about 67°39'30"N, 118°08'30"W for the PIP group and 67°40'N, 118°15'30"W for the AMO claims) toward the western end of the volcanic belt were found to be of little interest. The PIL 1-39 and 43-108 claims are located just east of the Coppermine River and about 10 miles southwest of the settlement of Coppermine (86-O-11; about 67°43'N, 115°19'30"W). It is not known whether or not any exploration was done on the latter group. Early in the exploration season it was reported (Engineering and Mining Journal, July, 1968, p. 112) that work had "indicated a breccia deposit grading 3 1/2 per cent Cu and with sufficient tonnage implications to have economic potential", but which group this showing occurs on is not known.

On the XYZ, SON and SHEL claim groups exploration work was done June 24-July 5 and August 3-12, 1968. Prospecting was carried out over the entire property along lines spaced 500 feet apart and the west half of the property was geologically mapped along the same lines. The southwest part of the property is underlain by basalts. An argillaceous quartzite unit, about 30 feet thick in the northwest part of the property and thinning to 2 1/2 feet in the southeast, overlies the basalt and dips 2-5 degrees north. A conformable diabase sill caps the quartzite. A set of northwesterly-striking strike-slip faults and a set of east-west thrust faults are present.

Four copper showings were located which are considered to be significant. Showing B consists of chalcopyrite in disseminated form and narrow veinlets in a quartz vein and the amygdaloidal basalt country rock. The copper mineralization occurs for a length of 200 feet at the northwest end of the vein which is 6 inches to 2 1/2 feet wide and has been traced for 1,200 feet along a strike of N30°W. The vein dips 75 degrees southwest.

Showing C consists of very small stringers of chalcopyrite and pyrite in quartz and wallrock along a fault that strikes N7°W and dips 70 degrees east. The quartz vein is 6 inches to 3 feet wide and is only intermittently mineralized.

Showing D is a strike extension of C. Here however, only the footwall of the quartz vein is exposed along the edge of a lake.

Showing E consists of chalcopyrite, pyrite and quartz stringers in small frost-heaved basalt fragments. The showing occurs along a linear representing an east-west thrust fault.

Magnetometer and Ronka EM16 electromagnetic surveys were recommended for the west part of the property at an estimated cost of $4,200. The SON and SHEL groups, except for some outcrops of the diabase sill, are covered by heavy overburden and it was recommended that these be dropped.

Continental McKinney Mines Ltd. (LEAH 1-72 claims) (86-N-10; about 67°37'20"N, 116°35'W)

This group of claims is located just over 3 miles north of the main block of claims held by Coppermine River Ltd. The property is along the north contact of the basalt belt, as are the XYZ, SON and SHEL claims of Continental McKinney Mines. Prospecting and geological mapping at a scale of 1,000 feet to the inch were done on the property July 6-12, 1968, by L.J. Manning and Associates Ltd.

Outcrop occupies less than 1 per cent of the property. Basalts are believed to underlie most of the property; they are reported to trend northerly and dip to the east. Younger flat-lying sediments are exposed along a creek on the property. Some chalcocite and chalcopyrite mineralization on the property may be related to a major northwest-striking fault.

Minor grains of native copper were found in practically unaltered basalt on a small peninsula at the north end of a lake. Chalcopyrite is present in vertical fractures in thin-bedded argillaceous quartzite on the east bank of the creek.

About 14 occurrences of mineralized float were found on the property. Most of this float consists of chalcocite, but some of bornite and chalcopyrite, in basalt which was sometimes brecciated or amygdaloidal. The source of the float may be off the property to the southeast.

Native copper occurs in calcite veinlets up to 1/2 inch wide in large angular boulders on the west side of the creek and about 2,000 feet north of the south boundary of the property. From the size and distribution of the mineralized float it was inferred to be close to its bedrock source. The rock was estimated to grade 1-2 per cent Cu.

Magnetometer, electromagnetic and induced polarization surveys were recommended for the property at an estimated cost of $35,000.

Continental Potash Corp. Ltd. (ZEKE 1-72 claims) (86-O-11; about 67°36'N, 115°18'30"W)

This property is east of the Coppermine River and lies north of the contact between the basalt belt and overlying sediments according to the regional mapping that has been done in the area (Fraser, 1960). A program of geological mapping was carried out on the property between August 28-October 4, 1967, by Sulmac Exploration Services Ltd. This mapping was apparently of a reconnaissance nature.

The sediments underlying the property probably consist of red, white and grey sandstones, and black, grey and green shales, with possibly some interbedded dolomite. These sediments strike northeast and are reported to dip 5-8 degrees north. The contact with underlying basalt is approximately at the southeast corner of the property. Diabase which outcrops on the property probably forms a conformable sill.

Limited surface exploration was carried out on the property in 1968 and apparently nothing of consequence was located (The Northern Miner, October 17, 1968, p. 15).

Coppermine River Ltd. (DOT claims) (86-N-7, 8, 9, 10; about 67°28'N, 116°32'W)

These claims form a large block which was staked between the Teshierpi and Herb-Dixon Faults, two of the major faults which cut across the basalt belt. These DOT claims surround a number of smaller groups that were staked somewhat earlier and have been treated separately in the succeeding summary. The DOT claims were staked by PCE Explorations during the autumn of 1966 and during the winter and spring of 1967. The claims were transferred to Coppermine River Ltd. prior to the 1967 exploration season, at the time the latter company was formed.

PCE Explorations had acquired at least 1,534 claims by mid-January, 1967. Coppermine River Ltd. was formed by Pan American Canada Oil, Newconex Canadian Exploration, Conwest Explorations, Consolidated Proprietary Mines Holdings, and PCE Explorations, each with equal financial participation in the planned program. PCE Exploration received 565,000 vendor shares, and an additional 185,000 vendor shares went to Consolidated Proprietary for 45 claims and to individual prospectors. A total of 1,554 claims were transferred to Coppermine River Ltd. by PCE Explorations. A program was planned for 1967 at an estimated cost of $500,000.

In April, 1967, over 300 tons of supplies and equipment, including a 25-ton bulldozer, were airlifted to the property by Hercules aircraft. The plane utilized an ice airstrip.

During the 1967 season geophysical work was carried out from May 5 to about September 16. During the first part of the season the applicability of various methods was tested by surveying across known mineralized zones. The surveys were run on lines spaced 200 feet apart with stations each 100 feet. Horizontal-loop electromagnetic surveys covered about 55 line miles, and a Crone JEM system was tested for a total of about 8 line miles. Both of these methods proved unsuccessful. A Ronka EM16 radio-frequency electromagnetic system was tested over one showing.

Induced polarization surveys were conducted by Huntec Ltd. from June 13 to August 28 and totalled 109.6 line miles. By mid-July it was evident that a definite correlation existed between the induced polarization anomaly and the good drilling results being obtained for the No. 47 zone. Early testing of the method was done using both gradient array and pole-dipole electrode configurations. The gradient array technique is faster and was chosen for the reconnaissance surveying. The pole-dipole technique was employed for detailing of the better gradient anomalies, because it better defines the depth and width of the causative zones. From the results obtained it was concluded that the "Metal Factor" values were only of significance where they coincided with "Apparent Chargeability" anomalies.

A limited test program of 10.4 line miles of magnetometer surveying was carried out in the area of the No. 47 zone during the latter part of the season.

Work commenced in the No. 47 area, later known as the A grid, on July 8, 1967. The induced polarization survey in the area resulted in a large number of apparent chargeability anomalies. Drilling of one of these where it was coincident with a surface showing resulted in discovery of the No. 47 deposit. A sharp change in chargeability background, generally quite high, was considered to mark the location of the Teshierpi Fault. Some branch and subparallel faults were postulated on similar grounds. There is

a general northeast to north-northeast trend in the apparent resistivity and chargeability results. A chain of "Metal Factor" anomalies extends through the area roughly parallel to the interpreted position of the Teshierpi Fault. Most of the anomalies lie to the north of and adjacent to the fault, but anomalies 47/4 (corresponding to the No. 47 deposit) and 47/8 lie south of the main fault and close to an interpreted branch fault. Anomaly 47/10 may also lie along the extension of the same zone. Anomalies 47/1 and 47/9 also lie south of the main fault zone, but are not known to be associated with subsidiary faulting.

Zone 47/4 is 100 to 200 feet wide and a maximum of 2,600 feet long and was drilled for most of its length during the 1967 season. The mineralization occurs in a brecciated zone which has been heavily hematitized and chloritized. The zone is characterized by moderate chargeabilities (maximum 27.8 milliseconds), low resistivities and high metal factors (up to 24.4 secs./ohm-meter. The resistivity low is broader and less distinct than for the other anomalies and this was interpreted as a reflection of the extent of alteration of the country rock. The magnetometer survey along the zone showed a strong magnetic low of -2,300 gammas in relation to a general background of about +400 gammas. The magnetometer anomaly correlated with the resistivity low and is most probably related to alteration along the zone.

Anomaly 47/3 has similar characteristics to 47/4 and lies along strike about 3,000 feet to the southwest. Hole S-59 was drilled to test this anomaly and intersected brecciated and hematitized basalt with calcite stringers, but no copper mineralization.

Anomaly 47/5 also has similar characteristics to 47/4 but lies 700 to 1,000 feet to the northwest along the main Teshierpi Fault. Other anomalies, some of similar characteristics, form a chain along the fault. Anomaly 47/6, however, lies about 600 feet northwest of anomaly 47/5 and has similar characteristics to anomaly 47/4.

As noted above, drilling of the No. 47 deposit commenced in July, 1967. The property was visited by the author on August 12 and 13, when some of the core was examined. By mid-August a total of 15 holes had been drilled on the zone. Four holes missed the zone, but the remaining 11 holes intersected mineralization of good grade along a length of 1,200 feet. The averaged assay results for the major intersections, and certain more restricted intervals, in these holes are given in the table below.

Hole No.	Inclination	Intersection	Core Length (feet)	Cu (%)
S-8	-45°	41'-115'	74	2.95
		46'-71'	25	5.5
S-9	-60°		47	5.14
S-10	-45°	82.5'-121'	38.5	2.94
S-17		74'-132'	58	1.92
S-18			147	2.19
S-19			119.6	4.23
S-20			103	3.26

Hole No.	Inclination	Intersection	Core Length (feet)	Cu (%)
S-21	-45°	69'-185'	116	3.18
S-24			154.5	3.23
S-25	-45°		57.4	2.87
S-26	-45°		44.2	6.33
			17	3.12

Based on the drilling to mid-September, 1967, it was concluded that the zone was nearly vertical, had an apparent dragfold structure in plan, and raked steeply to the southwest. On the basis of the S-shaped dragfold-type configuration near its centre the deposit was considered in two sections, the northeast 'A' portion had a length of 550 feet and the southwest 'B' portion a length of 650 feet.

During September a deeper tier of 6 holes was drilled beneath the 'A' portion of the deposit to intersect it at a depth of 200 to 300 feet. The first of these holes, S-55, at the northeast end of the zone, failed to intersect significant mineralization. The other holes were all drilled at 100-foot intervals along the zone and at an inclination of -45 degrees, and all holes resulted in very good intersections. The averaged assay results for these holes are as follows:

Hole No.	Core Length (feet)	Cu (%)	Comments
S-53	118.6	2.55	Or 4.48% Cu/46.7 feet
S-54	149.4	4.94	Or 5.17% Cu/122 feet
S-57	158.4	4.25	Or 5.23% Cu/121.4 feet
S-58	297.4	3.62	Or 3.96% Cu/260.2 feet
S-63	100.2	4.08	

Following this drilling, a series of four holes was drilled to test the northeastern A section of the deposit down to a depth of about 500 feet. The results of this drilling are summarized in the table below.

Hole No.	Intersection	Core Length (feet)	Cu (%)	Remarks
S-64	257'-307'	50	2.09	Beneath hole S-63
	521'-591.5'	70.5	4.67	
S-66	255'-275'	20	5.34	Beneath hole S-57
	464.5'-515'	50.5	1.15	
S-68	197'-422'	225	3.05	Beneath hole S-25 and 200 feet southwest of hole S-64
S-67		19.3	2.97	Beneath holes S-25 and S-68

By mid-November a preliminary estimate (The Northern Miner, Nov. 16, 1967, p. 1) of 10,000 tons per vertical foot for an 800-foot length in the A section of the deposit, had been made. The average grade for this tonnage was reported to be well in excess of 3 per cent Cu. A total of 15,100 feet of drilling had been done on the property to this date, of which 11,265 feet was in 34 holes on the No. 47 orebody. The length of the section for which the tonnage calculation was made was later revised to 753 feet. (The Northern Miner, November 23, 1967, p. 2). It was also reported here that the weighted average grade of all copper intersections within the 1,300-foot length of the No. 47 deposit was better than 3 per cent Cu after allowing for a dilution factor of 15 per cent.

The ore minerals of the No. 47 deposit are primarily chalcocite and bornite. Preliminary flotation testing of the ore indicated that a concentrate grading 60 per cent to 68 per cent Cu could be produced (The Northern Miner, November 23, 1967, p. 2). The fact that a higher-grade concentrate than normal could be produced was considered to be an advantage in reducing shipping costs.

Geological mapping was done on the property in July and August, 1967. This mapping covered a total of about 240 square miles. The basalt flows generally strike northwest and dip from 0 degrees to 12 degrees northeast. The Teshierpi Fault strikes northeast through the large block of claims and is located toward the southeast corner. Many other faults and minor fractures, usually of a minor nature, strike about northwest. The basalt flows are grey, green and purple in colour and seem to range in thickness from 25 to 100 feet. The flows are frequently capped by a hematitized flow-top layer.

More than 60 individual copper showings were located during the geological mapping, of which about half were of possible significance. The most significant mineralization was found in brecciated zones related to faulting. The mineralization consists of chalcocite and minor bornite and is usually accompanied by chloritization, carbonatization and hematitization. The majority of the showings consisted of veins along fractures in the basalt country rock. The veins consist of quartz, quartz and calcite, or calcite and contain some associated bornite, chalcocite and/or chalcopyrite.

Some areas of chalcocite-bearing flow-top material were located. In some places the chalcocite is present as amygdules and in other places has apparently replaced much of the whole rock. While some of the portions of the flow tops are rich in copper, these are irregularly distributed.

During the 1967 season two fully-winterized camp buildings were completed on the property at Hope Lake. Portable insulated trailer-type cabooses were constructed to provide sleeping and eating quarters for the diamond drillers. A garage was also built as were portable skid-mounted drill shacks containing solution tanks, all in preparation for the Arctic winter drilling conditions. Thirty miles of tote roads were constructed to some of the areas on the property that were considered to have the greatest potential. An airstrip 3,200 feet long by 125 feet wide was constructed near Hope Lake, and a 600-foot extension to the strip was started.

Drilling on the No. 47 zone in 1967 continued until December 20 for a total of 14,969 feet in 39 holes. Two drills were employed in this program for most of the season. When the results of this drilling had been carefully considered the company reported (The Northern Miner, March 7, 1968, p. 1) that 3,090,000 tons had been indicated to a depth of 500 feet grading 3.48

per cent Cu, or grading 3.14 per cent Cu when allowance had been made for 10 per cent dilution. Expenditures by Coppermine River Ltd. up to the end of 1967 were $667,770. When the milling tests had been completed on the 1967 drill core it was indicated that a 60 per cent Cu concentrate, containing 4 to 5 ounces of silver per ton, could be prepared with a recovery of 92 per cent of the contained copper (The Northern Miner, July 18, 1968, p. 1).

During the spring of 1968 about 2,000 tons of equipment and supplies were delivered to the property in a joint operation with other companies that had exploration programs planned for the area. A large part of the supplies were transported to Hay River by railway, from Hay River to Echo Bay mine on Great Bear Lake by trailer truck on a winter road, and were then airlifted by Hercules aircraft to the property. In addition, fuel oil and other petroleum products were airlifted from Norman Wells, and some supplies were flown from Yellowknife.

A co-operative airborne geophysical survey to consist of 17,000 line miles and to cover the properties of more than 50 companies holding claims in the area was contracted for prior to the 1968 exploration season. This survey was flown by Lockwood Survey Corp. and employed dual frequency (400 and 2,300 c.p.s.) electromagnetic equipment and a total field fluxgate magnetometer. It was planned that this survey would start in May and that preliminary results would be available to the companies in June. However, an aircraft arrived at Hope Lake on May 9th and could not proceed with the survey due to extensive snow cover, the first productivity was on June 19 following a return of the plane to the property on June 15. Due to this and other difficulties, the survey was completed on August 1 and many of the companies only received preliminary survey results just before leaving the field for the season.

The survey was flown along east-west lines spaced at 1/8-mile intervals. The actual flight paths were recorded by concurrent photography. The survey results were plotted at scales of 1 mile to the inch and 1/4 mile to the inch. The survey failed to detect any electromagnetic anomalies that could be rated of A grade, and only a few of B grade. In test flights over the No. 47 deposit the ratios of low frequency responses to high frequency responses were not significantly greater than for other above-background zones.

The magnetometer survey indicated an area of low response corresponding to the outcrop area of red sandstones and other sediments overlying and interbedded with basalts in the vicinity of the Coppermine River and extending to the west. This area is surrounded by a broad belt of basalt flows which exhibit high magnetic relief, perhaps as a result of varying degrees of oxidation of the flows in this zone. Numerous structural features are indicated within the basalt flows, especially within the zone of high magnetic relief, by the magnetic pattern.

Coppermine River Ltd. in the spring of 1968 held a total of 2,364 claims in the area. In addition to the Lockwood survey and a continuation of drilling on the No. 47 zone, the company contracted with Huntec Ltd. for induced polarization surveying. This geophysical survey was to be concentrated along a 24-mile length of the Teshierpi Fault, including the vicinity of the No. 47 deposit and also Malachite and Wreck Lakes. The geophysical work on the DOT claims, including electromagnetic and magnetometer surveys, was done on 11 grids and is summarized in the following table.

Grid	DOT claims covered	Line Miles of Survey EM.	Mag.	I.P.	No. of Claims
A	10-12, 16, 17, 24, 28, 32, 36, 40-43, 45-47, 49-51, 53-62, 71, 72, 76, 77, 191-193, 196-201, 209, 210, 215-219	34	24	12	49
B	44, 48, 52, 73-75, 91, 92, 936, 944, 1219, 1224, 1227, 1228, 1233-1238, 1243-1245	9	17	4	23
C	1-8, 63, 107-110	9			13
D	9, 10, 15-34, 37, 39, 41, 45, 49, 53, 54, 174, 175, 178-184, 185-190	20	9	14	44
E	206-208, 211-214, 225, 228-231, 236, 237, 1272-1287, 1350-1353, 1386-1455	41	41	12	106
F	428, 937-943, 994-997, 1212-1216	9			17
G	226, 227, 232-235, 755, 1164-1211, 1340-1343, 1349, 1354-1385	34	34	3	92
J	373-379, 457-463, 469-475, 536, 537, 542, 543, 548-550, 597-599, 604-608, 684, 685, 1254-1257, 1259	10	10		43
K	87-90, 93-96, 240-247, 319-326, 331-338, 406-411	47	48		38
L	526-535, 553-555, 592-594, 611-613, 673-675	9	9		22
M	754-756, 1004-1010, 1033-1039, 1052-1057, 1078-1083, 1096-1102, 1126-1132, 1145-1151	13	13		49

On Grid A, which includes the No. 47 orebody, geological mapping was done by plane table at 100 feet to the inch over an area equivalent to about 5 claims. The Ronka EM16 electromagnetic survey confirmed the orebody that was already known. The magnetometer survey, employing a Barringer Proton Precession magnetometer, indicated a magnetic low coincident with the ore zone. A resistivity survey detected a significant anomaly close to the northwest side of the No. 47 orebody. This anomaly was tested by diamond drilling and shown to be a zone of disseminated pyrite.

The detailed geological mapping located a mineralized shear 500 feet to the south of and parallel with the ore zone. Two drillholes investigated this zone but failed to intersect significant mineralization.

The first hole drilled in the No. 47 deposit in 1968 was S-77. This hole was inclined at -65 degrees and was drilled to a depth of 822 feet to cut the deposit at a depth of about 600 feet. A number of other holes were drilled to a similar depth. This drilling indicated some additional tonnage to the southwest of the ore outlined by the 1967 drilling. However, it soon became obvious that there would not be a really substantial increase in the reserves outlined in 1967, and this was duly announced (The Northern Miner, July 18, 1968, p. 1). The property was visited by the author on July 14 and again on July 30-31.

A hole, S-97, was drilled approximately 575 feet northeast of the most northeasterly drilling on the No. 47 deposit. This hole assayed 3.77 per cent Cu for a core length of 24 feet in relatively flat-lying, copper-bearing, flow-top basalt. This mineralization was considered to be associated with the nearly vertical fault-breccia zone which is host to the No. 47 deposit (The Northern Miner, July 18, 1968, p. 1). The results of this hole, and the picture which resulted from careful re-logging of the core and plotting of the resulting information by Dr. R. Blais, consultant, supported the idea that mineralization might be located in amygdaloidal flow-top horizons near their abutment against the main mineralized vertical breccia zone of the No. 47 deposit. A number of vertical holes were drilled to test this hypothesis at favourable sites along the deposit.

On August 1, 1968, it was reported (The Northern Miner, p. 3) that a hole which was drilled to test a geophysical anomaly 1 1/4 miles northeast of the No. 47 orebody had intersected a highly shattered zone containing scattered pyrite, chalcocite and malachite. A second hole was planned 400 feet farther northeast. It was also reported that bulldozing in the Wreck Lake area had uncovered a chalcocite-bearing shear zone. Some mineralized flow-top basalt was associated with this shear zone.

The first hole, S-115, drilled to test for flow top mineralization adjacent to the No. 47 zone, cut 7 such flow tops averaging 17 1/2 feet thick and 2 1/2 per cent Cu. The individual flow tops assayed 3.64 per cent Cu/19 feet, 3.09 per cent/10 feet, 1.17 per cent/9.5 feet, 3.31 per cent/23 feet, 2.57 per cent/20 feet, 2.08 per cent/25 feet, and 1.54 per cent/16 feet (The Northern Miner, August 15, 1968, p. 1). The average grade for an intersection of 286 feet, from 77 feet to 363 feet in the hole, is 1.23 per cent Cu. As of early August a total of 20,000 feet had been drilled in 1968. This drilling had indicated the depth limit of the No. 47 deposit and had closed off the zone to the northeast. Hole S-122, the second vertical hole of this series, resulted in intersections of 10.46 per cent Cu/13 feet, 2.16 per cent/12 feet, 1.59 per cent/42 feet, and 5.96 per cent/15 feet (The Financial Post, August 31, 1968, p. 10). These intersections were at depths of 93 to 106 feet, 143 to 155 feet, 160 to 202 feet, and 210 to 225 feet, respectively. A third hole, S-124, failed to make any intersections of economic value.

Drilling on the No. 47 deposit was suspended for the 1968 season on September 16, when total drilling by Coppermine River Ltd. along the zone totalled 33,000 feet. This drilling had tested the zone to a depth of 600 feet and for a length of 1,500 feet. On the basis of this drilling the preliminary estimate of reserves was revised to 3,571,000 tons averaging 3.44 per cent Cu, or 4,106,000 tons averaging 3.07 per cent Cu after allowing for 15 per cent dilution by wall rock containing 0.6 per cent Cu (The Northern Miner, October 17, 1968, p. 1).

During the 1968 season the airstrip at Hope Lake was extended to a length of 4,700 feet and a width of 150 feet. An assay laboratory was put in operation at the Hope Lake camp in June and was used by a number of companies doing exploration in the area.

On the B Grid the interesting geophysical results were apparently restricted to the METALS claims, and have been discussed elsewhere.

The C Grid is located 1 to 2 miles south of Hope Lake and was investigated by an induced polarization survey and diamond drilling in 1967, when it was referred to as Area 1-4. The induced polarization survey

commenced June 16 and several anomalies were detected. Holes S-4 to S-7 tested an east-west anomaly coinciding with a ridge on claims DOT 2 and 3. The peak of the anomaly gave a maximum "Metal Factor" value of 9.6 sec/ohm-meter and this peak was tested by hole S-7. Hole S-3 tested a small chargeability high on claim DOT 5. Hole S-2 was also drilled on this claim and hole S-1 on claim DOT 14. Although some surface mineralization occurs on the grid, the seven holes, which totalled 1,585 feet, gave assay results of only 0.10 to 0.25 per cent Cu. The drilling was done June 6 to July 6, 1967. In 1968 nine line miles of electromagnetic surveying were done on the grid, but none of the crossovers were considered to be of any real significance.

The D Grid is located west of the A Grid on the south-central part of the property. The electromagnetic survey indicated a number of minor linear crossovers which may represent short shear zones. The magnetometer survey failed to indicate any well-developed trends. Resistivity features as determined by the induced polarization survey were found to trend about north-south, but no outstanding resistivity lows were located. The chargeability highs and linears that were outlined were attributed to concentrations of magnetite in the massive flows. It was concluded that the area did not warrant further exploration at that time.

The baseline on Grid E has a strike of N44°E. Geological mapping at 500 feet to the inch was done between lines 20 + 00E and 44 + 00E on the grid. The mapping indicated two occurrences of chalcocite that were not considered to be significant. A good linear trend of crossovers was obtained by the electromagnetic survey. The magnetometer survey produced a coincident magnetic low. The induced polarization survey gave a chargeability high and resistivity low coincident with the favourable electromagnetic and magnetic anomalies. Diamond-drill holes testing the anomaly intersected a chalcocite-bearing quartz-carbonate vein in a shear zone. However, the mineralization was apparently not of economic significance. It was concluded that the grid warranted further attention.

On Grid F several linear electromagnetic anomalies, weak except for two moderate crossovers, were detected which run parallel to the base line, S50°W. These linear anomalies are considered to be minor shear zones, and no further investigation of the grid was recommended.

Geological mapping was done on 3 claims on Grid G. Several linear electromagnetic anomalies were detected, one of which nearly parallels the north-south base line. The latter electromagnetic anomaly was considered to represent the contact between sediments and basalts, which was also reflected by the magnetic data.

Grid J includes 23 PAT claims so that the geological mapping on the grid which covered a total of about 36 claims, was probably done on only about 20 DOT claims. The geological mapping revealed scattered occurrences of chalcocite, bornite and malachite. Several of the copper occurrences on the grid, possibly on the PAT claims, consist of mineralization in veins or shears cutting amygdaloidal flow-top basalt. One occurrence consists of minor chalcocite in a calcite vein 6 inches wide which occurs in a shear zone striking N65°W and dipping 55 degrees southwest. Another consists of minor bornite in a carbonate stringer that strikes N35°W and dips 70 degrees southwest. The grid is considered to warrant further investigation.

The K Grid is located about 2 miles west of Wreck Lake. Fifteen men were employed in prospecting and doing geophysical surveys on the grid. The geophysical work was done to follow up numerous copper showings which

were found in association with favourable structures. The electromagnetic survey resulted in an abnormally high number of crossovers. Most of the anomalies were considered to represent unmineralized shears and faults. Extension of the grid to the northwest will be necessary in order to completely outline some of the anomalies. The magnetic data indicate north-south faults and also reflect some of the basalt flows which strike slightly west of north. Weak magnetic lows which show some coincidence with electromagnetic conductors may warrant further work, possibly induced polarization surveys.

Prospecting on the K Grid located a number of minor copper occurrences consisting of malachite, chalcocite, bornite, and native copper, often in float boulders. One showing consists of chalcocite in a shear zone 4 feet wide that is exposed for a length of about 7 feet. The shear strikes N80°W, and dips steeply north, in typical grey aphanitic melaphyre.

A number of minor electromagnetic anomalies, and a major north-south magnetic anomaly, are present on the L Grid, possibly on the McCART or DON claims. It was concluded that no further investigation of the grid was warranted at this time.

The electromagnetic and magnetometer surveys on the M Grid served only to define a north-south contact between sediments and volcanics. The geological mapping, which covered 18 claims on a reconnaissance basis, failed to indicate any significant copper occurrences.

Coppermine River Ltd. (PAT, DON, McCART, LLOYD, LARS, LARRY, JACK, NAT, ED and METALS claims) (86-N-7, 8, 10)

These groups of claims are included within the large block of DOT claims which is also held by Coppermine River Ltd. and were also transferred to that company (by PCE Explorations) when it was formed prior to the 1967 season. These groups of claims were staked during the 1966 season by PCE Explorations to cover copper showings that were previously known or were discovered during reconnaissance investigations that year. The showings on these claim groups were investigated to some extent by trenching and sampling during the 1966 season. The claims comprising these groups and the approximate locations of the groups are as listed below.

Group	Claim Sheet	Latitude	Longitude
PAT 1-23	86-N-10	67°32'30"	116°39'30"
DON 1-20	86-N-7	67°29'05"	116°40'
LLOYD 1-12	86-N-7	67°28'15"	116°43'
LARS 1-9	86-N-7	67°27'45"	116°38'30"
LARRY 1-6	86-N-7	67°26'	116°47'
JACK 1-18	86-N-7	67°25'15"	116°44'
NAT 1-12	86-N-7	67°22'50"	116°37'45"
ED 1-4	86-N-8	67°24'45"	116°21'30"
METALS 1-30	86-N-8	67°23'15"	116°28'40"
McCART 1-18	86-N-7	67°29'05"	116°40'

These claim groups are generally underlain by basalts. However, a narrow tongue of red and grey sandstone which trends approximately north-south extends from the overlying sediments, lying north of the main claim block of Coppermine River Ltd., through the PAT group and into the McCART group.

Amygdaloidal flow tops and amygdaloidal flow-top breccias are only rarely exposed on these claims, apparently because they are more readily removed by erosion than the massive basalt. The flow tops are usually highly hematitized and they contain chlorite and calcite-jasper amygdules. In the case of groups located on claim sheets 86-N-7 and 86-N-10, the basalt flows generally strike north to northwest and dip 0 degrees to 11 degrees east to northeast.

A major fault strikes north-northwest through the southwest corner of the PAT group of claims. Prospecting failed, however, to indicate any sulphide occurrences associated with this fault. Some native copper was found in outcrops of massive basalt on the claims. A showing located at about 67°31'45"N, 116°40'W consists of chalcocite and malachite in northwest-striking fractures parallel to a fault in massive grey-green basalt. Geological mapping was done over this showing in 1967.

Showing No. 25 is located near the centre of the group at approximately 67°32'15"N and 116°39'30"W and consists of chalcocite and bornite in a train of quartz-calcite boulders. The boulders extend for 1,100 feet along a trend of due north to N10°E. Although there are old trenches and pits in the vicinity of the showing, the source of the boulders was apparently not uncovered. The No. 26 vein consists of copper-bearing float which occurs for a distance of 1,000 feet along an east-west strike.

The PAT group and some adjoining DOT claims were investigated by an induced polarization survey during the 1967 season. This survey on the 25-26 grid resulted in a number of anomalies. Anomaly 25-26/1 in the northwest corner of the grid gave a very low chargeability response, although the "Metal Factor" value of 12.9 sec/ohm-metre was good. The anomaly had a strike length of more than 1,400 feet, and was still open to the north. This anomaly was tested by hole S-62 at about 14 + 00 W and 3 + 00 N on the grid. Anomalies 25-26/3 and 25-26/4 gave responses of up to 15.5 and 13.9 sec/ohm-meter, respectively. One anomaly on the grid gave a chargeability response of 35 milliseconds.

Holes S-47, 48, 49, 60 and 61 were drilled to test showing No. 25, located at about 6 + 00 W and 5 + 00 S on the survey grid. This drilling intersected mainly amygdaloidal, weakly-mineralized, chloritized flow-top basalt. Further induced polarization surveying was tentatively recommended for the 25-26/1 anomaly.

The PAT group and 43 DOT claims were covered by the 'J' survey grid on which geophysical surveys were conducted in 1968. Electromagnetic and magnetometer surveys and geological mapping were done on the grid. The electromagnetic and magnetometer surveys each covered about 15 line miles. A few minor crossovers were obtained in the Radem electromagnetic survey. One anomaly coincides with a magnetic low and probably represents an unmineralized shear zone. The geological mapping revealed scattered occurrences of chalcocite and bornite throughout the area of the grid and further work was recommended.

The DON group was staked to cover a showing of nearly massive chalcocite in two narrow and poorly exposed veins that are about 25 feet apart. The showing is located at approximately 67°29'45"N, 116°42'45"W and was investigated in 1966. One of the veins is 3 1/2 feet wide and contains nearly massive chalcocite across a width of 2.6 feet. Samples from trenches across the vein assayed 25.84 per cent Cu across 2.6 feet or about 21 per cent Cu across 3 1/2 feet. A sample from the second vein assayed 39 per cent Cu

across 0.8 feet. Frost-heaved blocks of massive chalcocite can be traced for 500 feet along a trend of N60°W. Geological mapping of the property in 1967 indicated the occurrence of some native copper, probably in massive basalt, at about 67°29'45"N, 116°41'W.

No significant sulphide occurrences were found on the McCART group. As on the PAT group, some native copper was located in outcrops of massive basalt. Geophysical surveys and geological mapping done by Coppermine River Ltd. in 1968 on grid 'L' covered claims McCART 1-16, and DON 4, 5, 12, 13, and 20 of the group discussed above, as well as 22 DOT claims. Electromagnetic and magnetometer surveys on the grid each covered 18 line miles. The electromagnetic survey showed a number of minor conductors of no significance. Some scattered chalcocite was observed in a quartz vein about 100 feet long and 6 inches wide. No further investigation of the survey grid was recommended for the time being.

On the LLOYD group geological mapping in 1967 resulted in the location of three showings of frost-heaved or glacially-transported, copper-bearing, quartz-calcite boulders in the south-central area of the claims. Chalcocite and minor associated bornite occur in the quartz and calcite. The three showings are located at about 67°28'07"N and 116°44'08"W, 67°28'06"N and 116°43'53"W and 67°27'55"N and 116°43'27"W. The mineralization may be associated with a major fault that strikes north-northwest through the centre of the group or with minor faults and fractures subsidiary to the main fault.

The LARS group was staked to cover a previously known showing, the Lars No. 1 vein. The showing consists of stringers of chalcocite in a silicified breccia and shear zone which strikes about N25°W in basalt. The showing is located at about 67°28'N, 116°38'W and is 20 to 30 feet wide with an exposed length of 1,075 feet. The most northerly exposure of the zone is within 100 feet of a significant fault striking about N53°W. The best copper values from channel sampling by the American Metal Company of Canada in 1944 were 4.34 per cent Cu/3 1/2 feet, 2.61 per cent/3 feet, 1.55 per cent/5 feet and 1.49 per cent/5 feet. Frost-heaved float and talus were sampled along a length of 600 feet by PCE Explorations in 1966 and assayed 2.89 per cent Cu/20 feet, 6.40 per cent/20 feet, 3.55 per cent/30 feet, 5.68 per cent/22 1/2 feet and 5.83 per cent/22 feet. An electromagnetic survey covering 5 line miles was carried out by Coppermine River Ltd. during the 1968 season on a small grid on claims LARS 5-8 and three adjacent DOT claims. No electromagnetic conductors of significance were detected and no further work was recommended, for the time being, on these claims.

The LARRY group was also investigated by PCE Explorations in 1966. The main showing on the group is located at about 67°25'N, 116°46'55"W and consists of veinlets of massive chalcocite in a fracture zone that strikes about N24°W in basalt. The fracture zone is exposed across a width of about 30 feet and for a length of 200 feet. The zone was tested along a length of 173 feet by chip samples taken across the zone at five locations. These samples assayed 2.28 per cent Cu/5 feet, 8.36 per cent/10 feet (or 14.06 per cent/5 feet), 2.35 per cent/20 feet (or 3.71 per cent/5 feet), 3.85 per cent/5 feet (and another section grading 2.47 per cent/15 feet), and 6.19 per cent/10 feet. A ground electromagnetic survey was carried out in May or June, 1967, on a grid which covered this showing, but no response was obtained in the vicinity of the known mineralization. This suggests strongly that the mineralization is of a disseminated and disconnected type.

The JACK group covers a showing, known as No. 13, of chalcocite and bornite in a quartz vein. The quartz vein averages about 4 feet in width in a southerly section where it can be traced for a length of at least 550 feet. The vein is intermittently exposed again in a northerly section, after a 500-foot displacement to the northwest along a fault, where it is 2 1/2 to 3 feet wide. The vein is located in the southwest part of the group at about 67°24'45"N, 116°44'15"W. The vein strikes about N15°E in basalt and was tested in August, 1967, by a series of 16 shallow diamond-drill holes. Some massive veins and lenses of bornite and chalcocite up to about 8 inches wide are evident in trenches on the vein.

The area of the No. 13 showing was investigated in May or June, 1967, by an electromagnetic survey. This survey, as for the LARRY group, failed to indicate any conductors in the vicinity of the known mineralization. This is interpreted as indicating that the sulphides are disseminated and in disconnected masses.

The core from the drillholes contains blebs and veinlets of calcite and bornite in a matrix of hematitized and brecciated basalt. Assays were generally less than 2 per cent Cu, although some good intersections were obtained. The holes were drilled as indicated in the following table. Some of the assay results from the drilling, which totalled 995 feet, are presented in the succeeding table.

Hole No.	Latitude	Departure	Inclination	Bearing	Depth (feet)
S-31	11 + 60S	0 + 40W	40°	S79°E	64
S-32	"	"	40°	N56°E	64
S-33	"	"	40°	S34°E	65
S-34	10 + 90S	0 + 47W	45°	S79°E	61.6
S-35	"	"	40°	N56°E	66
S-36	"	"	40°	S34°E	60
S-37	10 + 15S	0 + 50W	45°	S79°E	49.5
S-38	"	"	40°	N56°E	71
S-39	"	"	40°	S34°E	66
S-40	12 + 36S	0 + 42W	45°	N56°E	51
S-41	"	"	40°	S34°E	60
S-42	"	"	40°	N56°E	56
S-43	"	"	55°	S79°E	72
S-44	7 + 80S	0 + 70W	45°	S79°E	64
S-45	2 + 90S	0 + 12W	45°	S79°E	64
S-46	"	"	40°	S34°E	61

The METALS group is largely a restaking of the former METAL group at Wreck Lake. Showings here were examined in 1944 by the American Metal Company of Canada and some drilling was done in 1952. Disseminated to massive chalcocite occurs in boulders of flow-top material over a large area. The boulders are up to 5 feet in diameter and contain up to 40 per cent Cu. The mineralization may be related to a north-northwest trending shear zone. The showing was investigated by PCE Exploration in 1966 and later by Coppermine River Ltd. A mineralized vein 6 inches wide on former claim METAL 7 reportedly gave assays of 2.06 oz/ton Ag and 21.5 per cent Cu, and 0.4 oz/ton Ag and 8.7 per cent Cu.

Area 5-6 (designated Grid B in 1968) including Wreck and Malachite Lakes was investigated by induced polarization surveying in 1967 and 14 main anomalous zones were outlined. The largest zone has an overall strike length of 5,000 feet and an average width of 250 feet, with a length of 3,100 feet considered most favourable. The anomaly is interrupted near its centre by Malachite Lake. The anomaly is very similar in its characteristics to that associated with the No. 47 deposit. The anomaly can be interpreted as lying on strike with anomalies 47/3 and 47/4 (the latter one associated with the No. 47 deposit) along a branch fault from the main Teshierpi Fault. Drilling of this anomaly was recommended. The induced polarization survey was conducted by Huntec Ltd.

Core Assay Results No. 13 Showing

Hole No.	Intersection	Core Length (feet)	Cu (%)	Ag (oz/ton)	Comments
S-32	44.5'-54.5'	10.0	3.05		
S-33	36.4'-42.0'	5.6	1.11		
	42.0'-44.4'	2.4	63.95	2.8	
	44.4'-48.2'	3.8	1.55		
S-34	36.8'-41.8'	5.0	1.37		
S-35	49.0'-57.0'	8.0	2.47		
S-36	48.5'-55.0'	6.5	3.87	0.3	
	55.0'-60.0'	5.0	0.53		
S-38	40.6'-44.0'	3.4	1.02		
	44.0'-49.5'	5.5	0.73		
	49.5'-51.4'	1.9	6.14		
	51.4'-59.0'	7.6	0.29		2.83% Cu/13.4 feet
	59.0'-62.9'	3.9	6.14	0.5	
	62.9'-67.9'	5.0	0.15		
S-39	25.4'-29.6'	4.2	3.05		
	53.5'-60.0'	6.5	2.42		
S-42	40.0'-45.0'	5.0	3.38		5.29% Cu/11.5 feet
	45.0'-51.5'	6.5	6.76		
S-45	50.4'-58.0'	7.6	7.89		

The claims METALS 1, 2 and 8-11 are included within grid 'A' and claims METALS 3-7 and 12-30 within grid 'B'. Ronka EM16 electromagnetic, magnetometer and induced polarization surveys were done on these grids by Coppermine River Ltd. during the 1968 season. The induced polarization survey was performed by personnel of McPhar Geophysics. The survey grids also covered many DOT claims and, unless the geophysical surveys were concentrated on the METALS group, it is estimated that 15 line miles of electromagnetic survey, 23 line miles of magnetometer survey and 8 line miles of induced polarization survey were done on the METALS claims.

The Teshierpi Fault, which strikes northeast across the main block of claims of Coppermine River Ltd. passes along the shallow valley on the METALS claims in which Wreck and Malachite Lakes are located. The electromagnetic survey indicates a linear trend of very definite crossovers along the fault valley. Several of these conductors were investigated by diamond drilling and are apparently caused by a system of tight, parallel, shears

which contain minor mineralization. The induced polarization surveys revealed two anomalous areas, one of which lies under Wreck Lake and the other in the vicinity of Malachite Lake. Both of these areas exhibited high chargeability and moderate to high resistivity. Diamond drilling of these anomalies indicated pyrite with associated copper mineralization at Wreck Lake and hematite at Malachite Lake. Further investigation of the A and B grids was recommended.

The reason for the staking of the ED 1-4 claims is not known. Geophysical work and geological mapping were done during the 1968 season by Coppermine River Ltd. on two grids, 'A' and 'E' which covered all or part of 56 and 108 claims, respectively. Grid 'A' included claim ED 2 and grid 'E' claims ED 3 and 4. Ronka EM16 electromagnetic and magnetometer surveys, and possibly an induced polarization survey, were thus apparently done over these three ED claims. Further work has been recommended on both of these grids.

Coppermine River Ltd. (PUMA 1-15 claims) (86-N-8; about 67°20'45"N, 116°15'W)

This group was staked by PCE Explorations in 1966 and some surface investigation of the property was carried out. Prior to the 1967 season the group was transferred to Coppermine River Ltd. and that year some geological mapping was done.

The most significant showing on the property is located at about 67°21'05"N, 116°14'20"W and was found and investigated in 1966. This showing consists of chalcocite in calcite and quartz which cement a flow-top breccia. The zone is not exposed and consists of boulders up to 2 1/2 feet in diameter that are distributed for a distance of 120 feet along a trend of N68°E. The richest material is estimated to grade 15 to 20 per cent copper.

A showing of chalcocite and malachite, apparently in float boulders in an area covered with overburden, was located during geological mapping of the claims in 1967. The showing is located at approximately 67°20'20"N, 116°15'30"W.

Coronation Gulf Mines Ltd. (Group 1; EB, SB, JS, IS and MAD claims) (86-N-8, 86-O-5; about 67°18'30"N, 115°58'W)

This property consists of claims EB 11-22, 33-35, SB 41-46, 52-72, JS 73-108, JB 109-144, IS 145-180 and MAD 1-5 claims, a total of 155 claims. The JB 131-141 and IS 142-180 claims were held jointly by Croydon Mines and Madrona Explorations, and the remainder of the claims, except for the MAD claims, were held by Pyramid Mining Company, until they were transferred to Coronation Gulf Mines prior to the 1968 season.

In 1967 the companies spent $70,000 on the exploration of three claim groups (Western Miner, March, 1968, p. 19). Prior to the 1968 season Coronation Gulf Mines had acquired 875 claims in 6 blocks and had budgeted $275,000 for their exploration, as recommended by L.J. Manning and Associates Ltd. (Western Miner, April, 1968, p. 264). Exploration and camp supplies were trucked to Great Bear Lake and then flown to Willow Lake (approximately 67°22'15"N, 116°00'30"W) in a joint operation with Bernack

Coppermine Exploration Co. Ltd. and other companies. A helicopter was taken under charter to support the exploration programs of Coronation Gulf Mines and of the associated companies, Spectroair Explorations and Northair Mines.

A preliminary exploration program consisting of prospecting, some diamond drilling and some induced polarization test surveys was carried out on these claim groups during the 1967 season. A number of copper showings were located by this work.

Showing A is located on claims IS 148 and 149 and consists of chalcocite and secondary malachite along a shear zone, which strikes N15°W to N30°W. The best assay results for samples of float or frost-heaved material were 6.54 per cent Cu and 0.03 oz/ton Ag across a width of 3.1 feet, 0.39 per cent Cu/3.9 feet, and 11.80 per cent Cu and 0.74 oz/ton Ag across 0.25 feet. Two diamond-drill holes, inclined at 45 degrees east, were drilled to test the showing and failed to intersect ore grade material. These holes totalled 355 feet, were 100 feet apart, and were apparently both drilled on claim IS 149.

Showing B was traced for a length of 1,200 feet along a north-south shear zone on claims IS 164 and 165. The shear zone is 20 feet wide and contains malachite and chalcocite. Five holes totalling 1,154 feet, the deepest to 379 feet were drilled to test the zone on the two claims. The results were not encouraging, although disseminated native copper and chalcocite occur in the basalt in two of the holes. Hole No. 1 assayed 0.17 per cent Cu for a core length of 52 feet from 79 feet to 131 feet in the hole, and hole No. 3 assayed 0.69 per cent Cu/27 1/2 feet from 98 1/2 feet to 126 feet. Holes 4 and 5 were located near the south end of the zone, hole 3 about 100 feet to the north, and holes 1 and 2 another 1,240 feet to the north. A test induced polarization survey was carried out August 23-September 7 by Seigel Associates Ltd. This survey consisted of about 3 line miles along east-west lines spaced 200 feet apart, and an electrode spacing of 200 feet was employed.

Showing C is located on claims JB 118 and 119 and consists of scattered small veinlets of chalcocite in a fine-grained flow-top horizon. Samples from 10 pits or trenches along the showing only gave up to 0.09 per cent Cu.

Showing C-1 is a poorly-exposed north-south shear zone on claim JB 109. Some malachite occurs along the east wall of the shear. An induced polarization test survey of just over 3 line miles was carried out along east-west lines, spaced 400 feet apart, in the vicinity of this showing. The survey employed the gradient array method with an electrode separation of 200 feet and covered all or part of claims JB 109, 110, 117 and 118.

Showing F is a north-south shear zone in which heavy malachite staining was exposed by trenching.

Showing G consists of a shear zone 10 to 15 feet wide which strikes east-northeast across claims SB 58 and 64. Trenching exposed brecciated basalt containing disseminated chalcocite and secondary malachite across a width of 10 feet and for a length of 80 feet. A test induced polarization survey was carried out along north-south lines in the vicinity of the showing and totalled about 2.9 line miles. This survey covered all or parts of claims SB 57, 58, 64 and 65. Chargeabilities of 5 to 15 milliseconds were obtained in the survey.

Further detailed exploration of the claim groups, including geological mapping and diamond drilling, was recommended. Induced polarization surveys over showings and favourable structures were also recommended.

During the 1968 season more detailed prospecting and geological mapping at 1,000 feet to the inch were done on the property. The claims are predominantly underlain by basalt flows which strike about east-west and dip 10°N. A north-south diabase dyke 200 feet wide cuts the basalt. Two relatively large areas of widespread copper mineralization were found. These are both controlled by steeply-dipping faults and shear zones which generally strike nearly north-south.

Showing B on claims IS 163 and 164 is apparently represented by three exposures along a minor fracture zone. The mineralization at two places consists of heavy chalcocite, calcite, quartz and minor jasper which form the cement to a breccia zone striking N30°W. At the third mineralized locale chalcocite and secondary malachite, in part in calcite veinlets, occur along joints and minor fractures striking S84°W and N10°E. Elsewhere on claim IS 164 narrow veinlets of massive chalcocite, in part containing minor calcite, are present along fractures which strike N80°W and dip 85 degrees north.

Showing A is described as a major fault zone about 50 feet wide which strikes N8°W. Large calcite veins within the zone strike N20°E and contain massive chalcocite and minor quartz and jasper. Chalcocite is erratically distributed in the zone.

Showing 87A on claim JS 87 consists of chalcocite along shear planes in a shear zone which strikes N57°E, dips 85°SE, and averages 20 feet in width. A vein of massive chalcocite 2 inches wide is present in the centre of the shear and some chalcocite is disseminated in the basalt, but the showing appears to be of very limited extent.

Showing 132 is located on claim JB 132 and consists of mineralization along a north-south shear zone that is 25 to 50 feet wide. The zone can be traced for 300 feet and is a highly fractured zone that is cemented by quartz, calcite and minor jasper. Some native copper and chalcocite occur as veinlets, and chalcocite and much secondary malachite occur on fracture planes.

Showing 137 consists of minor chalcocite and bornite along a shear zone 30 feet wide which strikes N26°E, and dips 75 degrees east, across claim JB 137. The zone is not highly brecciated but is occasionally crosscut by narrow quartz stringers. Showing 141 occurs on claim JB 141 and consists of chalcocite associated with the calcite cement of a highly brecciated fracture zone. The zone is about 15 feet wide and strikes N70°E. Showing 147 on claim IS 147 consists of chalcocite in frost-heaved fragments which can be traced for 200 feet along a shear zone about 20 feet wide and with a strike of N10°W. Showing 159 consists of chalcocite in quartz-calcite breccia along a fracture zone striking N22°E and dipping 85 degrees east. The zone is on claim IS 159 and is 10 feet in width. Showing 160 is on claim IS 160 and is also a breccia zone. Calcite and quartz form a cement to the breccia and chalcocite is disseminated throughout the zone. The breccia zone is vertical, strikes N72°W, is 15 feet wide, and can be traced for a length of 100 feet along strike.

Other minor copper showings, mostly related to or occurring in northeast or north-northeast trending faults and fractures, were found on claims SB 44, 63, 64, 66, JS 87, 102, 106, JB 118, 119, 128, IS 150 and 166.

Detailed mapping was recommended over the copper showings. It was also recommended that the most significant showings be diamond drilled employing a small-diameter drill.

Coronation Gulf Mines Ltd. (Group 2; OP 1-36 and BO claims) (86-O-4, 5; about 67°15'45"N, 115°44'W)

This property is located in the Coppermine Mountains and consists of claims OP 1-36, BO 33-37, 44-53, 60-118, 123-134, 141-152, 161-171 and 174-178, a total of 150 claims. Prospecting and geological mapping at a scale of 1,000 feet to the inch was done August 12-September 10, 1968.

The property is underlain by a series of basalt flows which are cut by diabase dykes. The flows strike approximately N80°E and dip gently to the north. Faulting, predominantly along north and northwest directions, is extensive throughout the area. Some chalcocite was found in randomly distributed float fragments. However, no significant mineralization was located in place on the property and no further work was recommended.

Coronation Gulf Mines Ltd. (Group 3; DON 1-36, BUD 37-72 and ORE 73-103 claims) (86-N-8; about 67°17'N, 116°12'W)

Prospecting and geological mapping at 1,000 feet to the inch were carried out on the property June 15 to July 24, 1968. Geophysical surveys were done June 14-22 and July 11-15, 1968, by Seigel Associates Ltd.

The area is almost entirely underlain by basalt flows which strike west-northwest and dip 5 to 10 degrees to the north. Several strong nearly-vertical faults and shatter zones, most of which strike north to north-northeast, cross the property. A dominant northwest-striking fault also crosses the property. A number of hematitized horizons, probably flow tops, are present in the basalt sequence. A number of minor copper showings, and one of possible significance, were located.

Showing C 3-19 is located on claim DON 19 and consists of chalcocite sporadically distributed along a narrow sheared and brecciated fault zone. This showing was apparently discovered late in the 1967 season. The zone strikes northwesterly, dips 85 degrees northeast, and has been traced for 2,000 feet. The chalcocite is generally associated with quartz and calcite which cement the breccia. The zone is rarely greater than a foot in width and is apparently associated with two adjacent northerly-striking faults.

No areas of appreciable flow-top mineralization were located, although minor mineralization of this type is present on claim BUD 42. On claim DON 4, for example, minor chalcocite occurs in joints near faults and shear zones. In some places minor native copper is disseminated in massive basalt or occurs with calcite along joints.

The geophysical surveys covered claims DON 3-5, 18-20, and parts of claims DON 21, 26 and 27. The grid lines were oriented N71°E, spaced at 400-foot intervals, and totalled about 10 line miles. None of the known copper showings gave a significant response in the induced polarization survey. The best induced polarization anomaly, with a chargeability of 38 milliseconds, was located east of the base line and off of the property. The background chargeability is generally 15 to 25 milliseconds and the resistivity

about 500 to 8,000 ohm-meters. A magnetic low coincides with the best anomaly, but this may not be significant due to the generally variable magnetics. A number of moderate chargeability anomalies coincide with resistivity highs and also fail to give a magnetic or Ronka EM16 response.

Two main Ronka EM16 electromagnetic anomalies were obtained, but they coincide with chargeability lows and are probably due to conductive overburden or unmineralized shear zones. The main anomaly trends north-south and is located west of the base line. A general magnetic low seems to coincide with this anomaly. Strong erratic magnetic variations in the surveyed area are likely due to marked topographic effects.

It was suggested that, due to the lack of correlation of results obtained by different geophysical methods, none of the survey responses were of further interest. Two holes were drilled on the property August 5-11 on the basis of surface indications only, but apparently none of the core was assayed. The two drillholes were located 300 feet apart and apparently tested the C 3-19 showing at about 67°17'45"N and 116°10'30"W. The drilling was done as follows:

Hole No.	Inclination	Direction	Depth (feet)
C 68-4	45°	northeast	291 1/2
C 68-5	25°	north-northeast	395

Coronation Gulf Mines Ltd. (Group 4; JS 1-36, FM 37-72 and RIP 73-108 claims) (86-O-5, 6; about 67°18'15"N, 115°31'W)

This 108-claim property is located just east of the Coppermine River and was prospected, and geologically mapped at a scale of 1,000 feet to the inch, during the period July 7 to August 20, 1968. The work was done by a two-man crew.

Approximately 70 per cent of the property is covered by glacial overburden. Basalt flows underlie the property and these are intruded by diabase dykes which are 50 to 100 feet wide. The flows strike east-northeast and dip gently to the northwest. Apparently 4 or 5 major diabase dykes which strike north, northeast and north-northwest are present in the central part of the property. The most prominent faults strike northerly and northeasterly across the property. No significant amounts of mineralized float were found along the fault zones and no other showings were located which warrant further investigation.

Some chalcocite coats fragments and forms part of the cement, with quartz and carbonate, in very narrow breccia zones, which generally strike north-northeast and dip steeply to the east. The fragments average 1/4 to 1/2 inch in diameter and the breccia zones probably average 4 to 8 inches in width. These minor zones are widespread on the property.

Secondary copper minerals occur along joints and random fractures in the basalt. Native copper is also present in minor scattered occurrences as thin films on joint surfaces and as disseminated blebs in basalt.

No further work was recommended on the property.

Coronation Gulf Mines Ltd. (Group 5; GM, DM, FD and SA claims) (86-O-5; about 67°24'N, 115°35'W)

This 106-claim property consists of claims GM 7-20, 33-36, DM 37-47, 58-72, FD 73-76, 81-103, SA 105-124, 126-134, 137-140, 142 and 143. The property is located two miles east of the Coppermine River and adjoins southwest of a large block of claims held by Teshierpi Mines. Prospecting and geological mapping were done June 15-August 5, 1968.

An estimated 80 per cent of the property is covered by glacial overburden. Basalt flows which generally strike east-northeast and dip gently to the north, underlie most of the property. Hematitized horizons, probably flow tops, are common in the flow sequence. There are two dominant directions of faulting. One fault set strikes north-northeast and dips steeply to the southeast; the other strikes northwest. The mineralized areas are related to the north-northeast set, possibly because of greater exposure along that set.

All of the mineralized zones on the property consist of quartz-carbonate fault-breccia zones which contain variable amounts of chalcocite. A mineralized zone on claim DM 43 also contains minor bornite. Alteration consists chiefly of hematitization of the breccia fragments and of the wall-rock. The fragments range in size from 1/4 inch to 2 feet. Five of the zones are considered to be of significance.

Detailed geological mapping and test drilling with a light machine where warranted were recommended on the five main showings.

Geophysical surveys were carried out over two grids on parts of the property from July 4 to August 11, 1968, by Seigel Associates Ltd. The grids consist of northwest-southeast lines spaced 400 feet apart and total 63 line miles. An induced polarization survey was carried out employing the gradient array configuration and with an electrode separation of 200 feet. The background chargeability was found to be 20 to 30 milliseconds. A total of 14 anomalies with peak chargeabilities of 27.2 to 45 milliseconds were located on the two grids. The most significant of these anomalies are listed below.

Grid	Anomaly	Length (feet)	Width (feet)	Chargeability (milliseconds)	Magnetics	E.M. Response
1	A	4800+	300	42.5	Flanking low	Coincides with mag. low
	B			28.6	Flanking low	Flanking conductor
	D	1500+	400	40.0	Broad low	Very good
	H			33.5	Low in part	Weak
2	A			38.0		

Anomaly A on grid 1 is open to the northeast and gives distinct responses in profiles across the zone. Except for two lines which show coincident resistivity lows, the anomaly is marked by coincident or flanking

resistivity highs. The flanking magnetic low is narrow and sinuous and diverges from the anomaly at its south end. The Ronka EM16 survey, using the signal from Seattle, Washington, gave a weak coincident anomaly with a pronounced out-of-phase response. The magnetic-electromagnetic anomaly is probably a northeast-striking fault. Traverses over the induced polarization anomaly with a horizontal-loop electromagnetic unit failed to give significant responses. The anomaly may represent a zone rich in chlorite or containing disseminated copper mineralization, which dips steeply northwest.

Anomaly B is located about 600 feet east of A and is coincident with a number of resistivity highs. The Ronka EM16 electromagnetic anomaly which flanks the zone is of moderate strength. The horizontal-loop electromagnetic survey gave a weak response coincident with the magnetic low.

Anomaly D trends about north-south and is open to the north. The peak of the anomaly gives a distinct profile although the anomalous responses or other lines are broad and are flanked by resistivity highs. The in-phase response of the Ronka EM16 electromagnetic survey was up to 18 per cent, but the horizontal-loop electromagnetic survey gave no significant response.

Anomaly H is flanked on the west by a resistivity high. A weak coincident Ronka EM16 electromagnetic anomaly was obtained on three survey lines, and the chargeability peaks on two of these lines nearly coincide with magnetic lows.

The Ronka EM16 survey covered grid 1 and about 1 1/2 line miles on grid 2. Readings were taken each 100 feet in this survey, in the magnetometer survey, and in the limited horizontal-loop electromagnetic work. A Sharpe SE-600 unit with a coil spacing of 200 feet was used in the horizontal-loop survey. The geophysical surveys failed to give obvious anomalous responses over the known mineralized showings.

Drilling was recommended for the five anomalies in the above list. Three holes were recommended for each of the A anomalies on the two grids, and a single hole for the other three anomalies. The Ronka EM16 survey on grid 2 covered only anomaly A and it was recommended that this survey be extended to cover the four other anomalies on this grid.

At least three holes were drilled on the property in August 1968. The holes were all inclined 45 degrees in the direction N45°W but it is not known which anomalies were tested. It seems likely, however, that the two A anomalies were included in the program. The results of the drilling are as follows:

Hole No.	Claim	Latitude	Longitude	Length (feet)	Intersection	Cu (%)
C 68-6	FD 85	67°23'35"	115°34'30"	200	95.6'-100.8'	0.41
					100.8'-101.5'	0.60
					101.5'-102.6'	0.38
C 68-7	DM 42	67°24'25"	115°36'25"	219		
C 68-8	GM 18	67°24'40"	115°35'50"	201	95'-98'	0.36

Hole No. 7 was located near the north boundary of claim DM 42 and hole No. 8 near the west boundary of claim GM 18. It is evident that the drilling results were not encouraging.

Coronation Gulf Mines Ltd. (Group 6; GO 1-216 claims) (86-O-11; about 67°32'N, 115°22'W)

This property is east of the Coppermine River and on the north contact of the basalt belt. The property was geologically mapped at 1,000 feet to the inch, June 15-August 27, 1968.

The property is about 80 per cent covered by overburden and 100 claims are completely lacking in outcrop. Basalt underlies approximately 50 per cent of the property, diabase 10 per cent and sandstone 40 per cent. The sandstone is believed to be only 50-100 feet thick, but it underlies most of the northwest part of the property. The sandstone is medium grained, highly hematitic, cross-bedded in place and includes minor interbedded red shale. A diabase sill at least 300 feet thick intrudes the basalt and is exposed in the south and northwest parts of the property. The sill strikes about east-west and dips 10 degrees north. Basalt is exposed on the south and east-central parts of the property. North of these areas sandstone and basalt are interbedded and have also been juxtaposed by faulting. The basalt flows generally strike northeast and dip gently northwest. Many horizons, probably flow tops, within the flow sequence are hematitized.

A number of faults, mostly striking north-northeast, have been inferred. One long fault has been traced along a north-northwest trend and a set of apparently minor east-west faults is present. An area of considerable faulting in the northeast part of the property is considered of further interest.

Some chalcocite occurs along steeply-dipping, narrow, northeast-striking quartz-carbonate fault-breccia zones. These zones are similar to those found on and near the property of Quadrate Explorations, except that, with an average width of about 1 1/2 feet, they are much narrower. The chalcocite coats breccia fragments and in places forms a nearly massive cement to the breccia. Some chalcocite is also disseminated in hematitized fragments. One of these zones of mineralized breccia occurs along the contact between basalt and sediments at approximately 67°32'35"N, 115°19'W. No areas of flow-top mineralization were found on the property.

Detailed investigation of mineralized and otherwise favourable areas was recommended.

Crowbank Mines Ltd. (GAL claims) (86-N-1, 86-O-4; about 67°13'30"N, 116°00'30"W)

This property consists of claims GAL 36-41, 52-58, 66-75, 83-92, 100-109, 117-126, 135-143 and 152-154, a total of 65 claims. The property lies on the Coppermine River north of the September Mountains and adjoins to the south of the property of James Bay Mining Corp. An exploration program consisting of prospecting and a reconnaissance magnetometer survey was carried out by the company, formerly Crowpat Minerals Ltd., during the period July 26 to August 27, 1968.

There is very little outcrop on the property; some rock is exposed on 7 of the northern claims and there are 2 outcrops on the southern boundary. The property is underlain by basalt which consists of fine-grained black to purplish-black flows. These flows are often amygdaloidal and generally dip about 10 degrees north.

Two showings consisting of patches of copper-stained rubble were located on the northern part of the property. One of the copper showings may be a southward extension of a known copper-bearing vein on the property of James Bay Mining Corp.

Readings were taken each 100 feet along north-south lines spaced 800 feet apart. A total of about 40 line miles was surveyed. The survey outlined a magnetic low 400 feet wide and 3,000 feet long in the northeast part of the property (The Northern Miner, September 26, 1968, p. 6). This magnetic low may represent a fault that extends onto the James Bay Mining property.

No further work was recommended on the property pending results in the vicinity, particularly on the property of James Bay Mining.

Daniel Mining Co. (ARCH claims) (86-N-12, 86-M-9; about 67°40'30"N, 118°00'30"W)

Claims ARCH 230, 231, 240, 241 and 250-277 comprise this 32-claim property. The name of the company was changed to Daniel Diversified Ltd., following the 1968 season.

An exploration program consisting of prospecting, geological mapping and a reconnaissance electromagnetic survey was conducted on the property July 1-August 6, 1968, by Shield Geophysics Ltd. of Timmins, Ontario. Only three outcrops of basalt are present on the property but large angular blocks of basalt elsewhere are considered to be frost-heaved material that is nearly in place. The basalt is fine grained and dark grey to maroon in colour, with prominent columnar jointing. No copper mineralization was noted.

A Ronka EM16 electromagnetic survey was carried out along east-west lines spaced 600 feet apart in a search for major structures. One conductor of possible significance was outlined. The conductor trends north-northeast and lies adjacent to a wet area, which could be the cause of the anomaly. No further work was recommended for the property.

D'Aragon Mines Ltd. (51%) and Willow Lake Mines Ltd. (49%) (JIM claims) (86-O-5; about 67°21'10"N, 115°55'30"W)

This property consists of 20 JIM claims with Grant Numbers N92477-84, N92495-502 and N92513-16. Four other claims, N92414-17, were also held until they lapsed December 19, 1968. The property was prospected July 2-August 31, 1967, by a party under the supervision of Mr. S. Tough.

The No. 1 vein consists of chalcocite, native copper, and native silver in a calcite and quartz matrix to a brecciated zone along a tension fault. The native silver and native copper occur as blebs and wires in the breccia matrix. The breccia zones, in part, appear to be along the contacts of the fracture zones in which they occur. This vein or brecciated zone is located on claim N92502 and strikes about N52°E. It is represented by frost-heaved breccia for 100 feet following a short section of outcrop, and is again represented as rubble following a covered interval 300 feet long. One sample across 3.6 feet assayed 7.25 per cent Cu and 0.56 oz/ton Ag, and another from 30 feet to the northeast gave 2.94 per cent Cu and 1.42 oz/ton Ag across

a width of 3 feet. In one place heavy chalcocite mineralization was reported (The Northern Miner, Sept. 14, 1967, p. 7) to occur across 2 feet, with further disseminated mineralization over a known width of about 10 feet. The linear depression in which the mineralized zone occurs has been traced for nearly a mile.

Chalcocite and native copper are present in a vein near the east boundary of claim N92501. This vein strikes about N35°E and an extension of the vein is exposed about 900 feet to the northeast near the southwest corner of claim N92497.

A program of detailed prospecting, detailed geological mapping, and diamond drilling of the No. 1 vein and other showings was recommended for the 1968 season. In 1968 the company moved in supplies jointly with other companies carrying out exploration in the area. Preparations for work in the area, including the purchase of supplies, amounted to an expenditure of about $10,000. The company participated in the airborne survey flown by Lockwood Survey Corp. and also planned to carry out the recommended program (The Northern Miner, May 30, 1968, p. 13). However, it is not known whether or not this exploration work was done.

Donalda Mines and Bernack Coppermine Exploration Co. Ltd. (KIL 1-14, 26-33 claims) (86-O-5; about 67°19'N, 115°35'30"W)

An exploration program was carried out on this 22-claim property during the 1968 season by Bernack Coppermine Exploration. Under the exploration agreement with Donalda Mines, Bernack was to acquire a 51 per cent interest in the property after an expenditure of $50,000.

When the main exploration camp of Bernack Coppermine at Willow Lake was visited on July 30, 1968, geological mapping at 400 feet to the inch had been completed on the Donalda property. A detailed grid had been established over the property and some magnetometer and Ronka EM16 electromagnetic surveying had been carried out.

The main showing of interest on the property consists of disseminated chalcocite and some native copper in a very fine grained and highly hematitized flow-top intercalation in the basalt sequence. This flow-top layer, which was mapped as an interbed of shale or fine-grained sandstone, is up to 15 feet thick and grab samples from a length of about 3,000 feet gave good assays. The showing which is located at approximately 67°19'40"N, 115°37'W, was visited on July 31. Drilling in August consisted of 7 vertical holes at 200-foot intervals. These holes were to depths of 50 to 70 feet and indicated only very low copper values. The average indicated grade for the zone was about 0.35 per cent Cu.

The results of three of the holes, all drilled on claim KIL 2, were as follows:

Hole No.	Latitude	Departure	Depth	Fine-grained red 'sandstone' Intersection	Thickness	Cu (%)
5	60+00N	0+00	59	43'-50 1/2'	7 1/2 ft.	0.10
6	56+00N	0+25W	61	39 1/2'-50 1/2'	11 ft.	0.35
7	58+00N	0+30W	50	39 1/2'-48'	8 1/2 ft.	0.15

Another mineralized zone on the Donalda property consists of copper-bearing quartz veins along a northeast-striking fault zone. The mineralized zone is 3 to 10 feet wide and can be traced for a length of 4,500 feet.

Earlcrest Resources Ltd. (MID 1-100 claims) (86-N-11; about 67°41'30"N, 117°10'W)

This property is about 8 miles west of the Herb-Dixon Fault and the contact between the basalt sequence and overlying sediments crosses the north part of the property. The claims were recorded June 16, 1967. Prospecting, geological mapping, trenching and electromagnetic and induced polarization surveys were carried out on the property in August, 1967, under the supervision of G.R. Kent of Watts, Griffis and McOuat Ltd. The geological mapping was done at a scale of 1,000 feet to the inch.

Most of the property is underlain by basalt. The massive portions of flows generally average 35 to 40 feet thick and the flow tops about 10 feet thick. Some flow-top breccias of limited lateral extent were noted. The basalt flows strike slightly north of west and dip from a few degrees north to a few degrees south. A series of north-striking diabase dykes have eroded more rapidly than the basalt country rock to produce linear depressions. Sandstone with shale partings is exposed in the northeast corner of the property. Mineralization was noted at a number of places but only one showing was considered of significance.

Secondary copper minerals frequently occur along joints, fractures and shears, and are associated with chalcocite-bearing calcite-quartz veins. These calcite-quartz veins are commonly found adjacent to diabase dykes, in fractures parallel or normal to the dyke contacts. Chalcopyrite and pyrite are present in north-northwest striking quartz veins on the north part of the property.

Showing No. 1 consists of massive chalcocite in a shear striking S80°W which cuts purple basalt flows on claims MID 37 and 38. The chalcocite is disseminated in the basalt for up to 2 or 3 inches on either side of narrow fractures which are sometimes filled with calcite. The shear zone dips 85 degrees south and has a maximum width at least somewhat in excess of 7 feet. Nearly massive chalcocite was noted across widths up to 1 foot but more frequently occurs in several parallel bands. There is evidence of copper mineralization for 2,000 feet along the shear although the best exposures occur intermittently along a length of about 1,000 feet. Five channel samples, along a strike length of 820 feet, ranged from 0.42 per cent Cu/8 feet to 19.49 per cent Cu/7 feet and averaged 10.12 per cent Cu across an average width of 4.62 feet. The true width of the zone could not, however, be determined.

A survey grid of about 3.7 line miles was established in the vicinity of the showing and was covered by geophysical surveys. An electromagnetic survey over the grid failed to locate any conductors. An induced polarization survey covered about 2.4 line miles, but gave chargeabilities to only 23 milliseconds above a general background of 19 to 20 ms. The I.P. survey thus failed to delineate the mineralized zone, but it was considered to reveal other overburden-covered areas of possible interest.

A magnetometer survey over the established geophysical grid was recommended. Investigation of the No. 1 showing by a series of drillholes at a depth of about 50 feet was also recommended.

Further geological mapping and geophysical surveying, and diamond drilling was planned by the company for the 1968 season. An induced polarization survey was conducted by McPhar Geophysics Ltd. over the central part of the main showing in 1968. Late in the 1968 season a contract for 1,000 feet of drilling in 6 holes was let to Inspiration Ltd. to test the No. 1 showing (Engineering and Mining Journal, September, 1968, p. 212).

The induced polarization survey was done on 5 lines 100 feet apart using an electrode separation of 50 feet. The survey showed a zone of weak but fairly definite anomalies, especially on three of the grid lines. These anomalies were just south of the baseline and coincident with the known mineralization.

The diamond drilling totalled 931 feet in 6 holes and tested the No. 1 showing for a length of 500 feet at a depth of 80 to 100 feet. The zone was found to be weakly altered by chloritization and hematitization and to contain only minor mineralization. The drilling was done from August 3 to August 30, 1968, with results as listed in the table below. All holes were inclined at 45 degrees in the direction N10°W.

Hole No.	Latitude	Departure	Length (feet)	Intersection	Core Length (feet)	Cu (%)
68-1	1 + 10S	4 + 30E	177	83.0'-88.0'	5	0.65
68-2	1 + 10S	5 + 30E	171	135.0'-145.0'	10	0.10
68-3	0 + 90S	6 + 30E	176	115.0'-120.0'	5	0.50
				120.0'-122.0'	2	2.13
				122.0'-127.0'	5	0.08
68-4	1 + 05S	8 + 30E	175			
68-5	1 + 00S	7 + 30E	174	134.0'-143.0'	9	1.25
68-6	0 + 70S	3 + 30E	58	30.0'-32.2'	2.2	4.31

No further work was recommended on the property for the present time.

East Coppermine Exploration Company Ltd. (1685 claims) (86-O-3, 6, 11; about 67°24'30"N, 115°14'30"W)

This block of claims lies about 3 to 10 miles east of the Coppermine River and extends for about 24 miles in a north-south direction between Melville Creek and the Nipartoktuak River. The claims are almost entirely underlain by basalts of the Coppermine River Group. The property consists of claims AC 1-99, DL 1-36, MV 1-36, HW 1-36, VAL 1-4, 9-16, 21-28, NOR 1-100, CP 2-8, DOR 1-4, 9-16, 21-28, 33-40, 51-58, 69-72, VIC 1-120, 126-135, 146-152, ES 1-36, GS 1-36, MT 7-15, DT 1-36, JC 1-36, JH 1-36, LR 1-27, MDS 1-16, 25-62, 71-84, 93-99, LIZ 1-36, LAC 1-2, 13-24, PAT 1-22, SA 29-36, EM 1-36, JM 1-36, JO 1-36, CON 1, KEV 1-36, ROD 1-36, BRAD 1-36, JOE 1-36, SHARON 1-36, SIS 1-36, DAN 1-36, JIM 1-36, TERRY 1-36, WARREN 1-36, MIKE 1-36, JUDY 1-36, JOYCE 1-12, F1-48, 55-62, 67-120, ER 25-27, 34-39, B 82-100, SJ 1-36, GT 1-36, and EH 6-15, 26-35, 46-55, 66-75. These claims are mostly registered in the name of Conwest Exploration Company Ltd., which company managed an exploration program on the property June 1-September 5, 1968.

Copper Occurrences

No.	Claim	Latitude	Longitude	Mineralogy	Showing
1	SHARON 1	67°33'10"	115°10'00"	chalcocite	North Thompson Lake
2	SHARON 1	67°33'05"	115°10°05"	"	
3	SHARON 23	67°32'10"	115°09'30"	native Cu	Thompson Lake
4	JIM 36	67°31'15"	115°14'15"	bornite	
5	JIM 26	67°31'10"	115°12'55"	chalcocite	No. 5
6	JIM 26	67°31'00"	115°13'15"		
7	MIKE 11	67°29'25"	115°11'05"	chalcocite	No. 6
8	MIKE 14	67°29'35"	115°11'45"	"	
9	MIKE 21	67°29'05"	115°12'35"	native Cu	Judy Lake
10	MIKE 32	67°28'50"	115°13'10"	"	
11	NOR 91	67°27'10"	115°13'15"	"	
12	NOR 94	67°26'55"	115°12'55"	chalcocite	No. 7
13	NOR 94	67°26'45"	115°12'45"	"	
14	NOR 47	67°26'35"	115°13'00"	native Cu	
15	NOR 48	67°26'20"	115°13'25"	"	
16	NOR 48	67°26'25"	115°13'45"	chalcocite and native Cu	
17	PAT 2	67°26'35"	115°21'40"	chalcocite	
18	PAT 6	67°26'30"	115°22'15"	"	No. 9
19	LR 12	67°26'15"	115°20'50"	"	
20	LR 27	67°25'55"	115°21'00"	"	
21	JH 22	67°25'20"	115°18'55"	"	
22	JH 22	67°25'17"	115°18'35"	"	No. 8
23	JH 32	67°25'13"	115°18'55"	"	
24	GS 21	67°23'40"	115°13'00"	"	
25	HW 4	67°22'45"	115°12'15"	"	No. 4
26	AC 42	67°20'50"	115°22'35"	"	No. 3
27	AC 25	67°20'30"	115°22'40"	"	No. 2
28	AC 20	67°20'15"	115°22'45"		No. 1
29	EM 7	67°17'45"	115°17'25"	bornite, cc.	
30	EM 30	67°17'15"	115°17'15"	bornite, cc.	

The F, ER and B groups, and claims VIC 81-86, 95-106, 114-120, 126, 127, 134, 135, were allowed to lapse by the company and at the end of 1968 a total of 1,518 claims were held in good standing. The LIZ claims were held under option.

The exploration program consisted of prospecting, geological mapping, ground geophysical surveys, a combined airborne magnetometer-electromagnetic survey flown by Lockwood Survey Corp., and limited diamond drilling. The geological mapping was at a scale of 1,000 feet to the inch and grid areas were mapped at 100 feet or 200 feet to the inch.

With the exception of the southeast corner of the property, where limestone or dolomite of the Hornby Bay Group is exposed, the property is underlain by a series of basalt flows. The flows are cut by a few diabase and felsite dykes. The flows strike north-northeast to northeast and dip approximately 10-15 degrees northwest. They range in colour from grey and green to purplish brown, depending on the degree of chloritization and oxidation. Except for the contact portions of flows, they are usually very massive and aphanitic. However, in some areas the flows are porphyritic or pegmatitic. The tops and bottoms of the flows are highly amygdaloidal and are sometimes brecciated. The very top of a flow usually contains numerous calcite, quartz and chlorite amygdules ringed with red sanidine. This zone grades downward to basalt with calcite and chlorite amygdules and, below this, to basalt with just chlorite amygdules. The very bottom of a flow will commonly contain numerous small calcite amygdules and exhibit much flow structure.

A great number of copper occurrences were found on the property by prospecting. The occurrences which appear to be most significant have been arbitrarily assigned numbers and are listed below. Occurrence 30 consists of a vein 2-3 feet wide which contains, in places, massive chalcocite and bornite. The mineralization has been traced for a length of about 500 feet and one electromagnetic traverse across the vein gave a crossover of 10 per cent.

Showings 1, 2 and 3 are located on the AC claims and were included within the Hals geophysical grid. Showing 1 consists of chalcocite in fractured aphanitic lava, and some malachite in amygdaloidal flow-top material. Showing 2 also consists of chalcocite in fractures in massive basalt. Showing 3 consists of chalcocite in float fragments from the margin of a felsite dyke. Chalcocite is also present in brecciated flow-top material and massive lava in nearby occurrences. Electromagnetic surveying indicated a conductor paralleling the felsite dyke with crossovers of up to 21 per cent. Approximately 6.3 line miles of electromagnetic surveying, 14.8 line miles of magnetometer surveying, and 8.3 line miles of induced polarization surveying were done on the Hals grid. The induced polarization survey indicated an anomalous zone associated with surface mineralization along the zone of the No. 2 and No. 3 showings. The pole-dipole array was used with electrode separations of 100, 200 and 400 feet. The peak chargeability that was obtained was 25 milliseconds. A distinct electromagnetic conductor parallels the induced polarization anomaly, but lies about 300 feet to the east and also parallels the felsite dyke. A second conductor was located near the base line.

The No. 2 and 3 showings were tested by two diamond-drill holes. These holes were both inclined due east at 45 degrees and gave results as follows:

Hole No.	Showing	Depth (feet)	Intersection	Comments
EC 1	No. 3	335	250'-335'	Felsite dyke. Chalcopyrite and traces of chalcocite at the contact.
EC 2	No. 2	450	367'-371'	Volcanics. Disseminated pyrite.
			372'-375'	Felsite dyke margin. Disseminated pyrite.

The area of these showings was visited July 31, 1968, just before drilling commenced. The so-called felsite appears to be coarse grained feldspar-rich diabase. The chalcocite is disseminated interstitially throughout the rock. The mineralization occurs in float boulders and does not appear to be exposed. A sample selected from the surface material is reported to have assayed 1.6 per cent Cu.

Showings No. 4, 8 and 9 are located on the Michelle geophysical grid. Showings No. 8 and 9 consist of a number of copper occurrences which are considered to be of minor importance. Showing No. 4 consists of chalcocite, calcite and red sanidine in a brecciated flow top. A chip sample from one trench assayed 10.10 per cent Cu/4 1/2 feet, and one from another trench 11.32 per cent/7 1/2 feet. While the showing is quite rich, it is apparently limited in size.

Geophysical work on the Michelle grid consisted of 24.1 line miles of magnetometer survey, approximately 34 line miles of electromagnetic survey, 8.3 line miles of reconnaissance induced polarization survey, and about 3.4 line miles of detailed induced polarization survey. The electromagnetic survey located three strong conductors, one of which is located just east of a zone of high chargeability. The gradient array induced polarization method was used at first, but results were not satisfactory and the pole-dipole array was employed thereafter with electrode separations of 200 and 400 feet. The induced polarization survey was only run over areas with known mineralization or with electromagnetic anomalies. The strongest induced polarization anomaly had a chargeability of 27 milliseconds. The induced polarization survey was conducted by Huntec Limited. Magnetic lows at 2 + 00E on line 324 S, and 14 + 00W to 19 + 00W on line 308 S are associated with chargeability peaks of 23.5 and 27 milliseconds, respectively. Neither of these are associated with a strong electromagnetic anomaly.

Copper occurrences 11 to 16 (see table above) are located on the Salmi No. 1 geophysical grid. These include the No. 7 showing which consists of chalcocite mineralization in fractured aphanitic basalt along the east side of a north-striking fault. The mineralization occurs at intervals along a strike length of approximately 1,200 feet. Chip samples from a trench at one point assayed 2.71 per cent Cu over a width of 10 feet. Copper occurrence 16 consists of massive chalcocite with native copper in a vein 1-6 inches wide that is exposed at intervals for a distance of 300 feet.

Geophysical surveying on the Salmi No. 1 grid consisted of 7 line miles of magnetometer survey, 5.1 line miles of Ronka EM16 electromagnetic survey and 3 line miles of induced polarization survey. The surveys indicated a magnetic low, a strong electromagnetic anomaly, and an induced

polarization anomaly with a peak chargeability of 29 milliseconds, all coincident with the main mineralization along showing No. 7. Spreads of 100 and 200 feet were used in the induced polarization survey. A second strong electromagnetic conductor runs from 11 + 00W on line 40 S to 2 + 00W on line 8 S and continues, beyond an offset on a north-south fault, from 7 + 00E on line 4 S to 10 + 00E on line 8 N.

Numerous geologically favourable areas on the property have not yet been investigated and warrant additional exploration. Extensive geophysical surveys were recommended as the next stage of evaluation.

General Resources Ltd. (GUN claims) (86-N-10; about 67°35'30"N, 116°32'W)

This property is a short distance north of the main block of claims held by Coppermine River Ltd. and consists of claims GUN 10, 11, 30, 31, 50, 51, 70, 71, 90, 91, 101-105, 116-125, 136-145, 156-165, 176-185 and 196-200. Geological mapping at a scale of 1,050 feet to the inch was done on the 60-claim property in August, 1968, by Watts, Griffis and McOuat Ltd. Reconnaissance soil geochemical and induced polarization surveys were also carried out during the 1968 season by McPhar Geophysics Ltd. In addition, the company participated in the airborne survey flown by Lockwood Survey Corp.

Outcrop, consisting entirely of basalt, occupies less than 1 per cent of the property. Most of the outcrop occurs along a ridge which trends north-northwest across the northeast corner of the property. No significant copper showings were located during geological mapping of the claims. Sediments are exposed a short distance north of the property.

It was recommended that further work on the property should consist of geophysical surveys. Detailed magnetometer, high-frequency electromagnetic and induced polarization surveys were recommended for grids established over any significant anomalies indicated by the airborne survey or by the geochemical or induced polarization surveys. The results of these latter surveys are unknown to the author.

Eskimo Copper Mines Ltd. (JOK and EXT claims) (86-O-5; about 67°20'N, 115°32'30"W)

This property consists of claims JOK 1, 2, 5-13, 23-25, 27-42, 49-57 and EXT 1, a total of 40 claims, and was under option by Bernack Coppermine Explorations Ltd. in 1968. Magnetometer and Ronka EM16 electromagnetic surveys were carried out in the vicinity of the main showing. The surveys each covered about 3 line miles on claims JOK 12 and 23, and parts of JOK 11 and 42, and were done September 1-6, 1968.

The property is underlain by basalt flows which strike northeast and dip gently to the northwest. Chalcocite mineralization occurs in brecciated and massive basalt in a zone exposed on the face of a cliff on claim JOK 12 on the north part of the property. The zone has an exposed width of 25 feet and a true width of about 10 feet. The strike of the mineralized zone is assumed to be N50°E.

The electromagnetic survey failed to outline any conductive zones. A broad magnetic low coincides with the mineralization.

Giant Yellowknife Mines Ltd. (GY 1-30 claims) (86-O-12; about 67°33'15"N, 115°56'40"W)

This property lies west of Coppermine River just northeast of a group of claims held by Coppermine River Ltd., and was staked to cover the northeast projection of the Teshierpi Fault. Field work was done on the property in September, 1967, and April, 1968. The work in 1968 consisted of Ronka EM16 and SE 200 electromagnetic surveys and a magnetometer survey. The company also participated in the airborne survey flown by Lockwood Survey Corp.

A diabase sill occupies the north part of the claim group and is considered to be underlain by basalts, although sediments below the diabase sill are to be expected in this area (Baragar, 1967). Based on the results of the magnetometer survey the inferred diabase-basalt contact is interpreted to cross the Teshierpi Fault in the northeast corner of claim GY 14. The geophysical surveys were restricted to the general area of this junction. Nearly coincident anomalies were obtained with the two electromagnetic units along the postulated position of the Teshierpi Fault.

It was concluded that the conductor along the Teshierpi Fault is probably caused by metallic mineralization, and it was recommended that it should be tested with at least two drillholes.

Golden West Mines Ltd. (TED 1-35 claims) (86-N-9; about 67°34'N, 116°02'W)

This property lies just northwest of the Teshierpi Fault, is on the north contact of the basalt belt, and to the north adjoins the east part of the property of Colonial Oil and Gas. A program of prospecting, geological mapping and geochemical soil sampling was carried out on the property August 1-12, 1968, by W.P. McGill and Associates Ltd.

Basalt is present as float on, and is considered to underlie, the south part of the property. A diabase sill is exposed on the north part of the property and a thin unit of shale, which strikes about east-west, is exposed immediately south of the sill. Mineralized float was found to be rare on the property. The geological mapping and geochemical sampling were done along east-west lines spaced 500 feet apart.

In the reconnaissance geochemical survey 137 soil samples were taken at depths of 1 foot to 4 feet at stations at 500-foot intervals along the traverse lines. These were analyzed colorimetrically for total heavy metal content. Samples were then taken each 100 feet on a grid with lines spaced 200 feet apart. A total of 200 samples were taken in this detailed survey and were analyzed in Toronto for their copper content. The detailed survey was done on claims TED 5, 9 and 18 in the southwest part of the property and outlined a consistent anomaly on claim TED 5.

An electromagnetic survey was recommended over the geochemical anomaly on claim TED 5, but it was concluded that diamond drilling was warranted in any event.

Golden West Mines Ltd. (PENNY 1-36 claims) (86-N-9; about 67°35'N, 116°15'W)

This property lies about 6 miles west of the TED claims, held by the same company, and is on the basalt sequence at or near the contact with overlying sediments. A program of prospecting, geological mapping, and geochemical soil sampling was carried out on the property August 1-12, 1968, by W.P. McGill and Associates Ltd.

Work was carried out on the property along east-west lines spaced 500 feet apart. Basalt flows, generally with a low northerly dip, underlie most of the property. Sediments are represented by float fragments but none are exposed on the property. Diabase dykes intrude the basalt flows. Faults with northwest and northeast strikes were both observed and inferred to be present.

Scattered mineralization, consisting of copper sulphides and native copper, was observed at a number of locations on the property, especially in areas of basalt outcrop. All the copper-bearing veins that were located in outcrop were less than 4 inches wide.

A total of 209 soil samples were taken at 500-foot intervals in the reconnaissance phase of the geochemical survey. These were analyzed colorimetrically for total heavy metals. Scattered anomalous values were obtained over essentially all of the property. Four broad anomalous areas were covered by a detailed survey in which samples were taken each 100 feet along lines spaced 200 feet apart. Copper analyses were done in Toronto on 471 samples taken in this detailed survey. The grids for the detailed sampling were not sufficiently extensive to completely clarify the results of the reconnaissance survey.

Anomaly No. 4, which is extremely complex and large, is considered to be the best anomaly.

The broad anomalous areas 1, 2 and 3 are subdivided into 12 zones on the basis of the detailed soil sampling for copper. Zones 7, 8 and 11 consist of a number of significantly high samples over large areas and are considered important, especially zone 11 which is probably continuous with anomaly No. 4. Zones 1, 2, 5, 6, 9, 10 and 12 are based on two or more adjacent anomalous values and, although of small size, are of possible significance. Zones 3 and 13 are based on a single high sample and both may thus be considered insignificant.

An electromagnetic survey was recommended over the geochemical anomalies; presumably this would cover, in particular, anomaly No. 4 and zones 7, 8 and 11. The electromagnetic survey would be followed by diamond drilling.

Hearne Coppermine Explorations Ltd. (TRI, CARL, FAR, CAL, MID, FRED, FAR, FOX, NWT and FARR claims) (86-N-10, 11, 12, 13; 67°30'N to 67°42'N, 116°53'W to 117°53'30"W)

This very large block of 2,050 claims extends from about 1 1/2 miles west of the Herb-Dixon Fault at 116°53'W longitude, where it covers the entire exposed width of the basalt belt, for nearly 27 miles farther west to 117°53'30"W longitude. The south boundary of the property follows the south contact of the basalt belt (Fraser, 1960) west to 117°19'W and then,

very roughly, slopes northwest to 67°42'10"N, 117°37'30"W, and from there extends directly west to the west boundary of the block. The north part of the claim block is interrupted by properties of Earlcrest Resources and Coppermine River Ltd. which cover 1/3 to 2/3 of the width of the basalt belt from about 117°07'30"W to about 117°30'W. The property consists of claims TRI 2-819, CARL 1-300, FAR 1-200 (T 11001 etc.; 86-N-12), CAL 1-301, MID 101-200, FRED 88-92, 100-109, 115-127 and 129-200, FAR 94-167 (86-N-13), FOX 1-72, NWT 1-36, 73-87, and FARR 52-85.

The TRI, CARL, FAR 1-200, CAL, MID and FRED claims were staked early in 1967 under the supervision of Mr. G. Leliever. Hearne Coppermine Exploration Ltd. was formed in July, 1967, to explore these and other claims. A preliminary exploration program, consisting of prospecting, geological mapping at a scale of 1,000 feet to the inch and limited trenching and sampling, was conducted by Watts, Griffis and McOuat Ltd. during the period August 12-September 21, 1967. The TRI group was only investigated in part by prospecting. Reconnaissance geological mapping was done on the CARL, FAR, CAL, MID and FRED groups. The exploration camp for this work was located at approximately 67°35'N, 117°05'W. A total of 24 men were organized into three prospecting parties, five mapping parties, and one trenching party.

Copper mineralization in the area occurs as (1) fracture fillings with quartz or calcite, (2) mineralized shear zones and fault and/or fold breccias with minor gangue, (3) native copper as vesicle fillings in flow tops, (4) chalcocite replacements of flow-top breccias, and (5) fine disseminations in massive basalt flows. A total of twenty showings were described from the property, of which four were investigated by trenching and sampling. All of the showings were considered to warrant additional investigation.

FAR 1-200 Group

Hematitized flow tops, which are frequently brecciated, are relatively common on the group. Three major sets of fractures with strikes of N10°E, N10°W and N80°W are present.

Native copper in trace amounts is common as disseminations in massive flows and amygdules. Chalcocite occurs with quartz as fracture fillings and, with little or no matrix material, along narrow shear zones. Some chalcocite is also present in flow-top material, and some chalcopyrite is present in quartz which fills fissures. The main showings discovered on the property are listed below.

Showing	Claim	Strike	Dip	Length (feet)	Width (feet)	Type
H-1	FAR 156, 157	353°	90°±	200	0-1	Fracture filling
H-3	FAR 77	180°	90°±	300	0-1 1/2	Fracture filling
H-7		90°	10°			Flow top
H-8	FAR 3	310°	90°±	125+	3-6	Fault breccia
H-10	FAR 61	N-S	90°±	1500+	1/2	Quartz vein
H-11		E-W	90°±	450	1	Quartz vein
H-13		N-S	90°±	1100	1/2-2	Fracture filling
H-14						Flow top
H-15	FAR 38	N-S	90°±	150	1-1 1/2	Fracture filling

Showing H-1 consists of chalcocite veinlets in a quartz vein which probably occurs along the contact of a diabase dyke. The vein of showing H-3 contains chalcocite and quartz, chalcocite is massive in places but elsewhere only quartz is present. Showing H-7 is reported to be located north of claims FAR 80 and 81, and could thus be on claim FAR 163, FAR 164, NWT 85 or NWT 86. The showing consists of frost-heaved fragments of chalcocite-bearing grey amygdaloidal flow-top basalt which are scattered over an area of several hundred square feet. A grab sample of the mineralization assayed 10.42 per cent Cu.

Showing H-8 consists of disseminated chalcocite which replaces a red silicified fault breccia. Some chalcocite also occurs as veinlets in the zone. The main zone is exposed across a width of 3 feet and chalcocite veinlets are present in other narrow parallel fractures. Chip samples from the zone assayed 3.92 per cent Cu/3 feet and, for an adjacent section, 0.95 per cent Cu/10 feet. Several very narrow, parallel, mineralized breccias and veins also occur in the well-defined linear depression which is about 75 feet wide and can be traced for over 2 miles to the northwest.

Showing H-11 is located about 500 feet north of claim FAR 21 and may thus be on claim FARR 59. The showing consists of minor chalcopyrite in a quartz vein. Showing H-13 is similar and is probably located on claim FARR 60. Showing H-14 is located 200 feet north of the northwest corner of claim FAR 60 and should thus be about on the boundary between claims NWT 86 and 87. Float fragments of flow-top basalt containing heavy chalcocite in amygdules comprise the showing.

During the 1968 season a drilling program was carried out on showing FAR-3. The initial drilling suggested that the mineralization was confined to a lens about 150 feet long and with a maximum width of 15 feet within a shear zone (The Northern Miner, October 10, 1968, p. 7). The chalcocite mineralization was found to grade between 2 and 3 per cent Cu. Associated with this shear zone is a flow top approximately 15 feet thick which extends laterally from the shear zone over an area of less than 100 feet by 100 feet.

Another high priority drilling target, showing FAR X1, could not be drilled before the end of the 1968 exploration season.

CARL 1-300 Group

On the northern part of the group flow tops are intensely fractured and brecciated. Diabase dykes were observed at two places and are probably present at a great many more. Minor copper mineralization is usually present in quartz veins, up to 6 feet wide, which are present along the sides of gullies. These gullies are thought to have resulted in many cases from the erosion of diabase dykes.

A strong fault which strikes N60°W crosses the northern boundary of the group at the northeast corner of claim CARL 28. A fault on the property also separates dolomite to the north from basalt to the south. A number of copper showings, all steeply dipping, were found on the property and are listed on next page.

Showing H-16 is considered to be possibly the most interesting. Heavy chalcocite mineralization replaces basalt along a brecciated shear zone. There are numerous narrow parallel branch fractures along the zone which are also mineralized.

Showing	Claim	Strike	Length (feet)	Width (feet)	Type
H-2	CARL 56	90°	1000+	1±	Quartz vein
H-6	CARL 94	75°	100	0-4	Calcite vein
H-16	CARL 14	E-W	270+	3+	Shear zone
H-17	CARL 5	E-W	1200	3	Quartz vein
H-18	CARL 69	E-W		1/2-1 1/2	Quartz vein
H-19	CARL 94	variable	variable	0-6	Quartz vein
H-20	CARL 65	W-NW	1000+	2	Quartz vein

Showing H-6 consists of an unusual type of mineralization for the Coppermine area. This showing occurs on the east boundary of claim CARL 94 and consists of small massive lenses of galena in a calcite vein. The calcite vein, with some quartz, can be traced for 100 feet in a gash fracture which branches from a major linear. At the junction of the two fractures scattered blebs and veinlets of chalcopyrite are present. One piece of massive galena from the showing assayed 8.62 oz/ton Ag.

Showing H-2 is a vuggy quartz vein containing blebs and veinlets of bornite, chalcopyrite, and malachite. The mineralization is strongest at the eastern end of the vein. Showing H-17 consists of minor chalcocite and malachite, and showing H-18 of minor chalcopyrite, bornite and malachite. Showing H-19 is a series of quartz veins which contain minor chalcopyrite. One quartz vein along the bottom of a linear depression contains galena. Chalcopyrite, chalcocite and malachite in a quartz vein form the mineralization of showing H-20.

A high priority showing on claim CARL 7 was drilled during the 1968 season. Several surface assays indicated 14 per cent Cu over a true width of 4 feet. Preliminary drilling indicated a deposit approximately 300 feet long, 150 feet deep and a maximum of 4 feet wide. Over a mining width of 8 feet the grade is between 3 per cent and 4 per cent Cu in the form of chalcocite. The tonnage calculated to a depth of 500 feet is in the order of 125,000 tons grading approximately 2 per cent Cu (The Northern Miner, October 10, 1968, p. 7).

The CARL-9 showing was also of high priority but could not be drilled before the end of the 1968 season. It contains native copper, cuprite, malachite and chalcocite in flow-top material and is exposed for a length of 40 feet.

CAL 1-301 Group

The basalt flows on this group strike northwest-southeast and dip 10-15 degrees northeast. The basalt flow-top horizons are frequently brecciated. Only one small diabase dyke was observed on the claim group. A diabase sill has also apparently intruded the lava sequence.

A wide and deep northwest-trending valley crosses through the centre of the group and extends beyond the boundaries. This valley probably marks a fault and numerous minor shear zones are present along its sides. Several other northwest-trending valleys of considerable magnitude are present both on the claim group and surrounding it in this portion of the Bornite Mountains. Some northeast-striking shears and strong faults are also present on the property.

Chalcopyrite in quartz-carbonate veins along the walls of northwest-trending gorges is the predominant type of mineralization. These mineralized zones are vertical, up to 10 feet wide, and from 10 to 200 feet long.

There are a number of small chalcocite-bearing shear zones on the group which strike northeast. There appears to be a concentration of these showings in the south-central portion of the claim group. In particular, showings H-4, H-5 and H-12 look interesting. Showing H-12 is located on claim CAL 149 but the location of the other two showings is not known. Showing H-4 strikes N50°E, is 6 inches to 6 feet wide, and is about 1,000 feet long. Chalcocite is present as veinlets, and in quartz-calcite veinlets, along a sheared and fractured zone. The zone is widest at the eastern end where it passes beneath overburden. Chip samples from two trenches 380 feet apart along the zone assayed 5.41 per cent Cu/5.2 feet and 8.12 per cent Cu/6 feet.

Showing H-5 consists, in part, of massive chalcocite and associated malachite in a fracture zone which strikes N50°E. At the west end of the zone minor veinlets of chalcocite occur in quartz. Four chip samples from trenches across the zone, spaced 40 feet, and 45 feet apart, assayed 27.18 per cent Cu/16 inches, 28.10 per cent Cu/12 inches, 12.04 per cent Cu/9 inches and 24.12 per cent Cu/5 inches. The east end of the zone is obscured by overburden.

In the case of showing H-12 chalcocite occurs as narrow veinlets and disseminated blebs in an altered, silicified, shear zone. The shear strikes N65°E, is 2.5 to 4.7 feet wide, and at least 200 feet long. A chip sample across a width of 4.7 feet assayed 5.90 per cent Cu and another from a pit 115 feet along strike assayed 29.34 per cent Cu/2.5 feet.

Two of the showings investigated on the CAL group in 1968, possibly corresponding to those described above, were assigned a high priority, but could not be drilled before the end of the season. These are the CAL-2 and CAL-3 showings which consist of massive chalcocite in brecciated basalt. The mineralization of showing CAL-3 was traced along strike for a distance of 400 feet.

TRI 2-819 Group

Only a small portion of this group was prospected during the 1967 season. One showing was partially described on the basis of this preliminary work. The showing consists of a single small exposure of a mineralized shear zone of undetermined orientation. Bornite and malachite are disseminated in calcite and rim fragments in the shear zone. Some quartz veins are also present in the shear zone.

MID 101-200 Group

On this claim group the basalt flows strike west-northwest and dip about 12 degrees north. The flows are very massive and their average thickness is about 50 feet or less. Two diabase dykes were observed and probably many others are present in the north-striking linears.

The northeast and southwest boundaries of the claim group are marked by very strong, regional, linear depressions which trend N40°-50°W. These valleys are connected by a secondary set of fractures with strikes of N10°-15°W.

A number of copper occurrences, generally quartz veins containing bornite, chalcocite or chalcopyrite, were found on the group. However, none of these showings was considered to be significant.

FRED Group

Basalt flows strike north-northwest and dip gently northeast on this part of the property. A number of north-northwest lineaments, which are filled with glacial till, were suspected to represent diabase dykes. One northwest-trending valley, which crosses the north boundary of the group, may be the locale of a major shear zone. No significant mineralization was located.

Following the 1967 season recommendations were made for further work as follows:

1. A continuation of the preliminary prospecting and mapping program.
2. Magnetometer and induced polarization surveys in overburden areas and along major structural lineaments.
3. Diamond drilling to test the better showings and significant geophysical anomalies.
4. To continue trenching as a preliminary investigation method for the lower priority showings.
5. To participate jointly with other companies in an airborne geophysical survey.

TRI Group

In 1968 a program of prospecting, reconnaissance geological mapping, airborne geophysics, and ground geophysics in areas of interest was carried out from June 10 to August 21 on the TRI group. Photogeological interpretation was carried out prior to and simultaneous with work on the group. Aerial photographs of the company's properties in the area were taken by Northwest Survey Corp. at a height of 12,000 feet using a high resolution camera. Hearne Coppermine also participated in the regional airborne magnetometer and electromagnetic survey flown by Lockwood Survey Corp. This exploration program was assisted by the Federal Government through the Northern Mineral Exploration Assistance Program.

The TRI group is entirely underlain by basalt flows which are generally massive and lacking in evidence of hydrothermal alteration. The flows strike N35°-40° W and dip 5-10 degrees northeast. Only about 10 per cent of the claim group is occupied by outcrop. The flows are about 10-100 feet thick and have grey to reddish brown amygdaloidal flow tops. A northwesterly striking fault crosses the northeast corner of the group. The northeast corner of the group is also cut by a northeasterly striking fault.

Due to delay in completion of the Lockwood survey, Hearne Coppermine started a helicopter-borne magnetometer survey in June. This survey was flown at about 60 mph and 500 feet above the ground, with the flight lines spaced from 800 feet to 1/2 mile apart. The survey was made to map major structural features. It was found, however, that not all photo linears were magnetic lows and from this it was inferred that not all fault and shear zones were hematitized.

Ground magnetometer and radio-frequency electromagnetic surveys were carried out on 6 grids. The grid lines were 200 feet or 400 feet apart

for these surveys. Twenty weak to moderate electromagnetic anomalies were detected on grids A and B. Five of these anomalies were rated 'B' priority, but none were rated 'A' priority. The two major faults, noted above, in the northeast corner of the group were represented by broad magnetic depressions. Seven weak isolated conductors of 'E' priority were located on grid C. On grid D the survey resulted in five anomalies, the best of 'C' priority. Grid E was surveyed by magnetometer and about 1/4 of the grid was covered by the electromagnetic survey. A number of linear magnetic lows were detected which may correlate with major faults, but only five weak conductors were found which are of no further interest. Eight weak to moderate conductors were located on grid F and one of these was of 'C' priority. A linear north-south feature on the grid correlates with a mapped major fault.

Several minor copper occurrences, mostly of the quartz-calcite vein type, were found on the TRI claims. However, none of the showings were considered to be of significance. None of the geophysical anomalies on the six survey grids had outstanding characteristics, and no further work was recommended for the present on these grids. It was suggested that areas covered with overburden might be investigated by geochemical soil surveys.

FAR 94-167 (86-N-13), FOX, NWT, and FARR 52-85 Groups

These groups were investigated by Chapman, Wood and Griswold Ltd. during the period June 1 to September 7, 1968, using the same methods described above for the TRI group.

The north part of this block of claims is apparently underlain by sediments with very sparse exposure. The south part of the claim groups is underlain by basalt flows. Seven showings occur on the claims, of which three were discovered in 1967. Showing NWT-1 consists of minor occurrences of native copper, chalcocite and malachite in outcrops of flow-top material over an area 500 feet by 200 feet. Showing NWT-2 consists of mineralization along a shear zone. The showings Far Extension 1-5 are quartz-calcite veins which occupy fractures.

Two radio-frequency electromagnetic surveys (using the signals transmitted from Seattle, Washington, and from Cutler, Maine) were carried out over a grid 1,600 feet wide by 3,000 feet long. These surveys resulted in 2 anomalies of priority C, 2 of priority D, and 3 of priority E. One of these, anomaly R-NWT-4, is associated with a tight, but major, fracture. Three reconnaissance lines of an induced polarization survey extended onto the FARR claims but no definite anomalies were located.

Additional investigations in the vicinity of the NWT-1 showing were recommended for the 1969 season. A thorough evaluation of the airborne geophysical data from the Lockwood survey was also recommended.

Hearne Coppermine Explorations Ltd. (LASH 1-600, LIZ 1-18 and ELGOK 1-36 claims) (86-O-5, 11, 12; about 67°32'N, 115°37'W)

This 654-claim property was staked in the autumn of 1967 and straddles the Coppermine River in the area where regional mapping (Fraser, 1960) indicates a tongue of sediments extending south into the basalt sequence. Work by Baragar (1967) suggests that the property is almost entirely underlain by interbedded basaltic flows, sandstone and shale which form an upper

unit, within the Coppermine River Group, overlying the basalt sequence. The property is joined on the north by the ESC group of claims of Teshierpi Mines Ltd.

An exploration program was carried out on the property June 1 to August 31, 1968, under the supervision of personnel of Chapman, Wood and Griswold Ltd. and a consulting geophysicist, Dr. S.H. Ward. The program consisted of geological mapping at 1,000 feet to the inch, photo-geological interpretation, geophysics, and a limited geochemical soil sampling test survey. The company also participated in a joint, regional, airborne survey by Lockwood Survey Corp. Aerial photographic coverage of the company's properties was flown at an elevation of 12,000 feet by Northwest Survey Corp. The geophysical surveys were carried out in part by McPhar Geophysics Ltd. and in part by personnel working for Hearne Coppermine Explorations. The 1968 exploration program by the company was assisted by the Federal Government through the Northern Mineral Exploration Assistance Program. The anticipated expenditure by the company in exploration of more than 3,000 claims in the Coppermine River area was about $840,000. A total of about 45 to 60 men were employed in carrying out the program.

Photogeologic interpretation was carried out prior to and simultaneous with the field investigation. Areas of copper mineralization, structural complexity or hydrothermal alteration were selected for more detailed work, including ground geophysical surveys. These surveys were magnetometer, radio-frequency electromagnetic and induced polarization.

On the LASH claims, located east of the Coppermine River, the contact between the basalts and overlying sediments appears to trend N20°E on the basis of airborne magnetometer surveying. Glacial overburden is extensive on this eastern part of the property. In the central part of the LASH group a diabase dyke which cuts sediments is exposed at the Coppermine River where it dips steeply to the east. As the dyke is traced southeasterly from the river it flattens and appears to assume a sill-like character.

Diabase dykes throughout the area strike about N20°W and are offset by several major faults with strikes of N70°W.

On the property a sequence of grey shale overlies the red sandstone units. These shales extend several miles north of the north contact of the basalt belt. Diabase sills lie above or within the shale sequence in the eastern portion of the claims. Disseminated chalcocite occurs within the shales close to the contacts with diabase sills.

Basalts are mainly restricted to the eastern and western limits of the LASH claims. The exposed basalt is all of the massive textural type.

An airborne magnetometer survey was flown over the property employing a helicopter. The survey was flown at a ground speed of about 60 mph and a height of about 500 feet about the local terrain. The survey was flown primarily for information regarding the location of major structural features.

Two unexposed diabase dykes are interpreted on the basis of the aeromagnetic survey. A long continuous magnetic high trends down the axis of the syncline formed by the interbedded sediments-volcanics sequence in the immediate vicinity of the Coppermine River (Baragar, 1967). This magnetic high is inferred to represent folding or faulting in a north-northeast direction.

The aeromagnetic survey of the LIZ and ELGOK claims established only that the entire area is underlain by sediments. No anomalies were detected which could serve as a guide in prospecting.

Ground magnetometer, electromagnetic and induced polarization surveys were carried out over four grids on the LASH groups. The Radem electromagnetic surveys used the signals transmitted from Seattle, Washington, and Cutler, Maine, and readings were taken at 100-foot intervals along lines 100 or 200 feet apart. The claims covered by the four survey grids are as follows:

Grid	Claims
A	254 and parts of surrounding claims, especially 255
B	333, 334, 337, 338, 142, 143, 148, 149 and parts of 144, 147, 327, 328, 332, 335 and 336
C	55, 56, 141, 150, 335, 336, 341 and 350
D	381, 383-395, 397-400, 535, 595-597 and parts of 408, 409, 534 and 536

Twenty conductors were obtained in the electromagnetic survey as listed in a table on the following page.

The A grid is located east of the Coppermine River in the southeast corner of the most easterly part of the LASH group. Anomalies 7 and 9 on this group nearly coincide with a mapped fault which strikes northeasterly, and anomaly 6 also appears to represent a fault.

Geological mapping of the grid indicated that massive grey-green and purple basalts are cut by numerous quartz and calcite veins. Some chalcocite occurs in these veins. No electromagnetic anomalies were found in coincidence with this mineralization. A magnetometer survey in the vicinity of the showing indicated a magnetic high over the mineralized outcrop and a number of linear magnetic lows which are inferred to correspond to faults. One of these faults was confirmed by geological mapping and a number of others by interpretation of aerial photographs.

A principal anomalous zone, possibly corresponding to conductors 7 and 9, extends for some 1,800 feet along a northeasterly trending fault. The second principal zone is adjacent to another fault and is located at 0 to 4 E on the grid. A third, less significant, zone lies west of a third fault and immediately east of the base line.

Three holes were drilled on this grid on a chalcocite showing and geophysical anomaly. The holes were recommended on the basis of an induced polarization survey which gave "Metal Factor" values of up to 10 times background. The depth to the causative source was calculated as 75 to 100 feet. These holes encountered only weak mineralization and were drilled as follows:

Hole No.	Latitude	Departure	Azimuth	Inclination	Depth (feet)
1	1 + 60S	2 + 00W	180°	45°	303
2	2 + 00S	4 + 00W	180°	45°	305
3	4 + 50N	1 + 00E	180°	45°	253

Grids B and C lie within a bend in the Coppermine River and just west of the river at approximately 67°31'45"N, 115°36'W. Geological mapping of these grids was done at a scale of 200 feet to the inch. The mapping

Electromagnetic Anomalies

No.	Grid	Character	Length	Peak	Trend	Magnetics	Photogeol.	Geology	Priority
1	B	Vein type	800'+	6°	360°	None	Linear	Sandstone	A
2	B	Fault	200'+	4°	330°	None	Possible linear	Sandstone	C
3	B	Fault	600'+	3°	345°	None	--	Sandstone and diabase	D
4	B	Fault	2000'+	7°	330°	Low	Linears	Quartzite	B
5	B	Weak	1200'+	2°	345°	Low	Linear	Diabase sill	C
6	A	Fault	500'+	14°	060°	Low	Linear	Fault	B
7	A	Fault	300'+	6°	060°	Low	Linear	Fault	B
8	A	Weak	200'+	?	060°	None	None	No obvious correlation	D
9	A	Weak	600'+	?	045°	Low	Linear	Fault	D
10	A	Moderately weak	?	4°	?	Low	None	Fractured basalt	C
11	A	Weak	200'+	2°	060°	--	None	--	D
12	C	Strong	1200'+	20°	360°	Low	Linear	Diabase and quartzite	A
13	C	Weak	400'+	3°	010°	Low	--	Quartzite	D
14	C	Moderate	2400'+	11°	350°	Flank	Scarp	Contact	B
15	C	Weak	600'+	2°	360°	Low	Linear	Diabase	C
16	C	Weak	200'+	?	360°	Low	Linear	Diabase	D
17	C	Weak	600'+	2°	360°	Low	Linear	Quartzite	D
18	D	Strong	5600'+	9°	360°	Contact	Contact	Contact	A
19	D	Strong Negative	5200'+	9°	325°	Linear high	--	Diabase dyke	A
20	D	Weak	2400'+	5°	360°	None	Cover	--	E

on the B grid revealed the presence of a diabase sill overlying quartzite and sandstone. Where they are fractured, both the diabase and the sediments contain minor native copper, chalcocite and malachite. The electromagnetic survey on grid B resulted in five conductors, of which one was rated as priority 'A'. Anomaly 4, rated as priority 'B', follows a magnetic low, and was tested by induced polarization traverses along six lines. However, the induced polarization survey failed to indicate a coincident anomaly. A special induced polarization traverse was run near the Coppermine River to test resistivity lows at the east end of two survey lines. This traverse indicated a near-surface anomaly close to the river which was interpreted as due to red sandstone. It was considered that all other anomalous features were also related to red sandstone.

Diabase, exposed on the central part of grid C, is underlain by quartzite which is, in turn, underlain by red sandstone. The electromagnetic survey detected six conductors of which three, anomalies 12, 15 and 17, apparently represent a single north-south fault. Anomaly 14 appears to lie along the contact between diabase on the east and quartzite to the west. This anomaly is rated at priority 'B' and anomaly 12 at priority 'A'.

Grid D was located near the southwest corner of the LASH group at approximately 67°30'15"N, 115°45'35"W. In addition to claims listed previously the grid apparently covers claims BUD 806, 807, 808 and parts of claims BUD 803, 804, 805 and 809, which do not form part of the property of Hearne Coppermine Explorations. Geological mapping was done at a scale of 200 feet to the inch on claims LASH 389, 391, 392 and 400, and parts of claims LASH 382, 383 and 388. Basalt is exposed on the west half of this grid and sediments on the east half. Chalcocite, malachite and native copper occur along the contact between basalt and sediments, and along fractures adjacent to the contact. Aeromagnetic results appear to indicate that a diabase dyke cuts across the northeast corner of the grid.

Two of the three electromagnetic anomalies recorded on the grid were rated as priority 'A'. One of these, No. 18, occurs along or parallel to the contact between basalts and sediments. The second anomaly, No. 19, coincides with a long linear magnetic high and is interpreted as a diabase dyke.

Geochemical soil sampling was carried out along 7 lines on grid D late in the season. The samples were taken at a depth of a few inches and 200 feet apart and were analyzed for copper. An anomaly was obtained which correlated with geophysical anomalies and observed mineralization. The mean background was determined to be 53 ppm copper and the threshold of anomaly as 130 ppm copper. The peak value obtained was 330 ppm copper. It was concluded that this test survey had shown that soil geochemistry might be useful in prospecting areas covered by overburden.

More detailed studies of the geology within and surrounding the LASH, LIZ and ELGOK claim groups, particularly in the sections exposed by the Coppermine River, were recommended for the 1969 season. It was suggested that the hypothesis that the basalt-sediment contact is a favourable location for ore occurrences should be checked. No drilling was recommended on the B and C grids until these studies were done. Following their completion, a hole might be drilled to test anomaly No. 12. It was concluded that the anomalies on grid D did not warrant further exploration.

Hearne Coppermine Explorations Ltd. (COM 1-140 and JIM 1-200 claims) (86-N-8, 9; about 67°25'N, 116°13'W)

The latitude and longitude given above is for the JIM group of claims. Claims COM 1-95 (86-N-9) form a block centred at about 67°31'30"N, 116°24'30"W, and the southeast corner of this block joins a block formed by claims COM 96-140 (86-N-8). The latter block of claims is centred at about 67°28'45"N, 116°18'30"W and its southeast corner adjoins the northwest corner of the JIM group.

The COM and JIM claims adjoin to the east of the main block of claims held by Coppermine River Ltd. The claims were staked early in 1967 and the company was formed in July to explore these and other claims. A preliminary exploration program consisting of prospecting, geological mapping at a scale of 1,000 feet to the inch, and limited trenching and sampling, was carried out by Watts, Griffis and McOuat Ltd. during the period August 12-September 21, 1967.

From previous regional mapping (Fraser, 1960; Baragar, 1967) it appears that this property should be completely underlain by basalt. However, some brown arkosic sandstone is interbedded with the basalt on the northern part of the JIM group and much more red to brown sandstone appears, on the basis of frost-heaved blocks, to underlie parts of the property, particularly the northern part of the JIM group and the southern part of the COM group. The Teshierpi Fault apparently crosses the northwest corner of the JIM group and a subparallel fault is also present on this group.

In the southwest part of the JIM group the basalt flows strike N20°W to N40°W and dip relatively steeply to the northeast. Farther north the dip flattens to about 6 degrees or less. A minor northwest-striking fault is present on the northwest part of the claim group and another in the southwest corner of the group strikes slightly east of north. The rock is brecciated across a width of 10 to 20 feet along the latter fault. A major northeast-striking fault may cross the entire claim group from the southwest to the northeast corners. Thin plates of native copper occur with calcite in joints in the basalt over a small area in the extreme southwest corner of the claim group. However, no significant mineralization was found on the property during the 1967 season. In 1968 a high priority target, showing JIM-1, was apparently found on the claim group. This was one of 7 high priority targets found by the company during the summer of 1968 but could not be drilled before the season closed.

There are no outcrops on the south part of the COM group, and the north part of the group (claims COM 1-95) was only reconnoitered by helicopter. As noted above, frost-heaved material suggests that sandstone underlies the south part of the group. In this area some basalt is exposed as ridges just east and west of the property. A considerable amount of basalt is exposed near the west boundary and along northerly-trending valleys on the north part of the group. Apparently no copper showings were located on the COM claims, possibly due to inadequate investigation.

Homestake Silver Ltd. (OP 37-64 claims) (86-O-4; about 67°14'30"N, 115°47'W)

This property is about 1/2 mile north of the Coppermine River where it flows east along the north flank of the September Mountains, and lies east

of the south part of the property of Bracemac Mines. A prospecting and geological mapping program was conducted on the property July 8-13, 1968, by L.J. Manning and Associates Ltd. The company also participated in the regional airborne survey flown by Lockwood Survey Corp. The claims are registered in the name of Mr. J.E. Millette and were optioned by Homestake Silver Ltd. from the Coppermine Syndicate (Western Miner, February, 1968, p. 19).

The prospecting and geological mapping was done by traversing east-west lines spaced at 500-foot intervals. About 20 per cent of the property consists of outcrop. Two flows of dark green to black, massive, basalt are exposed along an east-west ridge across the centre of the property. The flows, which contain a few specks of native copper, dip 5-8 degrees north and are separated by an amygdaloidal horizon about 5 to 8 feet thick. The vesicles of the amygdaloidal zone are filled with chlorite, epidote, quartz and carbonate. No zones of significant structural disturbance and no mineralization of economic interest were found.

Further exploration of the property was not recommended at the present time.

James Bay Mining Corp. (ALF claims) (86-O-4, 5; about 67°15'30"N, 115°55'30"W)

This property consists of claims ALF 1-72, 78, 79, 87-96, 103-130, a total of 112 claims. The property is on the south slope of the Coppermine Mountains and extends south nearly to the Coppermine River. An exploration program was carried out on the property in August, 1967, by Quebec Geophysics Ltd. The work consisted of prospecting, trenching, sampling, and the drilling of four shallow holes. A number of northeast-striking faults were located on the property. One of these crosses claims ALF 5, 21, 22 and 32 and has some copper mineralization associated with it on claim ALF 21. Another northeast fault which crosses claims ALF 6 and 21 contains showing B. The valley of Hornby Creek is believed to follow a major northeast-striking fault.

Showing A consists of frost-heaved copper-bearing fragments along a zone on the north part of claim ALF 74 that trends about N80°E and extends onto the southwest part of claim ALF 84. The zone is reported to dip about 80 degrees south. It was traced for a length of 2,300 feet and was investigated by trenching. Two samples across widths of 4 feet and 5 feet in one trench assayed 17.61 per cent Cu and 13.48 per cent Cu, respectively. This is an average grade of 15.32 per cent/9 feet. Holes 1, 2, 3 and 4 were drilled to depths of 30 feet, 42 feet, 15 feet, and 19 feet, respectively, along the trenched section of the mineralized zone. These holes cut a number of narrow high-grade intersections (10.85 per cent Cu/0.75 feet, 3.09 per cent/1.5 feet and 13.34 per cent/0.5 feet in hole 2, and 2.86 per cent across a true width of 2 to 2 1/2 feet in hole 4). The reported grade of 4.95 per cent Cu across a width of 34.5 feet (The Northern Miner, October 12, 1967, p. 9) is highly misleading. The average grade indicated by hole 2 for a true width possibly as great as 15 feet was 1.74 per cent Cu. If this is not considered to be ore, the width of ore-grade material is restricted to 9 feet on the basis of the surface sampling. If a grade of 1.74 per cent Cu is generously considered to be ore, then an average grade of 6.83 per cent Cu can be calculated

for a width of 24 feet. However, hole 4 apparently intersected the mineralized zone beneath one of the surface samples and gave an assay of 2.86 per cent Cu across a true width of about 2 to 2 1/2 feet. This suggests that the surface assay results may need to be drastically discounted in extrapolating to depth.

Showing B consists of chalcocite mineralization that has been traced for a length of 1,600 feet along a northeast-striking fault. The zone is 6 to 8 feet wide at its southwest end. A sample, possibly representative of a 7-foot width, assayed 8.12 per cent Cu.

Showing No. 3 consists of high-grade fragments which were found along Hornby Creek. Showing No. 4 consists of chalcocite float up to 14 inches wide which was found at a locality 500 feet southwest of a zone of frost-heaved mineralized rubble. Showing No. 5 consists of a frost-heaved mineralized zone which was traced for a length of about 300 feet.

Diamond drilling was recommended on the A zone, and an induced polarization survey over the A and other showings. In July and August, 1968, about 2.1 line miles of magnetometer survey, and the same amount of electromagnetic work, was carried out along the known 2,300-foot strike length of the A zone. These surveys, on the same grid, covered parts of claims ALF 73, 74, 83 and 84. Magnetometer readings were taken each 50 feet along north-south lines spaced 200 feet apart. The electromagnetic readings were taken each 100 feet. The surveys indicated magnetic ridges on either side of the shear zone and a number of minor electromagnetic conductors in or adjacent to the shear zone, but not coincident with the mineralized zone. An induced polarization survey was recommended over the grid.

A drill program on the property was delayed due to problems of financing, but 3 holes totalling 470 feet were drilled November 5 to December 6, 1968, on the A zone. These holes were located near the southeast corner of claim ALF 83. All the holes were drilled toward the north from one site. Holes 1, 2 and 3 were drilled at inclinations of 55, 70 and 85 degrees, and to depths of 87, 129 and 254 feet, respectively. The drilling was reported (The Northern Miner, November 14, 1968, p. 13) to have substantiated the preliminary drilling on the zone, i.e., narrow high-grade intersections separated by nearly barren material. Hole 3 failed to intersect the mineralized zone. All intersections better than 0.8 per cent Cu are as follows:

Hole No.	Intersection	Core Length (feet)	Cu (%)
1	28.6'-30.0'	1.4	34.36
	43.2'-44.2'	1.0	19.25
	47.5'-49.0'	1.5	11.60
2	35.0'-36.0'	1.0	5.09
	36.0'-39.5'	3.5	1.44
	44.0'-48.0'	4.0	1.04
	77.0'-83.0'	6.0	3.06
	83.0'-89.0'	6.0	1.51

It was concluded that more drilling must be done to completely test the A zone. At least 4 other zones on the property require investigation and possibly drilling. A program of detailed magnetometer and electromagnetic surveys was recommended.

Janus Explorations Ltd. (CU claims) (86-O-5; about 67°22'N, 115°48'W)

This property consists of claims T 4901-4908 and 5073-5100, a total of 36 claims. The property is west of Coppermine River and immediately west of the property of United Buffadison Mines (now Western-Buff Mines and Oils Ltd.). An exploration program, consisting of prospecting, geological mapping and diamond drilling, was conducted on the property June 25 to October 4, 1968, at a cost of $36,000. Eight holes were drilled totalling 2,005 feet by Watts Exploration Services Ltd. The company also participated in the regional airborne survey that was flown by Lockwood Survey Corp.

The property is underlain by basalt flows and interflow fragmental horizons. These rocks strike somewhat north of east and dip about 10 degrees north. A series of vertical shears with brecciated contacts strike northeast across the property. These shears show evidence of right lateral movement and shears at N60°E, in particular, show evidence of tension.

Essentially all of the fracture zones contain some native copper and chalcocite mineralization. The native copper occurs as plates or nuggets in the wall-rocks and/or in the main fracture zones. Chalcocite in these zones is generally disseminated in the quartz, calcite or jasper gangue which cements the breccias. The best concentrations were found at or near the base of the basalt flows.

A northeast-striking breccia zone on claim T 4901 contains the best mineralization found on the property. Chalcocite forms the cement of a brecciated zone at the contact of a series of quartz-carbonate lenses which also contain patches and fine disseminations of chalcocite. Hole No. 8 was drilled to test the southwest extension of the zone, but intersected no fracturing or mineralization. The mineralized zone extends northeast onto the property of United Buffadison Mines, and on strike to the southwest a large calcite vein can be traced from the east boundary of claim T 5085 across this claim and claim T 5076. This vein may continue onto the property of Quadrate Explorations. Near the east boundary of claim T 5085 this calcite vein, known as the Hearne Vein extension, is very sparsely mineralized with chalcocite. The mineralized zone has been drilled on the property of United Buffadison Mines (Zone D) with discouraging results.

Native silver was found late in the field season across a width of one foot in a small calcite vein and its brecciated wall-rock on claim T 5086. Some native copper and quartz were associated with the mineralization. Hole 7 cut the fracture zone, and an adjacent zone of tension fracturing, but failed to intersect significant mineralization. This vein, rather than that tested by hole 8 on claim T 4901, may be the extension of the vein on claims T 5076 and T 5085. It trends east-northeast across claims T 5086 and T 5087 and should continue onto the property of United Buffadison, although it has not been located there.

The diamond drilling, in which all holes were inclined at 45 degrees, was carried out as on page 85.

The sections of diamond drill core that were assayed generally gave values up to only 0.35 per cent Cu and 0.5 oz/ton Ag, including sections in holes 4, 5 and 7 in which native silver was reported to be present. However, a section of silver-bearing core at a depth of 164 to 165 feet in hole No. 5 assayed 1.40 oz/ton Ag, and four samples from hole No. 4, starting at a depth of 180 feet, assayed 0.56 oz/2 feet, 0.26 oz/2 feet, 0.64 oz/4 feet and 0.62 oz/4 feet. A 3-foot section of core in hole No. 4

Hole No.	Claim	Latitude	Departure	Bearing	Depth (feet)
1	T 5079	1560S	1300W	S50°E	265
2	T 5082	1540S	1090W	S50°E	250
3	T 5075	5450S	1750E	S40°E	297
4	T 5075	5545S	2025E	S40°E	323
5	T 5075	5525S	2300E	S40°E	253
6	T 5075	5400S	2335E	S40°E	206
7	T 5086	5230S	3370E	N30°W	193
8	T 4901	4570S	6400E	S45°E	218

which contained blebs and sheets of native copper assayed 0.65 per cent Cu, and the highest copper assay was 0.90 per cent/2 feet in hole No. 7.

Drillholes 1 and 2 tested a zone of copper mineralization on claims T 5079 and T 5082 toward the southwest corner of the property. The mineralization occurs along a structural break striking N36°E. This is an extension of the No. 6 vein from the property of Quadrate Explorations. A nearly parallel mineralized zone about 1,500 feet to the northwest follows a fracture striking N42°E on claims T 5080 and T 5081 and passes southwest onto the SAM group of Teshierpi Mines. Another prominent fracture further northwest is mineralized over a length of 4,500 feet and also passes southwest onto the Teshierpi property. This zone lies about 800 to 900 feet northwest of that on claims T 5080 and T 5081, and extends across claims T 5094 and T 5096, and onto claim T 4907. The fractures with which these three mineralized zones are associated form very prominent linears on aerial photographs.

It was reported (The Northern Miner, August 1, 1968, p. 20) that two anomalies were detected on the property by the Lockwood survey. Ground geophysical work was apparently done to test these anomalies (The Northern Miner, September 5, 1968, p. 1).

More detailed investigation of the property was recommended at an estimated cost of $20,000. It was recommended that plane-table mapping of the outcrop area be done for detailed structural information. Magnetometer and electromagnetic surveys were recommended to obtain structural information and to indicate the presence of any conductors, especially on the north and northwest parts of the property where overburden is extensive. Re-examination of fracture zones for silver mineralization, and more detailed systematic prospecting, were also recommended.

Komo Explorations Ltd. (MGB claims) (86-N-8; about 67°19'N, 116°18'W)

This 100-claim property consists of claims MGB 101-180 and 233-255. Exploration consisting of detailed prospecting and geological mapping was carried out on the property July 20 to August 20, 1968, by Noranda Exploration Co. Ltd. The company also participated in the regional airborne survey flown by Lockwood Survey Corp.

Outcrop is present on less than 40 per cent of the property. The property is entirely underlain by basalt flows. These are mostly fine-grained massive rocks that contain trace amounts of native copper, but some flow tops were observed in the southwest part of the property and one was traced for a length of 300 feet. The amygdules consist of calcite or quartz and are rimmed with potash feldspar. A number of minor faults striking north to

northeast are readily inferred from surface features in the western and central parts of the property. One of these, which is also evident as a long narrow magnetic low in the results of the airborne magnetometer survey, strikes northeast across the property and includes a minor breccia zone (No. 2 showing) as well as being related to the No. 1 showing.

The No. 1 showing is on claims MGB 234 and 252 in the extreme northeast corner of the property and consists of copper-bearing float or frost-heaved material over an area 400 feet wide by 1,000 feet long. The mineralization consists of quartz-calcite-chalcocite vein material in angular boulders. It was considered that the angular nature of the fragments and their abundance indicated a nearby source.

Showing No. 2 consists of chalcocite, with associated calcite, in angular boulders of quartz breccia found within a basin 400 by 600 feet on claim MGB 234. The zone is exposed at the southeast corner of this showing where a few stringers of quartz breccia up to 6 inches wide are present in an area 4 feet wide by 10 feet long. This showing is about 2,500 feet southwest of the No. 1 zone. The mineralization does not appear to be of economic significance and two traverses across the zone with induced polarization equipment gave inconclusive results.

On parts of claims MGB 139-142 a great number of small samples of native copper were found in frost boils over an area about 1,000 feet by 2,000 feet. However, the float does not appear to be related to the underlying basalt flow which is well exposed in the area.

It was recommended that Noranda Explorations not undertake further exploration on the property in the immediate future.

Lake Beaverhouse Mines Ltd. (MAR 500-562 claims) (86-N-1, 8; about 67°16'N, 116°05'30"W)

This property, just north of the Coppermine River on the south flank of the Coppermine Mountains, joins the west boundary of the property of James Bay Mining Corp. The property was prospected and geologically mapped at a scale of 1,000 feet to the inch in August and September, 1967, by Watts, Griffis and McOuat Ltd.

The property is underlain by basalt flows which are near the axis of a broad shallow syncline (Baragar, 1967). The flows trend north-northwest on the west part of the property and nearly east-west on the east part. Dips are about 6 to 7 degrees north. The massive flows average about 35 to 40 feet thick and the flow tops are about 10 feet thick. The basalts are commonly amygdaloidal and the amygdules consist of chlorite, calcite and epidote with minor secondary orthoclase. North-trending linears are in many cases the result of erosion of diabase dykes, which may be up to 100 feet wide. Fractures and inferred faults strike north, northwest, northeast or east and all are steeply dipping. Faults which strike within 20 degrees of due north, and to a lesser extent those of the northwest set, are in some places occupied by diabase dykes.

Minor disseminated native copper is present in massive basalts, frequently associated with calcite fillings of scattered vesicles. The average grade is estimated to be less than 0.25 per cent Cu in all cases. Secondary copper minerals, malachite and minor azurite, are often observed along joints, fractures and shear planes, and locally in flow tops. Fractures

adjacent to diabase dykes, which are parallel or normal to the contacts, frequently contain calcite, quartz and chalcocite. Four showings were located which were considered to be significant.

Showing No. 1 consists of seams of massive chalcocite along a shear zone on claim MAR 502. The shear zone strikes S85°W, dips 80 degrees south, is greater than 6 feet wide and has been exposed for a length of 20 feet. The zone passes under heavy overburden to the east and beneath a lake to the west; similarly the footwall has not been exposed because of heavy overburden.

Showing No. 2 is located on claim MAR 519 and consists of chalcocite which occurs interstitial to coarsely crystalline calcite and minor quartz, in a series of narrow veins and as patches along their wall-rock contacts. The veins are exposed across a width of 15 feet, with overburden on either side, and strike N50°W and dip 85 degrees northeast. The zone is exposed for a length of 50 feet.

Showing No. 3 consists of angular mineralized float that has been traced for a length of 1,000 feet on claims MAR 533 and 534. Chalcocite and malachite occur as knots, blebs, and drusy coatings in small vugs, in white to flesh-coloured breccia fragments from 2 inches to 4 feet in diameter. The rock consists of variably hematitized feldspar, quartz, calcite and chalcocite, with secondary quartz crystals and hematite staining. The source of the mineralization was believed to be nearby.

Showing No. 4 consists of chalcocite- and bornite-bearing calcite-quartz veins that occur across a width of 6 feet, and an exposed length of 20 feet, on claim MAR 512. Two main veins and several smaller ones are present and contain an estimated 2 per cent Cu. The veins dip vertically and strike N20°E, and similar veins are exposed farther north along strike. The showing is along the west side of a major linear.

Recommendations were for an induced polarization survey over the No. 3 showing, and diamond-drill testing of the other three showings. During the period June 21 to August 26, 1968, further prospecting and geological mapping, and geophysical surveys, were carried out on the property by Watts, Griffis and McOuat Ltd. An induced polarization survey covering about 19.5 line miles was conducted between June 24 and July 25 by McPhar Geophysics Ltd. and a diamond drilling program consisting of 1,092 feet in 10 holes was carried out by Watts Exploration Service Ltd. The company also participated in the regional airborne survey by Lockwood Survey Corp.

Claims FAL 1-4 were staked during the season and these were mapped at a scale of 1,000 feet to the inch and a reconnaissance magnetometer survey was carried out. Minor native copper and chalcocite were found in association with some of the linears on these claims. Linears on the main property, which were interpreted from study of aerial photographs, were prospected and were also investigated by reconnaissance magnetometer and Radem EM 16 electromagnetic surveys. Geological mapping of the main showings was done at a scale of 100 feet to the inch.

Showing No. 5 was located along the common boundary of claims MAR 540 and 541. The showing is along the east side of a deep north-trending valley which forms a prominent linear. The mineralization consists of irregularly distributed chalcocite, bornite, and minor pyrite and chalcopyrite. Detailed magnetometer, Radem EM 16 and induced polarization surveys, and geological mapping, were done over the zone. A definite induced polarization anomaly was located which was fairly strong in places and

coincided, in part, with the prominent linear and, in part, with a pronounced magnetic low. Six holes were drilled along the zone, of which one gave an intersection of 2.31 per cent Cu across a width of 2.1 feet.

Geophysical work was also done on grids covering showings 1, 3 and 4. The grid lines were spaced 200 feet apart in the areas around showings 1 and 3, and also in the case of showing No. 5, but were 400 feet apart in the case of showing 4. The electrode spacing was 100 feet for the induced polarization survey.

Several weak magnetic lows and electromagnetic conductors were located on a grid near showing No. 1. Possible weak induced polarization anomalies were also detected, but none of these had extensive structures associated with them. Two short holes were drilled to test the No. 1 showing, but failed to intersect significant mineralization.

In the vicinity of showing No. 3 a moderate and broad to very definite induced polarization response was obtained for the full length of the grid. The induced polarization anomaly is located about 500 to 700 feet south of the line of mineralized float. One of the strongest anomalies obtained on the property was located on one of the lines on this grid. The zone correlates, in part, with a prominent magnetic low, but there is no associated electromagnetic conductor. One hole was drilled near the I.P. anomaly but may not have been drilled deep enough to indicate its source.

No induced polarization response was obtained near showing No. 4. A definite response was obtained, however, on the most southwesterly line and this may be the northward extension of the anomaly obtained on Grid 5. It was recommended that the grid be extended farther south.

The regional airborne survey resulted in 9 interpreted anomalies on the property. Three are in the vicinity of the No. 2 showing, but none is coincident. Ground geophysical surveys also indicated anomalous areas in the vicinity of the No. 2 showing.

Further work on the property would depend on favourable developments in the general Coppermine area, and was not recommended for the immediate future. The 1968 program resulted in an expenditure of $64,531 (The Northern Miner, October 31, 1968, p. 18).

Lynch Holdings (TRI and STAN claims) (86-N-7, 10; about 67°30'N, 116°55'W)

This property is located just west of a small group of STAN claims held by Northlake Mines and is on the lower contact of the regional belt of basalt lavas. The property consists of claims TRI 1, STAN 25-28, 37-47, 54-66, 73-86 and 93-99. An option was taken on this 50-claim property by Bernack Coppermine Exploration Co. prior to the 1968 season. The property was mapped geologically at a scale of 500 feet to the inch during the period July 28-August 15, 1968.

Outcrop is present on about half of the property but is generally confined to the eastern part. The basalt flows strike northwest-southeast and dip gently northeast. Three north-northwest-striking faults which branch off of the Herb-Dixon Fault, located about 4 miles to the east, can be traced onto the property. These are tension faults with little or no associated movement as the basalt flows show no offset. A second less prominent set of tension fractures strikes north-northeast. Dolomite is exposed in the south

and southwest parts of the property. Diabase is present along one minor tension fault and narrow quartz veins, seldom more than 2 feet wide, occur along tension faults at a number of places, as well as in tight fractures parallel to these structures.

Copper mineralization was noted at three localities on the claim group. Minor chalcocite replaces other minerals in amygdules in basalt along a tension fault which strikes north-northeast. This showing is in the southeast corner of the property and close to the basalt-dolomite contact. Minor chalcopyrite, bornite and chalcocite is present along the eastern wall of a linear which runs north-northwest. The vein is a maximum of 2 feet wide and was traced for a distance of 200 feet. Thirdly, chalcocite and native copper are present in narrow quartz stringers in frost-heaved basalt which occur over two small areas on the eastern part of the claim group. These areas of mineralization are between two of the prominent linear depressions.

Mineralization on the property was not considered to be of economic significance. No further work was recommended until more was known about the geology and mineralization occurring west of the Herb-Dixon Fault. The 1968 mapping program cost $5,000.

MacKenzie Mining Ltd. (TIP 1-100, 104, 105 claims) (86-O-10; about 67°37'30"N, 115°42'30"W)

This 102-claim property is located about 13 miles southeast of the settlement of Coppermine. A preliminary program of prospecting and geological mapping was carried out on the property between August 20 and 25, 1968, by L.J. Manning and Associates Ltd.

The major part of the property is underlain by a diabase sill but some basalt is exposed in the southwest part of the property. The basalt is unconformably overlain by argillite and this is, in turn, overlain by quartzite. The individual basalt flows are generally 40 to 60 feet thick. Amygdules in the basalt contain quartz, carbonate, zeolite, sanidine, epidote, chlorite and, rarely, native copper. The argillite is black, fine grained, and partly fissile and was estimated to be 80 to 100 feet thick. The quartzite is thinly bedded, fine grained, and grey to white and its thickness was estimated at 150 feet. The quartzite contains narrow argillaceous interbeds. The diabase sill which caps the sediments is at least 120 feet thick. All the rock units dip to the north at 3 to 5 degrees.

Three steeply dipping faults were recognized on the property. A north-south fault has had an apparent downward displacement of the east block of 30 feet. An east-west fault at the base of a cliff dips about 85 degrees south. A fault with apparent right-lateral displacement strikes N20°E and is located along a deep stream channel.

Two copper showings were found on the property. Showing A is on claim TIP 104 and consists of chalcocite in flow-top basalt. The chalcocite is disseminated in the flow top, cements breccia fragments, and replaces the host rock. The showing is located along the east side of a fault which strikes N20°E. The best mineralization is restricted to the upper 2 feet of the flow top and occurs over an area 20 feet long by 5 feet wide in an erosional remnant of the flow top. This section is estimated to contain 25 to 30 per cent chalcocite. Sporadic chalcocite as fracture and amygdule fillings, and as disseminated blebs is present for a distance of 200 feet along the flow top south of the main showing.

Showing B is associated with the east-west fault at the base of a cliff. It consists of mineralized quartz and quartzite along a length of approximately 2,000 feet. The quartz vein is 3 to 5 feet wide and is exposed for a distance of about 20 feet at the east end of the showing. Chalcopyrite is present as blebs and fine stringers in the quartz and wall-rock. Here and there chalcocite is present as small specks and pyrite is common. The content of copper minerals was estimated to be less than 1 per cent. Breccia fragments of mudstone, quartzite and basalt occur in the quartz.

Magnetometer and radio-frequency electromagnetic surveys were recommended for the property. In addition, detailed geological mapping and induced polarization surveying were recommended for selected areas. Some preliminary diamond drilling was also recommended.

MacKenzie Mining Ltd. (KIL 1-33, 37-61 claims) (86-O-11; about 67°35'N, 115°15'W)

This 58-claim property is located about 18 miles south of the settlement of Coppermine and consists of a narrow band of claims extending from about 3 miles east to about 12 miles east of Coppermine River. Geological mapping and prospecting was done on the property August 12 to September 1, 1968, under the supervision of G.R. Hilchey of L.J. Manning and Associates Ltd. The claims were recorded in June, 1968.

The property is underlain by basaltic flows and minor interbedded sediments. A diabase sill that strikes north and dips 5 to 7 degrees to the west intrudes these rocks on the eastern part of the property. The basalt flows strike N38°E and dip 7 to 10 degrees to the northwest. The sandstone exposed on the property was found to be more than 15 feet thick. The basalts and interbedded sediments are cut by at least four faults which strike approximately N25°E. Some hydrothermal alteration is associated with these faults.

Relatively minor amounts of chalcocite and bornite occur in altered basalt close to known and suspected faults. Some mineralized float was found on the eastern part of the property. Calcite-quartz veins are fairly common on the property and some barite was observed as float fragments.

Magnetometer and radio-frequency electromagnetic surveys, detailed geological mapping and additional prospecting were recommended on the property.

Magnum Consolidated Mining Co. Ltd. (GORD 1-300 claims) (86-N-12, about 67°40'30"N, 117°45'W)

Work consisting of prospecting, geological mapping and reconnaissance geophysical surveys was carried out on this property during the 1968 season by Watts, Griffis and McOuat Ltd. The company also participated in the regional airborne survey which was flown by Lockwood Survey Corp.

The property is entirely underlain by basalt, although very little outcrop (approximately 5 per cent) is present. The basalt flows dip very shallowly to the north. The tops of flows are very fine grained and invariably purple to reddish brown in colour. Amygdules commonly consist of calcite, quartz, chert, orthoclase, chlorite and epidote. Some diabase dykes cut the basalt flows and a number of north-northwest linears have been developed by

more rapid erosion of these dykes than of the basalt. Minor native copper is disseminated in the lavas, sometimes as rims to calcite amygdules, but no significant copper showings were located.

Some blebs of native copper were noted in very narrow calcite and calcite-quartz veins. On claims GORD 153 and 158, in the north-central part of the property, a small network of calcite veins containing some native copper, chalcocite, bornite and chalcopyrite occurs along a north-south trend. Most of these veinlets are 1/8 inch or less in thickness. However, a specimen of native copper nearly 2 feet long, up to 8 inches wide, 1/2 inch thick, and weighing about 20 pounds was recovered from one of these veins.

Minor native copper was also observed along fractures and shear planes. No mineralized float was located on the property.

In addition to regular prospecting particular attention was devoted to linears interpreted by study of aerial photographs. These linears were also investigated by reconnaissance magnetometer and Radem EM16 electromagnetic surveys. The surveys were generally along lines spaced 1,000 feet apart, but along some major structures the lines were at 500-foot intervals. Magnetometer readings were taken each 50 feet, and electromagnetic readings each 100 feet, along the traverse lines.

The magnetometer survey indicated that many of the linears were faults or shear zones. The best electromagnetic results were obtained over a length of 5,000 feet along one linear, and for a shorter distance along a divergent linear lying just to the west. The magnetic lows along these zones are not pronounced, however, and it was concluded that they are probably narrow and unmineralized shear zones.

Further work was made contingent on the results of the airborne survey. If any airborne electromagnetic anomalies were considered significant, it was recommended, in view of the extensive overburden, that ground geophysical methods be used for further investigation.

Nordic Explorations Ltd. (MAG 1-64 and MAT 37-72 claims)(86-O-6; about 67°28'N, 115°22'30"W)

An exploration program was conducted on this 100-claim property during the 1968 season under the supervision of Anglo-Celtic Exploration Ltd. Four prospectors were employed at various times during the season. Geological mapping at 1,000 feet to the inch, 27 line miles of Ronka EM16 electromagnetic survey, and 9 1/2 line miles of magnetometer survey were done under contract by Canadian Aero Services Ltd. This work was done July 15 to August 27 by a 3-man crew and a supervisor. Five showings were located, of these three were considered to be significant and some trenching was attempted on them by a 2-man crew from September 8 to 15.

Approximately 30 per cent of the property is occupied by outcrop. Basalt in the form of massive and porphyritic flows, with amygdaloidal or fragmental flow tops, underlies most of the property. The basalts dip shallowly in a west to northwest direction. A conformable diabase sill intrudes the basalt flows on the north part of the property and generally dips in a direction slightly north of west. Faults and fractures are steeply dipping and generally strike north-northeast to north-northwest. The larger faults are post-diabase, but the mineralized faults were not traced into the diabase, although they are located close to and strike towards it. Showings 1, 2 and 3

are all on the MAT claims and in the proximity of the diabase sill, which suggests that the sill has had some control over the mineralization.

Showing No. 1 consists of chalcocite stringers and blebs in a basalt breccia zone that is 1 foot to 5 feet wide and has been traced for a length of 30 feet. No quartz or carbonate gangue is present. A number of mineralized samples from the showing were assayed and two of these gave 3.64 per cent Cu and 9.32 per cent Cu. However, the zone could not be traced as float or frost-heaved fragments and electromagnetic and magnetometer surveys failed to give pronounced anomalies. The electromagnetic survey gave an extremely weak response, evident mainly in the quadrature or out-of-phase component, and the magnetometer survey indicated a weak magnetic low extending for 500 feet south-southeast of the showing. A geological map of the No. 1 showing was prepared at a scale of 100 feet to the inch.

The No. 2 showing lies within 100 feet of the diabase sill, is exposed across a width of 4 feet and can be traced intermittently for a length of 30 feet along a strike of N70°W. The zone consists of a basalt breccia with chalcocite in the matrix and as fracture-filling stringers. Chalcocite also occurs as amygdules in flow-top material. There are no coincident magnetic or electromagnetic anomalies.

The No. 3 showing consists, again, of a basalt breccia zone and was located on a basalt ridge. The zone is 150 feet northeast of the diabase sill, strikes N40°E, and is exposed intermittently for a length of 120 feet. Mineralization consisting of veinlets and disseminated blebs of chalcocite was observed for a length of 30 feet and in one place the mineralized breccia is exposed across a width of one foot. The electromagnetic survey indicates a weak conductor lying just west of the showing which has a north-south trend. A magnetic low is coincident with the electromagnetic anomaly.

Trenching and sampling of the three main showings were recommended for early in the 1969 season. An induced polarization survey was recommended over showings No. 1 and No. 3, and if assay results are encouraging, also over the No. 2 showing.

Nordic Explorations Ltd. (ARCH 1-45 and GORD 301-340 claims) (86-N-12, 13; about 67°44'30"N, 117°55'W)

This property, on the north contact of the basalt belt, is about 30 miles west of the Herb-Dixon Fault and lies just west of the largest block of claims held by Hearne Coppermine Explorations Ltd. The property also includes claims ARCH 46-75 but these are located in the north part, are underlain by sediments which overlie the basalt sequence, and are apparently being allowed to lapse. Prospecting and reconnaissance geological mapping were done on the 85 claims listed above July 4-September 8, 1968, by Anglo-Celtic Exploration Ltd.

The property is largely underlain by basalt. The flows dip about 5 degrees north. Some faults and shears were observed, mostly with strikes between N40°W and due north. Some diabase sills also occur on the property, presumably in the sediments overlying the basalt belt. Float mineralized with chalcopyrite or pyrite was encountered in numerous places on the property, especially toward the north and west.

The best showing is near the northeast corner of claim ARCH 28. The showing consists of chalcopyrite, and lesser chalcocite, in pods of quartz

and carbonate along a narrow shear zone that strikes N40°W and dips 85°NE. Other smaller showings of a similar type are found along strike. The zone is not considered to be of economic significance. A good showing was reported to have been located just west of the property on claim ARCH 186. This claim is held by Mr. G. Leliever.

Geological mapping, to be followed by geophysical surveys, was recommended for the property in 1969.

Nordic Explorations Ltd. (HAY 1-36 and VOIR 1-36 claims) (86-O-10; about 67°33'N, 114°54'W)

An incomplete exploration program consisting of detailed prospecting, general geological mapping and geophysical surveying was carried out on the property during parts of August and September, 1968, by Anglo-Celtic Exploration Ltd. of Yellowknife. The property is located toward the east end of the volcanic belt in the Coppermine area and lies immediately southeast of the property held by Amalta Oils and Minerals. Prospecting was carried out on the property August 19 to September 1. Electromagnetic surveys were then carried out which covered the three main showings that had been discovered. A program of geological mapping was commenced but heavy snowfall prevented much work from being done.

The property is about one third outcrop and is entirely underlain by basalts. The basalt strikes N40°E to N80°E and dips 2 to 10 degrees northwest. The three main showings, A, B and C, consist of chalcocite and bornite mineralization. Showing A, on claim VOIR 15, was mapped at 100 feet to the inch by S.R. Mason. This showing consists of chalcocite veinlets in a basalt breccia which strikes about N30°E. The veinlets occur erratically across an exposed width of 10 feet. Two grab samples, considerably above average grade for the 10 foot width, averaged 6 per cent Cu. Another showing on claim VOIR 10 is probably an extension along strike.

Several native copper occurrences were also found on the property. A plate of copper about 2 inches thick and 6 feet deep was located in one fissure.

Electromagnetic readings were taken at 200-foot intervals on lines 400 feet apart. A strong anomaly was obtained in the vicinity of showing A which coincided with the extent of the known mineralization. Conductor B also trends northeasterly in the vicinity of showing B, but there was no response of the quadrature or out-of-phase component. Conductor C, which is extremely weak, is located in a shatter zone, but again there is no response from the quadrature or out-of-phase component.

A magnetometer survey was recommended over the A, B, and C conductors. Geological mapping of the property at 1,000 feet to the inch and a Ronka EM 16 survey of the remainder of the property was also recommended. The 1968 exploration program on the property cost $7,332.

Nordic Explorations Ltd. (MGB 181-185, 190-192 claims) (86-N-8; about 67°21'30"N, 116°21'30"W)

A surface exploration program consisting of prospecting and preliminary geological mapping was conducted on this 8-claim property during

the 1967 season. This program was under the supervision of Mr. Gordon Leliever. The property is located about 6 to 7 miles south-southeast of Hope Lake (approx. 67°26'30"N, 116°27'45"W) and joins the south boundary of the large block of claims held by Coppermine River Ltd. The name of the company was changed to Nordic Mines and Investments Ltd. in December, 1968.

Basalt flows on the property probably strike northwest and dip shallowly to the northeast. Only a few outcrops of massive grey-green basalt are present on the property. A small showing of native copper was discovered on one of these outcrops.

Additional exploration was recommended for the property. The property was again briefly examined, this time by Anglo-Celtic Exploration Ltd., in September, 1968.

From this work it was reported that outcrop occupies less than 10 per cent of the property. The basalt flows strike north-northwest and dip 5-10 degrees east-northeast. Fractures and minor faults were observed with various strikes, although many strike northeast parallel to the Teshierpi Fault. One major fault appears to strike northwest across claims MGB 182 and 183.

Minor native copper is present disseminated in the massive basalt and in amygdules. A showing is present on claim MGB 181 which consists of native copper in fractures, but the copper-bearing fractures are discontinuous and erratic.

In view of the fact that a high proportion of the property is covered by overburden, a program of high-frequency electromagnetic and magnetometer surveys over structurally favourable parts of the property was recommended for 1969.

Northair Mines Ltd. (DOLL 1-108, MC 1-108, and JO 37-44 claims) (86-O-9, 10, about 67°36'N, 114°28'W)

This property is located about 22 miles southeast of the settlement of Coppermine and about 13 miles from the east end of the basalt belt. Prospecting and geological mapping were done on the property August 8 to September 1, 1968, by L.J. Manning and Associates Ltd.

The property was investigated by traversing at 500-foot intervals. Basalt outcrops over most of the property and is unconformably overlain by argillite, which is in turn overlain by quartzite. A number of significant copper showings were found on the property. Chalcocite occurs as replacement, breccia cement and disseminated material in flow-top basalt. Pervasive chalcocite mineralization is present in erosional remnants of flow tops in one small area. The showings occur in or adjacent to faults.

Showing A is situated on both banks of the Asiak River near a waterfall. Calcite and quartz veins, most less than six inches wide, occur along a series of fractures that are spaced 1 to 2 feet apart for a distance of 250 feet along the river bank. Two east-west trending calcite veins are 2 to 4 feet wide. Native copper occurs as narrow leaves and sheets in approximately 80 per cent of the narrow calcite veins, and disseminated and in amygdules in the wall-rock. The veins are steeply dipping and strike in many directions, with an east-west set possibly dominant. Some blebs of chalcocite are present. This showing is located at about 67°36'45"N and

114°32'45"W. On the property lying west of the DOLL group (LEL claims of Murco Copper Mines?) showings consisting of sheets of native copper occur along a creek for a distance of 1,500 feet.

Showing B consists of chalcocite associated with specular hematite in veinlets in frost-heaved material. The frost-heaved fragments are distributed intermittently for approximately 2,000 feet along a north-striking fault which cuts massive basalt. The showing is located at about 67°36'55"N and 114°28'20"W.

Showing C consists of scattered copper occurrences along a linear depression directly below a cliff formed by an overlying diabase sill. The copper mineralization consists of veinlets and disseminated blebs of chalcocite in flow-top and amygdaloidal basalt. Some chalcocite cements and partially replaces fragments in the flow-top material. The showings extend in an arc from 67°37'22"N, 114°29'10"W to 67°37'10"N, 114°28'40"W, and are near overlying thin beds of argillite and quartzite. These sediments are in turn overlain by a resistant diabase sill. The showings are small and occur as erosional remnants or exposures along the side of the cliff.

Showing D consists of chalcopyrite finely disseminated in quartz veinlets and the adjacent quartzite at the base of the cliff. The exposed thickness is up to 3 feet and the mineralization appears to be restricted to the basal part of the quartzite unit. Individual showings do not exceed 20 feet in length, but the width is obscured by the overlying rock. The showing is east of showing C at about 67°37'15"N and 114°28'20"W.

Showing E consists of specks and fine stringers of chalcocite and chalcopyrite in pyrite-bearing quartz veinlets. The quartz veinlets and hematite (as veinlets or pervasive hematitization?) are associated with a layer of hornfels (tuff?) 6 inches thick at the contact of the basalt with overlying argillite. This showing is considered to indicate that the basalt-argillite contact may be a favourable locale for copper deposits. This showing is located at about 67°37'N and 114°26'15"W.

Magnetometer and Ronka EM 16 electromagnetic surveys, and detailed geological mapping were recommended over the known copper showings. It was also recommended that geological mapping at 1,000 feet to the inch be done over unmapped areas of the property.

One diamond-drill hole was also recommended on the basis of the preliminary work. Two holes were drilled between August 29 and September 2, 1968, on claim JO 37. These holes, possibly on showing B, were drilled to cross a northerly-trending minor fault with results as follows:

Hole No.	Azimuth	Inclination	Depth (feet)	Intersection	Cu (%)
N-68-9	280°	45°	130	58'-63'	0.17
				63'-68'	0.05
				68'-72'	0.12
N-68-10	280°	40°	123		

An electromagnetic survey in the vicinity of the drillholes indicated the presence of prominent faults. The drilling was financed by Coronation Gulf Mines and Spectroair Explorations in return for an interest in the property (The Northern Miner, September 5, 1968, p. 1).

Northlake Mines Ltd. (STAN claims) (86-N-7; about 67°28'N, 116°53'W)

This property was staked in July, 1967, and 50 claims were recorded. When the property was mapped in 1968 by Bernack Coppermine Explorations, under an option agreement, it was found that two thirds of the claims overlapped the MAR group to the east which was staked in 1966. Only 12 full claims and 11 fractions, claims STAN 2, 3, 6-11, 14-19, 22-24, 29, 30, 35, 36, 48 and 53, were thus legally held by Northlake Mines. The property lies about 1 1/2 miles west of the major north-south Herb-Dixon Fault and is just north of the contact between basalts and the underlying dolomite (Fraser, 1969).

Prospecting and geological mapping at a scale of 500 feet to the inch was carried out on the property June 6-29, 1968, on behalf of Bernack Coppermine Exploration Co. There is approximately 50 per cent outcrop on the property. Basalt flows have a strike of north-northwest and dip 6 to 10 degrees east-northeast. Three linears, which trend north-northwest across the property, are thought to represent tension-type shatter zones. There are many possible faults with a northwest strike and some with an east-west strike.

Small amounts of chalcopyrite, bornite and chalcocite were found in narrow quartz veins along some of the north-northwest striking linears on the property. These veins are only up to 4 inches wide. No further work was recommended on the property until more is known of the geology and, in particular, the nature of mineral occurrences west of the Herb-Dixon Fault.

Northville Explorations Ltd. (South Group) (86-N-7; about 67°27'N, 116°50'W)

This property consists of claims MAR 101-162, 166-197 and 199-221, a total of 117 claims. The property extends for about 7 miles along the Herb-Dixon Fault. The main property of Coppermine River Ltd. lies east of the south part of the property.

A preliminary exploration program was carried out on this property in 1967 by a crew under the supervision of Mr. G. Leliever. Geological mapping was done at a scale of 1/2 mile to the inch. The apparent lateral displacement on the Herb-Dixon Fault is about 6 to 8 miles. However, the actual movement on the fault is unknown and it seems probable that much of this offset is due to downward movement of the block located between the Herb-Dixon and Teshierpi Faults. Three copper showings, all apparently associated with faults or fractures, were found on the property.

One showing consists of quartz, calcite and chalcocite in a fault breccia zone 12 to 35 feet wide. The zone strikes northeast to north-northeast and can be traced for about 1 1/4 miles. In places veins of massive chalcocite up to 12 inches wide were noted in the zone.

Another showing consists of chalcocite in a quartz matrix to a brecciated basalt along a north-south zone. The zone was traced for a length of 500 feet and contains quartz veins up to 6 inches wide. A third showing is a quartz-chalcocite-bornite vein or fracture filling about 4 inches wide and 7 feet long. This vein or fracture filling has a north-south strike.

A program of geological mapping, geophysical surveys, and sampling of showings was recommended. For the 1968 season an exploration

program for the property was jointly, and equally, financed by P.C.E. Explorations, Newconex Canadian Exploration, Conwest Exploration Co., Pan American Canadian Oil, and Cominco. These companies provided $100,000 for exploration on this and the north group of claims (The Northern Miner, March 14, 1968, p. 3). Geological mapping of the property was done at a scale of 1,000 feet to the inch. The property was also covered by the regional airborne geophysical survey flown by Lockwood Survey Corp.

There is little or no outcrop along the broad valley that marks the Herb-Dixon Fault. Steeply-dipping faults, minor shear zones, and joints, all with northerly strikes, along the sides of the valley are thought to be related to the main fault. From these subsidiary structures it is inferred that the Herb-Dixon Fault dips 75 to 80 degrees east. The structures west of the Herb-Dixon Fault are very tight in comparison with those east of the fault. The basalt flows west of the fault strike S36°E and dip 10 degrees northeast, while those east of the fault strike S26°E and dip 15 degrees east. Near the western boundary of the claim group and west of the Herb-Dixon Fault, dolomite is exposed beneath the basalt flows.

The No. 47 orebody on the main property of Coppermine River Ltd. is associated with the Teshierpi Fault. Similarly, it was thought that the Herb-Dixon Fault or subsidiary structures, particularly those east of the main fault, were favourable sites for copper mineralization.

A radio-frequency electromagnetic survey was carried out jointly by Northville Explorations and Teshierpi Mines which was supposed to cross the Herb-Dixon Fault near the north boundary of the property. However, the Seattle station went off the air for a number of weeks before the survey was completed.

A series of northwesterly to north-northeasterly striking faults have been inferred from the attitudes and distribution of minor shear zones, minor faults and joints. Many strong lineaments visible on the aerial photographs probably represent faults.

Native copper is present in calcite and chlorite amygdules which are scattered here and there in fine-grained massive flows. Flow tops are abundant on the property but flow-top mineralization appears to be absent. Copper-bearing quartz and quartz-carbonate veins form by far the most common types of mineralization. These veins are associated with minor shear zones and commonly contain fragments of brecciated basalt; the copper minerals generally occur in the border zone rather than in the vuggy quartz which comprises the bulk of the typical vein. Three showings were located in 1967 and two others were found in 1968.

Showing No. 1 consists of scattered chalcopyrite and chalcocite in quartz veins and brecciated basalt along a major fault with a north-northeast strike. Two mineralized sections, approximately 5,000 feet apart, are present along the zone. In the southern section mineralization is exposed intermittently for a length of 80 feet and occurs across an average width of 9 feet in a shear zone that is 20 feet wide. One sample across the zone assayed 0.59 per cent Cu across 10 1/2 feet, a sample about 15 feet to the southwest assayed 1.54 per cent Cu across 9 1/2 feet, and a sample about 75 feet farther to the southwest assayed 0.42 per cent across 7 1/2 feet. A central zone, which is richer than average, is 2 1/2 feet to 4 feet wide and 20 feet long. Essentially barren quartz veins can be traced intermittently for 1,300 feet southwest and 1,500 feet northeast of this southern mineralized section, but the zone becomes much narrower. From 1,300 feet to 2,000 feet to the

southwest minor chalcocite is present in quartz veins at three places, but the maximum width of these mineralized zones is 1 1/2 feet.

The northern mineralized section of the zone has a maximum width of 9 feet and is exposed for a length of 25 to 30 feet. The average of a four-part chip sample is 0.21 per cent Cu across 9 feet. The mineralization is erratically distributed in this section of the zone.

The "Rabbit Lake occurrence" was discovered in 1968. This consists of blocks of copper-bearing frost-heaved quartz vein material over an area of 20 by 20 feet adjacent to a quartz vein that is 3 feet wide. The mineralization is very erratic but massive veins of chalcocite are present and some small fragments are estimated to contain at least 30 per cent Cu. Fragments, containing malachite and occasional patches and veinlets of chalcocite, which are apparently frost-heaved can be traced about 300 feet southwesterly parallel to the strike of the quartz vein.

The "Lake 450 occurrence" was also discovered in 1968 and consists of erratically distributed chalcopyrite and chalcocite in quartz-carbonate veins along a shear zone on an escarpment on the east side of a linear depression. The zone has been traced as outcrop and talus for a length of 500 feet northward from "Lake 450". The mineralization occurs across a maximum width of 6 feet and for a length of 200 feet. A four-part chip sample averaged 0.27 per cent Cu across 6 feet.

Preliminary results from the airborne survey indicated three magnetic lows along or near prominent northwesterly-trending lineaments. The magnetic lows are located near the Herb-Dixon Fault and several of the lineaments are inferred to be faults. Copper-bearing veins have been found in minor northwesterly-trending shear zones along the walls of these lineaments at several locations southeast of the magnetic anomalies.

It has been recommended that no further work be done on the known showings. The Herb-Dixon Fault is considered to remain the most important target for future exploration. Ground magnetometer, electromagnetic and induced polarization surveys were recommended over favourable airborne anomalies. It seemed probable that ground geophysical surveys would be carried out in 1969.

Northville Explorations Ltd. (North Group) (86-N-10; about 67°36'N, 116°47'W)

This property consists of claims MAR 326-335, 344-353, 362-429, 475-482, and 484-537, a total of 150 claims. The property lies about 4 miles north of the south group and also covers part of the Herb-Dixon Fault. The same consortium of companies financed the 1968 exploration program on both properties. The geological mapping crew was provided by Cominco Ltd.

Much of the discussion with regard to the Herb-Dixon Fault on the south group applies also to this property. Basalt flows in the Bornite Mountains dip gently east-northeast. Chlorite, red feldspar, calcite, quartz, agate, jasper and epidote, individually or several in association, form the amygdules found in the basalts. Agate amygdules are very common, and red feldspar amygdules relatively rare, in the basalts of the Bornite Mountains. Siltstones, quartzose and calcareous sediments are exposed in two localities in the lowlands in the central part of the property. The sediments are horizontal to gently dipping to the north-northwest. Several northerly- and

northwesterly-trending faults have been inferred to be present on the property. Copper-bearing quartz and quartz-carbonate veins are, as for the South group, the most common types of showings. These veins are generally controlled by faulting and appear to be associated with intersecting structures.

A showing in the northwest part of the claim group consists of blebs and patches of chalcocite in sheared and brecciated basalt along a fault which strikes west-northwest and dips 85 degrees south. The fault cuts three basalt flows which strike north-northwest and dip about 13 degrees east. These basalt flows are exposed in an escarpment 7 feet high. Chalcocite, as well as occurring as patches in the matrix of the brecciated basalt, fills narrow fractures in jasper fragments and also appears to have replaced the jasper in some cases. The copper mineralization appears to be evenly distributed in the upper flow, which is 3 feet thick. The middle flow is 3 feet thick and a 1 foot thickness of the lower flow is exposed; the copper mineralization is erratically distributed in these flows. The mineralized zone is 1 1/2 to 2 1/2 feet wide and is located along the footwall side of the shear zone. A two-part channel sample across the width of the zone, including a quartz-carbonate vein that is 6 inches wide, gave an average grade of 26.9 per cent Cu/2 feet. This sample is from the upper flow and is thought to be representative of a mass of mineralization 25 feet long, 3 feet thick, and 1 1/2 to 2 1/2 feet wide. The mineralized zone has been traced, partly in talus, for a distance of 200 feet to the west-northwest. The fault and quartz-carbonate vein can also be traced east-southeast for 500 feet, and the fault for a further 500 feet.

Trenching of the main showing and along the mineralized zone was recommended. The valley occupied by the Herb-Dixon Fault, and possibly subsidiary structures, was considered of particular interest. Also, ground magnetometer, electromagnetic and induced polarization surveys were recommended over favourable airborne anomalies. It seemed probable that ground geophysical surveys would be carried out in 1969.

Northwest Territories Coppermines Ltd. (MGB, TOIVO and WEDGE claims) (86-N-8; about 67°21'N, 116°17'30"W)

This property consists of claims MGB 186-189, 193-232, TOIVO 1-8 and WEDGE 1-25, a total of 77 claims, and is located at the southeast corner of the main block of claims held by Coppermine River Ltd. The TOIVO claims were staked and prospected by Mr. Fred Koosel in 1967. These claims lie immediately west of the PUMA group of claims which were held by Consolidated Proprietary Mines Holdings in 1967 and later transferred to Coppermine River Ltd. The TOIVO group is entirely underlain by basalt flows and disseminated native copper was noted in flows on most of the claims. High-grade chalcocite lenses are present in quartz veins in boulders, apparently frost-heaved, along a northwest-southeast zone, possibly a fault, on claim TOIVO 7. The zone extends northwest onto claim TOIVO 8 and southeast onto claim MGB 252 on the property of Komo Explorations Ltd. Magnetometer, Ronka EM 16 electromagnetic, and induced polarization surveys were carried out on the property April 22 to July 22, 1968. The magnetometer and electromagnetic surveys covered the entire property on a grid totalling about 110 line miles. The Ronka EM 16 survey employed the signal from the station at Seattle, Washington, at a frequency of 18,600 cycles per

second. Profiles of the magnetometer traverses clearly indicated the shear and fault zones, and diabase dykes were represented as magnetic highs.

A Huntec induced polarization unit, operated at 2.5 kilowatts, was used in gradient and three-electrode arrays to check the electromagnetic conductors and magnetic lows. The induced polarization surveying covered all or part of claims MGB 187, TOIVO 7, 8, and WEDGE 12, 13, 15 and 16.

The company apparently started a drill program on the property early in August (The Northern Miner, August 1, 1968, p. 8). The results of the drilling are not known but were apparently disappointing (The Northern Miner, November 7, 1968, p. 2).

Pascar Oils Ltd. (EMILE 1-18 claims) (86-N-7, 8; about 67°21'N, 116°31'15"W)

This property lies immediately south of the main block of claims held by Coppermine River Ltd. and preliminary surface examination of the property by Mr. David Ross in the spring of 1967 indicated that the Teshierpi Fault probably crosses the northwest corner of the property. The property was examined in May and June while there was still considerable snow cover. In January, 1969, the name of the company was changed to Pascar Development Corp.

From the preliminary investigation it appears that a broad flow-top zone extends northwest across the central part of the property and dips gently to the northeast. Outcrop is best near the eastern end of the property and at its western boundary. Two minor mineral occurrences were noted. Narrow chalcocite veinlets are present in small float fragments of flow-top material at the southwest corner of claim EMILE 10. Native copper was noted in a small fracture in an outcrop of basalt on claim EMILE 16.

No further work was done on the property during the 1967 season. Prior to the 1968 season Bernack Coppermine Exploration entered into an option agreement whereby it was to carry out an exploration program on the property. An induced polarization survey was conducted on the property June 18-30 by Huntec Ltd. Mackenzie Management and Engineering Ltd. did prospecting and geological mapping on the property between June 8 and August 2, 1968, for Bernack Coppermine Exploration.

The geological mapping was at a scale of 400 feet to the inch. The property is entirely underlain by basalt which outcrops over about 40 per cent of the property. The basalt flows strike north-northwest and dip gently to the east. A wide northwesterly-trending depression close to the west boundary of the property probably represents a fault. This fault appears to be related to the Teshierpi Fault that lies a short distance to the west.

No significant copper showings were located on the property. Trace amounts of chalcopyrite and chalcocite were found disseminated in basalt at about 9 localities on the western half of the claim group.

A picketed grid was established over the western two thirds of the property for an induced polarization survey. Claims EMILE 3-5, 7-9, 16-18, and parts of claims 2, 6, 10 and 15, were covered by approximately 12.7 line miles of reconnaissance survey employing the gradient electrode array. The survey was done along northwest-striking lines spaced at 400-foot intervals and readings were taken each 100 feet. The background chargeability was found to be 10-15 milliseconds and readings below 20 ms. were not considered anomalous.

A strong north-south "Metal Factor" anomaly was located in the southeast corner of claim EMILE 8, but it gave no definite chargeability response. A "Metal Factor" anomaly near the west boundary of claim EMILE 2 gave a corresponding chargeability response on only one line. This anomaly did not appear in subsequent testing and was rejected.

A "Metal Factor" anomaly near the north boundary of claim EMILE 18 has a possibly coincident 20 ms. chargeability anomaly which stands out well above the low background in the area. Two anomalies on claim EMILE 6 are similar but may be too small to be significant unless they extend farther north, in which direction they are both open. There are a number of occurrences of copper mineralization near the peaks of these anomalies. Magnetometer and Ronka EM 16 electromagnetic surveys, to possibly be followed by drilling, were recommended for these anomalies.

The most prominent anomaly is located on claim EMILE 5 and gave a chargeability response of about 9 ms. above a relatively high local background of 20 ms. Detailed surveying using the 3-electrode array confirmed the presence of a narrow, shallow, chargeability zone. Magnetometer and Ronka EM 16 electromagnetic surveys were also recommended over this anomaly.

Mapping at a scale of 200 feet to the inch, and Ronka EM 16 electromagnetic and magnetometer surveys, were carried out over the induced polarization anomalies. The results of this geophysical work are not known to the author, but no further work has been recommended on the property at the present time.

In January, 1969, the property was optioned to Ranworth Exploration Ltd. This company can earn a 50 per cent interest in the property through expenditure of $10,000 on exploration.

PCE Explorations Ltd. (ROB 1-10 claims) (86-N-8; about 67°20'N, 116°00'30"W)

This group of claims, one of those to be recorded by PCE Explorations following the 1966 season of reconnaissance investigations in the Coppermine area, was staked in mid-October, 1966. The group adjoins just northeast of a group of claims that have been held by Pickle Crow Gold Mines for over 10 years. The Pickle Crow claims cover the Dick vein in which drilling has reportedly indicated 66,000 tons grading 8.78 per cent Cu.

Geological mapping of the property at a scale of 1/2 mile to the inch was done September 1-5, 1967. The property is underlain by basalt flows, massive grey-green to purple melaphyres, which strike east-west and dip north at up to 11 degrees. An amygdaloidal flow top is exposed at one place on the central part of the property. Two copper showings consisting of chalcocite and bornite, which occur as cement in brecciated and sheared zones, are present on the property. Chalcocite and bornite also occur along the zones as small veins and as blebs in quartz-carbonate veins. The North Vein is located on claim ROB 1 along the southeast side of a fault with a strike of about N55°E. The vein probably extends southwest onto claims held by September Mountain Copper Mines. The South Vein is located near the northwest corner of claim ROB 9 and may possibly be related to a fracture or fault striking about N35°-45°E. No samples were taken for assay.

Detailed sampling of the showings, and magnetometer and electromagnetic surveys in their vicinity, were recommended.

Pinex Mines Ltd. (GORD 301-414 claims) (86-N-1, 86-O-4; about 67°11'30"N, 116°00'W)

This 114-claim property is located in the September Mountains on and near the south contact of the basalt sequence. During 1968 the property was optioned to Noranda Exploration Co. Ltd., which company completed a program of prospecting and geological mapping on the property June 24 to July 31, 1968. The property was included in the regional airborne magnetometer and electromagnetic survey flown by Lockwood Survey Corp.

Approximately 15 per cent of the property is occupied by outcrop. For the most part the property is underlain by basalts. Limestone (dolomite?) which underlies the basalt sequence is exposed in the very southwest corner of the property. One outcrop of gabbro and a few of volcanic breccia are present in the area. The volcanic breccia is mineralized and is located on claims GORD 343 and 344. The gabbro or diabase is located just south of the property and is a small plug or dyke which intrudes through the limestone (dolomite?) and into the basalt.

Work on the property failed to reveal anything of economic interest. A few blebs of native copper were rarely seen in flow-top material. The airborne electromagnetic survey indicated a few weak anomalies, but results of the magnetometer survey were not available when the report on the property was prepared.

Pinex Mines Ltd. (COP 1-92 claims) (86-N-7, 10; about 67°29'30"N, 116°47'W)

This property lies along the west boundary of the main block of claims held by Coppermine River Ltd. and part of its west boundary lies approximately along the Herb-Dixon Fault. Prospecting and geological mapping was done on the property during the 1968 season by Noranda Exploration Co. Ltd. The property was included in the regional airborne survey flown by Lockwood Survey Corp. Geological mapping was done at a scale of 1,000 feet to the inch.

There is moderate rock exposure on the east and south parts of the property, but elsewhere the exposure is poor. Approximately 20 per cent of the property is occupied by outcrop. The property is predominantly underlain by basalt flows which dip 5-10 degrees northeast. The flow tops are poorly exposed. Quartz sandstone and quartzite are exposed on one part of the property. A minor fault strikes N30°W across the north part of the property. Minor chalcopyrite and bornite are present in small quartz veins along the north side of the gorge which represents the fault.

Chalcopyrite, occasionally with associated chalcocite and bornite, is present in quartz veins where it is apparently confined to the vein margins. Steeply dipping quartz veins, which are up to 6 feet wide and generally strike north to northwest, are present around the area of quartzite on claims COP 10, 11 and 14. A quartz vein up to 5 feet wide is present along a gorge which marks a fault on claims COP 3, 6 and 9. The vein has been traced for several hundred feet, but contains only minor chalcopyrite.

No mineralization of economic significance was located on the property. Consequently, no ground geophysical surveys were carried out. The airborne survey indicated a series of weak electromagnetic anomalies along a north-south trend. These were considered to be most probably due to clay overburden. The airborne magnetometer survey over the south part of the property indicated scattered magnetic highs and lows.

Pinex Mines Ltd. (ROB, SOP and MGB claims) (86-N-8; 67°21'N, 116°25'30"W)

This property consists of claims ROB 8-13, 15-24, 27-30, 33-42, SOP 1-12, 15-17 and MGB 311-314, a total of 49 claims, and lies immediately south of the east part of the main block of claims held by Coppermine River Ltd. The property was under option by Noranda Exploration Co. Ltd. during 1968. The latter company carried out a program consisting of prospecting, geological mapping at a scale of 1,000 feet to the inch, and some detailed induced polarization surveying. The induced polarization survey was run by McPhar Geophysics. In addition, the property was included in the joint airborne survey flown by Lockwood Survey Corp.

Basalt flows are exposed on 20 to 30 per cent of the property, mostly on the eastern part, and dip northeasterly at about 10 degrees. Many amygdules in the basalt consist of calcite which may be accompanied by native copper. The flow tops have been badly eroded and none was found in place. Two areas of interesting mineralization were located on the property.

At one place, chalcocite-bearing quartz-calcite-vein material was found as angular float over an area about 1,000 feet long by 200 feet wide. The source of the float was considered to be nearby and it may be frost-heaved and essentially in place.

A second area of mineralization is located about 2,200 feet to the northwest and consists of disseminated chalcocite in a red, fine-grained, lightly sheared flow horizon. The mineralization is in place and also in float scattered over an area about 700 by 200 feet. Two induced polarization lines across this showing failed to detect an anomaly.

The airborne electromagnetic survey indicated a weak anomaly just west of the property. The magnetometer survey indicated a series of minor magnetic highs and lows. Some of the magnetic lows are probably related to minor structural breaks.

It was considered unlikely that the two mineralized areas were of economic significance, and no further work was recommended on the property.

Pinex Mines Ltd. (HM 1-8 claims) (86-O-5; about 67°26'N, 115°33'30"W)

This property lies east of the Coppermine River and adjoins one of the main blocks of claims held by Teshierpi Mines. An exploration program consisting of prospecting and geological mapping at a scale of 1,000 feet to the inch was carried out between August 20 and 24, 1968, by Noranda Exploration Co. Ltd. under an option agreement. The property was also covered by the joint airborne survey flown by Lockwood Survey Corp.

The property appears to be entirely underlain by basalts, which are exposed on about 20 to 30 per cent of the property. A lake that goes by

the local name of "Tundra Lake", at approximately 67°25'45"N and 115°32'45"W, lies along a regional northeast-striking fault. The airborne survey indicates a magnetic low running about north-south along the east side of "Tundra Lake" and a magnetic high, with a coincident electromagnetic anomaly, along the west side of the lake. However, Teshierpi Mines conducted magnetic and induced polarization surveys along the major fault to the north without success. Likewise, Coronation Gulf Mines worked on the fault south of the Pinex property.

No significant surface mineralization was located on the property. Ground geophysical work was not done on the property, and no further work was recommended.

Polaris Mines Ltd. (FYM 1-108 claims) (86-M-9; about 67°42'N, 118°28'W)

This property is about 44 miles west of the Herb-Dixon Fault and lies near the centre of the basalt sequence, which is exposed over a relatively narrow width, generally about 10 miles, in most of that part of the volcanic belt that lies west of the Herb-Dixon Fault. The claims were staked in March, 1968, and acquired by the company at a cost of $32,400 (The Northern Miner, May 30, 1968, p. 12). An exploration program was conducted on the property July 19 to August 2, 1968, by Precambrian Mining Services Ltd. Prospecting and geological mapping were done.

The property is underlain by basalts but outcrop occupies less than 15 per cent of its area. A north-striking linear crosses the centre of the property and was prospected in detail, but no exposure was located. No significant copper showings were located on the property.

A reconnaissance magnetometer survey was recommended near the main linear. Detailed magnetometer and Ronka EM 16 electromagnetic surveys were recommended to follow the reconnaissance magnetometer survey. Any favourable anomalies from these surveys would be targets for induced polarization surveys. Further exploration on the property was deferred pending results by other companies in the area (The Northern Miner, December 26, 1968, p. 2).

Provident Resources Management Ltd. (66 2/3%) and Rolling Hills Copper Mines Ltd. (33 1/3%) (WIN 1-108 claims) (86-O-10; about 67°38'30"N, 114°50'W)

This property is on the north contact of the basalt belt at a point about 16 miles east of Coppermine River and 23 miles from the east end of the belt. The 108-claim property of Artex Mines (B.C. charter) lies immediately to the south. An exploration program consisting of prospecting, geological mapping and a geochemical survey was carried out July 15 to August 9, 1968, by Advance Geology and Geophysics Ltd.

Outcrop covers approximately 25 per cent of the property. A diabase sill 20 to 60 feet thick is exposed on the north part of the property. This sill is underlain by a light grey to buff sandstone unit with an exposed thickness of 30 to 60 feet. There are no outcrops in the central part of the property and the contact between the sandstone and underlying basalt is not

exposed. Basalt is exposed in the south-central and southwest parts of the group. The basalt is generally fine grained and contains calcite and quartz amygdules. North- and east-striking faults are inferred to be present in the north and northwest parts of the property, but no copper mineralization was noted along the faults. The prospecting and geochemical sampling was done along east-west lines spaced 400 feet apart. Four main copper showings were located and, in addition native copper was found in float in the central part of the property on claims WIN 72 and WIN 82, and at two places on claim WIN 71.

Showing No. 1 is located on claim WIN 54 and consists of chalcocite, chalcopyrite and malachite in well-mineralized sandstone float which is present over an area of 75 by 200 feet on a talus slope. No geochemical anomaly is associated with the showing.

Showing No. 2 consists of chalcocite in two quartz-veins which are about 12 inches wide and 10 feet apart and which strike northeast in lightly sheared basalt. Some chalcocite is also present in the host rock along the veins. The showing is on claim WIN 90 and was investigated by a trench 4 feet wide and 18 feet long. Samples from the trench assayed 3.06, 10.2, 8.85, 24.7 and 0.84 per cent Cu, with the higher assays being for vein material. The showing lies within geochemical anomaly D which is 1,000 feet long and about 10 times background (general background in the area is 10 to 25 ppm copper, and averages about 20 ppm).

Showing No. 3 is 800 feet west-southwest of No. 2 and is on claim WIN 102. The showing occurs in basalt over an area of about 10 by 25 feet, and consists of veinlets of chalcocite, and specks and plates of native copper. The disseminated native copper is in amygdaloidal basalt. The zone of mineralization may be much more extensive, but any extensions are covered by overburden. A grab sample from the showing assayed 10.8 per cent Cu. The showing lies within geochemical anomaly C which is 800 feet long and averages about 5 times background.

Showing No. 4 is located on claim WIN 76 and consists essentially of plates of native copper in basalt over an exposed area about 20 feet in diameter. Any extensions of the mineralization are obscured by light overburden. The showing is located within geochemical anomaly A which is 1,800 feet long and has a peak of greater than 5 times background.

The geochemical survey consisted of soil sampling, with colorimetric analyses for copper being performed in Toronto at the Jens Mogensen Laboratory. All the anomalies were found to trend north-northeast parallel to the major regional fractures. The anomalies that were obtained in the reconnaissance survey were further defined by sampling along intermediate lines 200 feet apart and along lines at the extremities of the zones. Anomaly B is located on claims WIN 99 and 100 and is 1,400 feet long and greater than 6 times background. Anomaly E is of similar strength, is open to the south and at least 2,000 feet long and is located on claims WIN 89, 103 and 104.

Showing No. 2 is considered to be the most impressive of those located on the property. The No. 1 showing is of interest due to the even distribution of copper in the sandstone, but the mineralization is not in place and does not have an associated geochemical anomaly. Showings 3 and 4 have possibilities for extension due to the associated geochemical anomalies.

An induced polarization survey was recommended to test the copper occurrences and geochemical anomalies, particularly where the two are coincident.

Provident Resources Management Ltd. (66 2/3%) and Rolling Hills Copper Mines Ltd. (33 1/3%) (AL 37-108 claims) (86-O-10; about 67°35'30"N, 114°44'W)

This 72-claim property is located near the north contact of the basalt belt and a short distance southeast of the WIN group which is held by the same owners. Prospecting, geological mapping and a geochemical survey were done on the property July 15 to August 9, 1968, by Advance Geology and Geophysics Ltd. The investigation was carried out by traversing east-west lines spaced 400 feet apart. Geochemical samples were taken, in so far as possible, each 400 feet along the traverse lines. The samples were taken from the B horizon at an average depth of about 4 inches. These samples were colorimetrically analyzed for their copper content at the Jens Mogensen Laboratory in Toronto.

The AL group of claims is entirely underlain by basalts. Outcrop occupies about 15 per cent of the property. No faults were recognized. Sixteen copper occurrences were located during investigation of the property.

Showing No. 5 consists of massive seams of chalcocite, and secondary copper minerals, in angular boulders up to 3 feet in diameter. These boulders can be traced east-west for 150 feet on claim AL 45. The train of mineralized boulders is on a basalt outcrop which generally has a thin overburden cover. A grab sample from the mineralized float assayed 48.5 per cent Cu. Showing No. 5 B is located on claim AL 44, 200 feet west-northwest of showing No. 5, and consists of plates of native copper in lightly sheared basalt. The mineralization is exposed in a series of old trenches dug by Eskimos in an area 50 feet across. Geochemical anomaly C, which is about 500 feet long and averages 5 times background, includes the two showings.

Showing No. 6 is located on claim AL 43 and consists of native copper disseminated in fragments of basalt in 'frost boils' over an area 75 by 100 feet. The mineralized fragments constitute up to 15 per cent of the total fragments in these frost boils and a grab sample of the material assayed 41.9 per cent Cu.

Showing No. 7 consists of chalcocite and native copper in a strong shear zone a few inches wide. The shear is on the edge of a basalt outcrop on claim AL 41 and may be related to a larger zone of mineralization which is suggested by geochemical anomaly A.

Chalcocite associated with quartz in a 1 1/2-foot wide shear zone forms Showing No. 8. This showing is exposed for a length of only 8 feet on claim AL 85 and is located just east of a grassy swamp which is 100 feet across and may conceal an area of mineralized fractures. The showing is included within geochemical anomaly E which is 2,600 feet long, is about 6 times background, i.e. has a peak of greater than 90 ppm Cu, and is located on claims AL 84, 85, 91 and 92.

Showing No. 11 occurs on claim AL 92 and is also located within geochemical anomaly E. The showing consists of chalcocite in minor fractures in basalt and some chalcocite-bearing float. Showing No. 12 is on claim AL 96 and consists of a narrow calcite vein that is 20 feet long and well-mineralized with native copper. Showing No. 13 consists of plates of native copper in basalt in an area 70 feet in diameter. The showing is on claim AL 79. The extent of the mineralization is obscured by light overburden, but there is no associated geochemical anomaly. Showing No. 14 is located on claim AL 104 and consists of chalcocite mineralization in float material that is considered to have been transported from some distance away.

Other showings on the property include the following:

Showing No.	Claim	Comments
9	AL 41	Minor occurrence of disseminated native copper
10	AL 42	Blebs of chalcocite in a minor calcite vein
15	AL 91	Minor disseminated native copper in 'frost boils'
16	AL 91	Minor disseminated native copper in 'frost boils'
17	AL 44	Minor disseminated native copper
18	AL 56?	Minor disseminated native copper
19	?	Good chalcocite mineralization in 'frost boils'

The geochemical survey outlined 5 anomalies on the property. Anomaly A is 1,000 feet long, about 5 times background (which was found to be 10-25 ppm Cu, and to average about 20 ppm), and is on claim AL 40. Anomaly B is located on claims AL 44, 53 and 54, is 1,800 feet long, and has a peak of 200 ppm Cu or about 8 times background. Anomaly D is likewise about 8 times background with a peak of 250 ppm Cu. This anomaly is 2,600 feet long and is located on claims AL 64, 73 and 74. The anomalies were defined by sampling intermediate lines 200 feet apart, following their detection by the reconnaissance survey. The anomalies appear to radiate from a point in the west-central part of the property which was interpreted as indicating little correlation with major fault structures.

The No. 5 showing was considered to be of greatest interest. Geochemical anomaly C suggests that the mineralization could be extensive. Showing No. 6 shows good mineralization but lacks an associated geochemical anomaly. Showing No. 7 is located adjacent to geochemical anomaly A and was considered of possible significance. Showings 8 and 11 were considered to have some potential by virtue of being enveloped in geochemical anomaly E.

Quadrate Explorations Ltd. (CU, HOK, TAR, TUFF and ST claims) (86-O-5, about 67°20'N, 115°46'30"W)

This property consists of claims HOK 1-15, TUFF 1-10, ST 1-14, TAR 1-4, 6-11 and 72 CU claims (Grant Nos. T 5001 to T 5072), a total of 121 claims.

The ST and TUFF claims were staked in 1967 and the HOK claims were purchased the same year. Prospecting, preliminary geological mapping and limited diamond drilling was done on the property in 1967. The program was supervised by Mr. S. Tough. The exploration camp was visited by the author on August 13. The property is in the Burnt Creek section of the Coppermine Mountains and extends east to the Coppermine River. Outcrop on the property is good, especially south of Burnt Creek.

The basalt flows strike N65°W and dip gently to the north. Minor native copper is disseminated in the flows. Flow tops are invariably red due to intense hematitization. The most prominent structures on the property are a set of northeast-striking tension faults. These faults generally show little displacement, although some extend for tens of miles. Many of these northeast tension faults are copper-bearing, at least in part, and were carefully investigated for this reason. The Hearne, Sandberg and Franklin veins, known from exploration in the area in 1930 and subsequent years, were relocated and several new veins were found. These zones were found to be breccia or shatter zones along the tension faults. Quartz and carbonate, commonly containing chalcocite, cement the lava fragments and sometimes form large veins along the zones.

The No. 3 vein is exposed in the northwest corner of claim T 5028 and again farther east-northeast in the southeast corner of claim T 5025. The vein was traced for 1,400 feet. High-grade lenses of chalcocite are present along the vein. Sampling of the best exposure of the vein resulted in a grade of 12.45 per cent Cu across 3 1/2 feet. The vein, and the Franklin No. 1 and No. 2 veins a short distance northwest, no doubt extend southwest onto the VERA group which is held by Consolidated Proprietary Mines Holdings Ltd.

Franklin No. 2 vein is about 600 feet northwest of the No. 3 vein and is exposed near the west boundary of claim T 5025. This shatter zone is about 20 feet wide and can be traced southwest for about 8,000 feet on the ground and as a linear on aerial photographs. Chalcocite is abundant across a width of 7 feet in the shatter zone and a channel sample across 6 feet of this zone assayed 17.0 per cent Cu. Another channel sample across the centre of the vein assayed 23.96 per cent Cu across 4 feet (The Northern Miner, August 31, 1967, p. 2). A channel sample taken in 1930 across the zone at a point 5,000 feet to the southwest, presumably on the property held for more than 10 years by Pickle Crow Gold Mines (claims 350, 360, 361 and 370 with Grant Nos. 99850, 99860, 99861 and 99870), assayed 18.0 per cent Cu across 7 feet.

The Franklin No. 1 vein, considered to be a branch from the zone occupied by the No. 2 vein, is exposed on the west boundary of claim T 5025 about 250 feet northwest of the Franklin No. 2 vein. A sample from the vein assayed 13.77 per cent Cu across 8 feet. A sample taken in 1930, apparently from the same outcrop, assayed 16.32 per cent across 2.8 feet.

Six diamond-drill holes totalling 717 feet were put down along the Franklin No. 2 vein in 1967. Hole No. 1 was drilled to a depth of 295 feet in the footwall of the zone and failed to make an intersection. Holes 5 and 6 were drilled from the same station and intersected chalcocite-bearing zones of brecciated basalt with assay results as follows:

Hole No.	Depth (feet)	Inclination	Intersection	Core Length (feet)	Cu (%)
5	60	45°	28'-32'	4	2.76
			32'-36'	4	10.80
			36'-40'	4	1.06
6	78	60°	31'-34'	3	1.37
			34'-38'	4	4.26
			38'-40'	2	2.09

Holes 2, 3 and 4 were located 900, 860 and 690 feet northeast of hole 6, respectively, and tested an extension of the Franklin No. 2 or Franklin No. 1 vein, probably the former, in the vicinity of the boundary between claims T 5025 and T 5024. Hole 2 was abandoned at a depth of 110 feet and failed to intersect significant mineralization, hole 3 was inclined at 45 degrees and gave a core intersection of 11.3 feet in the shatter zone which assayed 4.72 per cent Cu across 1.3 feet at the beginning of the section, and hole 4 at the same inclination gave an assay of 1.46 per cent Cu across 4.9 feet in a basalt breccia section cemented with chalcocite and quartz.

The Sandberg vein is north of Burnt Creek and roughly 1 1/4 miles northwest of the Franklin zone. The vein is exposed in the northeast corner of claim T 5012 and northwest corner of claim T 5013. It crosses claim T 5032 and, after an interval of 1,500 feet, is again exposed in the southeast corner of claim T 5042, for a total length of about 3,200 feet. A similar zone was found in 1967 on the property of United Buffadison Mines about 7,000 feet northeast along strike. The Sandberg vein is actually a shatter zone about 50 feet wide. The zone is not exposed well enough for proper sampling, but a combined sample of small frost-heaved pieces from the vein assayed 8.30 per cent Cu.

The No. 5 vein, also poorly exposed, was discovered in 1967 about 850 feet northwest of the Sandberg vein. This vein is similar to the others in that it is a chalcocite-bearing northeast-trending breccia zone. The zone is exposed on claims T 5033, T 5032 and T 5041.

The Hearne vein is exposed on a property of Pickle Crow Gold Mines (claims 140, 141, 200, and 201, with grant numbers 99640, 99641, 99700 and 99701) which adjoins the west boundary of the Quadrate property. A sample taken from the Hearne vein in 1930 assayed 18.16 per cent Cu across 6 1/4 feet. The shatter zone is about 25 feet wide and was drilled by Pickle Crow Gold Mines in 1957. This zone presumably extends for 2 miles northeast across the Quadrate property. No exposures of the zone were located on the Quadrate property, although a possible extension was found just north of the property a short distance from the north boundary of claim T 5071. The Hearne shatter zone is about 1/2 to 3/4 mile northwest of the No. 5 vein.

The No. 6 vein was discovered in 1967 in the northwest corner of the property. The vein is another zone of chalcocite-bearing breccia and is exposed in the northeast corner of claim T 5067 and again just north of the property boundary. This zone lies nearly 3/4 mile northwest of the probable extension of the Hearne vein.

The intersections obtained in holes 5 and 6 were considered to be ore grade. In view of the expense and time required to systematically drill the known shatter zones, it was recommended that they be investigated by magnetometer and induced polarization surveys. It was also recommended that the property be further investigated for shatter zones.

Further preliminary prospecting, geological mapping, and Ronka EM 16 electromagnetic and induced polarization surveys were carried out on the property, primarily on the HOK, TUFF and ST claims, in 1968. This work was done between June 15 and September 10. It was estimated that the program planned for the 1968 season would cost $150,000 (The Northern Miner, February 15, 1968, p. 3). This program was assisted by the Federal Government under the Northern Mineral Exploration Assistance Program. Supplies were moved to Willow Lake (about 67°22'15"N, 116°00'30"W) in

April in a joint airlift with Coronation Gulf Mines, Bernack Coppermine Exploration and other companies. The electromagnetic survey covered about 53 line miles and was conducted by Anglo-Celtic Exploration Ltd. and the induced polarization survey covered about 11.3 line miles and was conducted by Canadian Aero Mineral Surveys Ltd. A drilling program was also carried out under contract by Watts Exploration Services Ltd., and the property was also covered by the regional airborne survey flown by Lockwood Survey Corp.

The HOK, TUFF and ST claims are underlain by basalt. Outcrop is good on the south part of the property but poor on the north part along Burnt Creek. The basalt flows strike about N80°E and dip 9 to 12 degrees north. No fault breccia zones were located on these claims and, with the exception of malachite-stained float on claim ST 14, no copper showings were found. The electromagnetic survey indicated 5 conductors, all broad and indistinct, and all considered to be due to conductive overburden or changes in topography. The electromagnetic survey was conducted on northwest-southeast lines spaced at 400-foot intervals. It was considered that large chalcocite-bornite deposits, similar to the No. 47 deposit of Coppermine River Ltd., were probably not present on the property, but that smaller important sulphide bodies might be present.

The induced polarization survey was carried out in the period July 10 to August 7. The survey, which tested electromagnetic anomalies and some areas of mineralized float, resulted in only one significant anomaly in an area covered with overburden. This anomaly had a peak chargeability of 42 milliseconds above a background of about 12 ms. The survey employed electrode spacings from 25 to 800 feet. The anomaly that was obtained was later tested by drilling (holes 8 and 9), but the results were negative.

The property was visited by the author on July 14, 1968, and drilling was then in progress on the western extension of the No. 3 vein on claim T 5028. This vein is heavily mineralized with chalcocite and hematite and the fault breccia zone has reportedly been traced on surface for 4,000 feet (The Northern Miner, July 11, 1968, p. 1). The first hole of the 1968 drill program tested this vein and gave an intersection of 13.2 per cent Cu/15.7 feet at a vertical depth of 150 feet (loc. cit.). Hole No. 2 was drilled beneath No. 1 but had to be abandoned and failed to intersect mineralization of interest, but hole No. 3 was located 50 feet to the east and intersected a section on the No. 3 vein which assayed 3.59 per cent Cu for a core length of 10 feet. Holes 4 and 5 were located 100 and 200 feet, respectively, east of the No. 3 hole and gave intersections of 0.5 per cent Cu/10 feet and 3.15 per cent /9.5 feet. Hole No. 6, probably also on the No. 3 vein, assayed 1.0 per cent Cu for a core length of 8 feet. Holes 7 and 10 tested geophysical indications and hole No. 7, at least, gave negative results.

During the season it was reported (The Northern Miner, July 25, 1968, p. 3) that some high-grade copper mineralization had been found in a north-south fault near the No. 3 vein. This discovery led to consideration that the No. 3, Franklin No. 1 and Franklin No. 2 veins might be offshoots from this fault. The fault gave some response to electromagnetic and magnetometer surveys. Hole No. 6 may have tested the intersection of the No. 3 vein with this fault.

Ramid Resources Ltd. (BUD claims) (86-N-8, 86-O-5; about 67°24'15"N, 115°58'W)

This 100-claim property, consisting of claims BUD 398-415, 418-468 and 541-571, was acquired by the company from Mr. G. Leliever in January, 1968. Geological mapping of the property at 1,000 feet to the inch and some ground magnetometer surveying were carried out during the 1968 season. The company also participated in the regional airborne survey flown by Lockwood Survey Corp.

Basalt flows with interbedded red sandstone underlie the property. The rocks strike east to southeast and dip gently to the north. The basalt flows are well exposed along two ridges near the southeast corner of the property. Amygdaloidal flow tops contain quartz, feldspar, epidote and calcite amygdules. Exposure is too incomplete to permit thickness measurements, but on the most easterly of the two ridges sandstones with a minimum thickness of 30 feet underlie basalt with a minimum thickness of 35 feet. A prominent north-striking diabase or diorite dyke is 100 to 200 feet wide. This dyke is well defined by the results of the airborne magnetometer survey.

A ground magnetometer survey consisting of 11 line miles was carried out in what was considered a favourable area on the property, and 2 line miles were also covered in the west-central part of the property. Readings were taken every 200 feet along lines spaced about 600 feet apart.

No significant mineralization was located on the property. A piece of native copper about 12 inches long and 1/2 inch thick was found on the surface near the eastern edge of the property, but no other pieces could be found. It was recommended that no further work be done on the property.

Mr. G. Rapson (ESCAPE 1-72 claims) (86-N-11, 12; about 67°34'N, 117°30'W)

This property is located about 2 miles north of the west end of Dismal Lake and is underlain by dolomites of the Hornby Bay Group. These sediments are overlain by basalt flows of the Coppermine River Group just north of the property. Mr. Rapson prospected in the area during the 1967 season with assistance from the Federal Government under the Prospectors Assistance Program. Some chalcopyrite was found as stringers in dolomite. Samples taken from a few small trenches on the showing apparently gave very low assay results. Some selected hand specimens contained appreciable chalcopyrite in veinlets. A few claims were staked on the showing late in the season.

Mr. Rapson returned to the area in 1968 and further staking between June 15 and 21 enlarged the group to 72 claims. The property was visited by the author on July 31. At the main showing a series of chalcopyrite veins are related to a minor flexure in the generally flat-lying dolomite country rock. The axis of the flexure trends about north-south. The mineralization did not appear to be of economic significance.

Rayore Mines Ltd. (RAY 1-108 and BON 1-8 claims) (86-N-9; about 67°35'15"N, 116°19'W)

Prospecting and geological mapping were carried out on this property July 26 to August 20, 1968, by L.J. Manning and Associates Ltd. The property is near the north contact of the basalt belt as mapped by Fraser (1960) and within the interlayed volcanic-sedimentary sequence as mapped by Baragar (1967). The property joins properties held by Golden West Mines, Cambridge Mines, and Commander Explorations-Adera Mining. Only approximately 1 to 2 per cent outcrop is present on the property. Most of the outcrop consists of basalt, but red sandstone may underlie the south-central part of the property. A fault zone with a strike of N30°W crosses the property from the southeast corner to the north boundary. From study of aerial photographs the fault zone has a minimum length of 10 miles, and of this about 3 1/2 miles is on the Rayore property.

Mineralization consists of chalcocite, and rarely native copper and bornite, that is restricted almost entirely to float. In particular, mineralized float is common along the northeast side of the fault zone. Assays were obtained for mineralized float as follows:

Cu (%)	Ag (oz/ton)
6.20	0.20
6.20	0.44
29.5	1.35
1.18	0.07

A program of detailed geological mapping and geophysical and geochemical surveys was recommended at an estimated cost of $47,500.

Rose Pass Mines Ltd. (MGB 1-100 claims) (86-N-8; about 67°19'N, 116°25'W)

This property is located a short distance south of the main block of claims of Coppermine River Ltd. and is entirely underlain by basalt. A northeast-striking fault crosses the southeast corner of the property (Fraser, 1960).

A preliminary investigation of this property was carried out between September 10 and 20, 1967, by a crew under the supervision of Mr. S.A. Mouritsen. The basalts were reported to be purplish to brown, massive to vesicular, rocks. Amygdules are filled with calcite, jasper, quartz and native copper. Blocks of quartz indicating veins up to 18 inches wide are present in the glacial drift along a fault which strikes slightly east of north and is located a short distance west of the east boundary of the property. A fault with a northerly strike is interpreted to cross the property near its centre.

Some copper showings were located in the east-central part of the property. Seventeen grab samples were assayed. Five of these samples were taken from approximately the same volcanic horizon and were from a length of about 3/4 mile along a northwest-southeast strike. The richest samples gave assay results as follows:

Sample	Cu (%)	Ag (oz/ton)
E	2.15	0.7
G	5.76	1.8
H	0.48	0.3

A grab sample from a showing located nearly 1/2 mile to the northeast assayed 3.6 per cent Cu and 0.32 oz/ton Ag.

Recommendations for work included study of the structure of the basalts, investigation of the known showings including drilling, an induced polarization survey, and stripping of the overburden from the geophysical anomalies obtained and from the known showings.

In 1968 a program consisting of prospecting, geological mapping, induced polarization surveying and diamond drilling was carried out on the property. This program was assisted by the Federal Government through the Northern Mineral Exploration Assistance program. The geological mapping, at a scale of 500 feet to the inch, was done July 8 to September 15. The induced polarization survey covered 20.3 line miles and was done by Geofax Surveys Ltd. in the period July 8 to August 21. The author visited the exploration camp July 14, 1968.

The property is entirely underlain by basalt, but the amount of outcrop on the property is not reported. The flows dip gently and appear to form a dome in the central part of the property and to be folded in the eastern part of the property. A dip of 12 degrees east was obtained on the western part of the property. Faults on the property strike north-northeast to north-northwest, west-northwest and west-southwest. A major northeast-striking fault passes onto the property at the south-central boundary. Two major loci of fracturing were located on the property. One of these is located in the east-central part of the property and the other in the northwest quarter. The basalt is highly brecciated at these points.

Copper sulphide minerals and native copper occur in calcite and quartz which cement breccia zones that occur along a number of faults on the property. Distinct quartz veins also occur along the faults. The breccia zones were discovered in 1968. The results of induced polarization surveys are interpreted to indicate possible extension of copper-bearing zones laterally along flow-top horizons.

The Northwest Zone of mineralization consists of chalcocite and bornite which occur as narrow veinlets in quartz veins and the brecciated basalt host rock along faults. The zone is on claim MGB 18 and mineralization occurs along a fault and two of its branch faults. Three copper-bearing veins are exposed; one of these is about 20 feet wide and can be traced for 500 feet and the other two are narrower and are exposed for a length of about 250 feet. Adjacent to the most easterly of the veins chalcocite-bearing breccia cemented with quartz is exposed over an area about 100 feet square. Float blocks of quartz mineralized with chalcocite can be traced 500 feet north from here to an outcrop of basalt breccia which is cemented with calcite. This breccia also contains narrow veinlets of chalcocite. Eight holes were drilled near the southern outcrop of breccia and on the east side of and parallel with the fault zone. The fault zone strikes north-northwest.

Samples from a length of 35 feet in a trench located 155 feet east of the site of hole No. 1 and on claim MGB 18 assayed 2.39 per cent Cu. A similar sample from the same distance east of hole No. 1 assayed 1.75 per cent Cu and 0.39 oz/ton Ag. Assays of 1.13 per cent Cu and 1.50 per cent Cu were obtained for samples from trenches on claim MGB 17.

Most or all of the 8 drillholes were drilled vertically. A total of about 840 feet was drilled with results as listed below.

Hole No.	Depth (feet)	Intersection	Core Length (feet)		Cu (%)
1	87	0 -10.5'	10.5		0.49
		10.5'-13'	2.5		2.28
		13'-36'	23		0.61
		36'-56'	20		1.58
		56'-87'	31		1.98
2	119	0 -4'	4		0.23
		4'-29'	25		1.58
		29'-34'	5		0.87
		34'-44'	10		2.06
		44'-62'	18		0.81
		62'-110'	48		1.65
		110'-119'	9		2.27
3	129	51'-112'	61		1.12
4	132	0 -8'	8		0.09
		8'-18'	10		1.45
		18'-24'	6		1.09
		24'-30'	6		2.35
		30'-37'	7		1.37
		37'-43'	6		0.97
		43'-50'	7		2.15
		50'-57'	7		2.46
		57'-64'	7		2.16
		64'-71'	7		1.17
		71'-78'	7		1.75
		78'-85'	7		(2.99
		85'-92'	7		(2.29
		92'-99'	7	2.69% Cu/41 ft.	(2.56
		99'-110'	11		(3.04
		110'-119'	9		(2.57
4		119'-126'	7		1.17
		126'-132'	6		2.18
5	117	0 -17'	17		0.21
		17'-33'	16		2.33
		33'-38'	5		0.66
		38'-43'	5		2.76
		43'-78'	35		0.54
		78'-83'	5		1.20
		83'-88'	5		0.85
		88'-110'	22		2.82
		110'-117'	7		1.35
6	56	0 -7.5'	7.5		0.08
		7.5'-12'	4.5		0.47
		12'-19'	7		2.80
		19'-38'	19		1.08
		38'-56'	18		0.74

Hole No.	Depth (feet)	Intersection	Core Length (feet)	Cu (%)
7	101	10'-37'	27	0.65
		37'-43'	5	4.42
		43'-65'	22	2.55
		65'-72'	7	1.17
		72'-86'	14	2.56
		86'-101'	15	1.45
8	99	0 -9'	9	0.51
		9'-20'	11	2.55
		20'-35'	15	1.11
		35'-49'	14	2.62
		49'-57'	8	1.35
		57'-73'	16	5.20
		73'-79'	6	1.75
		79'-99'	20	6.58

Hole No. 3, which was to a depth of 129 feet, intersected mineralization which graded generally less than 1 per cent Cu. The average grade reported for hole No. 8 is 3.19 per cent Cu/99 feet but it is pointed out that the last 14 feet of this hole penetrated material particularly rich in copper, and this section probably unduly enhances the average. The drillholes were distributed over an area about 500 by 200 feet, and holes 7 and 8 were located some distance northwest of the other more closely spaced holes. Aside from the fact that vertical holes are not a satisfactory method of testing what is apparently a nearly-vertical mineralized zone, the drilling is insufficient to justify the calculation of an indicated tonnage. However, a consultant for the company calculates that about 131,000 tons containing 2.89 per cent Cu are present.

The Southeast Zone is located along a fault on claims MGB 86 and 87 in the east-central part of the property. Good chalcocite mineralization occurs in narrow quartz veins, one up to 2 feet wide and the other 12 feet away and 8 inches wide, and across a width of 90 feet in brecciated basalt along the fault which strikes north-northeast. The breccia is cemented with calcite. About 1,200 feet north of this the zone can be traced along a length of 300 feet. Surface features suggest that the zone has a length of at least 3,800 feet. Samples from trenches on claim MGB 86 assayed 7.73 per cent Cu and 0.38 per cent Cu, and a sample from a trench near the north boundary of claim MGB 87 assayed 3.54 per cent Cu (and a grab sample from this claim assayed 2.96 per cent Cu). A sample from a trench near the north boundary of claim MGB 76, possibly along this zone, assayed 1.46 per cent Cu, and another sample from a trench on the east part of claim MGB 74, in the same area, assayed 2.93 per cent Cu.

Other copper-bearing samples from trenches on the property assayed 0.68 per cent Cu (claim MGB 74), 1.97 per cent and 7.19 per cent (both claim MGB 69), and 1.43 per cent (near the north boundary of claim MGB 74). Considerable copper mineralization in quartz is present south of claim MGB 20 and near the northwest corner of claim MGB 95.

The induced polarization survey resulted in 12 anomalies as follows:

Anomaly	Length (feet)	Peak (ms.)	Comments
A	Not defined	23	
B	2,000	21	Open to the north. Site of 1968 drilling
C	2,500	20	Weak, 400 feet wide, generally trends northwest
D		20	Similar to C in area and strength
E	4,000+	27	Not completely outlined, 400 feet wide
F	Not defined	21	Good coincident chalcocite in quartz float
G	Not defined	20	
H	3,000 (min)	30	Considered of prime importance, 300-400 feet wide
I		36	Also of prime importance, about 500 feet wide
J		20	Zone only strong near transecting faults or shears
K	5,000±	52	Irregular, open to the southeast
L	6,000 (min)	42	Major anomaly about parallel to K, open to the northwest

Anomaly I coincides with an area in which mineralized samples were taken in 1967; one of these assayed nearly 6 per cent Cu. The peak for anomaly K coincides with a fault along which copper mineralization was found. Two other faults or shear zones cut the anomalous zone. The average of 18 channel samples along the associated mineralized zone was 2.13 per cent Cu, with one "good width" assaying 5.76 per cent Cu (Western Miner, October, 1968, p. 162). Anomaly L, as well as anomalies H and I, was considered to be of prime importance.

The background chargeability was recorded as 5 milliseconds, and any chargeabilities above 15 ms. were considered anomalous. A 100-foot abnormal or special array was used for most of the survey.

It was recommended that further induced polarization surveying be done to trace anomaly B northward, to outline anomaly E, to test for possible extensions of anomalies H, I, K and L, and to cover the remainder of the property. Testing of anomalies E, H, I, K and L by diamond drilling was also recommended. Further diamond drilling of anomaly B along the Northwest Zone of mineralization was most strongly recommended.

September Mountain Copper Mines Ltd. (Group 1; GL 1-217 claims) (86-N-8, 9, 86-O-5, 12; about 67°30'N, 116°01'W)

A 90 per cent interest in this property was transferred by Millbank Minerals to September Mountain Copper Mines, a newly incorporated

company, prior to the 1968 season. Millbank Minerals is controlled by Great Basin Metal Mines which in turn, is controlled by Consolidated Manitoba Mines. September Mountain Copper Mines is, likewise, an affiliate of the latter company. A program consisting of prospecting, reconnaissance geological mapping, induced polarization surveys over selected target areas, and some test surveying by electromagnetic, magnetic and geochemical methods was conducted on the property during the 1968 season by Huntec Ltd.

Outcrop was estimated to occupy less than 5 per cent of the property. The property is approximately one mile southeast of the Teshierpi Fault and is underlain by the upper series of the Coppermine River Group (Baragar, 1967) which consists of basalt flows and interbedded red sandstone. The sandstone beds appear to be 15 to 25 feet thick. Seven target areas on the property were selected for more detailed investigation and induced polarization surveys were carried out in four of these as follows:

Target Area	Reconnaissance I.P. (line miles)	Detail I.P. (line miles)	Anomalies and Priority A	B	C
1	37.5	10.4	1	5	3
2	8.3			4	
3	2.3				4
4	3.4	1.5		1	

The more significant anomalies obtained by the induced polarization surveys may be tabulated as follows:

Target Area	Anomaly	Length (feet)	Width (feet)	Chargeability (milliseconds)	Metal Factor Response	Priority	Recommended
1	4	4,000	6,000	24.4	High	A	3 drillholes
	2	2,800		26.3	Fair	B	Detail I.P., soil survey, mag.
	3			19.1	Good	B	Detail I.P.
	5	800	800	25.2	Good	B	Detail I.P., mag.
	6			nil	High	B	Detail I.P., mag.
	9			16	High	B	Detail I.P., mag.
	8	700	250	19	High	C	Detail I.P. line
2	1	1,800	175	Poor	High	B	Detail I.P., mag.
	2	900	100	15.8	High	B	Detail I.P., mag.
	3	800	100	21.8	High	B	Detail I.P., mag.
	4			29	Poor	B	Detail I.P., mag.
4	1	4,100	350	17,19.3	High	B	Mag., further E.M.

Target area 1 in the northwest part of the property is 3.8 miles long and 4,000 feet wide and was selected because of proximity to the Teshierpi Fault. The area was mapped at a scale of 400 feet to the inch. Background chargeability was found to be generally 12 to 16 milliseconds. Anomaly 4 is a large zone of high metal factor values. A few chargeability peaks, related to areas of low resistivity, are present along the zone. In addition to drilling, completion of geochemical and magnetometer surveys over the anomaly was recommended. Anomaly 6 is a narrow east-trending zone of high metal factor values which lacks a coincident chargeability anomaly, and was interpreted as a fault.

In target area 2 it was also recommended that the extent of anomalies 2 and 4 be determined. The anomalies in target area 3 are given a low priority primarily because of their limited extent. Detailed induced polarization and magnetometer surveys were recommended.

The B anomaly in target area 4 may be open to the south, but two lines of detailed induced polarization surveying gave disappointing results. Soil sampling and electromagnetic surveying were done along four lines across the anomaly. The electromagnetic survey indicated 6 conductors, 3 of which flank the induced polarization anomaly.

Preliminary soil sampling and electromagnetic surveying were carried out along three traverse lines in target area 5. A number of weak conductors were obtained. The geochemical sampling indicated more highly anomalous copper values than were obtained elsewhere on the property. Induced polarization and magnetometer surveys, and completion of the electromagnetic survey were recommended.

Target area 6 was selected as the place where three airborne electromagnetic anomalies should be investigated. Three out of six grid lines were covered by Ronka EM 16 electromagnetic and geochemical surveys. Completion of this ground checking was recommended.

Target area 7 covers a lineament selected from aerial photographs. The aeromagnetic survey indicates that the south part of the linear is a diabase dyke. Farther north the dyke is about 2,000 feet east of the lineament and magnetometer surveying along two lines suggested that the linear represents a fault. Reconnaissance geochemical soil sampling in this area indicated anomalous copper values. A magnetometer survey was recommended.

September Mountain Copper Mines Ltd. (Group 2; BUD claims) (86-O-5; about 67°27'15"N, 115°46'30"W)

This property consists of claims BUD 1-156 and 205-248, a total of 200 claims. A 90 per cent interest in the claims was transferred by Heathridge Mines to September Mountain Copper Mines prior to the 1968 season. Heathridge Mines is controlled by Great Basin Metal Mines which is, in turn, controlled by Consolidated Manitoba Mines. September Mountain Copper Mines is, likewise, an affiliate of the latter company. Preliminary prospecting, geological mapping, geochemical soil sampling, and limited electromagnetic surveying were done by Huntec Ltd. during the summer of 1968.

Less than 2 per cent of the property is outcrop, but it is assumed to be largely underlain by sandstone. Red crossbedded sandstone is present along the Coppermine River on the eastern boundary of the property, where

a thickness of at least 140 feet is exposed, and along the southern border of the property. Basalt flows, which strike northeast and dip about 10 degrees northwest, are exposed on the top of a hill on the west part of the property. A diabase dyke cuts the sandstone and is exposed where it crosses the Coppermine River in the southeast corner of the property. No significant structures or showings were found.

Traces of copper mineralization were located in the basalts and in sandstone bordering the diabase dyke. An induced polarization survey was recommended over the hill on which the basalt flows are exposed. Ground electromagnetic work was carried out in one area to check airborne electromagnetic anomalies. Further electromagnetic work was recommended in this area. This recommended work was considered of low priority.

September Mountain Copper Mines Ltd. (Group 3; JIM, VIC and SEPT claims) (86-N-8, 86-O-5; about 67°19'30"N, 116°02'W)

This property consists of 123 JIM claims, 64 VIC claims and 2 SEPT claims. The Grant Numbers of the VIC claims are T 4909-13, 4916-33, 4936-53, 4956-73, and 4977-80 and the group lies at about 67°17'45"N, 116°06'W and immediately south of one held by Canadore Mining and Development Corp. (60%) and Clero Mines Ltd. (40%). The JIM claims (Grant Numbers N92418-76, 92485-88, 92491-94, 92503-06, 92509-12 and 92553-600) are located north and east of the VIC claims and may be contiguous or slightly separated from this 64-claim group. The JIM claims are centred at about 67°20'30"N, 116°00'W and surround a property that has been held by Pickle Crow Gold Mines for more than 10 years. The Pickle Crow property (6 claims with Grant Numbers 99652, 99657, 99683, 99684, 99730 and and 99731) covers the Dick vein in which drilling has indicated 62,000 tons grading 8.78 per cent Cu. An 85 per cent interest in the VIC and JIM claims was transferred to September Mountain Copper Mines by North Briar Mines prior to the 1968 season. North Briar Mines is controlled by Great Basin Metal Mines which is, in turn, controlled by Consolidated Manitoba Mines. September Mountain Copper Mines is, likewise, an affiliate of the latter company. The two SEPT claims (T 71098, 99) were apparently staked during investigation of the property and their exact location is not known.

Prospecting and reconnaissance geological mapping, followed by geophysical surveys, detailed geological mapping, and limited geochemical soil sampling were carried out by Huntec Ltd. during the 1968 season. Photogeological interpretation and observations from helicopter flying over the property were used in the reconnaissance program. Reconnaissance geological mapping was done at a scale of 1,320 feet to the inch. From this work seven target areas were selected and geophysical work was done in six of these areas. Geological mapping was done in the target areas at a scale of 400 feet to the inch.

Target areas 1 and 2 lie east of Amco Lake (a local name for a lake at 67°20'30"N, 115°59'30"W) and north of Burnt Creek. Target areas 3, 4 and 5 lie on the west flank of a broad valley which drains into Amco Lake, and target area 6 lies partly in a small range of hills on the east side of the valley and south of Amco Lake.

The property is entirely underlain by basalt which is exposed over about 20 per cent of the area. Considerable faulting and fracturing are

evident on the property. This property was the most extensively mineralized of those investigated by the company in the area.

The induced polarization, magnetometer and Ronka EM 16 electromagnetic surveys gave results as follows:

Target Area	Reconn. I.P. (line miles)	Detail I.P. (line miles)	E.M. Survey (line miles)	Mag. Survey (line miles)	Anomalies and Priority A	B	C
1	10.0		2.9	10.0		2	3
2	9.4	2.2	3.8	9.4	3	2	
3-4	10.3	2.0	2.5	2.5		4	3
5	12.3	1.1	2.5	-		2	2
6	13.0	2.5	3.8	4.8	1	2	4

More information is listed below for most of the anomalies grouped in the above table.

Target Area	Anomaly	Length (feet)	Width (feet)	Chargeability (milliseconds)	Metal Factor Response	E.M. Results	Priority
1	1	3,100	200-300	23.9	Good		B
	2	not defined		30	Good		B
2	1	1,600	200	31		Conductor	A
	2	Unknown	200	37	Good		A
	3			28.5	Moderate	Favourable	A
	4	1,400	400	26.3	Nil		B
	5	800±	100±	27.7	Nil		B
3-4	1	1,300	75-300	26.6	Poor	Conductor	B
	2	1,100	125	23			B
	3	1,500	175	28.2	High		B
	4	1,300		22.6	High		B
	5	2,300		24	Good		C
	6	300+		24.2	Nil		C
	7	1,400	700	55	Nil		C
5	1	600	75	24	Slight	Nil	B
	2	600	200±	24.3	Slight	Weak	B
	3	3,200+	150	22.4	Some		C
6	1	1,200	75	20.4	Nil		A
	3	700	175	18.8	Good		B
	7	300+		26	Good		B
	2	1,500+		34			C
	4	1,200+		19.6			C
	5	700	150	22.6	Nil		C
	6			21	Nil		C

In target area 1 the background chargeability, at least in the vicinity of anomaly No. 1, was found to be 14-17 ms. using the gradient array induced polarization method. Anomaly No. 1 consists of three chargeability peaks, all correlative with low resistivity, and parallels a zone of magnetic lows which lies 300 feet to the west. A weak conductor lies adjacent to the peak of the anomaly. Anomaly No. 2 correlates with low resistivity but its extent was not outlined. Three anomalies of C priority were also located. No significant copper showings were located in this target area.

Anomaly No. 1 in target area 2 is open to the northeast and lies adjacent to and parallel with a mineralized fault which gives an associated magnetic low, as well as a strong electromagnetic conductor. A geochemical anomaly for copper flanks the induced polarization anomaly on the east. Anomaly No. 2 is open to the north and coincides with a zone of copper mineralization along the east wall of a fault. This mineralization consists of chalcocite, native copper and quartz calcite veinlets that can be traced for 500 feet along talus slopes. At one place a mineralized zone 1 foot wide was found. Anomaly No. 3 is only slightly above background, but also coincides with a mineralized fault. Diamond drilling of these three anomalies was recommended.

Mineralization occurs along another fault in target area 2, possibly corresponding to anomaly No. 1 or No. 3. The mineralized zone is exposed across a width of 10 feet along the east side of the fault and consists of a network of chalcocite veinlets and lenses in a number of narrow bands of highly hematitized and brecciated basalt. The zone is exposed for a length of 500 feet and can be traced as float for another 600 feet. A similar mineralized breccia zone is exposed across a width of 10 feet and for a length of 50 feet along another fault. Mineralization also occurs off the property along the latter fault.

In target area 3 no highly mineralized showings were located, but many minor occurrences are present along and near a fault in the area. Plates of native copper along joints and quartz-calcite veinlets are common in the southern part of the area. A zone of copper mineralization along a fault in target area 4 can be traced in outcrop and as float for a length of 2,000 feet. Disseminated chalcocite is present in irregular quartz and quartz-calcite veins that are 1/2 to 2.3 feet wide and can be traced for lengths of up to 100 feet. Channel samples taken across two of these veins assayed 1.93 per cent and 0.77 per cent Cu over widths of 2.3 and 0.9 feet, respectively. A representative chip sample from mineralized boulders occurring along a length of 800 feet elsewhere on the zone assayed 2.08 per cent Cu.

Anomaly No. 1 in target area 3-4 is located adjacent to a fault which, near the anomaly, consists of a slightly mineralized shatter zone. The "Metal Factor" response shows poor correlation with the chargeability anomaly except at the southern end of the latter. Anomaly No. 2 is open to the north and coincides with quartz-chalcocite veins and the interpreted position of a fault. Detailed induced polarization surveying is recommended over these anomalies. Anomaly No. 3 is located 500 feet east of and parallels No. 2. A zone of low resistivity coincides with the high chargeability. Some detailed induced polarization surveying was done and did not give a favourable response, but more has been recommended. Anomaly No. 4 is a north-striking zone which is only slightly anomalous but which is partly coincident with a highly fragmented shatter zone 100 feet wide which contains chalcocite-bearing quartz, calcite and hematite stringers. Completion of a magnetometer

survey and possibly drilling of the anomaly were recommended. In the vicinity of anomaly No. 5 slightly mineralized quartz veins occur in boulders, and disseminated native copper occurs in outcrop. Completion of a magnetometer survey over the anomaly, and more detailed induced polarization surveying over a parallel zone 500 feet to the east, were recommended. Determination of the southern extent of anomaly No. 6, and a magnetometer survey over anomaly No. 7, were also recommended.

In target area 5 anomaly No. 1 trends slightly west of north along an interpreted cross fault. The anomaly is not a zone of low resistivity. Completion of the magnetometer survey over the anomaly was recommended. Anomaly No. 2 trends about N10°W, also lacks a coincident resistivity low, and may be due to several fracture zones containing weakly mineralized quartz-calcite veins. Detailed induced polarization surveying indicated a very shallow source, possibly flow-top mineralization. No further work has been recommended on the anomaly. Anomaly No. 3 has its best characteristics at the north end and a line of detailed induced polarization surveying was recommended. The anomaly coincides with a fault. The east wall of another fault is the site of the most significant copper occurrence in target area 5. Chalcocite is disseminated throughout a highly hematitized and brecciated basalt exposed in a zone at least 2 feet wide. A zone of fracturing along the west wall of another fault contains numerous quartz-calcite veins which are up to 4 feet wide. Disseminated chalcocite is irregularly distributed in the veins, but an estimated 3 per cent Cu is present in places.

Anomaly No. 1 in target area 6 was assigned a high priority in spite of relatively low chargeability due to the low local background of 12 to 15 milliseconds. The zone, however, is one of high resistivity. The anomaly is near a junction of two faults where mineralization was found. Detailed induced polarization surveying is reported to have suggested a narrow, vertical zone of weak and disseminated mineralization from which a more concentrated body of mineralization extends horizontally at a depth of 70 to 100 feet. A diamond-drill hole was recommended to test the zone. The background chargeability in the vicinity of anomaly No. 3 is 12 to 14 milliseconds, and the anomaly lies adjacent to a zone of shattered basalt containing scattered chalcocite mineralization. Detailed induced polarization surveying and completion of the magnetometer and electromagnetic surveys were recommended. Anomaly No. 7 trends approximately north-south and is open to the north. Detailed induced polarization surveying and determination of the extent of the anomaly were recommended. Completion of the magnetometer survey to cover the other four anomalies in this area was recommended. In addition, further detailed induced polarization surveying was recommended for anomaly 2 and mapping, and possibly detailed induced polarization investigation, for anomaly 6.

The most significant mineralization in target area 6 consists of a chalcocite-bearing zone of shattered basalt containing quartz-calcite, hematite and chlorite veinlets. The zone is along the side of a valley and the geophysical results were interesting. Copper mineralization at the intersection of two faults is exposed across an average width of 20 feet and for a length of 100 feet along the edge of an outcrop. Chalcocite is present as narrow veinlets along fractures, and ringing and partially replacing fragments in brecciated basalt. Hematite also occurs along fractures, and irregular quartz-calcite-chlorite veins and lenses up to 6 inches wide occur intermittently. Sampling over part of the zone indicated an average grade of about 2.5 per

cent Cu. Two chip samples over an area 20 feet square in the northern part of the zone assayed 3.11 per cent and 4.06 per cent Cu. In the southern part of the zone samples from an area 16 feet square assayed 1.54 per cent and 1.24 per cent Cu.

Target area 7 was selected to explore a mineralized fault and an area containing a great number of copper occurrences. A train of heavily mineralized frost-heaved fragments of quartz was traced for 200 feet along the interpreted position of a fault near its intersection with another north-trending fault. Chalcocite and some bornite are present in the vein or veins which is/are at least one foot wide. A representative chip sample of the northern half of the boulder train assayed 6.30 per cent Cu, and of the southern half 4.61 per cent Cu. In another part of the area native copper occurs in numerous quartz and calcite veinlets along narrow fractures in massive basalt. Some native copper is disseminated in flow breccias and also occurs in amygdules in flow breccias. Geophysical surveys were not carried out in the target area due to lack of time, and it has been recommended that these surveys be done.

September Mountain Copper Mines (Group 4 (part); ER claims) (86-O-6; about 67°16'30"N, 115°26'30"W)

This property consists of claims ER 4-9, 16-21, 28-33 and 40-70, a total of 49 claims. It is located about two miles east of the bend in the Coppermine River where the river swings north after flowing east for about 18 miles past the September Mountains. A reconnaissance exploration program was conducted on the property by Huntec Ltd. during the 1968 season. No target areas were located on the property and no further work was recommended.

September Mountain Copper Mines Ltd. (Group 4 (part); A, C, D, E and ER claims) (86-O-3, 4; about 67°11'30"N, 115°25'W)

This property consists of claims A 3-26, 31-54, 60-81, 88-100, C 1-9, 16-37, 44-65, 69-100, D 1-100 and E 1-92, a total of 360 claims. The property is in the eastern part of the September Mountains near the southern contact of the basalt belt. A reconnaissance exploration program consisting of prospecting, geological mapping and geochemical soil sampling was conducted on the property by Huntec Ltd. during the 1968 season.

Approximately 20 per cent outcrop is present on the property, although the north part is largely covered by overburden. The property is entirely underlain by basalts. However, no significant indications of copper mineralization were found. No major faults were located on the property. Geochemical soil sampling was done along faults and fracture zones which were interpreted from study of aerial photographs. This sampling failed to indicate any geochemical anomalies. Dolomites underlying the basalts and belonging to the Hornby Bay Group are exposed just south of the property.

No further work was recommended for this large block of claims.

September Mountain Copper Mines Ltd. (Group 5; JAT and RUD claims) (86-N-7; about 67°16'N, 116°40'W)

This property consists of 96 JAT claims (Grant Numbers T 50517-T 50612) and 54 RUD claims (Grant Number T 50001-50024, 29-34, 39-42, 49-52, 59-62, 69-72, 79-82 and 89-92). The property is located on a low-lying plain at the southeast end of Dismal Lakes. A preliminary surface examination of the eastern half of the property was carried out by Huntec Ltd. during the 1968 season.

No basalts are known to be present on the property, but they are exposed about 4,000 feet to the northeast of its northeast corner. Dolomites of the Hornby Bay Group are exposed on the east part of the property and some quartz-feldspar porphyry is exposed on the western part. The Teshierpi Fault passes through or near the northwest corner of the property. The possibility of locating copper deposits is not considered to be good because the property is not located on the basalts of the Coppermine River Group and because of the extensive overburden.

No further work has been recommended on the eastern part of the property. Completion of the reconnaissance investigation on the western part of the property was recommended, but was given a low priority.

The Shawinigan Mining and Smelting Co. Ltd. (80%). Africana Mining Co. (20%) (ILROCK 1-36 and MONNIER 19-36 claims) (86-N-7; about 67°20'30"N, 116°35'30"W)

This property was acquired by Africana Mining early in 1967 by staking. A preliminary geological report was prepared on the property by Shichshocks Geotechnical Services, Inc., during the 1967 season. Subsequently, Shawinigan Mining and Smelting acquired a majority interest in the property.

The property covers part of the northeast-striking Teshierpi Fault and both basalt and, southeast of the fault, some of the underlying dolomite as well, are exposed on the property. These features are also suggested by the regional mapping (Fraser, 1960).

The best mineralized zone located by the preliminary surface work consists of a north-striking vein 6 to 8 feet wide in the north-central part of the property. This vein is exposed for a few tens of feet but chalcocite-rich float was traced for a distance of 1,500 feet along the vein. The mineralization consists of massive chalcocite in a gangue of quartz and calcite. Assay results for a few samples averaged 29.9 to 33.75 per cent Cu and 1.10 to 3.50 oz/ton Ag.

Pyrite, chalcopyrite and chalcocite were observed in amygdules in the basalt at places on the property and tiny flakes of native copper were observed, in particular, in two of the basalt flows. An induced polarization survey was recommended along the Teshierpi Fault, where there was a complete lack of outcrop.

Whether or not further exploration was conducted in 1968 is not known.

Spectroair Explorations Ltd. (SIL, BO, EB, SB and SP claims) (86-O-5; about 67°17'30"N, 115°48'30"W)

This property consists of claims SIL 6-33, BO 7-10, 23-26, 38-43, 54-59, 119-122, 135-140, 153-160, 172, 173, EB 1-10, 23-32, SB 36-40, 47-51, and SP 1-6, a total of 104 claims. Most of these claims were acquired during 1967 by companies participating in Spectroair Explorations and were transferred to Spectroair prior to the 1968 season. The claims BO 7-10, 23-26, 38-43, 54-59 and 8 SIL claims were transferred by New Cronin Babine Mines Ltd., claims BO 119-122, 135-140, 153-160, 172, 173 and 20 SIL claims by Silver Ridge Mines, and claims EB 1-10, 23-32, SB 36-40 and 47-51 by Northair Mines. Claims SP 1-6 were apparently added by staking during the 1968 season, but their exact location is not known. The three companies noted above jointly hold a 71.28 per cent interest in Spectroair Explorations.

A preliminary exploration program was carried out on the BO, EB, and SB claims during the 1967 season. Prospecting located two showings on the Northair claims and one on the boundary between the Silver Ridge and New Cronin Babine properties.

This D showing is on claims EB 8 and 25 and is an extension to the southwest of a mineralized zone on a property of Pickle Crow Gold Mines (claims 350, 360, 361 and 370). Chalcocite veins up to 3 inches wide are present across a width of 20 to 25 feet. The zone can be traced as outcrop and as mineralized float for a length of about 1,100 feet. Showing E is an isolated exposure on claim EB 6 of a copper-bearing breccia zone. The breccia zone occurs along a north-striking fault.

Showing I is located on claims BO 57 and 120 and is a large mineralized area located on the top of a prominent ridge. Test pits for a distance of 600 feet along the ridge, and trenching along the northeast side of the ridge, exposed chalcocite and malachite along fractures and disseminated in the basalt. The mineralization is low grade, but further trenching and sampling was recommended.

Prospecting and geological mapping at a scale of 1,000 feet to the inch was done on the SIL and SP claims June 15 to July 30, 1968. The claims are entirely underlain by basalt which dips 5 to 15 degrees north. The basalt flows are thicker on the north part of the property than on the south part. Some chalcocite and chrysocolla are reported in flow tops on claims SIL 10 and 11, but most of the mineralization on the property is structurally controlled.

A showing on claim SIL 33 consists of chalcocite in float fragments of basalt breccia along a proposed fault, and a showing on claim SP 3 is similar. Chalcocite occurs in a shear, and considerable copper staining in float, along a northeast-striking fault on claim SIL 23. Some malachite occurs with calcite in float fragments of quartz and jasper breccia along the same fault on claims SIL 18 and 7. Malachite also occurs with calcite in a breccia along a shear, which branches from this fault, on claim SIL 21. Some malachite is present along shears on the north boundary and in the northwest corner of claim SIL 21. On claim SIL 25 chalcocite is present in breccia along a north-northeast fault, and on claim SIL 24 chalcocite and calcite are present along a shear branching from this fault. Chalcocite is present in the calcite cement of a breccia and in calcite vein material along what is probably the same fault on claim SIL 19.

Detailed mapping and trenching of the copper showings are recommended.

Geophysical surveys were conducted over parts of the property by Seigel and Associates Ltd. during the periods June 23-July 3 and July 30-August 6, 1968. Claims EB 4-8, 23-32, SB 36-38, SIL 11-15, 23-33, BO 119-122, 135-139, and 154-158 were covered in whole or in part by magnetometer, induced polarization, Ronka EM 16 electromagnetic and Turam surveys. About 32 line miles of grid lines oriented east 6 degrees south and spaced 400 feet apart were covered by the surveys. Three anomalies were indicated by the induced polarization survey, which was carried out with an electrode separation of 200 feet. The background chargeability in the area is 20 to 30 milliseconds. Some of the features of the three anomalies are as follows:

Anomaly	Length (feet)	Width (feet)	Chargeability (ms)	Resistivity
A	700 max.	300	43.2	Coincident low
B		600	39	Low coincident in part
C			37.2	

Anomaly A is a northeast-trending zone, but does not have an associated magnetic low. An electromagnetic response 200 to 300 feet west of the anomaly is probably due to the edge of a swamp. The anomaly is on claims EB 8 and 25 and corresponds with the D zone of mineralization. The original gradient anomaly was confirmed by detailed induced polarization surveying employing the three-electrode array. Diamond drilling of the anomaly resulted in intersections of chlorite-rich basalts, but failed to indicate any copper mineralization.

Anomaly B is adjacent to a possible fault zone which contains copper mineralization in places. The anomaly is flanked to the west by a zone of high resistivity. Diamond drilling results were the same as for anomaly A. Anomaly C is a crescent-shaped zone which lacks electromagnetic or magnetic expression. The anomaly is flanked by a zone of high resistivity.

Three steeply-dipping copper-rich veins each 1 foot to 3 feet wide and about 25 feet apart are present on the property of Pickle Crow Gold Mines (claims 350, 360, 361 and 370) located just to the north. No significant induced polarization or magnetic responses were obtained over these veins.

Spectroair Explorations Ltd. (HA 1-108 claims) (86-O-6; about 67°22'N, 115°07'W)

This property is located east of the Coppermine River and joins the southwest corner of a large block of claims held by Bernack Coppermine Explorations Ltd. The property was acquired from the Coppermine Syndicate at a cost of $10,800 (The Northern Miner, July 4, 1968, p. 19). It was prospected and geologically mapped at 100 feet to the inch during the period August 1-27, 1968.

Less than 5 per cent of the property is occupied by outcrop. The property is underlain by basalt flows which are cut by a number of diabase dykes from 20 to 200 feet wide. The basalt flows strike east-northeast and

dip gently to the north. Pyrite was occasionally found disseminated in massive basalt, along fractures, or in amygdules (with or without associated calcite). No major faults were recognized and no fault breccias were found in outcrop. Small angular blocks of barite were found on claim HA 95 in the southeast part of the property and near the contacts of one or two diabase dykes. Only one significant copper showing was found on the property.

On claim HA 28 mineralized frost-heaved material occurs over an area 150 by 50 feet. The mineralization consists of chalcocite, quartz and minor bornite in brecciated, vesicular, dark red basalt. Some fragments of massive chalcocite up to 6 inches in diameter are present. The breccia may form a zone located along a fault. Further exploration of showing by geophysics was recommended.

Malachite is present along fractures and in amygdules in angular frost-heaved fragments of flow-top basalt on claims HA 15 and 16. The mineralization is apparently secondary after chalcocite, and possibly bornite, and is distributed over an area of 400 to 600 square feet.

Taseko Mines Ltd. (B 37-72 claims) (86-O-6; about 67°18'30"N, 115°23'30"W)

The property was geologically mapped September 3-14, 1968, at a scale of 500 feet to the inch. The property is generally covered by glacial drift, and outcrop occupies only about 15 per cent of the area. Basalt flows underlie the property and are cut by a few diabase dykes. The basalt flows dip north and northwest at not more than 20 degrees. No significant faults or fracture zones were located. Only insignificant copper mineralization was discovered by detailed prospecting.

In view of the limited outcrop on the property, it was recommended that further work should consist of magnetometer and electromagnetic surveys, with particular attention devoted to the southern part of the property.

Teshierpi Mines Ltd. (Group 1; HED, RON, TER and MAS claims) (86-O-5, 6, 11; about 67°28'N, 115°28'30"W)

This property consists of claims HED 1-12, RON 1-47, TER 1-48, MAS 1-33 and 47-50, a total of 144 claims. The claims extend northeast from Tundra Lake (approximately 67°25'45"N, 115°32'45"W), where the company maintained an exploration camp during the 1968 season, and lie about 3 to 5 miles east of the Coppermine River.

The company reportedly held 1884 claims in 12 groups prior to the 1968 season (The Northern Miner, March 14, 1968, p. 3). Of these claims 754 had been sold by Coppermine River Ltd. (previously acquired from P.C.E. Explorations for $56,466) for 410,000 escrowed shares and 754 by P.C.E. Explorations on the same basis. An additional 364 claims were sold to Teshierpi by P.C.E. Explorations for $29,962 and an option on 12 claims was assigned by P.C.E. for $250. A total of $500,000 was budgeted for exploration on the 12 claim groups in 1968, with the financing provided 25 per cent by P.C.E. Explorations, 25 per cent by Conwest Exploration Company, 25 per cent by Pan American Canadian Oil, 15 per cent by Newconex Canadian Exploration and 10 per cent by Consolidated Proprietary

Mines Holdings. With its vendor shares P.C.E. Explorations had an interest of about 41 per cent in Teshierpi Mines prior to the 1968 season. The claims held by Teshierpi include a group, No. 6, of about 345 claims which cover the north part of the Muskox Intrusion (86-O-3 and extending to the south along the east contact). No work is known to have been done on the latter group during the 1968 season. A helicopter and a Cessna aircraft were under charter to support the exploration program on the Coppermine area properties.

A reconnaissance investigation of the property was carried out June 20 to September 1, 1968. Ten showings were described in a report on the property and have been arbitrarily assigned numbers by the author.

Showing No. 1 consists of float fragments of quartz- and calcite-cemented breccia from a breccia zone or vein. The breccia fragments include red arkose and amygdaloidal basalt. The float fragments are well mineralized with chalcocite and occur over an area about 70 feet long by 10 feet wide.

Showing No. 2 consists of minor chalcocite, bornite and secondary malachite in a large quartz-calcite vein which is apparently 300 feet wide. The grade of the vein was estimated at 0.5 per cent Cu.

Showing No. 3 consists of pyrite and chalcopyrite which occur as tiny granules along the bedding in blackish-green shale which underlies a diabase sill. Sulphide is estimated to comprise 10 per cent of the rock over a thickness of 4 feet at a point about 25 feet below the contact. The contact with the overlying sill was traced for a distance of 84 feet.

Showing No. 4 consists of massive chalcocite float. Showing No. 5 consists of bornite veinlets along the west side of a sheared zone in which quartz and calcite veins are common. Showing No. 6 consists of chalcocite in float fragments of brecciated porphyritic basalt. Showing No. 7 is a mineralized shear zone which strikes due north and dips 80 degrees east. Chalcocite occurs along the shear planes across a width of 15 feet. Showing No. 8 consists of an area of high-grade chalcocite float similar to that of showing No. 6.

Showing No. 9 is a chalcocite-bearing series of quartz and calcite veins which occur across a width of 50 feet in highly brecciated, fractured and oxidized porphyritic basalt. Showing No. 10 is in a shear zone with a strike of N40°E. Chalcocite is present in a section of the shear which is 5 feet wide and 300 feet long. The shear zone cuts oxidized porphyritic basalt.

Many of the copper showings are located along what is considered to be an extension of the Sandberg fault zone (see description of the property of Quadrate Explorations).

Electromagnetic, magnetometer and induced polarization surveys were carried out on five grids on the property June 20-September 1, 1968. These surveys were carried out as follows:

		Line miles of survey			Anomalies and Priority				
Grid No.	Claims	E.M.	I.P.	Mag.	A	B	C	D	E
1	TER 3, 5, 7-9, 20, 21, 45-47	3.4	2.8	Nil	1		3		
2	Unknown	1.5	13.9	11.3					
3	MAS 1-33, 47-49	45.5	17.0	20.4		2	17	6	5
4	RON 1-47	40.7	Nil	Nil					
5	HED 1-3, 7-10	4.2	Nil	Nil					

Readings in the magnetometer and electromagnetic surveys were taken each 100 feet along the grid lines which were spaced 400 feet apart. For detailed investigation readings were taken each 50 feet along lines 100 feet apart. Electrode separations of 25 to 200 feet were employed in the induced polarization surveying.

A magnetometer survey has been recommended over the anomalies obtained on the No. 1 grid. A drill test of the anomaly of A priority was also recommended. Two holes were drilled within the area of this grid to test a chalcocite showing but did not test the most anomalous zone in the area.

The anomalies on grid No. 3 were not all tested by the three survey methods and were obtained as follows:

Methods of Detection	Anomalies and priority B	C	D	E
Electromagnetic only		2		
Electromagnetic and induced polarization			2	
Electromagnetic and magnetic	1	5	2	2
Electromagnetic, magnetic and induced polarization	1	10	2	3

To assess further the anomalies on this grid completion of the geophysical surveys was recommended over the anomalies rated C or better, and field checking was recommended for those anomalies investigated by all three methods.

On grid No. 4 minor bornite, chalcocite and malachite were found at a number of places. A magnetometer survey and some detailed electromagnetic surveying were recommended on this grid, particularly over anomalies rated priority C or higher. A similar magnetometer survey was recommended over the anomalies on grid No. 5.

Six holes were drilled on the property during the 1968 season. Two of these, toward the southwest corner of claim TER 6 on grid No. 1, apparently tested a mineralized zone which extends southward onto claims held by Chance Mining and Exploration Co. Ltd. (a company affiliated with Conwest Exploration Co. Ltd.). This highly brecciated or shattered zone is located at about 67°25'35"N, 115°29'30"W and drilling was in progress by Teshierpi Mines when the showing was visited on July 31. Four holes were drilled near the southwest corner of claim TER 46 on grid No. 2. It is not known whether these four holes tested a surface showing or a geophysical anomaly. The results of the drilling are listed below.

Hole No.	Grid	Latitude	Departure	Azimuth	Inclination	Depth (feet)
TS-2	No. 1	3+63N	0 + 76W	120°	45°	193
TS-3	No. 1	3+21N	0 + 20W	300°	40°	120
TS-4	No. 2	22+00S	3 + 50W	106°	45°	418
TS-5	No. 2	22+00S	0 + 25E	274°	40°	306
TS-6	No. 2	22+00S	3 + 00W	286°	40°	397
TS-7	No. 2	20+00S	0 + 25W	274°	40°	299

The assay results obtained in this drilling are as follows:

Hole No.	Intersection	Core Length (feet)	Cu (%)
TS-2	138'-140'	2	0.4
TS-3	16.3'-20'	3.7	0.81
"	20'-25'	5	1.00
"	25'-30'	5	1.97
TS-4	216.5'-219'	2.5	0.18
"	255'-260'	5	0.28
"	260'-265'	5	0.72
"	265'-270'	5	0.31
TS-6	125.5'-130.5'	5	0.91
TS-7	232.5'-235.5'	3	0.55
"	239'-243'	4	0.21

More geophysical surveying and detailed geological mapping were recommended for the property.

Teshierpi Mines Ltd. (Group 2; PAN 1-56, DIB 1-3 and MAS 34-46 claims) (86-O-5; about 67°21'N, 115°36'W)

A reconnaissance investigation was carried out on this 72-claim property June 20-September 1, 1968. A number of copper showings were briefly described, along with general notes on the geology, at selected points on the property. The numbers assigned to these showings correspond to the numbers of the notes presented in the report on the property.

Showing No. 6 consists of a chalcocite-bearing quartz-calcite breccia vein that is 5 inches wide and can be traced 25 feet along a strike of N22°E. Chalcocite is massive in places in the vein. Showing No. 11 consists of a little bornite and chalcopyrite along a small shear zone that is 10 feet wide. Showing No. 13 is an area of float material in 'frost boils' and consists of fragments of porphyritic basalt cut by some narrow veinlets of chalcocite. Some minor native copper mineralization in quartz-calcite veins which occur in fractures or shears across a width of 200 feet forms showing No. 15. A quartz-calcite breccia vein 7 feet wide, and with an exposed length of 20 feet, forms part of the showing. This vein strikes N35°E.

Showing No. 21 is a mineralized zone in slightly brecciated porphyritic basalt. Chalcocite and secondary malachite occur as veinlets and along shear planes in the oxidized zone. Chalcocite in veinlets and amygdules over an area 100 feet long by 30 feet wide comprises showing No. 38. Showing No. 39 consists of chalcocite and secondary malachite in amygdules, veinlets and shear planes along a sheared zone 20 feet wide that is exposed for a length of 150 feet. Showing No. 55 is a zone of parallel quartz-calcite veins that is 7 feet wide and 30 feet long. Specks of chalcocite are scattered through the breccia. The veins and breccia zone are in sheared porphyritic basalt.

Showing No. 59 consists of minor malachite along a quartz-calcite breccia zone in sheared porphyritic basalt. Showing No. 65 is a similar breccia zone that is 1 foot wide, 30 feet long, strikes N74°E, and dips vertically. The zone contains from a trace to greater than 5 per cent chalcocite. Showing No. 76 consists of copper-bearing quartz-calcite breccia fragments which are distributed in 'frost boils' over an area 100 feet wide by 200 feet long.

Some geophysical surveying was also done on three grids on the property during the 1968 season. On grid No. 1 an electromagnetic survey covered 4.8 line miles and on grid No. 2 about 0.7 line miles were covered. No anomalies were obtained on these two grids; grid No. 2 covered parts of claims PAN 11, 20-22, 52 and 53. On grid No. 3, which covered part or all of claims DIB 1-3, PAN 1-4, 13-20, 25, 32-51, MAS 37 and 41-46, an electromagnetic survey covering 18 line miles was the only geophysical work done.

A magnetometer survey and some detailed electromagnetic surveying were recommended over the anomalies on grid No. 3, particularly over those rated priority C or higher. Detailed geological mapping was also recommended for the property.

Teshierpi Mines Ltd. (Group 3; TEA 1-44 claims) (86-N-12; about 67°36'30"N, 117°32'30"W)

This property is located on the south contact of the basalt belt about 18 miles west of the Herb-Dixon Fault. A preliminary investigation of the property was carried out during the 1968 field season. Two copper showings were located during this work.

Showing No. 1 is the most significant showing that was located on the TEA group. This showing consists of secondary copper minerals along joints and as amygdules in chloritized altered basalt. The best assay results for chip or channel samples from the showing were 1.15 per cent Cu across 4 feet and 1.12 per cent Cu across 5 feet.

Showing No. 2 is a relatively minor occurrence of bornite, chalcopyrite, and secondary malachite in talus material on a slope below an exposure of quartz-calcite vein breccia in dolomitized limestone. The showing is near the contact of the dolomitic limestone with overlying basalts.

No further work appears to have been done on the property during 1968, nor recommendations made as to future exploration.

Teshierpi Mines Ltd. (Group 4; GREG 1-273 claims) (86-N-10; about 67°40'N, 116°51'W).

This large group of claims straddles the Herb-Dixon Fault where it offsets the contact of the basalt belt with overlying sediments (Fraser, 1960). Preliminary prospecting and some geophysical surveying and diamond drilling were done on the property during the 1968 season. Five 'showings' were found.

Showing 1 consists of mineralized blocks of flow-top material. Showing 2 is an occurrence of large float fragments of quartz-calcite vein material in talus. The fragments contain minor pyrite and malachite. Showing 3 consists of some malachite along one bedding plane in white, medium-grained, quartz sandstone. A few layers of black carbonaceous shale and of quartz pebbles occur in the sandstone.

Showing 4 is a very highly crushed breccia zone, but no associated copper mineralization was found. Showing 5 is a mineralized quartz-calcite vein that has apparently been investigated by geophysical surveys, and possibly diamond drilling. Samples taken across the widest part of the vein assayed 3.16 per cent Cu/5 feet and 1.85 per cent/3 feet.

Geophysical surveys were carried out on two grids on the property as listed below. The electromagnetic survey employed Ronka EM 16 or Crone units, both employing the radio signal broadcast from Seattle, Washington. Readings were taken each 100 feet along lines spaced 400 feet apart. The electrode spacings for the induced polarization surveying were from 25 to 200 feet.

		Line-miles of survey			Anomalies and priority				
Grid No.	Claims	E.M.	Mag.	I.P.	A	B	C	D	E
4-1	1, 2, 15-18, 31-34, 47-50, 63-66, 79-82, 95-98, 111-114, 127-130, 142-146, 159-162, 167, 168, 171-174, 177-180, 183-186, 189-192, 195-198, 200	70	7.6		1	5	4	3	9
4-3	226, 230, 231, 239-241, 249-251, 255-257, 271, 272	18.5	15.5	5.3					

On grid 4-1 magnetometer, detailed electromagnetic and induced polarization surveys have been recommended to test the anomaly of A priority and one of B priority. Magnetometer and detailed electromagnetic surveys were recommended over two other anomalies of B priority and one of C priority. Magnetometer surveying was also recommended over the remaining two anomalies of B priority.

An electromagnetic survey over grid 4-3 detected only one significant anomaly which is near significant copper showings on the grid; the induced polarization survey gave a weak to moderate coincident anomaly. The magnetometer survey indicated a very weak magnetic low that is also coincident.

Five holes were drilled on claim 240 on grid 4-3 and presumably tested the main copper showing and geophysical anomaly on this grid. The holes were drilled along a line from the central part of the south boundary of the claim to a point just southeast of its centre. All the holes were inclined at 40 degrees and the results of the drilling were as follows:

Hole No.	Latitude	Departure	Azimuth	Depth (feet)	Intersection	Cu (%)
TS-8	11 + 93N	2 + 93E	316°	92		
TS-9	13 + 00N	2 + 93E	316°	117		
TS-10	14 + 00N	2 + 45E	302°	101	37'-41'	0.47
					62.5'-65.5'	1.03
					67'-70'	1.3
					75.6'-78.6'	0.41
TS-11	16 + 76N	2 + 10E	303°	185	29.6'-35.6'	3.73
					58'-59.6'	0.24
					84.5'-88'	3.90
					129.5'-136'	0.79
					154.5'-159.5'	3.68

Hole No.	Latitude	Departure	Azimuth	Depth (feet)	Intersection	Cu (%)
TS-12	18 + 00N	1 + 55E	303°	187	71'-76'	8.2
					76'-78'	0.4
					103.3'-106.5'	1.45
					117'-118.6'	15.75
					134'-136'	1.50
					151.5'-154.8'	3.70

Three intersections obtained in hole TS-11, 3.73 per cent Cu/6 feet, 3.90 per cent/3.5 feet and 3.68 per cent/5 feet, and two intersections in hole TS-12, 8.2 per cent/5 feet and 3.70 per cent/3.3 feet, were encouraging.

Teshierpi Mines Ltd. (Group 5; CON 1-55 claims) (86-M-9, 16; about 67°45'25"N, 118°16'W).

This property is near the north contact of the basalt belt and approximately 37 miles west of the Herb-Dixon Fault. A preliminary investigation of the property was carried out during the 1968 exploration season. Four showings, probably all insignificant, were located. These showings are assigned the numbers of notes included in the report on the property.

Chalcocite and chlorite are present as amygdules in basalt at mineralized occurrence No. 25. Showing No. 26 is a sheared and oxidized flow-top breccia which contains amygdules of chalcocite. Samples from this showing assayed 0.29 per cent Cu. Showing No. 34 consists of minor mineralization in a brecciated, amygdaloidal, flow top overlying sheared porphyritic basalt. A quartz vein 1 foot wide and 150 feet long forms showing No. 39. The vein is mostly barren and strikes N20°W in sheared porphyritic basalt, but does contain a little chalcocite and secondary malachite.

This preliminary work does not appear to have been followed up during the 1968 season, and no recommendations are known concerning further work on the property.

Teshierpi Mines Ltd. (Group 7; KARLA 1-13 claims) (86-N-11; about 67°42'N, 117°06'W)

This property lies near or on the north contact of the basalt belt and is about 7 miles west of the Herb-Dixon Fault. The claims were staked for PCE Explorations during the 1966 season while reconnaissance exploration was being carried out in the area. They were transferred to Teshierpi Mines prior to the 1968 season.

A showing at approximately 67°41'30"N, 117°05'40"W was investigated in 1966. Massive malachite occurs in a quartz vein 12 feet wide which is exposed for a length of 175 feet and strikes N50°W in basalt. Several veins of chalcocite up to 12 inches wide are exposed along the valley to the northwest.

Futher preliminary investigation of the property was carried out August 1-20, 1968, under the supervision of Murray Watts, Jr. Many quartz and quartz-carbonate veins were located on the property. Irregular and minor occurrences of bornite and chalcocite are found in the veins, and none

was considered to be of economic significance. The locations and characteristics of four of the mineralized areas on the property are noted below. The showing located on the east boundary of claim KARLA 11 apparently corresponds to the showing described above.

A quartz vein up to 6 feet wide is located approximately at the southwest corner of claim KARLA 9. The vein is exposed for a length of 750 feet along a northwest strike in basalts. The vein is barren for the most part, but malachite is abundant in places and traces of chalcocite are present.

A quartz vein 3 feet wide and 170 feet long is located near the south boundary of claim KARLA 10 and also strikes northwest. This vein is better than the one on claim KARLA 9 and contains malachite, traces of chalcocite and pyrite.

On the north boundary of claim KARLA 1 another northwest-striking quartz vein is exposed which contains bornite, chalcocite, malachite and pyrite. The vein is 20 feet wide and 100 feet long and is barren in places. However, some mineralization occurs in sheared rock on either side of the vein.

Malachite, bornite, hematite and pyrite are found in places in a shear zone on the east boundary of claim KARLA 11. Stringers and veins of quartz are present throughout the shear zone.

Teshierpi Mines Ltd. (Group 8; DIZ 1-323, JIM 1-36, and HERB 1-107 claims) (86-N-7; about 67°19'N, 116°48'W)

This 466-claim property is located southwest of the main block of claims held by Coppermine River Ltd. and is centred on Teshierpi Mountain. The group covers a wedge of basalts and dolomite between the Teshierpi and Herb-Dixon Faults (Fraser, 1960). The junction of these two faults should lie immediately south of the south boundary of this property. A length of 4 or 5 miles of the Teshierpi Fault lies on the property and approximately 7 miles of the Herb-Dixon Fault; the HERB group forms a northerly-projecting arm on the property which apparently lies immediately west of the latter fault.

Preliminary investigation of the property was carried out during the 1968 season. Four minor copper showings were described as a result of this work.

Showing No. 1 consists of malachite-stained quartz and calcite which form veins and the cement to breccia veins. These veins are up to 3 inches wide and occur here and there in grey porphyritic basalt. Showing No. 27 is a brecciated amygdaloidal flow top which is occasionally cut by narrow quartz-carbonate veins. These veins are up to 3 inches wide and contain scattered chalcocite. Showing No. 34 consists of scattered thin sheets of native copper in fractures in grey, medium-grained, porphyritic basalt. The basalt is also cut by veinlets of quartz and calcite. Showing No. 38 is apparently located just off of the property. Specks of native copper are scattered in narrow stringers of quartz which cut the basalt country rock.

A Ronka EM 16 electromagnetic survey was carried out on two grids on the property. Grid No. 1 covered claims DIZ 287-298, 301-306, 309-314, 151, 318, 321, 322, and JIM 9-12 in whole or in part. Grid No. 2 covered all or part of claims HERB 1, 9-12, 19-23, 28-33, 38-44, 47-54, 56-60, 62-69, 72-79, 82-89, and 92-99. The electromagnetic survey on the

No. 1 grid covered about 31.6 line miles and that on the No. 2 grid about 75.9 line miles. On the No. 1 grid six anomalies of priority E and one of priority C were located. No further work was recommended on these anomalies.

The survey on the No. 2 grid showed a number of conductors distributed for a considerable distance north to south. It was considered likely that the anomalies represent crushed and sheared zones along the Herb-Dixon Fault system. It was recommended that further work be considered for six limited areas on this grid.

Teshierpi Mines Ltd. (Group 10; ANDY 1-12 claims) (86-O-11; about 67°35'15"N, 115°07'30"W)

An option on this group was acquired by P.C.E. Explorations and was assigned to Teshierpi Mines prior to the 1968 season for $250 (The Northern Miner, March 14, 1968, p. 3). These claims were staked in July and August, 1964, after a copper showing was found by an Eskimo, and were subsequently optioned to Canadian Nickel Company, a wholly-owned subsidiary of International Nickel Company of Canada Ltd. (Schiller, 1964).

The claims are underlain by clastic sedimentary rocks of the Coppermine River Group, and lie just north of the surface extent of the underlying basalts (Fraser, 1960). Several copper showings consisting of bornite, and possibly chalcopyrite, in a quartz-carbonate gangue are found in chert breccia (Schiller, 1964, p. 13). The breccia apparently occurs along a fault zone.

Canadian Nickel Company drilled 6 holes totalling 625 feet on the property between May 23 and June 12, 1965, of which two were abandoned in overburden. These holes were drilled as follows:

Hole No.	Claim	Depth (feet)	Inclination	Azimuth	Latitude	Departure
26227	ANDY 1	300	-45°	090°	2 + 85N	2 + 00W
26228	ANDY 1	52	-90°	-	2 + 85N	1 + 50E
26229	ANDY 4	45	-90°	-	10 + 60S	5 + 00E
26230	ANDY 4?	18	-45°	090°	10 + 00S	2 + 25E
26231	ANDY 1	50	-45°	090°	10 + 60S	1 + 00E
26232	ANDY 4	160	-50°	090°	10 + 94S	0 + 75E

Near the surface, hole 26227 intersected black to light grey shale, in part strongly brecciated, with some sandstone interbeds. Some minor pyrite and carbonate stringers occur in the brecciated sections. Below a depth of 108 feet the sediments are predominantly sandstone. The sandstones are calcareous in part, very coarse grained in part, and contain disseminated pyrite. Some volcanic pebbles are present in the sandstone below a depth of 150 feet. Mudstone occurs interbedded with the sandstone, especially from 192 to 223 feet in the hole. At a depth of 193 feet blebs of chalcopyrite are evident in the sandstone. In the interval 209-213 feet the sandstone is cut by chalcopyrite, pyrite and quartz-carbonate stringers. At a depth of 222.7 feet the hole entered a breccia zone which consists of quartz, carbonate minerals, highly altered rock fragments (in part replaced by chert?), and disseminated blebs of chalcopyrite and bornite. In some cases

blebs of chalcopyrite are rimmed by bornite. This brecciated and altered material passes into brecciated basalt at a depth in the hole of about 235 feet and into massive basalt at about 280 feet. Numerous samples from the hole were assayed for copper with results as listed in the table following.

The nickel assay results are also presented since they are available. In general values of 0.04 per cent Ni or less were obtained, likely representing the presence of trace nickel, or possibly slight contamination during assaying. The 0.09 per cent Ni assay for a 9.5 foot intersection of brecciated basalt may indicate, however, the presence of the mineral carrolite which is known to occur in the area.

Holes 26228 and 26229 intersected basalt which is brecciated in certain intervals. An assay of a brecciated interval at 35.9 feet to 37.3 feet in the latter hole gave values of 0.13 per cent Cu, 0.08 per cent Ni and 0.002 oz/ton Au. Inclined hole 26232 intersected only sediments to its completed depth of 160 feet. The hole intersected interbedded sandstone and shale to a depth of 56 feet, sandstone with minor interbedded shale from 56 to 135 feet, and fine-grained mudstone from 135 feet to the end of the hole. Some quartz and carbonate veining occurs at the main sandstone-mudstone contact at a depth of 135 feet.

Ronka EM 16 electromagnetic, magnetometer and induced polarization surveys were carried out on the property by Teshierpi Mines during the 1968 season. These surveys covered about 3.1, 2.9 and 2.5 line miles, respectively. The survey grid covered claims ANDY 1-4. It was concluded that the surveys indicated a narrow fault trending about north-south which separates quartzites on the west from highly magnetic massive basalt on the east. No mineralization was indicated by the surveys. No other work is known to have been done during the 1968 season, nor are recommendations known with regard to further work on the property.

Assay Results for Hole 26227

Intersection	Width (feet)	Ni (%)	Cu (%)
72.0'-75.0'	3.0	0.01	0.06
107.3'-108.6'	1.3	0.01	0.10
108.6'-110.9'	2.3	0.02	0.06
110.9'-112.1'	1.2	0.04	0.04
118.7'-120.7'	2.0	0.03	0.07
136.6'-143.4'	6.8	0.04	0.07
143.4'-150.0'	6.6	0.03	0.09
150.0'-151.5'	1.5	0.01	0.21
179.7'-185.2'	5.5	0.01	0.07
188.7'-191.7'	3.0	Nil	0.04
202.7'-204.9'	2.2	0.02	0.07
209.4'-211.0'	1.6	0.04	0.44
211.0'-212.9'	1.9	0.04	2.36
212.9'-214.9'	2.0	0.04	0.35
214.9'-218.0'	3.1	0.03	0.27
220.8'-222.7'	1.9	0.01	0.32
222.7'-226.7'	4.0	0.03	0.72
226.7'-233.3'	6.6	0.04	1.56
233.3'-234.1'	0.8	0.03	0.20
234.1'-235.4'	1.3	0.04	0.83
235.4'-245.0'	9.5	0.09	0.10

Teshierpi Mines Ltd. (Group 9; BEE, DOT, NEE and BON claims) (86-O-10; about 67°31'45"N, 114°57'W)

This property consists of claims BEE 1-28, DOT 1-27, NEE 1-36 and BON 1-36, a total of 127 claims. The property lies east of the Coppermine River, about 24 miles west of the east end of the basalt belt, and adjoins east of the north part of the main block of claims of Bernack Coppermine Exploration Company, where a significant copper occurrence was located and drilled in 1968. A preliminary investigation of the property was made during the summer of 1968. Three minor copper occurrences were reported from this investigation.

Showing No. 7 consists of occasional blebs of native copper and chalcocite in float fragments of brecciated, amygdaloidal, oxidized, flow-top material. Calcite, chlorite and quartz are the main amygdule minerals. Narrow veinlets of chalcocite in slightly crushed basalt comprise showing No. 29. The basalt is grey, medium-grained, and porphyritic, and is cut by scattered veinlets of quartz and calcite. Showing No. 30 is a very narrow quartz-feldspar vein which strikes east-west in similar basalt to that described above. Blebs of chalcocite are widely disseminated in the vein.

No further work is known to have been done on this property during the 1968 season.

Teshierpi Mines Ltd. (Group 11; SAM 1-48 claims) (86-O-5; about 67°21'30"N, 115°51'30"W)

This property lies immediately north of the property of Agassiz Mines Ltd. - Fundy Explorations Ltd. and covers, with other showings, the extension of a silver-bearing vein found near the north boundary of the latter property. The property of D'Aragon Mines lies to the west and the properties of Janus Explorations and Quadrate Explorations lie to the east. The No. 6 vein on the Quadrate property probably extends southwest onto the SAM group.

A preliminary investigation of the property was conducted by PCE Explorations in 1966. One main copper occurrence, the No. 1 showing, was located at approximately 67°21'N, 115°51'W. Chalcocite occurs with calcite and quartz along a breccia-fracture zone which strikes N40°E in flow-top basalt. The zone can be traced in outcrop and as frost-heaved blocks for 1,150 feet. Chip samples taken in two old pits about 320 feet apart assayed 10.89 per cent Cu across 5 feet and 12.08 per cent across 1 foot. Showing No. 2 is located about 1 1/2 miles northwest of the No. 1 showing. The showing consists of a frost-heaved breccia zone with a strike of N15°W. The zone has been traced for a length of more than 1,000 feet and is up to 30 feet wide in places. Pyrite, native copper and native silver are present in the calcite cement of the breccia. Two grab samples were taken along the zone and assayed 138 oz/ton Ag and 0.04 oz/ton Au, and 25.5 oz/ton Ag and 0.01 oz/ton Au.

Further preliminary investigation of the property in 1968 resulted in the location of eight minor copper occurrences. One showing consists of chalcocite, and secondary malachite, in a quartz-calcite-jasper vein 1 to 1 1/2 inches wide which strikes about north. Another showing consists of an area in which quartz-calcite veins up to 2 inches wide strike north in coarse-grained porphyritic basalt. Along the side of a lake on the boundary of the

property a shear zone contains some quartz-calcite veins which are generally narrow and spaced 2 to 3 feet apart. The veins contain chalcocite and malachite and are brecciated in part.

An induced polarization survey on the property covered about 1 3/4 line miles. This survey was done on claims SAM 46 and 47 and indicated one distinct anomaly which may represent a shear zone. This anomaly is near the south boundary of the property and may correspond to the silver-bearing breccia or shatter zone which extends north from the property held jointly by Agassiz Mines and Fundy Explorations. Alternatively, the anomaly may lie to the east of this structure.

Teshierpi Mines Ltd. (Group 12; ESC 1-195, 201-300 claims) (86-O-11, 12; about 67°35'30"N, 115°32'30"W)

This group straddles the Coppermine River and is underlain by sediments of the Upper Coppermine River Group, which overlie the basalt sequence. The 295-claim property was mapped geologically during the 1968 season.

In addition to the predominant sediments on the property, minor diabase, as sills intruding the sediments, is also present (Baragar, 1967). A number of copper showings were found on or near the Coppermine River where the best exposure is to be found.

Chalcocite and bornite are present along many of the small shear zones which cut the sediments along the Coppermine River. The sulphides occur as veinlets and small isolated blebs in the shear zones and as disseminations in the adjacent porous sandstones for up to 4 to 5 feet from these shears.

The most significant mineralization on the property consists of chalcocite and bornite in nodules in a glauconite-rich sandy siltstone and a laminated clayey siltstone. The nodules are marcasite- and hematite-bearing. Two main exposures of mineralization of this type were investigated.

The No. 1 showing is located on the northwest bank of the Coppermine River about 4 1/2 miles upstream from the Escape Rapids, at approximately 67°35'15"N, 115°35'45"W. This showing was visited by the author on July 31. The mineralized sandy siltstone at this locality averages 4.5 feet thick and can be traced along strike for about 600 feet. The nodules are spherical to lenticular, are up to 3 inches across and are irregularly scattered in the beds. A thin band of chalcocite near the top of the nodule-bearing section extends for some distance along the bedding. Other minor disseminated mineralization in a few places appears to follow the bedding for short distances.

Showing No. 2, located at about 67°36'15"N and 115°30'30"W a short distance north of where copper mineralization was found in regional mapping of the area (Fraser, 1960), is very similar. The copper-bearing nodules here are in a clayey siltstone bed which has an average thickness of 3.5 feet.

Five wide channel samples were taken across the thickness of the mineralized section at the two localities. These channel samples gave the following results.

Showing No.	Width of Sample (feet)	Thickness of Bed (feet)	Cu (%)
1	2	4.5	5.66
1	2	4.5	6.95
1	2	4.5	1.21
1	0.5	4	1.69
2	2	3.5	17.83

In late June, 1968, a hole was drilled on claim 53, about 2 miles upstream from Escape Rapids and on the east side of Coppermine River, to investigate the sedimentary section. This hole was drilled vertically and intersected a monotonous sequence of sandstones and siltstones. The hole was abandoned at a depth of 406 feet without any visible copper mineralization being penetrated, and without reaching the underlying basalts. This is the only hole that was drilled in a planned program of cross-sectional drilling (The Northern Miner, May 30, 1968, p. 13).

A series of 3 to 6 drillholes has been recommended to assess the mineralized nodule-bearing beds. Detailed stratigraphic mapping was recommended if the drill results were encouraging.

Towagmac Exploration Co. Ltd. (MGB 253-324 claims) (86-N-8; about 67°20'N, 116°13'W)

This 72-claim property lies immediately west of a companion property held by Canadian Goldale Corp. Ltd. Prospecting, geological mapping and an electromagnetic survey were carried out on the property in August, 1968, by William P. McGill and Associates Ltd. This work was done along northwest-southeast lines spaced at 500-foot intervals.

The property is entirely underlain by basalt flows which strike northwest-southeast and are well exposed as a series of ridges. The basalt flows are generally fine grained and somewhat amygdular. The contacts of the flows are occasionally highly oxidized. Numerous minor occurrences of native copper were found in a prominent set of joints which strike N60°E. Calcite and epidote generally accompany the native copper. Chalcocite is comparatively scarce on the property.

Readings were taken each 100 feet in the "Radem" electromagnetic survey. Seventeen anomalies, most of them weak and twelve of them with strikes near due north, were obtained in the survey. Anomalies 2 and 3 are both of moderate strength and relatively long, 2,500 and 7,000 feet, respectively, and anomaly 3 may correspond to a fault. Anomaly 7 coincides with an inferred fault but is generally weak except where it may join with No. 5. Anomaly 5 is of moderate strength and may also join with No. 16. Anomalies 15 and 16 represent two strong converging faults that strike east and east-northeast. The junction of these conductors on claim MGB 319 is considered an especially favourable locality. Anomalies 1 and 8 are of moderate strength and No. 1 is located along a fault which extends onto the property of Canadian Goldale Corp. Narrow copper-bearing veins are exposed near conductors 4 and 14. Prospecting in the vicinity of other conductors failed to indicate any mineralization.

The geophysical lines were oriented approximately parallel to the strike of the basalt flows. It was found that for most of the fault structures and detected conductors this orientation was poor.

It was recommended that the No. 15 and 16 conductors be tested by diamond drilling.

Trans Columbia Explorations Ltd. (HR 1-125, 150-209 claims) (86-O-11; about 67°35'30"N, 115°10'W)

This 185-claim property is located about 8 miles east of the Coppermine River on the north contact of the basalt sequence (Fraser, 1960). Geological mapping of the property at 1,000 feet to the inch was done June 21-August 1, 1968, by Precambrian Mining Services Ltd. Some magnetometer and electromagnetic surveying was carried out August 15-September 1, 1968.

Approximately 50 per cent of the property consists of outcrop, but exposure is very poor in areas underlain by sediments. The sediments unconformably overlie the basalts and the dips of both sequences are 0-20 degrees north and northwest. The sediments consist of impure sandstone, limestone and carbonaceous shale. Diabase intrudes both the basalts and the sediments. Some major faults on the property may be obscured by overburden. Evidence of minor faulting was observed on the property, and a minor normal fault may be associated with the mineralization of the No. 3 showing. Six copper showings were located on the property.

Showing No. 1 consists of narrow veinlets of chalcocite in basalt adjacent to the Nipartoktuak River in the north-central part of the property. A calcite vein containing sporadic chalcocite mineralization is associated with the showing. The calcite vein is several hundred feet long and massive chalcocite occurs at the margin of the vein at one place. Three grab samples assayed 14.5 per cent Cu, 4.6 per cent Cu and 1.2 per cent Cu. Six chip samples from the west part of the showing assayed 0.8 per cent Cu/2.5 feet, 1.1 per cent/2 feet, 0.5 per cent/1.8 feet, 0.55 per cent/1.3 feet, 0.15 per cent/2.5 feet and 0.20 per cent/2.5 feet. The magnetometer and Ronka EM 16 electromagnetic surveying in the vicinity of this showing was along north-trending lines spaced at 400-foot intervals. The electromagnetic survey gave only a weak response and did not outline any significant conductors. The magnetometer survey, likewise, failed to indicate any linear magnetic lows which might represent faults.

The No. 2 showing is located 1/4 mile west-northwest of the No. 1 showing and is on the north bank of Nipartoktuak River. The showing consists of a single large outcrop of a calcite vein stockwork which trends about N10°W. Massive and disseminated chalcocite and bornite occur in the stockwork across a true width of 30 to 50 feet. The grade is estimated at 2 per cent Cu. Indications of the calcite vein stockwork have been found 1,000 feet north of the showing. The magnetometer and electromagnetic surveys were conducted along east-trending lines spaced 400 feet apart. A magnetic low is centered just west of the showing and can be traced 3,500 feet north along strike. The electromagnetic survey shows a generally conductive zone coincident with the magnetic low and a strong conductor with a length of 700 feet is present between about 1,300 and 2,000 feet north of the showing.

Showing No. 3 consists of chalcocite veinlets in basalt in the south central part of the property. The mineralization occurs over a significant area; in the east section of the showing it is up to 100 feet wide. Showing No. 4 consists of a bornite-bearing calcite vein which occurs in the southwest part of the property. The vein generally contains only minor mineralization, but in one place contains massive bornite. Showing No. 5 is in the southeast part of the property and is a minor occurrence of veinlets of chalcocite and bornite in basalt. The No. 6 showing is located 2,000 feet north-northeast of No. 5 and consists of narrow veinlets of chalcocite and chalcopyrite in fractures in basalt. The zone is less than 10 feet wide and is of low grade.

Detailed magnetometer and electromagnetic surveys have been recommended over major fault structures that are obscured by overburden. Since only the No. 1 and No. 2 showings were investigated by geophysical surveys, it seems probable that some of the other showings would be tested if further work were done on the property. A limited program of diamond drilling was recommended on the No. 2 showing, and this drilling will probably be done in 1969.

Trans Columbia Explorations Ltd. (GOOD 1-35 and BREN 1-36 claims) (86-N-10; about 67°43'N, 116°54'W)

This property lies a short distance west of the Herb-Dixon fault and regional geological mapping (Fraser, 1960) indicates that the north contact of the basalt belt lies south of the property. A program consisting of prospecting, geological mapping and a soil geochemical survey was carried out July 24-August 7, 1968, by William P. McGill and Associates Ltd.

Only a few small outcrops are present on the property, but float boulders are thought in most cases to be diagnostic of the underlying bedrock. Basalt is exposed in a few places and underlies the southern part of the property. Remnants of a diabase sill form a number of large areas of outcrop. Sediments are exposed in a few places, and the thickness of sediments below the diabase sill is estimated at about 80 feet. A fault is inferred to be present along the volcanics-sediments contact. A few faults with northwest strikes may cut the sedimentary rocks. No significant copper showings were found in place.

Secondary copper minerals occur in calcite in float boulders on claims GOOD 12, 13 and 14, which are underlain by basalt. The zone of copper-bearing float extends northwest along a possible fault.

The geochemical survey, as well as the prospecting and mapping, was conducted along east-west lines spaced 500 feet apart. A total of 340 samples were taken at 500-foot intervals, except over diabase outcrop. The samples were taken at a depth of 12-30 inches and were analyzed colorimetrically for total heavy metals. Two areas of copper-bearing float were selected for detailed geochemical investigation and a total of 324 samples were taken at 100-foot intervals along lines spaced 200 feet apart. These samples were analyzed for copper at the Jens Mogensen Laboratory, Toronto.

An area of copper-bearing float underlain by sedimentary rocks failed to give a soil anomaly. An anomaly 100 to 200 feet wide and 550 feet long occurs on claim GOOD 13. The peak of the anomaly is only 30 ppm copper. The anomaly is open off of the property to the south.

A high-frequency electromagnetic survey was recommended over the geochemical anomaly. Diamond drilling was considered to be warranted regardless of the results of the electromagnetic survey. It was also recommended that the ground on the extension of the anomaly south of the property boundary be staked if possible.

Torwest Resources (1962) Ltd. (ARCH and GORD claims) (86-N-12; about 67°41'N, 117°56'30"W)

This 100-claim property, consisting of claims ARCH 196-198, 203-208, 213-219, 222-229, 232-239, 242-249 and GORD 341-400, formed part of a total of 388 claims purchased from Mr. G. Leliever for $96,000. The property is located in the centre of the relatively narrow western part of the basalt belt and is adjoined to the east by a property held by Magnum Consolidated Mines and to the west by that of Daniel Mining Company. Electromagnetic and magnetometer surveys, trenching and limited diamond drilling were done on the property in 1968.

Several minor showings were located which consist of thin plates of native copper along fractures in basalt. Chalcocite was found in amygdules in basalt across a width of 1-1 1/2 feet and for a length of 15 feet on claim GORD 355. Two trenches and a drillhole to a depth of 35 feet failed to give any copper values. On claim GORD 368 high-grade chalcocite occurs in broken fragments, apparently from the disintegration of a single float boulder, over a small area. Two shallow pits and two drillholes to depths of 87 and 25 feet, indicated no mineralization in the underlying basalt.

The Ronka EM 16 electromagnetic survey totalled about 86.5 line miles and covered the entire property on lines spaced 400 feet apart. Readings were taken each 200 feet and at closer intervals over anomalous zones. A number of interesting anomalies were located. The magnetometer survey covered the strong electromagnetic anomalies, but was not completed over the entire property. The magnetometer survey results were generally of little interest.

Further geophysical work, including an estimated 15 line miles of induced polarization survey, was recommended for the property. Limited diamond drilling was recommended to follow the induced polarization survey to test the best anomalies.

Torwest Resources (1962) Ltd. (IKE 1-288 claims) (86-N-7; about 67°13'45"N, 116°14'W)

This large property is located near and on the south contact of the basalt sequence in the central part of the belt. The group covers the western end of September Mountains and extends west across Coppermine River to a point about 4 1/2 miles west of the river. The property comprises the greater part of a total of 388 claims purchased from Mr. G. Leliever for $96,000 (Engineering and Mining Journal, April, 1968, p. 158).

Approximately 10-15 per cent of the property is outcrop, generally basalt. Geological work was mainly devoted to tracing the contact between the basalts and the underlying dolomites of the Hornby Bay Group. A Ronka EM 16 electromagnetic survey covered the property. The survey totalled

about 50 line miles and was conducted along lines spaced 800 feet apart over part of the property and 1,600 feet apart for the remainder. The survey results were almost entirely negative. A magnetometer survey was not carried out due to lack of time.

It was recommended that the property be allowed to lapse.

Mr. G. Turner (Rae River) (86-O-13, 86-N-16; about 67°55'N, 115°45'W)

Mr. Turner prospected in this area in the vicinity of Rae River during the 1968 season. Some of the showings that received attention were on Rae River about 3 miles up the river from salt water and about 20 miles west-northwest from the settlement of Coppermine. The showings are in dolomite which forms part of a sequence of sediments overlying the Coppermine River Group, and are about 22 miles north of claims staked along the basalt belt. Other showings are reported to occur further upstream. The WG 1-50 claims (86-N-16) were recorded early in July. The property also includes the RED 1-48, CO 1-12, CLUB 1-8, FOX 73-90 and CAN 1-30 claims.

From descriptions of the showings by Mr. Turner, both cross-cutting veins and flat seams conformable with the bedding appear to be present. Veins containing chalcopyrite, carrolite, pyrite and marcasite are present on both sides of Rae River and are associated, in part, with a dyke or thin sill of diabase. Some siderite in coarse tabular crystals is also found here. Some soapstone, including a nearly black variety that has been used by the Eskimos for making attractive carvings, also occurs on the property and may be closely associated with the copper showings. Samples from the "East Showing" on the south side of the river show considerable evidence of shearing.

The mineral that has been identified as carrolite is a mineral of the linnaeite group which is coarsely crystalline and closely associated with coarse grains of the other sulphides. In some cases the mineral shows good cubic outline and in a few cases it forms radiating clusters. X-ray fluorescence investigation indicated the presence of major nickel and minor iron, cobalt and copper. This would suggest that the mineral may be polydymite (nickel member), or siegenite (cobalt-nickel member), rather than carrolite, the copper-cobalt member of the linnaeite group.

Three samples of the mineralization that were assayed by Mr. Turner gave the following results:

Description	Cu (%)	Au (oz/ton)	Ag (oz/ton)
Abundant chalcopyrite and carrolite	11.00	0.15	0.60
Predominantly carrolite	6.10	0.08	0.40
Dolomite with crystals of chalcopyrite	3.70	0.04	0.14

United Buffadison Mines Ltd. (NAN, GRA and PRO claims) (86-O-5; about 67°21'30"N, 115°42'30"W)

The NAN 1-36 and GRA 1-36 claims were held by the company prior to the 1967 season and the PRO 10-30, 33, 34 claims were taken under option prior to the 1968 season. The name of the company has recently been changed to Western-Buff Mines and Oils Ltd. The property straddles the Coppermine River about 10 miles north of where it flows east along the north flank of the September Mountains. The property lies just northeast of that of Quadrate Explorations. A program of prospecting, geological mapping, and electromagnetic and geochemical surveying was conducted on the NAN and GRA claims during the 1967 season by Advance Geology and Geophysics Ltd.

Approximately 10 per cent of these claim groups consists of outcrop, although there is very little rock exposed on the east side of Coppermine River. Regional geological mapping (Fraser, 1960) indicates that a tongue of sandstone extends south into the sequence of basalt flows to the north boundary of these claims. The property is reported, however, to be entirely underlain by basalts. Three prospectors worked on the property and located four zones of interesting copper mineralization.

Zone A is exposed for a length of 700 feet on claim GRA 17. The zone is a highly brecciated or 'shatter' zone and strikes N40°E in a depression which is 60 feet wide. The zone is possibly an extension of the Sandberg vein, which is about 50 feet wide, from the adjoining property of Quadrate Explorations. Numerous quartz and calcite veinlets are exposed across a width of 20 feet. A chalcocite vein 3 feet wide and at least 200 feet long is exposed in three trenches. About 400 feet northeast of these trenches, the vein was again exposed in a trench. Some copper mineralization occurs in the wall-rock for a distance of about 8 feet on either side of the vein. Representative samples from the chalcocite vein assayed 59.8 per cent Cu and 65.3 per cent Cu for an average grade of 62.5 per cent Cu/3 feet.

Zone B is located on claim GRA 18 near the north contact of the same shatter zone that is associated with Zone A. Shearing at N20°E to N40°E occurs in an area 1,000 feet long by 200 feet wide. Some copper mineralization is present in feldspar-calcite-quartz veinlets which are associated with jasper-calcite veinlets in fractures that cross the sheared zone. Samples from a trench across the most highly mineralized section averaged 0.337 per cent Cu across 20 feet or 0.416 per cent Cu across 15 feet.

Zone C is located on claim NAN 23 on the west bank of Coppermine River. The mineralization and shearing appear to be the same as for the B zone. Visible native copper is associated with the veins along the shear zone. The zone is exposed across a width of 20 feet and for a length of 200 feet. A sample from a small trench across the zone assayed 2.40 per cent Cu.

Zone D is located a few feet west of the west boundary of the property near the northwest corner of claim NAN 18. This showing is on claim T 4901 of the property of Janus Explorations and is probably a further extension of the "Hearne Vein extension" which outcrops farther southwest on that property. Extension of the zone northeast onto the United Buffadison property is indicated by mineralized boulders in the overburden. Brecciation is prominent along the zone, and the zone is very much like the A zone. A massive chalcocite vein 2 feet in width, with disseminated mineralization on either side, occurs along the zone.

An electromagnetic survey totalled about 52 line miles and covered all of the ground area of the property along north-trending lines at 400-foot intervals. The mineralized zones were found to be nonconductive and no conductors were detected elsewhere on the property.

A geochemical soil sampling survey was not completed and covered only about 10 per cent of the area of the 72 claims. Completion of the survey was planned for the 1968 season.

A total of 5,000 feet of diamond drilling in 23 holes was recommended to test the four mineralized zones. This recommended drilling included 14 holes to test the A zone for a length of 1,000 feet and to a depth of 150 feet.

During the 1968 season the geochemical survey was completed on the NAN and GRA claims, the diamond drilling program was carried out, essentially as recommended, and a program of prospecting, geological mapping, and geochemical surveying was conducted on the PRO claims. The exploration camp was visited by the author on July 14.

The PRO claims were investigated between July 1 and 16 by traversing north-trending lines spaced 400 feet apart. Only about 1 per cent outcrop is present on this group, but it was concluded that the property is entirely underlain by basalt. The basalt flows dip 2 to 5 degrees north-northwest. No faults were noted on the property but one is inferred along the Coppermine River. Four small areas of copper mineralization were found. Three of these, two located along Coppermine River and the other close to the southwestern boundary of the property, consist of native copper as disseminated blebs in basalt or in amygdules of calcite or quartz. The fourth showing consists of native copper in a quartz vein 1/4 inch wide and 10 feet long that is on the south part of claim PRO 15 on the east side of the Coppermine River.

About 685 soil samples were taken at 100-foot intervals on the grid which totalled about 31 line miles. The samples were taken at depths of a few inches to one foot and were analyzed for copper at the Jens Mogensen Laboratory, Toronto, by nitric acid extraction and colorimetric analysis. The background in the area was found to be 10 to 25 ppm Cu and to average about 20 ppm Cu. An anomaly greater than 8 times background and 400 feet wide by 1,100 feet long was located on claim PRO 10. A second anomaly greater than 5 times background and 400 feet wide by 1,500 feet long was found on claim PRO 29 in the northeast part of the property. Both anomalies are elongated east-west and are located in overburden areas. The geochemical anomaly on claim PRO 10, a native copper occurrence on the west bank of the Coppermine River, and zone D which is exposed just west of claim NAN 18, occur over a distance of 1 1/4 miles along a northwest alignment.

Geochemical sampling on the NAN and GRA claims was also done at 200-foot intervals on north-trending lines spaced 400 feet apart. An anomaly 3,600 feet long, extending the zone 700 feet northeast, and about 10 times background, was found to include mineralized zones A and B. Anomaly D was located on the west part of claim NAN 18 in the vicinity of the D zone of mineralization. The anomaly has a peak of 11 times background and extends north-south for a length of 1,600 feet. Anomaly C is 900 by 1,800 feet, has a peak of about 6 times background, and is located on claim NAN 35 about 2,000 feet north of the A mineralized zone. Anomaly E is about 400 feet wide and 1,600 feet long, about 9 times background, and is located on claim GRA 3 between anomaly C and the end of the anomaly extending

northeast through the A zone. These four anomalies are all on the western part of the property. The geochemical survey was done by Advance Geology and Geophysics Ltd. in the period June 14 to 30, 1968.

The diamond drilling consisted of 5,004 feet in 23 holes and was done June 18 to September 12, 1968. The drilling is summarized in the table below; the letters prefixed to the hole numbers indicate the zones drilled.

A total of 2,969 feet of drilling in 15 holes investigated the A zone across a maximum width of 200 feet, over a strike length of 750 feet, and to a maximum depth of 275 feet. Brecciation over a maximum core length of 12 feet, and associated shearing and fracturing, was intersected along the zone. Chalcocite, and native copper in amygdules, are erratically distributed. The best mineralization was intersected in hole A-5 at a depth of 86 to 89 feet and averaged 19.02 per cent Cu for a core length of 3 feet. Hole A-6 investigated the zone at greater depth and gave 2.7 per cent Cu for a core length of 2 feet at 105-107 feet in the hole. Red shale beds up to 15 feet thick were encountered in the drilling. The volcanics, possibly tuffaceous in part, contain quartz, chert and calcite, and have been partly hematitized.

The hole on the B zone intersected mineralization at 169 to 171 feet which assayed 2.56 per cent Cu. The hole on the C zone cut a section grading 15.70 per cent Cu at 184 to 185 feet. Minor mineralization was noted elsewhere in the hole and some red shale is also present. Only minor amounts of low-grade mineralization were intersected in the D zone.

Hole No.	Latitude	Departure	Inclination	Bearing	Depth (feet)
A-1	41 + 25S	43 + 05W	45°	N43°W	239
A-2	41 + 25S	43 + 05W	63°	N43°W	241
A-3	39 + 77S	43 + 03W	45°	S43°E	173
A-4	40 + 23S	41 + 47W	45°	N43°W	240
A-5	41 + 88S	42 + 06W	45°	N43°W	153
A-6	41 + 88S	42 + 06W	63°	N43°W	152
A-7	41 + 88S	42 + 06W	85°	N43°W	251
A-8	43 + 04S	43 + 26W	45°	N43°W	158 1/2
A-9	38 + 55S	40 + 00W	45°	S43°E	289
A-10	42 + 50S	42 + 47W	45°	N43°W	95
A-11	42 + 50S	42 + 47W	60°	N43°W	151
A-12	42 + 50S	42 + 47W	70°	N43°W	152
A-13	43 + 33S	42 + 97W	60°	N43°W	194
A-14	43 + 33S	42 + 37W	80°	N43°W	161
A-15	45 + 32S	43 + 85W	60°	N43°W	320
B-1	50 + 70S	59 + 06W	45°	N65°W	422
C-1	3 + 65N	3 + 10E	60°	N25°W	390
D-1	7 + 58N	61 + 65W	45°	North	158
D-2	7 + 58N	61 + 65W	65°	North	251
D-3	9 + 90N	61 + 22W	45°	S43°E	152
D-4	9 + 90N	61 + 22W	60°	S43°E	259
D-5	10 + 33N	58 + 75W	45°	N43°E	150
D-6	10 + 33N	58 + 75W	65°	N43°E	253

The drilling results were generally disappointing, and no further drilling of the four zones was recommended for the present. Induced

polarization surveying was recommended to test the two geochemical anomalies and four copper occurrences on the PRO claims. The 1968 exploration cost $150,000, but the company was assisted by the Federal Government through the Northern Mineral Exploration Assistance program (The Northern Miner, September 12, 1968, p. 3).

Univex Mining Corporation Ltd. (RT and EH claims) (86-O-6; about 67°21'30"N, 115°27'30"W)

This property consists of claims EH 1-5, 16-25, 36-45, 56-65, 76-80 and RT 1-99, a total of 139 claims. A program of prospecting and geological mapping at a scale of 1,000 feet to the inch was conducted on the property June 18-July 7, 1968, by L.J. Manning and Associates Ltd.

The property is underlain by a series of basalt flows which are cut by a number of diabase dykes, generally less than 150 feet wide, with strikes from slightly east of north to slightly west of north. Vesicles in the basalt are filled with quartz, carbonate, zeolite, feldspar, chert, chlorite, and occasionally native copper. The flows dip 5 to 10 degrees northwest. Steeply dipping faults cut the basalts along northeasterly and northwesterly strikes. Some copper showings are associated with these faults.

A great number of minor copper occurrences were found on the property and thirteen were found which were considered of possible significance. Showings A, D, F, K, L and M consist of chalcocite in fissures and fractures. Showings K and L are apparently chalcocite-bearing sets of fractures in diabase dykes. Quartz and pyrite are associated with the weak to strong chalcocite mineralization of showing F which occurs along a north-northwest striking fault. The chalcocite-bearing quartz veinlets of showing A are very narrow and occupy fractures which strike in many directions. The showing is located on the west edge of an outcrop area and the zone of fracturing may be subsidiary to an inferred fault with a strike of N20°E. Several minor chalcocite showings occur as frost heave along this strike. Showing D consists of chalcocite which occurs as disseminations and massive veinlets up to 4 inches wide, in a quartz-calcite vein along a minor fault which strikes N55°E. The vein was traced for 50 feet and is up to 5 feet wide.

Chalcocite occurs in showings A and E, and chalcocite and pyrite in showing B, as part of the cement to a basalt breccia. These showings consist of float only, although in the case of showing C the mineralization is found in a considerable area along a northeast-striking fault, and mineralization of the E showing lies along a fault with a north-northeast strike. The strongly mineralized float fragments of the C showing can be traced for 1,500 feet along a trend of N35°E.

The chalcocite mineralization of showings G, H and J is classified as of both the cavity filling and replacement types. Showings G and J consist of strongly mineralized frost-heaved material. Showing H is located along the same north-northwest striking fault as showing F. In these showings the chalcocite occupies fractures and cavities, and partially replaces the matrix, in hematitic flow-top material.

Intersections of faults, and flow-top horizons adjacent to faults, were considered as favourable areas on the property. Magnetometer and Ronka EM 16 electromagnetic surveys were recommended over a grid, with

lines spaced 500 feet apart, to cover showings C, D, E, H and J. An induced polarization survey was recommended in the vicinity of showings C, D, E and H. Detailed geological mapping was also recommended for selected areas on the property. Diamond drilling was planned for any favourable geophysical anomalies resulting from the recommended surveys.

Vanmetals Exploration Ltd. (GUN claims) (86-N-10; about 67°35'30"N, 116°36'W)

This property consists of claims GUN 4-9, 12-17, 24-29, 32-37, 44-49, 52-57, 64-69, 72-77, 84-89 and 92-97, a total of 60 claims. These claims were recorded March 31, 1967. The property is located near the north contact of the basalt belt and about 6 miles east of the Herb-Dixon Fault. It is joined on the east by the property of General Resources Ltd. Some initial prospecting was done on this property in 1967 by Watts, Griffis and McOuat Ltd. Geological mapping at a scale of 1,050 feet to the inch was done by Watts, Griffis and McOuat Ltd. during August, 1968. Reconnaissance geochemical soil sampling and induced polarization surveying were done in conjunction with this mapping, apparently by McPhar Geophysics Ltd. Van-metals Exploration also participated in the regional airborne survey flown by Lockwood Survey Corp.

Less than 1 per cent outcrop is present on the property. Basalt flows apparently underlie most of the property, and these strike north-northwest and dip gently to the east. Sediments are exposed just north of the property and may underlie the north part. Faults were not definitely identified and no significant copper showings were located, probably because of the nearly complete overburden cover. Several outcrops were found to contain minor disseminated native copper, and one contained a few narrow stringers of native copper and chalcocite.

The results of the geochemical and induced polarization surveys are unknown to the author. Geophysical surveys were recommended for any areas on the property considered favourable on the basis of the preliminary work, including the airborne survey.

Whitey Wilson Oil and Gas Ltd. and Down North Minerals Ltd. (ME 1-108 claims) (86-N-11, 12, 13, 14; about 67°45'15"N, 117°29'W)

This property is just north of the north contact of the basalt belt according to the regional mapping of the area (Fraser, 1960) and about 18 miles west of the Herb-Dixon Fault. Fifty-six of the claims are owned by Down North Minerals Ltd. and fifty-two of them by Whitey Wilson Oil and Gas Ltd. The joint property was prospected and geologically mapped at 1,000 feet to the inch September 7-15, 1968, by Precambrian Mining Services Ltd.

Only about 1 per cent of the property is occupied by outcrop; most of the remainder is covered by a large glacial outwash plain of sand and gravel. Fine-grained, pale grey limestone is exposed at several localities at or close to the south boundary of the property. A small outcrop of dark grey to black shale is present on the south boundary and overlies limestone. Light grey quartzite, generally massive but with some cross-bedding, is

exposed in the southeast corner of the property. The sediments dip 10 to 15 degrees south, and are thus considered to overlie the basalts unconformably. Fine-grained, dark grey to purplish grey basalt occurs along the south boundary and to the south of the property.

A northwesterly-trending fault occurs in the southwest part of the property. The prospecting failed to locate any copper mineralization.

No further work was recommended at the present time, but it was considered that it might be warranted if the sediments overlying the basalts were to be investigated for syngenetic copper deposits.

Willow Lake Mines Ltd. (153 JIM claims) (86-N-8, 86-O-5; about 67°22'15"N, 116°00'W)

This property consists of the JIM claims with Grant Numbers N92301-92413, 92489, 92490, 92507, 92508 and 92517-92552. It was reported in October, 1967 (The Northern Miner, October 26, 1967, p. 13) that Quebec Explorers held a 42 per cent interest in these claims, with private interests holding the balance. It was later reported (The Northern Miner, February 1, 1968, p. 13) that the claims were held by the "MQP Mineral Exploration Partnership", in which Quebec Explorers held a 20.44 per cent interest. Later it was reported that the exploration partnership had transferred its half interest in the claims to Willow Lake Mines, and that Quebec Explorers with a 10.22 per cent interest in the partnership could finance Willow Lake Mines to the extent of 20.44 per cent (The Northern Miner, August 22, 1968, p. 20). Willow Lake Mines budgeted $115,000 for exploration of the property in 1968 (The Financial Post, May 18, 1968, p. 15). Geological mapping and magnetometer and electromagnetic surveys were done on the property between June 15 and October 1, 1968. The geological mapping was done by Mr. S. Mason. The company also planned to participate in the joint airborne survey flown by Lockwood Survey Corp. (The Northern Miner, February 1, 1968, p. 13).

The property is primarily underlain by basalts. Some red thin-bedded sandstone is exposed along Willow Creek in the eastern section of the property. A diorite (?) dyke about 300 feet wide strikes northerly across the central part of the property. Minor chalcopyrite and pyrite, and appreciable magnetite, occur in the dyke.

About a mile southwest of the west end of Willow Lake an area 1,000 feet by 400 feet contains abundant float of copper-bearing quartz-carbonate breccia. A fault which strikes northeast passes along the west side of this area of mineralized float. Another northeast fault was found to have minor associated chalcocite where it crossed Willow Creek near the outlet of a lake in the southwest corner of the property.

The magnetometer and electromagnetic surveys were carried out on the same grid and each covered about 160 line miles. The most definite magnetic low is about 2,000 feet east of the southeast end of Willow Lake and extends about 7,000 feet north-northeast. A series of weak conductors (anomaly C) are associated with the low. This zone lies along the course of Willow Creek and is completely covered with overburden. Five other conductors, 3 with associated magnetic lows and 2 with magnetic highs, were located. One of the anomalies which correlates with a magnetic high is in an area of copper-bearing float.

It was recommended that the 6 weak electromagnetic conductors be tested by diamond drilling.

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