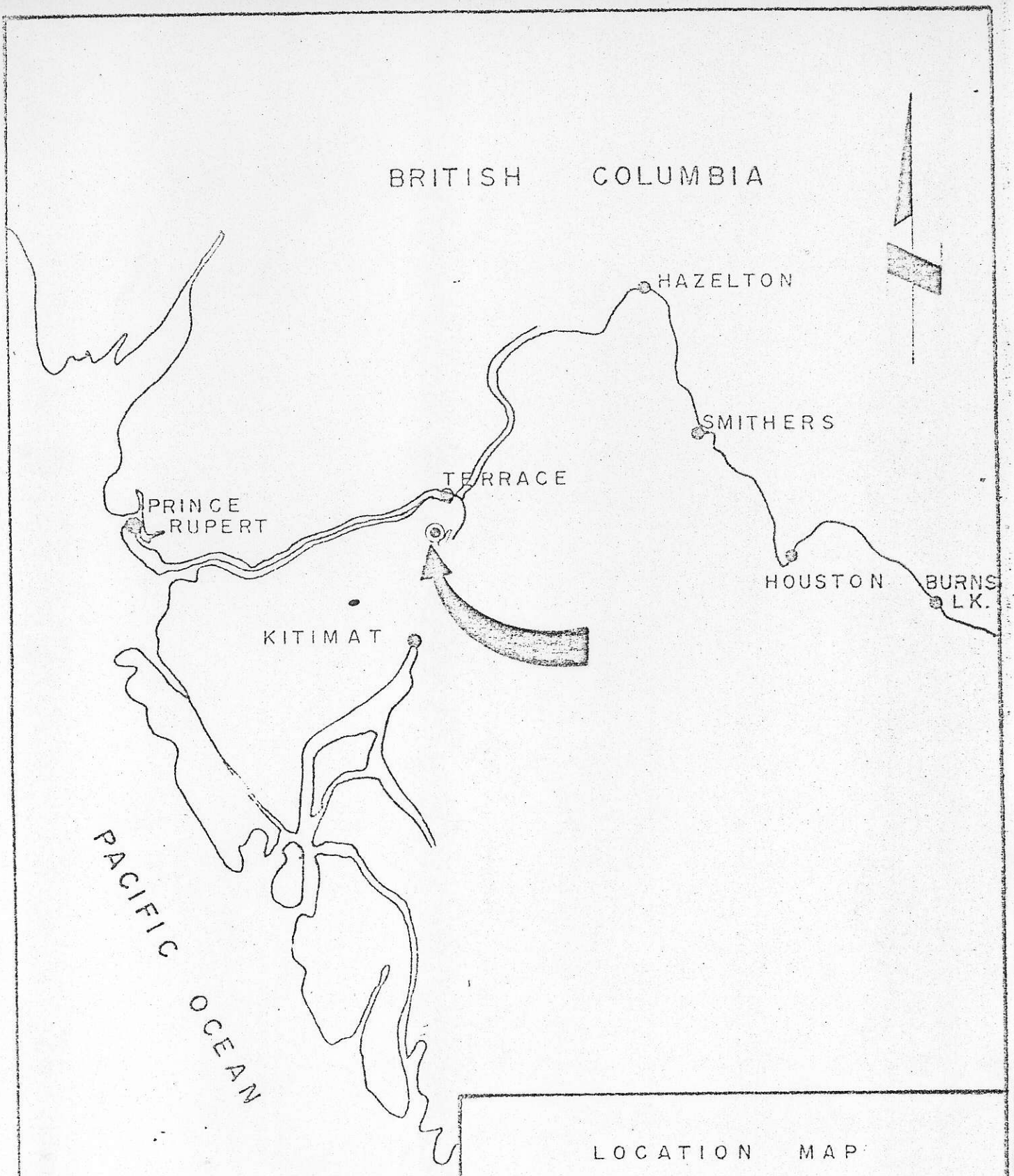


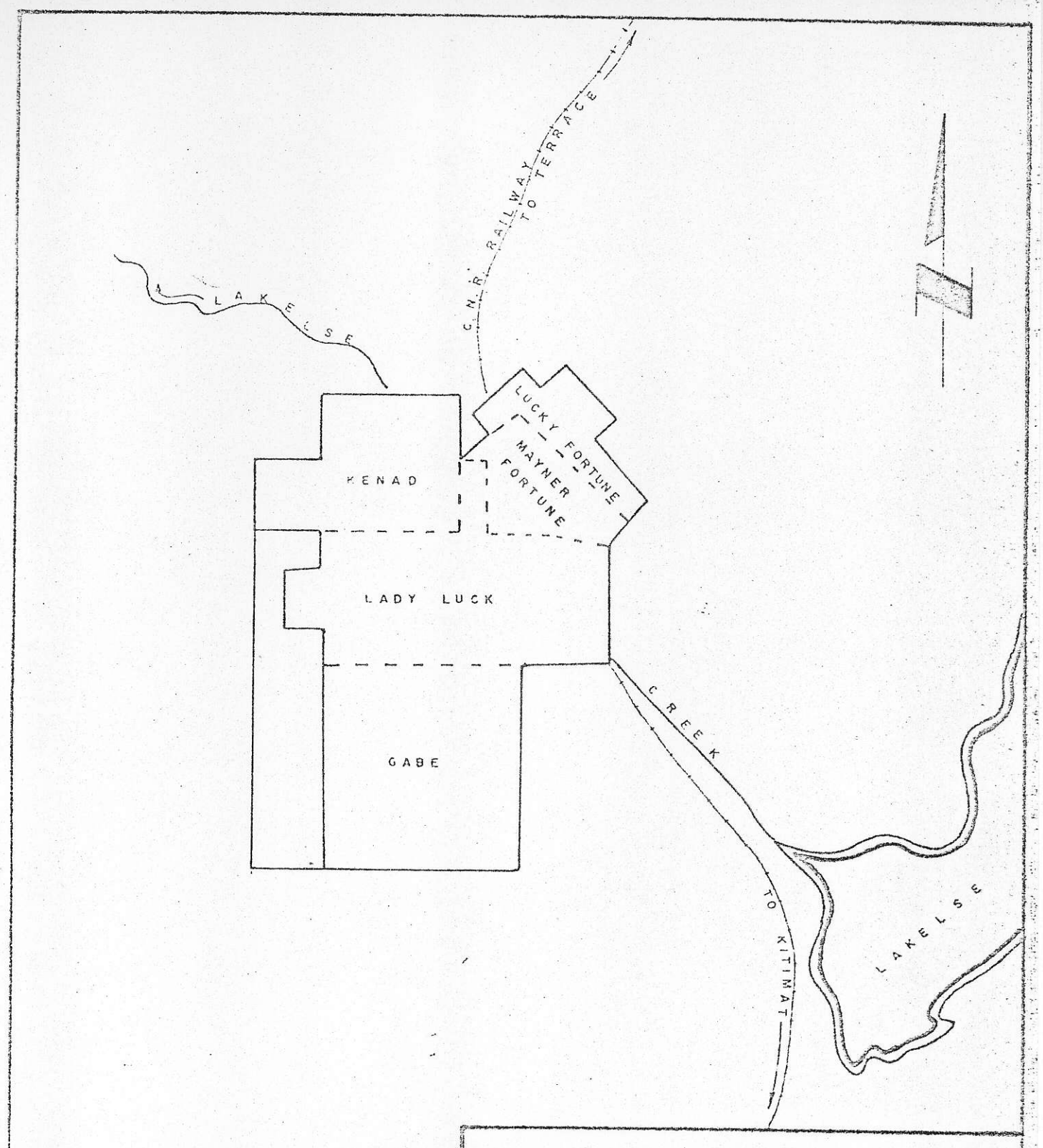
LOCATION MAP

CREE LAKE MINING LTD. (N.P.L.)

0 10 20 30 40 50 60

SCALE OF MILES

671618



CLAIM MAP

CREE LAKE MINING LTD. (N.P.L.)

0 1 2

SCALE OF MILES

INTRODUCTION

Early in 1971, The Hanna Mining Company Ltd. entered into an option agreement with Cree Lake Mining Ltd. to explore a mineral property near Terrace, British Columbia. Bullis Engineering Ltd. were engaged to do the field work.

The work consisted of:

(a) Geological mapping of the property on a scale of 1 inch equals 400 feet. The base maps were prepared by McElhanney Surveying & Engineering Ltd. of Vancouver, from aerial photos taken in March 1970.

(b) Soil sampling of a large portion of the property. The samples were gathered at 100 foot intervals on a grid, established on 400 foot centres, and along certain roads outside the grid area. The samples taken at the even hundred-foot stations were analysed, and all the other samples were stored for future use.

(c) A magnetometer survey was conducted on the property, using the established grid for control. The readings were taken at fifty foot intervals with a Jalander 46 - 65 Electronic Magnetometer.

Finally, a stadia survey was run to tie the grid to the maps prepared by McElhanney Surveying.

The work began on 26 July and was completed by 28 October; the reports and maps were prepared in November and December. Twenty-three persons were employed, full or part time, on the project. Two Terrace firms were employed as sub-contractors for bull-dozing roads and clearing trails. A total of 734.5 man-days of labor were expended on the property between 26 July and 28 October.

The personnel included:

Two Geologists, full and part time.
One Geologist's helper, full time.
One Magnetometer operator, part time.
One Magnetometer helper, part time.
One Supervisor, part time.
Four Soil Samplers, part time.
Thirteen Line Cutters, part time.

A total of 63.0 miles of line was cut and picketed on the property. The cost of the work, including mobilization, soil analyses and base map, was $ 42,816.76.

PROPERTY DESCRIPTION

LOCATION & ACCESS

The Cree Lake Mining Ltd. (N.P.L.) property is located near the Town of Terrace in the Skeena Mining Division of British Columbia. The claim group lies about seven miles south of Terrace and is situated between the C.N. Railway branch line of Kitimat and Mount Johnstone. The co-ordinates of the centre of the group are approximately 54 degrees 23 minutes north latitude and 128 degrees 38 minutes west longitude. The area is shown on N.T.S. Sheet 103 I (East Half).

The Town of Terrace is situated on the Canadian National Railway line that serves the port of Prince Rupert and is at the junction of the branch line that serves the Port of Kitimat.

All-weather, paved highways connect Terrace with Kitimat, Prince Rupert and the British Columbia highway system. The area is served by Canadian Pacific Airlines with daily, scheduled flights from Vancouver and Prince Rupert to the all-weather airport at Terrace.

The claim group is located in the broad Kalum-Kitimat Valley near the base of Mount Johnstone; elevations on the property range from 200 feet to 1,800 feet above sea-level. The claim area is readily accessible over all-

weather, gravelled logging roads that traverse the length and breadth of the group. The excellent logging roads make rapid and easy access to any part of the property.

CLAIMS

Claim Name	Record Number	Number of Claims
Ladyluck # 1-4	25826-25829	4
Ladyluck # 5-14	26605-26614	10
Ladyluck # 15 & 16	27623-27624	2
Ladyluck # 17-30	27625-27638	14
Ladyluck # 31 & 32	33205-33206	2
Ladyluck # 33-40	30005-30012	8
Gabe # 1-36	28606-28641	36
Kenad # 1-20	31170-31189	20
Kenad # 21-38	36644-36661 ~~Not available~~	18
Mayner's Fortune #1	15316	1
Mayner's Fortune # 2-4	15340-15342	3
Mayner's Fortune # 5-8	15365-15368	4
Lucky Fortune #1-6	15456-15461	6
Lucky Fortune # 7 & 8	15712-15713	2
Lucky Fortune # 17-20	30332-30335	4
	Total Claims:	134

CONCLUSIONS:

1. The disseminated mineralization found in the volcanic rocks of the "hybrid complex" as well as the disseminated to massive mineralization found in the skarned zones are all spacially related to the contact of the "Younger granodiorite" stock.

2. The soil sampling program has confirmed copper and zinc mineralization in areas that are lightly covered by overburden. The geochemical survey results have confirmed that heavy overburden has effectively halted metallic ion migrations, this accounting for the weak showings.

3. The results of the magnetometer survey indicated several anomalous areas along a general northeast trend. Many of the anomalies lie on the mineralized skarn zones as geologically mapped. The area on both sides of the Lakelse River generally shows higher readings. This may be caused by the nature of the gabbroic intrusion. The area southwest of the Lakelse River (30E - 36N) indicates a copper and zinc geochemical anomaly of considerable areal extent.

4. Generally it appears that a mineralized zone extends across the Cree Lake property in a northeast - southwest trend. This zone extends for approximately 12,000 feet in length and 3,000 feet in width. The geochemical and magnetometer surveys tend to support this trend. Surface outcrops and the general structure in the area also tend to establish a northeast trend.

5. The results of the diamond drilling have indicated that mineralization extends at depth. Several sections of good grade copper ore have been intersected.

6. Many of the Cree Lake claims are underlain by altered sediments and greenstones that outcrop as broad hands of steeply dipping garnetiferous to epidote rich skarn. The skarn and schistose greenstone and/or diorite contains disseminated to massive sulphide mineralization. The sulphides include pyrite (iron), chalcopyrite (copper), sphalerite (zinc), molybdenite (molybdenum). In addition magnetite iron occurs as massive lenses within the skarn.

7. Additional exploration is warranted and necessary to determine whether or not commercial deposits of base metals exist on this property.

RECOMMENDATIONS:

Additonal exploration should be carried out over the mineralized trend with special emphasis placed on areas of geophysical and geochemical anomalies. Additional drilling will be required to test the most promising areas at depth.

J. A. Tessari, P. Eng.

HISTORY OF THE AREA

Terrace has been a centre for prospecting from earliest times and much of the country within a radius of fifty miles had been explored by the turn of the century.

Placer mining was carried on in Lorne, Kleanza and Quill Creeks from 1900 until 1936. Lode deposits were discovered, developed and mined east of the Kalum-Kitimat Valley at a rapid rate from 1910 until the present time. None of the deposits are very large; most are of the fissure-filling and/or vein type. There are at least sixty known lode-deposits situated within the map sheet area (See Sheet 103 I, East Half); all are located east of the major topographic feature known as the Kalum-Kitimat Valley.

Limestone and iron ore were the only mineral deposits known to exist on the west side of the valley until K. Mayner made his recent discoveries. The iron ore deposits, situated on Iron Mountain about ten miles north of Kitimat, were discovered and partially explored between 1900 and 1908. The iron occurs as magnetite lenses within metamorphosed volcanic rocks that have been intruded by a granodiorite stock. The deposits are typically contact

metamorphic and the metamorphosed volcanics in which the deposits occur could be described as "green skarn". Frobisher Limited took an interest in the Iron Mountain property in 1957 and subsequently proved that a magnetic anomaly exists over the deposits which is 5,000 feet long and 400 feet wide. As a result of the exploration by Frobisher Limited, Falconbridge Nickel Mines Ltd. became interested in the area and have explored an iron-bearing zone on the Weedene River about five miles north-west of Iron Mountain and ten miles south-west of Lakelse Lake.

The area in which the Cree Lake Mining Ltd. property is situated does not have a long, nor extensive, history of exploration. The fact that the area is underlain, in part, by sedimentary and volcanic rocks had not prompted extensive prospecting. The lack of exploration is due mainly to the physical conditions imposed by dense forest growth over drift covered areas. Prospecting was difficult until recent years when the logging companies built good access roads into the area. A short, shallow adit is reported to exist was found on Lady Luck #21 claim near the railway bridge. Some gold was derived from the adit, according to heresay reports, but no mention of this development is recorded in the literature.

During the late 1950's and early 1960's, Mr. Ken Mayner prospected the area west of Lakelse Lake and discovered a number of metamorphosed greenstone and limestone "skarn" zones that contained magnetite, copper and zinc sulfides and molybdenite. Mr. Mayner staked the area when it became apparent that logging roads would be built throughout the area.

A syndicate, organized by U.S. Smelting Mining & Refining Corp., Bralorne Pioneer Exploration, Columbia Cellulose Co. Ltd., and Union Carbine, did some work on the property in 1965-1966. Although no record of the work could be found, Mr. K. Mayner stated that a magnetometer survey was conducted during the winter and some follow-up samples were taken from shallow rock trenches and outcrops in the spring.

In the summer of 1966, Cree Lake Mining Ltd. (N.P.L.) acquired an option on the property from Kenad Developments Ltd., of Calgary, Alberta, who had optioned the property from the owner, Mr. Kenneth Mayner, of Terrace, B.C. In a report to the Company, dated February 1967, Mr. K.P. Bottoms, P. Geol., made recommendations for an extensive programme that included soil sampling, geophysical surveying

(magnetometer), trenching and 2500 feet of diamond drilling.

The programme began with a photogeological survey of the Lady Luck and Mayner's Fortune group, conducted by Dr. Peter J. Haman. The survey showed the fracture pattern, areas underlain by coast intrusives and areas underlain by sediments, as well as sand-and-gravel plains. The data obtained were subsequently checked by field mapping by personnel from Resources Management Limited and by Dr. W. Patmore.

By the spring of 1967, Cree Lake Mining Ltd. (N.P.L.) had completed a soil sampling programme on the Lady Luck group and some magnetometer work and geological mapping was compiled in the same area. A stripping and trenching programme in the vicinity of high soil and magnetic anomalies was also undertaken. The result of this work was set out in Bottom's report of March 1967.

A limited drilling programme was initiated, under the direction of Dr. W. Patmore, when 1700 feet of core drilling was completed in ten shallow holes. The results of the drilling programme is not available.

The Nittetsu Mining Co. Ltd. took an interest in the property in the summer of 1970. Although no firm agreement was reached between Cree Lake Mining Ltd. (N.P.L.) and Mr. K. Mayner on the one hand and Nittetsu Mining Co.

Ltd. on the other, the Nittetsu Mining Co. investigated the area in some detail. A grid was established on the Lady Luck group and a magnetometer survey, using a McPhar M. 700 instrument, was completed over the area in which Cree Lake Mining had located copper-molybdenum mineralization. A geological plan was compiled of the same area and a drilling programme completed. The drill programme was contracted to Canadian Longyear Ltd., who drilled about 3,000 feet in six holes. The result of the Nittetsu programme has been summerized in the following sections.

REGIONAL GEOLOGY

The Terrace region is described by S. Duffel and J. G. Souther, in G.S.C. Memoir 329 which was published in 1964. The area is underlain by Paleozoic sediments and "greenstones" that have been intruded, and altered, by Coast Intrusives. The bed-rock in the Kalum-Kitimat valley is covered by a mantle of unconsolidated marine clay, 400 to 600 feet thick, overlain by 200 feet of stratified sand and gravel and capped by boulder till 5 to 10 feet in thickness. The unconsolidated material now lies 600 to 700 feet above sea-level in out-wash plains that have not been eroded by post glacial drainage. Good exposures of the Palezoic greenstones and sediments are found on either side of the Kalum-Kitimat Valley near Terrace, on Mount Thornhill and on Nash Ridge. The latter area forms the north-west flank of the Cree Lake property. A description of the bed-rock is given by Duffel and Souther as follows: the greenstone section of Nash Ridge must have a thickness of 5,000 feet and is "commonly so highly altered that little of the original character of the rock remains". The rocks are classed as pseudodiorites and quartz-mica schists with epidote and chlorite being common constituents. The

sediments consist of shaley limestone, calcareous mudstones and shales with overlying metamorphosed greywake and recrystallized blue-white limestone resting conformably on the argillaceous limestone member.

Although Duffel and Souther do not describe the rocks in the vicinity of the Cree Lake property in detail, they have found limestone float in White Creek that originated somewhere on Nash Ridge. Meta-greywackes and meta-argillites were observed on Nash Ridge and they equate these rocks with the strata near Shames, where quartz-mica schist is common and some skarn was observed. The rocks near Shames show signs of granitization, with associated migmatites.

The Coast Intrusives of the Terrace district have been divided into four distinct facies by Souther, who describes them as:

(a) Gabbro facies (olivene bearing).
(b) Pyroxene quartz diorite facies.
(c) Inner facies (biotite-hornblende).
(d) Border facies (hornblende biotite).

The gabbro and pyroxene quartz diorite facies form separate, small intrusive bodies that are earlier than the main body of the batholith. The phases of the main body resemble one

another closely and are difficult to classify for this reason. The inner facies includes biotite-granodiorite and adamellite of three different ages. The border facies consists of three distinct zones of (1) hornblende granodiorite, (2) an intermediate zone of migmatite, and (3) an outer zone of hornblende diorite and/or quartz diorite.

The Paleozoic rocks which were intruded by the Coast Intrusives, appear to be dragged upward during the emplacement of the intrusives. "They conform to the igneous contracts and most commonly dip away from them", according to Souther.

GEOLOGY OF PROPERTY

The information available at the beginning of the programme indicated that the areas underlain by the metamorphosed volcanic and sedimentary rocks would prove to be the most interesting, from the economic viewpoint, and for this reason the main weight of the exploration effort was placed on these areas. The base maps are prepared on a scale of one inch to four hundred feet.

LITHOLOGY

The property is underlain by the following rock types:

Sedimentary and Volcanic Rocks: These rocks are correlated with the Palaeozic series, possibly Permian, described by Duffel and Souther and appear to be a conformable series on the property.

The volcanic rocks are, mainly, flows of basic to intermediate composition. Some tuffs are thought to be present because some volcanic rocks are strongly foliated conformably with the limestone bedding. All the volcanic rocks examined have been highly altered by metosomatism

resulting from diorite intrusions that have engulfed and metamorphosed the original rocks. Chlorite, hornblende and epidote are common constituents of the paradiorite and the metamorphosed volcanic rocks; much of the original character of the rock is lost and what is left is best described as featureless, altered "greenstone". Battersby has mapped an area of volcanic rock in the north-west corner of the property which he describes as "a large block of weakly metamorphosed volcanics (which) lie outside the zone of intruding diorites".

The sediments are largely coarsely recrystallized limestone and thin-bedded impure quartzites with intercolated graphitic shale and argillaceous limestone. Locally, these limey sediments have been altered to skarn composed of epidote and garnet with lesser amounts of calcite and magnetite. Disseminations and patches of pyrite, sphalerite, chalcopyrite and molybdenite occur in several of the skarn zones.

The limestone occurs as large isolated blocks and it is usually white in color but locally may be green or blue-grey. The recrystallized limestone is massive with thin boudins of quartzite present; the less altered limestone is argillaceous-to-siliceous with well-developed

banding. The quartzite members are usually brown-to-black in color except where they form part of the limestone sequence. The quartzite is usually thin bedded and presents a well-banded appearance. An isolated occurrence of argillaceous-to-slaty, well-foliated rock is exposed in the rail-road cut east of the Lakelse River.

Intrusive Rocks: The intrusive rocks found on the Cree Lake property are all related to the Coast Range intrusions that vary in age from Jurassic through Cretaceous, according to Duffel and Souther. The several types of intrusives that appear on the property fit closely the facies classifications described by Duffel and Souther. The mode of emplacement of the dioritic rocks had a profound effect on the local geology, especially as it relates to the economic geology of the property. The intrusives fall into four broad categories which are separated on the basis of time of intrusion and mode of emplacement.

The oldest facies is hornblende and/or quartz diorite which underlies the northern half of the property. The diorite has intruded and engulfed much of the older volcanic and sedimentary rocks altering them to hybrid rocks with a variety of compositions, textures and structural

features. All are characterized by abundant hornblende with lesser amounts of biotite and they range from magmatic varities to metasomatic and/or metamorphic rocks. The contacts with the volcanic rocks are usually gradational. Many fragments and blocks of the volcanic (mainly) and sedimentary rocks are found within the diorite and these all show alteration to a greater or lesser degree. In some cases, the inclusions may be almost totally reconstituted; schlieren "streaks" and rounded ghost-like fragments may be the only evidence of the presence of inclusions. The diorite contains more hornblende and biotite near the inclusions. Battersby has observed that locally the inclusions may consitute 40% of the rock volume. Duffel and Souther have used the term "migmatite" to describe hybrid rocks that contain more than 50% by volume of inclusions of country rock and, where hornblende exceeds biotite, they refer to the rock as a "hybrid pseudo-diorite". Much of the rock underlying the northern half of the property fits this description.

A related phase of the older diorite appears as irregular dykes of hornblende granodiorite that are intrusive into the hybrid rocks. The contacts between the dykes and the hybrid complex are relatively sharp, showing only limited alteration but with no chilled borders. The dykes are irregular tabular bodies of very limited extent; they are

located on the west side of the property about four thousand feet north-east of the "main showing".

The younger granodiorite forms a stock which underlies the southern half of the property. The rock is a biotite-hornblende granodiorite and fits the Duffel-Souther description of the "white-granodiorite" of the Inner Facies. The rock is fresh everywhere it is exposed on the property. The younger granodiorite is medium-grained, uniform in composition and texture and appears massive in outcrop.

The main body of the granodiorite is intermittantly exposed in outcrop on the southern one-third of the property west of Lakelse River. The contact between the "older diorite" and "younger granodiorite" was traced across the property in a north-east direction for one mile before it dissappeared under overburden. The granodiorite also outcrops east of, and near, the Lakelse River but here the contacts are covered by alluvium. Swarms of north-west trending, irregular bodies of granodiorite, that are either dykes or possibly cupolas, are located on either side of the "main showing" skarn area where they have intruded the hybrid complex.

Numerous feldspar-porphyry dykes have intruded the hybrid complex on both sides of the Lakelse River; Duffel and Souther have suggested that these porphyry dykes are a late phase of the "younger granodiorite" because they are intrusive into all other rocks of the hybrid complex. The rock has a fine-to-medium grained, grey groundmass with uniformly-distributed feldspar phenocrysts throughout. The dykes vary from a few feet to hundreds of feet in width and some were traced for 3,500 feet along strike. The dykes are all steeply dipping with strikes varying from east-west to north-west.

The "gabbro-facies" of Duffel and Souther is represented on the property by a body of gabbro which outcrops along the eastern margin of the Cree Lake property. Only a small portion of the gabbro body underlies about one-half of two claims of the Cree Lake property; the bulk of the gabbro outcrops to the east between the property and Lakelse Lake. The rock is a medium-grained, olivene-rich gabbro with 5% to 10% magnetite content and is quite magnetic. The rock is fresh-looking in outcrop. The contact between the gabbro and the hybrid rocks was not seen due to an intervening porphyry dyke which intrudes the gabbro near the north end of Lady Luck 34 claim. From this evidence, and reinforced by the observations of Duffel and Souther elsewhere in the area, it appears that the gabbro pre-dates the

"younger-granodiorite" but may be post "older-diorite".

The final intrusive activitity was emplacement of dykes which vary in width from a few inches to several feet. Most of these dykes are basic in composition, varying from basalt to lamprophyre, although a few aplite dykes are present. All appear to strike east-west or north-west and are roughly parallel to the feldspar-porphyry dykes. Indeed, many dark dykes were observed in contact with porphyry dykes, lying on either side of the porphyry and occupying the same dilation zone.

STRUCTURE

A variety of structural features have been mapped on the Cree Lake property and, from the data collected in the field, two major structural trends are apparent. They are not related except in a general way, both result from the Cordilleran orogeny.

The oldest features are bedding and primary layering within the volcanic flows and tuffs that cross the property in a north-east to east direction. This feature is well developed west of the Lakelse River, where the strike of bedding and flows vary from N to E to east with dips to the north-west. The north-east to east trend continues across the river, except in the extreme north-east corner of the property where a limestone-volcanic sequence strikes north and dips steeply east.

The secondary structures developed in the volcanic-sedimentary sequence are related to the metamorphism and metasomatism that resulted from the engulfing of the sequence by the "older diorite". Breccia, consisting of fragments and blocks of volcanic rock in a matrix of "older diorite", is common west of the road on Lady Luck #4 Claim. The inclusions all show some degree of alteration and assimilation, although "ghost" relics are not common. The inclusions do not

have a pronounced preferential orientation; some are twisted and rotated, but there is a tendency for the fragments to retain their original orientation. Dilation and/or metasomatism has produced a pseudo-diorite breccia with roughly equidistant blocks. Indeed, the hybrid rocks of the north half of the property could be considered to be an "igneous breccia" on a gigantic scale.

Foliation within the volcanic rocks is parallel to the east to north-east trend and probably developed during the emplacement of the "younger granodiorite" stock because the contact of the stock also strikes east to north-east across the property.

The "older-diorite" appears to be the result of the engulfing and static replacement of sedimentary and volcanic rocks to form the"hybrid complex" underlying the north end of the property. There is, however, one large mass of "older diorite" that appears to be intrusive into the hybrid complex; this mass forms the long ridge situated east of the river and north of the railway crossing. The rock, which underlies much of Mayner's Fortune #3 and #4 Claims, forms a small elliptical-shaped stock. The rock is medium to coarse-grained and has a uniform, dioritic texture. It has a massive appearance in outcrop and contains

no "schlieren or "wisps" of inclusions, nor any of the other diagnostic features of the "migmatite" found west of the river. There are some isolated remnants of limestone and volcanic rock that form small roof pendants on the ridge but these are discrete bodies that are not brecciated nor injected by the diorite. The contact between the "stock" and the hybrid complex was not seen in outcrop but it is probably gradational and tenuous across distances of one hundred feet or more. The "stock" could be the feeder source of the "older diorite" which may have spread from this centre to form the "hybrid complex". The emplacement of the "stock" may be the reason for the abrupt change of attitude of the volcanic and sedimentary rocks that lie on either side of the "stock". West of the stock, the sediments strike north-east and dip to the north-west; whereas east of the stock, the sediments strike north and dip east.

The later intrusives, which include the "younger granodiorite" and the gabbro with their attendant dykes, are related to the second major trend. The trend is more-or-less parallel to the large Coast Intrusives which strike north-west. Most of the porphyry dykes and basic dykes strike north-west or west with steep to vertical dips. The dykes are probably controlled by dilation zones caused by major north-south faulting.

The southern half of the property is underlain by the "younger granodiorite" which has been described elsewhere. It is a massive, uniform rock with few structural features apart from a rude foliation due to the orientation of the biotite and hornblende laths in a north west direction.

The dyke-like apophyses of "younger granodiorite" which crop out north of the main mass and which intrude the hybrid complex, are oriented in the north-west direction. Several porphyry dykes, seen cutting the main mass of the "younger granodiorite", also strike north-west.

The large stock of fresh, medium-grained, olivene-rich gabbro, located to the east of the property, is rudely foliated at 350 degrees with a vertical dip. Joints within the gabbro have the same orientation. Epidote-healed fractures that strike 110 degrees and dip vertically were noted in the gabbro.

One dyke, that has the same mineral composition as the gabbro stock, outcrops a few hundred feet west of the stock. The gabbro dyke lies adjacent to a porphyry dyke and within a dilation zone (fault?) which strikes north-west and dips steeply. The contact zone between the gabbro dyke and gabbro stock is covered with overburden and no age relationship can be assigned

to the dyke. In this same area, a wide porphyry dyke, with an orientation similar to the gabbro dyke, cuts both the gabbro stock and the hybrid complex.

The best exposures of faults were seen along the railway cuts east of the Lakelse River. Here a strong northwest fault, in a zone 125 to 175 feet in width, cuts the hybrid rocks. The fault zone consists of several fault planes which bear 85^{o} to 110^{o} and dip steeply south at 80^{o}. The zone contains about one hundred feet of crushed and sheared argillite on the foot-wall side and fifty to seventy-five feet of brecciated volcanic and dioritic rocks and limestone in the central zone. The fault, which is parallel to a long reach of the river, was not found west of the river. Nor can the fault be traced for any distance east of the railway cut; it disappears under overburden on the ridge underlain by the "older diorite" plug and there is no evidence that it exists east of the ridge. Several elongated gullies were located on the western slopes of Mount Herman, containing porphyry and basic dykes, which cut limestone and hybrid rocks and which have a similar orientation to the large fault. Another gully was found near the gabbro dyke, described in a previous section. These gullies may represent faults, or dilation zones, which are related to the fault movement in the area.

No faults were noted in either the "younger granodiorite" or the gabbro stocks; however, porphyry dykes were found in both and the inference is that at least part of the movement was post gabbro and post "younger granodiorite".

ALLUVIUM

The deposits of marine clay, deltaic gravel and sand and glacial till that covered the Terrace area must influence the results obtained in geochemical and geophysical surveys, and, therefore, some consideration should be given to the distribution and thickness of the alluvial deposits on the Cree Lake property.

The property lies, more-or-less, between two large outwash plains. The first, which lies south of Lakelse Lake, forms a flat, plateau-like divide between the Skeena and Kitimat river drainage systems; the second lies north of Lakelse Lake between the lake and the Skeena River. The Terrace Airport is built on the second outwash plain. Both plains are deltas which were deposited at the toe of the glacier as broad tidal flats. Although they are very similar, they were deposited at different times of glacial retreat.

According to Duffel and Souther, the Kalum-Kitimat Valley was scoured clean by the ice during the advance of the glaciers. After a partial retreat of the ice, an arm of the sea filled the valley up to the 600 foot contour. Thick deposits of marine clay were laid down in the bottom of the fiord during this period while deltas of sand and gravel developed along the margins of the fiord. The marine

deposits and the deltas are still partially preserved in terraces up to elevations of seven hundred feet. The ice advanced again to a point three miles south of Lakelse Lake where it stagnated in a curving arc. The flat, out-wash plain south of Lakelse Lake was then deposited to a depth of 600 feet above the present sea-level. The ice again retreated and a lake formed between the glacier and the ice-contact face of the out-wash plain. The present drainage pattern was established after the ice retreated to a point north of Lakelse River. At this stage, the ice again stagnated and an extensive sand and gravel delta was deposited on which the present Airport is built. The surface of the delta slopes gently south-west with steeply dipping foreset beds along the western and southern perimeter. The delta was deposited in an arm of the sea that flooded the Skeena River Valley to a depth of 600 feet. As the ice retreated further and emergence of the land commenced, the streams re-established old drainage pattern or, as in the case of the Kitimat River, established new channels when dams of deltaic material plugged the old channels.

The Cree Lake property lies wholly within the Lakelse River valley and slightly west of the two large deltas described above. The property was never covered by immense

deposits of deltaic material; only the marine clays and marginal delta deposits were left on the property after the retreat of the ice to an elevation of seven hundred feet above the present sea-level. With the full emergence of the land, the streams cut through the marginal deposits in the Coldwater River and White Creek Valley, carrying the sand and gravel down to lower levels and forming broad out-wash plains along these streams below the 600 foot contour. The elevation of the Lakelse River rises from 175 feet at its mouth to 235 feet at its source in the Lake. The combined thickness of marine clay and out-wash sand and gravel could be in the order of 200 to 400 feet over some areas on the Cree Lake property. West of Lakelse River, the alluvium covers sixty to seventy-five percent of the property whereas only thirty percent is covered east of the river.

The results obtained from the soil samples clearly demonstrate that the out-wash sand and gravel do have a damping effect on the migration of the metallic ions. The "anomalies" were found either at the base of, or on, the slopes below known mineralization or else on the low hill located between Base Lines 30-00 E and 50-00 E. The values obtained here all lie within the postulated "arc of influence" of the younger granodiorite; i.e. within a mile of the contact.

The low hill is only lightly covered by overburden and at least 25% of the hill is outcrop.

There are a number of scattered, isolated high copper or zinc values located on the out-wash gravel; these may be due to either drainage concentrations (silts) or mineralized "float" in the vicinity of the high value.

CREE LAKE MINING LTD. (N.P.L.)

MAGNETOMETER SURVEY

INTRODUCTION

In conjunction with a geological survey and a geochemical survey, a magnetometer reconnaissance was carried out on a portion of the property. During the period of September and October 1971, this survey was carried out. A total of 60.5 miles of line and roads was read.

EQUIPMENT

The survey was carried out using a Jalander Electronic Magnetometer #7218. The instrument in an aluminum case weighs only 3.2 lb. An oil-dampened fluxgate automatically levels itself in the vertical direction and thus readings are in the vertical magnetic field. This instrument is carried on a strap around the neck and readings are taken by roughly levelling the instrument and pressing the reading button. The results

are read directly through the top lens. Orientation is not absolutely necessary, although all readings during the survey were taken with the magnetometer facing within 10 degrees of magnetic north.

The range of the instrument is from 10 to 250,000 gammas with five sensitivity ranges selected by a knob on the right side of the instrument. Following is a table of sensitivity for the instrument used:

Scale 1 -	each	scale	division	equals	9.15 gammas.
Scale 2 -	"	"	"	"	27.15 "
Scale 3 -	"	"	"	"	96.88 "
Scale 4 -	"	"	"	"	411.57 "
Scale 5 -	"	"	"	"	1021.3 "

METHOD OF SURVEY

The survey was carried out over the cut grid and the relevant roads. This grid had north-south base lines and east-west lines cut at 400-foot intervals. A main base station was established at 16 + 00 W and 30 + 00 E with auxiliary base stations established where necessary. Readings were taken at 50-foot intervals along the east-west lines and along the relevant roads. The instrument was oriented in a northerly direction for each reading, in order to minimize any inherent errors in the magnetometer. A total of 60.5 miles was read. No detailed

investigations of above-normal readings were carried out to ascertain whether these readings were isolated peaks or representative of a broader, magnetically high zone.

SOIL SAMPLING PROGRAMME

WHEN SAMPLES TAKEN:

The samples were gathered in the summer and autumn of 1971, between 1 August and 20th October. The samples were taken by two teams, consisting of two men each. One man dug and packaged the sample, the other man kept notes. Each team chained and picketed the lines to mark the sample locations.

HOW SAMPLES TAKEN:

The samples were obtained by digging with a small spade to the "B" soil layer. Four to eight ounces of soil was removed and packaged in a special manilla envelope which was then marked with the grid location of the sample. The samples were taken at hundred foot intervals along the lines, except where soil conditions prevented the taking of a sample. The crews kept note of rock outcrops, swamps or ponds where no samples were taken and noted the condition of the soil where excess humus existed or where the soil was comprised mainly of rock particles or gravel.

AREA OF PROPERTY SAMPLED

Two large blocks of the property were sampled; grid lines were laid out and cut on an east-west bearing at four hundred foot intervals. Five base lines were laid out and cut on a north-south bearing at 30-00 West, 0-00 B.L., 30-00 East, 60-00 East and 75-00 East. The cross lines were tied to the base-lines by chaining; a transit-and-stadia survey was run to tie the base-lines to the topographic map which was prepared by McElhanney Surveying and Engineering Ltd.

The west block extends from Line 88-00 North to Line 52-00 South and from Line 15-00 West to Line 60-00 East; the block is, therefore, 14,000 feet by 7,500 feet. Additional samples were taken west of the "west block" along forest access roads where the number and spacing of the roads allowed excellent coverage of the area.

The east block lies east of Lakelse River and extends from Line 24-00 North to Line 88-00 North and from Line 60-00 East to Line 90-00 East (approximately); the block is 6,400 feet by 3,000 feet.

The southern portion of the property, which is underlain by the massive "younger granodiorite" stock, was sampled on lines spaced at 400 or 800 foot intervals to determine the "background" values over the barren stock. Lines 32-00

South to 52-00 South, west of the river, are all underlain by the granodiorite stock.

HOW SAMPLES WERE TREATED

The samples were gathered, packaged and catalogued in the field. Only the even numbered samples from the areas west of the Lakelse River were analysed. All the other samples were catalogued and stored for future reference.

The samples selected for analyses were shipped to Vancouver Geochemical Laboratories Ltd., 1521 Pemberton Ave., North Vancouver, B.C. The samples were sifted and ground to minus 80 mesh; a one-quarter gram portion of each was digested in 10 c.c. of cold 0.5 Normal Hydrochloric acid for four hours. Metallic ion determination was made in an Atomic Adsorption unit by Mr. L. Nichol, chemist, and checked by Mr. C. Chun.

A total of 1072 samples were analysed for copper and zinc and, of these, 569 were also analysed for molybdenum.

Approximately 1700 samples are held in storage; these represent all the odd-numbered samples gathered west of the Lakelse River and all the samples gathered east of the River.

RESULT OF SOIL SAMPLING

Copper (1,072 samples)

The copper content of the samples analysed averaged 5.75 ppm; the values varied from 1 to 64 ppm with 72.5% of the samples falling between 1 and 6 ppm. The background in the area is extremely low and, therefore, the "threshold" value is taken, arbitrarily, at 6 ppm. Only those samples containing 10 ppm, or more, have been plotted. Contours have been drawn at 10 ppm intervals for copper. No area can be considered to be truly "anomalous"; those zones containing values greater than 10 ppm are located over, or downslope from, areas of weak copper mineralization that have been located by prospecting and mapping.

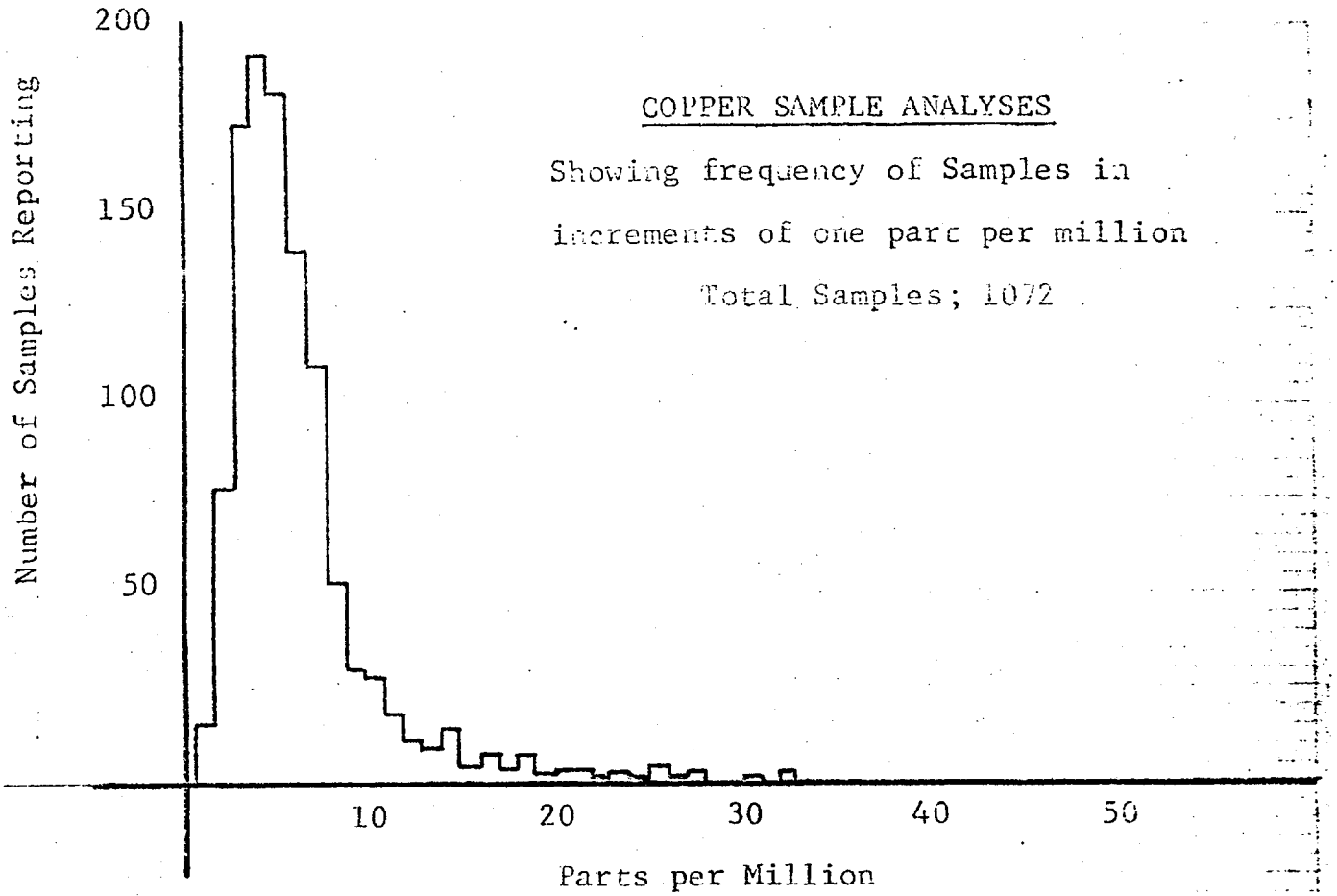
Zinc (1,072 samples)

The zinc content of the samples analysed averaged 10.2 ppm; the values varied from 1 to 170 ppm with 75.4% falling between 1 and 10 ppm. The zinc values are extremely low, paralleling the copper results, and no area could be considered "anomalous". The "threshold" values is 12 ppm and only those samples reporting 20 ppm, or more, have been

plotted. The contour interval for zinc is 20 ppm.

Molybdenum (569 samples)

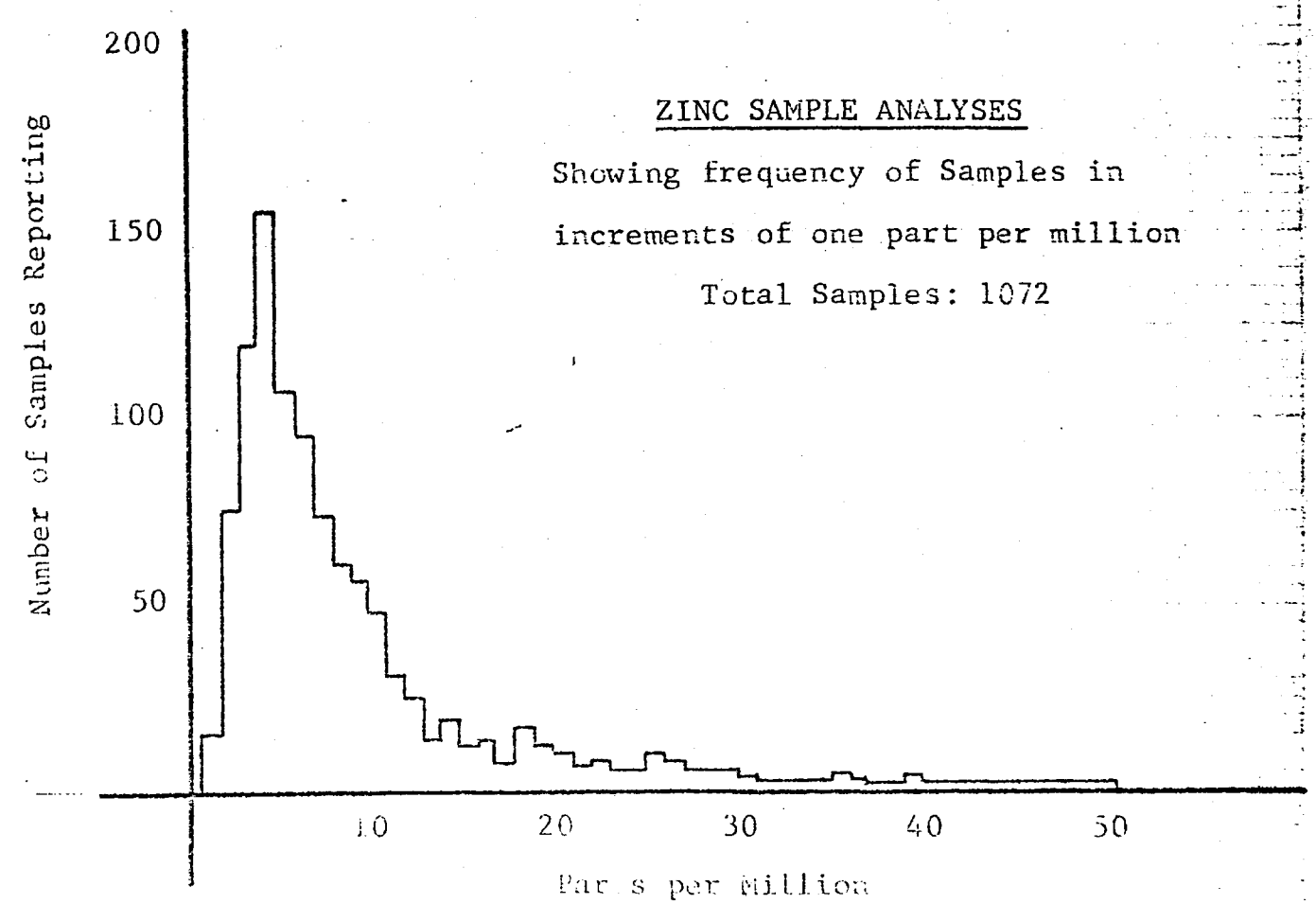
Only 150 samples reported molybdenum and these averaged 1.24 ppm. One sample contained 9 ppm and, therefore, there are no anomalous zones.



COPPER SAMPLE ANALYSES

Showing frequency of Samples in increments of one part per million

Total Samples; 1072



ZINC SAMPLE ANALYSES

Showing frequency of Samples in increments of one part per million

Total Samples: 1072

DRILLING PROGRAM

A limited diamond drilling program was carried out in the summer of 1973 to test some of the geochemical and magnetometer anomalies located on the main showing. Nine vertical holes were drilled with an AQ Longyear 24 Diamond Drill. The holes were all located near the intersection of the north-south and east-west base line on the Lady Luck 1, 2, 3, and 4 claims.

The cores were logged by Dr. W. R. Bacon of Bacon & Crowhurst Ltd. and certain samples were sent in for assay.

Several significant zones of mineralization were encountered with copper being the main economic mineral present.

(A copy of the drill core logs is included in this report.)

Diamond Drill Hole Co-ordinates 225' N of 0 Depth 126' Vertical Hole

HOLE 73-1

Logged by W.R.B.

8'	- 0'	Greenstone
0'	- 23'	Garnet skarn 5" good copper @ 17' Mo @ 18.5' Mo @ 22.0'
23'	- 34.5'	Massive andesite
34.5'	- 59.5'	Brown garnet skarn
59.5'	- 61.5'	Massive grey andesite
61.5'	- 72.5'	Brown garnet skarn
72.5'	- 75.0'	Massive grey andesite
75.0'	- 84.5'	Brown garnet skarn
84.5'	- 88.5'	Massive grey andesite
88.5'	- 91.0'	Brown garnet skarn
91.0'	- 99.0'	Massive porphyritic andesite
99.0'	- 109.0'	Badly broken, mainly brown skarn
109.0'	- 112.5'	Massive grey andesite
112.5'	- 122.5'	Brown skarn, sheared greenstone Mo veinlet @ 114.8'
122.5'	- 125.6'	Tremolite-garnet rock

Sample:		Ag	Cu	Zn	Mos2
10231	15' - 20'(5')	0.18	0.87	0.09	0.043

(N.B. Not all the core present)

Diamond Drill Hole Co-ordinates 100' N of 0 Depth 220' Vertical Hole

HOLE 73-2

Logged by W.R.B.

0.0' - 15.0' Well mineralized (mainly Cu) skarn

0'- 5' -	.01 Au	0.40 Ag	0.95 Cu	0.10 Zn	0.007 MoS_2
5'-10' -	.01	0.32	0.57	0.13	0.010
10'-15' -	.01	0.22	0.44	0.07	0.007

15.0' - 32.6' Brown skarn

20.0'-20.5' - Fine, disseminated copper

32.6' - 78.7' Generally massive, medium grained andesite

78.7' - 115.0' Skarn, mainly brown - Mo noted @ 84'

115.0' - 128.0' Well mineralized skarn

115'-120'	- 0.55 Cu	0.39 Zn	0.006 MoS_2
120'-128'	- 1.73	3.21	0.003

128.0' - 141.5' White, crystalline limestone

141.5' - 145.8' Grey, porphyritic andesite

145.8' - 154.0' White, crystalline limestone

154.0' - 158.5' Grey, massive andesite

158.5' - 172.5' Skarn and greenstone

160.6'-172.5' - Mineralized with Fe, Cu, Zn.
0.97 Cu 0.46 Zn 0.004 MoS_2

172.5' - 186.5' Unmineralized skarn

186.5' - 189.3' Grey, porphyritic andesite

189.3' - 194.3' Altered diorite

194.3' - 216.0' Barren grey andesite, porphyritic and non-porphyritic

216.0' - 220.0' Sheared, leucocratic granite. Some pyrite

Sample:		Au	Ag	Cu	Zn	MoS_2
Sludge Sample	33' - 40'(7')	0.01	0.25	0.17	1.40	0.007

Diamond Drill Hole Co-ordinates 10' S of 0 Depth 155' Vertical Hole

HOLE 73-3

Logged by W.R.B.

0' - 15.0'	Skarn
15.0' - 88.0'	Grey limestone (Fine Zn ?). Some development of epidote, minor garnet
88.0' - 120.0'	Andesite, mainly medium-grained
120.0' - 155.0'	Broken, sheared to 134.7'. A leucocratic granite. Some Py.

Diamond Drill Hole Co-ordinates 100' S & 125' E Depth 233' Vertical Hole

HOLE 73-4

Logged by W.R.B.

0.0' - 16.0'	Leucocratic granite. Some mineral lost. Fe, Zn, Cu in last 3'.
16.0' - 29.0'	Mixture - skarn, greenstone, minor granite. Fe (magnetite) in patches.
29.0' - 43.0'	Mixture - fine-grained andesite, epidote skarn.
43.0' - 181.0'	Dark massive, medium-grained andesite; fine pyrite.

Samples:		Cu	MoS_2
10228	98' - 108' (10')	0.03	0.004
10229	152' - 157' (5')	0.01	0.003

181.0' - 183.6'	White limestone.
183.6' - 188.5'	Fine-grained andesite.
188.5' - 212.0'	Limestone becoming less pure toward lower contact.
212.0' - 228.0'	Greenstone, minor skarn, fine moly, pyrite, chalcopyrite.

Sample:		Cu	MoS_2
10230	212' - 219' (7')	0.19	0.336
10226	1' - 10' (10')	0.02	0.016
10227	20' - 29.6' (9.6')	0.48	0.012

Diamond Drill Hole Co-ordinates 200' S & 75' W Depth 107' Vertical Hole

HOLE 73-5

Logged by W.R.B.

0.0' - 55.0'	Badly broken rock; mainly andesite, minor skarn. Short sections of granite. Some fine pyrite; chalcopyrite (?) @ 36' - 37'.
55.0' - 67.0'	Unmineralized greenstone.
67.0' - 96.0'	Leucocratic granite.
96.0' - 107.0'	Greenstone, quite broken.

Diamond Drill Hole Co-ordinates 200' N & 300' W Depth 145' Vertical Hole

HOLE 73-6

Logged by W.R.B.

0.0' - 29.0'	Mixed skarn, limestone. Minor diorite. No mineral.
29.0' - 55.0'	Grey limestone.
55.0' - 83.0'	Dark, unmineralized andesite.
83.0' - 145.0'	Typical light skarn (after greenstone). A few specks of moly.

Sample:		Cu	Zn
10232	83' - 93' (10')	0.01	0.01

Diamond Drill Hole Co-ordinates 400' N & 200' W Depth 187' Vertical Hole

HOLE 73-7

Logged by W.R.B.

7' - 96'	White limestone cut by several dark, narrow, andesite dykes.
96' - 115'	As above plus light development of skarn.
	107.5' - 108.8' Bornite in white limestone.
115' - 135'	Medium-grained diorite.
135' - 182'	White limestone - a few dark dykes.
182' - 187'	Porphyritic granite plus minor skarn.

Diamond Drill Hole Co-ordinates 100' N & 200' E Depth 184' Vertical Hole

HOLE 73-8

Logged by W.R.B.

0.0' - 7.5'	Leucocratic granite.
7.5' - 10.0'	Andesite dyke.
10.0' - 14.8'	Leucocratic granite.
14.8' - 21.8'	Andesite dyke.
21.8' - 38.7'	Mainly diorite; quartz stringers plus moly at 27', 28'.
38.7' - 48.5'	Andesite dyke.
48.5' - 75.8'	Dark medium-grained diorite, some quartz veining.
	55' - 56' Moly.
75.8' - 93.1'	Andesite dyke.
93.1' - 111.3'	Dark, medium-grained diorite.
111.3' - 144.7'	Skarn, mainly epidote. Minor moly, chalcopyrite.

Sample:		Cu	Mo (?)
10233	112' - 118' (6')	0.06	0.049

144.7' - 148.0'	Andesite dyke.
148.0' - 184.0'	Skarn. Mineralized with pyrite, chalcopyrite, magnetite, moly.

Samples:		Cu	Mo (?)
10234	148' - 156' (8')	0.80	0.009
10235	156' - 164' (8')	0.32	0.011
10236	164' - 174' (10')	0.05	0.016

Diamond Drill Hole Co-ordinates 300' N & 220' E Depth 123' Vertical Hole

HOLE 73-9

Logged by W.R.B.

0.0' - 50.0'	Mottled, garnet-epidote skarn. A little fine pyrite; very sparse chalcopyrite.
Samples marked:	14' - 18' 23' - 28' 36' - 40.5' 40.5' - 45.0' 45.0' - 49.0'
50.0' - 52.3'	Basalt dyke.
52.3' - 92.5'	As at 0.0' - 50.0'. Magnetite at 57'-58', 82.9' - 84'.
92.5' - 96.0'	Basalt dyke.
Samples marked:	105' - 110'. 110' - 115'.

DRILLING TO PROCEED

Samples:		Cu	Zn
10237	35' - 49' (14')	0.30	0.08
10238	105' - 115' (10')	1.11	

Diamond Drill Hole Co-ordinates 300' N & 220' E Depth 123' Vertical Hole

HOLE 73-9

Logged by W.R.B.

0.0' - 50.0'	Mottled, garnet-epidote skarn. A little fine pyrite; very sparse chalcopyrite.
Samples marked:	14' - 18' 23' - 28' 36' - 40.5' 40.5' - 45.0' 45.0' - 49.0'
50.0' - 52.3'	Basalt dyke.
52.3' - 92.5'	As at 0.0' - 50.0'. Magnetite at 57'-58', 82.9' - 84'.
92.5' - 96.0'	Basalt dyke.
Samples marked:	105' - 110'. 110' - 115'.

DRILLING TO PROCEED

Samples:		Cu	Zn
10237	35' - 49' (14')	0.30	0.08
10238	105' - 115' (10')	1.11	

LEGEND

GEOLOGY

Lithology, increasing age.

1. Sand, Gravel, Clay, Alluvium

2. Basic Dykes

3. Porphyry Dykes

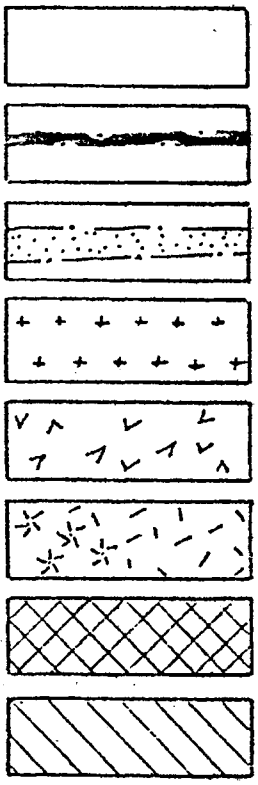
4. Gabbro

4. "Younger" Granodiorite

5. Hybrid Complex and Diortie

6. Limestone

6. Sediments



Skarn alteration

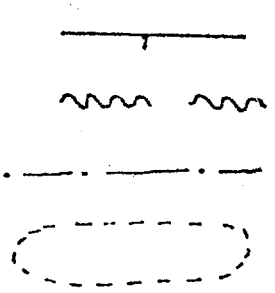
Mineralization- CU PY

Bedding and/or Foliation

Fault

Contact, assumed

Outcrop areas



LEGEND

GEOCHEMICAL SURVEY

Values — $\frac{7}{31}$ Cu. p.p.m. / Zn p.p.m.

Contours — Zn 25 p.p.m.

MAGNETOMETER SURVEY

Magnetic high — 5000

Magnetic low — 1000

Contour Interval — 1000 Gammas.

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