012149

AREA EXPLORATION CORPORATION

MOUNT NANSEN PROJECT

WHITEHORSE MINING DISTRICT, YUKON TERRITORY

GEOLOGY, GEOCHEMISTRY AND DRILLING, 1971

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JANUARY, 1972

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GENERAL INTRODUCTION

This report is intended to be a review report and description of the various exploration phases carried out by contractors and employees of Area Exploration Corporation on the Mount Nansen Project, Number 158.

The Mount Nansen Project was initiated because of the area's close similarities with the Casino porphyry copper deposit located some 60 miles to the northwest and the location of two large and distinct copper-moly anomalies by F. Bianconi and R. Saager of Mount Nansen Mines Ltd. during a 1970 soil survey.

The field programs were designed to begin an evaluation of the potential grade and extent of mineralization of the Mount Nansen prospect. The field season began June 1st, 1971 and ended October 11th, 1971.

Initial stages were geological, E.M., ground magnetometer and soil geochemical surveys. This work was followed by an I.P. survey and this in turn by drilling using both a percussion and a diamond drill.

Exploration work was carried out almost wholly upon claims at the north end of the Mount Nansen holdings (those of porphyry copper potential) and only minor work was undertaken in the areas of known Ag-Pb veining near the abandoned mill and camp complex to the south.

A detailed description of the geophysical work is the subject of a separate report by Peter E. Walcott & Associates Ltd.

HISTORY

Widespread activity on gold placers in the Dawson Range started subsequent to the Klondike Gold Rush. The best placers were found in the tributaries of Nansen and Victoria Creeks, and work has been done on these intermittently since 1907. The first claim to be actually recorded was the Discovery claim on Nansen Creek which was staked in 1910 by Frank Back and Tom Bee (Cairnes 1914). Since that time mining and prospecting have been intermittently carried on in the Mount Nansen district. The following is a brief history of the activities:-

1910 - All the creeks in the Nansen District were staked from end to end for placer gold. Most claims have lapsed.

1930 - First primary gold deposit was located by P.R. Guder at Freegold Mountain, 14 miles north of Mount Nansen.

1943 - Prospectors Brown and McDade discovered the first Pb-Ag-Au lode in the immediate vicinity.

1946 - Canwest Explorations Ltd. explored the Webber area and the Huestis Syndicate trenched the Huestis zones.

1947 - After underground work, activities ceased at Brown-McDade as the results were disappointing and metallurgical tests indicated low recoveries for gold and silver.

1965 - Peso Silver Mines performed underground exploration at the Webber and Huestis vein zones.

1968 - After a feasibility report by Dolmage-Campbell & Associates, a mill was purchased by Mount Nansen Mines Ltd. to extract Pb-Ag-Au ore from the Huestis and Webber veins.

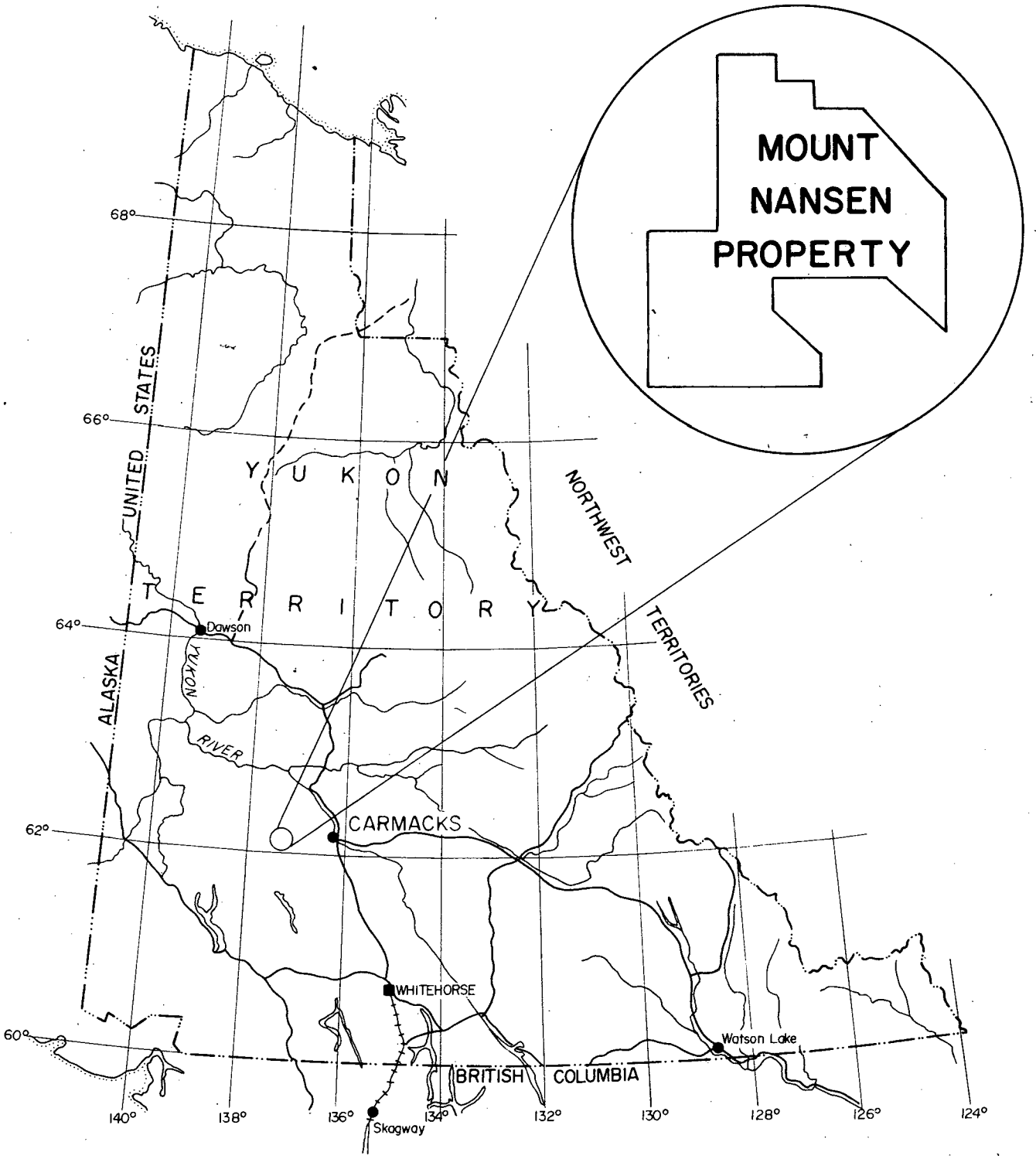
1969 - The production period of Mount Nansen Mines Ltd. started September 1968 and ended April 1969. The 400 tpd mill and camp complex was only three-quarters finished at shutdown.

1970 - F. Bianconi and R. Saager of Mount Nansen Mines Ltd. recognized a porphyry copper environment north of the camp, and Pb-Ag veins. Geochemical silt and soil surveys were undertaken and two extensive copper-moly anomalies were located.

1971 - Area Exploration Corporation recognized the potential of the property and undertook a comprehensive field program on Mount Nansen Mines' northern claims. Field crews made use of the partially complete mine site as a base camp.

LOCATION AND ACCESS

The Mount Nansen Property lies in the Carmacks District, Yukon Territory (137°10'W/62°05'N), some 115 miles to the northwest of Whitehorse and 30 miles to the west of Carmacks. From Whitehorse the mill site and camp are reached by 100 miles of good gravel road to Carmacks on the Whitehorse-Mayo Highway, and finally by 41 miles of all weather gravel road built by Mount Nansen Mines Ltd. Driving time from Whitehorse to the camp is approximately 3 hours. The Carmacks-mill site road becomes extremely greasy during periods of heavy rainfall and use of a 4x4 is advisable. In addition, this road would require re-paving after each spring run-off. Other access to the camp is by float plane, the landing being on Victoria Lake, 5 miles to the southeast, or by land planes during the winter months making use of the airstrip constructed by Mount Nansen Mines, 2 miles southeast of the camp.



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PROPERTY LOCATION MAP

SCALE : 1" = 100 MILES

FIG. 1

The camp is located on the southern extremity of the claim block. Access to the central and northern parts of the Property is by a 5-mile 4-wheel drive road which traverses from the camp across the saddle between Discovery and Back Creeks, crosses the east fork of Nansen Creek and continues north to the end of the Mount Nansen claims. This road was built in the fall of 1970 by T. Wheeler of Carmacks to provide access to a placer claim located on the east fork of Nansen Creek and also a mineral claim block which is adjacent to and northwest of the Mount Nansen holdings. This road, because of its central position, provides excellent access to the grid area. Driving time from the camp to the grid is 20-25 minutes. The road was cat bladed several times over the summer to reduce transportation time.

TOPOGRAPHY AND GLACIATION

The Mount Nansen Property lies at the southeast end of the northwest-trending Dawson Range. The Dawson Range is a belt of gentle summits within the Yukon Plateau. The Yukon Plateau is an area of peneplanation and erosional maturity about 4000-5000 feet in elevation lying between the St. Elias Mountains to the west and the Ogilvie Mountains to the northeast. Most of the Western Plateau escaped glaciation during Pleistocene time, and drainage is characterized by V-shaped valleys and an absence of lakes.

No evidence of glaciation could be found in the Property. A regional geology map prepared by H.S. Bostock (1936) indicates the glacial boundary to be 4 miles south and 10 miles east of the Property.(see Regional Geology map, Page 9). However, D.D. Cairnes (Canada Department of Mines Summary Report 1914) notes the presence of a boulder clay associated with the placer deposits in the Nansen Creek valley. He attributes this boulder clay to an older period of glaciation because the area shows all the features of unglaciated country including gentle slopes typical of the normal processes of erosion. Large quantities of fine-grained sand showing some signs of stratification are revealed in road cuts 3 miles to the southeast of the Property. An explanation for this occurrence could be that the sand was deposited in an ice margin lake.

The climate in recent times has been both cold and arid. Mean annual temperature is in the range of 21-24°F and annual precipitation is 8-14 inches. The Property is permafrost covered.

The main ridge of the Property is centrally located and lies between Nansen Creek to the west and Victoria Creek to the east. It has an elevation of 5000 feet. Mount Nansen, 5593 feet, is located 6 miles northwest of the camp and adjacent to the northwest Property boundary. Victoria Mountain, 6136 feet, 6 miles north of the camp, is adjacent to the northeast corner of the Property.

At the north end of the Property, topography is controlled by rock type, hydrothermal alteration and faulting. Resistant andesite and basalt flows form craggy bluffs and surround a topographic low of hydrothermally altered porphyry. Silicified areas within the intrusion are left as dome structures. The creeks generally trend northwest and northeast following the predominant fracture system of the Property.

Timberline has an elevation of approximately 4000 feet, thus the lowest sections of the Property are covered by spruce, birch and poplar. Thick buck brush extends from the valley floors to well above timberline. The highest areas are covered only by grass.

LINE CUTTING

A total of 455,000 feet or approximately 86 line miles of grid was picketed over Tertiary intrusions and their perimeters. Of this total it was found necessary to cut only 23.5 line miles. Two line cutters, Andre Leblanc and Leopold Laramie of Eastern Associates Reg'd, were contracted to cut and picket these 23.5 line miles, while the rest of the grid was completed by Area personnel. The line cutters finished this contract in 11 days.

The grid baseline extends some 36,500' NW-SE, from the northwest corner of the property to the southeast corner of the property. Cross lines were run NE-SW at 800 foot intervals across the baseline - this interval was reduced to 400 foot where warranted. Stations were marked at 200 foot spacings with red fluorescent laths. Only North and West coordinates were used.

GEOCHEMISTRY

Methods

Soils from the 'B' horizon were sampled at 200 foot intervals along the grid cross lines. Tony Wheeler's D7 Cat was used to rip sample holes through variable amounts of volcanic ash and ice to the B horizon. Copper and molybdenum were determined over the whole grid, and in addition, soils from 316N to 368N were analysed for lead and silver.

Analyses were by Barringer Research using the following method:-

	SAMPLE	ATTACK	ANALYSIS
Cu	250 mgm - 80 mesh	Hot $HClO_4$	Atomic Absorption
Mo	250 mgm - 80 mesh	" $HClO_4$	Atomic Absorption
Pb	250 mgm - 80 mesh	" $HClO_4$	Atomic Absorption
Ag	2.5 gm - 80 mesh	KCN	Atomic Absorption

THRESHOLDS:	Cu	70 ppm	Pb	50 ppm
	Mo	7 ppm	Ag	0.5 ppm

Thresholds for lead and silver may be misleading as it is likely that the whole sampled area is anomalous - - trenching upslope has revealed lead, silver and copper mineralization along shear zones in the granodiorite (Campbell and Guardia 1969).

In addition, silts were taken from the streams draining from the west into Nansen Creek and analysed as follows:-

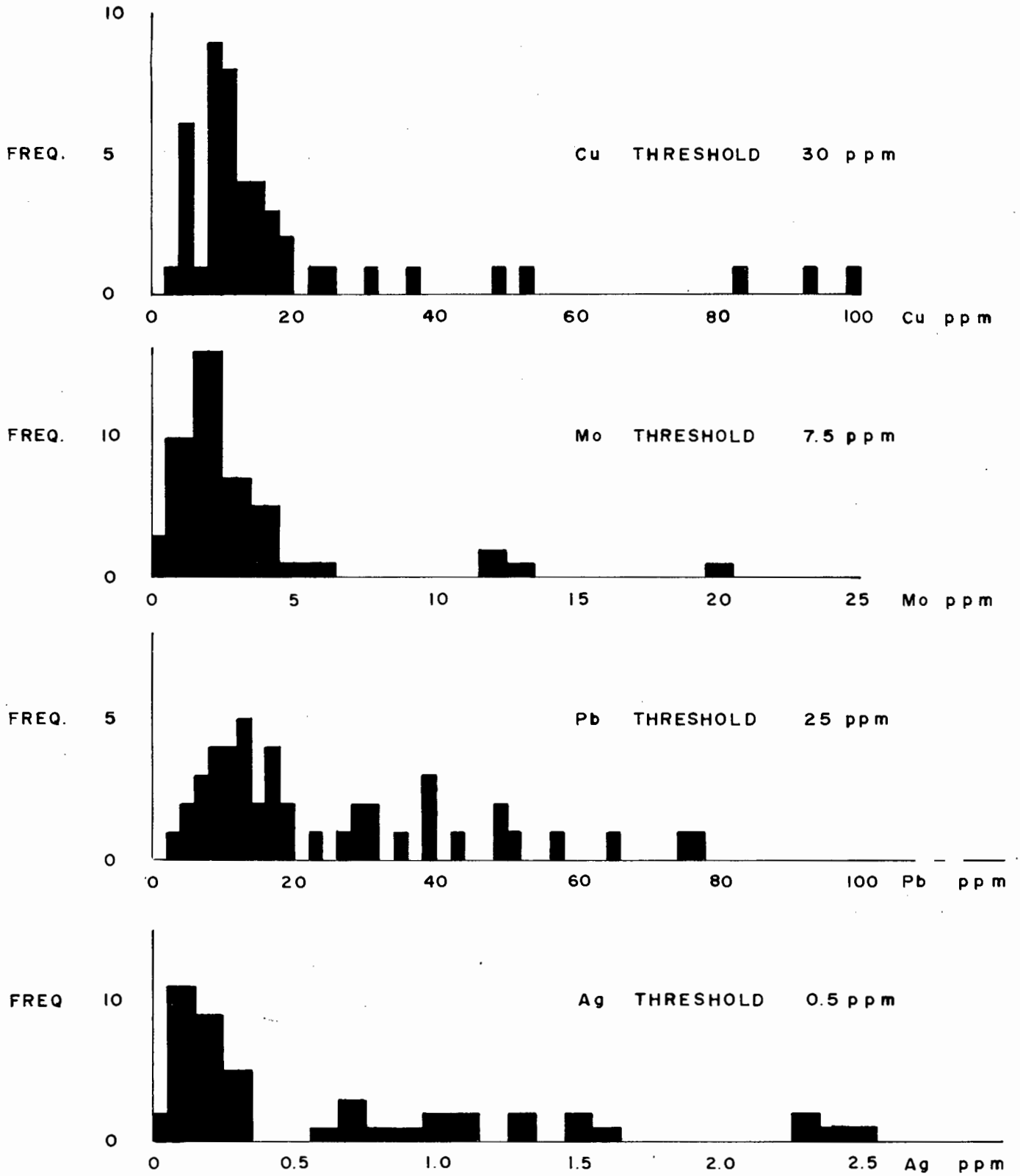
	SAMPLE	ATTACK	ANALYSIS
Cu	250 mgm - 80 mesh	0.5N HCl	Atomic Absorption
Pb	250 mgm - 80 mesh	0.5N HCl	Atomic Absorption
Mo	250 mgm - 80 mesh	Bisulphate Fusion	Colorimetric
Ag	2.5 gm - 80 mesh	KCN	Atomic Absorption

Results

The soil survey outlined four broad anomalous areas - three grouped around the confluence of Nansen Creek and East Fork, with fairly consistent high values to the north of the confluence below the Essansee lead-silver veins, and a large, spotty anomaly round the group of silicified domes, Unit M, at the head of the East and South Forks. The shapes of anomalous zones seem to indicate N-S and E-W trends, i.e., coincident with fracture directions A and C (see section on Structure).

The silt survey confirmed an anomaly found by F. Bianconi and R. Saager of Mount Nansen Mines Ltd., located around a hill at about 280N/350W (off the present grid area) in Nansen Group Volcanics. Their anomaly was predominantly to the south of the hill and in lead, zinc, silver and antimony. The present survey shows a zoned anomaly in that the two streams closest to the hill had anomalous copper, molybdenum, lead and silver, whereas the streams immediately north and south of these two have only anomalous lead and silver. Geologically, the area consists of the Mount Nansen Group Volcanics with minor porphyry intrusions and intercalated rhyolite. It may be that a porphyry situation exists under the cap of volcanics and the anomalies are due to "leaking" out through the cap.

Frequency-concentration plots for the silt values are shown overleaf with approximate threshold values deduced therefrom. More sophisticated statistical analysis is not justified for so few samples. Threshold values for the copper and molybdenum soil survey are quoted from a report by B. Smee of Barringer Research - "Geochemical Orientation Study, Mount Nansen Property" - which was the result of field and laboratory work in May and June of 1971. In his report, Smee recommended use of the Cat ripper and the above analytical techniques as well as stressing the importance of sampling below the ash layer.



HISTOGRAMS OF FREQUENCY OF CONCENTRATION (IN NO. OF SAMPLES) VERSUS CONCENTRATION FOR THE 1971 SILT SURVEY.

GEOLOGY

Introduction

The regional setting of the Mount Nansen Property is shown on Fig ii overleaf. The Property geology gives a good insight into the regional situation and hence detailed discussion of the latter is not necessary. NW-SE trends are dominant in the Mesozoic-Tertiary magmatic phases and hence the Property can be considered as in the same belt as Casino Silver Mines Ltd.'s property, 60 miles to the northwest. The latter property has much in common with Mount Nansen, being initially explored for silver values in galena-bearing veins and only later for copper and molybdenum. The geology is apparently completely analogous with respect to rock-types involved. Lack of volcanic cover, and more distinct alteration patterns at Casino may reflect a deeper level of erosion than Mount Nansen.

Rock exposure on the Property is limited. There are areas of rubbles of one rock type that have been taken as representative of bedrock, shown on the map bounded by dotted lines. In addition, trenches were sampled (rarely to bedrock) and any consistent float rock-type noted, for added control. Lack of glaciation of the Property renders this method justifiable, except in the valleys. These four controls are coloured heavy on the map, and thus the degree of certainty of lithologic boundaries can be assessed.

Lithologies and Petrography

Unit A - Yukon Group Metamorphics

Unit A comprises metaquartzites, mica schists, foliated meta-igneous rocks, highly re-worked banded gneisses and migmatitic rocks. Outcrop is limited and no idea of the overall structure of these rocks could be gained, but it is certain that high grade metamorphism, polyphase deformation, intrusion and a long time were involved in their formation. Observations of foliation and minor fold axes may point to an overall north-south structural grain. Outcrop is restricted to the southern border of the Property and to a window in the volcanic cover in the centre of the Property.

Unit B - Lineated Diorite

Unit B is of dioritic composition, consisting of large amphiboles (up to 1/2 inch) in a less coarse plagioclase matrix. The amphiboles, at least, are strongly aligned and an occasional foliation may be due to alignment of plagioclase laths. One trench sample indicates an intrusive contact with schist, yet the lineation in the diorite, the contact, and the foliation in the schist are all discordant, with no sign of the lineation superposed over the foliation or vice versa. It is concluded that lineation is due to igneous flow and that the discordance to the contact is due to local turbulent flow.

Unit B shows a spatial relation to Units J and K in the southeast corner of the property and may be associated genetically with them.

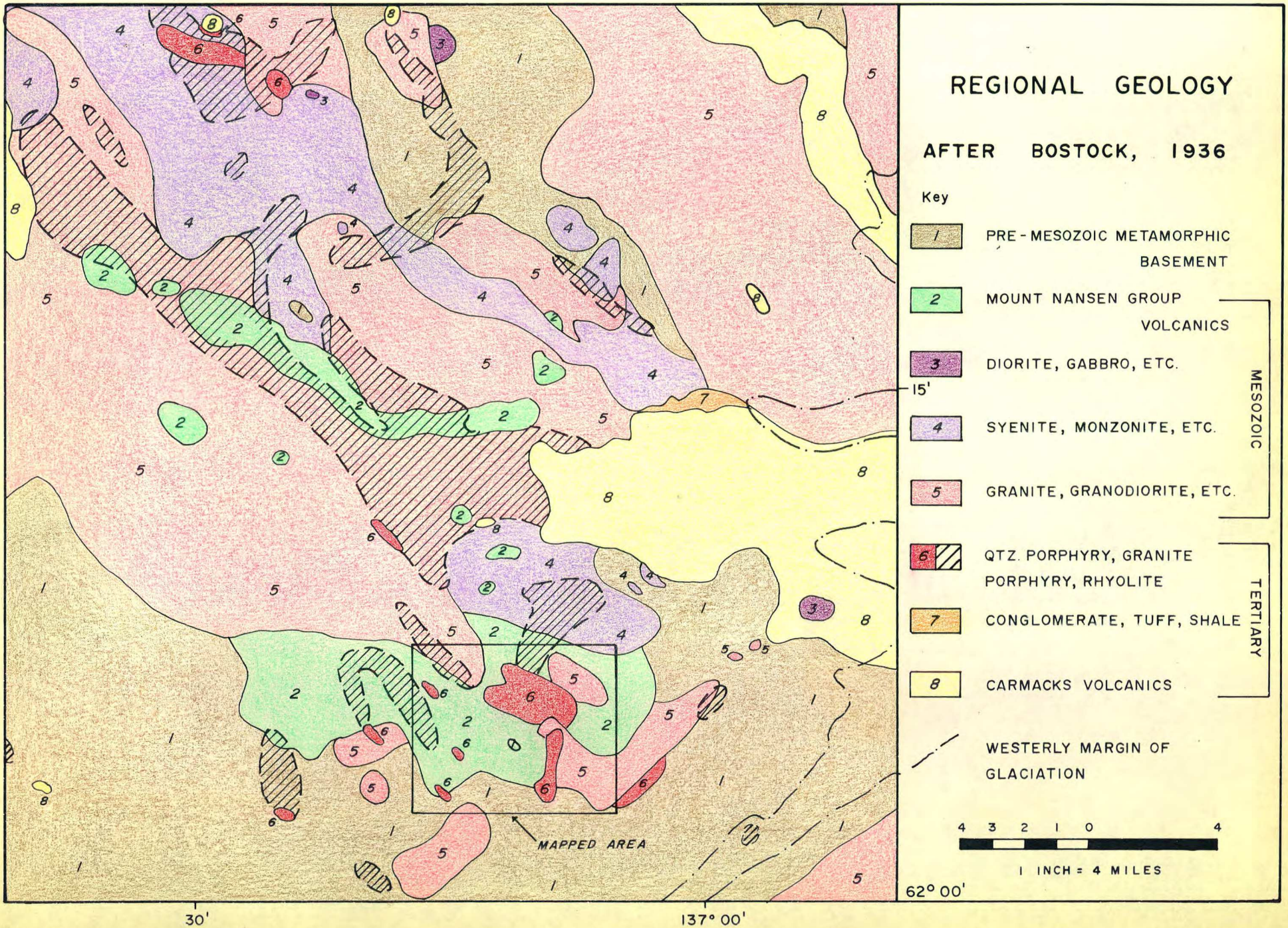

REGIONAL GEOLOGY
AFTER BOSTOCK, 1936
Key
1 PRE-MESOZOIC METAMORPHIC BASEMENT
2 MOUNT NANSEN GROUP VOLCANICS
3 DIORITE, GABBRO, ETC.
4 SYENITE, MONZONITE, ETC.
5 GRANITE, GRANODIORITE, ETC.
MESOZOIC
6 QTZ. PORPHYRY, GRANITE PORPHYRY, RHYOLITE
7 CONGLOMERATE, TUFF, SHALE
8 CARMACKS VOLCANICS
TERTIARY
WESTERLY MARGIN OF GLACIATION
4 3 2 1 0 4
1 INCH = 4 MILES
MAPPED AREA
15'
62° 00'
30'
137° 00'

Fig ii

Units C, D, E, F - Mount Nansen Group

The Mount Nansen Group is a suite of volcanic to hypabyssal, basaltic to dacitic rocks that, in the south, overly the Yukon Group. Here the rocks are predominantly agglomerates and flow breccias (Unit C), having abundant fragments of andesite and minor Yukon Group rocks, in an andesitic matrix. A strange exposure at 250W/105N shows a "volcanic conglomerate" of a very well rounded and sorted andesite boulders (up to one foot) in an andesitic matrix, overlying about 10 feet of apparently baked shale, in turn overlying brecciated granitic gneiss of the Yukon Group. The exposure seems to represent a Jurassic soil profile to bedrock, subsequently overlain by a volcanic flow which passed through a stream bed before coming to rest.

The bulk of the Mount Nansen Group (Unit D) is of porphyritic andesite. One exposure of thin-bedded, graded, tuff - probably sub-aqueous - occurs in the northeast corner of the Property. Minor basaltic and dacitic volcanics were noted.

The volcanics are seamed with two sets of hornblende-plagioclase porphyry dykes (Unit E), one set trending 060°, the other approximately 150°. An area of medium-grained, equigranular diorite (Unit F) occurs toward the south end of the Property and probably represents a sill.

Units G, G^1

The Mount Nansen Group is apparently intruded by a coarse, equigranular batholith of granodioritic to adamellitic composition (Unit G) trending northwest. Along the contacts a medium-grained quartz diorite (Unit G^1) is developed. This spatial relationship suggests that Unit G^1 is a marginal facies of Unit G or perhaps an early phase of intrusion subsequently itself intruded by Unit G at deeper level. Mineralogically the two rocks are similar, but G^1 has markedly interstitial quartz, abundant hornblende, minor biotite, and the feldspar is 90% euhedral plagioclase, whereas G has hornblende equal to biotite in moderate quantity, a fair amount of orthoclase in some cases, and greater than 20% quartz with granitic texture. A float sample of G intrusive into G^1 was found, supporting the multiple intrusion hypothesis.

Unit H - Rhyolite

Aphyric silicic volcanics are found on the west edge of the Property, apparently interbedded with the Mount Nansen volcanics.

Units J and K

In the southeast corner of the Property trenching has outlined a body of porphyritic adamellite (Unit J) and an apparently

associated lamprophyric intrusion (Unit K). The adamellite appears to be a high-level stock and has phenocrysts of orthoclase up to 2" long in a coarse matrix of plagioclase quartz and mafics. Unit K has abundant large amphibole phenocrysts in a dark grey-green matrix that may be alkaline.

Unit L - Quartz-Feldspar-Porphyry, etc.

Unit L comprises volcanic or sub-volcanic rhyodacitic (compare Unit J) porphyry and its hydrothermally altered derivatives. Hydrothermally altered Unit G is difficult to distinguish from altered Unit L where alteration is advanced and hence the former is probably often mapped as Unit L. "Fresh" (propylitic alteration) porphyry has phenocrysts of orthoclase up to an inch long, smaller plagioclases, partially resorbed quartz, hornblende and biotite (usually chloritized) set in a glassy groundmass. The great majority of altered varieties consist of quartz "eyes" (relic phenocrysts) set in a kaolinitic matrix (argillic alteration). A limited amount of quartz-sericite (phyllic) alteration was seen at the junction of the South and East Forks of Nansen Creek. Whether this area represents the primary extent of phyllic alteration is doubtful, since supergene argillic alteration will have affected the surface expression of any primary alteration zoning.

Unit M - Silicified Porphyry, etc.

Unit M has strong topographic expression and is generally associated with Unit L. It comprises breccia of porphyry in a matrix very rich in silica, also silicified porphyry. The breccia matrix contains tourmaline and apatite, and in the vicinity of 200N/200W a tourmaline-bearing silicified rock flour was noted - with texture very like a poorly sorted sandstone and rounded fragments. The rock type has thus originated through brecciation of earlier rocks by volatile rich silicic fluids.

Stratigraphy

The inferred stratigraphic order is shown in the map key.

The Yukon Group (Unit A) forms the basement to the area and is demonstrably intruded by Unit B and Unit L and overlain by Units C and D. Bostock (1936) places the Group in age from Pre-Cambrian to Pre-Triassic on the basis of one fossil locality and superposition observations. One outcrop on the property indicates that the Group formed a weathered land-surface prior to the extrusion of the Mount Nansen Group, at the oldest Upper Jurassic (Bostock).

Unit B may be as old as Pre-Cambrian or as young as Tertiary - spatial association with Tertiary intrusives suggesting the latter. However, Bostock describes diorite gneiss intrusive into the Yukon Group elsewhere on the Carmacks map sheet and on

the Property, Unit B occasionally has a foliation suggesting metamorphism. Hence, it has been placed pre-Mount Nansen and post-Yukon in age.

The Mount Nansen Group has been restricted to Upper Jurassic - Lower Cretaceous by Bostock. Cairnes (1915) concluded that some of the volcanics were younger than Cretaceous sediments. Bostock stresses that all Mesozoic intrusives cut the volcanics, while Cairnes cites exposures of Mount Nansen volcanics overlying conglomerates with boulders of Mesozoic intrusives. Units E and F are almost certainly co-magmatic with C and D.

As described in the previous section, Unit G^1 is presumed to have intruded the volcanics at moderately high tectonic level and to have been intruded by Unit G at lower tectonic level. To the northwest the batholith has been dated radiometricly at 97 ± 2 m.y (Cretaceous).

Unit H, rhyolite, has been placed in the Tertiary by Cairnes and Bostock. However, there is evidence on the west boundary of the Property that it is interbedded with the Mount Nansen Group. Cairnes described gradations between rhyolite and porphyry suggesting that these rocks are truly Tertiary. The conclusion is that the Mount Nansen volcanic activity continued into the Tertiary while early members were being intruded by the batholith.

Unit J intrudes the Yukon Group and the batholith, Unit K is grouped with it on the basis of the common association of adamellite and lamprophyre. Unit L is obviously a higher level equivalent of J and is seen elsewhere on the Carmacks sheet intruding and overlain by the Carmacks Volcanics, Miocene or older (Bostock). Hence all these units are probably Early Tertiary. Composite dykes of Units L and E may be further indication that Mount Nansen volcanism continued into the Tertiary. Dykes of Unit E are also found intruding the granodiorite, Unit G (Campbell and Guardia, 1969). Unit L intrudes Unit J and hence fairly rapid uplift of the area in Early Tertiary time is indicated. Porphyritic dacites 60 miles to the northwest in the Casino deposit have been radiometricly dated at 69 ± 3 m.y, and coarser varieties at 71 ± 3 m.y. Unit M represents the final stages of this magmatic activity, in which residual highly silicic volatile rich fluids found their way upward along newly formed fractures in the plutonic and hypabyssal rocks now at high tectonic level, sometimes with explosive force, brecciating the host rocks.

Structure

The Yukon Group has suffered polyphase deformation and no structural interpretation is possible from the exposures seen. If anything, there is a North-South structural grain.

The Mount Nansen Group rocks have apparently been folded (Bostock). It may be that variable altitudes and irregular outcrop boundaries represent primary features formed as the flows covered the Jurassic topography, alternatively folding may be locally due to intrusion.

Mapped lithologic boundaries and attitudes in the east centre of the Property suggest that the batholith contact dips gently southwest and northeast under the Mount Nansen Volcanics. Regionally, the batholith trend is Northwest-Southeast, and it is correlated with the Coast Range Intrusives in B.C.

Many air photo lineaments have been mapped - these are thought to represent normal faults associated with block uplift. Unit E dykes are intruded along these lineaments and hence they may be pre-plutonic features. More likely, however, is the possibility that all igneous rocks of the area are to some extent co-magmatic and contemporaneous with each other and the faulting. This theory of temporally overlapping magmatic events differs from Bostock s approach in which events occur consequentially, but it is more in accord with Cairnes' observations during his detailed mapping of the area in 1915. The lineaments are plotted on the rose diagram overleaf and four maxima, A, B, C, and D can be picked out. Referring to the geologic map, it is seen that B and D are associated, e.g., in the northeast corner of the Property in the Nansen volcanics, where the two directions are invaded by Unit E and L dykes. The line of silicified domes (Unit M) in the centre of the property follows trend D. The porphyry north of the Huestis adits is "L" shaped having arms trending along B and D, and has been subsequently isolated by similar faults. Generally these lineaments do not appear to involve much lateral displacement and are thought to represent normal faults associated with block uplift of the area. However, geophysical surveys coupled with inconclusive geological evidence point to a major fault parallel to lineament B, which has apparently displaced the northern portion of the argillicly altered area (Unit L) approximately 2,000 feet left laterally. An alternative explanation would be that displaced I.P., E.M. and magnetic features have a common dip (i.e., are not vertical) and that the fault is a normal fault. The E.M. survey outlined a lineament offset by the above fault, which in turn could explain features in the geology and I.P. in terms of a right lateral displacement of about 2,000 feet, parallel to lineament D. Both these proposed faults run through areas of critical interest on the Property and hence may be important in future work. If the inferred displacement is removed, the picture that emerges is of a single magnetic depression, coincident with an area of argillic alteration and rimmed by a halo of high I.P. effect. This I.P. halo is open to the west due to lack of coverage and may be due to high pyrite (compare with Gibraltar Mines, in which ore grade mineralization is found just inside the pyrite halo).

A and C are more restricted lineaments, A being mainly expressed by Nansen Creek which trends accurately north-south over about 3 miles and C representing the East Fork lineament which appears to offset the Nansen Creek lineament. Hence, A and C may have some strike-slip component of movement - lithological control was not sufficient to prove or disprove this, however, and tentative lithologic boundaries are shown continuous across the lineaments. Dykes of Unit L are seen following trends A and C and hence they may be contemporaneous with the late stages of magmatism.

Mineralization

Hydrothermal alteration is evident over large areas of the Property and in varied rock types. The main area of alteration is coincident with the large area of Unit L in the centre of the Property. Much of this area was probably originally quartz-feldspar porphyry and some fairly fresh samples of this rock type are found within it - a lot, however, was probably granodiorite.

Five types of alteration can be distinguished:-

(1) Propylitic - in which the mafic minerals of the granodiorite and porphyry are altered to chlorite, and plagioclase to calcite, epidote and albite. This alteration state is probably present to some extent throughout the granodiorite and is characteristic of "fresh" samples of quartz-feldspar porphyry.

(2) Argillic - in which feldspar is replaced by kaolinite and mafics break down further to clays such as montmorillonite. This state is the most common in obviously "altered" rocks, but may in part be supergene rather than hypogene, masking any primary zoning pattern, if any.

(3) Phyllic - in which general re-crystallization and loss of mafic components give rise to a quartz-sericite-pyrite assemblage. This zone is restricted to an area around the confluence of the South and East Forks.

(4) Silicic - in which porphyritic rocks have been strongly silicified. These areas are easily identifiable due to the resistance of the silicified rock and are mapped as Unit M. They form rounded domes and are probably localized by the intersection of lineament trends B & D (see Structure section).

(5) Brecciated - The silicified domes of Unit M at 200N/200W and 144N/250W also contain silicic breccias. The former dome appears to contain fragments of quartz-feldspar porphyry, vein quartz and silicified rocks whereas the latter seems to contain fragments of andesite. The matrix of these breccias is dominantly silica.

All of the above rock types contain variable amounts of pyrite and/or limonite. No areal distribution of especially limonitic or pyritic material was deduced and it is presumed that the variable factors of initial zoning and subsequent leaching, oxidation and redeposition have resulted in a distribution too complex to map using float samples.

Copper-bearing rocks on the surface are not abundant. This may be due to leaching. The silicified dome at 216N/180W has yielded quartz-feldspar porphyry samples bearing disseminated chalcopyrite, pyrite and malachite, assaying at up to 1.1% Cu.

No further galena-bearing veins other than those discovered by Mount Nansen Mines Ltd. were found. Mineralizing fluids for these veins were localized along shear zones with a northwesterly strike, dipping at angles varying from vertical to moderate southwest (Campbell and Guardia, 1969). If this mineralization is synchronous with, and the outer zone of, the copper-molybdenum mineralization (Lowell & Guilbert, 1970), then the structural controls were probably the same. Hence, the centres of mineralization may be expected to plunge vertically or southwesterly.

Drilling

A total of 2,480 feet of diamond hole and 3,120 feet of percussion hole was drilled on the Property during the 1971 field season. This footage comprises two diamond holes, CD-1 and CD-2, and nine percussion holes, CP-1-9.

CD-1

Location: 224N/208W

Dip and Azimuth: 45°, 045°

Length of Hole: 1,030 feet

Purpose of Hole: To test (a) a general area of silt and soil copper and molybdenum anomalies.

(b) the geological section in toward the silicified dome at 216N/180W.

(c) the extent of quartz-sericite alteration, seen on surface at the confluence of South and East Forks.

Remarks: The lithology, mineralogy and metal content of the holes is shown on the graphic log overleaf. The following points should be noted:-

(1) The presence of breccia as bedrock. This was not noted during surface mapping, thus it may be possible that such unsilicified breccia sub-outcrops over larger areas than thus far suspected.

(2) The presence of fresh granodiorite at depth reaffirming that the extent of the porphyritic rhyodacite intrusion is unknown.

(3) Absence of copper and molybdenum in the top 400 feet of brecciated material and best copper grades in fresh granodiorite.

(4) Antipathetic relationship between copper and molybdenum values, where present, as noted in the soil survey of this area of the Property.

(5) The testing of the section (purpose (b) above) was not achieved due to very difficult drilling and eventual enforced closure of the hole.

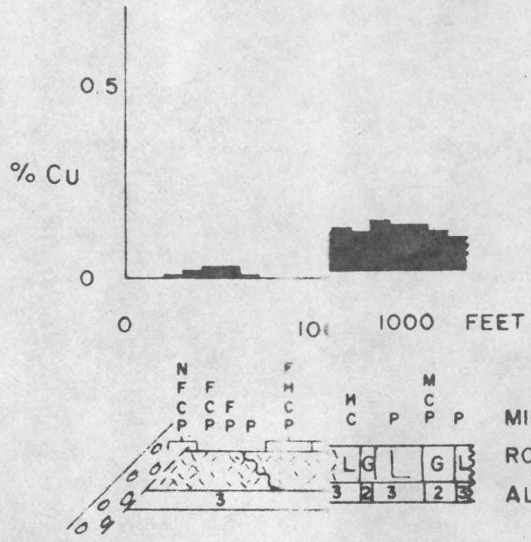
(6) No pervasive phyllic alteration was noted.

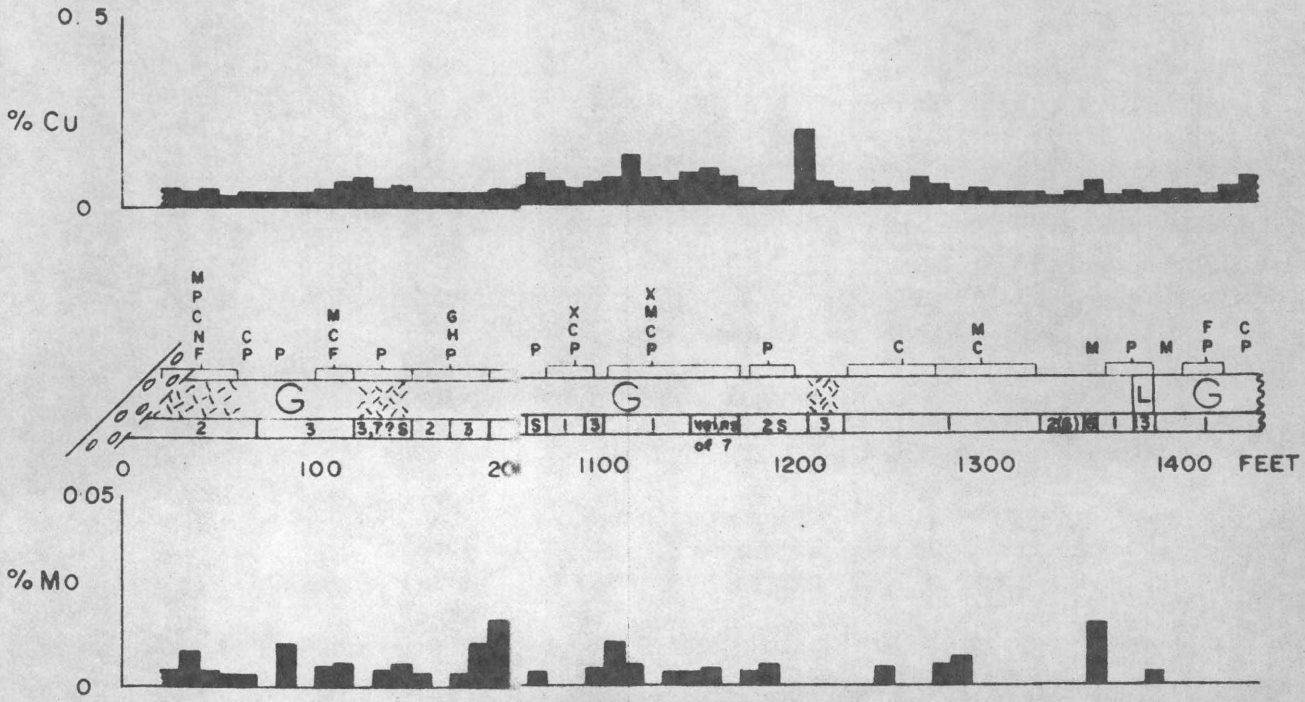
KEY:

P - PYRITE
C - CHALCOPYRITE
M - MOLYBDENITE
F - IRON OXIDE
N - MANGANESE OXIDE
H - CHALCOCITE
G - GALENA
A - ANHYDRITE
X - MAGNETITE
Y - CALCITE
G - GRANODIORITE
L - QTZ - FELDSPAR PORPHYRY
BRECCIATION
FAULT

MINERALS NOTED
ROCK FEATURES
ALTERATION FACIES and DIAGNOSTIC MINERALS:

1 FRESH
2 PROPYLITIC (Chlorite)
3 ARGILLIC (Clays)
4 ADVANCED ARGILLIC (Clay, Sericite)
5 PHYLLIC (Sericite)
6 ADVANCED PHYLLIC (Sericite)
7 POTASSIC (K-Feldspar)
S SILICIFIED





CD-2

Location: 332N/200W

Dip and Azimuth: 45°, 190°

Length of Hole: 1,450 feet

Purpose of Hole: To test (a) a coincident copper-molybdenum soil anomaly.

(b) a possible westerly extension of a magnetic zone in the granodiorite to the east of the hole.

Remarks: (1) The hole was almost all in granodiorite as expected.

(2) In contrast with CD-1 there is, if anything, a sympathetic relationship between copper, degree of brecciation and molybdenum (note the high coincidence of copper and molybdenum soil anomalies in this area in contrast with CD-1 as well).

CP-1

Location: 232N/196W

Depth: 240 feet

Target: Medium copper and molybdenum soil anomalies, the phyllic alteration zone, and an aeromagnetic low.

Remarks: Encouraging grades, especially at around 100 foot depth where some enrichment may have occurred.

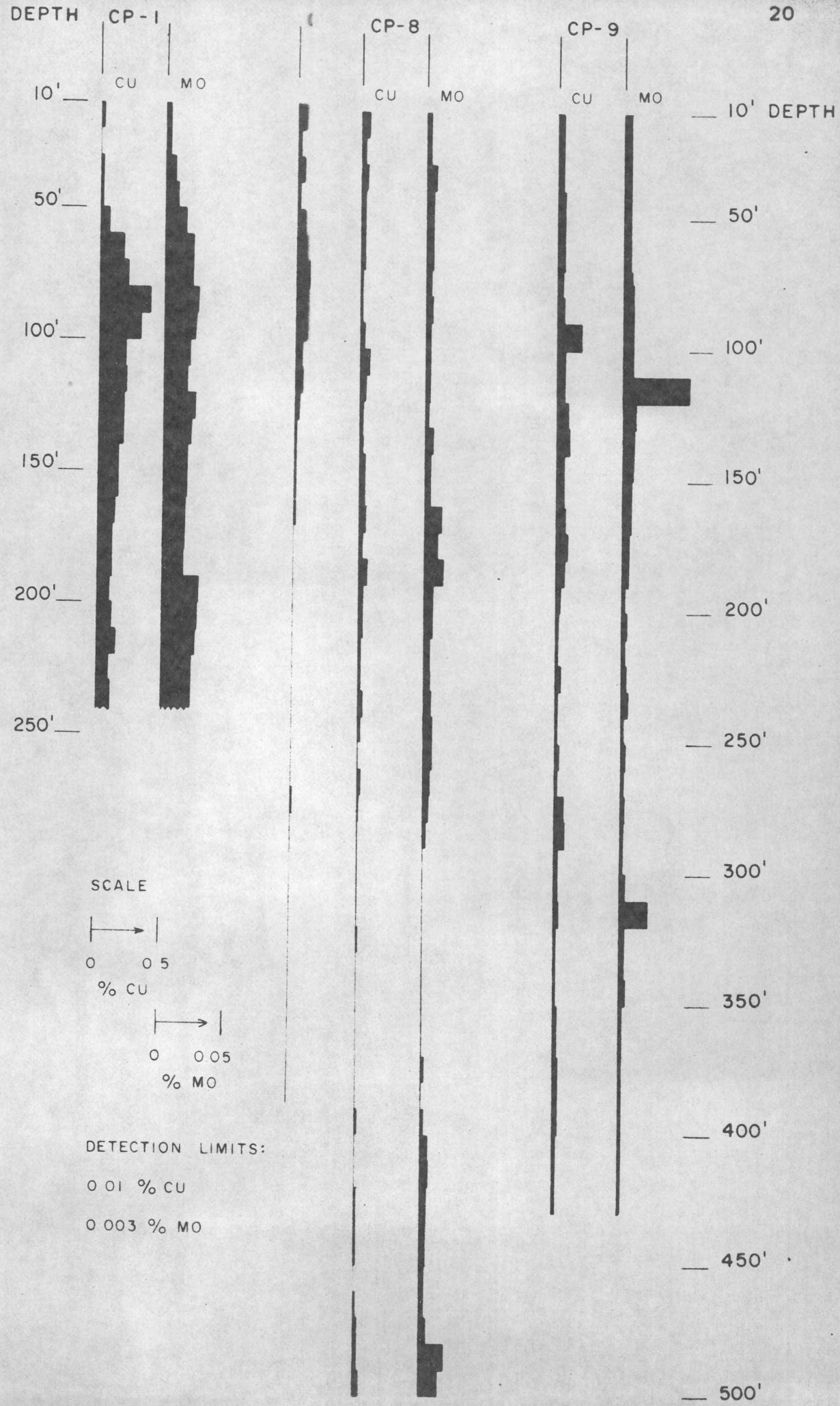
CP-2

Location: 216N/214W

Depth: 390 feet

Target: Copper anomaly in soils.

Remarks: No encouragement. Again possible enrichment at 100 feet.


DEPTH
CP-1
CU
MO
CP-8
CU
MO
CP-9
CU
MO
10'
50'
100'
150'
200'
250'
300'
350'
400'
450'
500'
10' DEPTH
SCALE
0 0 5
% CU
0 0 05
% MO
DETECTION LIMITS:
0 01 % CU
0 003 % MO

CP-3

Location: 176N/152W

Depth: 410 feet

Target: Molybdenum anomaly in soils.

Remarks: Low grades, possibly a higher molybdenum to copper ratio than usual.

CP-4

Location: 228N/174W

Depth: 270 feet

Target: Copper and lesser molybdenum, anomaly in soils and the margin of a silicified dome.

Remarks: Some encouragement.

CP-5

Location: 208N/182W

Depth: 330 feet

Target: Molybdenum anomaly in soils.

Remarks: Higher than usual molybdenum to copper ratio, but grades not encouraging.

CP-6

Location: 260N/244W

Depth: 350 feet

Target: Coincident copper and molybdenum anomalies in soils.

Remarks: Grades not encouraging.

CP-7

Location: 268N/250W

Depth: 200 feet

Target: Coincident copper and molybdenum anomalies in soils.

Remarks: Some encouragement in copper grades.

CP-8

Location: 324N/224W

Depth: 500 feet

Target: Coincident copper and molybdenum anomalies in soils.

Remarks: Grades not encouraging.

CP-9

Location: 336N/216W

Depth: 430 feet

Target: Coincident copper and molybdenum anomalies in soils.

Remarks: Grades not encouraging.

General Remarks:

1. Some difficulty was experienced with drilling probably due to blocky ground and clay-rich horizons.

2. Some enrichment of copper was noted at around 100 feet in some holes.

3. Drilling generally confirms the difference in chemical character of (1) the area of silicified domes, which have non-coincident copper and molybdenum values and (2) the area around the confluence of Nansen Creek or East Fork, which has coincidence of copper and molybdenum.

4. With reference to the I.P. results, analysed after the drilling, Holes CP-3, 4, 8, 9, and CD-2 lie well outside the I.P. halo inferred in the section on Structure. Holes CP-2, 6, and 7 lie inside the halo and Hole CP-5 lies on its outer edge. Hole CP-1, with encouraging grades, was drilled into the major I.P. anomaly on shallow separations, and Hole CD-1 was drilled into the edge of the halo from the inside and met some encouragement at depth. Hence, very little drilling was done at the inner edge of the I.P. halo where, by analogy with Gibraltar, the best mineralization may be expected.

Geological Synthesis

The lithologies on the property can be grouped as follows:-

Environment	Rock Unit	Composition	Age
Volcanic (porphyritic)	C D H	Andesitic Basaltic to Dacitic Rhyolitic	Late Jurassic to Early Tertiary
Sub-Volcanic (porphyritic)	E L M	Andesitic Rhyodacitic Highly Silicic	Late Jurassic to Early Tertiary
Hypabyssal (equigranular)	F G^1	Andesitic Quartz-andesitic	Late Mesozoic
High-level Plutonic (porphyritic)	J K	Rhyodacitic Lamprophyric	Early Tertiary
Plutonic (equigranular)	G	Dacitic to Rhyodacitic	Cretaceous

This grouping indicates the following development of the area in terms of tectonic level and magmatic differentiation:-

(1) Upper Jurassic, Units C, D, E, F: Initiation of andesitic volcanism in the Late Jurassic and accumulation of a deep volcanic pile, with accompanying sills and dykes, on top of the pre-existing metamorphic basement in a sub-aerial environment. Hence, regionally, the Upper Jurassic "Casino-Nansen" belt could be equated with the larger scale Andean belt with the Shakwak Trench corresponding to the Peru-Chile Trench.

(2) Lower Cretaceous, Unit G^1: Depth of the volcanic pile and degree of differentiation are such that the basement and the pile are invaded by the feeding magma chamber, giving rise to the medium-grained quartz-diorite intrusive.

(3) Mid and Upper Cretaceous, Unit G: Continued volcanism, now of dacitic magma, leads to further depression of the base of the pile. The magma chamber, now of dacitic composition, advances again into the pile giving the deep-level, coarse-grained batholith of granodiorite. There is a marked change with the beginning of the Tertiary. The history is now one of uplift and erosion; magmatic activity continues as does differentiation, but compared to the Mesozoic magmatic products, are volumetricly small.

(4) Early Tertiary, Units H, J, K, L: Rapid uplift of the region and emplacement of porphyritic adamellite and lamprophyre as the penultimate products of the magmatic cycle in a previously plutonic environment. Continued rapid uplift allowed emplacement of porphyritic rhyodacites

at the same level and resulted in block faulting of the area. Minor volcanic expression of this magmatism is expressed in the rhyolites on the property.

(5) Miocene, Unit M: It is known that Unit L predates and to a minor extent is synchronous with the Miocene Carmacks Volcanics. Hence, Unit M must be of approximately Miocene age and represents shallow, hydrothermal activity and little fracturing of the host rocks. The final product of differentiation was a hydrous, silicic, volatile-rich fluid with appreciable concentration of iron, copper, molybdenum, lead, zinc, silver and gold, and was probably admitted along existing fault planes. Elsewhere in the Canadian Cordillera it has been noted that the fissures admitting the post-orogenic plateau basalts (e.g., Carmacks Volcanics) are predominantly N-S and E-W. If hydrothermal activity was approximately synchronous with the initiation of plateau basalt extrusion, then it is possible that mineralizing fluids were admitted along N-S fissures, e.g., the Nansen Creek lineament. Since these lineaments are later than the block faulting (lineaments B & D in Structure section), they may be a more favourable locus for late-stage mineralizing fluids. However, it is probable that the intersections of both sets, A (Nansen Creek) and C, B and D, of lineaments are favourable sites for the location of ore.

The composite geological section enclosed with this report illustrates the deductions about stratigraphy and tectonic level discussed above.

CONCLUSIONS AND RECOMMENDATIONS

The 1971 field season was very successful in that an almost complete geological, geochemical and geophysical picture of the areas of interest within the Property was achieved in one summer. In addition, preliminary sub-surface investigations gave further useful insights into the primary lithologies, the alteration, and the mineralization.

Recommendations are thus of two types:

(A) Diamond drilling of targets outlined by the summer's work.

(B) Minor further work of the type carried out this summer.

(A) Diamond Drill Targets (see enclosed 1"=1,000' map "Drilling 1971-1972")

Recommendations are made considering all aspects of the exploration, including the stream sediment, airborne K_{40}, and aeromagnetic surveys carried out by Mount Nansen Mines Ltd. in 1970 and the 1971 I.P., EM-16 and magnetometer surveys which are the subject of a separate report by P.E. Walcott & Associates Ltd.

Recommended holes are listed in order of priority.

(1) 304N/227W

Approximately 2,000 feet northwest of the confluence of Nansen Creek and East Fork.

Testing:

(a) Aeromagnetic low (also topographic low).

(b) A fluvial overburden covered area surrounded by the three coincident copper-molybdenum anomalies in soils.

(c) A major intersection of lineaments A and C.

(d) A consistent metal factor anomaly on all four separations.

(2) 180N/190W

On the road between two silicified domes.

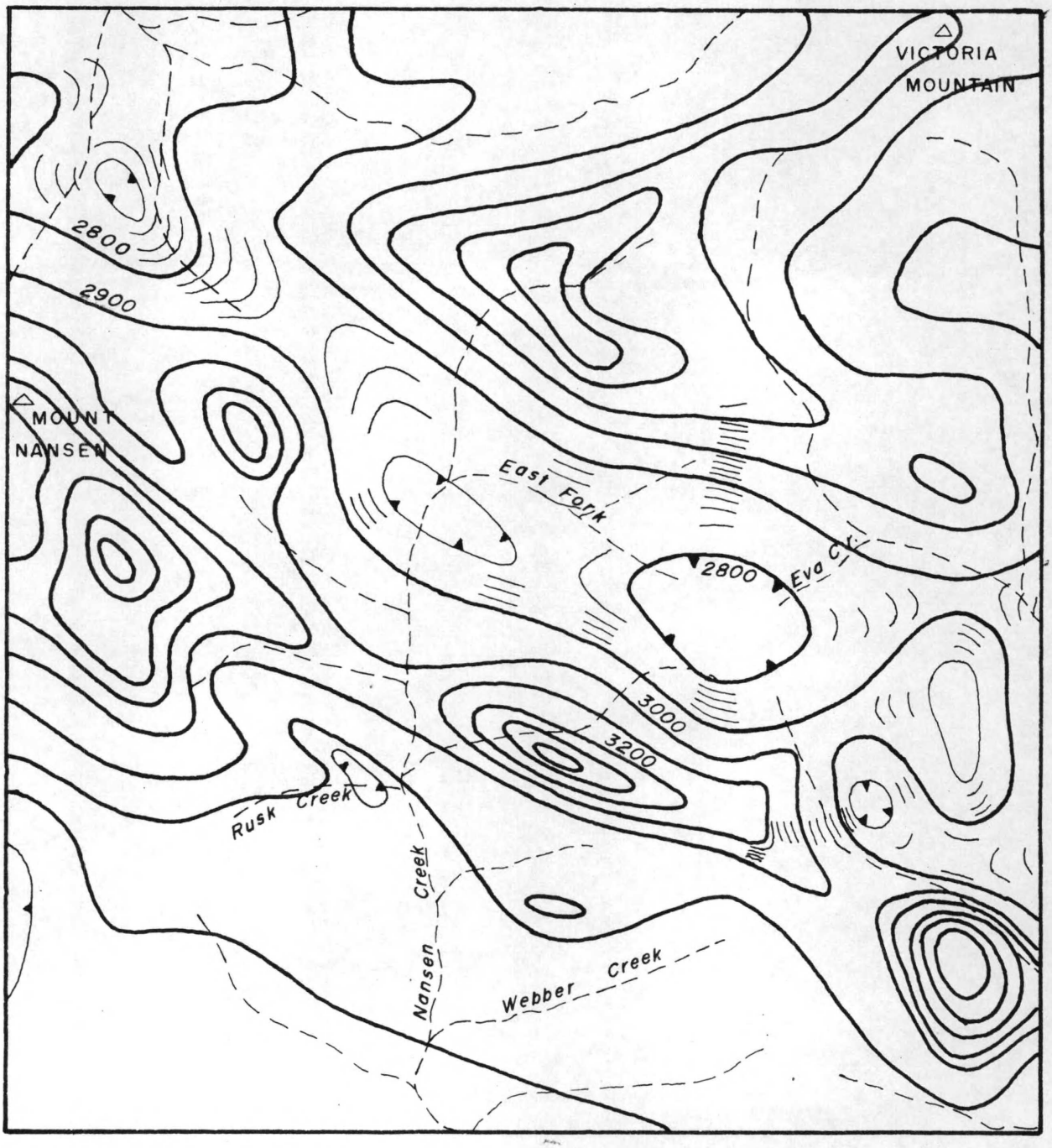
Testing:

(a) The major metal factor anomaly on deep separations.

(b) The major airborne K_{40} anomaly within the Property.

AEROMAGNETICS

FIG iii



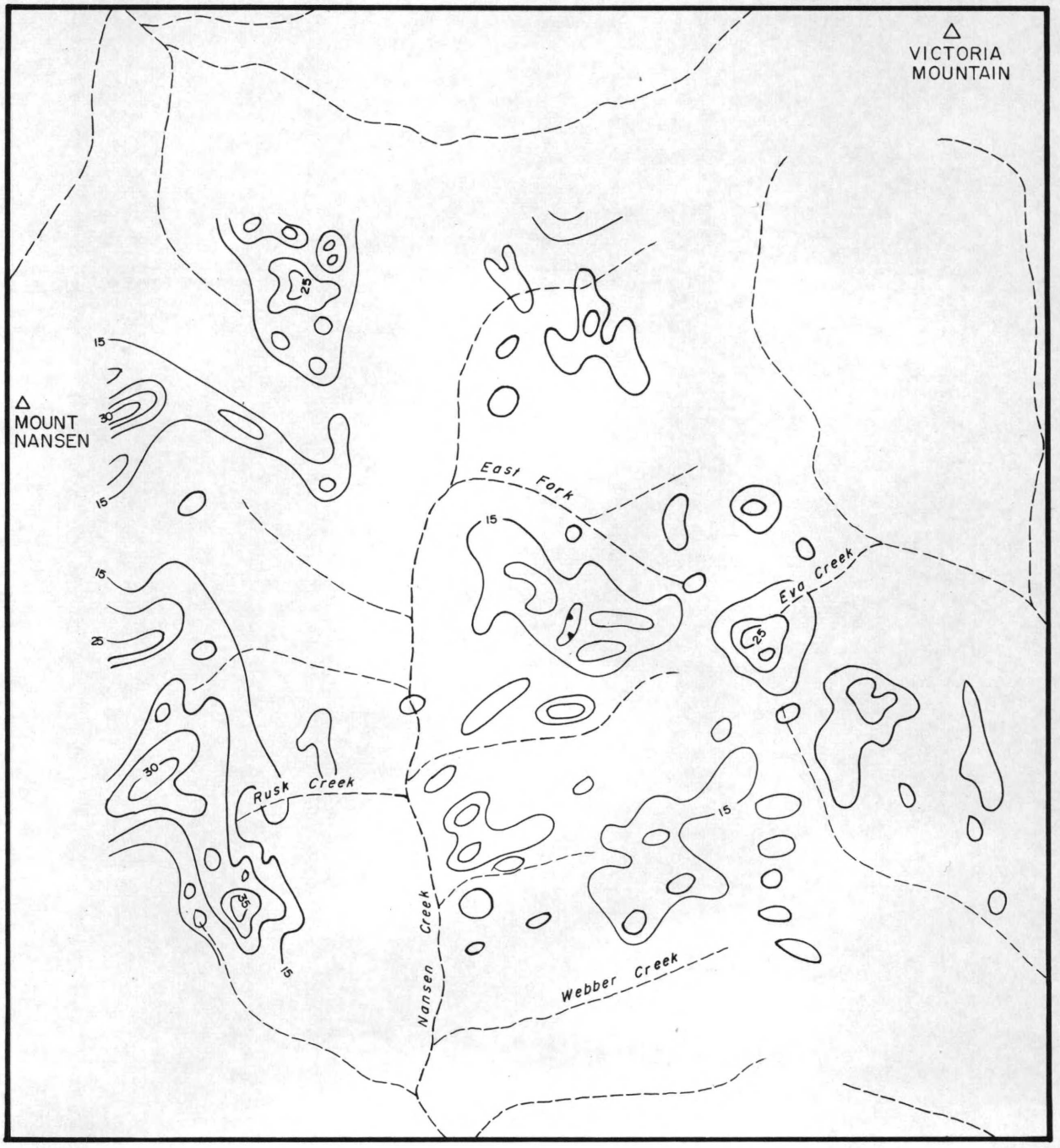
CONTOUR INTERVAL 100 GAMMAS, DETAILS AT 20 GAMMAS, ISOMAGNETIC LINES FOR TOTAL FIELD FLOWN AT APPROXIMATELY 300 M ALTITUDE AND 1000 M INTERVALS ON NORTH - SOUTH LINES

SCALE 1 INCH = 1 MILE

AFTER . G.S.C. MAP 3312 G, 1966

AIRBORNE K_{40} SURVEY

FIG. iV



CONTOUR INTERVAL 5 COUNTS PER SECOND.
SURVEY FLOWN AT APPROXIMATELY 200 M. ALTITUDE AND 250 M. INTERVALS ON NORTH - SOUTH LINES.

SCALE: 1" = 1 MILE

FLOWN BY GEO-X SURVEYS LTD., FOR MOUNT NANSEN MINES LTD, 1970

(c) The major aeromagnetic low.

(d) The margin of a silicified porphyry dome.

(e) A topographic high surrounded by drainage giving encouraging silt anomalies in copper and molybdenum. However, no anomalous soil values were obtained in this area. Trend surface and factor analysis of silt metal contents (Saager, 1971) indicate this area to be the most favourable target outlined by the 1970 stream sediment sampling.

(3) 232N/200W

At the confluence of South and East Forks.

Testing:

(a) Phyllic alteration zone.

(b) Area of encouraging copper-molybdenum mineralization as proved by CP-1, 1971.

(c) The major metal factor anomaly on shallow separations.

(d) A major intersection of lineaments B and C.

(e) The edge of the major aeromagnetic low.

(4) 200N/200W

The Grid Base Point on a silicified breccia dome.

Testing:

(a) The breccia pipe - Casino mineralization is "mainly within breccia" (Archer & Godwin, 1971).

(b) Tourmaline-bearing rocks - Casino is "inside the tourmaline area."

(c) An area again in the aeromagnetic low, K_{40} high and surrounded by streams bearing copper rich silts. Metal factor and soil geochemical effects are not very anomalous here, however.

(5) 236N/230W

The low hill southeast of the confluences of Nansen Creek and East Fork.

Testing:

(a) A good metal factor anomaly.

(b) A silicified dome.

There is no soil geochemical anomaly in this immediate area, however, a large copper-molybdenum anomaly occurs about 2,000 feet downslope to the northwest.

(6) 172N/145W

The confluence of Eva Creek and the creek draining south from Victoria Mountain.

Testing:

(a) An area of spotty but very high metal factor values.

(b) An area of spotty but high molybdenum soil anomalies (but only minor copper).

This area is not exceptional geologically, being on the edge of the altered zone bordering in granodiorite, but there is aerial photograph evidence of relatively intense fracturing. The 1971 percussion hole, CP-3, was in this area and did not show encouraging grades.

Should Hole No. 1 prove encouraging, similar environments occur at 288N/220W, 272N/260W, 262N/210W and 252N/205W. If silicified domes drilled (Holes Nos. 2, 4, and 5) intersect ore, then further holes on the remaining domes at 192N/190W, 216N/177W, and 196N/162W can be drilled. If brecciation (Hole 4) is a major control, then perhaps the brecciation at 142N/245W may be worth investigation.

(B) Further Geological, Geochemical and Geophysical Work

Two areas at present not within the claims optioned by Area Exploration Corporation appear worthy of further work:-

(a) The 1971 silt survey outlined a zoned geochemical anomaly at the head of Rusk Creek, which drains eastward into Nansen Creek, just off the western edge of the Property on apparently unstaked ground. Zones appear to be:

1. Centre: copper, molybdenum, lead, minor silver
2. copper, lead, silver
3. lead, silver
4. Outer Zone: silver

The anomalous area is also the site of a major aeromagnetic low and airborne K_{40} anomaly.

Geologically, the area of interest (about 2 miles wide) consists of Mount Nansen volcanics seamed with minor quartz-feldspar porphyry intrusions and intercalated with rhyolites. Hence, geochemical anomalies may reflect a porphyry environment with a thin cover of andesites. Pending success elsewhere on the Property, the following is recommended for this area:-

1. Staking the area - approximately 20 claims
2. Detailed geological mapping and sampling of the small scale intrusions and host rock.
3. Soil survey for copper, molybdenum, lead and silver.

Should results of such work be encouraging, follow-up work should consist of an I.P. survey and drilling.

(b) If the results of drilling silicified porphyry domes are encouraging, further claims covering such a dome south of the optioned area should be optioned. This dome has been localized by fracture sets B and D, and is apparently fault bounded (see geological map enclosed). It is about 4,000 feet north of the Huestis lead-silver veins and 4,000 feet east of the Webber veins, and hence, may be the centre of mineralization for these veins. If a "typical" (Lowell and Guilbert, 1970) porphyry zoning pattern exists, then one may expect a copper-molybdenum core to this mineralization. Geochemical surveys will be hampered by the amount of previous activity in this this area, and thus an I.P. survey followed by drilling is recommended.

In conclusion, it is pointed out that the Western American Cordillera is the proven site of porphyry copper-type mineralization over much of its length. The Yukon is tectonicly very similar to southern B.C. and the rest of the belt, thus there is no reason why copper-molybdenum deposits of comparable grade and tonnage should not exist in the Territory. Lack of glaciation further enhances the prospects in that like Arizona, but unlike southern British Columbia, there is the possibility of supergene enrichment giving rise to ore. The Mount Nansen Property must be one of the most favourable targets in the Yukon for location of such an orebody.

Respectfully submitted,

P. F. Lewis

APPENDIX A

MAP INVENTORY

Scale	Size	Description
1" = 100 miles	8½" x 11"	Property location map
1" = 4 miles	"	Regional geology, after Bostock, 1936
1" = 1 mile	"	Aeromagnetics, after G.S.C. Map 3312G, 1966
"	"	Airborne K_{40} survey, Mount Nansen Mines Ltd., 1970
1" = 1,000'	38" x 46"	General property data, claim data (field copy)
"	"	Claims (also stylized versions at 1" = 1,000' and 2,000')
"	"	Geology and grid
"	"	Topography
"	28" x 34"	Geochemical soil survey (contours only) - Copper
"	"	- Molybdenum
"	"	- Lead
"	"	- Silver
"	"	Geochemical silt survey - all elements
"	"	Drilling, 1971 and proposed 1972
"	17" x 29"	Composite metal factor plan
"	"	Composite frequency effect plan
1" = 400'	42" x 70"	Geochemical soil survey - Copper
"	"	- Molybdenum
"	"	- Lead
"	"	- Silver
"	"	Grid
"	"	E.M. survey *
"	"	Magnetometer survey *
"	"	I.P. survey: Metal factor * (4 sheets, one for each separation)
"	"	I.P. survey: Frequency effect * (4 sheets, one for each separation)
"	"	I.P. survey: Resistivity (4 sheets, one for each separation)
"	"	Composite metal factor *
"	"	Composite frequency effect *
"	40" x 50"	Alteration plan

APPENDIX B

CAMP

The Mount Nansen camp complex consists of:

1 Assay Office
1 Cookhouse
1 Recreation Hall
1 Administration - Drafting Building
1 Staff Bunkhouse
7 Bunkhouses

These facilities would provide accommodation for 80 men. Area crews used the staff bunkhouse, the administration building and a small trailer unit for the cookhouse, beginning June 1, 1971.

The 35,000 gallon mill water tank was filled at the beginning of the season. 4,000 feet of plastic hose was purchased by Area and a pump rented from Arctic Diamond Drilling in order to pump water from Pony Creek to the tank. The water hose is now being stored in the mill. Once filled the tank lasted the entire season.

Electricity was supplied by a 1,250 K.W. diesel generator. Some work will have to be done on this unit if further exploration is to follow.

Communication was by a battery-powered CNT radio-telephone. The radio is registered in Whitehorse and the camp call sign is 2M-3437.

Other equipment in the camp area that might be useful in a further stage of exploration is:

1 1969 4x4 G.M.C. Pickup (needs approximately $500 work)
1 Bombardier (needs $1,400 work)
1 D-6 (useful only for light work)
1 955 Front-end Loader
1 Road Grader
1 G.M.C. 3-ton Automatic Dump Truck
1 Lincoln Welding Unit
Several Compressors

During the field season the Mount Nansen caretakers were Mr. and Mrs. Emil Roy. As of September 15, 1971 the new caretakers are Mr. and Mrs. Jean-Guy LeClerc.

APPENDIX C

PERSONNEL

The following is a list of Area Employees and the time spent at Project No. 158:-

	Arrival	Departure
J. B. P. Sawyer	May 29/71	May 30/71
	June 22/71	June 24/71
	July 11/71	July 11/71
	Aug. 5/71	Aug. 6/71
	Aug. 20/71	Aug. 21/71
	Aug. 29/71	Aug. 30/71
	Sept 13/71	Sept 14/71
Dr. J. G. Simpson	July 21/71	July 23/71
	Sept 13/71	Sept 13/71
	Oct. 6/71	Oct. 7/71
Dr. C.C. McFall, Senior Geologist	May 29/71	June 3/71
	June 12/71	June 15/71
Rod Savidge, Prospector	May 30/71	July 14/71
David Beal, Student Engineer	May 30/71	June 4/71
Chuck Der, Student Geologist	May 30/71	June 20/71
John Essex, Student Engineer	May 30/71	Aug. 21/71
Jim Madsen, Student Engineer	May 30/71	Sept 5/71
Peter Lewis, Geologist	June 3/71	June 20/71
Phil Sullivan, Student Civil Engineer	July 1/71	July 16/71
David Watts, Miner-Surveyor	July 1/71	Sept 15/71
Robt. Dickinson, Field Supervisor, Student Geologist	May 30/71	Sept 15/71
Mrs. Jeanne Roy, Cook	May 29/71	Sept 15/71
Mrs. Shirley LeClerc, Cook	Sept 15/71	Oct. 15/71
Ian Turnbull	Sept 12/71	Oct. 11/71

APPENDIX D

CLAIMS

The following is a list of claims optioned or staked by Area Exploration Company during 1971. The expiry dates shown include 450 claim years filed on 137 claims on 1st March 1972.

(1) Claims on which Area has a right to perform exploration, but eventual silver veins found on these claims are owned 100% by Mount Nansen Mines Ltd.

Claim	Grant No.	Sheet	Expiry Date
Bit 1	93441	115-I/3	Nov. 1, 1974
Bit 2	93442	115-I/3	Nov. 1, 1974
Bit 3	93443	115-I/3	Nov. 1, 1974
Bit 4	93444	115-I/3	Nov. 1, 1974
Bit 5	93445	115-I/3	Nov. 1, 1974
Bit 6	93446	115-I/3	Nov. 1, 1974
Total 6 Bit Claims			
Laura 16	93468	115-I/3	Nov. 1, 1974
Laura 17	93469	115-I/3	Nov. 1, 1974
Total 2 Laura Claims			

(2) Claims covered by the Option Agreement between Area and Mount Nansen. Silver veins which are found on these claims are given to Mount Nansen Mines Ltd., Area Exploration Company receiving a 5% interest.

Claim	Grant No.	Sheet	Expiry Date
B.M. 1	77668	115-I/3	May 8, 1976
2	77669	115-I/3	May 8, 1976
3	77670	115-I/3	May 8, 1976
4	77671	115-I/3	May 8, 1976
5	77672	115-I/3	May 8, 1976
6	77673	115-I/3	May 8, 1976
7	77674	115-I/3	May 8, 1976
8	77675	115-I/3	May 8, 1976
9	77676	115-I/3	May 8 1976
10	77677	115-I/3	May 8, 1976
11	77678	115-I/3	May 8, 1976
12	77679	115-I/3	May 8, 1976
13	77680	115-I/3	May 8, 1976
14	77681	115-I/3	May 8, 1976
15	77682	115-I/3	May 8, 1976
16	77683	115-I/3	May 8, 1976

APPENDIX D cont'd

Claim	Grant No.	Sheet	Expiry Date
B.M. 17	77684	115-I/3	May 8, 1976
18	77685	"	May 8, 1975
19	77686	"	May 8, 1976
20	77687	"	May 8, 1976
21	77688	"	May 8, 1976
22	77689	"	May 8, 1976
23	77690	"	May 8, 1976
24	77691	"	May 8, 1976
25	77692	"	May 8, 1976
26	77693	"	May 8, 1976
27	77694	"	May 8, 1976
28	77695	"	May 8, 1976
29	77696	"	May 8, 1976
30	77697	"	May 8, 1977
Total 30 B.M. Claims			
Joanne 1	74283	115-I/3	July 28, 1982
2	74284	"	July 28, 1982
3	74285	"	July 28, 1982
4	74286	"	July 28, 1982
5	74287	"	July 28, 1982
6	74288	"	July 28, 1982
7	74289	"	July 28, 1976
8	74290	"	July 28, 1976
Total 8 Joanne Claims			
Dome 19	73705	115-I/3	July 15, 1978
23	73709	"	July 15, 1974
24	73710	"	July 15, 1974
25	77746	"	May 8, 1980
26	77747	"	May 8, 1978
27	77748	"	May 8, 1980
28	77749	"	May 8, 1978
29	77750	"	May 8, 1978
30	77751	"	May 8, 1978
31	77752	"	May 8, 1978
32	77753	"	May 8, 1978
33	77754	"	May 8, 1980
34	77755	"	May 8, 1980
35	77756	"	May 8, 1980
36	77757	"	May 8, 1980
37	77758	"	May 8, 1980
38	77759	"	May 8, 1980
39	77760	"	May 8, 1980
40	77761	"	May 8, 1980
41	77762	"	May 8, 1980
42	77763	"	May 8, 1980

APPENDIX D cont'd

Claim	Grant No.	Sheet	Expiry Date
Dome 43	77764	115-I/3	May 8, 1978
44	77765	"	May 8, 1978
45	77766	"	May 8, 1978
46	77767	"	May 8, 1978
47	77768	"	May 8, 1978
48	77769	"	May 8, 1978
53	77774	"	May 8, 1980
54	77775	"	May 8, 1980
55	77776	"	May 8, 1980
56	77777	"	May 8, 1980
57	77778	"	May 8, 1980
58	77779	"	May 8, 1978
59	77780	"	May 8, 1978
60	77781	"	May 8, 1978
61	77782	"	May 8, 1978
62	77783	"	May 8, 1978
63	77784	"	May 8, 1974
64	77785	"	May 8, 1974
65	77786	"	May 8, 1974
66	77787	"	May 8, 1974
67	77788	"	May 8, 1974
68	77789	"	May 8, 1974
69	77790	"	May 8, 1978
70	77791	"	May 8, 1978
71	77792	"	May 8, 1978
72	77793	"	May 8, 1978
73	77794	"	May 8, 1978
74	77795	"	May 8, 1978
75	77796	"	May 8, 1974
76	77797	"	May 8, 1974
85	81849	"	Sept. 18, 1978
87	81851	"	Sept. 18, 1974
88	81852	"	Sept. 18, 1974
89	81853	"	Sept. 18, 1978
90	81854	"	Sept. 18, 1978
91	81855	"	Sept. 18, 1978
92	81856	"	Sept. 18, 1978
93	81857	"	Sept. 18, 1974
94	81858	"	Sept. 18, 1974
96	81860	"	Sept. 18, 1974
97	81861	"	Sept. 18, 1974
98	82062	"	Sept. 18, 1974
99	81862	"	Sept. 18, 1974
100	81863	"	Sept. 18, 1974
101	81864	"	Sept. 18, 1974
102	81865	"	Sept. 18, 1974
103	81866	"	Sept. 18, 1974
104	81867	"	Sept. 18, 1974
105	81868	"	Sept. 18, 1974
106	81869	"	Sept. 18, 1974

Total 71 Dome Claims

APPENDIX D cont'd

Claim	Grant No.	Sheet	Expiry Date
Dolly 1	81938	115-I/3	Sept. 26, 1978
2	81939	"	Sept. 26, 1978
3	81940	"	Sept. 26, 1978
4	81941	"	Sept. 26, 1978
5	81942	"	Sept. 26, 1978
6	81943	"	Sept. 26, 1978
7	81944	"	Sept. 26, 1978
8	81945	"	Sept. 26, 1978
9	81970	"	Oct. 5, 1974
10	81971	"	Oct. 5, 1974
11	81972	"	Oct. 5, 1974
12	81973	"	Oct. 5, 1974
13	81974	"	Oct. 5, 1974
14	81975	"	Oct. 5, 1974
15	81976	"	Oct. 5, 1974
16	81977	"	Oct. 5, 1974
17	81978	"	Oct. 5, 1974
18	81979	"	Oct. 5, 1974
19	81980	"	Oct. 5, 1974
20	81981	"	Oct. 5, 1974
21	81982	"	Oct. 5, 1974
22	81983	"	Oct. 5, 1974
23	81984	"	Oct. 5, 1974
24	81985	"	Oct. 5, 1974
25	81986	"	Oct. 5, 1974
26	81987	"	Oct. 5, 1974
27	81988	"	Oct. 5, 1974
28	81989	"	Oct. 5, 1974
29	81990	"	Oct. 5, 1974
30	81991	"	Oct. 5, 1974
31	81992	"	Oct. 5, 1974
32	81993	"	Oct. 5, 1974
33	81994	"	Oct. 5, 1974
34	81995	"	Oct. 5, 1974
35	81996	"	Oct. 5, 1974
36	81997	"	Oct. 5, 1974
37	81998	"	Oct. 5, 1974
38	81999	"	Oct. 5, 1974
39	82000	"	Oct. 5, 1974
40	82001	"	Oct. 5, 1974
41	82002	"	Oct. 5, 1974
42	82003	"	Oct. 5, 1974
43	82004	"	Oct. 5, 1974
44	82005	"	Oct. 5, 1974
45	82006	"	Oct. 5, 1974
46	82007	"	Oct. 5, 1974
47	82008	"	Oct. 5, 1974
48	82009	"	Oct. 5, 1974
49	82010	"	Oct. 5, 1974
50	82011	"	Oct. 5, 1974
51	82012	"	Oct. 5, 1974
52	82013	"	Oct. 5, 1974

APPENDIX D cont'd

Claim	Grant No.	Sheet	Expiry Date
Dolly 53	82014	115-I/3	Oct. 5, 1974
54	82015	"	"
55	82016	"	"
56	82017	"	"
57	82018	"	"
58	82019	"	"
59	82020	"	"
60	82021	"	"
61	82022	"	"
62	82023	"	"
63	82024	"	"
64	82025	"	"
Total 64 Dolly Claims			
Harry 1 Fr.	Y26391	115-I/3	Oct. 21, 1973
2 Fr.	Y26392	"	"
3 Fr.	Y26393	"	"
4 Fr.	Y26394	"	"
5 Fr.	Y26395	"	"
6 Fr.	Y26396	"	"
7 Fr.	Y26397	"	"
8 Fr.	Y26398	"	"
9 Fr.	Y26399	"	"
Total 9 Harry Fractions			
Stone 1	93478	115-I/3	Nov. 1, 1974
2	93479	"	"
3	93480	"	"
4	93481	"	"
5	93482	"	"
6	93483	"	"
7	93484	"	"
8	93485	"	"
Total 8 Stone Claims			
Betty 1	93486	115-I/3	Nov. 1, 1974
2	93487	"	"
3	93488	"	"
4	93494	"	"
5	93495	"	"
6	93496	"	"
7	93497	"	"
8	93498	"	"
9	93499	"	"
10	93489	"	"
11	93490	"	"
12	93491	"	"
13	93492	"	"
14	93493	"	"

APPENDIX D cont'd

Claim	Grant No.	Sheet	Expiry Date
Betty 15	93500	115-I/3	Nov. 1, 1974
16	93501	"	"
17	93502	"	"
18	93503	"	"
19	93504	"	"
20	93505	"	"
21	93506	"	"
22	93507	"	"
23	93508	"	"
24	93509	"	"
25	93510	"	"
26	93511	"	"
27	93512	"	"
28	93513	"	"
29	93514	"	"
30	93515	"	"
31	93516	"	"
32	93517	"	"

Total 32 Betty Claims

Laura 1	93447	115-I/3	Nov. 1, 1974
2	93448	"	"
3	93449	"	"
4	93450	"	"
5	93451	"	Nov. 1, 1978
6	93956	"	Nov. 17, 1978
7	93452	"	Nov. 1, 1974
8	93453	"	"
9	93454	"	"
10	93462	"	"
11	93463	"	"
12	93464	"	"
13	93465	"	"
14	93466	"	"
15	93467	"	"
18	93470	"	"
19	93471	"	"
20	93472	"	"
21	93473	"	"
22	93474	"	"
23	93475	"	"
24	93476	"	"
25	93477	"	"
26	93455	"	"
27	93456	"	"
28	93457	"	"
29	93458	"	"
30	93459	"	"
31	93460	"	"
32	93461	"	"

Total 30 Laura Claims

APPENDIX D cont'd

(3) Claims optioned from Mr. T. Wheeler.

Claim	Grant No.	Sheet	Located	Expires
Tee 1	Y24049	115-I/3	Mar. 4, 1968	Mar. 1, 1976
2	Y24050	"	"	"
3	Y24051	"	"	"
4	Y24052	"	"	"
Total 4 Tee Claims				
Bun 1	Y12189	115-I/3	Mar. 6, 1967	Mar. 1, 1976
2	Y12190	"	"	"
3	Y12191	"	"	"
4	Y12192	"	"	"
Total 4 Bun Claims				
Sue 1	Y20649	115-I/3	July 29, 1967	Mar. 1, 1976
2	Y20650	"	"	"
3	Y20651	"	"	"
4	Y20652	"	"	"
5	Y20653	"	"	"
6	Y20654	"	"	"
7	Y20655	"	"	"
8	Y20656	"	"	"
Total 8 Sue Claims				

(4) Claims staked by employees of Area Exploration Company during the field season within and peripheral to the Mount Nansen holdings.

Claim	Grant No.	Date Staked	Staker	Sheet No.	Expiry Date
Chick 1	Y61405	July 17/71	J. Essex	115-I/3	July 28/76
2	Y61406	"	"	"	"
3	Y61407	"	"	"	"
4	Y61408	"	"	"	"
Total 4 Chick Claims					
Jeanne 1	Y61401	July 10/71	R. Dickinson	115-I/3	July 28/76
2	Y61402	"	"	"	"
3	Y61403	"	"	"	"
4	Y61404	"	"	"	"
Total 4 Jeanne Claims					

APPENDIX D cont'd

Claim	Grant No.	Date Staked	Staker	Sheet No.	Expiry Dates
Crow 1	Y61101	July 8/71	R. Savidge	115-I/3	July 14/72
2	Y61102	"	"	"	"
3	Y61103	"	"	"	"
4	Y61104	"	"	"	"
5	Y61105	"	"	"	"
6	Y61106	"	"	"	"
7	Y61107	"	"	"	"
8	Y61108	"	"	"	"
Total 8 Crow Claims					
Emil 1	Y61390	July 16/71	J. Madsen	115-I/3	July 28/76
2	Y61391	"	"	"	"
3	Y61392	"	"	"	"
4	Y61393	"	"	"	"
5 Fr	Y61397	July 17/71	R. Dickinson	"	"
6 Fr	Y61398	"	"	"	"
7 Fr	Y61399	"	"	"	"
8 Fr	Y61400	"	"	"	"
9	Y61394	"	J. Madsen	"	"
10	Y61395	"	"	"	"
11	Y61396	"	"	"	"
Total 11 Emil Claims					
Char 1 Fr	Y62068	Sept. 14/71	I. Turnbull	115-I/3	Sept. 15/76
2 Fr	Y61648	Aug. 9/71	D. Watts	"	Aug. 10/76
3 Fr	Y61649	"	"	"	"
4 Fr	Y61650	"	"	"	"
5 Fr	Y61651	"	"	"	"
6 Fr	Y61652	"	"	"	"
7 Fr	Y61653	"	"	"	"
8 Fr	Y61654	"	"	"	"
9 Fr	Y61655	"	"	"	"
10 Fr	Y61656	"	J. Essex	"	"
11 Fr	Y61657	"	"	"	"
12 Fr	Y61658	"	"	"	"
13 Fr	Y61659	"	"	"	"
14 Fr	Y61660	"	J. Madsen	"	"
Total 14 Char Fractions					
Kathy 1 Fr	Y62069	Sept. 12/71	I. Turnbull	115-I/3	Sept. 15/76
2 Fr	Y62070	"	"	"	"
Total 2 Kathy Fractions					

APPENDIX D cont'd

In addition to this claim staking, almost all the claim groups were located in the field. A 1" = 1,000' mylar overlay of the base geology map was prepared and shows the positions of the located claim posts. A 1" = 400' location map of the grid area also shows the outside boundaries of the claim groups.

Silver Standard Mines Ltd. holds 6 claims within the Mount Nansen claim block. These are:-

Claim	Grant No.	Expiry Date
ME 11	73732	July 29, 1972
12	73733	"
13	73734	"
14	73735	"
Yal 13	73952	
Yal 1	73506	

An extensive effort was made over the summer to locate these posts. The only Silver Standard claim definitely located was Post No. 1 for Yal No. 1. Inscribed on a 2" x 1-1/2" board was the following:-

YAL #1

1,500' N

1,500 L

October 25/58 P.J. Clay

This post is located at coordinates 206+50W, 202+75N on the Area grid. Possible posts for the ME claims were also located. Both the Yal claims and ME claims were plotted from this data on the above maps and appear to be a distance of some 200-400' south of anomalous geochemical zones. The location of other patented lots within the claim boundaries have been taken from Government Survey data, but were not verified on the ground.

Work applications in 1972 will be made to bring as many of the claims to a common expiry year as possible.

APPENDIX E

REFERENCES

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Reconnaissance Mineral Exploration in the Yukon Territory, Canada - A Case History

Schweizer Min. Pet. Mitteillung, 1971, pp 140-154

Bostock, H.S., 1936

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May Group Claims, Carmacks, Y.T.

Report for Esansee Explorations Ltd.

Findlay, D.C., 1969

The Mineral Industry of Yukon Territory and Southwestern District of Mackenzie, 1968

G.S.C. Paper 69-55

Lowell, J.D. and Guilbert, J.M., 1970

Lateral and Vertical Alteration - Mineralization Zoning in Porphyry Ore Deposits

Econ. Geol. V. 65, pp 373-409

Phillips, M.P. and Godwin, C.I., 1971

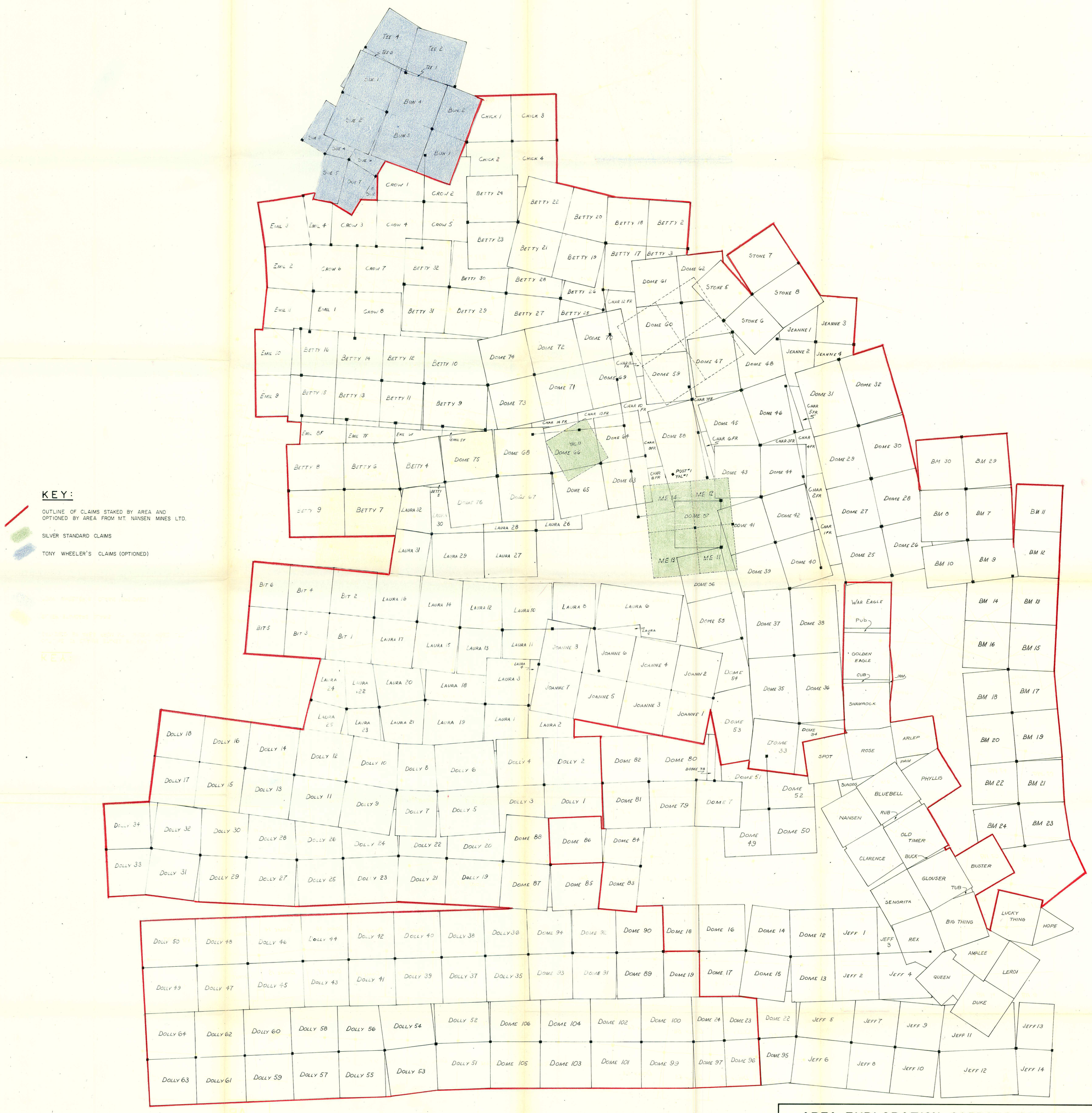
Geology and Rotary Drilling at the Casino Deposit, Y.T.

Saager, R., 1971

Trend Surface and Factor Analysis of Geochemical Data from the Mount Nansen Area.

Unpublished

Various internal reports of Mount Nansen Mines Ltd.



AREA EXPLORATION CORPORATION LTD.

MT. NANSEN PROJECT

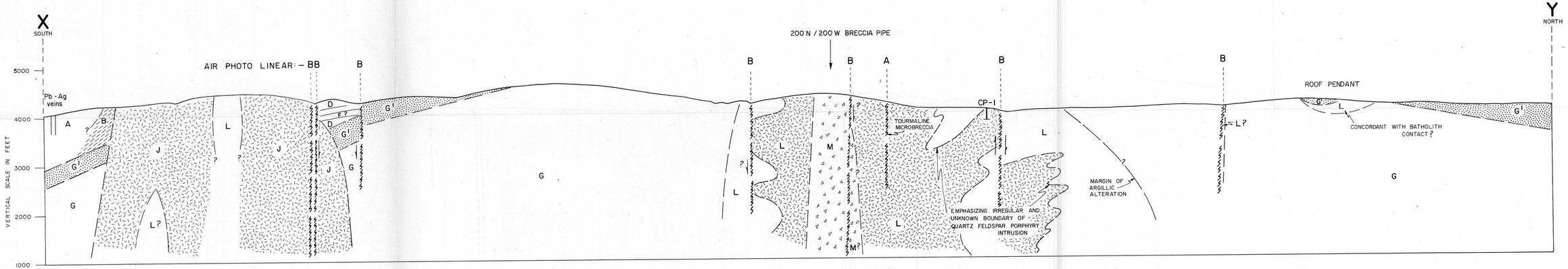
CLAIM LOCATION PLAN

COMPILED BY: R. A. DICKINSON

DATE: JULY 30, 1971

SCHEMATIC GEOLOGICAL SECTION X – Y (SEE MAP)

AZIMUTH OF SECTION = 150°
KEY AS ON GEOLOGICAL MAP.



HORIZONTAL SCALE = VERTICAL SCALE = 1 in. = 1000 ft.

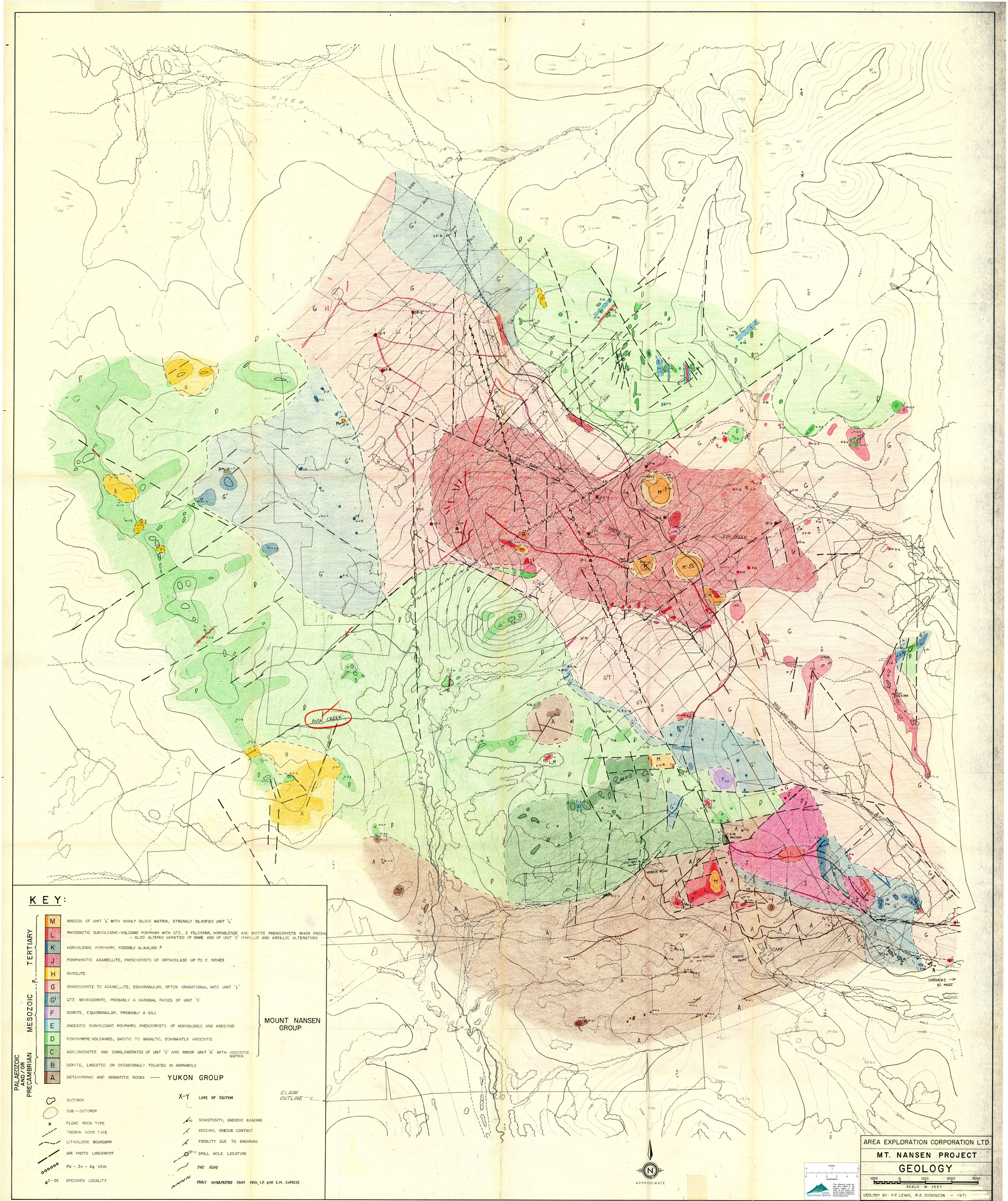
1000 0 1000 2000 3000

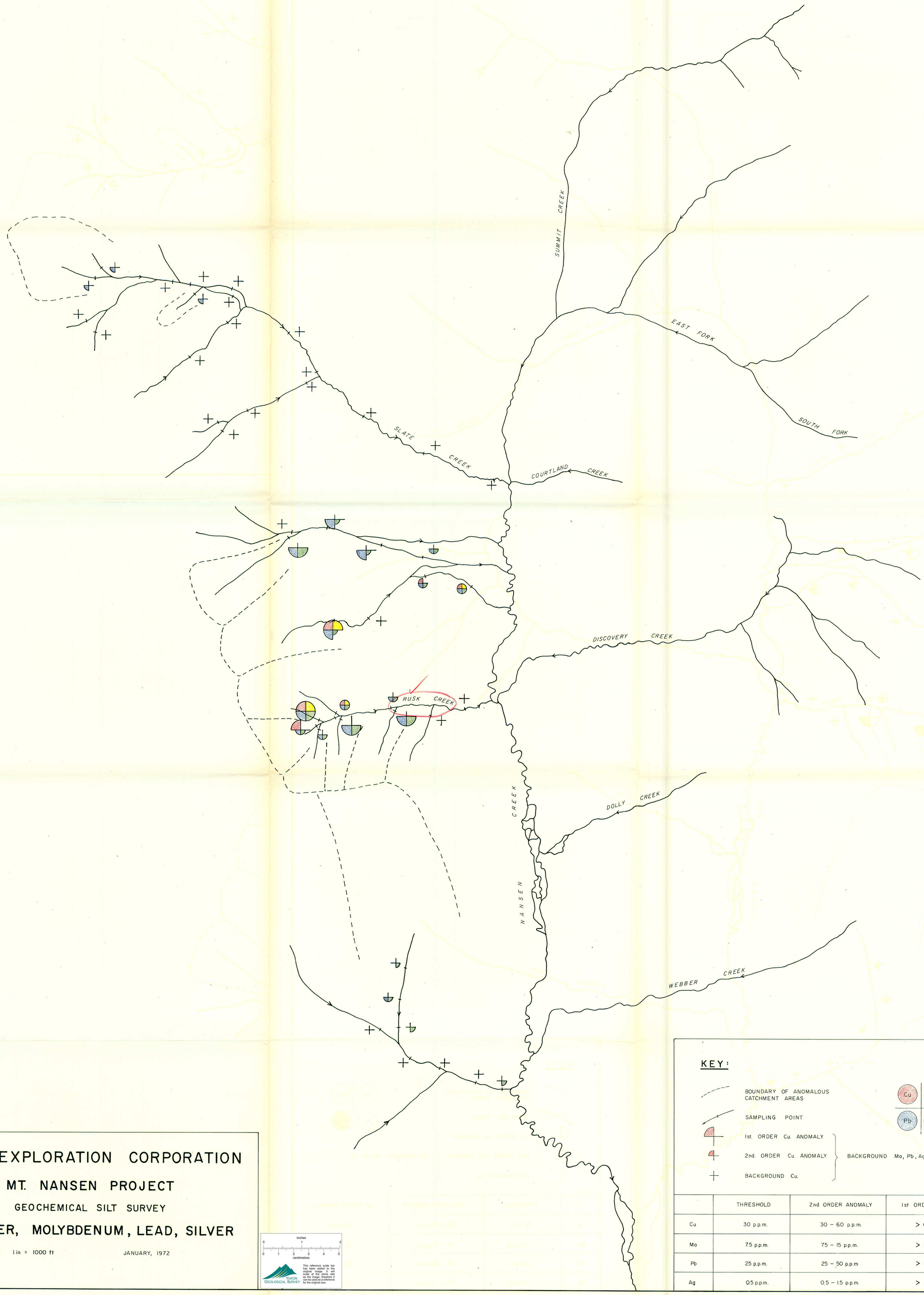
inches 0 1 2
0 1 2 3 4 5 centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

AREA EXPLORATION CORPORATION JANUARY, 1972


KEY:
TERTIARY
MESOZOIC
PALAEOZOIC AND/OR PRECAMBRIAN
M BRECCIA OF UNIT 'L' WITH HIGHLY SILICIC MATRIX, STRONGLY SILICIFIED UNIT 'L'
L RHYODACITIC SUBVOLCANIC-VOLCANIC PORPHYRY WITH QTZ., 2 FELDSPAR, HORNBLENDE AND BIOTITE PHENOCRYSTS WHEN FRESH - ALSO ALTERED VARIETIES OF SAME AND OF UNIT 'G' (PHYLLIC AND ARGILLIC ALTERATION)
K HORNBLENDE PORPHYRY, POSSIBLY ALKALINE ?
J PORPHYRITIC ADAMELLITE, PHENOCRYSTS OF ORTHOCLASE UP TO 2 INCHES
H RHYOLITE
G GRANODIORITE TO ADAMELLITE, EQUIGRANULAR, OFTEN GRADATIONAL INTO UNIT 'L'
G' QTZ. MICRODIORITE, PROBABLY A MARGINAL FACIES OF UNIT 'G'
F DIORITE, EQUIGRANULAR, PROBABLY A SILL
E ANDESITIC SUBVOLCANIC PORPHYRY, PHENOCRYSTS OF HORNBLENDE AND ANDESINE
D PORPHYRITIC VOLCANICS, DACITIC TO BASALTIC, DOMINANTLY ANDESITIC
C AGGLOMERATES AND CONGLOMERATES OF UNIT 'D' AND MINOR UNIT 'A' WITH ANDESITIC MATRIX
MOUNT NANSEN GROUP
B DIORITE, LINEATED OR OCCASIONALLY FOLIATED IN AMPHIBOLE
A METAMORPHIC AND MIGMATITIC ROCKS — YUKON GROUP
OUTCROP
SUB - OUTCROP
FLOAT ROCK TYPE
TRENCH ROCK TYPE
LITHOLOGIC BOUNDARY
AIR PHOTO LINEAMENT
Pb - Zn - Ag VEIN
D-26 SPECIMEN LOCALITY
X-Y LINE OF SECTION
70 SCHISTOSITY, GNEISSIC BANDING
BEDDING, IGNEOUS CONTACT
FISSILITY DUE TO SHEARING
CP-1 DRILL HOLE LOCATION
DIRT ROAD
FAULT INTERPRETED FROM MAG, I.P. AND E.M. SURVEYS
CLAIM OUTLINE
PLAZA RIVER
EAST FORK
SOUTH FORK
EVA CREEK
RUSK CREEK
NANSEN CREEK
BASE LINE ZONE
HEBBER VEINS
HUEDTIS VEINS
CAMP
CARMACKS → 160 MILES
APPROXIMATE
AREA EXPLORATION CORPORATION LTD.
MT. NANSEN PROJECT
GEOLOGY
SCALE IN FEET
GEOLOGY BY: P.F. LEWIS, R.A. DICKINSON - 1971



AREA EXPLORATION CORPORATION

MT. NANSEN PROJECT

GEOCHEMICAL SILT SURVEY

COPPER, MOLYBDENUM, LEAD, SILVER

1 in = 1000 ft

JANUARY, 1972

KEY:

BOUNDARY OF ANOMALOUS CATCHMENT AREAS

SAMPLING POINT

1st. ORDER Cu. ANOMALY

2nd. ORDER Cu. ANOMALY

BACKGROUND Cu.

} BACKGROUND Mo, Pb, Ag

Cu Mo Pb Ag

	THRESHOLD	2nd ORDER ANOMALY	1st ORDER ANOMALY
Cu	30 p.p.m.	30 – 60 p.p.m.	> 60 p.p.m.
Mo	7.5 p.p.m.	7.5 – 15 p.p.m.	> 15 p.p.m.
Pb	25 p.p.m.	25 – 50 p.p.m	> 50 p.p.m.
Ag	0.5 p.p.m.	0.5 – 1.5 p.p.m.	> 1.5 p.p.m.

inches 0 1 2

0 1 2 3 4 5 centimetres

YUKON GEOLOGICAL SURVEY

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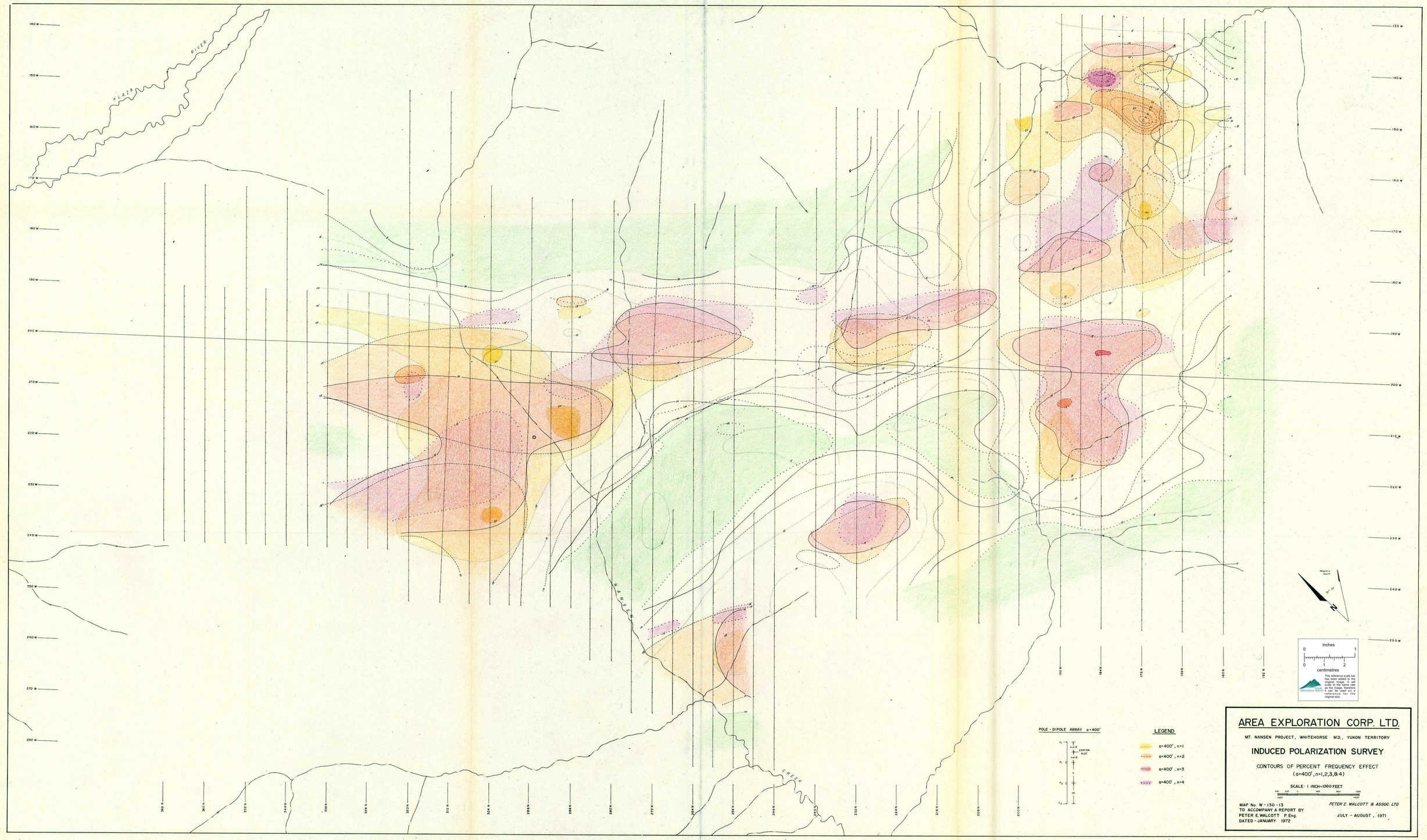
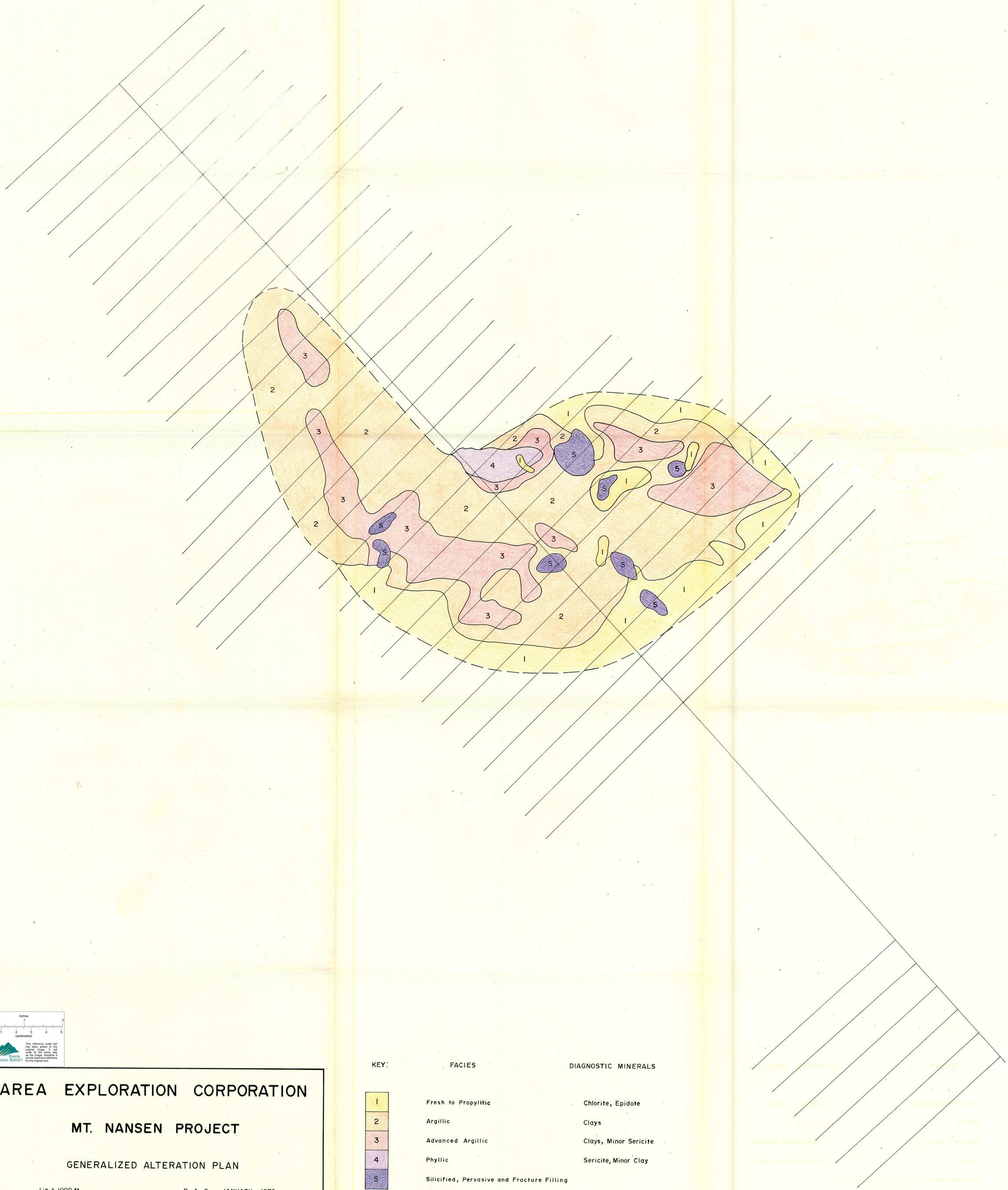

KLAZA RIVER
HAKEN CREEK
140 W
150 W
160 W
170 W
180 W
190 W
200 W
210 W
220 W
230 W
240 W
250 W
260 W
270 W
280 W
130 W
Magnetic North
24° W
inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
POLE - DIPOLE ARRAY a=400'
C1
a=2
STATION PLOT
n=2
P1
C
n=3
P2
n=4
C2
LEGEND
a=400', n=1
a=400', n=2
a=400', n=3
a=400', n=4
AREA EXPLORATION CORP. LTD.
MT. NANSEN PROJECT, WHITEHORSE M.D., YUKON TERRITORY
INDUCED POLARIZATION SURVEY
CONTOURS OF PERCENT FREQUENCY EFFECT
(a=400', n=1,2,3,&4)
SCALE: 1 INCH=1000 FEET
MAP No. W-130-13
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT P.Eng.
DATED - JANUARY 1972
PETER E. WALCOTT & ASSOC. LTD
JULY - AUGUST, 1971



inches
0 1 2
0 1 2 3 4 5
centimetres

YUKON GEOLOGICAL SURVEY

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

AREA EXPLORATION CORPORATION

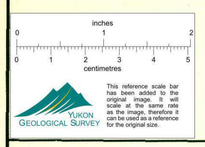
MT. NANSEN PROJECT

GENERALIZED ALTERATION PLAN

1 in = 1000 ft.

R. A. D. , JANUARY, 1972

KEY:	FACIES	DIAGNOSTIC MINERALS
1	Fresh to Propylitic	Chlorite, Epidote
2	Argillic	Clays
3	Advanced Argillic	Clays, Minor Sericite
4	Phyllic	Sericite, Minor Clay
S	Silicified, Pervasive and Fracture Filling	
	Edge of Defined Alteration	



AREA EXPLORATION CORPORATION

MT. NANSEN PROJECT

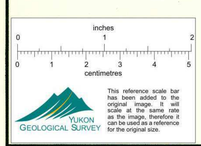
GEOCHEMICAL SOIL SURVEY — **COPPER**

1 in. = 1000 ft.

DECEMBER, 1971

KEY:

- > 1000 p.p.m.
- 801 – 1000 p.p.m.
- 601 – 800 p.p.m.
- 401 – 600 p.p.m.
- 201 – 400 p.p.m.
- 100 – 200 p.p.m.



AREA EXPLORATION CORPORATION

MT. NANSEN PROJECT

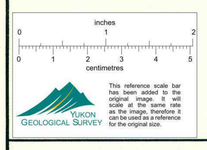
GEOCHEMICAL SOIL SURVEY — **MOLYBDENUM**

1 in. = 1000 ft.

DECEMBER, 1971

KEY:

- > 90 p.p.m.
- 71 – 90 p.p.m.
- 51 – 70 p.p.m.
- 31 – 50 p.p.m.
- 10 – 30 p.p.m.



AREA EXPLORATION CORPORATION

MT. NANSEN PROJECT

GEOCHEMICAL SOIL SURVEY — **LEAD**

1 in. = 1000 ft.

JANUARY, 1972

KEY:

- > 300 p.p.m.
- 251 – 300 p.p.m.
- 201 – 250 p.p.m.
- 151 – 200 p.p.m.
- 101 – 150 p.p.m.
- 50 – 100 p.p.m.

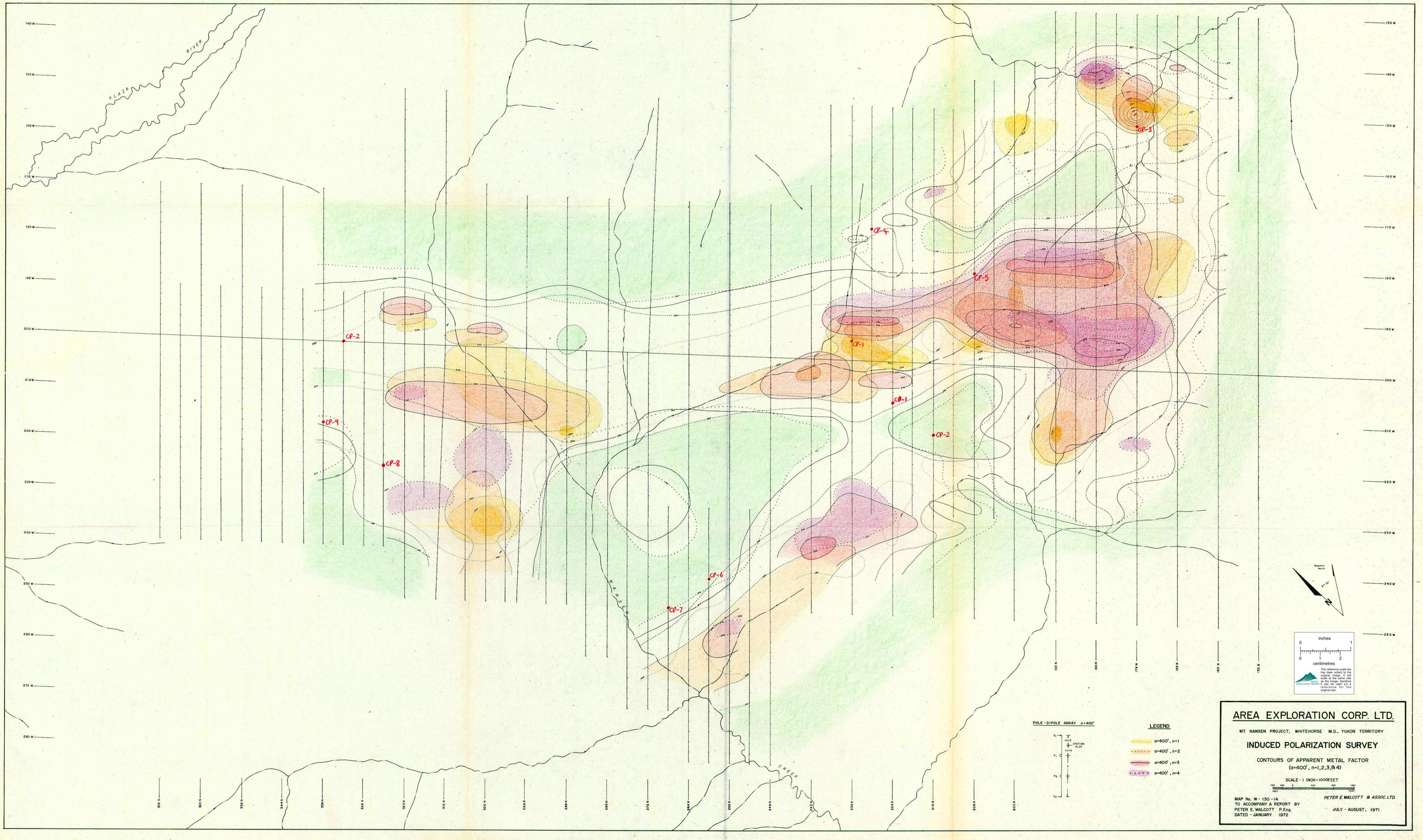
AREA EXPLORATION CORPORATION

MT. NANSEN PROJECT

GEOCHEMICAL SOIL SURVEY — **SILVER**

1 in. = 1000 ft.

JANUARY, 1972


KLAZA RIVER
HANSEN CREEK
CP-1
CP-2
CP-3
CP-4
CP-5
CP-6
CP-7
CP-8
CP-9
Magnetic North
inches
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
POLE - DIPOLE ARRAY a=400'
STATION PLOT
LEGEND
a=400', n=1
a=400', n=2
a=400', n=3
a=400', n=4
AREA EXPLORATION CORP. LTD.
MT. NANSEN PROJECT, WHITEHORSE M.D., YUKON TERRITORY
INDUCED POLARIZATION SURVEY
CONTOURS OF APPARENT METAL FACTOR
(a=400', n=1,2,3,& 4)
SCALE - 1 INCH = 1000 FEET
MAP No. W - 130 - 14
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT P.Eng.
DATED - JANUARY 1972
PETER E. WALCOTT & ASSOC. LTD.
JULY - AUGUST, 1971

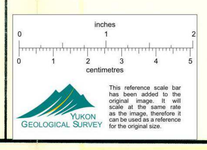
AREA EXPLORATION CORPORATION

MT NANSEN PROJECT

DRILLING, 1971 AND PROPOSED DRILLING, 1972

1 in. = 1000 ft.

JANUARY, 1972

KEY:

- DIAMOND DRILL HOLE, 1971 – CD-1, CD-2
- PERCUSSION DRILL HOLE, 1971 – CP-1 to 9
- PROPOSED DIAMOND DRILL HOLES, 1972 – 1 to 6
- FURTHER PROPOSED DRILL HOLES MENTIONED IN TEXT, — 1A to D IF HOLE 72-1 IS SUCCESSFUL, ETC....