671229

KAZA LAKE PROSPECTS

Bryan Fraser

January 30, 1980

MEMO

To: J. C. Stephen Date: January 30, 1980

From: Bryan Fraser

Re: Kaza Lake Prospects

1. Two areas are open at present i.e. Northstar and Fire prospects.

2. Both areas ~~are~~ were worked as copper prospects but are underlain by similar rock types i.e. basalt, flows, breccias, and pillow basalt, interbedded bladed feldspar porphyry.

3. Grades of Cu mineralization of the order of 1-2% are reported for both areas.

4. Our interest should be in the potential for low grade precious metals in these areas. The following indicates potential:
   a. A reported assay of 0.45 oz/T Au in assessment report 4477 by Dynasty on the Fire (Kaza) property.
   b. Associated copper/silver mineralization on the Driftwood property which is located only 20 miles southeast in similar volcanics (1.5% Cu/1.0~~0~~ Ag /30').
   c. Coarse bladed feldspar porphyry. This is a feature noted near the Sam Goosly deposit in which a Cu/Ag mineralization is stratabound in Hazelton volcanics. It may indicate differentiation and thereby concentration of metals.
   d. Proximity to margins of gabbroic intrusion and alpine ultramatics.
   e. Recognized faulting and multiple intrusion of felsite dikes and proximity to rhyolite plug on Fire poperty.

5. No available information indicates these properties were seriously assessed for Au or Ag potential eg. geochem for As, Au.

6. Main showings are apparently staked out only by a few units.

7. Access is excellent with the BCR nearby and a four-wheel drive road to the property from Bulkley House.

Bryan Fraser.

Bryan Fraser

APPENDIX

1. Property Map

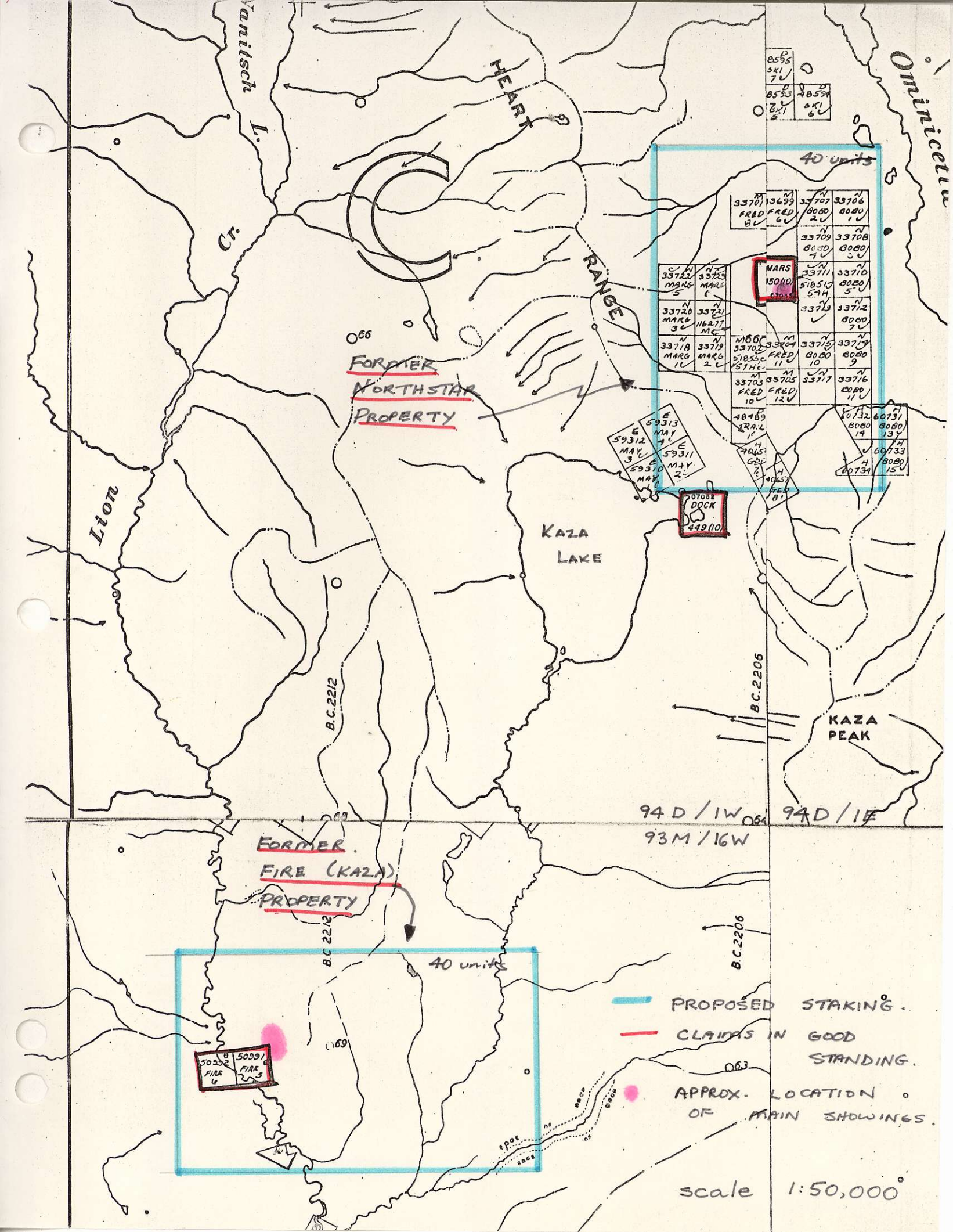
2. Regional geology

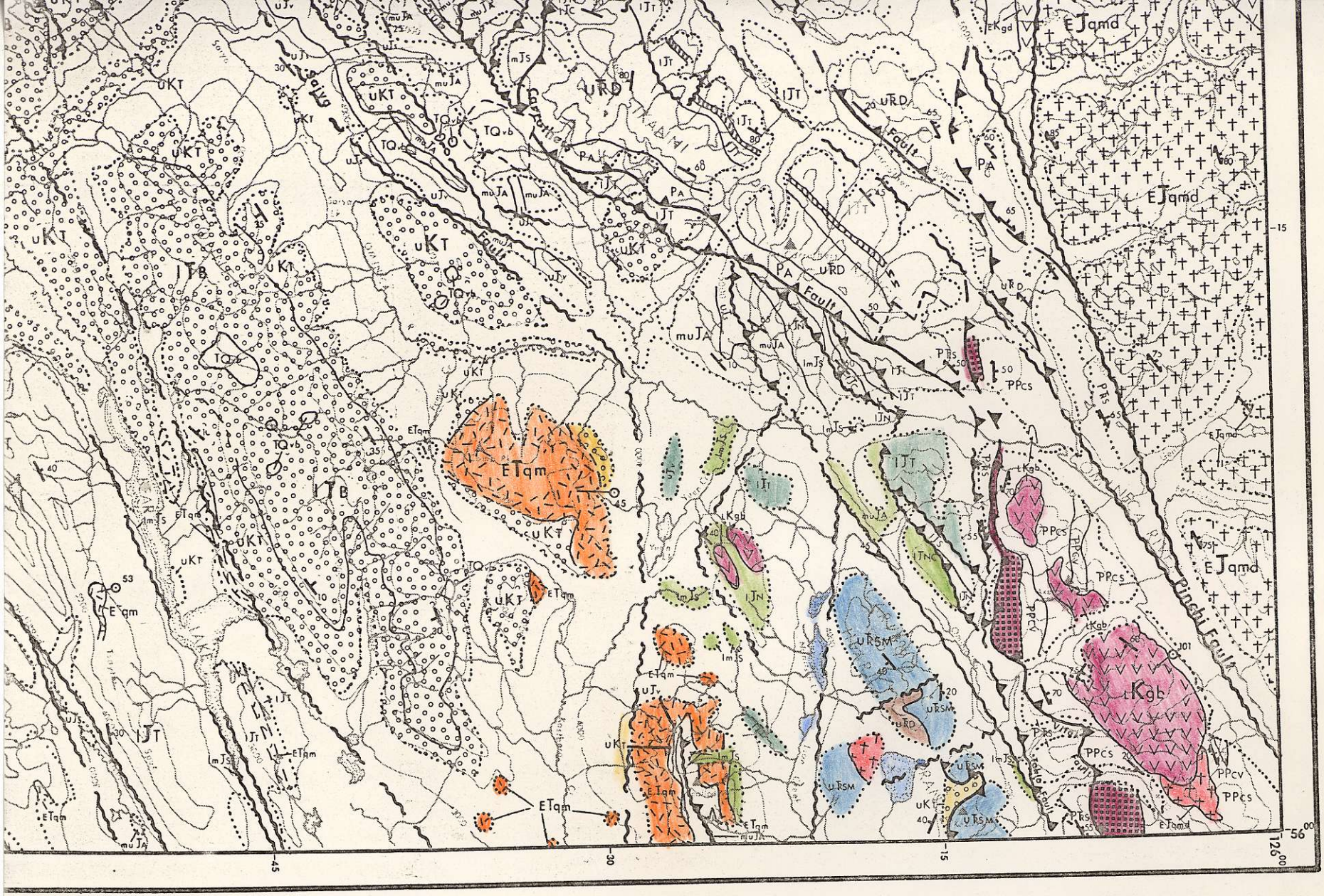
3. Min. of Mines Report 1967 on Northstar and Fire Properties.

4. Gold assay from Dynasty work in May, 1973.

5. Regional geology of Fire Property.

6. Regional geochemistry of Fire Property.


Yanitsch L.
HEART
Cr.
RANGE
Omineca
40 units
FORMER NORTHSTAR PROPERTY
MARS 150110
OTOBA DOCK 449110
Lion
KAZA LAKE
B.C.2212
B.C.2206
KAZA PEAK
94 D / 1W
94D / 1E
93M / 16W
FORMER FIRE (KAZA) PROPERTY
B.C 2212
B.C.2206
40 units
PROPOSED STAKING.
CLAIMS IN GOOD STANDING.
APPROX. LOCATION OF MAIN SHOWINGS.
scale 1:50,000



McCONNELL CREEK MAP-AREA

(94D/E)

GEOLOGY

Miles 5 0 5 10 15 20 Miles

Kilometres 5 0 5 10 15 20 25 30 Kilometres

1967

was mapped, some geochemical sampling was done, and 13 trenches in rock were drilled and blasted.

Copper-Molybdenum

Cumo, Ike (55° 127° N.E.) The Cumo and Ike groups, owned by D. J. McDonald, G. F. Taylor, *et al.*, are in the Atna Range 5 miles south of Shedin Peak. Bowser Group sediments are intruded by a stock of granodiorite, which in turn is cut by dykes of fine-grained granite, pale aplite, and pegmatite. The mineralization, which occurs near the contact of the granodiorite, consists of pyrite, chalcopyrite, and molybdenite in widely scattered quartz veinlets and veins ranging from a fraction of an inch to more than 2 feet wide. The largest veins strike northeasterly and dip 15 to 20 degrees southeast.

By R. V. Kirkham

The mineralization is observed to extend over an area a few hundred by 1,000 feet. Alteration is not extensive, and the average grade of exposed mineralization is low.

Copper

Cariboo Heart Range

Northstar (56° 126° S.E.) The Northstar property consists of 114 mineral claims located as the Fred, Bob, Marg, and others and held by Northstar Copper Mines Ltd. (P.O. Box 937, Smithers; R. M. Tait, president). The claims cover a large part of the Cariboo Heart Range north of Kaza Lake, which is in the southeast corner of the McConnell Creek area, 95 miles north-northeast of Smithers. Access is by float plane. The initial discovery and main showing is on the eastern slope of the mountain at about 5,000 feet elevation a mile north of the lake and on the Fred No. 2 claim near the boundary of Fred No. 1. In 1966 preliminary exploration included geological mapping and some hand trenching in the vicinity of the main showing and further prospecting in the area. In 1967 a field laboratory and camp were established at Kaza Lake and an extensive grid was laid out preparatory to soil-sampling and geological mapping. In September, after the writer's visit, 2,091 feet of AQ core was drilled in nine holes. T. Cameron Scott was in charge of the work.

Northstar Copper Mines Ltd.
By A. Sutherland Brown

The Cariboo Heart Range is underlain principally by volcanic and sedimentary rocks that Lord (1948, *Geol. Surv., Canada,* Mem. 251) included in his upper division of the Takla Group, but would not be so included today. However, he made extensive fossil collections that enable one to re-interpret the geology in the light of recent work. The intermediate and basic volcanic rocks (Unit 4 on Lord's map) that underlie most of the range probably belong to the Hazelton Group, and these are overlain by argillite, greywacke, and conglomerate that probably belongs to the Bowser Group (Unit 5A). In addition, on Kaza Peak these rocks are truncated and thrown into recumbent folds by a flat thrust from the east that carries Sustut Group in the upper plate.

The main showing (A) is on the eastern slope of the mountain on the rim of a landslide scar around which exposure is good in contrast to the surrounding area. The rocks strike within 15 degrees of true north and dip 45 to 65 degrees eastward. They appear to belong to the Hazelton Group and are basic to intermediate pyroclastic and massive volcanic rocks intercalated with lesser sedimentary rocks. Some of the sedimentary rocks are copper-bearing siltstones that occur on the southeastern rim of the scar, and because these are possibly syngenetic, the stratigraphic section and petrography are described in some detail. The section revealed around the rim from the stratigraphic base at the top of the scar is as follows: Lathy porphyritic basalt, 52 feet; limestone, 5 feet; agglomeratic limestone, 10 feet; calcareous

1967

agglomerate, 19 feet; agglomerate, 4 feet; calcareous agglomerate, 28 feet; tuffaceous limestone, 10 feet; slightly tuffaceous limestone, 28 feet; agglomeratic limestone, 10 feet; calcareous blocky agglomerate, 5 feet; dark-green blocky agglomerate to lapilli tuff, 95 feet; interbedded copper-bearing black laminated siltstone, fine crystal tuff and lapilli lithic tuff, 17 feet; lapilli tuff, 5 feet; lathy porphyritic basalt, 55 feet. The 5-foot lapilli tuff bed is separated from the 55-foot exposure of lathy porphyry by a shear subparallel to bedding. Up the hill from the top of the scar, scattered outcrop indicates about an additional 100 stratigraphic feet of the lower lathy porphyry which is in bedded shear contact with a lapilli tuff similar to the main one in the section.

All the volcanic rocks are divisible into two types: the massive lathy porphyritic basalt, which are most likely flows but may be sills, and the pyroclastic rocks, which are porphyritic andesites. The porphyritic basalts are composed of about 20 per cent phenocrysts of bytownite (An_{78}), about 10 millimetres long in a fine trachytic matrix of small laths of labradorite (An_{60}), about 0.15 millimetre long, granular pyroxene, chlorite, calcite, and ores. The porphyritic andesites are slightly more variable but chiefly are fairly crowded porphyries with 20 to 50 per cent chunky phenocrysts about 0.7 millimetre long of andesine and 5 to 15 per cent hornblende phenocrysts in a very fine-grained matrix of plagioclase, chlorite, and ores.

Both rocks are normally dark grey-green with the basalt mottled by the prominent white plagioclase laths. The basalt may also be maroon from oxidation of disseminated ore minerals in the matrix. Normally both rocks are chloritized and slightly carbonatized, and the andesite may be intensely so. Prehnite may be present in minor amounts, and certain vein-like bands in the basalt are entirely altered to prehnite. Epidote may be present in minor amounts.

The limestones are bioclastic rocks composed mainly of fragments of fossils, pellets 0.1 to 0.5 millimetre in long dimension, and a variable proportion of volcanic fragments. Pelecypods, bryozoa, corals, and crinoid clasts are recognizable, but none are of any diagnostic value. Bioclastic matter is dominated by pellets of possible algæ origin. Ash, crystals, lapilli, and blocks of volcanic origin are present in widely varying proportion and maximum size. Most are porphyritic andesite identical to that of the overlying tuff and agglomerate, but some are fine-grained trachytic non-porphyritic andesite.

The copper-bearing fine-grained beds are composed of intercalated tuff similar to the finer beds of the underlying agglomerate and interlaminated black siltstone and grey plagioclase-rich crystal tuff or fine sandstone. The siltstones commonly are slightly graded and intercalated with crystal tuff in laminæ, mostly 2 to 5 millimetres thick. The tuff beds are formed chiefly of lath-shaped plagioclase clasts 0.1 to 0.7 millimetre in long dimension closely packed with very little matrix. The siltstones are also dominated by fine plagioclase debris up to 0.03 millimetre in diameter with some spherules of organic origin about 0.1 millimetre in diameter, in fairly abundant semi-opaque matrix. Veinlets of calcite, limonite, and malachite are common in the laminated siltstone and crystal tuff, and many are oriented parallel to bedding. Malachite also replaces feldspars adjacent to siltstones in crystal tuff and lapilli tuff. Rare aggregates of chalcocite, bornite, or rare native copper occur chiefly along contacts of very fine siltstone and tuff. Chalcocite of very fine grain may also occur in the opaque matrix of siltstone. Pyrite is rare and present only in volcanic fragments of tuff probably as an original mineral.

Chip samples taken by the writer across the fine beds and into the adjacent lapilli tuffs assayed as follows:—

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Sample No.	Stratigraphic Thickness	Lithology	Copper Assay
	Ft.		Per Cent
6968	3½	Green lapilli tuff somewhat sheared	0.48
6967	4	Main beds—mostly laminated siltstone	1.45
6966	4	Main beds—mostly laminated siltstone	2.79
6965	4	Interlaminated siltstone and coarse tuff	1.35
6964	3	Laminated siltstone and sheared lapilli tuff	1.01
6963	2	Basal laminated siltstone and tuff	0.65
6962	4	Basal malachite—stained sheared lapilli tuff	0.46

Gold and silver occur in trace amounts in each sample.

South of the rim of the scar on projected strike with the siltstones some small pits have been dug by hand. These show that the strike swings sharply to the west, but the amount and distribution of the pits is inadequate to judge the continuity of the fine beds. To the north the coarse landslide blocks of less friable agglomerate and basalt effectively obscure the rubble from the fine beds.

A number of other showings, mostly of small size, have been discovered both in the vicinity of the landslide scar and elsewhere. Many of these are minor veins of calcite with a central filling of native copper bordered by cuprite and malachite. Some are actually composed principally of prehnite yet have the same copper minerals. One plate of native copper about 10 by 6 inches was discovered in a streambed. All these appear to represent supergene accumulations.

Other showings have also been found, such as one called B showing that is about 2,000 feet southeast of the main showing (A). The B showing is exposed in a trench about 50 feet long at an elevation of about 4,635 feet. Here lathy basalt in the lower part of the trench is highly fractured with some small seams containing bornite, malachite, and covellite. A chip sample of the lower 20 feet of the exposure in the trench assayed: Copper, 1.98 per cent.

[References: Assessment Reports Nos. 833 and 1084.]

Copper

Fire (55° 126° N.E.) The Fire group of 43 located claims is on a knoll overlooking Lion Creek, 4 miles south of Kaza Lake, which is 90 miles north-northeast of Smithers. It is held by R. M. Tait. Work done in 1967 included trenching and blasting small pits.

By A. Sutherland Brown

The region has not been mapped geologically but is close to the McConnell Creek area, which has. The area between Kaza Lake and the showings appears to be mostly underlain by porphyritic basalt pillow lavas that most likely belong to the Hazelton Group. Metamorphism does not seem important except near the showing.

The showings occur on a knob on the top of which rocks are well exposed in an elliptical area about 1,500 by 3,000 feet and are chiefly porphyritic basalts of varying phenocryst content. Rude pillows are evident in the east. On the western slope the knob is traversed by a gully oriented about north 40 degrees west that seems to be a shear. A lens of tuffaceous limestone 10 to 20 feet thick outcrops along the northern part of the gully for about 300 feet. The bedding of limestone and lavas appears to strike about north 25 degrees west and dip about 30 degrees eastward. These rocks are cut by white quartz feldspar porphyry dykes that trend northwestward and are probably related to the Kastberg Intrusions and part of the dyke swarm from Scallop Mountain.

1967

	Copper Assay
	Per Cent
....	0.48
....	1.45
....	2.79
....	1.35
....	1.01
....	0.65
....	0.46

Microscopically the flow rocks are seen to be composed of 20 to 30 per cent phenocrysts ranging from mostly agglomerated masses of plagioclase (now andesine) to dominantly chunky pyroxene. The matrix is composed of very fine plagioclase, pyroxene, chlorite, and ilmenite in an insertal fabric. Metamorphism is fairly intense but locally variable. Pyroxene is largely replaced either by actinolite or chlorite. Plagioclase is sericitized and slightly epidotized, but may also be slightly replaced by actinolite. The quartz feldspar porphyry and rhyolite are composed of a few large resorbed quartz crystals and kaolinized orthoclase and some smaller chloritized hornblende needles in a very fine aplitic quartzofeldspathic matrix.

Sulphide minerals occur in several manners: as an important accessory in highly amphibolitized volcanic rock along the main shear; as discrete vein-like masses composed of actinolite, quartz, sulphide, calcite, and chlorite; and as replacement in limestone. The main sulphides, in the rusty amphibolitized zone parallel to the shear, are pyrite and pyrrhotite with lesser chalcopyrite. In the limestone most of the sulphides are chalcopyrite. In the actinolitic vein-like masses, chalcopyrite may be the dominant mineral. These "veins" occur in a slightly irregular manner but also chiefly strike northwestward and may be 60 feet long and up to 20 feet wide, but are mostly much smaller. A grab sample from a freshly blasted pit in the limestone assayed: Copper, 1.20 per cent; silver, trace. A chip sample along an amphibolitized zone 40 by 20 feet assayed: Copper, 1.06 per cent; silver, trace.

[Reference: Assessment Report No. 1191.]

Copper-Gold-Silver

McConnell Range

Marmot
New Wellington Mines Limited
By W. G. Clarke

(56° 126° N.W.) Head office, 607, 1405 Douglas Street, Victoria. W. D. Savage, field manager. The Marmot group of 141 claims, owned by the company, is on Menard Creek near the headwaters of the Ingenika River. It may be reached by flying from Fort St. James to Thorne Lake, a distance of approximately 200 miles; from there a tractor-road leads to the camp, which is approximately 10 miles southeast of the lake.

Five men worked for eight months building 20 miles of tractor-road and doing 1 mile of trenching; geological, geochemical, and induced polarization surveys were made. A cookhouse, two cabins, and a tent frame were erected. One hole was diamond drilled to a depth of 50 feet.

[References: *Minister of Mines, B.C.*, Ann. Rept., 1966, p. 82; Assessment Report No. 991.]

Smithers

Silver-Lead-Zinc

Cronin Mine
Kindrat Mines Ltd.
By W. G. Clarke

(54° 126° N.W.) Company office, 610, 890 West Pender Street, Vancouver 1. Kindrat Mines Ltd. (owned by Paul Kindrat, P.O. Box 1057, Smithers) operates the Cronin mine under lease from New Cronin Babine Mines Limited. The Cronin property consists of the Sunrise No. 7 Crown-granted mineral claim and seven claims held under option and is located on the east slope of Mount Cronin, about 30 miles by road from Smithers.

During 1967 the mine was worked by two men from July until October. A total of 1,000 tons was mined, 800 tons from the pit and 200 tons from the upper levels underground. Production was largely from an open pit on the discovery outcrop, where ore was drawn into the upper adit through a glory-hole.

From Assessment Report # 4477 on Kaza Copper by Dynasty May, 1973

MINERAL SHOWINGS AND ALTERATION

The mineralization of the Kaza claims is clearly epigenetic, is related to north-south trending faults and is accompanied by three distinctive types of alteration. The main mineralized showings occur as linear zones of hornblende-sulphide rock which conform to topographic depressions. These hornblende rocks, which were described by Riensbakken as "hornblendite dikes", are probably skarns developed in the volcanics along zones of fracturing. The sulphide component of these mineral zones consists of pyrite mainly, with minor chalcopyrite, bornite, sphalerite and magnetite. Sulphide abuadance varies from about 5% to nearly massive. The two main hornblende skarn zones are a few feet wide and outcrop intermittently over lengths of several hundred feet; they appear to dip steeply.

Patchy exposures of a distinctively different type of skarn, consisting of epidote, calcite and minor pink garnet, occur in the area of the main showings. These skarns also are mineralized with pyrite and chalcopyrite and probably developed in more calcite-rich parts of the volcanics.

The following assay values were obtained from chip samples taken across the best exposed parts of the main skarn showings:

Number	Description	Cu (%)	Au. (oz/ton)	Ag. (oz/ton)
3-D-17	Chip sample across 6½ ft. of hornblende-sulphide skarn	0.20	0.004	0.05
3-D-26	Chip sample across 13 ft. of hornblende-sulphide skarn	0.88	0.49	0.37
3-D-28	Grab sample of epidote-calcite-garnet-sulphide skarn	0.22	0.010	0.08

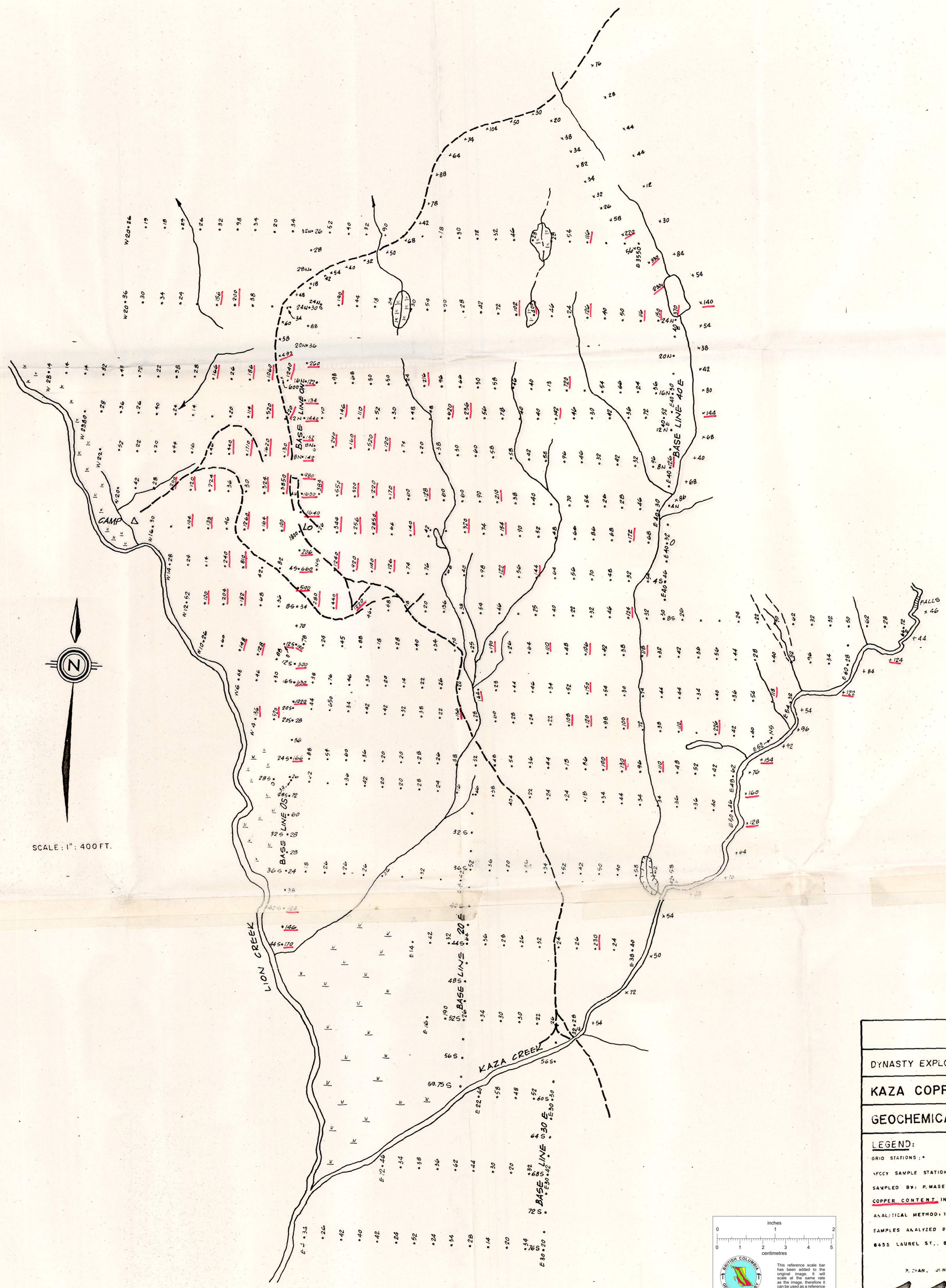
A.R. #4477
Dynasty
May, 1973

Number	Description	Cu (%)	Au (oz/ton)	Ag (oz/ton)
3-D-29	Chip sample across 9 ft. of epidote-calcite-garnet skarn with massive sulphide bands	1.01	0.040	0.34
3-D-30	Chip sample across 6 ft. of epidote-calcite-sulphide skarn with at least 50% sulphides.	1.39	0.071	0.41
3-D-32	Chip sample across 5 ft. of hornblende-sulphide skarn with 30% sulphides	0.28	trace	0.28

Where possible, these chip samples were taken perpendicular to the strike of the mineralized zones but the lengths of samples represent horizontal or surface distance, not true widths of mineralization. The samples are representative of the best mineralized sections where bedrock is exposed.

Minor amounts of chalcopyrite and bornite occur in small quartz-orthoclase-epidote veinlets, both near the main showings and elsewhere on the claims. These small mineralized veins are probably of no economic significance.

Chalcopyrite and bornite also occur sparsely disseminated through a limestone lens that outcrops in the vicinity of the main showings.



to accompany geological, geochemical & geophysical report by P.M. Dean, on the Kaza Copper Properties just south of Kaza Lake, Omineca M.D., dated July 4, 1973

FIGURE 5

DYNASTY EXPLORATIONS LTD.

KAZA COPPER PROPERTY

GEOCHEMICAL VALUES MAP

LEGEND:

GRID STATIONS: •

REGGY SAMPLE STATIONS: X

SAMPLED BY: P. MASER

COPPER CONTENT IN PPM: 124

ANALYTICAL METHOD: TOTAL PERCHLORIC EXTRACTION

SAMPLES ANALYZED BY ACME ANALYTICAL LABORATORIES.

8455 LAUREL ST., BURNABY 2, B.C.

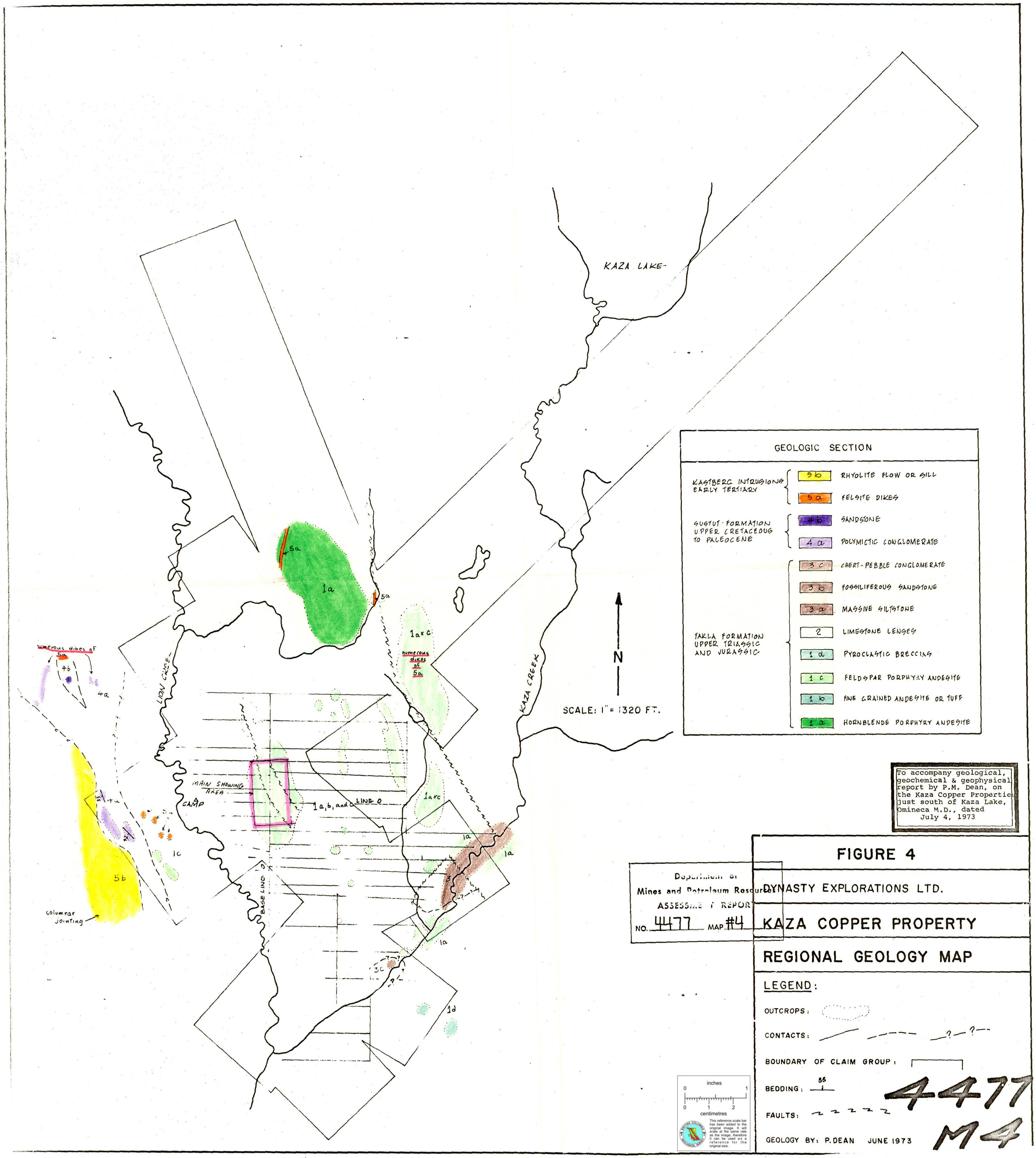
P. DEAN, JUNE 1973

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4477 MAP #5

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.

4477-M5


KAZA LAKE
LION CREEK
KAZA CREEK
5a
1a
1a & c
numerous dikes of 5a
numerous dikes of 5a
4b
4a
MAIN SHOWING AREA
CAMP
1a, b, and c
LINE 0
BASE LINE 0
1c
5b
columnar jointing
1a
3
3c
1d
N
SCALE: 1" = 1320 FT.
GEOLOGIC SECTION
KASTBERG INTRUSIONS EARLY TERTIARY
5b RHYOLITE FLOW OR SILL
5a FELSITE DIKES
SUSTUT FORMATION UPPER CRETACEOUS TO PALEOCENE
4b SANDSTONE
4a POLYMICTIC CONGLOMERATE
TAKLA FORMATION UPPER TRIASSIC AND JURASSIC
3c CHERT-PEBBLE CONGLOMERATE
3b FOSSILIFEROUS SANDSTONE
3a MASSIVE SILTSTONE
2 LIMESTONE LENSES
1d PYROCLASTIC BRECCIAS
1c FELDSPAR PORPHYRY ANDESITE
1b FINE GRAINED ANDESITE OR TUFF
1a HORNBLENDE PORPHYRY ANDESITE
To accompany geological, geochemical & geophysical report by P.M. Dean, on the Kaza Copper Propertie just south of Kaza Lake, Omineca M.D., dated July 4, 1973
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4477 MAP #4
FIGURE 4
DYNASTY EXPLORATIONS LTD.
KAZA COPPER PROPERTY
REGIONAL GEOLOGY MAP
LEGEND:
OUTCROPS:
CONTACTS:
BOUNDARY OF CLAIM GROUP:
BEDDING: 35
FAULTS:
GEOLOGY BY: P. DEAN JUNE 1973
4477
M4
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.