895244

REPORT OF GEOLOGICAL EXAMINATION

OF THE CHALCO STAR PROPERTY

Chalco Star 1	R308802 (4)
Chalco Star 2	R308803 (4)
Chalco Star 3	R308804 (4)
Chalco Star 4	R308805 (4)
Chalco Star 5	R308806 (4)

Similkameen Mining Division

N.T.S 92 H/8

49° 26' N., 120° 26' W.

Owner:

KOOTENAY KING RESOURCES INC.

636-470 Granville Street
Vancouver, British Columbia
V6C 1V5

By:

John Ostler; M.Sc., P.Geo.

Consulting Geologist

July 26, 1992

PROFESSIONAL
PROVINCE OF
JOHN D. OSTLER
BRITISH COLUMBIA
GEOSCIENTIST

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SUMMARY

The Chalco Star Property comprises five 4-post claims containing a total of 76 claim-units covering about 1775 ha (4260 A) including minor loss due to overlap. It is centred on 49° 26' north latitude and 120° 26' west longitude in about 4.5 km (2.75 mi) southeast of the town of Princeton in the Similkameen Mining Division of British Columbia.

The property is located about 12 km (8 mi) north-northeast of the Copper Mountain Mine which presently has three productive orebodies: Copper mountain, Ingerbelle and Virginia.

During 1990, 7,441,000 tons of ore were milled from the three orebodies to produce 56,418,000 pounds of copper, 13,617 ounces of gold and 311,660 ounces of silver. Average ore grade from the mine was 0.38% copper, 0.002 oz/ton gold and 0.042 oz/ton silver. Princeton Mining Corp. reported that as of January, 1991, reserves were 167,800,000 tons averaging 0.4% copper which included 43,000,000 tons that were to be mined during Princeton's current mining plan.

The Chalco Star Property-area is nnderlain by Triassic-age mafic volcanic rocks that have been assigned to the eastern volcanic facies of the Nicola Group. These volcanic rocks are intruded by dioritic to granodioritic bodies of various sizes and shapes that range in age from Triassic to Cretaceous. Both the Nicola volcanic and Mesozoic-age intrusive rocks have been fractured altered and intruded by younger dykes of varying compositions.

The stratigraphy, fracturing and alteration are similar in some respects to that at the Copper Mountain, Ingerbelle and Virginia ore bodies located a few kilometres south of the property-area.

Mineralization has been studied most intensively in the North and South zones located northeast and south of August Lake respectively.

In both zones, pyrite-chalcopyrite mineralization occurs with minor chalcocite and bornite in altered volcanic igneous rocks associated with fracturing near intrusive contacts. This association of mineralization, alteration, fracturing and intrusion is similar to that of

the Ingerbelle-area where ore is related to fracturing and alteration near the contacts of Nicola Group volcanic rocks and the Lost Horse Intrusions. It is quite possible that an orebody similar to Copper Mountain, Ingerbelle or Virginia may be buried beneath the Chalco Star Property-area and that the mineralization exposed on surface is part of a pyritic halo above the main orebody.

At present, the most promising deep drilling target on the property is the area beneath the South Zone where secondary copper mineralization has already been found to extend from surface to shallow depths along a dyke system.

The recommended exploration program comprises geological mapping, sampling, and induced polarization survey over the part of the property located east of the August Lake valley, and extensive NQ core and reverse circulation percussion drilling around the South Zone.

REPORT OF GEOLOGICAL EXAMINATION OF THE CHALCO STAR PROPERTY

1.0 INTRODUCTION

1.1 Terms of Reference

The writer was retained by Kootenay King Resources Inc. of Vancouver, British Columbia to examine the Chalco Star Property.

This report is a compilation of records of exploration work filed with the British Columbia Minister of Energy, Mines and Petroleum Resources, other data and information gathered during an examination of the Chalco Star Property conducted by the writer from April 16 to 18, 1992.

1.2 Location and Access

The Chalco Star Property is located at the eastern margin of the Hozameen Range of the Cascade Mountains, part of the Coast Mountains of southwestern British Columbia (Figure 1). The property comprises five 4-post claims containing a total of 76 claim-units covering about 1775 ha (4260 A) including minor loss due to overlap. The claims are centred on 49° 26' north latitude and 120° 26' west longitude in the Similkameen Mining Division of British Columbia (Figures 2 and 3).

Princeton, the nearest supply and service centre to the Chalco Star Property is located at the junction of B.C. Highways 3 and 5 about 289 km (176 mi) east Vancouver, B.C. via highways 1 and 3.

The claims are located about 4.5 km (2.75 mi) southeast of the Town of Princeton, B.C. between the Darcy Mountains and Similkameen River. Access to the property-area is by the August Lake road, a good all-weather road that joins B.C. Hwy. 3 at the golf course cut-off 4 km (2.4 mi) east of Princeton. The property-area is transected by numerous logging and ranch roads that may be passable only by 4-wheel drive vehicles during periods of poor weather.

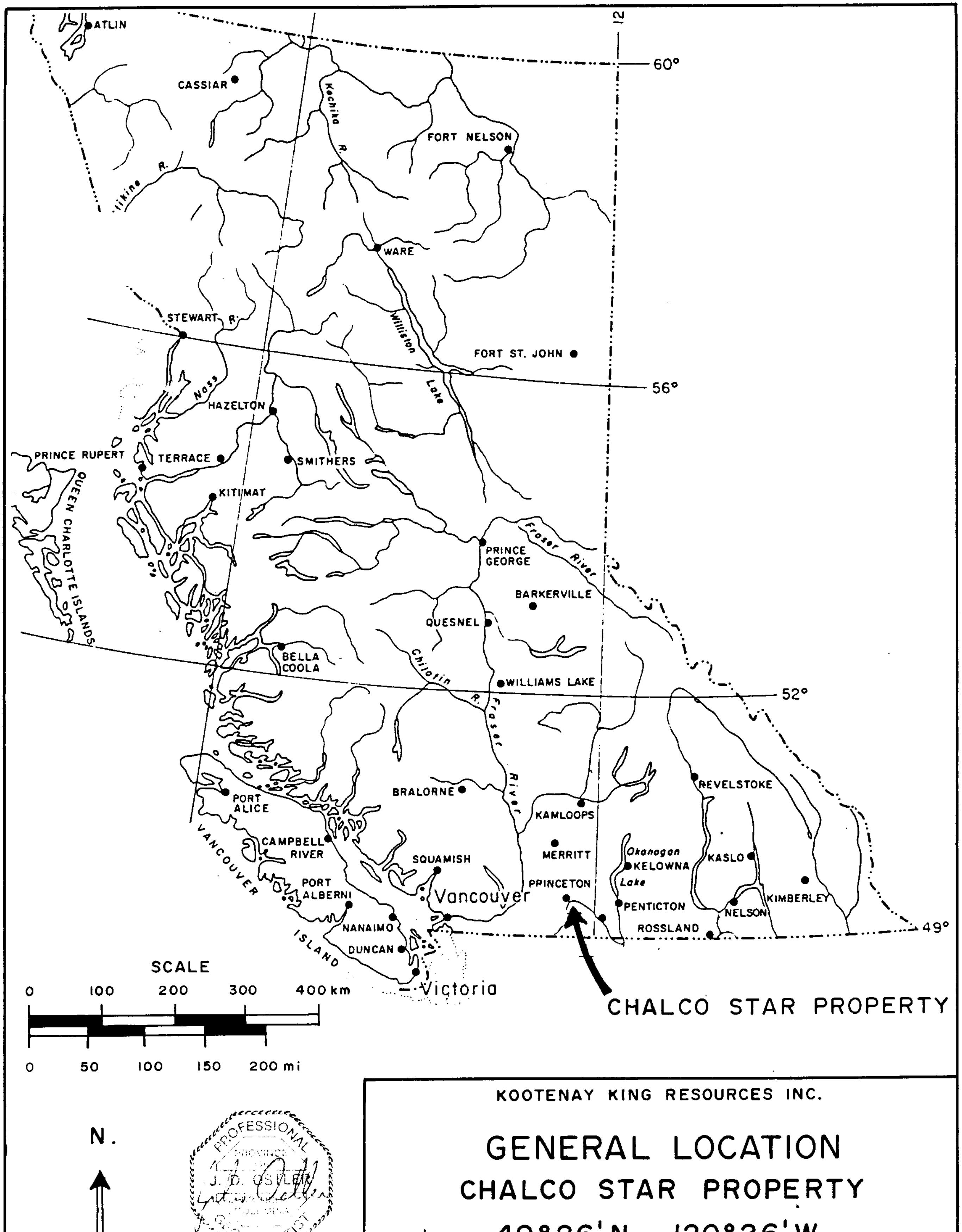


Figure I

CASSIAR EAST YUKON EXP. LTD.

KOOTENAY KING RESOURCES INC.

GENERAL LOCATION
CHALCO STAR PROPERTY
49°26'N., 120°26'W.

SIMILKAMEEN M.D., B.C.,	N.T.S. 92H/8
JOHN OSTLER; M.Sc., P.Geo.	JULY, 1992

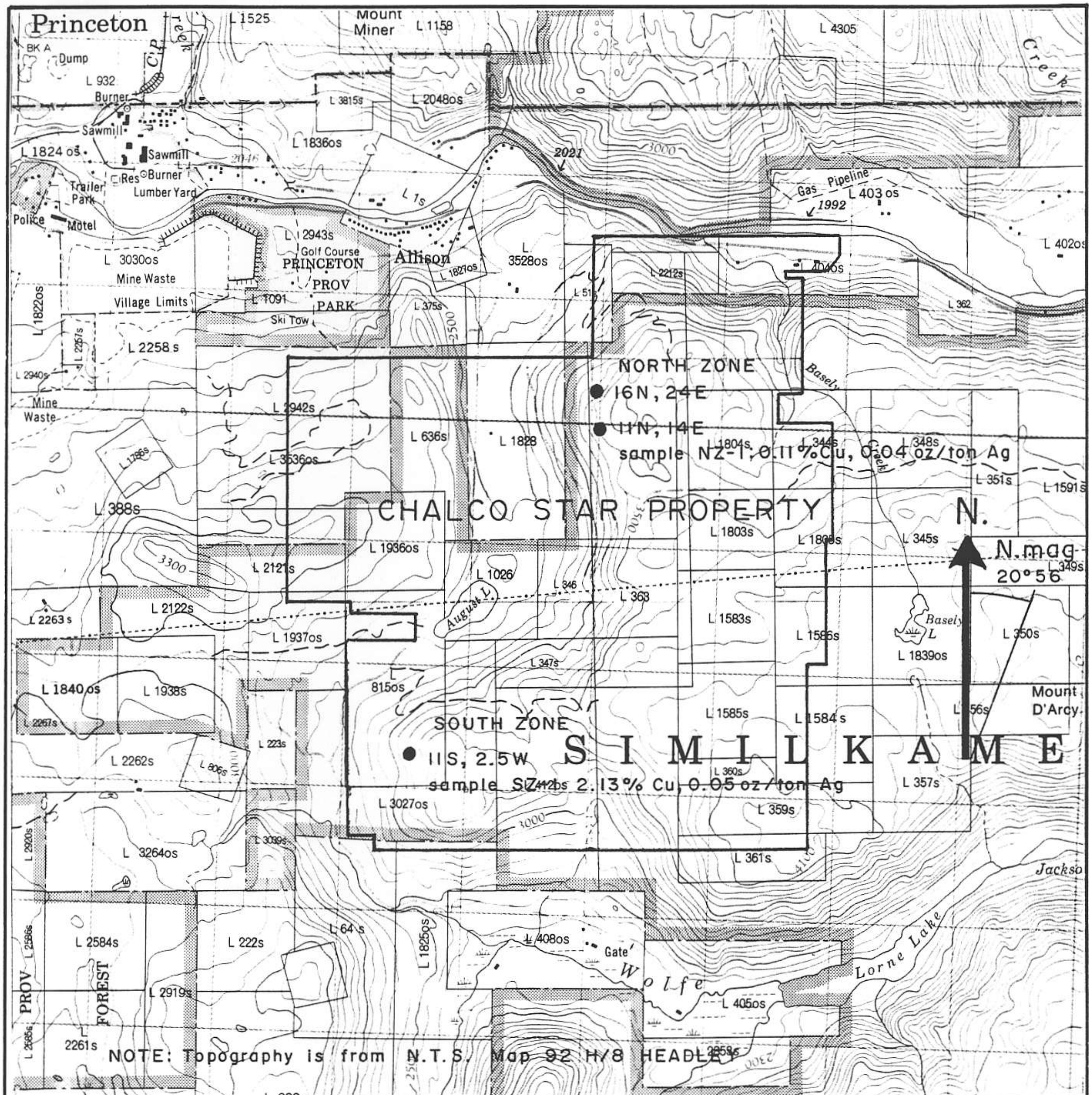
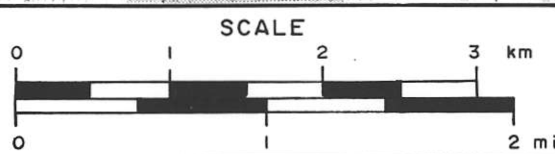


Figure 2

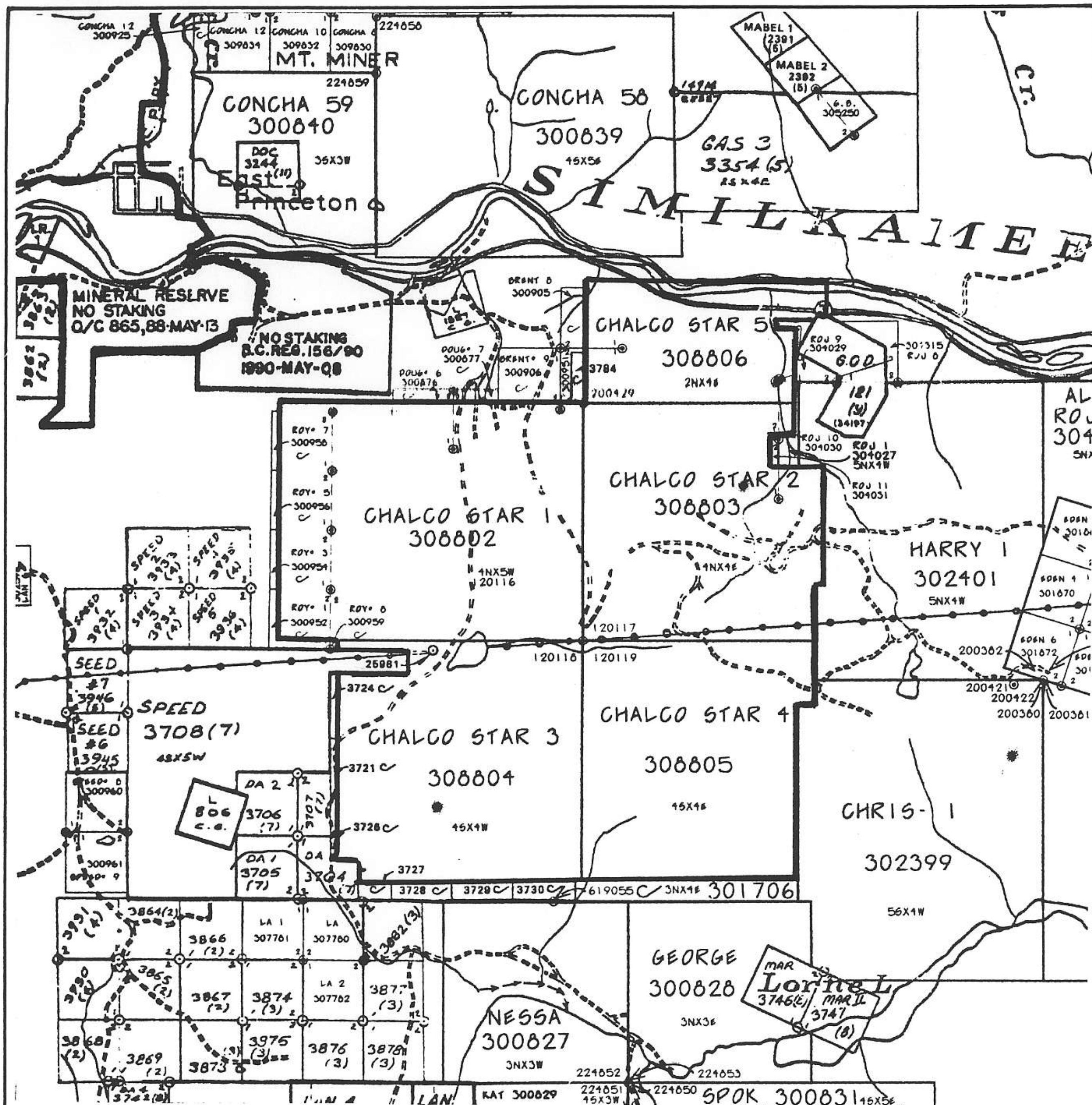
CASSIAR EAST YUKON EXP. LTD.



KOOTENAY KING RESOURCES INC.

LOCATION, TERRAIN and MINERALIZED ZONES
CHALCO STAR PROPERTY
49°26'N., 120°26'W.

SIMILKAMEEN M.D., B.C.,	N.T.S. 92H/8
JOHN OSTLER; M.Sc., P.Geo.	JULY, 1992



NOTE: Part of B.C. Mineral Titles Reference Map 092H08W

N.

20° 56' N. mag.

as of Jan. 1, 1992

Figure 3

CASSIAR EAST YUKON EXP. LTD.

SCALE

0 1 2 3 km

0 1 2 mi

KOOTENAY KING RESOURCES INC.

MINERAL CLAIMS

CHALCO STAR PROPERTY

49°26'N., 120°26'W.

SIMILKAMEEN M.D., B.C., N.T.S. 92H/8

JOHN OSTLER; M.Sc., P.Geo., JULY, 1992

1.3 Terrain and Vegetation

The Chalco Star Property is located at the eastern margin of the Hozameen Range of the Cascade Mountains, part of the Coast Mountains of southwestern British Columbia and at the western margin of the southern Interior Plateau.

Holland (1976) described the transition between the Hozameen Range and the Interior Plateau near Princeton as follows:

> The Cascade Mountains are separated by the Fraser River from the Pacific Ranges of the Coast Mountains to the north. The Cascade Mountains on the east are flanked by and merge in the Kamloops Plateau. Their western boundary is clearly defined by the Fraser River, but their eastern margin is a transition zone through which summit elevation progressively diminishes and the degree of dissection decreases as the Kamloops Plateau is approached. The boundary separating mountains and plateaus follows the Nicoamen River from its mouth, thence more or less along the 5,000-foot contour west of Prospect Creek to the head of Tulameen River and the head of Skagit River, thence down Copper Creek and east from its mouth across to the Ashnola River, thence northeastward past Crater Mountain to the valley of the Similkameen River.
>
> Holland, S.S.; 1976: p.44.

The Chalco Star Property occupies part of the lower northward-facing slope of the Darcy Mountains that forms part of the valley of the Similkameen River (Figure 2). Elevations on the Chalco Star Property range from about 610 m (2000 ft) above sea level near the Similkameen River at the northern boundary of the property, to about 1067 m (3500 ft) on the slopes of the Darcy Mountains near the southeastern corner of the claim group.

The Darcy Mountains are comparatively low, rounded promontories the gentle slopes of which were originally covered with pine and spruce forest, and parkland. Some of the forest has been removed by local ranchers who use some of the property-area for rangeland.

During development of the property, mining timber would probably have to be purchased from a local sawmill.

The most significant topographic feature on the property is the August Lake valley. It is a "U"-shaped glacial spillway that extends northward from August Lake to the Similkameen River (Figure 2). The flat floor of this valley is at an elevation of about 762 m (2500 ft) above sea level. where it transects the property north of the lake. On either side of the spillway slopes rise steeply up to the level of the frontal slope of the Darcy Mountains.

Soils are deep and well-developed on the frontal slope of the Darcy Mountains. Results from soil surveys taken in this area are generally reliable. Samples from various overlapping surveys tend to confirm each other.

Steep slopes flanking the August Lake valley and near the Similkameen River at the northern boundary of the property have the most numerous and best exposures of bed rock in the property-area.

The spillway north of August Lake is filled with glacio-fluvial sediments to an unknown depth. Soil and electromagnetic surveys over the spillway would not be reliable exploration tools in that area.

The climate of the Princeton area is typical of that of the southern interior of British Columbia. Summers are hot and dry. Winters are moderately cold. A thin blanket of snow accumulates over the area from November until March.

It would be necessary to truck water for drilling into most locations on the property.

1.4 Property

The Chalco Star Property comprises the following claims located in the Similkameen Mining Division of British Columbia:

Claim Name	Record No.	No. of Units	Record Date
Chalco Star 1	R308802 (4)	20	April 17, 1992
Chalco Star 2	R308803 (4)	16	April 18, 1992
Chalco Star 3	R308804 (4)	16	April 17, 1992
Chalco Star 4	R308805 (4)	16	April 18, 1992
Chalco Star 5	R308806 (4)	8	April 18, 1992
		76 Claim-units	

The claims are owned 100% by Kootenay King Resources Inc. of Vancouver, British Columbia.

The area was originally staked during 1991 by Douglas Hopper, Guy

DeLorme and Eric Becker as the Star Trek Property. At that time it comprised one 4-post claim of 12 claim-units and 69 2-post claims covering about 1800 ha (4320 A) including overlap. Those claims were purchased through exercise of an option granted to the company by Hopper, DeLorme and Becker on October 24, 1991. Kootenay King agreed to acquire its interest in the claims by paying a total of $10,000 and 100,000 shares of the capital stock of the company to the optionors.

Kootenay King's interest was subject to a 2% net smelter return of which 1% can be purchased by the company for $1,000,000 on or before October 24, 1996.

From April 16 to 18, 1992 the company restaked the property in its current form in order to eliminate the possibility of fractions of open ground existing within the claims. Reportedly, the company and the vendors have agreed to extend the terms of the original option agreement to the new claims with the exception that the $10,000 cash payment could be made in Kootenay King Resources Inc. stock.

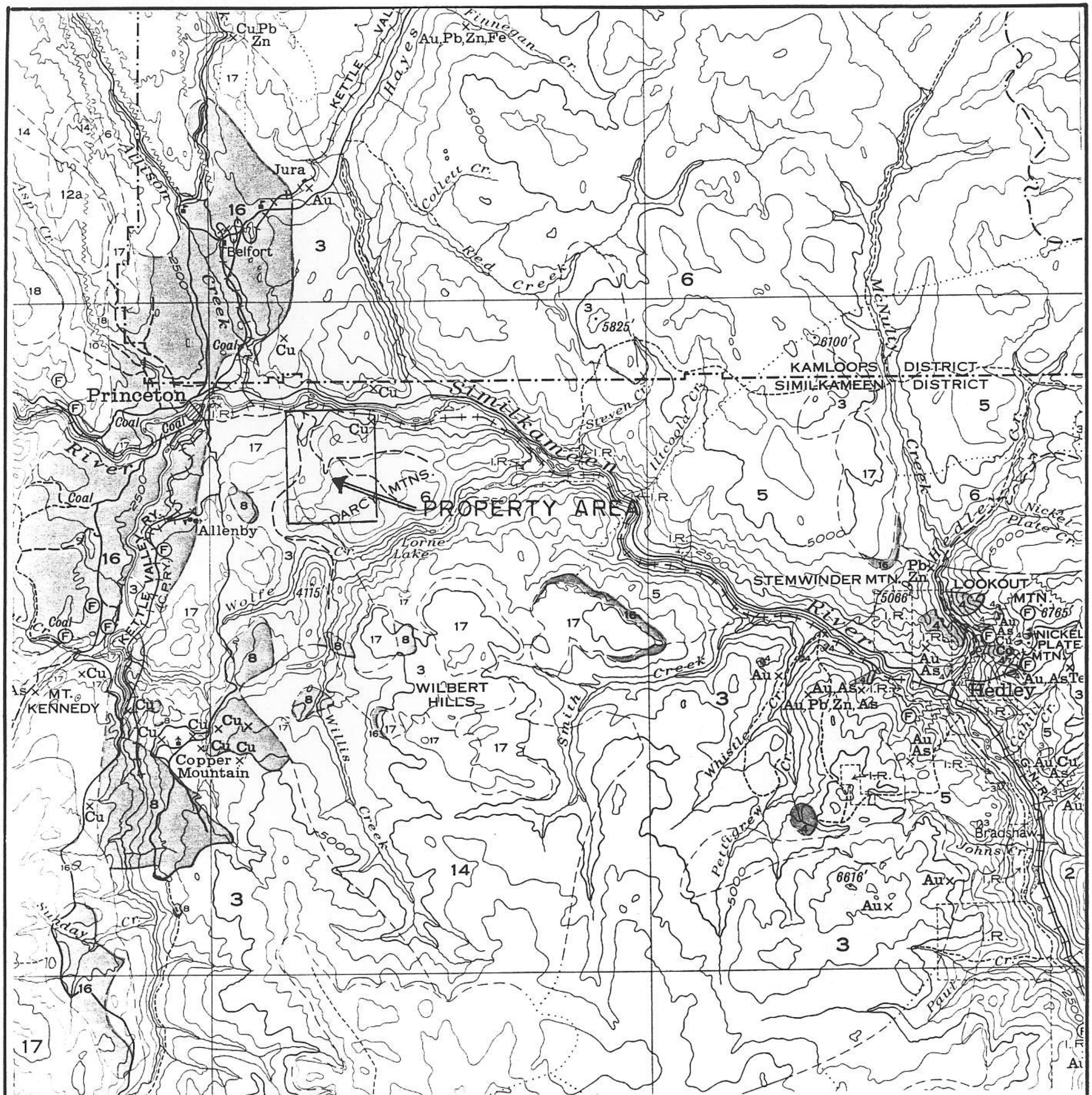
The writer was present during the staking of the Chalco Star claims. Most of the posts and lines of the claims (Figure 3) were inspected and in the writer's opinion, the claims were staked in accordance with the acts and regulations of the Province of British Columbia.

1.5 History of Mining in the Copper Mountain Camp

The Copper Mountain camp is located 13 km (8 mi) south southwest of the Chalco Star Property (Figure 4). V.A. Preto (1972) succinctly summarized the early history of mining in that area as follows:

The mining history of the Copper Mountain area has been long and at times, troubled. Copper was first discovered in the area in 1884 by a trapper named Jameson. Because of the excitement at that time created by the discovery of placer gold near Princeton, he failed to attract any interest in his find which remained virtually forgotten until R.A (Volcanic) Brown located the Sunset mineral claim in 1892. During the following three years several more claims were located in the area, and various amounts of work were done on different occurrences.

In 1900, R.A. Brown organized the Sunset Copper Company and carried out a programme of shaft sinking and underground development on the Sunset claim. In the meantime Emil Voigt had set up a camp on Wolf Creek at Lost



NOTE: For legend, see Figure 4A

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BRITISH COLUMBIA
GEOSCIENTIST

N.

20° 56' N. mag.

as of Jan. 1, 1992

Figure 4

CASSIAR EAST YUKON EXP. LTD.

SCALE

0 5 15 km

0 2 4 6 8 10 mi

KOOTENAY KING RESOURCES INC.

REGIONAL GEOLOGY
from G.S.C. MAP 888A
CHALCO STAR PROPERTY
49°26'N., 120°26'W.

SIMILKAMEEN M.D., B.C., N.T.S. 92H/8

JOHN OSTLER; M.Sc., P.Geo., JULY, 1992

FIGURE 4A
LEGEND TO FIGURE 4

CENOZOIC

TERTIARY

MIOCENE OR LATER

19 *Valley basalt: vesicular, varicoloured basalt*

18 *Plateau basalt: amygdaloidal, brown basalt*

MIOCENE OR EARLIER

PRINCETON GROUP

16 17 16. *Mainly shale, sandstone, and conglomerate; coal*
17. *Varicoloured andesite and basalt*

CRETACEOUS OR TERTIARY

UPPER CRETACEOUS OR LATER

14,15 14. *OTTER INTRUSIONS: pink and grey granite and granodiorite*
15. *LIGHTNING CREEK INTRUSIONS: grey quartz diorite*

CRETACEOUS

LOWER CRETACEOUS

KINGSVALE GROUP

12a-b,13 12a, *mainly volcanic breccia;* 12b, *mainly andesite and basalt porphyry*
13. *Andesite and basalt porphyry and volcanic breccia*

PASAYTEN GROUP

11 *Mainly grit and shale;* 11a, *mainly purple lava, tuff, and breccia*

SPENCE BRIDGE GROUP

10 *Hard, reddisn andesite and basalt*

MESOZOIC

JURASSIC (?) AND CRETACEOUS

UPPER JURASSIC (?) AND LOWER CRETACEOUS

DEWDNEY CREEK GROUP

9 *Tuff, volcanic breccia, grit, argillite;* 9a, *mainly conglomerate*

JURASSIC OR LATER

8 *COPPER MOUNTAIN INTRUSIONS: syenogabbro, augite diorite, pegmatite*

5,6,7 *COAST INTRUSIONS:* 5, *grey, slightly gneissic granodiorite;* 6, *mainly reddish, coarse-grained, siliceous granite and granodiorite;* 7, *light coloured granodiorite, quartz diorite, and gabbro*

4 *Peridotite, pyroxenite, gabbro*

TRIASSIC

UPPER TRIASSIC

NICOLA GROUP

3 *Varicoloured lava; argillite, tuff, limestone; chlorite and sericite schist*

PALÆOZOIC

CARBONIFEROUS OR LATER

2 *BRADSHAW, INDEPENDENCE, SHOEMAKER, and OLD TOM FORMATIONS: cherty and slaty argillite, green andesite, limestone; quartz-mica schist and gneiss*

HOZAMEEN GROUP

1 *Chert, green andesite, limestone*

Fault .... ~~~~

Fossil locality .... Ⓕ

Mineral occurrence .... ×

SYMBOLS FOR METALS

Silver	**Ag**
Arsenic	**As**
Gold	**Au**
Cobalt	**Co**
Chromium	**Cr**
Copper	**Cu**
Iron	**Fe**
Manganese	**Mn**
Molybdenum	**Mo**
Lead	**Pb**
Platinum	**Pt**
Antimony	**Sb**
Tellurium	**Te**
Zinc	**Zn**

Geology by H.M.A. Rice, 1939, 1941, 1944.

Approximate magnetic declination, 23°19' East

For Mining Properties, see Map 889A, "Princeton"

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Horse Gulch and had located a number of claims in that area. He held this property to his death in 1927, and had work done on the claims at various times.

In 1905, F. Keffer leased the Sunset and other claims and formed the South Yale Copper Company. Impetus in this organization, however, waned the following year and Keffer devoted his attention to Voigt's Camp for some time. In 1912 the Sunset and adjoining claims were taken up again, and the British Columbia Copper Company was organized, and soon renamed the Canada Copper Corporation. Development on the claims continued until 1914 when it stopped because of the start of World War 1. In 1916 work was resumed because of higher wartime copper prices, and the mine was equipped to produce 2,000 tons per day. It was at this time that the concentrator was built at Allenby, 6 miles north of the orebodies, and agreements were signed with the Kettle Valley Railway to build a spur line from Princeton to Allenby and thence to Copper Mountain. The building of the line took until 1918 because of difficult terrain and labour problems. The concentrator was thus not ready to commence operations until the end of the war, when the price of copper fell causing a new shut down. Dolmage reports that "Up to this time over $4,000,000 had been spent on the enterprise, no copper had been produced, and the hope for operating the mine had dwindled to a mere spark" (Dolmage, 1934 p.3).

In 1923 The Granby Consolidated Mining, Smelting and Power Company Limited acquired the property and began re-organizing the concentrator and mine plants. This activity, however, terminated at the end of that year. In the winter of 1925-1926 operations started again and the concentrator finally began treating ore, continuing to do so until December, 1930. Another dormant period followed until the end of 1936. In 1937 successful operations were resumed and continued until 1957 when they finally came to an end. To this date the concentrator had treated 34,775,101 tons of ore, mostly from underground operations, producing 613,139,846 pounds of copper, 187,294 ounces of gold and 4,384,097 ounces of silver.

From 1957 to 1965 only a moderate amount of work was done in the vicinity of Copper Mountain. In 1966, however, extensive exploration involving much trenching and drilling was initiated by The Granby Mining Company Limited on its holdings on Copper Mountain, by Newmont Mining Corporation of Canada Limited on the Ingersoll Bell, La Reine, and neighbouring claims west of the Similkameen River, and by Cumont Mines Limited on its holdings in the vicinity of Copper Mountain. The work done by Granby and Newmont continued uninterrupted through 1967. In September of that year Newmont began underground exploration on its property, now called the Ingerbelle, by driving an adit at the 3,050-foot level from the Princeton claim westerly toward the mineralization that had been intersected by snrface drilling on the Invincible, Ingersoll Bell, and La Reine claims. In December, 1967, Newmont purchased all of the Granby Holdings on Copper Mountain and was thus able to carry out an intensified large-scale unified exploration programme on both properties. This work which continued uninterrupted until the end of 1969, outlined at least three large zones of low-grade copper mineralization, one on the Ingerbelle property, and two on Copper Mountain, the latter centred on old open pits. Ore reserves were estimated at 76 million tons averaging 0.53% copper. In June, 1970, official notice was given of the Company's intention to put the Copper Mountain and Ingerbelle properties into production at a planned concentrator capacity of 15,000 tons per day. Capital cost of the project was estimated at 75 million dollars.

Preto, V.A.; 1972: pp. 11-13.

Similco Mines Limited, an operating company for Newmont put the Copper Mountain deposits into production in 1972 for a capital cost of

$10,000,000. Concentrator capacity was expanded to 25,000 tons per day and ore was extracted from both the Copper Mountain and Ingerbelle areas.

Production from Newmont's operations during 1988 was 7,925,000 tons of ore concentrated to produce 59,956,000 pounds of copper, 16,864 ounces of gold and 248,472 ounces of silver (Can. Mines Handbook, 1989-1990; pp. 101-102). That translated to an average ore grade of 0.38% copper, 0.002 oz/ton gold and 0.031 oz/ton silver.

Newmont sold the mine to Princeton Mining Corporation in 1988. Princeton intensified exploration in the Virginia and Alabama zones located north of the Ingerbelle pit near Smelter Lake (Figure 4). Subsequently more minable reserves were discovered and production emphasis shifted to include that from the Virginia deposit.

During 1990 production from the mine was 7,441,000 tons of ore milled to produce 56,418,000 pounds of copper, 13,617 ounces of gold and 311,660 ounces of silver (Can. Mines Handbook, 1991-1992; p. 323). Average ore grade was increased marginally to 0.38% copper, 0.002 oz/ton gold and 0.042 oz/ton silver. As of January, 1991, reserves were 167,800,000 tons averaging 0.4% copper which included 43,000,000 tons that were to be mined during Princeton's current mining plan.

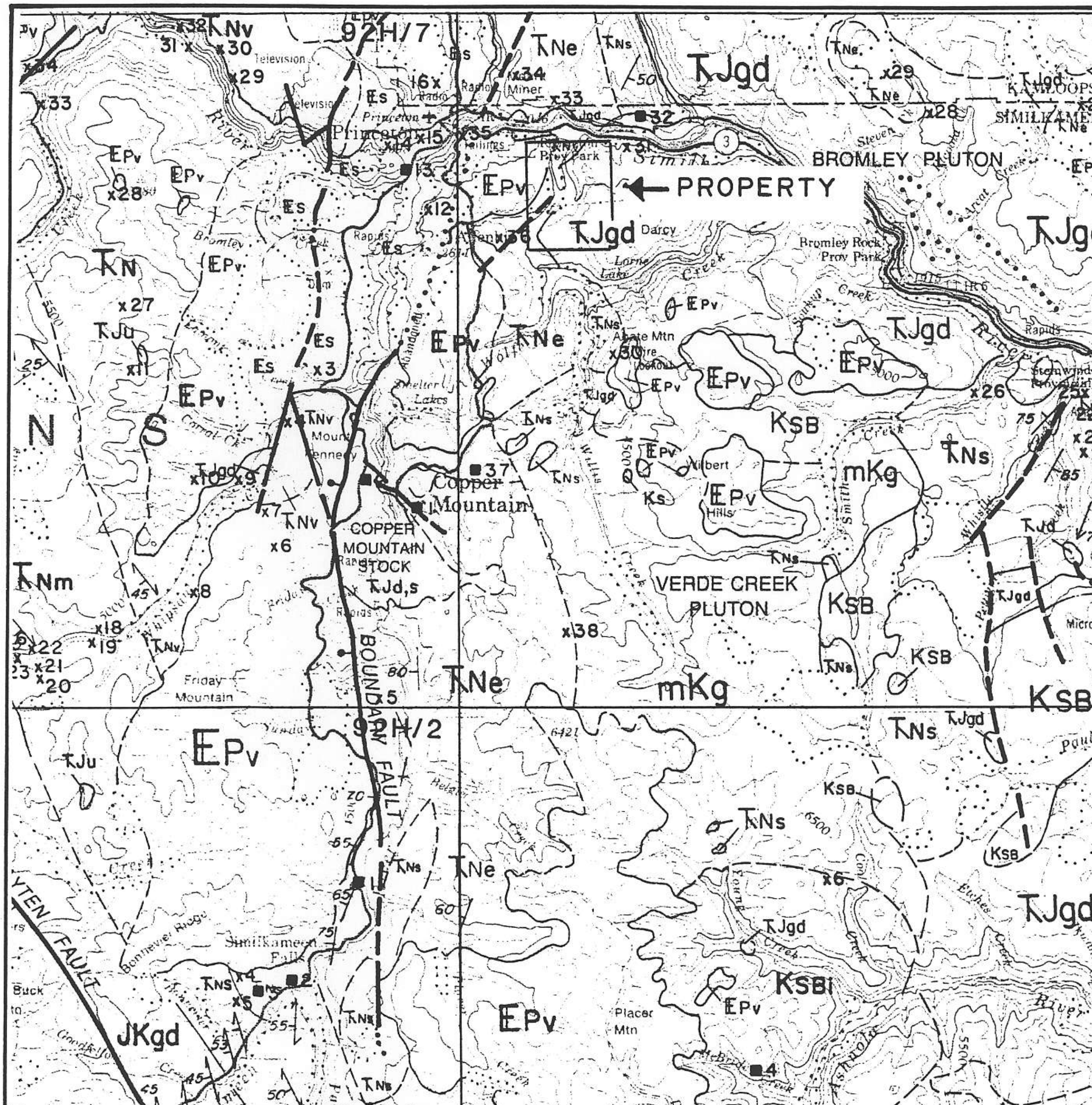
Recent drilling in the Virginia and Alabama zones has increased minable reserves further. A total of 86,880 feet of drilling in these areas during 1990 delineated 15,000,000 tons of ore grading an average of 0.4% copper and 0.006 oz/ton gold (George Cross News Letter, Nov. 1, 1990).

2.0 REGIONAL GEOLOGY AND ECONOMIC MINERALIZATION

2.1 Regional Geology

Interest in the geology of the Princeton area began in the late 19th century with the discovery of placer gold and lode copper deposits. Local geological studies were compiled into a regional map by Rice (1947) (Figure 4) which served as the standard reference for regional geology until Monger's compilation published in 1989 (Figure 5).

Much of the Princeton area is underlain by mafic to intermediate



NOTE: For legend, see Figure 5A

N.

20°56' N. mag.

as of Jan. 1, 1992

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Figure 5

CASSIAR EAST YUKON EXP. LTD.

SCALE

0 5 10 15 km

0 2 4 6 8 10 mi

KOOTENAY KING RESOURCES INC.

REGIONAL GEOLOGY from G.S.C. MAP 41-1989
CHALCO STAR PROPERTY
49°26'N., 120°26'W.

SIMILKAMEEN M.D., B.C., N.T.S. 92H/8

JOHN OSTLER; M.Sc., P.Geo., JULY, 1992

FIGURE 5A
LEGEND TO FIGURE 5
UPPER HALF

LEGEND

Formal names capitalized

CENOZOIC

QUATERNARY

PLEISTOCENE AND RECENT

	Thick drift, alluvium, glaciofluvial and lacustrine deposits, till, colluvium, landslides
PRv	"Valley basalt": basaltic flows

TERTIARY

MIOCENE AND PLIOCENE

MPv	"Plateau basalt": basalt, olivine basalt, minor tuff
MPSv	SKAGIT FORMATION: felsic, intermediate pyroclastics

MIOCENE

Mgd	Granodiorite (MOUNT BARR BATHOLITH)

LATE OLIGOCENE TO EARLY MIOCENE

OMCv	COQUIHALLA FORMATION: intermediate, felsic pyroclastics and flows

OLIGOCENE

Ogd	Granodiorite (CHILLIWACK BATHOLITH)

EOCENE

Egd	Granodiorite (NEEDLE PEAK, MOUNT OUTRAN PLUTONS)

PRINCETON GROUP

EPv	Intermediate flows featuring characteristic hornblende needles, local mafic and felsic flows, volcaniclastics
Es	Sandstone, conglomerate, argillite (includes ALLENBY FORMATION of PRINCETON GROUP)

EARLY TERTIARY

eTgd,i	Intrusions of granodioritic (gd) and intermediate (i) composition

CRETACEOUS AND/OR TERTIARY

KTc	CUSTER GNEISS: pegmatitic granite gneiss, pelitic schist and amphibolite, minor marble and ultramafic rocks, probably derived mainly from lower Mesozoic and possibly Paleozoic and (?) Precambrian rocks, and metamorphosed in Late Cretaceous and early Tertiary time
MS	Garnet-biotite, staurolite, kyanite and sillimanite schist (in part, SETTLER SCHIST), local amphibolite, minor ultramafic rock and siliceous schist; south of Fraser River includes greenschist-grade sandstone, pelite and broken formation; metamorphosed in Cretaceous
MSl	SLOLLICUN SCHIST: mainly greenschist-grade, mafic to intermediate volcanics, phyllite, minor volcanic- and carbonate-clast conglomerate, metamorphosed in Cretaceous

CRETACEOUS

LATE CRETACEOUS

lKgd,qm	Granodiorite (gd), quartz monzonite (qm) (SCUZZY PLUTON)

MIDDLE AND LATE CRETACEOUS

mKg	Mainly granite, in part miarolitic, locally porphyritic and locally fine grained (VERDE CREEK, CATHEDRAL LAKE, SUMMERS CREEK PLUTONS)
KSBi	Felsic intrusions, probably sub-volcanic equivalents of SPENCES BRIDGE GROUP

MESOZOIC

TRIASSIC AND/OR JURASSIC

LATE TRIASSIC AND/OR EARLY JURASSIC

TRJgd	Granodiorite (gd) (ALLISON LAKE, BROMLEY, CAHILL CREEK PLUTONS, part of MOUNT LYTTON COMPLEX)
TRJs,d	Small dioritic plutons in NICOLA GROUP: diorite and amphibolite of MOUNT LYTTON COMPLEX, dioritic HEDLEY INTRUSIONS
TJs,d,gd,u	Alkaline intrusions, syenite (s), diorite (d) (COPPER MOUNTAIN STOCK) syenodiorite (sd), gabbro (gb) and ultramafic rock (u) (TULAMEEN COMPLEX)
TRJC	CULTUS FORMATION: argillite, sandstone, minor carbonate

LATE TRIASSIC

NICOLA GROUP

TRNv	Volcanics, undifferentiated mafic to felsic volcanics and minor argillite
TRNw	Western volcanic facies of NICOLA GROUP: felsic to intermediate pyroclastics, argillite, local carbonate
TRNc	Central volcanic facies of NICOLA GROUP: intermediate, feldspar and feldspar augite porphyry pyroclastics and flows
TRNe	Eastern volcanic facies of NICOLA GROUP: mafic, augite and hornblende porphyry pyroclastics and flows
TRNs	Sedimentary facies of NICOLA GROUP: argillite, sandstone, tuff and local mainly carbonate clast breccia and conglomerate
TRNm	Amphibolite, foliated diorite, mylonite and chlorite schist, and minor marble derived from NICOLA GROUP

TRIASSIC

TRCC	CAMP COVE FORMATION: siliceous argillite, mafic volcanics
TRSP	SPIDER PEAK FORMATION: mafic volcanics
TRgn	Granite-gneiss of Hornet Creek
PMc	Carbonate in MOUNT LYTTON COMPLEX
PMC	Cogburn schist: meta-chert, pelite, amphibolite, marble, ultramafic rock; possible correlative of HOZAMEEN/BRIDGE RIVER COMPLEXES, metamorphosed in Cretaceous
PMu	Ultramafic rock, local gabbro

PALEOZOIC AND/OR MESOZOIC

PERMIAN TO JURASSIC

HOZAMEEN COMPLEX (PJH-PJHv)

PJH	Undifferentiated, chert, pelite, mafic volcanics, minor limestone, gabbro and ultramafic rock
PJHv	Mafic volcanics

BRIDGE RIVER COMPLEX

PJBR	Siliceous and chlorite schist, phyllite: correlative with HOZAMEEN COMPLEX but west of Fraser River
PJu	Ultramafic rock and local gabbro associated with HOZAMEEN and BRIDGE RIVER COMPLEXES

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FIGURE 5A
LEGEND TO FIGURE 5
CONTINUED
LOWER HALF

MESOZOIC

SPENCES BRIDGE GROUP

KSB	*Intermediate, locally felsic and mafic volcanics, sandstone, shale, conglomerate*
KSBS	*SPIUS CREEK FORMATION of SPENCES BRIDGE GROUP mafic volcanics*
Ks	*Chert-grain sandstone and conglomerate*

LATE EARLY, EARLY LATE CRETACEOUS

PASAYTEN GROUP

KPw,v	*(a) undifferentiated sandstone, conglomerate, argillite, (b) "Winthrop facies"* **(Pw)** *of PASAYTEN GROUP, arkose, conglomerate, argillite and minor red beds and tuff, (c), "Virginian Ridge facies"* **(Pv)** *of PASAYTEN GROUP, chert-grain sandstone, argillite) as mapped, Pasayten lies east of Chuwanten Fault, but is probably a non-marine facies equivalent of the upper part of the JACKASS MOUNTAIN GROUP*

EARLY AND MIDDLE CRETACEOUS

JACKASS MOUNTAIN GROUP

KJ	*Sandstone, argillite, conglomerate, lies west of Chuwanten Fault, marine and non-marine, upper part is probably a facies equivalent of PASAYTEN GROUP*
Kqd	*Quartz diorite* **(qd)**, *diorite* **(d)**, *granodiorite* **(gd)**, *minor ultramafic rock (SPUZZUM PLUTON), local gneissic phases*
Kgn	*Felsic and mafic gneiss (Breakenridge gneiss)*

JURASSIC(?) AND CRETACEOUS

JKB	*BROKENBACK HILL FORMATION intermediate pyroclastics and flows*
JKP	*PENINSULA FORMATION sandstone, conglomerate, gradational upwards into BROKENBACK HILL FORMATION*

LATE JURASSIC AND EARLY CRETACEOUS

JKgd	*Granodiorite and gneiss (EAGLE PLUTONIC COMPLEX)*
JKd	*Diorite and amphibolite (EAGLE PLUTONIC COMPLEX)*
JKg	*Muscovite-biotite granite and pegmatite (EAGLE PLUTONIC COMPLEX)*

LATE JURASSIC

lJs	*Sandstone, conglomerate, argillite ("Thunder Lake sequence" of Manning Park area)*
JK	*KENT FORMATION conglomerate, sandstone, argillite*
lJg	*Granite and granodiorite, in many places features pink feldspar megacrysts (OSPREY LAKE BATHOLITH)*
JB	*BILLHOOK CREEK FORMATION intermediate volcaniclastics*

MIDDLE AND LATE JURASSIC

JM	*MYSTERIOUS CREEK FORMATION argillite, tuff*

EARLY AND MIDDLE JURASSIC

JH	*HARRISON LAKE FORMATION intermediate, locally felsic flows and pyroclastics; local argillite, conglomerate*

LADNER GROUP

JL	*Argillite, slate, siltstone, tuff; as mapped, includes minor amounts of Upper Jurassic sandstone and conglomerate, possibly correlative with "Thunder Lake sequence"*
JD	*DEWDNEY CREEK FORMATION of LADNER GROUP sandstone, argillite; local mafic to intermediate volcanics*

PALEOZOIC

ORDOVICIAN TO TRIASSIC

APEX MOUNTAIN COMPLEX

OTSV	*Argillite, chert, mafic volcanics, minor carbonate and ultramafic rock (includes BRADSHAW, INDEPENDENCE, OLD TOM and SHOEMAKER FORMATIONS)*

PERMIAN

VEDDER COMPLEX

Pv	*Amphibolite, gneiss, minor ultramafic rock*

DEVONIAN TO PERMIAN

CHILLIWACK GROUP

DPc	*Undifferentiated pelite, sandstone, minor conglomerate, mafic and felsic volcanics; Permian carbonate* **(Pc)**, *Pennsylvanian carbonate* **(Pc)**

PROTEROZOIC AND PALEOZOIC

YELLOW ASTER COMPLEX

PPY	*Metadiorite and gabbro (includes BAIRD DIORITE on Old Settler Mountain)*

Area of outcrop

Geological boundary (defined, approximate, assumed)

Bedding, tops known (inclined, vertical)

Schistosity, gneissosity, cleavage foliation (inclined, vertical)

Lineation, axis of minor fold, mineral/clast elongation (horizontal, inclined)

Major fold axis (syncline, anticline, overturned fold arrow indicates plunge)

Lineament (from airphoto)

Fault (defined and approximate; assumed and extension beneath drift)

Normal fault (bar indicated downthrown side)

Strike-slip fault (arrow indicates relative movement)

Thrust fault and "layer parallel" fault, teeth on upper plate

Geological mapping by J.W.H. Monger, Geological Survey of Canada (1984-86). In addition, this compilation includes material from numerous sources (published reports by G.S.C. and B.C. Geological Survey, theses mainly at the University of British Columbia, and recent mapping by G.E. Ray, B.C. Geological Survey, in the Coquihalla and Hedley areas

Geological cartography by the Geological Survey of Canada

Thematic information on this map is reproduced directly from author's copy

Colour separations were obtained by camera from author's hand coloured manuscript map, colours of some units may appear similar

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

Base map at the same scale published by the Surveys and Mapping Branch in 1970. Road modifications by the Geological Survey of Canada

Copies of the topographical edition of this map may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, Ontario, K1A 0E9

Mean magnetic declination 1989, 20°39' East, decreasing 8.3' annually. Readings vary from 20°09'E in the SE corner to 21°08'E in the NW corner of the map

Elevations in feet above mean sea level

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volcanic and plutonic rocks of the Nicola Group that were deposited along two regional-scale northwesterly trending fault systems during the Late Triassic Period. The Nicola Group volcanics are generally interpreted to correlate with the Late Triassic-age Quesnel belt in central British Columbia and with the Takla and Stuhini volcanic assemblages in northern British Columbia and Yukon (Preto, 1979).

The Nicola Group is divided into three belts by the two major fault systems. These belts are named the Eastern, Central and Western Belts (Preto, 1972 and 1979; Monger 1989).

The Eastern Belt consists of a westerly facing sequence of volcanic siltstone, laharic deposits, conglomerates and tuff. Included in this belt are some alkaline flows near small stocks of micromonzonite porphyry.

The Central Belt contains the oldest rocks in the Nicola Group. They are mostly massive pyroxene and plagioclase-rich flows of andesitic and basaltic composition, coarse volcanic breccia, conglomerate and lahar deposits with lesser amounts of fine-grained pyroclastic and sedimentary rocks (Preto, 1979). Stratigraphic relationships and local facies changes indicate that the Central Belt rocks were deposited between two active fault systems that now define the boundaries of the belt.

Intrusive rocks are common throughout the Central Belt. They range in composition from gabbro and diorite to syenite and monzonite. At Copper Mountain these intrusions are subvolcanic phases of the Nicola volcanics (Rice, 1947; Preto, 1972). This opinion is confirmed by radiometric dating of both the volcanic and intrusive rocks at Copper Mountain by several researchers (Preto, 1972).

Sinclair and White (1968) determined a mean age for biotites in the Copper Mountain Stock of 193.5 MY.

The Copper Mountain Stock was mapped by Dolmage (1934) and Montgomery (1967). It was found to be a roughly concentrically differentiated intrusion grading from augite diorite at the border through monzonite to perthosite pegmatite.

The Copper Mountain Stock is the most southerly of the Copper Mountain intrusions. North of it are the Lost Horse Intrusions, a very complex body of rocks containing intrusive dykes, rafts and irregular pods intermixed with Nicola volcanic rocks. Interpretation is complicated further by a large amount of andesite and basalt in various stages of resorption within the intrusive bodies.

The Lost Horse Intrusives are very important in the history of ore development at Copper Mountain. Most of the ore mined to date is from the area extending from the Lost Horse Intrusives to the northeastern boundary of the Copper Mountain Stock.

The Voigt and Smelter Lake Stocks are located north of the Lost Horse intrusions (Figures 4 and 5). They are diorites that are interpreted by Montgomery (1967) to consist of undifferentiated magma from the same source as the Copper Mountain Stock and Lost Horse Intrusions. It is speculated that the Smelter Lake and Voigt stocks may be differentiated at depth.

The Western Belt of the Nicola Group differs from the Eastern and Central belts in that there is no obvious source area for the volcanics of that belt. Rocks of the Western Belt are the youngest in the Nicola Group. They form an easterly facing sequence of flow and pyroclastic volcanics that pass upward to well-bedded limestone. The volcanic flows of the Western Belt are commonly richer in plagioclase than those of the other belts and include a considerable amount of andesite, dacite and rhyolite with minor amounts of basalt. Many of these volcanic flows are subaerial (Preto, 1979).

The Late Triassic-age Bromley Pluton intrudes Nicola Group volcanics in the Chalco Star Property-area northeast of Copper Mountain (Figure 5). This intrusion is mainly granodiorite (Monger, 1989). It is assigned to the Mount Lytton Complex which includes the Allison Lake, Bromley and Cahill Creek plutons.

Southeast of the Chalco Star Property and due east of Copper Mountain near Agate Mountain is an area where mostly intermediate volcanic rocks of the Late Cretaceous-age Spences Bridge Group are exposed (Monger, 1989). Minor lithologies included in this group are rhyolitic and basaltic flows, sandstone, shale and conglomerate.

Rocks of the Spences Bridge Group are intruded by Middle to Late Cretaceous-age quartz monzonite of the Verde Creek Pluton and unconformably overlain by volcanic and sedimentary rocks of the Eocene-age Princeton Group (Monger, 1989).

East of Copper Mountain and south of the Chalco Star Property the Princeton Group comprises intermediate volcanic flows with prominent hornblende needles in an aphanitic matrix (Figure 5). North of the Chalco Star Property, Princeton Group rocks include sandstone conglomerate and argillite containing a significant number of coal measures (Rice, 1947).

The Mine Dykes at Copper Mountain trend northwest-southeast and range in composition from trachyte to rhyolite and can be from 0.3 to 61 m (1 to 200 ft) thick. Their habit of splitting and coalescing throughout the orebodies causes significant local dilution problems at the mine (Preto, 1972).

Fahrni (1962) related the Mine Dykes to the Late Cretaceous Otter intrusions (Figure 4) and were known to cut the Verde Creek Pluton which was dated at 99.5 MY (Preto, 1972) (Figure 5).

The Mine Dykes are subsequently cut by andesite porphyry dykes that trend northeast-southwest; at right angles to the Mine Dykes (Dolmage 1934). Preto (1972) suggested that these later andesitic dykes were related to deposition of the Eocene-age Princeton Group volcanics.

Pleistocene-age unconsolidated till and glacio-fluvial sediments fill many of the valley bottoms and mantle gentler slopes in the area around the Chalco Star Property.

2.2 Regional Deformation and Metamorphism

Volcanic and sedimentary rocks of the Nicola Group seem to have been deposited in an active rift zone defined by two regional-scale northwesterly trending normal fault systems. As has been mentioned previously, the Nicola Group was segregated into three belts by the two fault systems.

Near Kingsvale the Western and Central belts are separated by the Fig Fault (Monger, 1989). Southward, the boundary follows a series of unnamed faults that pass east of the Tulameen Complex and are buried beneath Princeton Group volcanic rocks west of Copper Mountain. The Central and Eastern belts are separated by the Allison and Sommers Creek Faults north of Princeton. South of the town, the belts are separated by the Boundary Fault which passes west of the Copper Mountain Stock (Figure 5).

The Central Belt seems to have been deposited in the graben of the rift. It contains the oldest and thickest succession of Nicola volcanics which are associated with the most mafic to intermediate subvolcanic intrusions.

At Copper Mountain the volcanics, intrusives and ore-bearing fractures have all been dated as Late Triassic-age, about 193 million years old (Preto, 1972). There, many of the local open folds and most of the major fracture systems have been determined to have been generated during deposition of the volcanic pile and intrusion of subvolcanic magma.

Four major sets of fractures have been recognized at the Copper Mountain Mine: east-west faults, mine breaks, northwest-trending faults and Boundary Fault, and northeast-trending faults. Their attributes were described as follows:

East-west Faults: These structures appear to be relatively old, and to have originated in pre-mineralization time. Later dilation in Tertiary time is, however, indicated, as some of the faults are followed by Tertiary dykes,...

Mine Breaks: A system of faults which trend slightly north of east to northeast with northerly dips of roughly 60% has been known for many years in the old Copper Mountain mine area... Though unmineralized themselves they have been considered to be ore controls by the mine staff. These are probably relatively old structures as suggested by their relation to mineralization. Though of slightly different attitude, they could belong to the same set as the east-west faults.

Northwest-trending Faults and Boundary Fault: The main Copper Mountain fault system is the most important structure of this group and has been known and mapped for many years by those who have worked in the area. Throughout its known length of more than 12,000 feet it trends northwest and dips vertically. At some places in the mine area the fault approaches within 150 feet of the stock contact but never cuts the intrusive... In the Copper Mountain mine area the development of a marked schistosity and biotite alteration is reported to have developed in the volcanic rocks over widths of more that 50 feet on either side of the fault (Fahrni, 1951, p.208). In the same area the fault itself is reported to change rapidly from a 3 to 4-foot gouge zone to a 20-foot zone of chloritic alteration or... to a 60-foot zone of narrow, branching gouge seems... The history of the Main fault system has been said to have been long and complex...

Northeast-trending Faults: At least two definite and one possible major structure, as well as a number of smaller ones, are indicated in this group. As in the case of the northwest and east-west trending faults, the history of these faults has probably been relatively long and complex.

Preto, V.A.; 1972: pp.53-55.

As at Copper Mountain, most of the folding and faulting in the Nicola Group rocks seems to be related to local emplacement of the volcanic pile and subvolcanic intrusions and not regional deformation due to mountain building. North of Kingsvale, Shau (1968) mapped a series of upright to overturned folds that were later related to the emplacement of the Nicola Batholith as they were confined to its southern terminus (Preto, 1979). The Meander Hills syncline, a large structure in Nicola Group rocks was proposed by Rice (1947) to extend from the Meander Hills to a point just west of Princeton. Later bedding plane studies indicated that the Nicola rocks were not folded but arranged in a series of roughly microclinal panels separated by faults (Preto, 1979).

Local folding and faulting occurred near the margins of the granitic plutons that intruded Nicola Group rocks from the Late Triassic to Late Cretaceous periods. Movement along the two main boundary fault systems within the Nicola Group rocks was probably due to compressive stresses at that time. Late Cretaceous folding in the Kingsvale and Spences Bridge rocks north of Princeton was oriented east-west due to north-south compression (Rice, 1947).

Early Tertiary-age fault movement in the Princeton area seems to have been mainly due to crustal tension resulting in normal faulting on many of the regional breaks. Sediments and volcanic rocks of the Eocene-age Princeton Group were deposited in small fault-bounded basins at that time. Rice (1947) suggested that east-west folding of Princeton Group rocks was the result of north-south compression during the Miocene Age.

Rocks in the Princeton area have undergone low-grade regional metamorphism resulting in lower greenschist facies mineral assemblages (Preto, 1972). Thermal aureoles of varying thicknesses and metamorphic grades have been mapped in sedimentary and volcanic rocks adjacent to intrusions.

At Copper Mountain, pervasive metasomatism near fractures accompanies ore deposition (Preto, 1972; Rice 1947; Dolmage, 1934). In other mineralized areas of the region, metasomatism was found to be almost absent. For example Lefebure (1976) found metasomatism to be almost absent in mafic volcanic rocks near the Big Kid copper deposit at the Fairweather Hills near Aspen Grove.

2.3 Mineralization at Copper Mountain

The copper deposits at Copper Mountain were divided by Dolmage (1934) into three genetic and mineralogical groups which were listed by Preto (1972) in order of decreasing economic importance to underground mining as follows:

(1) Bornite Deposits: These concentrations occur mostly in altered rocks close to the Copper Mountain Stock and are characterized by a high bornite to chalcopyrite ratio, near absence of pyrite, and small amounts of magnetite. Associated gangue minerals are orthoclase, albite, augite, biotite, epidote, and zoisite.

(2) Chalcopyrite-hematite Deposits: These deposits are found within the Voigt Stock. They are much smaller than the bornite deposits and consist of coarse-grained hematite with lesser amounts of pyrite, chalcopyrite and magnetite in a gangue of calcite, orthoclase, and some quartz.

(3) Chalcopyrite-pyrite Deposits: These deposits were subeconomic for the underground mining that was conducted at Copper Mountain until 1957. They contained large amounts of pyrite with some chalcopyrite. They occurred in altered Nicola Group rocks where they were intruded by Lost Horse Intrusions.

Preto (1972) reclassified the copper deposits at Copper Mountain into four types that were more relevant to the large-scale open pit mining that has been conducted in the area since 1972. Preto's classification was as follows:

GROUP A - DISSEMINATIONS AND STOCKWORKS MOSTLY OF CHALCOPYRITE AND PYRITE IN ALTERED NICOLA VOLCANIC AND/OR LOST HORSE INTRUSIVE ROCKS: This broad group of deposits is by several orders of magnitude the most important in the Copper Mountain area...

The Copper Mountain deposits have recently been specifically classified as complex porphyry deposits of the syenite clan, and those of the Ingerbelle, as skarn deposits gradational to the porphyry deposits (Southerland-Brown et al., 1971, pp. 124-125). Other workers (Mccauley, 1971) place more emphasis on the extensive metasomatism, evidence of pneumatolitic activity, and the formation and redistribution of magnetite associated with the Copper Mountain and Ingerbelle deposits, and consider them pyrometosomatic.

All deposits in this group are spatially and, it is believed, genetically associated with late phases of the Copper Mountain intrusions, by far the most productive of which are those of the Lost Horse suite. The sulphide deposits, be they in volcanic or in intrusive rocks, are associated with zones of extensive and locally intense wallrock alteration which include development of biotite, albite, epidote, pyroxene, actinolite, potash feldspar, and scapolite. Secondary garnet, sphene, and apatite are also found in very small amounts in some of the deposits and was observed only rarely in minor amounts in some thin sections.

GROUP B - HEMATITE-CHALCOPYRITE AND MAGNETITE-CHALCOPYRITE REPLACEMENTS IN ROCKS OF THE VOIGT STOCK: This group of mineral deposits is distinctive in both its mineralogy and in its association with diorite of the Voigt stock. Although the mineralization is locally higher grade than in deposits of Group A, metal concentrations in this group have so far failed to be of commercial value, and have a much lower potential of being so. The main reason for this is that mineralization is confined to narrow zones of shearing and brecciation, and even within these zones is generally irregularly distributed and variable.

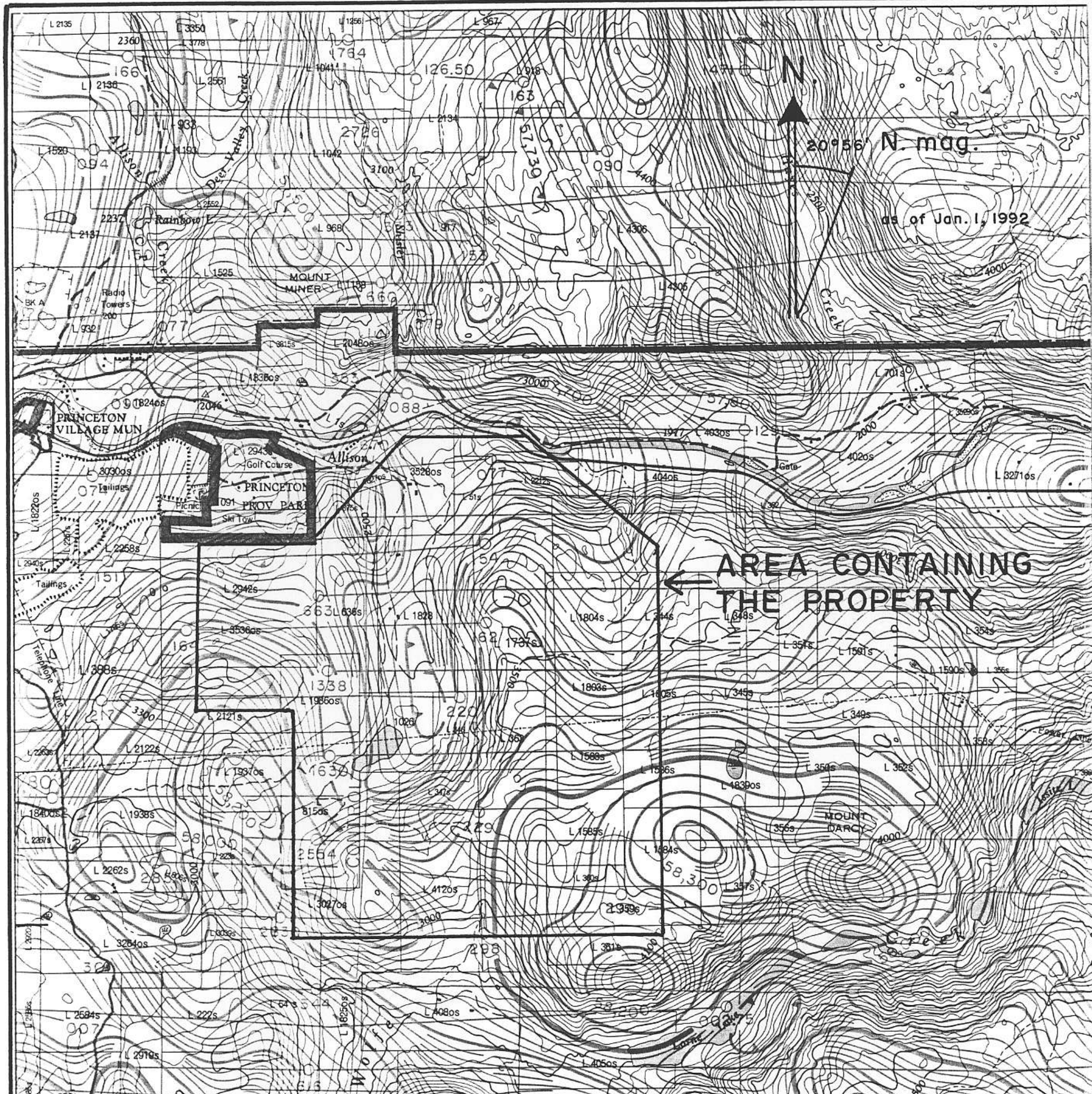
GROUP C - BORNITE CHALCOPYRITE CONCENTRATIONS ASSOCIATED WITH PEGMATITE VEINS IN ROCKS OF THE COPPER MOUNTAIN STOCK: Concentrations of this type are found at several places in the Copper Mountain stock. Mineralization is always associated with or occurs in veins and dykes of red potash feldspar pegmatite. Though grades in smaller lenses or shoots may be high, no orebody has yet been developed in mineralization of this type, and the writer believes that the potential of so doing is low...

GROUP D - MAGNETITE BRECCIAS AND REPLACEMENTS IN LOST HORST INTRUSIVE ROCKS: A number of occurrences of magnetite breccia are found in rocks of the Lost Horse suite, and are commonly associated with later phases of this suite. The rock at this locality is usually a brecciated monzonite or syenite porphyry that shows a considerable degree of pink potash feldspar metasomatism and has been healed by interlacing veins of coarse magnetite. Copper sulphides are generally scarce or lacking at these localities.

Preto, V.A.; 1972: pp.62-83.

2.4 Regional Geophysics

An aeromagnetic survey was flown over the Princeton area in 1969 for Amex Exploration Inc. The survey was re-compiled and published in 1973 by Geoterrex Limited. The part of the survey that includes the Star Trek Property is available from the Department of Energy, Mines and



LEGEND

ISOMAGNETIC LINES (absolute total field

500 gammas . . . .

100 gammas . . . .

20 gammas . . . .

10 gammas . . . .

Magnetic depression . . . .

Flight lines 15 687

Flight altitude 1000 feet above ground level

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Figure 6

CASSIAR EAST YUKON EXP. LTD.

SCALE

0 1 2 3 km

0 1 2 mi

KOOTENAY KING RESOURCES INC.

AEROMAGNETISM:
E.M.R. MAP 8526G

CHALCO STAR PROPERTY

49°26'N., 120°26'W.

SIMILKAMEEN M.D., B.C., N.T.S. 92H/8

JOHN OSTLER; M.Sc., P.Geo., JULY, 1992

Resources (G.S.C.) as Map 8526G (Figure 6).

In general, areas underlain by volcanic rocks are recorded as magnetic highs and areas underlain by intrusions are recorded as magnetic lows.

3.0 PROPERTY GEOLOGY AND MINERALIZATION

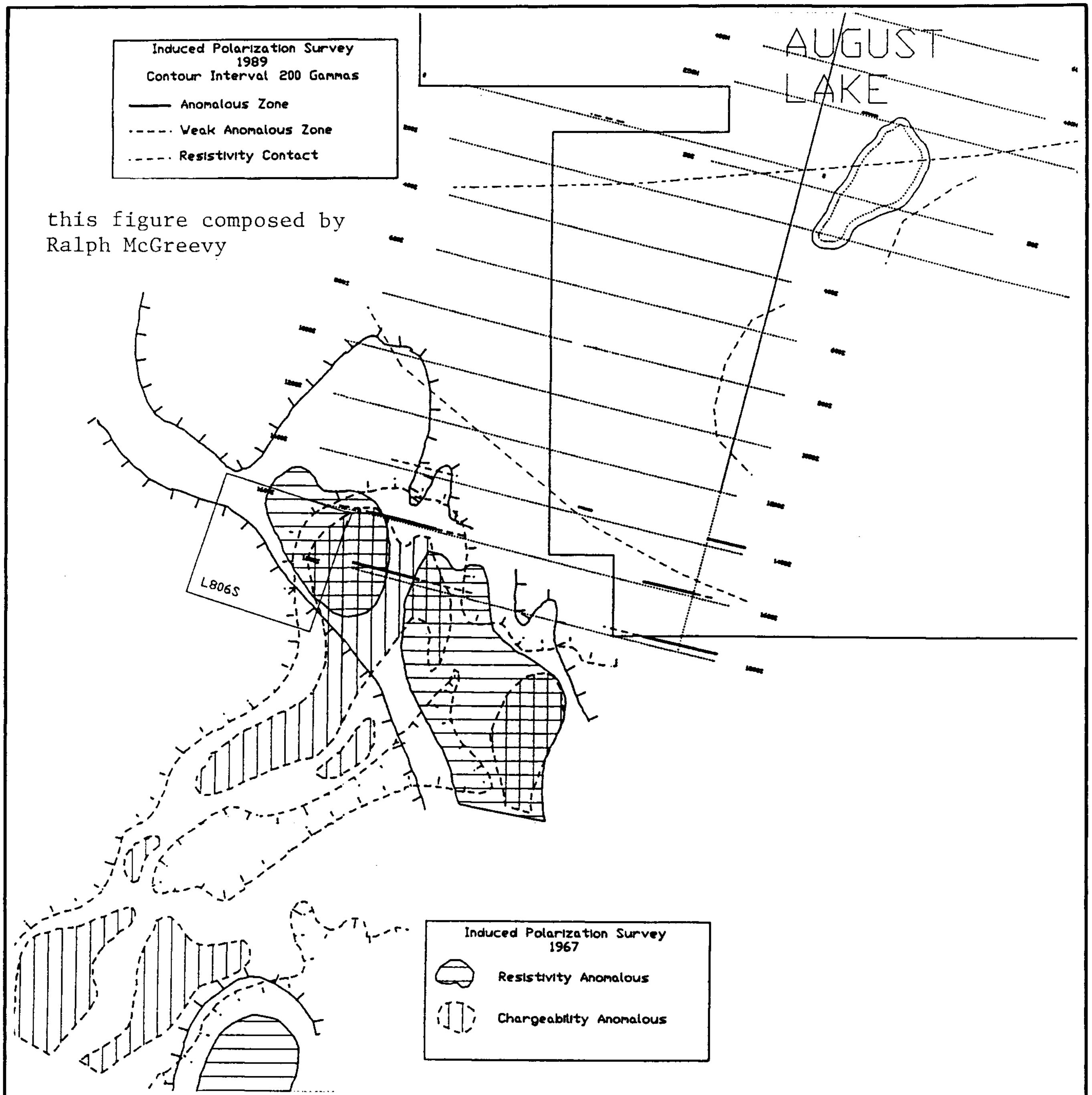
3.1 Recent Exploration on the Chalco Star Property-area

Prospecting and mineral exploration programs have been conducted in the whole region around Princeton for a century. Undoubtedly, many have walked over the ground now covered by the Chalco Star Property during the past. That work may or may not be recorded in reports and letters which remain of unknown value.

For the purposes of this study the commencement of recent exploration in the claim-area began in the mid-1960s when the oldest available assessment reports were filed with the provincial government.

Copper anomalies from a reconnaissance survey and minor chalcopyrite showings near Lot 806 (Knob Hill) southwest of August Lake prompted Federated Mining Corp. Ltd. and Glen Clark to have Geoterrex Ltd. conduct an induced polarization survey in that area (Clark, 1967). Two parallel zones of anomalous chargeability were traced for 2.4 km (1.5 mi) southeast of the lake. These zones were interpreted to be westward-dipping and to be located from 11.3 to 76.2 m (37 to 250 ft) below surface (Norgaard, 1968) (Figure 7). The zones could not be traced accurately near August Lake because of deep overburden in the valley bottom. Resistivity anomalies flanking the chargeability anomaly were interpreted to have been due to the presence of igneous intrusions.

During the early 1970s Dynasty Explorations Limited optioned ground from Arcan Mining and Smelting Ltd. that was located on the lower slopes of the Darcy Mountains northeast of the Chalco Star Property-area. Dynasty was interested in the potential of the area adjacent to copper mineralization found in Nicola Group volcanic rocks that was described by Thompson (1972) as follows:



NOTE: For location on property, see Figure 2.

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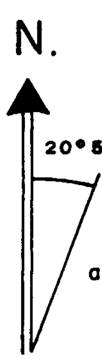
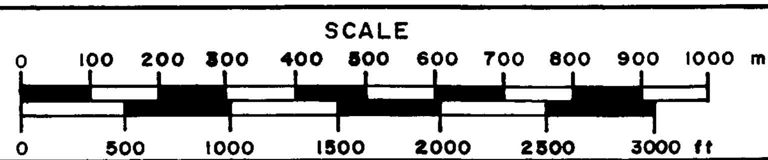


Figure 7

CASSIAR EAST YUKON EXP. LTD.



KOOTENAY KING RESOURCES INC.

I.P. SURVEYS
S.W. of AUGUST LAKE
CHALCO STAR PROPERTY
49°26'N., 120°26'W.

SIMILKAMEEN M.D., B.C., N.T.S. 92H/8

JOHN OSTLER; M.Sc., P.Geo., JULY, 1992

Chalcopyrite occurs in veinlets and as disseminated grains in coarse-grained granite near the contact with Nicola volcanic rocks. K-spar and sericite facies alteration of the granite are prominent. Some bornite and minor chalcocite occur as pseudomorphs of goethite after chalcopyrite were observed.

Thompson, W.D.; 1972: p. 2.

Thompson (1972) did not plot the locations of the copper showings that he described on his soil map, so their exact location remains unknown to the writer. It is suspected that they are located near the Copper Farm, Shamrock and Bonnie showings which are located as mineral locality No. 31 by Monger (1989) (Figure 5).

Thompson's soil geochemical survey resulted in the identification of several soil-copper anomalies.

The Copper Farm, Shamrock and Bonnie showings were reported on by L. Sookochoff in 1974 and W.G. Timmins in 1975. The showings were developed by a trench and three adits that were driven along mineralization in a north-south striking shear. The shear cut through Nicola Group andesites and agglomerates near their contact with granodiorite. Both the volcanic and intrusive rocks were reported to have been cut by quartz porphyry dykes (Timmins, 1975). Mineralization along the shear comprised sporadic lenses of chalcopyrite with minor tetrahedrite and bornite in a quartz and carbonate gangue (Sookochoff, 1974). A large area up the hill from the tunnels was covered by a brown gossan possibly due to underlying copper mineralization (Sookochoff, 1974).

A magnetometer survey was conducted over the area north of the old workings resulting in the definition of a magnetic high that measured about 1,700 gammas above local background levels located near the workings-area. The anomaly was interpreted to have been related to underlying diorite or granodiorite possibly containing high concentrations of magnetite or sulphide mineralization (Timmins, 1975).

Reportedly, a sampling and extensive bulldozer trenching program was conducted in 1980 on two zones of previously known copper showings in the property-area (Sivertz, 1983 and Hopper, 1984).

No reports from that program are known to the writer of this report.

By the mid-1980s Doug Hopper owned the area now covered by the Chalco Star Property. In 1984 he conducted a soil geochemical survey and sampled copper showings in the two zones which he named the North and South zones (Hopper, 1984). That work was commissioned by Pacific Seadrift, which was later known as Seadrift International Exploration Ltd.

Hopper (1984) identified three significant showings-areas in the North Zone located northeast of August Lake and a broad area of mineralization and alteration in the South Zone located about 1 km (0.6 mi) south of the lake (Figure 2). They were identified by their grid locations as follows:

NORTH ZONE:

16N, 24E	This is a small massive sulphide zone that ran 2475 ppm Cu with a soil-geochemical anomaly that extends for 200 m (656 ft) north and 300 m (984 ft) south of the showing.
21N, 17.5E	This is a large rusty gossanous zone containing some malachite in quartz-carbonate stringers. Copper contents range up to 1836 ppm Cu.
11N, 14E	This is an area with several old trenches that were expanded during the 1980 bulldozer trenching program. Showings of chalcopyrite and chalcocite are developed by the trenches. The soil survey results indicate that this showings-area is part of a copper-enriched zone that extends for 800 m (2624 ft) north-south and for about 350 m (1148 ft) east-west containing soil-copper contents up to 320 ppm Cu with associated high concentrations of lead, zinc and silver.

SOUTH ZONE:

11S, 2.5W	This is an area developed by old trenches that were expanded by bulldozer work. The trenches expose rock stained with malachite and lightly mineralized with chalcopyrite. The trenches are contained within an area of elevated soil-copper concentrations that is 1100 m (3608 ft) long and 450 m (1476 ft) wide. Concentrations of copper in these soils range up to 442 ppm Cu.

adapted from Hopper, D.; 1984: pp. 4-5.

G.W.G. Sivertz examined the property-area in 1983 and described showings he observed in the North and South zones. The writer has assigned Hopper's (1984) grid locations to Sivertz's (1983) descriptions and recorded them as follows:

NORTH ZONE:

11N, 14E;

The ... showing consist of chalcopyrite and pyrite in stringers and disseminations within siliceous, highly altered andesite tuff (fragmental). The sulfides are accompanied by large amounts of carbonate, magnetite, biotite, and epidote.

Many small-scale fractures and minor northwest-trending dykes up to 0.5 m thick intrude the altered volcanic rocks and appear to localize the occurrence of sulphide minerals. A 1.2 meter chip sample was taken across a section of volcanics between two northeast-trending fracture zones. This sample returned 0.22% copper, 0.05 oz/ton silver, and 0.006 oz/ton gold. Similar mineralization is exposed 10 meters to the northeast.

Bulldozer trenching 100 meters west of the old prospect pits reveals more altered volcanic rocks, several varieties of dykes, and a north-trending zone of intense quartz-ankerite alteration on rocks of unknown origin. A soil sample was taken above the exposed quartz-ankerite to retest the soil anomaly that prompted the trenching. This returned 56 ppm copper and 0.3 ppm silver. Malachite-chrysocolla staining was noted in a nearby quartz diorite dyke; a grab sample of this material returned 125 ppm copper and 5.3 ppm silver.

16N, 24E;

A series of trenches about 300 meters north of the old prospect pits exposes a large variety of dykes and altered rocks. Several small copper occurrences were noted, mostly malachite-chrysocolla in altered volcanic rocks at the margins of quartz diorite dykes. A chip sample was taken along 100m of trench crossing the trend of exposed volcanics and dykes; this returned 314 ppm copper and 0.6 ppm silver. Very little visible copper mineralization was noted in this composite chip sample.

SOUTH ZONE:

11S, 2.5W;

Bulldozer trenching ... in the south-central part of the property, has exposed patchy copper mineralization in intensely faulted and intruded Nicola volcanics. Five anomalous (124 ppm to 280 ppm copper) soil samples were obtained during the 1980 sampling program in this area, prompting the trenching operation. Copper mineralization consists of minor chalcocite, chalcopyrite and bornite with abundant chrysocolla in heavily weathered altered volcanics, and in relatively fresh-appearing porphyritic dykes. A 2 m chip sample across a mineralized, north-trending dyke and fault system returned 1.53% copper, 0.10 oz/ton silver, and 0.01 oz/ton gold. Quartz vein float, with very minor visible sulphides and much limonite, is associated with this fault/dyke system. A selected grab sample of quartz float assayed 0.52% copper, 15.9 oz/ton silver, and 0.01 oz/ton gold. Approximately 75 m north of the fault/dyke system the trenching has exposed a heavily weathered zone of altered intrusive rock which may be an extension of the fault/dyke system. A 1.0 m chip sample across this weathered zone returned 7100 ppm (0.71%) copper and 15.3 ppm silver.

Sivertz, G.W.G.; 1983: as quoted in
Hopper, D.; 1986: pp. 12-13.

Hopper (1984) hinted at the possibility that the North and South zones were both part of a single large mineralized area and that their segregation was apparent and due to poor rock exposure and dilution of soil metal contents in deep Recent sediments near August Lake.

During 1986 Seadrift International commissioned Hopper to continue extend his soil survey in the northern part of the property-area. Several small soil-copper anomalies were found there. Hopper (1986) performed Gausian curve statistical techniques on the data to improve definition of the anomalies without success.

By 1987 claims covering the property-area were owned by Gordon Webster of Vaneouver, B.C. who commissioned J.W. McLeod to report on a drill program conducted on in the South Zone that year.

McLeod (1987) reported that three drill holes were attempted in the fractured rock of the South Zone.

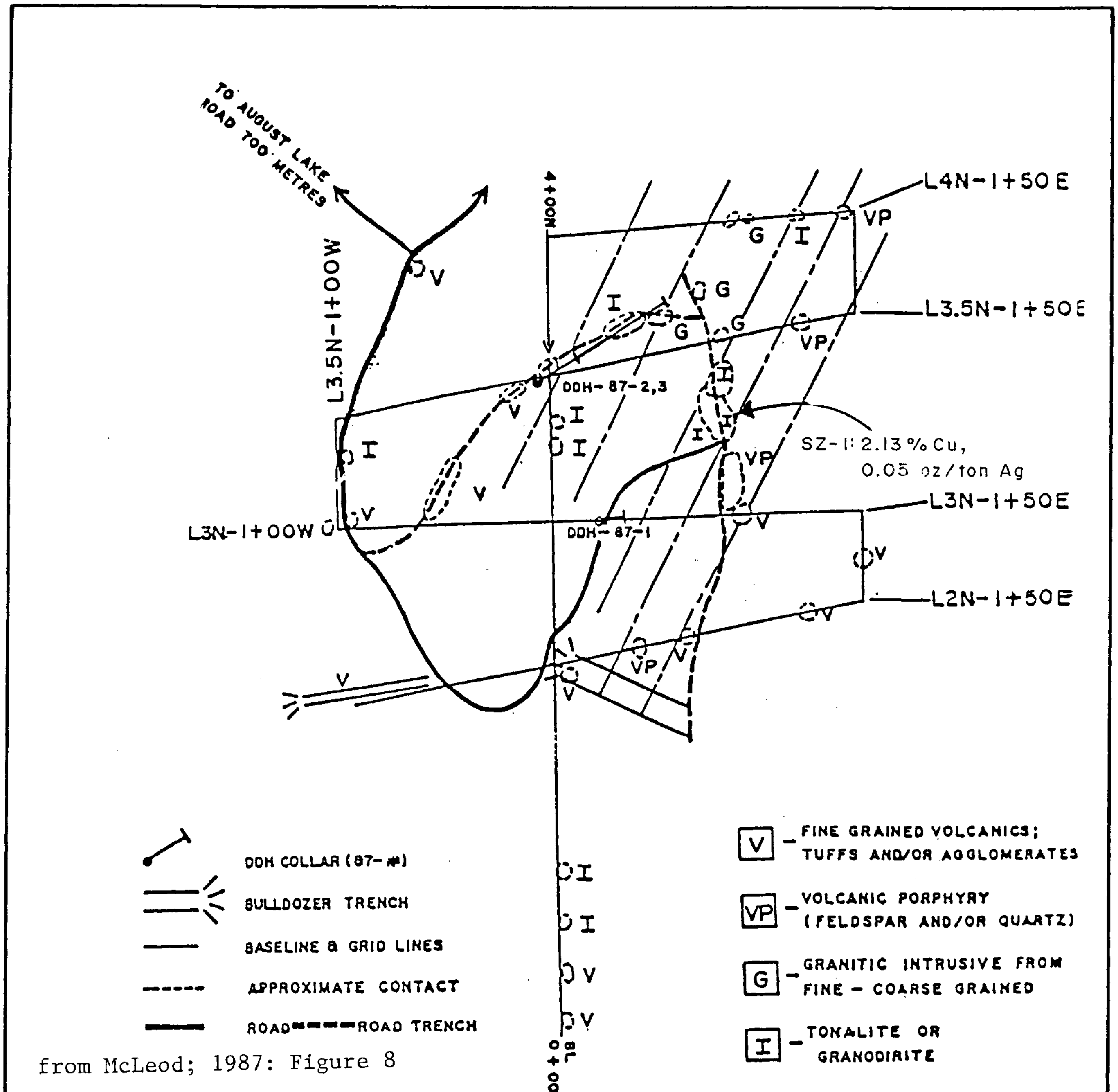
DDH-1-87 was attempted near the South Zone trenches (Figure 8). It was lost in broken rock at a depth of 29.88 m (98 ft) and did not reach its target, the down-dip extension of surface mineralization.

DDH-2-87 was drilled from a location down the hill from the first hole. It was drilled at an angle of -45° toward an area of surface mineralization north of that tested by DDH-1-87. DDH-2-87 was lost in broken rock at a depth of 23.17 m (76 ft) before reaching its target.

DDH-3-87 was drilled from the same set-up as DDH-2-87 at an angle of -60°. It penetrated 159.2 m (522 ft) of volcanics and felsic intrusive rocks. A well-mineralized section that assayed 0.18% copper, 0.25 oz/ton silver and 0.01 oz/ton gold was encountered from 85.5 to 96.0 m (280 to 315 ft) down the hole. McLeod's (1987) description of the geology in the South Zone was very similar to that of Sivertz (1983) quoted above.

Control of claims covering the property-area had passed to Gold Brick Resources Inc. by 1988. The company retained D.P. Taylor to supervise their 1988 exploration program.

Taylor (1988) was very encouraged by the results of the 1967 induced polarization survey conducted southwest of August Lake (Figure 7). He suspected that an anomalous structure extended northeastward beneath the August Lake valley. In order to improve definition of such a



from McLeod; 1987: Figure 8

NOTE: For location on property, see Figure 2.

N.

20°56' N. mag.

as of Jan. 1, 1992

SCALE

0 50 100 150 200 250 m

0 100 200 300 400 500 600 700 800 ft

KOOTENAY KING RESOURCES INC.

1987 DRILLING in the SOUTH ZONE

CHALCO STAR PROPERTY

49°26'N., 120°26'W.

SIMILKAMEEN M.D., B.C., N.T.S. 92H/8

JOHN OSTLER; M.Sc., P.Geo., JULY, 1992

Figure 8

CASSIAR EAST YUKON EXP. LTD.

PROFESSIONAL PROVINCE OF BRITISH COLUMBIA GEOSCIENTIST J. D. OSTLER structure, a soil-geochemical survey was conducted along the lower slopes flanking the August Lake valley and south of the present claim-area near the southwestern end of the Darcy mountains. Success was thwarted by thick overburden.

Taylor (1988) succinctly summed up his observations of economic mineralization in the property-area as follows:

It is considered that mineralization investigated to date is peripheral to the potential core mineralization on this property. The quartz veining and chalcopyrite veining and dispersions with associated anomalous gold values should be interpreted as mineralogical haloes of a centrally situated mineralized zone.

Study of the southern end of the Darcy Mountains and information from the 1987 drill holes show a marked increase in pyrite content and secondary chlorite and biotite alteration of andesites in this area. This situation becomes increasingly like a classic porphyry mineral zone with a pyritic halo containing traces of the protore mineralization, in this case copper with gold.

Taylor, D.P.; 1988: pp. 9-10.

Taylor (1988) recommended that a major drilling program should be conducted in the August Lake valley to test for a major porphyry copper deposit in that area. In order to aid target definition, he recommended that an induced polarization survey should be conducted between the area of the 1967 survey and August Lake.

The survey that Taylor recommended was conducted by S.J.V. Consultants Ltd. during 1989 (Visser, 1989) (Figure 7).

Visser (1989) found that the southwestern part of his survey-area was underlain by rocks with low resistivities which he interpreted as volcanics and the northeastern part of the survey-area was underlain by highly resistant rocks that were interpreted as intrusives. Two chargeability anomalies near the southwestern margin of the 1989 survey-area confirmed the chargeability anomalies discovered by the 1967 survey (Figure 7).

The writer believes that thick, water-saturated overburden masked results from the northern part of the 1989 survey-area. If bedrock had been exposed in that area, the 1989 induced polarization survey probably would have revealed several more chargeability anomalies.

Subsequently the claims were allowed to lapse, probably due to the onset of depression-level metal prices and poor financial markets. In 1991 the area was staked as the Star Trek Property by Doug Hopper, Eric Becker and Guy DeLorme who optioned the property to Kootenay King Resources Inc. later that year. During April 16 to 18, 1992 the Star Trek claims were restaked in their present form by Kootenay King Resources Inc.

3.2 Property Geology

Although most geologists that have conducted work in the area now covered by the Star Trek claims have commented on local geology, no concise property-scale geological map has been made of the area.

Rice (1947) (Figure 4) depicted the area now covered by the Chalco Star Property as being underlain by granodiorite of the Coast Intrusions in contact with Nicola Group volcanics. Monger (1989) (Figure 5) showed rocks exposed in the eastern part of the property-area as granodiorite forming part of the Triassic to Jurassic-age Bromley Pluton. Rocks exposed in the western part of the property-area were mapped as mafic volcanic flows and tuffs forming part of the eastern volcanic facies of the Late Triassic-age Nicola Group. Due to the necessities of scale, both of these regional maps indicated that there was a single contact that separated volcanic and intrusive rocks in the property-area.

Geologists who have conducted work programs in the property-area have commented on the complexity of volcanic-intrusive contacts that they have encountered. Sivertz (1983) briefly described the rocks exposed on the property as follows:

The ...property is underlain by Upper Triassic Nicola Group volcanic and sedimentary rocks, intruded by an Upper Triassic Copper Mountain type stock and Jurassic-Cretaceous rocks of the Coast Plutonic Complex. Swarms of pink-brown weathering, porphyritic to equigranular dykes were noted in the north-central part of the property; these resemble Lost Horse Intrusives.

Volcanic rocks noted were for the most part altered, siliceous lapilli tuff and altered porphyry of andesite composition. These rocks contain considerable amount of magnetite, secondary biotite, and epidote, especially near the Lost Horse dykes of north-central part of the property, and in an area of intense faulting and alteration in the south-central section.

Many ages and textures of intrusive rocks were noted. Equigranular rocks range from diorite to syenite in composition. Porphyritic dykes and small, irregular intrusions are found in mineralized areas in the north and south-central sections of the property. Some of the porphyrite dykes in the south-central area are very fresh in appearance and may be of Tertiary age.

Sivertz, G.W.G.; 1983: as quoted by
Hopper, D.; 1986: p. 11.

During the writer's examination of the Chalco Star Property during April 16 to 18, 1992 the accuracy of Sivertz's (1983) description of the property geology was confirmed.

As has been mentioned previously, the amount of rock outcrop available for mapping seems to depend on the steepness of slopes. The bottom of the August Lake valley and on the gentle front slope of the Darcy Mountains in the southeastern part of the claims, outcrop is reported to be scarce. Elsewhere on the property, rock outcrop is sufficiently plentiful to produce a useful property-scale geological map.

3.3 Property Mineralization

Known mineral showings on the Chalco Star Property are located in two areas that were named the North Zone and the South Zone by previous workers.

During the writer's examination of the property the major mineral showings were identified and sampled. The results are as follow:

NORTH ZONE:

11N, 14E;

This showing is located on the Chalco Star 2 claim about 1400 m (4592 ft) north and about 50 m (164 ft) east of its legal corner post (Figure 2). The old prospect trenches are just below a promentory at the crest of the eastern slope of the August Lake valley at an elevation of about 1026 m (3365 ft).

Nicola Group andesite in several of the trenches contains fine-grained stringers and disseminations of chalcopyrite, pyrite and magnetite in a gangue of quartz and carbonate. Mineralized stringers are most common near several thin, flay-lying dykes that are exposed in the upper trenches.

These pink felsic dykes are quite fresh and are probably Tertiary-age. The porphyritic andesites through which they intrude contain highly altered feldspar associated with abundant chlorite and epidote.

Bulldozer trenches located on the hill side below the old hand trenches contain very sparsely disseminated chalcopyrite in andesitic fragmental rocks.

The writer took a 25-chip composite sample of mineralized rock from the hand trenches (Appendix A, Figure 2). It ran: 0.11% copper, 0.04 oz/ton silver and traces of gold and molybdenum. These results were generally similar to those of a 1.2 m chip sample taken across a section of volcanic between two northeast-trending fracture zones in the hand trenches by Sivertz (1983). That sample returned 0.22% copper, 0.05 oz/ton silver and 0.006 oz/ton gold.

16N, 24E;

This showing is located on a grass-covered hill side at an elevation of about 945 m (3100 ft) above sea level. It is about 300 m (984 ft) north of the trenches at 11N, 14E on the Chalco Star 2 claim just east of the Chalco Star 1-2 claim line (Figure 2).

At this location, several bulldozer cuts have been made through shallow soil on the steep hill side into Nicola Group andesites. Very sparse malachite staining is visible in some of the trenches.

Sivertz (1983) obtained concentrations of 314 ppm copper and 0.6 ppm silver from a composite chip sample over a 100 m (328 ft) section in one of these trenches.

SOUTH ZONE:

11S, 2.5W;

The South Zone trenches are located on the Chalco Star 3 claim about 1200 m (3936 ft) south and 1500 m (4920 ft) west of the legal corner post (Figure 2). The bulldozer trenches and 1987 drill sites can be located easily on the steep, grass-covered hill side. McLeod's 1987 map of the area (Figure 8) is quite accurate.

The main showing is in a bulldozer trench at an elevation of about

980 m (3215 ft) above sea level. There, porphyritic Nicola Group andesites are intruded by a fresh porphyritic dyke, probably of Tertiary age. The dyke strikes northwesterly and dips steeply. Both the volcanics and the dyke rocks are washed with bright blue azurite and green malachite stain which is associated with finely disseminated chalcopyrite, pyrite and magnetite. McLeod (1987) reported that one of three drill holes attempted into the hill side below this showing intersected a 10.5 m (35 ft) thick section of volcanics and felsic intrusives that assayed: 0.18% copper, 0.25 oz/ton silver and 0.01 oz/ton gold. The other two drill holes were lost due to blocky ground (McLeod, 1987). If the mineralized structures encountered on surface and in the drill hole were the same, then mineralization would persist for at least 200 m (656 ft).

The writer took a 50-chip composite sample of mineralized and stained rock from the showing in the trench. It ran 2.13% copper, 0.05 oz/ton silver, a trace of gold and 0.002% molybdenum. Similar sampling by Sivertz (1983) returned 1.53% copper, 0.10 oz/ton silver and 0.01 oz/ton gold.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

4.1 (a) Geology

The Chalco Star Property-area is underlain by Triassic-age mafic volcanic rocks that have been assigned to the eastern volcanic facies of the Nicola Group. These volcanic rocks are intruded by dioritic to granodioritic bodies of various sizes and shapes that range in age from Triassic to Cretaceous. Both the Nicola volcanic and Mesozoic-age intrusive rocks have been fractured altered and intruded by younger dykes of varying compositions.

The stratigraphy, fracturing and alteration are similar in some respects to that at the Copper Mountain, Ingerbelle and Virginia ore bodies located a few kilometres south of the property-area.

At this time the development of these geological factors can not be assessed because no serious effort seems to have been made to map the geology across the property-area.

4.1 (b) Property Mineralization

Mineralization has been studied most intensively in the North and South zones located northeast and south of August Lake respectively.

In both zones, pyrite-chalcopyrite mineralization occurs with minor chalcocite and bornite in altered rocks associated with fracturing near intrusive contacts. This association of mineralization, alteration, fracturing and intrusion is similar to that of the Ingerhelle-area where ore is related to fracturing and alteration near the contacts of Nicola Group volcanic rocks and the Lost Horse Intrusions. It is quite possible that an orebody similar to Copper Mountain, Ingerbelle or Virginia may be buried beneath the Chalco Star Property-area and that the mineralization exposed on surface is part of a pyritic halo above the main orebody.

Mineralization similar to that found in the North and South zones may exist on other parts of the property. It may not have been found either because of poor local rock exposure or a lack of detailed exploration in those areas.

4.1 (c) Reliability of Recent Work

Almost all of the meaningful work conducted in the Chalco Star Property-area has been either induced polarization surveys or soil geochemical surveys. Two of the three holes drilled in the South Zone during 1987 were lost in blocky ground and geological work has been confined to small areas containing trenches.

The two induced polarization surveys and the many soil-geochemical surveys have enough overlap to provide reliable checks on the results of individual surveys. Fortunately, wherever these surveys overlap they confirm the reliability of the each other's data indicating that in general, the data from the surveys is reliable.

4.2 Recommendations

4.2 (a) Geological Mapping

The whole Chalco Star Property-area should be mapped at a scale of 1:5,000 in order to define stratigraphic, structural, fracture and alteration controls on exposed mineralization.

4.2 (b) Induced Polarization Survey

A multi-level induced polarization survey should be conducted over those parts of the Chalco Star 2, 3 and 4 claims east of the August Lake valley in order to identify the most appropriate areas for a deep drilling program.

4.2 (c) Deep Drilling Program

The most appropriate targets identified through geological mapping and induced polarization survey should be drilled extensively using a combination of reverse circulation and NQ core drilling.

The drilling target would be a large, relatively low-grade porphyry copper and gold deposit. Such targets require extensive drilling to locate and prove.

At present, the most promising deep drilling target on the property is the area beneath the South Zone where secondary copper mineralization has already been found to extend from surface to shallow depths along a dyke system. Similarities exist between mineralization in the South Zone on the Chalco Star Property and peripheral mineralization at the Ingerbelle deposit. A deposit similar to Ingerbelle may be found by drilling beneath the South Zone.

The writer recommends that the first drilling program be conducted beneath the South Zone unless some very pleasant surprises result from the induced polarization survey.

4.3 Recommended Program and Budget

Phase 1: Geological mapping; 1775 ha @ 1:5,000
Grid establishment for induced potential survey; east-west lines, 20 lines, 3 km long and 20 lines, 2 km long with stations marked at 50 m intervals

Wages:		
1 geologist; 15 days @ $300/day field	$ 4500.00	
and 7 days data compilation	$ 2100.00	
1 senior technician; 30 days @ $250/day	$ 7500.00	
2 junior technicians; 30 days @ $200/day	$12000.00	
	$26100.00	$26100.00
Transport:		
1 pick-up truck; 1 month @ $2400/month	$ 2400.00	
1 pick-up truck; 0.5 mo. @ $2400/month	$ 1200.00	
Gasoline and oil	$ 400.00	
	$ 4000.00	$ 4000.00
Equipment:		
2 chain saws @ $150/month each	$ 300.00	
Hip-chain thread	$ 350.00	
Flagging tape	$ 350.00	
Air photos	$ 100.00	
	$ 1100.00	$ 1100.00
Crew Costs:		
Hotel 30 days @ $60/day	$ 1800.00	
Meals; 3 men x 15 days x $50	$ 2250.00	
4 men x 15 days x $50	$ 3000.00	
	$ 7050.00	$ 7050.00
Report:		
Assay; 20 samples @ $40 each	$ 800.00	
Report production and drafting	$ 1600.00	
	$ 2400.00	$ 2400.00
Contingency		$ 6080.00
Cost of Phase 1 Program		$46730.00
G.S.T. 7% of cost of Program		$ 3270.00
Total cost of Phase 1 Program		$50000.00

Phase 2: Multi-level Induced Potential Survey covering the part of the property lying east of the August Lake valley; 100 line km of survey with stations at 50 m intervals along each line at a contract price of $1500/km including engineering and G.S.T.

Total cost of Phase 2 Program $150000.00

Phase 3: 2500 m (8200 ft) of reverse circulation drilling at a contract price of $65/m confirmed by 600 m (1968 ft) of NQ core drilling at a contract price of $160/m including engineering and G.S.T.

Reverse circulation drilling; 2500 m @ $65/m $162500.00
NQ core drilling; 600 m @ $160/m . . . . $ 96000.00

Total cost of Phase 3 Program $258500.00

Total cost of recommended program $458500.00

Note: A decision to proceed with phases 2 and 3 of the recommended program should be based on reasonable encouragement from positive results obtained from earlier phases of exploration.

West Vancouver, British Columbia
July 26, 1992

John Ostler

John Ostler; M.Sc., P.Geo.
Consulting Geologist

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To: KOOTENAY KING RESOURCES INC.

415 ROSLYN BLVD.
NORTH VANCOUVER, BC
V7G 1P1

Project : CHALCO STAR
Comments: ATTN: LARRY SOSTAD CC: JOHN OSTLER

Page Number : 1
Total Pages : 1
Certificate Date: 04-MAY-92
Invoice No. : I9213708
P.O. Number :
Account : JVN

CERTIFICATE OF ANALYSIS A9213708

SAMPLE	PREP CODE		Au oz/T	Ag oz/T	Cu %	Mo %
NZ-1	208	274	< 0.002	0.04	0.11	0.001
SZ-1	208	274	< 0.002	0.05	2.13	0.002

NZ-1 is from 11N, 14E in the North Zone
SZ-1 is from 11S, 2.5W in the South Zone

See page 27 for geological description and Figure 2 on page 3 for location

APPENDIX A

CERTIFICATION: [signature]

APPENDIX B

CERTIFICATE OF QUALIFICATION

I, John Ostler, of 2224 Jefferson Avenue in the City of West Vancouver, Province of British Columbia do hereby certify:

That I am a consulting geologist with business address at 2224 Jefferson Avenue, West Vancouver, British Columbia;

That I am a graduate of the University of Guelph in Ontario where I obtained my Bachelor of Arts degree in Geography (Geomorphology) and Geology in 1973 and that I am a graduate of Carleton University of Ottawa, Ontario where I obtained my Master of Science degree in Geology in 1977;

That I am licensed to practice as a Professional Geoscientist by the Association of Professional Engineers and Geoscientists of British Columbia and as a Professional Geologist by the Association of Professional Engineers, Geologists and Geophysicists of Alberta, and that I am a Fellow of the Geological Association of Canada;

That I have been engaged in the study and practice of the geological profession for over 20 years;

That this report is based on data in literature and a personal examination of the Chalco Star Claim Group located in the Similkameen Mining Division of British Columbia conducted on April 16 to 18, 1992;

That I have no interest in the Chalco Star Property nor in the securities of Kootenay King Resources Inc. nor do I expect to receive any.

Dated at West Vancouver, British Columbia this 26th day of July, 1992.

John Ostler

John Ostler; M.Sc., P.Geo.
Consulting Geologist