

Location/Identification

MINFILE Number:	092ISE149	National Mineral Inventory Number:	09217 Cu10
Name(s):	<u>JA</u> J.A., BETHLEHEM COPPER, HIGHLAND VALLEY COPPER		
Status:	Developed Prospect	Mining Division:	Kamloops
		Electoral District:	Yale-Lillooet
Regions:	British Columbia	Resource District:	Kamloops Forest District
BCGS Map:	0921046		
NTS Map:	092107W	UTM Zone:	10 (NAD 83)
Latitude:	50 28 30 N	Northing:	5593399
Longitude:	120 58 41 W	Easting:	643469
Elevation:	1195 metres		
Location Accuracy:	Within 500M		

Mineral Occurrence

Commodities:	Copper, Molybdenum		
Minerals	Significant:	Chalcopyrite, Bornite, Molybdenite, Pyrite	
	Associated:	Quartz	
	Alteration:	Sericite, Kaolinite, Calcite, Biotite, Quartz, Chlorite, Zeolite, Gypsum	
	Alteration Comments:	Gypsum	
	Alteration Type:	Argillic, Sericitic, Potassic, Propylitic	
	Mineralization Age:	Unknown	
Deposit	Character:	Stockwork, Vein	
	Classification:	Porphyry, Hydrothermal	
	Type:	L04: Porphyry Cu +/- Mo +/- Au	
	Shape:	Cylindrical	Modifier: Faulted, Fractured
	Dimension:	1300x300x300 metres	Trend/Plunge: 110 29
	Comments:	Axis of orebody.	

Host Rock

Dominant Host Rock:	Plutonic		
Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Triassic-Jurassic	-----	-----	Guichon Creek Batholith
Isotopic Age	Dating Method	Material Dated	
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Lithology:	Granodiorite, Quartz Diorite, Porphyritic Quartz Monzonite, Aplite Dike, Porphyritic Aplite, Quartz Plagioclase Porphyritic Dike		

Geological Setting

Tectonic Belt:	Intermontane	Physiographic Area:	Thompson Plateau
Terrane:	Quesnel		

Inventory

Ore Zone: JA	Year: 1972
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Category: Indicated

Report On: Y

Quantity: 260,000,000 tonnes

NI 43-101: N

Commodity	Grade
Copper	0.4300 per cent
Molybdenum	0.0170 per cent

Comments: Prelim. open pit design to extract 113 to 136 mt of ore. Approx. 117.923 mt at 0.51% Cu and 0.027% Mo are mineable by block caving.

Reference: Bethlehem Copper Corporation Annual Report 1973.

Capsule Geology

The JA deposit, discovered in 1971, is located at the bottom of Highland Valley where glacial overburden averages 170 metres thick. The property is underlain by the Early Jurassic-Late Triassic Guichon Creek batholith and straddles the north striking contact between older Guichon variety granodiorite to quartz diorite to the east, and younger Bethlehem phase granodiorite to the west. In the area of the deposit, the Bethlehem rocks carry several per cent rounded quartz phenocrysts in addition to the typical mafic phenocrysts. Aplite and mafic quartz-plagioclase porphyry dykes occurring in and adjacent to the orebody predate at least some of the mineralization. Aplite typically forms thin, discontinuous, sometimes porphyritic dykes and stringers. The porphyry dykes are generally more continuous and may be up to 10 metres wide. Thin, dark coloured, fine-grained post-ore dykes are less common. Along the southern margin of the deposit, a porphyry stock cuts the Guichon/Bethlehem contact and is elongated subparallel to the ore zone. Rocks in the stock vary from porphyritic quartz monzonite in the centre to porphyritic aplite toward the outer edges, with quartz, potassium feldspar, plagioclase and biotite being the main constituents. It is inferred to be an offshoot of the Bethesda phase.

The JA deposit is in a downdropped fault block bounded by west-northwest and north striking pre-mineralization regional faults. Faults with similar orientations exist in the JA zone. Mineralization is controlled by fractures and veins. In the mineralized zone, fracture and vein dips are bimodal at 60 degrees and 80 to 90 degrees and they appear to be subparallel. Areas with an average fracture spacing of 0.05 to 0.1 metres coincide with areas of highest copper grade.

Alteration is largely vein and fracture-related, and is complicated by the interaction of the porphyry stock and a hydrothermal system. Typical alteration products are chlorite and sericite, with less common epidote, secondary biotite, and copper or iron sulphides. The type and intensity of mafic alteration is partly controlled by rock type (ie. propylitization of hornblende and biotite). Phyllic alteration consists of quartz and flaky sericite assemblages as zones or selvages on scattered quartz veins. Potassium feldspar is common in the outer shell of the porphyry stock and in adjacent country rocks. Hydrothermal biotite is distributed widely but sparsely. Pervasive argillic alteration of feldspar to sericite, kaolinite, montmorillonite and calcite forms an elliptical zone around the orebody. Intensity decreases outward and slightly with depth. Quartz, calcite and zeolite veining is widespread. Gypsum occurs in late-stage fractures and veinlets.

The most prominent sulphide minerals are chalcopyrite, bornite, molybdenite and pyrite. The mineralized JA zone is elliptical in plan, measures 1300 by 300 by 300 metres and plunges 29 degrees at a 110 degree trend. The area of highest grade mineralization lies immediately north of the porphyry stock along the Guichon/Bethlehem contact in a zone of high density mineralized fractures and above average numbers of quartz veins and zones of phyllic alteration. There is a bornite-dominated zone in and adjacent to the porphyry stock succeeded upward and outward by chalcopyrite, then pyrite-dominated zones.

Indicated reserves are 260 million tonnes grading 0.43 per cent copper and 0.017 per cent molybdenum. Preliminary open pit design to extract 113 to 136 million tonnes of ore. Approximately 117,923,000 tonnes at 0.51 per cent copper and 0.027 per cent molybdenum are mineable by block caving (Bethlehem Copper Corporation Annual Report 1973).

Bibliography

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Placer Dome File

Falconbridge File

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Date Coded:	1985/07/24	Coded By:	BC Geological Survey (BCGS)	Field Check:	N
Date Revised:	1988/03/16	Revised By:	Lori K. Walters (LKW)	Field Check:	N