

PRODUCT

COPPER

PROVINCE OR  
TERRITORY

British Columbia

N.T.S. AREA 92 I/6, 7

REF. CU 3

NAME OF PROPERTY

HIGHMONT (IDE)

OBJECT LOCATED - No. 1 (East) Zone - (in Area 92 I/7).

UNCERTAINTY IN METRES 200. Lat. 50°25'55" Long. 120°59'50"

Mining Division Kamloops. District

County Township or Parish

Lot Concession or Range

Sec Tp. R.

OWNER OR OPERATOR AND ADDRESS

Highmont Operating Corporation

DESCRIPTION OF DEPOSIT

The property lies near the center of the Lower Jurassic Guichon batholith. Bedrock over most of the property is the Skeena variety of quartz diorite. Bethsaida quartz monzonite underlies the western part of the property and extends into the adjoining Lornex property along a contact that strikes about N20°W and dips about 50° east. The dominant geological feature is a west-northwest trending composite dyke that consists of a porphyritic quartz-eye variety of the Bethsaida phase, a leucocratic quartz porphyry, and local zones of tourmalinized breccia. The dyke is approximately 240 metres wide at Gnawed Mountain, narrows to approximately 60 metres between Nos. 2 and 3 deposits, and widens again to approximately 240 metres at the northwest edge of the property. The westernmost portion of the dyke appears to have been intruded along the Skeena-Bethsaida contact. The dyke is vertical in the central part of the property, but dips about 75°N in the eastern part. Offshoots into Skeena rocks have been found to extend 200 to 300 metres from the main dyke. At the western edge of the property a prominent northerly striking air-photo lineament is aligned with the Victor fault which occurs to the north of Highmont.

Hydrothermal alteration at Highmont formed potassic, phyllic, argillic, and prophyllitic facies. All are weak in comparison with those present at other Highland Valley porphyry deposits.

See Card 2 ....

Associated minerals or products of value - Molybdenum, rhenium.

HISTORY OF EXPLORATION AND DEVELOPMENT

The property is located on the south side of the Highland Valley, from 1 to 2 miles northwest of the summit of Gnawed Mountain. In addition to the No. 1 Zone, six other known mineralized zones are located as follows:

ZONE	LAT:	LONG:
No. 2	50°26'15"	121°00'30"
No. 3	50°25'50"	121°00'35"
No. 4	50°25'48"	121°00'05"
No. 5	50°25'30"	121°01'15"
No. 6	50°26'00"	121°01'15"
No. 7	50°25'35"	121°01'00"

Claims of the AM, IDE, and ANN groups, located in 1955 and 1956, were subsequently divided into at least three properties, the Highmont, the Minex (82 I/7, Cu 11), and Gnawed Mtn. (92 I/7, Cu 4). The Highmont portion of the ground was subsequently acquired by Brandywine Consolidated Mines Limited. The American Smelting and Refining Company optioned the property in 1957 and completed 400 feet of diamond drilling in 5 holes. The option was subsequently dropped. The company name (Brandywine) was changed in 1958 to Amador Highland Valley Coppers Ltd. In 1959 Kennco Explorations (Western), Limited, optioned the property, along with adjacent claims near the summit of the mountain which were held by Minex Development Ltd. A program of geological mapping, geochemical and geophysical surveys, trenching, and 148 feet of diamond drilling was carried out. The option was dropped later in the year. The company name (Amador) was changed in 1961 to Highmont Resources Ltd.

In 1962 Torwest Resources (1962) Ltd. acquired the 27 claim property from Highmont Resources through a stock transaction. Work by Torwest in 1962 in an area west of Gnawed Lake included an induced polarization survey, trenching, and 5,816 feet of diamond drilling in 20 holes. Anaconda American Brass Limited optioned the property in 1963 as part of a much larger group of claims. Work during 1964 and 1965 included geophysical surveys, trenching, and diamond drilling but it is not known how much of this was on Torwest ground. The option was terminated at the end of 1965.

Highmont Mining Corp. Ltd. was incorporated in March 1966, with Torwest Resources (1962) Ltd. as the chief shareholder, to acquire 34 recorded claims in the IDE, AM, Ann

see Card 2 ....

Mineral Development Sector, Department of Energy, Mines and Resources, Ottawa.

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**HISTORY OF PRODUCTION**

Production for 1981-82 totals 14,278,117 tons milled. From this ore 37,405,965 lbs of copper and 6,077,913 lbs of molybdenum were recovered (Teck Annual Reports).

**REFERENCES**

+Reed, A.J. and Jambor, J.L.; Highmont: Linearly Zoned Copper-Molybdenum Porphyry Deposits and their Significance in the Genesis of the Highland Valley Ores; The Canadian Institute of Mining and Metallurgy, Special Vol. 15, pp. 163-181, 1976.

++Bergey, W.R., Carr, J.M., Reed, A.J.; The Highmont Copper-Molybdenum Deposits, Highland Valley, British Columbia; The Canadian Institute of Mining and Metallurgy, Bulletin, Vol. 64, No. 716, pp. 68-76, December 1971.

International Geological Congress, Canada, 1972, Guidebook, Field Excursion A 09-C 09, pp. 58-60.

Reports of Minister of Mines, British Columbia: 1957, p. 27; 1959, p. 30; 1962, p. 49; 1963, p. 47; 1964, p. 89; 1965, p. 148; 1966, p. 158; 1967, pp. 150, 158-159; 1968, p. 189.

Geology, Exploration and Mining; British Columbia Dept. of Mines: 1969, p. 244; 1970, p. 330; 1971, p. 344; 1974, p. 131; 1975, p. E 83; 1976, p. E 95; 1977, p. E 145.

Mineral Policy Sector; Corporation Files: "Anaconda Company (Canada) Ltd.; Torwest Resources (1962) Ltd.; "Highmont Mining Corporation"; "Teck Corporation Limited".

Jambor, J.L. & Beaulne, J.M.; Sulphide Zones and Hydrothermal Biotite Alteration in Porphyry Copper-Molybdenum Deposits, Highland Valley, British Columbia; Paper 77-12, Geol. Surv. of Canada.

Anderson, John; Highmont Mine nears production; Canadian Mining Journal, May 1980, p. 89.

The Highmont Project; Mining Magazine, January 1981, pp. 18-29.

Jambour, J.L.; Research collection of over 2,800 samples of drill core selected by Jambour from 30,000 feet of Highmont core is contained in 31 rock trays stored at the Geological Survey of Canada, 601 Booth St., Ottawa; Mine plans and sections related to this extensive collection are on file with the Economic Geology Division.

**MAP REFERENCES**

- #Geology of the Highmont property and locations of the seven known deposits, Sc. 1":1,000 ft., Fig. 1, Report by Reed and Jambor, p. 165.
- Map 1010 A, Ashcroft, (Geol.), Sc. 1":4 miles - accomp. Memoir 262, Geol. Surv. of Canada.
- Map 886 A, Nicola, (Geol.), Sc. 1":4 miles - accomp. Memoir 249.
- Map 5211 G, Spences Bridge, (Aeromag.), Sc. 1":1 mile. (1968).
- Map 5212 G, Mamit Lake, (Aeromag.), Sc. 1":1 mile. (1968).
- \*Map 92 I/6 E, Spences Bridge, (Topo.), Sc. 1:50,000.
- \*Map 92 I/7, Mamit Lake, (Topo.), Sc. 1:50,000.

**REMARKS**

Comp./Rev. By	DMacR	DMacR	DMacR				
Date	6-78	01-81	11-83				

BCI 92 I/SE - 13  
92 I/SW - 36

NAME OF PROPERTY

HIGHMONT (IDE)

## DESCRIPTION OF DEPOSIT (continued)

The principal sulphide minerals at Highmont are pyrite, chalcopyrite, bornite, chalcocite and molybdenite. Fracture-controlled deposition predominates even on a microscopic scale; it is estimated that less than 5 per cent of the sulphides are disseminated. Most of the mineralization is in veinlets, less than 3 mm wide, which consist of sulphides and quartz and lack megascopic sericite selvages. In No. 1 zone the majority of the sulphides occur in two sets of vein fractures, one set striking N30°-40°W and dipping 80°NE, the other striking N40°050°E and dipping 45°NW. These fractures, however, are not distributed uniformly throughout the deposit, but are clustered in swarms that form zones of higher-grade mineralization. The No. 1 and No. 2 deposits dip northward, parallel to the orientation of the fracture sets and away from the composite dyke. Similarly the No. 3 and No. 4 deposits, which are south of the dyke, dip southward away from it.

Although faulting has not played a conspicuous role in the localization of the larger sulphide deposits at Highmont, the Nos. 5, 6 and 7 deposits may be related to movement along the Victor fault. The No. 5 deposit occupies a V-shaped wedge between a footwall shear, which strikes N20°W and dips 84°E, and a hanging-wall shear which strikes N11°W and dips 88°E. The No. 7 deposit, which strikes N20°W and dips 65°E occurs in Skeena rocks within 75 meters of the Bethsaida contact. The No. 6 deposit occurs in Bethsaida host rocks and may be the northwesterly extension of the No. 7 deposit. All three deposits may have been formed in tension gashes related to the Victor fault.

Tests on No. 1 Zone material indicate the molybdenite concentrate will contain approximately 0.017% rhenium.

## HISTORY OF EXPLORATION AND DEVELOPMENT (continued)

and Phyllis groups. Work from September 1966 to April 1967 included trenching, 61,116 feet of percussion drilling in 262 holes, and 8,278 feet of diamond drilling in 16 holes. This work more or less outlined the No. 1 and No. 2 ore zones. New financing was arranged and in August 1967 underground exploration was begun in an adit on the East (No. 1) zone at the 5,400 foot elevation. To February 1969 the underground work totalled 2,757 feet of drifting and cross-cutting, 536 feet of raising, and 3,978 feet of diamond drilling. Nippon Mining Company, Limited gave financial support from October 1966 to the end of the initial phase of underground exploration. Further work in 1969 included an induced polarization survey and surface diamond drilling; No. 5 Zone was discovered in November.

Teck Corporation Limited in October 1969 entered into an agreement with Highmont to finance and direct further exploration and development of the property. Work during 1970-71 included geological mapping, electromagnetic, induced potential and geochemical soil surveys, and diamond drilling. A feasibility study was carried out.

Reserves are reported as follows:

Zone	Tonnes	% Cu	% MoS <sub>2</sub>
1	111,000,000	0.287	0.042
2	24,000,000	0.273	0.093
5	120,000	1.1	
7	180,000	1.0	

The No. 3, 4 and 6 Zones are only partly explored and reserves are not yet adequately defined (Reed & Jambor, Special Vol. 15, p. 163).

Exploration work was resumed on the property in 1974 when a VLF electromagnetic survey was carried out over 29 line-miles covering all claims. During 1975 Teck carried out geological mapping, further VLF electromagnetic surveys over 18 line-kilometres covering the AM and IDE claims, and a magnetometer survey over 92 line-kilometres.

In 1976 the property comprised about 46 claims and fractions, including in addition to the above the New IDE, Ken, and Lynn groups. Work during the year included a geochemical soil survey (271 samples), and a VLF electromagnetic survey over 12 line-kilometres covering the Lynn claims. At that time Teck Corporation Limited owned a 45% interest in Highmont.

## HISTORY OF EXPLORATION AND DEVELOPMENT (continued)

On May 1, 1977 Highmont Mining Corp. Ltd. amalgamated with its parent company Torwest Resources (1962) Ltd. under the name Highmont Mining Corporation. A new agreement was reached whereby Teck would acquire additional shares in exchange for further exploration and development expenditures. Work on the property in 1977 included 1,054 m of diamond drilling in 4 holes on the AM 6 Fr and IDE 6 (West Zone). Teck Corporation Limited in August 1978 changed its name to Teck Corporation. A new feasibility study was carried out and in April 1979 the decision was announced to prepare the mine for production at 25,000 tons per day. Highmont Operating Corporation was incorporated at that time.

Highmont Mining Corporation was amalgamated with Iso Mines Limited and Tecksub (1979) Ltd. effective September 28, 1979, giving Teck 100% ownership of the Highmont property. In February 1980 Teck transferred the Highmont project to a partnership with an affiliate of Metallgesellschaft Canada Limited holding a 20% interest. Mining operations began in the West (No. 2) Zone. Milling operations began in December 1980 and reached full capacity of 25,000 tons per day by March 1981. The West Pit reserves were placed at some 23 million tons of 0.25% Cu and 0.079% MoS<sub>2</sub> at a strip ratio of 2.0 to 1.0. The East Pit reserves were reported at 111 million tons of 0.26% Cu and 0.038% MoS<sub>2</sub> at a strip ratio of 1.0 to 1.0 (Canadian Mining Journal, May 1980).

Effective June 30, 1982 Teck sold a 29.999% interest in the joint venture partnership to Kuwait Investment Office, London, leaving Teck with a 50.001% interest and Metallgesellschaft 20%.