

PRODUCT COPPER
PRODUIT

PROVINCE OR PROVINCE OU British Columbia
TERRITORY TERRITOIRE

N.T.S. AREA 92 H/7
RÉGION DU S.N.R.C.

REF. CU 7
RÉF.

NAME OF PROPERTY
NOM DE LA PROPRIÉTÉ

INGERBELLE (INGERSOLLE BELLE)

OBJECT LOCATED - Open pit.
OBJET LOCALISÉ

UNCERTAINTY
FACTEUR D'INCERTITUDE

Lat. 49°20'20"
Lat.

Long. 120°33'30"
Long.

Mining Division Similkameen
Division minière

District
District

Yale

County
Comté

Township or Parish
Canton ou paroisse

Lot
Lot

Concession or Range
Concession ou rang

Sec
Sect.

Tp.
Ct.

R.
R.

OWNER OR OPERATOR/PROPRIÉTAIRE OU EXPLOITANT

Newmont Mines Limited

DESCRIPTION OF DEPOSIT/DESCRIPTION DU GISEMENT

The mineralization occurs chiefly in a northwesterly trending belt of Upper Triassic Nicola Group rocks, comprising mainly andesitic to basaltic agglomerate, tuff breccia, and tuff. The belt, which is approximately 1,100 m wide and 4,300 m long, is bounded on the southwest by diorite of the Copper Mountain stock and on the northeast by a complex of dioritic to syenitic porphyries and breccias known as the Lost Horse intrusions. This narrow belt of Nicola rocks is highly faulted and fractured, including a Main northwesterly striking fault and several northeasterly, easterly, and northerly striking faults.

The Ingerbelle orebody is crudely L-shaped, with arms oriented northeast and northwest and maximum dimensions of 520 by 760 m. It straddles the east-west-striking Gully fault and can be divided into three zones. The southwest zone is a steeply northerly plunging pipe-like body on the south side of the fault. The southeast zone dips steeply to the south and also lies immediately south of the Gully fault. The north zone includes all ore north of the fault, and may be the down-faulted extension of the southeast zone. The host rocks are

see Card 2

Associated minerals or products - Gold, silver.
Minéraux ou produits associés

HISTORY OF EXPLORATION AND DEVELOPMENT
HISTORIQUE DE L'EXPLORATION ET DE LA MISE EN VALEUR

The property is located at 3,600' elevation on the west side of the Similkameen River, 8 miles south-southwest of Princeton. The Copper Mountain Mine lies about a mile to the southeast, on the east side of the river.

Prospecting and staking in the vicinity of the orebody began in about 1900. The La Reine claim (Lot 233) was Crown-granted to the Vermillion Forks Mining and Development Company in 1903. The Ingersolle Belle claim (Lot 234) was Crown-granted to Hugh Kennedy & associates in 1904. The Magnetic (Lot 235) and Brooklyn (Lot 236) were Crown-granted to H. Jones & associates in 1904. Intermittent exploration and development work in open cuts, shallow shafts, and several adits continued until about 1908.

Newmont Mining Corporation, of New York, through its subsidiary Newmont Mining Corporation of Canada Limited acquired the Ingersoll Belle and a number of adjacent properties totalling 63 claims in 1966. Work during the year was concentrated on the Ingersoll Belle and La Reine claims and included trenching, 17 churn-drill holes totalling 7,865 feet and 14 diamond drill holes totalling 11,706 feet.

Ingerbelle Mines Limited, a wholly owned subsidiary of Newmont Mining Corporation, was incorporated in Delaware in 1967 to continue exploration and development of the property. An extensive exploration program carried out during 1967-68 included 3,722' of underground work in an adit driven from the 3,060' elevation on the Princeton claim (Lot 153). Diamond drilling was done in 106 underground holes totalling 31,396', and 284 surface holes totalling 138,900'; percussion drilling totalled 51,500' in 200 holes. Open pit reserves were estimated at 43,500,000 tons at 0.56% Cu (Newmont Mining Corporation, 1968 Annual Report).

Ingerbelle Mines Limited on July 31, 1970 was merged with Similkameen Mining Company Limited under the latter name; Similkameen Mining had been formed as a wholly owned Newmont subsidiary to acquire the adjacent Copper Mountain property (see 92 H/7, Cu 1). Construction of a 15,000 ton per day mill began in 1970. The first grinding unit of the mill was put into production on about April 1, 1972, the second unit on May 8th, and the third on August 18th. Mill capacity was expanded to 22,000 tons per day in 1975.

see Card 2

HISTORY OF PRODUCTION/HISTORIQUE DE LA PRODUCTION

From start of production in April 1972 to the end of 1974, 13,495,917 tons of ore were milled. From this ore 71,430 ozs gold, 314,224 ozs silver, and 103,586,331 pounds of copper were recovered. Production for the period 1975-1978 inclusive totalled 23 964 556 tonnes, from which was recovered 3 895.401 Kg Au, 15 692.956 Kg Ag, and 83 136 855 Kg Cu.

Production for the period 1979-81 inclusive totalled 22,465,000 tons milled. From this ore 83,710 short tons of copper concentrate, 102,601 ozs (Troy) Au and 590,160 ozs (Troy) Ag were recovered (Newmont Mines Annual Reports). Production for the last 3 months of 1980 and first 8 months of 1981 was in part from the Copper Mountain mine.

REFERENCES/BIBLIOGRAPHIE

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 1900, pp. 898, 903; 1901, pp. 1170-1172;
 1905, p. 256; 1908, p. 129; 1966, p. 177;
 1967, p. 181; 1968, pp. 208-212⁺.

Dolmage, V.; Geology and Ore Deposits of Copper Mountain, British Columbia; Memoir 171, p. 37, Geol. Surv. of Canada, 1934.

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Geology, Exploration and Mining; British Columbia Dept. of Mines: 1969, p. 283; 1970, p. 385; 1971, p. 270; 1972, p. 120; 1973, p. 132; 1974, p. 115.

The Similkameen Project, Western Miner, Vol. 46, December 1972, pp. 29-38.

Copper Mountain and Ingerbelle; International Geological Congress, Canada, 1972, Guidebook, Field Excursion A09-C09, p. 69.

Macaulay, T.N.; Geology of the Ingerbelle and Copper Mountain Deposits at Princeton, B.C.; Canadian Institute of Mining and Metallurgy, Bulletin, Vol. 66, No. 732, April 1973, pp. 105-112.

++Parliament, J.H.; The Similkameen Project; Canadian Institute of Mining and Metallurgy, Bulletin, Vol. 66, No. 736, August 1973, pp. 58-64.

+++Fahrni, K.C., Macaulay, T.N., Preto, V.A.G.; Copper Mountain and Ingerbelle; Porphyry Deposits of the Canadian Cordillera, The Canadian Institute of Mining and Metallurgy, Special Volume 15, pp. 368-375, 1976.

Mineral Policy Sector; Corporation Files: "Newmont Mining Corporation"; "Ingerbelle Mines Limited"; "Similkameen Mining Company Limited"; "Newmont Mines Limited".

MAP REFERENCES/RÉFÉRENCES CARTOGRAPHIQUES

Map 888 A, Princeton, (Geol.), Sc. 1":4 miles - accomp. Memoir 243, Geol. Surv. of Canada.

Map 300 A, Copper Mountain Mining Area, (Geol.), Sc. 1":4 miles - accomp. Memoir 171.

Geology of Copper Mountain, Sc. 1":1,000', Fig. 2 - accomp. Bulletin 59, B.C. Dept. of Mines, 1972.

Generalized Geology, Ingerbelle Mines Ltd., Sc. 1":600', Fig. 24, Report of Minister of Mines, British Columbia, 1968.

#Copper Mountain and Ingerbelle Mines, (Geol.), Sc. 1":1,160', Fig. 24, IGC Guidebook, 1972.

Geology of the Copper Mountain-Ingerbelle Area, Sc. 1":1,800' (approx.), Fig. 2, Special Volume 15.

*Map 92 H/7, Princeton, (Topo.), Sc. 1:50,000.

REMARKS/REMARQUES

Comp./Rev. By Comp./rév. par	DMacR	DMacR					
Date Date	06-81	09-83					

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NAME OF PROPERTY INGERBELLE (INGERSOLLE BELLE)
NOM DE LA PROPRIÉTÉ

HISTORY OF EXPLORATION AND DEVELOPMENT (continued)
HISTORIQUE DE L'EXPLORATION ET DE LA MISE EN VALEUR

DESCRIPTION OF DEPOSIT/DESCRIPTION DU GISEMENT (continued)

mainly altered tuffs and fragmental andesite, but approximately 15 per cent of the ore is found in small, irregular masses of Lost Horse monzonite or diorite. Subtle stratigraphic control is evident in that fragmental andesite is the most favourable host rock. The faults, as well as numerous discontinuous shears and intense mineralized fractures, indicate that thorough shattering occurred prior to alteration and mineralization. An important feature of Ingerbelle is the very irregular distribution of copper mineralization, requiring the continual sorting of inter-ore waste during mining.

Chalcopyrite and pyrite are the dominant sulphide minerals, but their ratios change abruptly from place to place. Total sulphide content varies from 2 to 5 per cent, but some of the more pyritic material on the southern side of the ore zones carries up to 10 per cent sulphides. Pyrrhotite is found in the southeast zone. Sulphide mineralization occurs as fine disseminations and thin discontinuous fracture fillings, and less commonly as coarser blebs or veinlets of appreciable thickness. Molybdenite, in sub-economic quantities, is found most commonly in the north zone. Precious metals recoverable with the copper have averaged 0.18 g/tonne gold and 0.81 g/tonne silver.

Newmont Mines Limited was formed on January 1, 1977 to consolidate the operations of Similkameen Mining Company Limited and Granduc Operating Company, both 100% owned by Newmont Mining Corporation. With the installation of an ore conveyor across the river canyon the delivery of Copper Mountain ore to the mill began in October 1980. Mining in the Ingerbelle pit was completed in August 1981.