

PRODUCT MOLYBDENUM
PRODUIT

PROVINCE OR PROVINCE OU
TERRITORY TERRITOIRE British Columbia

N.T.S. AREA 93 A/2
RÉGION DU S.N.R.C.

REF. MO 1
RÉF.

NAME OF PROPERTY
NOM DE LA PROPRIÉTÉ

BOSS MOUNTAIN

OBJECT LOCATED - Main Breccia Zone.
OBJET LOCALISÉ

UNCERTAINTY 300 m
FACTEUR D'INCERTITUDE

Lat. 52°05'45" Long. 120°54'25"
Lat. Long.

Mining Division Cariboo
Division minière

District Cariboo
District

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

Noranda Mines Limited

DESCRIPTION OF DEPOSIT/DESCRIPTION DU GISEMENT

The molybdenum deposit occurs in granodiorite phases of the composite Upper Triassic Takomkane batholith, which intrudes Upper Triassic Nicola Group volcanics on the south and west, and is in fault contact with Lower Jurassic volcanic and sedimentary rocks on the east and north. A small Cretaceous quartz monzonite stock (Boss Mountain stock) intrudes the batholith near its northeastern edge, some 1,500 feet northeast of the molybdenum deposit. Dykes of rhyolite porphyry, rhyolite and quartz latite porphyry, as well as three phases of breccias are related spatially as well as genetically to the molybdenum mineralization. Andesite dykes of pre-mineral age and alkali basalt dykes of pleistocene age are the only other rock units in the proximity of the deposits.

Although important concentrations of molybdenite occur in breccia bodies, quartz veins probably contain most of the molybdenite at Boss Mountain. Quartz-molybdenite veins are known over an area exceeding 1,800 by 900 meters, with economic and near-economic concentrations restricted to a much smaller area, about 600 meters in diameter, centered on the Boss Breccias. Pyrite is the most abundant and widespread sulphide
see Card 2

Associated minerals or products
Minéraux ou produits associés

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

The property is located on the east side of Big Timothy Mountain approximately 50 miles east of Williams Lake. The breccia zone outcrop is at the 5,500 foot elevation at the head of Molybdenite Creek. The mountain originally known as Big Timothy Mountain was mistakenly identified in a 1920 survey as Boss Mountain, which lies 16 miles to the northeast. The Indian name "Takomkane" was given to the mountain by the Geographic Board of Canada in 1938. The official name was changed in 1961 to Big Timothy Mountain.

The showings were discovered in 1917 by W.J. Ryan and two claims, the Tipperary and Molyb, were staked in the names of Ryan and John Foster. Some trenching was done and an 800 pound sample was shipped to the Mines Branch, Ottawa; the claims subsequently lapsed. The showings were restaked in 1928 by R. Cavanagh and T.H. Hamilton. The Consolidated Mining and Smelting Company of Canada Limited purchased the claims outright in January 1930. The company carried out prospecting and trenching on the showings in 1930, 1936 and 1937. Eleven claims, the Tooty Fruity, Anne, Geraldine, Blacky, Utoo, Bonnie, Tip Top, Adanac, Adanac No. 1, Adanac No. 2, and Adanac Fraction (Lots 11116-11126, respectively) were Crown-granted to the company during 1936-1938. During 1942 the British Columbia Department of Mines carried out diamond drilling in 12 x-ray holes totalling 1,363 feet on the breccia zone; the project was financed by the Federal government.

In 1955 Mr. H.H. Huestis, of Vancouver, and associates acquired the Crown-granted claims at tax sale and the following year located 94 additional claims. Climax Molybdenum Company optioned the property in 1956. The company merged in January 1958 with the American Metal Company, Limited, to form American Metal Climax, Inc. Work on the property during the period 1956-1959 included geological mapping, a geophysical survey, trenching, and some 32,000 feet of diamond drilling. Indicated reserves were estimated at 1,000,000 tons averaging 0.90% MoS₂. The work during 1959 was carried out by a subsidiary company, Southwest Potash Corporation. The option was given up in 1960.

Noranda Mines Limited purchased the 11 Crown-grants and 64 recorded claims in 1961 and subsequently transferred the
see Card 2

HISTORY OF PRODUCTION/HISTORIQUE DE LA PRODUCTION

From the start of production in 1965 until the end of 1974, 792,501 tons of ore were milled. From this ore 17,099,409 pounds of molybdenum were recovered (the mine was closed during 1972-73).

Production for the period 1975-82 inclusive totalled 147 845 tonnes milled. From this ore 6 755 464 Kg of molybdenum were recovered.

REFERENCES/BIBLIOGRAPHIE

⁺Eastwood, G.E.P.; Big Timothy (Takomkane) Mountain; Report of Minister of Mines, British Columbia; 1964, pp. 65-80.

⁺⁺Brown, A. Sutherland; Takomkane Mountain; Report of Minister of Mines, British Columbia: 1957, pp. 18-22.

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continued reverse Card 2

MAP REFERENCES/RÉFÉRENCES CARTOGRAPHIQUES

Map 1-1963, Quesnel Lake, (Geol.), Sc. 1":4 miles, Geol. Surv. of Canada.

Takomkane Mountain, Geology and Claim Map, Sc. 1":3,000 ft., Fig. 2, p. 19, Report of Minister of Mines, British Columbia, 1957.

Geology of Boss Mountain Mine Area, Sc. 1":400 ft., Fig. 9, p. 68, Report of Minister of Mines, British Columbia, 1964.

Geology of the mine area, Sc. 1":2,000', Fig. 2, Spec. Vol. 15, p. 433.

Map 5235 G, McKinley Creek, (Aeromag.), Sc. 1":1 mile.

Map 93 A/2, McKinley Creek, (Topo.), Sc. 1:50,000.

REMARKS/REMARQUES

Comp./Rev. By Comp./rév. par	DMacR	DMacR					
Date Date	07-81	06-89					

PRODUCT PRODUIT	MOLYBDENUM	PROVINCE OR TERRITORY	PROVINCE OU TERRITOIRE	British Columbia	N.T.S. AREA 93 A/2 RÉGION DU S.N.R.C.	REF. MO 1 RÉF.
NAME OF PROPERTY NOM DE LA PROPRIÉTÉ		BOSS MOUNTAIN			HISTORY OF EXPLORATION AND DEVELOPMENT (continued) HISTORIQUE DE L'EXPLORATION ET DE LA MISE EN VALEUR	
DESCRIPTION OF DEPOSIT/DESCRIPTION DU GISEMENT (continued)				property to a wholly owned subsidiary, Brynnor Mines Limited. A program of geophysical and geochemical surveying, trenching, and diamond drilling was begun. During 1962-1963 a main haulage crosscut adit at the 5,045 foot elevation was driven 5,800 feet almost due west to the vicinity of the orebodies and a raise put up to the surface at the 5,488 foot elevation. In 1964, 4,897 feet of crosscutting and drifting, and 1,246 feet of raising was done in preparation for mining the Main Breccia and Fracture orebodies. Construction of a 1,000 ton-per-day mill was completed and milling began on February 17, 1965; the mill rate was increased to over 1,400-tons-per-day in 1968. An 885 foot internal production shaft was completed in 1969. Production was suspended December 3, 1971. Reserves at that time were estimated at 2,700,000 tons averaging 0.25 per cent molybdenum (Noranda Mines Limited, 1971 Annual Report).		
in the deposit and forms a large zone which extends as far as a mile beyond established ore zones.				Exploration and development work during 1972-73 included magnetometer and geochemical soil surveys, development drifting and raising, and 13,695' of surface and underground diamond drilling. The mine and mill were reconditioned during the latter part of 1973 in preparation for production. The mill operated on a one shift basis for 14 days in December 1973, treating approximately 6,500 tons of ore. Production was resumed in January 1974; the mine operated as the Boss Mountain Division of Noranda Mines Limited.		
Vein systems are large single veins or multiple sets of subparallel quartz-molybdenite veins. Ore boundaries in vein systems are defined by the grade of component veins and the distance between them. In breccia deposits, ore boundaries are gradational or sharp enough to permit visual definition.				An exploration program was begun in 1976 to investigate the open pit potential of the property. The original proven reserves were depleted in 1978 and production began in mid year in a small open pit, supplemented by development ore from underground. The extraction of ore from two small open pits was completed in 1980 and mining reverted to an all underground operation. Ore reserves at the end of 1980 were reported as 5,438,000 tons at 0.13% molybdenum, including an open pit reserve of 2,600,000 tons at 0.11% molybdenum (Noranda Mines Limited, 1980 Annual Report).		
The Main Breccia Zone is a crudely lenticular nearly vertical body 15 to 30 metres wide, 30 to 90 metres long in a N35°W direction, and extends through a vertical range exceeding 240 metres; the zone produced 1,706,099 tonnes of ore grading 0.39% Mo.				Work began in 1980 to expand the capacity of the concentrator to 2,900 tons per day, the additional 1,200 tons per day of ore to be supplied by a new open pit commencing in 1982. The underground mine produced at capacity until July 2, 1982 when the production rate was reduced by 50%. The open		
The South Breccia Zone is a poorly defined body that is much more irregular in shape and grade than the Main Breccia Zone.				p.t.o.		
Ore-grade mineralization in fractures and in the matrix of the breccia occurs as erratic pods. The only apparently continuous molybdenite mineralization within the zone is on the north and east sides of the breccia. This zone persists for a vertical distance of about 150 meters and a width of 6 to 15 meters.				p.t.o.		
Most veins within the mine area are narrow and individually are not of economic interest. However, where they occur in subparallel swarms, referred to as Stringer Zones, they constitute low-grade orebodies.						
The most important orebody of this type, the Stringer Zone, forms a gently dipping, arcuate skirt around the northwest and west margins of the Main Breccia Zone. This Stringer Zone has been traced down-dip from its intersection with the Main Breccia Zone for at least 150 meters. It has an arc length exceeding 180 meters, with a thickness ranging from 15 to 90 meters. Up to August of 1975, this zone has produced 1,599,488 tonnes of ore grading 0.20 per cent molybdenum. The Southwest Stringer Zone, located about 300 metres southwest of the Main Breccia Zone, has been developed for mining over a vertical distance of 93 meters, a width of 50 meters and a strike length of 135 meters. To the end of August 1975 the zone had produced 300,180 tonnes of 0.17 per cent molybdenum.						

DESCRIPTION OF DEPOSIT/DESCRIPTION DU GISEMENT (continued)

A system of quartz-molybdenite veins localized in a sheared and intensely altered andesite dyke north of the Main Breccia Zone is known as the High-Grade Vein. This vein system strikes N78°E and dips 40° to 45°N. It has been explored along a strike length and a dip length exceeding 120 meters and is 1.2 to 3 meters wide. Very coarsely crystalline and erratically distributed molybdenite locally may assay several per cent across the width of the vein.

REFERENCES/BIBLIOGRAPHIE (continued)

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HISTORY OF EXPLORATION AND DEVELOPMENT (con't)

pit mine wasn't placed in production. The mine closed indefinitely on February 15, 1983. Reserves were reported as 4,232,000 tons at 0.135% molybdenum (Noranda Mines, 1984 Annual Report) (includes the open pit reserve of 2.6 million tons reported above).