

NAME OF PROPERTY

AFTON, ADD (POTHOOK)

OBJECT LOCATED

UNCERTAINTY IN
METRES: 200.

Lake Zone	50°39'38"	120°30'40"
Pothook Zone	Lat. 50°39'15"	Long. 120°30'10"

Mining Division	Kamloops	District	Kamloops
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County	Township or Parish
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Lot	Concession or Range
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Sec	Tp.	R.
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OWNER OR OPERATOR AND ADDRESS

Teck Mining Corporation

DESCRIPTION OF DEPOSIT

The Afton orebody is at the northwestern end of the 18-km-long Iron Mask pluton. The separate and smaller Cherry Creek pluton occurs some 5 km farther northwestward. The Iron Mask pluton comprises successively emplaced units, all apparently of late Triassic age and ranging in composition from basic to moderately alkalic. The Iron Mask and Pothook units are oldest on geological evidence and consist chiefly of diorite and gabbro. Succeeding units of finer grained, more porphyritic rocks are emplaced mainly along northwestern and western linear structures that frame and dissect the pluton.

Latest was the Cherry Creek unit, which is host to the Afton copper deposit. This unit comprises mainly diorite, monzonite and syenite, which together form relatively large bodies, including the Cherry Creek pluton and the northwestern part of the Iron Mask pluton near Afton. The unit also includes equivalent porphyries and associated intrusion breccias as irregular dykes, emplaced mainly in the larger Cherry Creek bodies.

see Card 2

Associated minerals or products of value

HISTORY OF EXPLORATION AND DEVELOPMENT

This property is located on the south side of the Trans-Canada Highway, in the vicinity of Hughes Lake, 8 miles west of Kamloops. The Lake Zone is adjacent to the highway. The Pothook Zone is located about 3,500 feet southeast of the Lake Zone.

The Pothook claim was first reported on in 1897 but some work had apparently been done prior to that date. On the adjacent Bonanza claim, owned in 1897 by W. Ford, A. Darby, and associates, a shaft had been sunk 53 feet and from it a crosscut driven 60 feet. In 1898 the Pothook claim was optioned by a Mr. Croft, of Victoria. Exploration work during the year in a shaft and drift exposed considerable mineralization. The Scottish Copper Mines of British Columbia, Limited, acquired the property in 1899. A double compartment shaft was sunk to 330 feet and drifts totalling 900 feet were driven on 4 levels. Eight claims, the Pothook, Gold Mask, Midnight, Bonanza, Boss, Night Hawk, Cliff, and Piper (Lots 893-900, respectively), were Crown-granted to the above company in 1901. No further work was reported except for a period during 1916 when the workings were dewatered to the No. 2 level, and a carload of ore was shipped from the dump. All the claims, with the exception of the Cliff claim (Lot 899), subsequently reverted to the Crown for taxes.

In 1949 prospector Axel Berglund staked the 8 claim Afton group in the vicinity of the Pothook showings. Kennco Explorations (Canada) Limited in 1952 optioned the Afton group and expanded the property to 58 claims. The company carried out a program of geological mapping, geophysical surveys, and 4,555 feet of diamond drilling in 14 holes. This work indicated a substantial tonnage of submarginal material. Work was discontinued in August 1952.

Cadamet Mines Limited reportedly held the Afton group and adjacent claims surrounding the Cliff and Gift Crown-grants (92 I/9, Fe 1) in 1958. During the year the property was optioned to Noranda Exploration Company, Limited, and a program of geological mapping, electromagnetic and self potential surveys, trenching, and 800 feet of diamond drilling was carried out; the option was dropped late in the year. New Jersey Zinc Exploration Company (Canada) Ltd. held an option on the property in 1960.

In 1964, C.F. Millar, a geological engineer who was then a drilling contractor, persuaded Colonial Mines Limited to see Card 2

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

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HISTORY OF PRODUCTION

In 1899, 10 tons of ore were shipped from the Pothook claim. From this ore 1 ounce of gold, 5 ounces of silver, and 960 pounds of copper were recovered.

Production for the fiscal years ending Sept. 30 for the period 1978 to 1982 inclusive totals 12,258,777 tons milled. From this ore 206,949,379 lbs copper, 185,500 ozs gold, and 918,585 ozs silver were recovered (Financial Post Corporation Service).

REFERENCES

- †† Preto, V.A.; Afton, Pothook; Geology, Exploration and Mining, 1972, pp. 209-220, British Columbia Dept. of Mines.
- Reports of Minister of Mines, British Columbia: 1897, p. 613; 1898, p. 1103; 1899, p. 730; 1901, p. 1230; 1916, p. 427; 1952, p. 115; 1958, p. 29; 1962, p. 60; 1964, p. 98; 1967, p. 147.
- Geology, Exploration, and Mining; British Columbia Dept. of Mines: 1969, p. 237; 1970, p. 332; 1971, p. 297; 1973, p. 201; 1974, p. 151.
- Cockfield, W.E.; Geology and Mineral Deposits of Nicola Map-Area, British Columbia; Memoir 249, p. 110, Geol. Surv. of Canada, 1948.
- Mineral Policy Sector; Corporation Files: "Afton Mines Ltd."; "Teck Corporation Limited".
- The Afton Discovery; Western Miner, Vol. 46, February 1973, pp. 33-36.
- Western Miner, Vol. 48, No. 11, November 1975, pp. 16-19.
- Western Miner, Vol. 51, No. 1, January 1978.
- †Carr, J.M. and Reed, A.J.; Afton: A Supergene Copper Deposit; Porphyry Deposits of the Canadian Cordillera, The Canadian Institute of Mining and Metallurgy, Special Volume 15, pp. 376-387, 1976.
- Hoiles, H.H.K.; Nature and Genesis of the Afton Copper Deposit, Kamloops, British Columbia; M.Sc. Thesis, U. Alberta, 1978. (Abstract in CIM Bull., Nov. 1980, p. 28).

MAP REFERENCES

- Map 886 A, Nicola, (Geol.), Sc. 1":4 miles - accomp. Memoir 249.
- Map 887 A, Nicola (Mining Localities), Sc. 1":4 miles - accomp. Memoir 249.
- Map 7217 G, Ashcroft, (Aeromag.), Sc. 1":4 miles.
- *Map 92 I/10, Cherry Creek, (Topo.), Sc. 1:50,000.
- Geological Plan and Drill Plan of the Afton Deposit, Sc. 1":200 ft.; Fig. 18 - accomp. Rept. by Preto.
- #Geological Map of the Afton property, Sc. 1 Cm:250 Metres, Fig. 3, Special Vol. 15, p. 379.

REMARKS

The Cliff and Gift claims, although at times surrounded by this property, have been described separately. See Area 92 I/9, 10, Ref. Fe 1. No information has been found regarding the history of the Dominion claim (Lot 1595).

Comp./Rev. By	DMacR	DMacR	DMacR				
Date	10-75	8-78	11-83				

NAME OF PROPERTY

AFTON, ADD (POTHOOK)

DESCRIPTION OF DEPOSIT (continued)

The Afton copper deposit consists of shattered rocks in which the ore minerals occupy fractures and are disseminated. Ignoring complexities, the deposit, as defined by a 0.25 per cent copper cutoff, is a tabular body that strikes about N70°W, with an average dip of 55 degrees S. If viewed from the south as a vertical longitudinal slice, it appears to be triangular and increasingly narrow downward between a steep western limit and an eastern limit inclined moderately westward. The deposit measures 520 m long, 90 m in average width and as much as 600 m in drilled depth. Widening and deepening of the deposit westward results in about half the mineable tonnage occurring in the western third of the orebody, where the grade is generally highest as well.

The deposit comprises two distinct zones, hypogene and supergene, that contain different mineralogies. The overlying, but deeply penetrating, supergene zone embraces most of the proven ore reserves and is defined by metallic copper that is commonly accompanied by chalcocite and cuprite. Metallic copper occurs in fine scales, films, dendrites and granules, but also in masses as wide as 5 mm. Chalcocite, although mostly the typically supergene sooty variety, is partly grey chalcocite (digenite) and is both disseminated and in veins up to 25 mm wide. The lower, partly explored hypogene zone is characterized by bornite and chalcopyrite. Average grade of copper in the supergene zone is slightly less than that of the hypogene zone.

HISTORY OF EXPLORATION AND DEVELOPMENT (continued)

do percussion drilling near the Pothook shaft. The Afton 1-7, Afton Fraction, and Add 1-26 claims were optioned by the company from Axel Berglund. During the year several percussion holes were drilled in the vicinity of the Pothook shaft. Drilling to that date is reported to have indicated approximately 600,000 tons of 0.63% copper. This programme was short lived and in 1965 Mr. Millar formed a private syndicate (Tamarack Mining Syndicate) to acquire the option agreement and continue exploration near the Pothook and on some newly staked claims (Pot 1-5 Fractions, Pot 6-9, and Add 27-30) close to the Trans-Canada Highway. In addition, Mineral Lease M-22 E (Dominion claim, Lot 1595) was purchased from Alfred Holmwood. The option was transferred to Afton Mines Ltd. in February 1966. An induced polarization survey in 1966 indicated anomalous zones which correlated to a large extent with geochemical anomalies located in previous work. Further geochemical soil survey work was carried out in 1968 and 1969 and diamond drilling totalling 3,316 feet was done in 17 holes. Work in 1970 included 5 diamond drill holes totalling 2,500 feet. Four of these holes, on the Afton 1-4 and Dominion claims, extended the Pothook mineralized zone 100 feet farther north. The fifth drill hole (70-4) was put down about 3,300 feet northwest of the Pothook shaft on an induced polarization anomaly which corresponded closely to an electromagnetic conductive zone, a geochemical anomaly, and a saline lake (Lake Zone). This hole intersected significant amounts of native copper, abundant magnetite, and virtually no pyrite. The diamond drill programme was suspended incomplete and Duval Corporation was given the right of first refusal in exchange for an engineering report.

During the spring and summer of 1971 the property was under option to Quintana Minerals Corporation, who carried out geological mapping, and 5,100 feet of percussion drilling in 21 holes, none of which were within 1,000 feet of hole 70-4. The option was subsequently dropped.

At this point the property reverted back to Afton Mines Ltd. which, under the direction of C.F. Miller, in September 1971 began a new series of percussion holes in the immediate vicinity of DDH 70-4. During the month, 17 percussion holes on 100 foot centers and to a depth of 300 feet were put down in an area 400 feet by 400 feet; most of the holes bottomed in ore grade material. Drilling was suspended in order to arrange further financing through a stock underwriting;

HISTORY OF EXPLORATION AND DEVELOPMENT (continued)

percussion and diamond drilling resumed in November 1971. An agreement was reached with Placer Development Limited, through its subsidiary, Canadian Exploration, Limited, in March 1972 for additional financing through the purchase of Afton treasury shares in the amount of \$350,000 with the first right of refusal for 12 months to participate in further financing.

Teck Corporation Limited, and an associate company, Iso Mines Limited, on May 31, 1972, completed the purchase of just over 50% of Afton shares on the open market. On June 1, 1972, Afton reached an agreement with Canadian Exploration under which the latter company would carry out further exploration and feasibility studies and if warranted place the property in production, thereby acquiring a 30% interest in Afton. Work on the property was suspended in June 1972 by a Court order due to litigation between Canadian Exploration and Teck Corporation over control of the property. Work by Afton Mines during the period September 1971 to June 1972 included 24,281 feet of diamond drilling in 30 holes, 27,900 feet of percussion drilling in 93 holes, and 19,365 feet of rotary drilling in 26 holes.

The company name, Canadian Exploration, was changed in October 1972 to Canex Placer Limited. The Courts upheld the Canex-Afton agreement and although management of Afton was taken over by Teck, Canex Placer retained management of the property. Drilling was resumed by Canex Placer early in January 1973 but discontinued in April 1973 due to further litigation. An agreement was reached in May 1973 whereby Teck Corporation agreed to pay Canex Placer 4 million dollars for its interest in Afton Mines.

During 1973 Teck carried out an induced potential survey over 35 line-miles, a magnetometer survey over 43 line-miles, a geochemical soil survey (1,165 samples) over 43 line-miles, 48,533 feet of diamond drilling in 54 holes, 6,729 feet of rotary drilling in 18 holes, and 10,673 feet of percussion drilling in 55 holes. Ore reserves within the planned open pit, extending to a depth of 900 feet, were estimated at 34,000,000 tons averaging 1.0% copper.

During 1974 diamond, percussion, and rotary drilling was done in several holes. The decision to proceed with the construction of a mine, mill and smelter complex was made in October 1975. Open pit preparation began in April 1977 and the newly installed 7,000 ton per day mill produced its first

concentrates on December 9, 1977. The smelter, based on the top blown rotary converter process (TBRC), with a daily capacity of up to 300 tons of copper concentrate, produced its first blister copper on March 23, 1978.

Teck Corporation Limited by 1978 held directly and indirectly (through Iso Mines Limited) a 73% share interest in Afton. The company name was changed in August 1978 to Teck Corporation. In September 1979 Iso Mines was merged with Teck. A reorganization was carried out in 1981 whereby Teck converted its 73% share interest in Afton Mines to a 73% direct working interest in a partnership under the name Afton Operating Corporation, which was incorporated in June 1981 with Teck holding a 73% working interest and an affiliate of Metallgesellschaft Canada Limited a 27% partnership interest.

The operation was closed by strike action from November 21, 1981 to March 15, 1982. Operations were suspended June 22, 1982 due to a cycle of low grade ore and low copper prices. Operations resumed in May 1983 with assistance under the Federal Government Unemployment Insurance Act and the Provincial Government's Community Recovery Program. The copper smelter was closed permanently in late July 1983 due to economic factors; the closure was several years ahead of its planned phase out as the orebody changes from native copper to sulphides at depth. Reserves at Sept. 30, 1982 were reported as: open pit - 13,900,000 tons at 0.82% Cu, 0.022 oz/t Au; underground - 10,500,000 tons at 1.50% Cu, 0.03 oz/t Au (Teck Corporation, 1982 AR).

continued above