

NAME OF PROPERTY
NOM DE LA PROPRIÉTÉ

SILVER QUEEN (OWEN LAKE), CHISHOLM

OBJECT LOCATED - south corner of Silver Queen claim (Lot 6549).
OBJET LOCALISÉ

UNCERTAINTY 50 m
FACTEUR D'INCERTITUDE

Lat. 54°05'15" Long. 126°43'35"
Lat. Long.

Mining Division Omineca District
Division minière District

County Township or Parish
Comté Canton ou paroisse

Lot Concession or Range
Lot Concession ou rang

Sec. Tp. R.
Sect. Ct. R.

OWNER OR OPERATOR/PROPRIÉTAIRE OU EXPLOITANT

New Nadina Explorations Limited

DESCRIPTION OF DEPOSIT/DESCRIPTION DU GISEMENT

The property is underlain mainly by late Mesozoic or early Tertiary lavas and pyroclastics, and a small area of younger Tertiary volcanics.

In the vicinity of the workings the oldest rocks are fragmental volcanics, strongly altered with the introduction of a large amount of carbonate. These rocks are intruded by massive fine-grained porphyritic diorite. This intrusion may be sill-like rather than stock-like in form. The volcanics and the diorite are intruded by dykes and sills of porphyritic and amygdular felsite. Several fine-grained basalt dykes cut both the volcanics and the microdiorite. Some 14 veins are known to occur on the property. These occupy northwesterly striking fractures that cut the volcanics, the diorite, and the felsite porphyry and basalt dykes. The veins are independent of the enclosing rocks and of the several contacts. On the other hand, the veins are cut by northerly striking faults. Three veins outcrop within 600 feet in Wrinch Creek canyon. In addition to pyrite the sulphide mineralization is of two general types, chalcopyrite-sphalerite and sphalerite-galena, with gradations between the two. Gangue minerals are rhodo-
see Card 2 ..

Associated minerals or products - Zinc, lead, copper, gold, manganese,
Minéraux ou produits associés cadmium, gallium, germanium,

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

This property is located between elevations of 2,600 and 3,100 feet on Wrinch Creek, on the east side of Owen Lake, some 20 miles south of Houston. The Diamond Belle property (92 L/2, Ref. Ag 2) adjoins on the northeast.

The original discovery was made in 1912 at Wrinch canyon by Jim Holland, a member of a land-survey party. The Silver King, Tyee, Silver Queen, Silver Tip, and IXL claims (Lots 6547-6551) were staked as the Silver Queen group, which became the property of Dr. H.C. Wrinch of Hazelton.

The Chisholm group, located south of and adjacent to the Silver Queen, was staked soon after the original discovery. This ground was re-staked as the McLean group and was again relocated in 1928 as the Midnight group, owned by Alex and Angus Chisholm. Two shallow inclined shafts were sunk on this ground in 1914 or 1915.

The Federal Mining & Smelting Company, of Wallace, Idaho, optioned the Silver Queen and Diamond Belle in 1923. Some 500 feet of drifting was done on the Silver Queen before the option was dropped in August 1924. No further activity was reported until 1928 when Owen Lake Mining and Development Co., Limited, optioned the Silver Queen, Diamond Belle, and Midnight groups and acquired neighboring claims, in part by staking and in part by option, bringing the company holdings to some 67 claims. On the Silver Queen a crosscut adit, the Earl adit, at 2,710 foot elevation, was driven 3,000 feet, cutting some 13 veins including the Wrinch veins. Some 2,000 feet of drifting was done from the crosscut to explore the veins cut near the portal. The intended extension of the crosscut was to pass beneath the shaft on the Diamond Belle group. Work in the crosscut was discontinued in February 1930 when N.A. Timmins relinquished his option on a controlling interest in the Owen Lake company.

The Silver Queen group was acquired by Canadian Exploration, Limited, in 1941 and the showings were examined and mapped. Some of the old adits were reopened and examined during 1946-47.

Nadina Explorations Limited in 1963 leased 17 Crown-granted claims and fractions from Canadian Exploration, Limited, and staked 33 recorded claims. Exploration work was carried out on surface and underground. In May 1967 Kennco Explorations (Western), Limited, optioned the property. Work included induced polarization and geochemical surveys, and 1,511 feet of

see Card 2

HISTORY OF PRODUCTION/HISTORIQUE DE LA PRODUCTION

In 1915, 38 tons of sorted ore were shipped from the Chisholm group. This ore assayed about 6 ounces in silver to the ton and about 31% lead. However, a later assay of the dump containing the ore rejected by hand sorting assayed: gold, 0.08 ounce per ton; silver, 29.2 ounces per ton; lead, 11.4%; zinc, 29.5%. This ore was apparently rejected because of the high zinc content, but evidently either the zinc or the pyrite rejected contained most of the silver.

From March 1972 to September 1973, 210,185 tons of ore were milled at this property. From this ore 3,157 ounces of gold, 438,797 ounces of silver, 892,898 pounds of copper, 1,547,181 pounds of lead, 11,132,704 pounds of zinc, and 34,769 pounds of cadmium were recovered.

MAP REFERENCES/RÉFÉRENCES CARTOGRAPHIQUES

Geology of the Owen Lake Area, Sc. 1":2,000 feet, Fig. 21, Geology, Exploration, and Mining, 1969, B.C. Dept. of Mines.

Map 671 A, Houston, (Geol.), Sc. 1":4 miles.

Map 971 A, Smithers-Fort St. James, (Geol.), Sc. 1":8 miles.

*Map 93 L/2 E, Owen Lake, (Topo.), Sc. 1:50,000.

Map 5301 G, Owen Lake, (Aeromag.), Sc. 1":1 mile.

REMARKS/REMARQUES

REFERENCES/BIBLIOGRAPHIE

Church, B.N.; Geology of the Owen Lake Area; Geology, Exploration, and Mining, British Columbia Dept. of Mines, 1969, pp. 122-139.

Church, B.N.; Silver Queen (Nadina); Geology, Exploration, and Mining, British Columbia Dept. of Mines, 1970, pp. 134-138.

Holland, Stuart S.; Silver Queen; Report of the Minister of Mines & Petroleum Resources, British Columbia, 1965, pp. 81-84 and Fig. 12.

Lang, A.H.; Owen Lake Mining Camp, British Columbia; Summary Report 1929, Pt. A, pp. 77-88, and Fig. 3, Geol. Surv. of Canada.

Annual Reports, Dept. of Mines, B.C.: 1916, pp. 159-160; 1923, pp. 114-116, 386; 1924, pp. 99-100; 1928, pp. 170-171; 1929, pp. 171-175; 1966, p. 104; 1967, p. 108; 1968, p. 139.

Mineral Policy Sector; Corporation Files: "Federal Mining and Smelting Co."; "Owen Lake Mining and Development Co., Limited"; "Nadina Explorations Limited"; "Northgate Exploration Limited"; "Bralorne Resources Limited"; "New Frontier Exploration Inc."; "Houston Metals Corp."

Geology, Exploration, and Mining; British Columbia Dept. of Mines: 1971, p. 171; 1972, p. 370; 1973, p. 338; 1974, p. 256; 1977, p. E 190.

Mines Branch, Ottawa; Investigations in Ore Dressing and Metallurgy; Investigation Report IR 73-52.

Exploration in British Columbia; BCDM: 1979, p. 224; 1980, p. 339; 1983, p. 437; 1984, p. 321; 1987, p. A15, A40.

Cummings, W.W.; Report on the Owen Lake property, 24/06/86, in Houston Metals Corporation Statement of Material Facts, 29/10/86.

George Cross News Letters; 1985, No. 64; 1986, No. 152, 206; 1987, No. 76, 109; 1988, No. 20, 27, 42, 56, 63, 66, 88, 113, 117.

Comp./Rev. By Comp./rév. par			DMacR	DMacR	DMacR		
Date Date	04-73	11-75	03-82	11-86	07-88		

PRODUCT PRODUIT	SILVER	PROVINCE OR TERRITORY	PROVINCE OU TERRITOIRE	British Columbia	N.T.S. AREA 93 L/2 RÉGION DU S.N.R.C.	REF. AG 1 RÉF.
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SILVER QUEEN (OWEN LAKE), CHISHOLM

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

DESCRIPTION OF DEPOSIT/DESCRIPTION DU GISEMENT

chrosite, quartz, chalcedony, and barite. The average assay of 6 samples from surface cuts on No. 3 vein over a length of about 750 feet and a width of 4.8 feet gave: gold, 0.02 ounce per ton; silver, 6.9 ounce per ton; lead, 3.0%; zinc, 6.1%; copper, 2.2%. Sampling in the mine workings and vicinity indicated erratic values ranging from 1 to 139 ppm germanium and 1 to 24 ppm gallium.

diamond drilling in 5 holes; the option was subsequently dropped. Nadina Explorations resumed work on the property in 1968. Exploration work to 1970 identified 23 veins in 3 main groups, the "Wrinch", "Portal", and "Chisholm vein systems". About 4,400 lineal feet of vein mineralization was exposed on surface by trenching. Underground exploration work, mainly on the Wrinch vein system, consisted of two levels totalling about 10,600 feet of crosscuts and drifts which exposed about 4,000 feet of vein. Northgate Exploration Limited, through an option agreement of early 1970, acquired a share interest in the property by providing funds for the 1970 program of exploration and development. About 1,200 feet of raising and 350 feet of drifting was done on the main oreshoots. Exploration work included some 1,750 feet of drifting and 650 feet of diamond drilling. In addition 4 deep diamond drill holes totalling 8,524 feet were put down in search of a sulphide replacement orebody.

Negotiations began early in 1971 with Bralorne Can-Fer Resources Limited with a view to bringing the property into production at 500 tons per day. A joint venture agreement (Bradina Joint Venture) was reached in June 1971 with interest in the project divided as to Nadina 50%, Bralorne and Pacific Petroleum, Ltd., 25% each. Ore reserves at the end of 1971 were reported at 551,650 tons averaging 2.10% lead, 6.96% zinc, 0.76% copper, 0.10 ounce gold and 10.0 ounces silver per ton. The mill began tune up operations in late February 1972. The company name (Bralorne Can-Fer) was changed in May 1972 to Bralorne Resources Limited. Canadian Exploration, Limited, owner of the 17 Crown-grants, changed its name in October 1972 to Canex Placer Limited. Development work during the period 1971-73 included 741 feet of drifting, 5,299 feet of sub-drifting, 4,408 feet of raising, and 8,083 feet of diamond drilling in 32 holes. Operations were suspended on September 12, 1973. A supplemental agreement of April 1974 between Bralorne Resources and Pacific Petroleum called for the exploration of No. 3 vein at depth. Diamond drilling totalling 7,412' in 9 holes below the 2,600 level cut the vein at depths of 150 to 350'; the Bradina Joint Venture was terminated at the end of 1974.

New Frontier Exploration Inc. optioned the property in December 1976. During 1977 surface diamond drilling totall-

continued from right side.

Proven reserves were reported as 609,290 tons at 0.105 oz/t Au, 7.44 oz/t Ag, 0.48% Cu, 1.58% Pb, 6.64% Zn (George Cross News Letter 29/01/88).

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

ing 1,407 metres was done in 4 holes on Lot 7403 and Silver 4; the option was terminated.

By a Jan. 1, 1977 agreement Nadina optioned an 80% interest from Canex Placer in the 17 Crown-grants previously held under lease. The company name was changed in December 1977 to New Nadina Explorations Limited. Canex Placer was dissolved at the end of 1977 and the property transferred to Placer Development Limited. Geological reserves were estimated at 363,000 tonnes at 10 oz/t Ag, 0.1 oz/t Au, 0.76% Cu, 2.1% Pb, 6.0% Zn (George Cross News Letter, June 15, 1977).

During 1980-81 New Nadina carried out trenching on a newly exposed vein, and began to drive a series of crosscuts, drifts and drilling on the 2,600 level (472' of crosscut and drift, 6,470' of underground drilling in 28 holes and 1,776' on surface in 4 holes). Campbell Resources Ltd in 1982 carried out an airborne EM survey and metallurgical testing as part of an evaluation of the property. Reserves at that time were estimated at 577,590 tons grading 0.108 oz/t Au, 7.51 oz/t Ag, 0.49% Cu, 1.49% Pb, 6.53% Zn (as quoted by Cummings, 1986). Work by New Nadina in 1983-84 included 7,497' of surface diamond drilling in 15 holes.

Bulkley Silver Resources Inc, owner of the adjacent Diamond Belle property, in 1985 acquired an option to earn a 50% interest in New Nadina by financing exploration work. That year an electromagnetic survey, 1,130' of diamond drilling in 6 holes, and metallurgical tests were carried out. Gallium, germanium and indium were found in old mine samples in the winter of 1985-86 and a sampling program to determine their distribution was carried out in 1986. Bulkley Silver in October 1986 amalgamated with Cater Energy Inc under the name Houston Metals Corporation.

In 1987, the 2600 level crosscut was rehabilitated and extended towards the Cole Lake veins (Diamond Belle property). A decline ramp was started from near the tailings pond area to access an ore shoot on No. 3 vein. The Camp vein system was discovered in the fall of 1987. Work in 1987 included 4532 m of diamond drilling in 65 holes, 283 m of decline, 500 m of crosscut and 764 m of drift. Feasibility studies were in progress. Metallurgical work indicated the indium and germanium values would appear in the zinc concentrate.

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