

HIGHLAND VALLEY COPPER (LORNEX)

Lornex

885096

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MINFILE / pc
MASTER REPORT

PAGE: 1
REPORT: RGEN0100

GEOLOGICAL SURVEY BRANCH - MINERAL RESOURCES DIVISION
MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

MINFILE NUMBER: 0921SW045

NATIONAL MINERAL INVENTORY: 09216 Cu2

NAME(S): LORNEX, LORNEX MINE, HIGHLAND VALLEY COPPER, HIGHLAND VALLEY

STATUS: Producer	Open Pit	MINING DIVISION: Kamloops
NTS MAP: 092106E		UTM ZONE: 10
LATITUDE: 50 27 01		NORTHING: 5590297
LONGITUDE: 121 02 30		EASTING: 639033
ELEVATION: 1550 Metres		
LOCATION ACCURACY: Within 500M		
COMMENTS: Open pit at the Discovery zone.		

COMMODITIES: Copper Molybdenum Silver Gold Zinc

MINERALS	SIGNIFICANT: Chalcopyrite	Bornite	Pyrite	Molybdenite	Chalcocite
	Covellite	Copper			
	ASSOCIATED: Quartz	Malachite	Limonite	Pyrolusite	Azurite
	Cuprite				
	ALTERATION: Quartz	K-Feldspar	Sericite	Kaolinite	Chlorite
	Epidote	Calcite	Gypsum		
ALTERATION TYPE: Silicific'n	Oxidation	Potassic	Sericitic	Argillic	Propylitic
MINERALIZATION AGE: Unknown					

DEPOSIT

CHARACTER: Stockwork	Vein		
CLASSIFICATION: Hydrothermal	Porphyry		
DIMENSION: 1900 x 750 x 500 Metres		STRIKE/DIP:	TREND/PLUNGE:
COMMENTS: Lornex deposit			

HOST ROCK
DOMINANT HOST ROCK: Plutonic

STRATIGRAPHIC AGE	GROUP	FORMATION	IGNEOUS/METAMORPHIC/OTHER
Triassic-Jurassic			Guichon Creek Batholith

LITHOLOGY: Granodiorite
Quartz Diorite
Quartz Porphyry Dyke

HOST ROCK COMMENTS: Skeena variety.

GEOLOGICAL SETTING		PHYSIOGRAPHIC AREA: Thompson Plateau
TECTONIC BELT: Intermontane		
TERRANE: Quesnellia		

RESERVES

ORE ZONE: HIGHLAND VALLEY

CATEGORY: Indicated Ore	YEAR: 1991
QUANTITY: 101300000 Tonnes	
COMMODITY	GRADE
Copper	0.4100 Per cent
Molybdenum	0.0070 Per cent
COMMENTS: Probable reserves.	
REFERENCE: Open File 1992-1	

ORE ZONE: HIGHLAND VALLEY

CATEGORY: Measured Geological	YEAR: 1991
QUANTITY: 748500000 Tonnes	
COMMODITY	GRADE
Copper	0.4100 Per cent
Molybdenum	0.0070 Per cent
COMMENTS: Proven reserves.	
REFERENCE: Open File 1992-1	

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*Roundup 1994
-\$123m to bring Lornex into prod.
-debt repaid on schedule

CAPSULE GEOLOGY

The Lornex deposit lies in the central core of the Late Triassic-Early Jurassic Guichon Creek batholith and occurs within Skeena variety granodiorite to quartz diorite. This rock is medium to coarse-grained and slightly porphyritic. The Lornex property straddles the north trending, west dipping Lornex fault which juxtaposes Skeena rocks on the east side with Bethsaida phase quartz monzonite on the west. A pre-mineral quartz porphyry dyke, probably related to the Bethsaida phase, trends northwest and pinches out in the Lornex deposit.

Mineralization is controlled by the distribution and density of fracture sets. Three major sets of copper-molybdenum veins strike north-northeast to east and dip moderately southeastward. There are two sets of post-mineral fault and fracture systems; one which roughly parallels the mineralized veins and another which offsets the first up to 2 metres. The most prominent structural feature is the Lornex fault which dips 55 degrees to the west in the southern part of the orebody, and steepens to nearly vertical in the north. This fault truncates the northwestern part of the deposit. It is characterized by a 10 centimetre to 1.5-metre wide black gouge on the footwall and discontinuous mylonite pods 1 to 50 metres wide in the hanging wall.

Five main types of hydrothermal alteration are related to quartz and sulphide mineralization. Pervasive silicification, consisting of close spaced quartz veins with associated quartz alteration, is hosted by the Skeena rocks. The quartz porphyry dyke is only weakly affected by hydrothermal alteration. Potassium feldspar veinlets and hydrothermal biotite are erratically distributed. Argillic alteration is pervasive throughout the ore zone and is characterized by quartz, sericite, kaolinite, montmorillonite and chlorite. Copper grades generally correspond to the intensity of argillization. Within the argillic zone, phyllic alteration consists of grey quartz-sericite envelopes on mineralized veins. Pervasive propylitization, consisting of epidote (zoisite), chlorite and carbonates (calcite), is peripheral to the argillic zone. There is also an irregular zone of late-stage gypsum.

The Lornex deposit is 1900 metres long, 500 metres wide and plunges northwest to a depth of at least 750 metres. Chalcopyrite, bornite and pyrite constitute 1.5 per cent of the ore zone and occur in three roughly concentric sulphide zones respectively. Sulphides occur mainly with quartz as fracture-fillings and coatings. Veins average 5 to 15 millimetres in width. Molybdenite occurs as thin laminae in banded quartz veins and less often as rosettes in vuggy quartz veins.

The oxide zone averages 3 to 30 metres in thickness and thins toward the east. Supergene minerals are malachite, limonite, pyrolusite, azurite, cuprite, chalcocite, covellite, and native copper.

Lornex mine production combined with the Valley mine (0921SW012) in 1987.

Measured geological (proven) reserves at the Highland Valley operations are 748.5 million tonnes grading 0.41 per cent copper and 0.007 per cent molybdenum; indicated (probable) reserves are 101.3 million tonnes grading 0.41 per cent copper and 0.007 per cent molybdenum (Open File 1992-1).

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- EMPR MAP *30; 65 (1989)
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The Yukon Consolidated Gold Corp. Ltd.)
- EMR MP RESFILE (Lornex Mine)
- EMR MIN RES BR FILE (Lornex)
- EMR MIN BULL MR 166

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GEOLOGICAL SURVEY BRANCH - MINERAL RESOURCES DIVISION
MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

PAGE: 3
REPORT: RGEN0100

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DATE CODED: 870327
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RUN DATE: 10/27/92
 RUN TIME: 12:21:19

MINFILE / pc
 PRODUCTION REPORT
 GEOLOGICAL SURVEY BRANCH - MINERAL RESOURCES DIVISION
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PAGE: 1
 REPORT: RGEN0200

MINFILE NUMBER:	NAME:		STATUS:		
<u>0921SW045</u>	LORNEX		Producer		
Production Year	Tonnes Mined	Tonnes Milled	Commodity	Grams Recovered	Kilograms Recovered
1990	46,263,361	46,263,361	372,006,567 lbs Silver Gold Copper 373,160 lbs ← Molybdenum	67,978,377 582,524	2,15,659 oz 18,730 oz 169,093,894 1,695,982
1989	32,323,729	32,323,729	257,437,393 lbs Silver Gold Copper 3,646,913 lbs ← Molybdenum	47,571,741 421,110	1,529,540 oz 13,540 oz 117,016,997 1,658,597
1988	39,951,690	40,015,463	386,103,707 lbs Silver Gold Copper 4,266,376 lbs ← Molybdenum	66,399,175 597,529	2,134,885 oz 19,270 oz 175,501,685 1,939,262
1987	41,999,458	41,999,458	356,174,800 lbs Silver Gold Copper 10,398,744 lbs ← Molybdenum	46,366,979 296,416	1,490,804 oz 9,530 oz 161,897,636 4,726,702
1986	15,864,000	15,943,000	Silver Copper Molybdenum	12,813,296	47,829,875 2,009,903
1985	29,211,503	29,211,503	Silver Copper Molybdenum	28,732,801	105,822,586 3,151,589
1984	28,162,932	28,162,932	Silver Copper Molybdenum	22,580,533	77,744,825 3,082,566
1983	28,766,769	28,766,769	Silver Copper Molybdenum	24,992,888	87,442,989 2,768,393
1982	27,842,904	27,842,904	? Silver? Gold Molybdenum Zinc	28,849,936	2,109,237 102,788,005
1981	20,739,392	20,739,392	Silver Copper Molybdenum	17,921,014	66,180,006 1,732,772
1980	16,037,591	16,037,591	Silver Copper Molybdenum	* 18,372,886	63,431,872 2,168,136
1979	16,102,384	16,126,103	Silver Copper	16,562,009	60,858,558
1978	15,865,501	15,927,064	Silver Copper	17,486,200	63,114,028
1977	15,583,834	15,480,725	Silver Gold Copper	19,209,555 12,597	405 oz 66,156,450
1976	14,731,696	15,436,575	Silver Gold Copper	17,316,751 26,851	863 oz 68,313,748
1975	11,468,765	11,696,413	Silver Gold Copper	13,042,545 7,745	249 oz 50,239,447
1974	14,648,770	14,918,993	Silver Gold Copper	13,546,538 20,466	659 oz 48,763,749

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PAGE: 2
 REPORT: RGEN0200

MINFILE NUMBER: 0921SW045		NAME: LORNEX		STATUS: Producer	
Production Year	Tonnes Mined	Tonnes Milled	Commodity	Grams Recovered	Kilograms Recovered
1974	14,648,770	14,918,993	Molybdenum		1,785,875
1973	12,688,727	12,688,727	Silver	13,405,393	
			Gold	23,732	
			Copper		46,347,826
			Molybdenum		1,535,402
1972	2,587,118	2,587,118	Silver	4,308,512	
			Gold	6,780	
			Copper		16,047,187

SUMMARY TOTALS: 0921SW045

NAME: LORNEX

	Metric	Imperial
Mined:	430,840,124 tonnes	474,919,937 tons
Milled:	432,167,820 tonnes	476,383,471 tons
Recovery:		
Silver:	468,607,193 grams	15,066,069 ounces
Gold:	30,845,686 grams	991,710 ounces
Copper:	1,491,803,358 kilograms	3,288,862,503 pounds
Molybdenum:	30,364,416 kilograms	66,942,060 pounds
Zinc:	102,788,005 kilograms	226,608,697 pounds

Comments:

1990: 1987-1990: Production includes the Valley mine (0921SW012).
 1986: Six months operation only.

Wrong!! = 64,180

"Highland Valley Copper (1987-present)"

Plus 1991 Prod.

Tons Milled

51,033,000

Commodity

Recovery

Ag - 2,110,000 (02)

Au - 14,046 (02)

Cu - 391,087,039 (165)

Mo - 4,059,545 (165)

Reserves (to Jan. 1/92)

727 m tons @

.416% Cu + 0.0007% Mo

+ 0.0002 opt Au

Totals (Lornex) = ('72-'86 incl)

Ag = 5,615,161 oz

Au = 3,156 oz

Cu = 1,917,140,036 lbs

Totals to end '91 (HVC + Lornex)

Ag =

Au = 78,214 oz

Cu =

Mo =

Totals (HVC) '87-'91

Ag = 9,440,888 oz

Au = 61,012 oz

Cu = 1,762,809,506 lbs

Mo = 26,104,738 lbs