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GEOLOGICAL SURVEY OF CANADA

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**GEOLOGY AND REGIONAL SETTING OF MAJOR
MINERAL DEPOSITS IN SOUTHERN
BRITISH COLUMBIA**

[FIELD TRIP 12]

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8TH IAGOD SYMPOSIUM

FIELD TRIP GUIDEBOOK

Chapter 7b
THE LORNEX DEPOSIT¹

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INTRODUCTION

This report is mainly after a description published by M. W. Waldner, G.D. Smith, and R.D. Willis in 1976; it includes updated geological plan and section maps courtesy of Lornex Mining Corporation Ltd.

The Lornex copper-molybdenum deposit is in the interior plateau of British Columbia on the southern slope of the Highland Valley at latitude 50°27' north, longitude 121°03' west, NTS 921/6E. The pre-mining surface of the orebody was about 1 550 metres above sea level. The property is 42 kilometres by road southeast from Ashcroft and 72 kilometres by road from Kamloops.

HISTORY

Copper mineralization was discovered in bulldozer trenches spotted by Egil Lorentzen in 1964. Mr. Lorentzen formed Lornex Mining Corporation Ltd., and in 1965, under agreement with Lornex, Rio Tinto Canadian Exploration Limited began an investigation of the property. A program of geochemical, induced polarization, magnetometer, and geological surveys followed. The induced polarization survey outlined two zones where chargeabilities were in excess of 5 milliseconds - twice mean background. Subsequent diamond drilling of the anomalous zones returned encouraging copper grades. A total of 26 200 metres of surface diamond drilling and 27 000 metres of percussion drilling were completed by 1967. An underground bulk sampling and a small open pit provided feed for a pilot mill at 90 tonnes per day.

The developed orebody, which contained an estimated 266 million tonnes of mineable ore, was put into production in the spring of 1972 by Lornex Mining Corporation Ltd., which is controlled by Rio Algom

Mines Limited. During the period from 1973 to 1974, additional reserves were outlined by 20 700 metres of diamond drilling.

The mill was initially designed to process 34 500 tonnes of ore per day; however, actual throughput attained 43 500 tonnes per day. In 1979 expansion was initiated and increased design capacity to 84 000 tonnes per day.

GEOLOGY

Lornex copper-molybdenum deposit is approximately 1 900 metres long, 500 metres wide, and plunges northwesterly to a depth in excess of 750 metres (less than 850 metres above sea level). The ore deposit is mantled by 2 to 75 metres of overburden, which gradually thins eastward from a maximum depth in Award Creek Valley, the surface expression of the Lornex fault.

The orebody occurs within Skeena variety, a slightly porphyritic, medium to coarse-grained granodiorite (Fig. 6). It consists of quartz (20 per cent), plagioclase (50 per cent), orthoclase (10 per cent), biotite (5 to 20 per cent), and hornblende (5 to 10 per cent), with accessory sphene, apatite, zircon, and magnetite. Quartz occurs interstitially, as subhedral grains that show undulatory extinction. Plagioclase is twinned with complex oscillatory zoning; crystal cores are generally An₃₀₋₃₅. Orthoclase is interstitial and perthitic. Biotite is subhedral to euhedral; hornblende is irregular, anhedral, and commonly poikilitic.

A pre-mineral quartz porphyry dyke (Fig. 6), which probably is related to the Bethsaida phase (McMillan, 1976), trends northwesterly through the Highmont property and pinches out in the Lornex orebody. Contacts of the dyke are indistinct because

¹ modified from McMillan (1985)