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R. V. KIRKHAM

# Granduc mine prepares for production

The Granduc copper mine, located 30 miles north of Stewart in northwestern British Columbia, will be back in business by July 1980.

The mine closed in June 1978 and, following an agreement between Granduc and Esso Resources Canada Limited, a year later work began on a \$20-million program to reopen the mine and mill.

Esso purchased mining and milling equipment used by the former operator Newmont Mines Limited and re-designed the underground operation using conventional blast hole stoping and pillar caving methods. A production rate of 1.5-million tons annually grading 1.75% copper is planned.

Canada Wide Mines Limited, a subsidiary of Esso Resources, is operator of the project.

The following summary prepared from a report by Esso's Janeen Bowes details steps taken by the company to reinstate the mine as a copper producer.

### A NEW PROJECT GETS UNDER WAY

On 31 May 1979 Esso Resources bought the Granduc copper mine from Granduc Mines Limited and Newmont Mines Limited. Nine months earlier, in August 1978, Vic Jutronic, Charlie Aird and Fenton Scott, senior managers of Esso Minerals Canada, a division of Esso Resources, took their first critical look at the Granduc operation.

They were considering purchasing some of the mining and processing equipment and the concentrate storage and shipping facilities at Stewart, BC, for a copper-zinc-gold-silver deposit that Esso Minerals is developing at Kutcho Creek, 65 miles east of Dease Lake, BC. The three men assessed the potential of Granduc and were convinced that by switching to a different mining method, Esso Minerals could turn the formerly unprofitable mine into an economic venture.

Esso Resources management agreed, and the Foreign Investment Review Agency and the shareholders of Granduc approved the sale. In June 1979, staff from Canada Wide Mines Limited, arrived at the site to prepare for the reopening of the Granduc mine.

### CONCENTRATOR CHANGES

The company plans to treat approximately 4000 tons/day of ore compared to the original design capacity of 8000 tons/day. As a result, some of the equipment in the concentrator (mainly in the grinding and flotation circuits) was not needed. Satisfactory metallurgical results had been achieved in the previous milling operation and no new flow charts were proposed.

Granduc has been shut down for a year before Canada Wide Mines took over and during that time, the heavy snowfalls in the area had collapsed the steel-beamed roof of the concentrator.

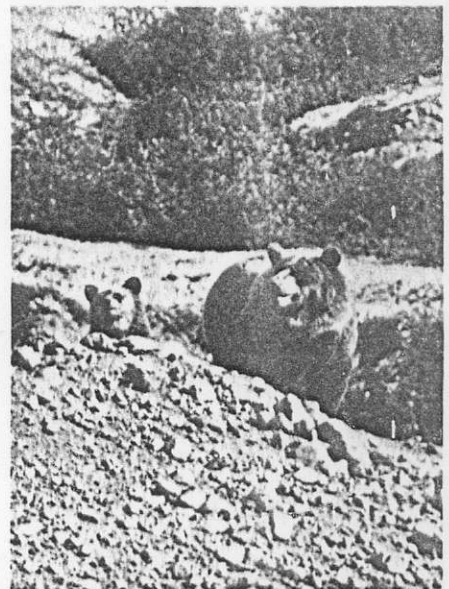
'Although the roof caved in, most of the equipment housed inside the concentrator was still in working condition', said Mine Manager Jerry Vincent.

Reconstruction of the concentrator roof was a priority in getting Granduc back on-stream. Work began in June and was completed at the end of October 1979 at a cost of \$7-million.

### MINE REHABILITATION

With work on the concentrator under way, contractors began work on the

*Some friendly visitors to the Granduc site*

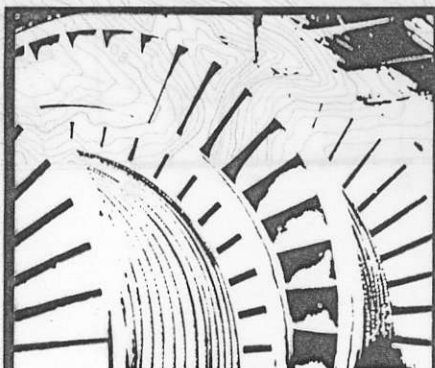


## SAGE CREEK COAL LTD.



**Herbert A. Pakrul, R.I.A.**

The appointment is announced of Herbert A. Pakrul as President, Sage Creek Coal Ltd., majority controlled by Rio Algom Limited. Mr. Pakrul was previously Controller of Rio Algom and will continue to be a Vice-President of that company. He will be located in Vancouver.



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ventilation system in the mine and on the power house and related electrical systems.

A major portion of the electrical expertise was directed to the power distribution system needed to reactivate a high-speed underground railroad. The system was designed to move cars with a carrying capacity of 45 tonnes through an 18km tunnel connecting the mining area and the concentrator building. The same railroad will be used to transport mining crews to and from the underground work areas. Once back in operation, a round trip will take about one hour.

With the exception of changing the underground mining method from sublevel caving to open-stopping — a technique that should result in less waste rock and more ore entering the concentrator — Granduc will operate in much the same way as before. Miners will use mechanized multidrill jumbos to excavate the ore and rubber-tired load-haul-dump vehicles to remove it. The daily ore production requirements will be about 3 600 tonnes.

An internal ramp system, connecting the different levels of the mine, will allow the vehicles to collect the ore and transport it to a gathering system where it will be carried to an underground crusher. This primary crusher will reduce the ore to pieces about 15 centimetres in size.

The ore then travels by conveyor to two bins where it is loaded into the railcars and taken to the concentrator at the other end of the main tunnel. There it passes through the fine crushing plant, and through the flotation process where the copper containing mineral is floated off, thickened, filtered and dried to produce copper concentrate.

The dried concentrate will be trucked



*Dave Watson, distribution manager, inspects some old diamond drill core samples*

50km south to the company's marine terminal at Stewart, at the rate of 270- to 315-tonnes/day. The terminal, located at the head of the Portland Canal, has a storage capacity for 13,500 tonnes of concentrate, a loading arm and docking facilities that can accommodate ships of up to 45,000-tonnes capacity.

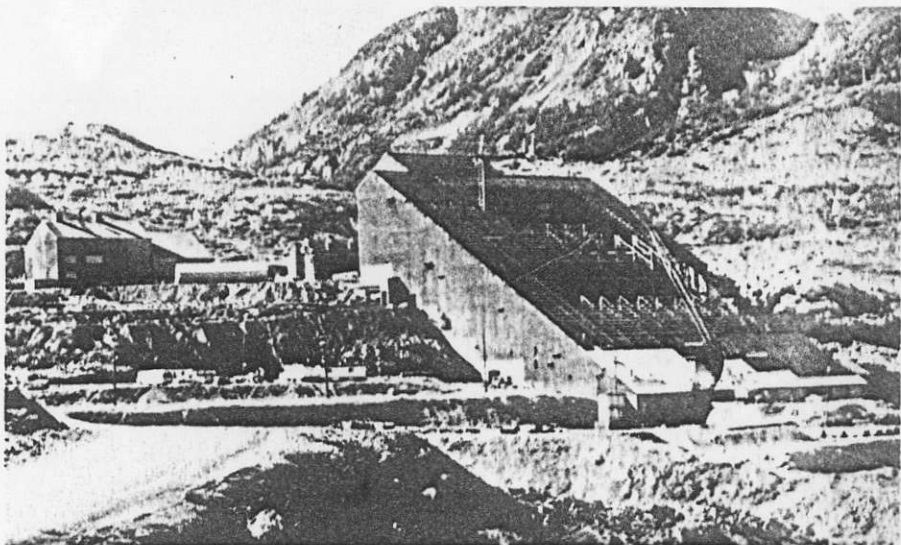
'We expect to ship the concentrate every one or two months on ships capable of taking 10,000 tonnes a trip,' says Mr Vincent. Esso Minerals is currently investigating potential markets for the Granduc concentrate. In the past, it was sent to markets in Japan.

Once in operation, the mine will employ about 360 people.

Esso estimates in-place reserves of approximately 12-million tons grading 1.79% copper which will be sufficient to give the mine a minimum five-year life from the start-up date.

WM

*The sloping roof of the concentrator had to be reconstructed after it caved in from a snow build up*





## Granduc Improvement

A change in fortunes due to a higher price of copper and greater mill throughput has led Granduc Mines to anticipate that in the last quarter of 1973 royalties payable to it under the lease agreement will be sufficient to eliminate the remaining smelter deficit of \$719,768. J. Norman Hyland, president, states in the quarterly report to shareholders.

There is the additional prospect, he said, that Granduc will be in receipt of cash income in early 1974. This expectation is based on maintenance of production, shipments, and copper prices at their current levels, he added.

Granduc Mines leased its mine jointly to Granduc Operating Co., subsidiary of Newmont Mining Corp., and American Smelting & Refining for a 22.5% royalty of defined net proceeds. For the period since the start of operations, Mar. 1, 1971, to Sept. 30, 1973, there is a smelter deficit of \$3,198,971 of which Granduc Mines' share is \$719,768.

For the nine months ended Sept. 30, 1973, net smelter returns were \$30,818,980 received in cash by the lessees for 46,478,915 lbs. of copper sold. Operating expenses and capital expenditures totaled \$18,491,505, leaving net proceeds on an accrual basis of \$12,327,505.

In the third quarter the mill handled 690,170 tons of ore averaging 1.29% copper. Production totalled 29,828 tons of concentrate averaging 28.3% copper. Copper output amounted to 16,876,668 lbs. Recovery was 94.9%.

Concentrator throughput for the quarter averaged 7,502 tons per day, down 4.8% from the previous quarter due to problems encountered with the underground and surface main conveyor belts. In October the milling rate averaged 7,725 tons a day with a grade of 1.26% copper.

Ore mined during the quarter was 21% from development and 79% from production with 61% of the ore coming from Block No. 1 and the remainder from Block No. 2. The trackless development was 5,976 ft. in Block No. 1 of which 68% was in ore, and 6,565 ft. in Block No. 2 of which 88% was in ore. Levels currently under development for sub-level caving in Block No. 1 are 3065, 3020, 2975, 2930 and 2795. In Block No. 2 levels under development are 3345, 3300, 3255 and 3120.

### CORE BOXES

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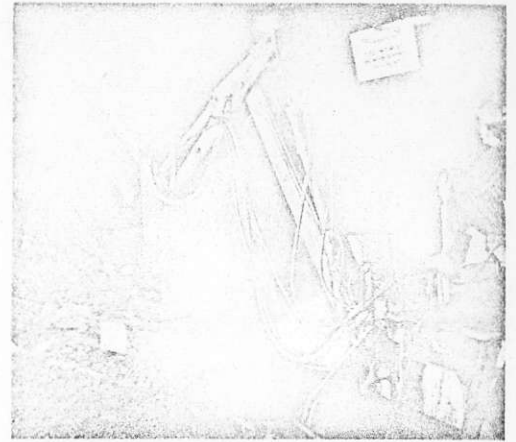
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# don't grapple with oversize...

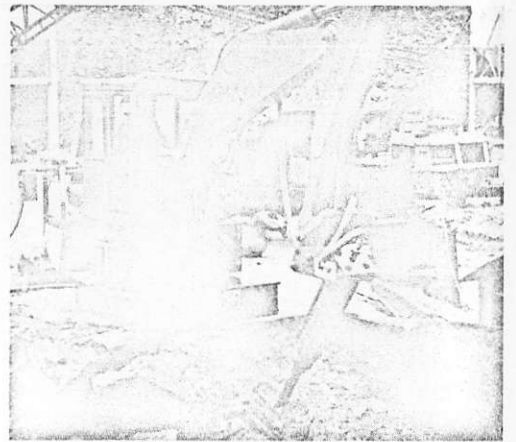
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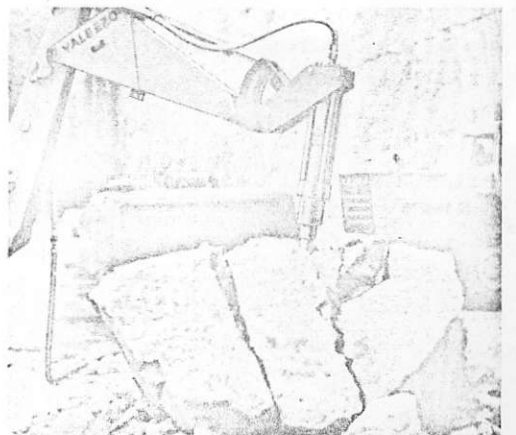
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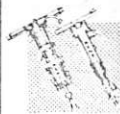
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