

Exploitation of the Inca Area.

The deposit is made up of two mineralized bodies with total in situ reserves of 161 million tons and grades of 0.6% of copper, 0.116 g/t of gold and 0.02% of molybdenum. These reserves comprise a 250 km² area that is to be exploited by the block destruction method. The project's total investment has been estimated at US\$ 25 million, and it would start operating in March 1992. During 1990 US\$ 5.9 million was invested to develop this deposit, and the investment in 1991 was US\$ 15.9 million.

Sources quoting the Division's General Manager, engineer Bruno Behn, indicate that the deposit's reserves would reach 500 million tons of sulfured mineral with a 0.8% grade of copper. Its exploitation, at a rate of 12 million tpy, would mean extending the Division's life for another thirty years. Operations are planned to start gradually as of 1992 with initial production of one million tons of mineral.

Oxidized Mineral Leaching.

The project includes construction of a plant to treat oxidized minerals from Quebrada "M" and Colina del Cobre. Part of this material was sold previously to Chuquicamata for a price over US\$ 700 thousand.

The metallurgical process basically includes heap leaching, followed by cementation with iron. The final product, copper cement, will be sent to the Potrerillos Smelter to obtain copper cathodes.

Operation of the project would produce an estimated 7,000 tpy of fine copper. Investment is estimated at US\$ 6.4 million. During 1991 an investment of approximately US\$ 3 million in this project was announced.

Flotation Cell Replacement.

The project for flotation cell replacement in the cleaning process emerges from the need to process a larger volume of concentrate with lower grades. It will also make it possible to improve copper recovery and will contribute to savings in power consumption.

Investment has been estimated at US\$ 620,000.

Electrolytic Refinery Expansion.

The purpose of expanding the refinery by 10,000 metric tons is to process copper surplus from the smelter in the form of anodes.

This expansion will make it possible to increase production to 120,000 tpy of electrolytic copper.

There is also a plan, which has not been approved yet, to expand the smelter from a capacity of 500 thousand tons of concentrate per year to 700 thousand. The plan includes construction of a second oxygen plant, a dry concentrate injection plant and a new casting wheel. It also includes a 5-meter diameter Teniente converter, a new refining furnace and a crane with a total investment of US\$ 70 million. Subsequently, a new sulfuric acid plant should be added which would add another US\$ 30 million.

Andina Division.

The fact that Andina does not have a smelter has increased its costs. Processing fees for concentrate treatment are around 38 cents which, added to the 47 cent production cost raises total cost to 85 cents, make it the highest cost of all Codelco Divisions.

This situation is a source of concern to Andina executives, because mineral grades have decreased to below 1.2%, and considerable investment is needed in the near future like the construction of a new tailings dam.

Plans to control this situation have resulted in two programs: improving copper recovery in the concentrating plant and improving mineral dilution in the underground mine. Together they represent a US\$ 37 million investment, and they are estimated to reduce costs by approximately 2 cents per pound of fine copper to around US\$ 20 million per year.

Production is expected to rise from 114 thousand tons to 127 thousand tons as a result of the project to increase metallurgical recovery from 79% to 84.5%.

The investment necessary to develop the capacity described above is approximately US\$ 350 million, US\$ 200 million of which should be invested in the first five years following approval of the project. For the time being investment plans are more modest.