

Sur-Sur Mine.

One of the main problems the Division faces is equipping the Sur-Sur mine which should have the best elements to face tough local conditions. However, budgetary restrictions have forced the use of discarded equipment or equipment that has been rented from third parties. In either case the equipment is worn out or inadequate for any mine that has to operate in extremely adverse weather conditions.

The solution that has been adopted consists of gradually replacing obsolete equipment with adequate equipment, according to the availability of funds for investment.

Another important problem is the compulsory interruption of activities in the Sur-Sur mine during winter which, in turn, causes the following problems:

- The production quota required of this mine must be completed in only eight months per year, which means equipment must be increased by 50%.

- The mineral that cannot be extracted in winter must be obtained during the eight months of operation and then stored in the superficial crater produced above the underground mine (as a result of the mining method used - block caving).

- The sector of the crater where the mineral can be stored will collapse at the latest in 1993, as a result of the underground operation that has been programmed to that date, and it could even collapse partially before which would prevent current operations from continuing.

The solutions adopted for these problems are the following:

- The current facilities of the Sur-Sur mine will be reinforced for the winter, which will increase the operating period without reaching 100% of the year which is considered impossible.

- A new open pit mine (Rajo Sur) will be developed which will work jointly with Sur-Sur to replace the current storage of mineral in the crater of the underground mine from 1993 on.

El Teniente Division.

As a result of explorations made during 1990, the existence of the Quebrada Teniente ore deposit was confirmed. The Quebrada Teniente is a mineralized body of 50 million tons grading 1.4% extractable copper which could be exploited underground using the current mine infrastructure. Investment is US\$ 45 million, and it should start production in 1994.

In the summer of 1991-1992 another anomaly detected to the south-east of the deposit will be investigated. Subsequently, explorations will be made in areas which are farther away from the deposit.

Teniente Electricity Supply Tender.

Codelco tendered the construction of a 92 MW hydroelectric plant located in the river basin of Río Cachapoal. The Corrales plant will include a dam that will hold 53 million cubic meters of water and a tunnel 6.4 kilometers long. Estimated investment is US\$ 150 million.

Other Teniente Projects and Studies.

In December, 1988 Codelco announced the tender of the Division's fresh tailings and the tailings stored at the Cauquenes Dam which contain copper, molybdenum, rutile, nickel, gallium, cobalt and other elements. The Division estimates that this project would generate additional production of fine copper of around 20,000 metric tpy for approximately 20 years.

Division has studied the construction and the operation of a 1500 tpd sulfuric acid plant. The same study includes a system to treat effluents and all auxiliary services.

During 1989 and 1990 the following studies were carried out:

- In the mining geological area, basic research to improve the geological model of the deposits, geomechanical studies and studies of rock burst phenomena, optimization of blasting design and slope stability.

- In the mineral concentration area, gravitational preconcentration, evaluation of milling equipment, removal of impurities and enriching concentrates with copper, hyperbaric concentrate filtering forms and, in general, the optimization of operating conditions for milling and flotation.