

Financing has already been approved by the Banco Central, through DL 600.

Ore reserves were estimated at 17.2 million tons, with a cut-off grade of 10% and a grade of 12.8% of sodium nitrate and an iodine content of 245 ppm. In the 26 km square area that was explored initially, 2.2 million tons of nitrate were found (which could be converted into 2.64 million tons of potassium nitrate) and 4,200 tons of iodine.

The Yolanda Process.

The mining exploitation method will use front end loaders and trucks to take the material of heap leaching sector with water (fresh or sea water). Approximately 40% of the minerals in the saltpeter are soluble. The solution will be recycled until saturation, and then it will be sent to a processing plant for iodine extraction.

Iodine is present in the solution in the form of oxygen-rich iodates. They are mixed with iodides in the presence of acid, precipitating elemental iodine, which is filtered, mixed, purified with acid, crystallized in flakes and packed in drums. Recovery is estimated at 90%.

In the next stage nitrate is extracted, and the solution that comes from the iodine is neutralized to remove all the acid. The heated solution is mixed with potassium chloride in tanks that are stirred. Chloride precipitates, leaving potassium nitrate in the solution. The hot liquid is cooled in a series of crystallizers, which precipitates potassium nitrate. Crystals are dried, granulated and packed in bags ready for shipping. Recovery would also be 90%. In the last stage sulfide is extracted.

The feasibility study considers that operations will start with a production of 5000 tpy. They are confident that the market will absorb all the iodine produced, but nitrate commercialization should be more difficult. At current prices, nitrate should provide 90% of the earnings.

III.2.- Sulfur Mining.

Chilean production of sulfur in 1991 totalled 16,884 tons, a figure significantly lower than the 28,582 tons, produced in previous year, this because of the increase in sulfuric acid production from metallurgical gases in the copper industry.

Chile has large reserves volcanic type sulfur located more than 4,000 meters above sea level. Extraction is very costly and, the product can hardly compete with imported sulfur at historical prices. Therefore, work is carried out sporadically while awaiting price increases.

Sulfur imports are 70,000 tpy, mainly from Canada and Bolivia.

Most of it is used as raw material to make sulfuric acid. Codelco and Enami's sulfuric acid plants will reduce these imports to less than half, and imports will be only for agricultural and chemical uses. This offer of acid obtained from gases is also being reflected in lower production of national sulfur.

CORFO has evaluated the possibility of starting up new plants in Chile several times, and is looking for efficient refining processes that deliver an optimum quality product. In 1987 a new analysis was made for this purpose, but the indefinite price trend and increase in the capacity to produce acid from sulfur dioxide gases have detained the development of this industry.

Many foreign investments in this sector have suffered similar fate.

Two or three years ago many companies showed an interest in analyzing sulfur production from different sources, but there have been no concrete results.

Sillajuaya Volcano - RMS Group of Canada.

The R.M.S. group of Canada announced investments of US\$ 85 million in a plant to float 5,000 tpd of saltpeter in the Sillajuaya Volcano. The highest cost was the construction of infrastructure.

Freeport analyzed the project and found metallurgical problems which had to be solved in the flotation stage. The project was abandoned.