



Technology News

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USER-FRIENDLY IN SITU COPPER OXIDE LEACH MINING COST MODEL

Objective

Enable prospective in situ leach mine operators to evaluate the economic potential of an ore body by using a user-friendly, computerized in situ copper oxide leach mining cost model.

Background

As part of its research on in situ leach mining technology, the Bureau of Mines produced a 5-volume contract report that mining companies can use to design an in situ mining operation for copper oxide deposits. Written for the Bureau by the Science Applications International Corporation (SAIC) in 1988, the generic design manual also contains a computerized cost model for evaluating the economic feasibility of in situ leach mining for any specific copper oxide deposit. The cost model is to be used with Volume II of the contract report. But because of certain complexities associated with running it, the Bureau found that the model could be improved by making it more user friendly.

Approach

The approach taken by Bureau researchers to make the original model more user friendly was to incorporate a HELP function to define input parameters, and to enable the display of output on the monitor. An accompanying handbook, U.S. Bureau of Mines Information Circular

(IC) 9284, contains further details on running the 1990 model.

How It Works

Even though the new computer program is menu driven, the user will need Bureau IC 9284 to run the program efficiently. Volume II of the contract report is still recommended for a more detailed understanding of in situ leach mining and for cost model insights.

To run the new program, the user responds to monitor prompts with keyboard input. A tutorial on entering input data can be viewed at the initial screen prompt. Next, the input phase provides the input parameters with their default values. These parameters are grouped into various categories: (1) business-related variables, (2) site-specific ore body and well-field characteristics, (3) copper leaching, (4) program control, (5) well-system specifications and costs, (6) surface-plant specifications and costs, and (7) environmental costs. The user may change the value of any of the parameters. The HELP function allows the user to see the definition and the data range or default value for a particular parameter.

An executable Fortran 77 program performs the calculations. The following outputs are then displayed: (1) design variable values and capital and operating costs, (2) pre-tax calculated selling price of cathode copper for a given discounted-cash-flow rate of return (DCFROR) or vice versa, (3) discounted initial value of investment, (4) annual operating costs, and (5) DCFROR cash flow table. This information may also be printed out.

For More Information

A copy of the 1990 cost model program on a floppy diskette may be obtained by contacting the Deputy Research Director, Twin Cities Research Center, U.S. Bureau of Mines, 5629 Minnehaha Avenue, South, Minneapolis, MN 55417. Requests for this program should include a double-sided, double-density 5-1/4-in or 3-1/2-in blank floppy diskette (formatted) for MS DOS and a return address label.

U.S. Bureau of Mines IC 9284, "User's Manual for the U.S. Bureau of Mines In Situ Copper Oxide Mining Cost Model," by J. M. Pugliese and O. M. Peterson, should be used with the 1990 version of the computer program. This handbook describes the files, tutorial, input phase, help function, and monitor-display of all calculated values and of the DCFROR cash flow table. A free single copy may be obtained by writing the Bureau's Publication Distribution Section, Bldg. 149, Cochran Mill Road, P.O. Box

18070, Pittsburgh, PA 15236. (A limited number of copies are available from the IC's authors at the Bureau's Twin Cities Research Center at the address previously mentioned.)

The 5-volume SAIC contract final report is sold by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161. Each volume may be ordered separately. The second volume may be ordered at the price noted.

Volume II: Draft Generic In Situ Copper Mine Design Manual. NTIS No. PB 89-148225/AS, \$45.00 for paper, \$8.00 for microfiche.

Additional technical information is available from Joseph M. Pugliese (612/725-4569) or Orin M. Peterson (612/725-4548), Twin Cities Research Center, U.S. Bureau of Mines, Minneapolis, MN 55417.

COST MODEL ASPECTS

