

PREVAL: PREFEASIBILITY SOFTWARE PROGRAM FOR EVALUATING MINERAL PROPERTIES

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ABSTRACT

This report presents the software documentation for PREVAL, a prefeasibility mineral property evaluation program developed by the U.S. Bureau of Mines on a Lotus 1-2-3² spreadsheet. It is presented in a step-by-step "users manual" format. Appendixes contain the technical assumptions, program default values, and a summary printout detailing capital and operating costs and cash-flow analysis.

INTRODUCTION

PREVAL is a software program developed on a Lotus 1-2-3 spreadsheet for prefeasibility valuation of mineral properties. It is a composite of many products developed by the U.S. Bureau of Mines for various aspects of mineral property evaluation, such as the Cost Estimating System (CES) handbooks and the economic analysis program (MINSIM). It was developed to enhance studies for the Minerals Availability and Mineral Land Assessment programs. The cost models used in PREVAL were developed by Thomas W. Camm, mining engineer, Bureau of Mines, Western Field Operations Center, Spokane, WA. The Federal tax routines were developed by Gary R. Peterson, mineral economist, Bureau of Mines, Minerals Availability Field Office, Denver, CO.

PREVAL is unique in that it utilizes aspects of expert systems programming to ask questions, make decisions, and then allow for user override. The software is designed to make an estimate of the total cost of production for a mineral property when not much is known about the mineral potential. The system works best for comparing the relative values of mineral properties and playing the "what if" game. The user should be cautious, however; the results should not be used as definitive numbers for any one property. Also, the individual cost components for each model should not be used separately because they are less accurate than the total cost estimate.

The PREVAL advantage is that estimates can become more accurate, when better information about a property is obtained, by allowing the user to modify program defaults through the menu system. For example, PREVAL uses a gold recovery of 70% for heap leach processing; however, if analytical tests of the ore indicate a recovery of 76%, then the menu system can be used to change the program default of 70% to 76%. Thus, the results can be "improved" if the user has additional information about the ore body.

PREVAL is essentially one giant macro. When the file is retrieved into 1-2-3, the program