

README

U.S. Geological Survey
Open-File Report 2004-1344

Version 3.0 of EMINERS--Economic Mineral Resource Simulator

By Joseph S. Duval

Version 3.0 is an update to USGS Open-File Report 2004-1344, which originally was version 2.0 of EMINERS by J.S. Duval

U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
Marcia K. McNutt, Director

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INTRODUCTION

Quantitative mineral resource assessment, as developed by the U.S. Geological Survey (USGS), consists of three parts: (1) development of grade and tonnage mineral deposit models; (2) delineation of tracts permissive for each deposit type; and (3) probabilistic estimation of the numbers of undiscovered deposits for each deposit type (Singer and Menzie, 2010). The estimate of the number of undiscovered deposits at different levels of probability is the input to the EMINERS (Economic Mineral Resource Simulator) program.

EMINERS uses a Monte Carlo statistical process to combine probabilistic estimates of undiscovered mineral deposits with models of mineral deposit grade and tonnage to estimate mineral resources. It is based upon a simulation program developed by Root and others (1992), who discussed many of the methods and algorithms of the program. Various versions of the original program (called "MARK3" and developed by David H. Root, William A. Scott, and Lawrence J. Drew of the USGS) have been published (Root, Scott, and Selner, 1996; Duval, 2000, and this report).

Version 3.0 of the EMINERS program is available as this USGS Open-File Report 2004-1344. Changes from version 2.0 include updating 87 grade and tonnage models, designing new templates to produce graphs showing cumulative distribution and summary tables, and disabling economic filters. The economic filters were disabled because embedded data for costs of labor and materials, mining techniques, and beneficiation methods are out of date. However, the cost algorithms used in the disabled economic filters are still in the program and available for reference for mining methods and milling techniques included in Camm (1991). The release notes included with this report give more details on changes in EMINERS over the years.

EMINERS is written in C++ and depends upon the Microsoft Visual C++ 6.0 programming environment. The code depends heavily on the use of Microsoft Foundation Classes (MFC) for implementation of the Windows interface. The program works only on Microsoft Windows XP or newer personal computers. It does not work on Macintosh computers.

For help in using the program in this report, see the "Quick-Start Guide for Version 3.0 of EMINERS--Economic Mineral Resource Simulator" (Bawiec and Spanski, 2012). It demonstrates how to execute EMINERS software using default settings and existing deposit models.

REFERENCES CITED IN THE INTRODUCTION

Bawiec, W.J., and Spanski, G.T., 2012, Quick-start guide for version 3.0 of EMINERS--Economic Mineral Resource Simulator: U.S. Geological Survey Open-File Report 2009-1057, 26 p., available only at <http://pubs.usgs.gov/of/2009/1057>. (This report supplements USGS OFR 2004-1344.)

Camm, T.W., 1991, Simplified cost models for prefeasibility mineral evaluations: U.S. Bureau of Mines Information Circular 9298, 35 p. (Also available at <http://pubs.usgs.gov/usbmic/ic-9298/html/cammfrms.htm>.)

Duval, J.S., 2000, A Microsoft Windows version of the MARK3 Monte Carlo mineral resource simulator: U.S. Geological Survey Open-File Report 00-415, 1 CD-ROM. (Also available at <http://pubs.usgs.gov/of/2000/of00-415/>.)

Root, D.H., Menzie, W.D., and Scott, W.A., 1992, Computer Monte Carlo simulation in quantitative resource estimation: *Nonrenewable Resources*, v. 1, no. 2, p. 125-138.

Root, D.H., Scott, W.A., Jr., and Selner, G.I., 1996, Computer program for aggregation of probabilistic assessments of mineral resources: U.S. Geological Survey Open-File Report 96-94, 1 diskette.

Singer, D.A., and Menzie, W.D., 2010, *Quantitative mineral resource assessment--An integrated approach*: New York, Oxford University Press, 219 p.

CONTACT INFORMATION

Inquiries about this report should be addressed to:

Jane Hammarstrom
U.S. Geological Survey
National Center, Mail Stop 954
Reston, VA 20192

Telephone: (703) 648-6165
E-mail: jhammars@usgs.gov

FILES THAT CONSTITUTE THIS REPORT

Three items are available for download from the index Web page for this report:

- readme.pdf (this document)
- zipped EMINERS folder
- ReleaseNotes.pdf

The zipped EMINERS folder contains the EMINERS program, release notes, grade and tonnage models, program help files, a zipped source code folder, and Excel templates to display both graphical and tabular output. Items in the EMINERS folder include:

The EMINERS executable code
Eminers.exe

Data for models, required output folder, and templates for output
EMINERS Output
Models-Grade&Tonnage
Models-Input
Templates

Files required for built-in help, including sources of some models and other information
Bull1693.fts
BULL1693.HLP
bull2004.fts
bull2004.hlp
Camm1991.cnt
Camm1991.fts
Camm1991.GID
CAMM1991.HLP
Eminers.cnt
Eminers.GID
EMINERS.HLP

Additional files required for program execution
Modldata.bck
Modldata.s00
ModlData.txt
MonteCarlo.dll

Release notes
relnotes 3_0.txt

Readme
readme.txt

Source code
EMINERS 3.0 source code.zip

SYSTEM REQUIREMENTS

The EMINERS program works only on Microsoft Windows XP or newer personal computers. It does not work on Macintosh computers.

DISCLAIMER

This version 3.0 of the EMINERS program has been approved for release and publication by the Director of the U.S. Geological Survey (USGS). Although this program has been subjected to rigorous review and is substantially complete, the USGS reserves the right to revise the data pursuant to further analysis and review. Furthermore, it is released on condition that neither the USGS nor the United States Government may be held liable for any damages resulting from its authorized or unauthorized use.

Although this program has been used successfully on a computer system at the USGS, no warranty expressed or implied is made regarding the display or utility of the data on any other system, or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. The USGS shall not be held liable for improper or incorrect use of the program or data described and/or contained herein. Neither the U.S. Government, the Department of the Interior, nor the USGS, nor any of their employees, contractors, or subcontractors, make any warranty, express or implied, nor assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, nor represent that its use would not infringe on privately owned rights.

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