PACKAGE ID - 000781AL00000 BOREXT

KWIC TITLE - FEC Profile Model for Wellbore Characteristics

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LIMITATION CODE -COPY **AUDIENCE CODE -** LIM

COMPLETION DATE - 04/03/1992 **PUBLICATION DATE -** 04/03/1992

DESCRIPTION - BOREXT is an interactive computer code, written in FORTRAN with a graphical user interface (GUI), which numerically solves a one-dimensional parabolic differential equation using the finite-difference method. Program operation is controlled by the GUI. Input data is read from disk files and may be modified interactively. Output of the program consists mainly of computational results displayed in a variety of graphical forms on the computer screen, possibly superimposed on the input data for comparison. Modifications to input data may be written to disk files for future reference. The principle reference for the code is Hale and Tsang (1988), which describes the basic input, computation, and output of the code, apart from the GUI, as developed in the predecessor code BORE.

PACKAGE CONTENTS - Media Directory; Software Abstract; Media Includes Source Code, Auxiliary Material, Sample Problem Input Data;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 3.5 Diskette

METHOD OF SOLUTION - A complete description of the soultion method is found in Hale and Tsang (1988). The solution method was first developed in the predecessor code BORE. In brief, a one-dimensional parabolic differential equation for advection and diffusion with a source term is solved in order to give the change in concentration at a given point in the wellbore over time. It is assumed that (1) the wellbore can be modeled as a cylindrical pipe closed at one end with a number of discrete inflow points along its length, (2) the initial conductivity profile in the wellbore in known, (3) that the linear velocity in the wellbore is sufficiently small that there is no turbulence, and (4) that there is uniform radial mixing in the borehole and uniform linear mixing within a cell.

COMPUTER - APPLE MACINTOSH

OPERATING SYSTEMS - DOS 3.2 or higher

PROGRAMMING LANGUAGES - Microsoft FORTRAN

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SOFTWARE LIMITATIONS - There are no solid restrictions on the complexity of the problem from the code itself. Limitations may be imposed by the speed of the computer on which the code is run and by the amount of memory available.

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - BOREXT is a third stage in one direction of a project to develop software for FEC log analysis. BOREXT differs from its immediate predecessor, BORE2, primarily in the three dimensional chromographic display and capabilities for probe studies and variable inflow specification.

RELATED SOFTWARE - The authors of BOREXT have developed a number of related and auxiliary programs. These include the direct predecessors of BOREXT (BORE, a batch version, and BORE2, an interactive GUI version) as well as developments in other directions to model additional parameters such as variable pressure and density of the borehole fluid. Various inverse methods have also been developed by the authors and researches in NAGRA to try to determine the parameters directly from the FEC logs for use as input to the BORE family of codes: these include PRE (Tsang et al., 1989) and MOMENT (Loew et al. 1990). The on-going DOE-NAGRA International Cooperative Research is continuing the development of related and auxiliary software .

OTHER PROG/OPER SYS INFO - There are three FORTRAN programs in this package. ESTSC compiled two of them. The third BOREXT.FOR had compiler errors (illegal label field) and would not create an executable, therefore the package is released AS-IS.

HARDWARE REQS - Typically an intel 80386 (or 80286) based PC, with a clock speed of at least 16 MHz, 640 kilobytes of memory and VGA graphics.

TIME REQUIREMENTS - The program is run interactively and presents the results to the user as they are calculated.

REFERENCES - No formal documentation

ABSTRACT STATUS - Submitted 2/10/95. Released AS-IS 5/17/95.

SUBJECT CLASS CODE - RN

KEYWORDS -
COMPUTER PROGRAM DOCUMENTATION
INTERACTIVE DISPLAY DEVICES
COMPUTER GRAPHICS
BOREHOLES
B CODES
FRACTURED ROCK

EDB SUBJECT CATEGORIES -
990200 422000 150200

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SPONSOR - DOE/RW

PACKAGE TYPE - AS - IS