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FD_BH: A Program for Simulating Electromagnetic Waves from a Borehole Antenna

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1. OVERVIEW

Program FD_BH is used to simulate the electromagnetic waves generated by an antenna in a borehole. The model representing the antenna may include metallic parts, a coaxial cable as a feed to the driving point, and resistive loading. The program is written in the C programming language, and the program has been tested on both the Windows and the UNIX operating systems.

This Open-File Report describes
- The contents and organization of the Zip file (section 2).
- The program files, the installation of the program, the input files, and the execution of the program (section 3).
- Address to which suggestions for improving the program may be sent (section 4).

2. CONTENTS AND ORGANIZATION OF THE ZIP FILE

The name of the Zip file is "fd_bh.zip." Within the Zip file are ofr_02-276.pdf, 5 files, and 5 directories. File ofr_02-276.pdf is a copy of this file. The 5 files contain the computer code that constitutes program FD_BH and are described in section 3.1. The 5 directories are "test1," "test2," "test3," "test4," and "test5;" the directories contain sample input files for program FD_BH and are described in section 3.3.

The contents of pick_sw.zip may be extracted using program Winzip, which may be purchased at http://www.winzip.com.

3. PROGRAM FD_BH

3.1 Program Files

The computer code for program FD_BH is in 5 different files, which are briefly described in Table 1.

Table 1. Files with the code for program FD_BH.

File	Short Description
fd_bh.c	Main C function for program FD_BH. Also contains many C functions related to input.
propagate.c	C function that simulates the electromagnetic waves.
calc_wavelet.c	C function that calculates an analytical wavelet.
fnc_general.c	Several general C functions that are needed for reading and writing files, memory allocation, and so on.
defs.h	Header file with definitions of macros, structures, and so on.

The compute code was written using ANCI standard C.

3.2 Installation

The installation requires two steps:

1. Copy the Zip file to a suitable directory on your computer.
2. Extract the contents of the Zip file using WinZip.
3. Compile and link the files listed in section 3.1. With the Windows 2000 operating system and the Visual C++ compiler, the compilation and linkage uses default values. With the UNIX operating system and the gcc compiler, the compilation and linkage also uses default values.

3.3 Input Files

Directories "test1," "test2," "test3," "test4," and "test5" contain sample input files which were used to test the code. These input files may be studied to determine how various features in a borehole antenna may be simulated.

4. Suggestions for Improving the Program

If you have any suggestions for improving the program, please contact:

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5. Disclaimers

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6. Acknowledgements