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# WIRELOG—Fortran programs for replaying, archiving and retrieving wireline logging data.

*by R. G. Richardson*

## Abstract

Logger data recorded on digital cassette using an SIE T-35 cassette recorder may be transcribed to ASCII card image format on disc and then archived to magnetic tape in compressed form for long term storage. Programs are included for producing listings of the contents of archive tapes and selectively retrieving previously archived data.

## INTRODUCTION

The Department has an SIE borehole logger, and data are routinely recorded on digital cassette for later replay on the field recorder or further processing. This report forms part of a series relating to borehole logging.

With the SIE single-conductor logger one or two parameters may be measured on each run. Depending on the type of tool, the data recorded may be digitised field recorder pen positions, raw counts, or counts per second. Data may be recorded going either down or up the hole for most tools.

For each hole a number of runs may be made, and the general program sequence is:

(i) Using WIT create a Hole File by:
   (a) enter a hole header (basic information regarding the hole location etc.)
   (b) enter a run header (basic information about one run) and then translate the appropriate cassette record

Repeat (b) until all runs are translated, which results in a disc file with the structure:

> Hole Header
> Run Header 1
> Run Data 1
> Run Header 2
> Run Data 2
> .
> .
> Run Header N
> Run Data N

(ii) Using TOTAPE copy a number of Hole Files to tape by:
   (a) Loading magnetic tapes on drives MAG1: and MAG2:
   (b) Entering the names of the Hole Files to be archived

(iii) Delete the Hole Files when archiving is complete

## THE PROGRAMS

*(i) WIT*

This program reads header data from the terminal and translates one or more runs from cassette to create a Hole File on disc. Commands for tape handling and error control are

also included. Dr J. W. Hudspeth wrote the program code for tape control.

The program is started by typing

WIT FILENAME

where FILENAME is the name to be given to the output file.

The program prompts for:

(a) TITLE—the hole name
   –40 characters
   –this field is used for later retrieval

(b) DATE LOGGED—the nominal date of logging
   –e.g. 22FEB86

(c) CO-ORDINATES—the AMG co-ordinates of the hole
   –e.g. 346240, 427168
   –these fields are integer and the leading 5 in the northing is omitted.

(d) OPERATOR—the operator
   –22 characters

(e) OPTION—for each run the options are:
   (1) Process a run
   (2) Unload the tape
   (3) End of hole
   –options 1 and 2 allow runs on different tapes to be merged into the one Hole File.

(f) TOOL—the standard abbreviation for the tool given in Appendix 1.

(g) DIRECTION—U or D
   –1 character

(h) SPEED—the logging speed in metres/minute
   –this is a real variable

(i) NORMAL or REVERSE—N or R
   –1 character

(j) CHANNEL 1 PARAMETER—the variable being measured on channel 1
   –8 characters

(k) CHANNEL 1 CALIBRATIONS—up to 10 calibration values. Enter as one per line and terminate by -99.
   –real variable

(l) CHANNEL 1 SCALE AND DEPTH—the scale factor and depth at which use of that scale commenced. Up to 5 values may be input and entry is terminated by -99, -99
   –real variables

(m) C.P.S. CHANNEL 1—counts per second setting
   –integer

(n) T.C. CHANNEL 1—time constant
   –real variable

(o) ATTENUATION CHANNEL 1—real variable

(p) OFFSET CHANNEL 1—real variable

(q) COMMENTS—comments on the run
   –12 characters

Items (j) to (q) are then repeated for Channel 2.

(r) ENTER POSITION OF FILE ON TAPE—enter the file number of the run on the cassette. Numbering starts at 1.
   –if 0 is entered the tape is unloaded and the user returned to (e).

There are a number of possible error messages during cassette replay. In particular, dirty heads or bad tapes are dealt with by 8 retries, followed by the options of aborting reading the log run, pausing to clean the heads, retrying the bad block again, or ignoring the bad block.

The format of the Hole File, which is also that of the file produced by OFFTAPE, is:

    Hole Header:  TITLE, DATE, EAST, NORTH
                  (A40,1X,A7,2I7)
                  OPERATOR
                  (A22)
                  NRUN–the number of runs following
                  (I4)

    Run Header:   TITLE, DATE, EAST, NORTH
                  (A40,1X,A7,2I7)
                  OPERATOR
                  (A22)
                  TOOL, DIRECTION, SPEED, NORMAL
                  (A5,1X,A1,F7.1,1X,A1)
                  DEPTHSTART, DEPTHEND, NBLOCK
                  (3I8)
                  PARAMETER1, CAL1
                  (A8,10F7.1)
                  SCALE1, DEPTH1
                  (10F8.1)
                  CPS1, TC1, ATTEN1, OFFSET1,
                     COMMENT1
                  (I6,3F7.1,A12)
                  PARAMETER2, CAL2
                  (A8,10F7.1)
                  SCALE2, DEPTH2
                  (10F8.1)
                  CPS2, TC2, ATTEN2, OFFSET2,
                     COMMEN2
                  (I6,3F7.1,A12)

Data Block (NBLOCK blocks):

Each block consists of 14 records. The first block does not contain any useful information.

    TRUEDEPTH, DEPTH, CHAN1, CHAN2,
    COUNT1, COUNT2, TIME, BIN1, BIN2
    (2X,2I6,2I5,2I7,I9,2I8)

TRUEDEPTH is the depth in the hole in centimetres.

Dummy values are indicated by DEPTH, CHAN1, CHAN2 and TIME being zero.

### (ii) TOTAPE

This command invokes three program runs. The first (FNPREP) prompts the user for the names of the Hole Files to be copied to tape. The second and third runs copy the selected Hole Files to tapes on MAG1: and MAG2: respectively. After transfer the Hole Files should be deleted.

For the first use of any tape a filemark must be written at the beginning of the blank tape using either TAPEC or COPY32.

The program that copies the files (ARCHIVE) uses a binary format with a record length of 364 characters. The last eight characters of the header blocks have set bit patterns to allow easy identification of the header type in the event of read problems on both tapes.

### (iii) TAPEDIR

This command causes the contents of a tape on MAG1: to be listed on the printer. The contents may be listed by hole or hole and run, depending upon an option selected by the user.

The data output is:

Hole Header:
   TITLE, DATE, EAST, NORTH, OPERATOR, NRUN

Run Header:
   TOOL, DEPTHSTART, DEPTHEND, PARAMETER1,
   PARAMETER2, COMMENT1, COMMENT2, NBLOCK.

### (iv) OFFTAPE

This command is used to retrieve data stored on tape and create a disk file in the WIT format. The tape must be mounted on MAG1:. Input at the console is:

(a) HOLE TITLE—a sufficient number of characters from the title to allow unique recognition.
   –e.g. TULLAH 1 could be found by TULL but if there are both TULLAH 1 and TULLAH 2 the latter can only be found by TULLAH 2.

(b) OUTPUT FILE NAME—a valid filename for the disk output.

[9 May 1989]

# APPENDIX 1

## Standard tool abbreviation

| | |
|---|---|
| CALIP | Caliper |
| TEMP | Temperature |
| SONIC | Sonic |
| NUTRN | Neutron |
| GAMA2 | Gamma-gamma density (no caliper) |
| NGAMA | Natural gamma |
| DENCA | Gamma-gamma density with caliper |
| FLOW | Flowmeter |
| MAGSU | Magnetic susceptibility |
| CCLOC | Casing collar locater |
| SPOIN | Single point resistivity and S.P. |
| RESLN | Long normal resistivity |
| RESSN | Short normal resistivity |