

IMPORTANT NOTICE: A printed copy of this document may not be the version currently in effect. The current official version is available via the Sandia National Laboratories Nuclear Waste Management Online Documents web site.

Effective Date 8-23-94

TITLE: **DOCUMENTING CONFIGURATION OF AND RETRIEVING DATA FROM THE
FLUKE HYDRA DATA BUCKET**

Prepared by: Clifford Howard Date: 7/21/94
SNL Reviewer: [Signature] Date: 7-21-94
SNL Approval: F.R. Quatto Date: 7-21-94
SNL Safety Approval: Nelaine Roland for EJM Date: 7-21-94
MOC Cognizant Department
Manager Concurrence: [Signature] Date: 8/12/94
MOC Manager of
Industrial Safety: [Signature] Date: 7/25/94
SNL QA Approval: Neil C. Simmons Date: 8-22-94
efc 7/21/94

PURPOSE: The purpose of this procedure is to: 1) define a method to document the configuration of a FLUKE HYDRA DATA BUCKET (subsequently referred to as "the Fluke" or "the unit") during operation as a data collection unit, and 2) define the process by which data is retrieved from the unit and transferred to QA. This procedure is written primarily with data collection activities associated with fluid flow testing in mind but may have applications beyond such activities.

RESPONSIBILITY: It is the responsibility of anyone who will be configuring the Fluke, operating the Fluke for data collection, or retrieving data from the Fluke to be knowledgeable of this procedure. It is the responsibility of the SNL WIPP SITE Data Acquisition System Coordinator, acting through existing SNL QA channels, to approve the qualification of any person prior to his/her performing any of the activities discussed in this procedure. It is the responsibility of any person who will be performing these activities to be approved for the tasks by the test Principal Investigator or his/her designee.

SAFETY: All anticipated voltages associated with the Fluke data collection unit are below 40 volts. The unit may be configured to monitor 120 vac power supply feed and precautions will be taken as appropriate if this function is used. Safety hazards other than those associated with the underground work environment are not anticipated.

REFERENCES:

- I. Fluke Hydra Data Bucket User's Manual
- II. Fluke Hydra Logger Package Application Software User's Manual

- III. Associated test plan as appropriate for work being done
- IV. SNL WIPP Procedure 485, Operation of the Fluke Hydra Data Bucket Data Acquisition System, With and Without a PC Interface
- V. Associated Test Tool Maintenance Log (A QA and safety record of tool specific activities)
- VI. Associated data acquisition configuration sketch or drawing

FORMS: (latest revision)

- I. SNL WIPP Form SSSPT38, Computer Based Data Transmission Documentation
- II. SNL WIPP Form SSSPT52, Fluke Data Bucket Configuration

QA RECORDS:

- I. SNL WIPP Form SSSPT38, Computer Based Data Transmission Documentation
- II. Floppy Disks containing data files (2 each)
- III. SNL WIPP Form SSSPT52, Fluke Data Bucket Configuration

PROCEDURE:

- I. Documenting Fluke Hydra Data Bucket Configurations
 - A. Configure the Fluke for data collection using a personal computer following the guidance of SNL WIPP Procedure 485.
 - B. Store the configuration with a file name of "SEtXX.HYD" where XX is a 2 digit number to uniquely identify the set up. This is done by using the "Store Setup" function of the "Setup" menu. At the "File Name:" prompt, type and enter "c:\logger\SEtXX.HYD".
 - C. Toggle to the "List Setup" command of the "Utilities" menu of the Logger software. At the "File Name:" prompt, enter the file name that the configuration is to be stored under. This will write a word processor compatible file of the selected configuration file name to the c:\Logger directory.
 - D. Exit the Logger software and enter a word processor software. Import the Fluke configuration file stored in Step I. C. to the word processor domain. Write into the file which tool and test the set up will be applied to (i.e., DBCP #1, L4DE1 Brine Flow Test), print the file, initial and date the print out, and make one copy of the print out. Place the print out copy in the "Fluke DAS Configuration" section of the appropriate test tool maintenance log book and submit the original to SNL

QA to be stored in the DAS configuration files associated with the test.

II. Transferring Fluke Configurations to Solid State Memory Card

- A. Configure the Fluke for data collection using a personal computer following the guidance of SNL WIPP Procedure 485. Install a formatted blank solid state memory card into the Fluke card drive.
- B. Store the configuration with a file name of "SEtXX.HYD" where XX is a 2 digit number to uniquely identify the set up. This is done by using the "Store Setup" function of the "Setup" menu. At the "File Name:" prompt, type and enter "c:\logger\SEtXX.HYD".
- C. Toggle to the "MEMCARD" menu and select the "Write Configuration File". At the "Config File Name:" prompt, type the SEtXX.HYD file name selected in II. B. above and press return. This will write the setup configuration file to the solid state memory card loaded in the Fluke.
- D. Repeat Steps II. A. B. and C. above to configure and load multiple setups onto the card.
- E. Remove the Fluke card and label it to define what test tool and what test the configuration will be applied to (i.e., DBCP #1, L4DE1 Brine Flow Test).
- F. Install another formatted blank, solid state card in the card drive of the Fluke. Repeat Steps II. C. and II. D. above. This will result in two cards with identical configurations on them. One of these cards is to be used at the data collection location in the Fluke and the other is to be kept in a safe place as a back up and for subsequent use.
- G. If additional setup configurations need to be added to the cards at any time, the relevant portions of Steps I. and II. above can be used. This is to result in additional setup configuration print outs which will need to be filed with QA in the DAS configuration files associated with the test and in the "Fluke DAS Configuration" section of the appropriate test tool maintenance log book. This is to also result in the two Fluke solid state data cards to have identical setup configuration files.

III. Collecting Data In the Fluke Without a PC Interface Using Pre-loaded Setups

- A. Install the Fluke in the data collection tool and effect the electrical interfaces (transducers and power supplies) as called out in the appropriate SNL engineering sketches or drawings. Check the unit for proper operation as discussed in SNL WIPP Procedure 485.
- B. When the test is physically ready to begin, select the data collection configuration from the choices in the test tool maintenance log. This is done by:
 1. turning on the Fluke,
 2. inserting one of the data cards with the pre-configured setups into the Fluke card drive,
 3. pressing the "FILES" button of the Fluke,
 4. acknowledging you wish to work with setups by pressing the "ENTER" key at the "SEtUP" prompt,
 5. pressing the "ENTER" key again at the "LOAd" prompt,
 6. using the up and down arrows to select one of the setups from the setup menu (the setup choice will be made by reviewing the setup configurations filed in the test tool maintenance log book and selecting the most appropriate), and
 7. pressing the "ENTER" key again when the name of the desired setup configuration is displayed.
- C. Data collection will be initiated by:
 1. pressing the "SCAN" button of the Fluke,
 2. selecting the data file name as described in SNL WIPP Procedure 485 using the arrow buttons,
 3. and pressing the "ENTER" button when the desired data file name is selected.
- D. Data collection can be stopped by pressing the "SCAN" button. Data collection can be restarted by using the same setup configuration by again pressing the scan button. A new Fluke setup configuration can be installed and started by cycling through Steps III. B. and III. C. If Steps III. B. and III. C. are not executed between when the scanning is stopped and started, the data will be appended to the previous data file (dAtXX). If Steps III. B. and III. C. are cycled through, the "XX" of the file name where data is collected will be increased by one (for example from dAt02 to dAt03).

- E. Each time the data collection is interrupted for any reason, an SNL WIPP Form SSSPT52 must be filled out documenting when scanning was stopped or started, what the configuration setup used for data collection was and/or is to be, and what the reason for interruption was (e.g., tank refill, periodic maintenance, data collection, etc.). Make a copy of the completed form and submit to the PI designee. Submit the original to SNL QA to be filed in the DAS section of the test note book.

IV. Data Retrieval From the Fluke Hydra Data Bucket

- A. Data should be retrieved from the data logger once every 2 weeks at a minimum. More frequent data retrieval can be carried out if desired. In order that the retrieved data can be comfortably transferred to a 3.5" floppy in "comma separated value" CSV format, the volume of data to be retrieved at any one time should not exceed about 400 Kbytes (about 4000 scans of 7 channels and "slow" scan speed). Any solid state data card should not be used beyond about 80% capacity to avoid the possibility of unintentionally overwriting data.
- B. Data can be retrieved in two ways. The first is by using a PC configured with Logger software, connecting to the Fluke per instructions of the Fluke Owner's manual, and downloading the data from the Fluke solid state card while the card is still in the fluke. This method is detailed in Step IV. C. below and is the preferred data collection method. The other is to remove the solid state data collection card, taking the card to another location and downloading the data to a PC from another Fluke instrument or a card reader. This method is detailed in Step in IV. D. below. Both methods will result in redundant data being submitted to QA, however this is easily accommodated in the data reduction process.
- C. Data Retrieval While the Solid State Data Card is In the Fluke
 1. Press the "SCAN" button to interrupt data collection.
 2. Connect a PC equipped with Logger software via the RS232 port to the Fluke as described in the Fluke Application Software manual and SNL WIPP Procedure 485.
 3. Using the DOS "Label" command, label a freshly formatted floppy disk with the SWCF experiment code. If space permits, also enter the hole number of the associated test or other information to help relate the disk content to the test (there are eleven characters available for the label). Insert this disk in the computer floppy disk drive.

4. Enter the Logger directory and type "logger" and press return. Enter the "MEMCARD" column. In this column go to the "Convert File to CSV" selection and press "ENTER".
 5. A list of data files on the solid state memory card will appear. Select the file to be converted from the card to a CSV file and written to a 3.5 inch floppy and press enter. At the "File Name:" prompt, type b:\DAXxyyzz.prn where xx (01 thru 12) is a numeric month designation, yy is a numeric day designation (01 thru 31), and zz is a data file sequence number (01 thru 99) following the recommendations of SNL WIPP Procedure 485. Ensure no data files have the same name. The resulting CSV file will be stored on the b: drive floppy.
 6. Copy all the files on the data card to the floppy disk. Make two identical copies of the CSV files on two 3.5 inch floppy disks. Disconnect the PC from the Fluke when down loading is complete.
 7. Press the "SCAN" button of the fluke to resume logging with the fluke.
 8. Import the freshly collected data to a spread sheet software such as Lotus 123 or Quattro Pro and plot the data versus time. Review the data and ensure it appears reasonable. If the data is suspected of being bad, investigate and find out why. If the data looks fine, print the data graphs and initial and date the graphs to indicate that you concur that the data looks fine.
 9. Label the data disks as follows:

Date (day, month, and year)
Test Plan and Test Activity
Test Type
Operator's Name
File Format - CSV
 10. Fill out a copy of SNL WIPP Form SSSPT38 documenting the existence of the data and transfer the two copies of the data disks and the graphs of the data versus time to SNL QA.
- D. Data Retrieval By Removal of the Solid State Card From The Fluke
1. Look at the lights on the right side of the data card drive slot. If the "Batt" light is illuminated, do not remove card until the card battery is replaced.
 2. Press the "SCAN" button to interrupt data collection.

3. Remove the solid state data collection card and store in a safe place for transport to a location where the data can be downloaded using a PC and a card reader or a PC and a Fluke Hydra Bucket.
4. Insert a backup data card with the Fluke configuration setups properly loaded as described in Section II. above. Resume logging with the desired configuration setup as described in Section III. above.
5. Take the data filled card to a PC properly connected either to a card reader or a Fluke Hydra Data Bucket and equipped with Logger software as recommended in the Hydra Application Software user's manual. Insert the card in the card drive.
6. Copy data using Steps IV. C. 3. through 6. as detailed above. Check the data and transfer it to QA following Steps IV. C. 8. through 10. as detailed above.

V. Interpreting the Comma Separated Value Data Files

- A. Data collected on the Fluke that has been converted to CSV format can be interpreted following the definition in Appendix A of the Hydra Application Software owner's manual entitled File Formats.

REVISION SUMMARY

To be completed by procedure's author before final revision is circulated for signatures.

I. Revisions made: Added step to direct electronically labelling the floppy data disks used for data retrieval.

II. Personnel effected:

(Check appropriate ones)

MOC Craftsman

Drilling _____
Shop _____
Mechanical _____
Electrical _____
Gage _____
Cable/TC _____
U/G DAS x
Geotech x

SNL JOB AREA

DAS General X
DAS B49 Trailer _____
DAS Sheds _____
DAS Equip. Cal. & Inv. _____
Thermocouple _____
Cables _____
Drilling _____
Gage Installation _____
Gage Cal. & Removal _____
Plugging & Sealing x
Brine Transport _____
QA _____
General _____
Principal Investigator _____
Bin Leak Tester _____
Permeability Testing _____

III. Retraining required:

(Circle One)

Read/Re-read procedure

Practical demonstration

Other (explain)

Signature of
Procedure's Author

Cliff Howard

Date

7/21/94