

APPENDIX G
DOCUMENT AND RECORDS TRACEABILITY

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This appendix (a) provides a description of documentation and computer tapes generated while preparing for, conducting, and gathering data from Test RIA 1-4 at the Power Burst Facility (PBF); (b) provides a list of some primary documents; and (c) describes how to obtain finished data and some primary documents.

Purpose

The purpose of this appendix is to provide a set of instructions for retrieving qualified test data, records, documents, etc., for Test RIA 1-4. By explaining what is available and where to look for it, much of the activity could be reconstructed, if necessary. These materials and records would be necessary to (a) reconstruct the processing, correction, and presentation of data; (b) retrieve data tapes in the corrected or uncorrected form; (c) determine the types and locations of instruments used; (d) determine the calibrations, zero settings, offsets, etc., for the transducers and instruments used; (e) find details of the test train design, fabrication, and instrumentation; and (f) retrieve calculations used in the discussions presented in this report. Much of this information is contained in various reports, documents, files, and drawings produced during the planning, building, and operation of the test, as well as during the data processing and qualification procedures.

Unfortunately, there is no unified filing system where one can find all of the information in one place. Some of the files and documentation systems are formal, but many are not. Material is physically located in the following three major areas: the Power Burst Facility, the Idaho National Engineering Laboratory (INEL) Computer Science Center, and the PBF Experiment Specifications and Analysis group work area. Some items are located in the INEL Technical Library and the EG&G Idaho, Inc. drawing vault.

Files, Documents, and Record Systems

This section lists all major files, documents, and record systems pertaining to TEST RIA 1-4, as well as an explanation of what they contain. It also lists the various data tapes and how to retrieve them.

Informal and Internal Reports

Informal and internal reports are prepared primarily for preliminary or internal use and are generally intended as working documents. They have not received full review and approval. Because these documents may undergo substantial changes, they should not be considered final.

Each document is assigned a unique number, and the INEL Technical Library files copies of each report. Copies are also available from the National Technical Information Service and the U.S. Nuclear Regulatory Commission (NRC) Division of Technical Information and Document Control. The specific documents covered under this category will be discussed in subsequent sections.

Data Acquisition Specification (DAS)

The DAS document is designed as a working tool for setting up the experiment instrumentation. It describes the amplifiers to be used, gain settings, zero offsets, instrument ranges, and patch panel connections, and provides a cross-index between the measurement identifiers of the Experiment Operating Specification, working parameter channels, and patch panel numbers. This document is used for setting up and checking out the facility instrumentation for each experiment. It does not have a unique number, but it is filed in the Configuration and Document Control (CDC) generic file for the particular experiment.

Transducer Report

Information on the transducers used in the particular experiment is contained in the Transducer Reports. These reports list the transducers by serial number and measurement identifier. They also contain the basic equations necessary to translate transducer output voltage (current) into engineering units. These equations are based on calibration data, if available. A brief description of the transducers is given, and calibration techniques are discussed. These reports are contained in the Engineering Design File (discussed in a subsequent section) and have a unique number.

Experiment Operating Procedure (EOP)

The EOP document describes in detail how the experiment will be operated from the PBF control room. It includes instrument checklists to ensure proper operation at specific points in the experiment. This document, prepared by the PBF Operations Branch, is assigned a unique number by CDC, and the original is retained in CDC files.

Experiment Specification Document (ESD)

The ESD is prepared by the PBF Experiment Specifications and Analysis group, and it describes, in specific terms, the purpose of the experiment and, in general terms, the instrumentation required. These documents are internal reports and are available as described previously.

Experiment Configuration Specification (ECS)

The ECS is prepared by the test train assembly and instrumentation group and describes in specific terms how the test train will be constructed and instrumented. It is from this report that the experiment apparatus is designed and the Site Work Releases (described in a subsequent section) are prepared. This is an internal report.

Experiment Operating Specification (EOS)

The EOS is an informal report prepared by the PBF Experiment Specification and Analysis group. The purpose of this document is to explain, in general, how the experiment will be conducted, what data are to be recorded, and where measurements are to be made. In most cases, there are details of instrument locations, desired operating ranges, necessary response times, and measurement accuracy. This document also establishes the official identifiers that will accompany each measurement.

Experiment Predictions Document (EP)

The EP is an internal document that explains the objectives of the experiment, as well as giving a general description of the test conduct, measurements to be made, and instruments to be used. The results of the test prediction calculations are presented, along with references to computer codes and input conditions.

Engineering Design File (EDF)

The EDF is an informal file system operated by the Thermal Fuels Behavior Program (TFBP). The purpose of this file is to record engineering work done in support of the PBF facility or experiments that requires more formal recording. The originals of all material are filed near the TFBP management offices. Copies of these files are kept at PBF in the CDC files.

Blue Book

This is an informal system used by the test train assembly group to record the design, instrumentation, fabrication, and checkout of the test train. The file consists of several looseleaf binders, each titled according to subject. Each specific test has a Blue Book; however, no unique number is assigned. The Blue Book can be retrieved by using the

generic test title. Blue Books are on file at CDC, in the test train assembly area, and with the test train and experiment project engineers. The following is a list of Blue Book contents:

1. Experiment Configuration Specification
2. Design Process Records (design documentation package provided by the cognizant design engineer with a cover letter describing section contents)
3. Assembly Site Work Releases (SWR)
4. Indentured Parts List
5. Fuel Train Assembly Procedures [applicable Assembly Disassembly Procedures (ADPs) and hot cell Detailed Operating Procedures (DOPs) are listed by the cognizant assembly engineer]
6. Test Train Assembly Procedures (applicable ADPs are listed by the cognizant assembly engineer)
7. Test Train Disassembly Procedures (applicable ADPs are listed by the cognizant assembly engineer)
8. Quality Discrepancy Reports
9. Instrument Schedule.

Site Work Release (SWR)

The SWR is a document that can contain other documents, records, drawings, etc. It has a unique number issued by CDC. A Site Work Release is issued to cover specific areas of work. These documents are on file at CDC.

Configuration and Document Control (CDC)

CDC is located at PBF. This is a formal control system used to file SWRs, drawings, plant operation manuals, PBF facility Technical Specifications, PBF System Design Documents, EOPs, DOPs, EDFs, and Document Revision Records. Many of these documents are filed by a unique number, but there are also generic files by test that contain items such as the DASs and Blue Books.

Drawing File

All drawings used in the construction and instrumentation of TFBP test trains have a unique drawing number. The originals are filed in the EG&G Idaho drawing vault. Copies of particular test drawings are usually filed at the CDC station at PBF.

Data Tapes

All raw test data generated at PBF are recorded on computer tape by the Data Acquisition and Reduction System (DARS) in pulse code modulated (PCM) form. These PCM tapes are kept at PBF until after the Fuel Behavior Report is published. They are then sent to the EG&G Idaho central file where they are retained for about one year. Finally, they are sent to the Federal Tape Storage Center in Seattle, Washington, where they are retained indefinitely. These tapes can be retrieved at any time. Records of tapes and methods of retrieval are kept at PBF. These tapes can only be processed by the DARS.

Data tapes are also stored at the INEL Computer Science Center in qualified (corrected) form in what is called the NRC Data Bank.

Data Processing History File

This is an informal file kept by the data processing organization. Records are kept for locating data tapes that have been processed.

Microfiche of all processed data in graphical form, as well as all changes made to the data, are recorded in this file. Microfiche containing both raw and finished data are also stored.

Computer Code Configuration Control (CCCC)

CCCC is a formal control system operated by the INEL Computer Science Center. This system is designed for historical storage and retrieval of computer tapes or cards. Each stored item is given a unique number and is stored until a specified date or indefinitely.

User-Supplied Data Configuration Control Log (USDCC)

This log is maintained in the TFBP office area and is designed to ensure traceability and reproducibility of computer aided analyses and main frame computer data processing performed for TFBP. The USDCC contains references to computer codes in CCCC, tapes in the INEL Computer Science Center Tape Library, and supporting documents.

Photographs

Photographs presented in TFBP documents are retrievable from either of two separate sources. Photographs identified by a letter followed by a number (e.g., A234) or the year followed by a letter and number (e.g., 79B-332) are on file at the Test Reactor Area hot cells at INEL. Photographs identified by the year followed by only a number (e.g., 79-4567) are on file with the EG&G Idaho Photography Section.

Test RIA 1-4 Experiment Materials Identification

This section lists some specific documentation for Test RIA 1-4. The following major documents can be used to locate lower levels of documentation for Test RIA 1-4:

- o Experiment Operating Specification--TFBP-TR-323, June 1979
- o Experiment Specification Document--TFBP-TR-278, January 1978
- o Transducer Report--EDF 1479, "RIA 1-4 Test Train and Fuel Rod Transducer Description and Performance"
- o Transducer Report--EDF 1480, "Flow Loop and Plant Instrumentation Description and Performance for the RIA 1-4 Test"
- o Experiment Predictions--EGG-TFBP-5023, February 1980
- o Transmittal of RIA 1-4 Qualified Data--EG&G Idaho, Inc. letter LCM-23-80
- o Quick Look Report--EGG-TFBP-5146, May 1980.

Document, Data, and File Retrieval

Some documents, drawings, computer tapes, records, etc., maintained by a Department of Energy (DOE) contractor such as EG&G Idaho are not generally available without either EG&G Idaho or NRC/DOE approval.

Informal or Internal Documents

Informal or internal documents are available from the National Technical Information Service, the NRC Division of Technical Information and Document Control, and the INEL Technical Library, as well as from TFBP.

Drawings

Formal drawings and blueprints used for any EG&G Idaho program can be obtained from the EG&G Idaho drawing vault by specific number and with appropriate approval.

Data Tapes

Computer tapes of the raw DARS PCM data can be obtained only through the PBF Operations Branch. Listings and locations of the data tapes are maintained. To be usable, the data must be processed by the DARS.

Tapes of qualified data in the INEL CYBER format can be obtained from the NRC Data Bank. The NRC/Reactor Safety Research Data Bank is accessible only with NRC approval. Contact can be made through the NRC Data Bank coordinator in Silver Spring, Maryland, or through the EG&G Idaho coordinator.

Data in the NRC Data Bank are accessible directly through remote terminals around the United States by qualified individuals, as well as through formal requests to INEL or NRC. The Data Bank is organized to quickly supply specific data interactively to skilled users or lead a novice searcher a-step-at-a-time through the process starting from the fact that the test was performed at PBF. Tapes of qualified data can be obtained only from INEL where the Data Bank is located.

Access to Informal Files

Access to the various informal files at INEL is possible only by traveling to the physical location. Generally, information is retrievable only when code numbers or nomenclature are known. Local knowledge of the file contents is probably necessary.

Calculations

Inputs to computer calculations made for predicting experimental conditions are contained in the EP document, along with CCCC numbers for the codes used. Inputs for posttest calculations are contained in an appendix to the final report (such as a test results report), along with the CCCC numbers.