



General Electric Company  
175 Curtner Avenue, San Jose, CA 95128

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U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Richard W. Borchardt, Director  
Standardization Project Directorate

Subject: Simplified Boiling Water Reactor (SBWR) Panthers - PCC  
Readiness Assessment Plan

As part of the Simplified Boiling Water Reactor (SBWR) test program, full-size prototype heat exchangers for the Passive Containment Cooling System (PCCS) and the Isolation Condenser System (ICS) will be tested by SIET and ENEA at the Performance ANALysis and Testing of HEat Removal Systems (Panthers) Test Facility in Piacenza, Italy.

Prior to this test, a readiness assessment will be performed to assure the technical adequacy of the facility and personnel to conduct the test, in accordance with the test requirements.

Attached is a copy of the Readiness Assessment Plan which will be used to carry out this review.

Sincerely,

J. E. Leatherman  
Manager, SBWR Design Certification  
M/C 781, (408)925-2023

Attachment (1 copy)

cc: M. Malloy, Project Manager (w/2 copies of Attachment)  
F. W. Hasselberg, Project Manager (w/1 copy of Attachment)

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# PANTHERS-PCC

## Readiness Assessment Plan

### 1.0 INTRODUCTION

#### 1.1 Background

As part of the Simplified Boiling Water Reactor (SBWR) design process, full-size prototype heat exchangers for the Passive Containment Cooling System (PCCS) and the Isolation Condenser System (ICS) will be tested by SIET and ENEA at the Performance Analysis and Testing of Heat Removal Systems (PANTHERS) Test Facility in Piacenza, Italy. The Passive Containment Cooler (PCC) and IC were designed by Ansaldo SpA. Ansaldo Componenti has constructed and delivered the PCC to SIET and is currently fabricating the IC.

The objectives and requirements for the PANTHERS program are presented in the PANTHERS Test Requirements & Test Specification (GE document 23A6999, Rev. 1).

PANTHERS-PCC is the designation of the program applicable to the testing of the PCC prototype.

#### 1.2 Purpose

The purpose of this readiness assessment is to assure the technical adequacy of the facility and personnel to conduct the upcoming PANTHERS-PCC tests in accordance with the test requirements. The specific goal is to ensure that all preparations are either complete or proceeding so that testing may be initiated with high confidence that quality results will be obtained.

The PANTHERS-IC Test Program is outside the scope of this review except where components of that program will be used in PANTHERS-PCC (e.g., IC Pool).

#### 1.3 Assessment Team

The readiness assessment will be conducted by a team of engineers from GE, the U.S. Department of Energy (DOE), and the Electric Power Research Institute (EPRI). A representative from the U.S. Nuclear Regulatory Commission (NRC) staff will also participate as an observer.

## PANTHERS-PCC Readiness Assessment Plan

The participants are listed below:

<u>Name</u>	<u>Organization</u>
TR McIntyre	GE-NE - Leader
PF Billig	GE-NE
JR Fitch	GE-NE
TL Cook	DOE
RE Camp	DOE
V Cavicchia	ENEL SpA representing EPRI
TM Lee	NRC

### 1.4 Methodology

The scope of the readiness assessment is presented in Section 2.0. The work will be carried out by review of facility documents, observation of the physical conditions of the test loop, and interviews with facility personnel.

The assessment will be divided into horizontal and vertical reviews. The horizontal review will consist of determining the overall readiness of the facility, its personnel, and documentation. The vertical review will look at a more detailed examination of a part of the facility (e.g., a single instrument line, data calculation, etc.) to verify the technical adequacy and correctness of the work.

### 1.5 Schedule

The assessment is planned for April 12-14, 1994, with April 15 to be available if needed. The work will begin each day at 9:00 AM at the SIET office in Piacenza (Via Nino Bixio, 27). During the opening session, the team will decide which tasks are to be conducted as a single team and which ones will be assigned to sub-groups. At the closing session, preliminary findings and recommendations will be presented to SIET and ENEA.

## PANTHERS-PCC Readiness Assessment Plan

### 2.0 SCOPE OF THE REVIEW

#### 2.1 Quality Assurance

- a. Quality Assurance (QA) Plan and conformance with the plan.
- b. Procedure for incorporating changes from the QA Manual into lower tier QA documents.
- c. Procedure to assure consistency between information that can be found in more than one document (e.g., instrument lists).
- d. Procedure for verification of QA documents.

#### 2.2 Facility Assessment

- a. Facility as-built documentation including fabrication drawings, as available.
- b. For unavailable or incomplete documents, status and procedures to finalize documentation.
- c. Physical condition of the test facility.
- d. Vertical Review: Confirm compliance of as-built piping drawings for a key system (e.g., air supply piping) by tracking the line from its source through the facility.
- e. Release and control of design information for procurement.
- f. Procurement specifications
- g. Compliance to controls on facility documentation.
- h. Adequacy of verification on facility documentation.
- i. Procedures, where applicable, for turning over systems from subcontractors to SIET.
- j. Status and adequacy of spare parts on site or deliverable times.
- k. Evidence of permanent labels on facility components (e.g., valves) and applicable instruments (e.g., pressure transducers).

#### 2.3 Instrumentation and Data Acquisition System

- a. Calibration procedures.
- b. Compliance to controls on calibration.

## PANTHERS-PCC Readiness Assessment Plan

- c. Adequacy of documentation and verification on instrument installation and calibration, including assurance that all instruments will be recalibrated before expiration of the calibration.
- d. Identification of critical instruments for testing.
- e. Vertical Review: For a select number of instruments, trace the history and layout of each instrument through the following stages:
  - i) procurement
  - ii) calibration
  - iii) installation
  - iv) connection to control room
  - v) field test
  - vi) data recording
- f. DAS validation and control.

### 2.4 Data Reduction

- a. Documentation and verification of software configuration.
- b. Vertical Review: For a select number of calculations, review the software for agreement with the calculated parameter.

### 2.5 Test Plan & Procedures

- a. Adequacy of Test Plan to satisfy test objectives.
- b. Compliance of document with QA procedures.
- c. Evidence of administrative controls on tests.
- d. Process of preparation, review, and revision of Test Procedures.
- e. Identification of test prerequisites, initial conditions, and acceptance criteria.
- f. Procedures to resolve unexpected results or unanticipated behavior during testing.

### 2.6 Control System

- a. Adequacy to satisfy Test Procedures.
- b. Documentation of verification of controls.

## FANTHERS-PCC Readiness Assessment Plan

### 2.7 Shakedown Tests

- a. Results of conducted shakedown tests and compliance with QA procedures.
- b. Status of remaining shakedown tests.

### 2.8 Personnel

- a. Responsibility assignments including backups for key roles.
- b. Adequacy of training or background to meet responsibility requirements.

### 2.9 Pre-test Analyses

- a. Status and schedule for completing pre-test analyses.
- b. Adequacy of controls and verification.

### 2.10 Test Schedule

- a. Evidence of test schedule and agreement with SBWR program integrated schedule.
- b. Detailed Action Plan to track critical path and maintain schedule.

### 2.11 Occupational Safety and Health

- a. Evidence of facility safety plan.
- b. Safety training requirements.
- c. Compliance with SIET safety plan and Italian statutes.

## **PANTHERS-PCC Readiness Assessment Plan**

### **3.0 CONCLUSION**

#### **3.1 Preliminary Assessment**

At the conclusion of the readiness assessment, the review team will present their conclusions and findings at the close-out meeting. Open items from the assessment will be presented and a schedule to close the items will be developed and agreed upon by all parties.

#### **3.2 Final Assessment**

A written draft final assessment will be prepared by April 20 and sent out for comment. All comments will be returned by April 27, and a final assessment report issued May 4.

The final assessment and documentation of closure of open items will be filed in the test program's Design Record File.