

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-353/88-17

Docket No. 50-353

License No. CPPR-107

Category B

Licensee: Philadelphia Electric Company  
2301 Market Street  
Philadelphia, PA 19101

Facility Name: Limerick Nuclear Generating Station, Unit 2

Inspection At: Limerick, Pennsylvania

Inspection Conducted: July 25-29, 1988

Inspectors:

Henri F. van Kessel  
Henri F. van Kessel, Reactor Engineer

9-1-88  
date

Peter Drysdale  
Peter Drysdale, Reactor Engineer

9-7-88  
date

Approved by:

P. K. Eapen  
Dr. P. K. Eapen, Chief, Special Test  
Programs Section, EB, DRS

9/8/88  
date

Inspection Summary: Routine Unannounced Inspection on July 25-29, 1988  
(Inspection No. 50-353/88-17)

Areas Inspected: Preoperational test program, including the review of the preoperational test program implementation requirements, preoperational test procedures, activities in the QA/QC interface with the preoperational test program, preoperational test results, and the test witnessing of preoperational tests for the Emergency Diesel Generator A.

Inspection Results:

One unresolved item was identified dealing with a discrepancy found in preoperational test procedure 2P50.1 for the RCIC system.

## DETAILS

### 1.0 Persons Contacted

#### 1.1 Philadelphia Electric Company (PECO)

R. Albin, QA Engineer  
J. Corcoran, Manager Quality  
\*D. Cook, Construction Engineer  
\*D. A. DiPaolo, Superintendent Unit 2 QA  
\*G. C. Kelly, QA Engineer (Bechtel)  
S. G. Koneckny, QA Engineer (Bechtel)  
\*G. Lauderback Jr. Startup QC Supervisor  
J. Luccarella, Construction Engineer  
\*H. Lilligh, QA Manager (Bechtel)  
\*W. L. McCullough, Project Startup Engineer (Bechtel)  
\*K. W. Meck, Assistant Superintendent QA  
\*J. J. Milito, Startup Superintendent Unit 2  
\*R. L. Payne, QA Engineer  
\*J. R. Pidgeon, QA Engineer  
W. T. Ullrich, Startup Manager  
\*H. R. Wiegler, Startup Superintendent Operations

#### 1.2 U.S. Nuclear Regulatory Commission

R. A. Gramm, Senior Resident Inspector  
\*R. L. Fuhrmeister, Resident Inspector

\*Denotes those present at exit meeting.

### 2.0 Preoperational Test Program

#### 2.1 Preoperational Test Procedure Review (70311; 70341; 70357 & 70360)

The preoperational test procedures as listed in Attachment A were reviewed for the following attributes:

- Management review and approval
- Procedure format
- Clarity of stated objectives
- Prerequisites
- Environmental conditions
- Acceptance criteria and their sources
- References
- Initial conditions
- Attainment of test objectives
- Test performance documentation and verification
- Degree of detail for test instructions
- Restoration of system to normal after testing
- Identification of test personnel
- Evaluation of test data
- Independent verification of critical steps or parameters
- Quality control and assurance involvement

It was noted in the review of test procedure 2P50.1; page 2-18, Acceptance Criterion (47), that "The RCIC turbine trip throttle valve can be reset remotely after an electrical trip (FSAR Section 5.4.6.2.4.1(b))." However, the quoted FSAR section only states one condition which is required for the RCIC system to be available in a standby mode for automatic operation, i.e., valve HV-50-212 is open. Step 6.4.22.4.1(1)(c) of the procedure accomplishes verification of the required valve position prior to the trip test, whereas, Step 6.4.22.4.2(1) resets valve HV-50-212 after the turbine trip test. Therefore, Acceptance Criterion (47) should refer to FSAR Section 5.4.6.2.4.1(n) which resets the throttle valve after the trip test.

PECo Startup Engineering has agreed to change the test procedure in accordance with the observations of the inspector as noted above. A TCN will be prepared for this change prior to conducting the test. This item will be tracked under Unresolved Item 50-353/88-17-01.

It was noted in procedure 2P56.1, Section 4.2, paragraph (14) that "Specific test steps are not included (in the procedure) for the installation and removal of test equipment including the returning to service of system instruments as ---." The inspector verified that there will be steps in the procedure to install and remove test devices but the procedure will not provide details on how this is done. This is the responsibility of Testing and Labs (T&L).

It was observed also that the option for performing the logic functional testing prior to the related preoperational test still exists (asterisk items). The inspector learned that the choice is made by the Startup Project Engineer. The startup engineer is required to issue a letter to document his decision in each case.

The inspector checked on the independent verification of critical steps in the procedures since there are no provisions shown in the approved procedures reviewed. Hold points for such independent verification are assigned by Startup QC/QA after approval of the procedure and prior to approval to perform the test, in accordance with AP 8.3P paragraph (5.2b7) of the Startup Manual.

Apart from Unresolved Item 353/88-17-01, no unacceptable conditions were identified by the inspector within the scope of this inspection.

## 2.2 Test Witnessing (70441)

The inspector witnessed tests on Emergency Diesel Generator A leading into the 3 hour load test which is performed in accordance with the test instructions referenced below.

Test witnessing by the inspector included observations of:

- Overall crew performance
- Use of latest revised and approved procedure by test personnel
- Designation of one person in charge of conducting the test
- Availability of sufficient test personnel to perform the tests
- Coverage of test prerequisites
- Use of acceptance criteria to evaluate test results
- Verification that plant supporting systems are in service
- In-service status of calibrated special test equipment required by the test procedure
- Adherence to the test requirements of the test procedure during the tests
- Timely and correct action by test personnel during performance of the tests
- Data collection for final analysis by test personnel

The inspector independently verified readings of system parameters during the tests.

The first run of the diesel was aborted because the crankcase vacuum was too high (in excess of 3 inches of water). The orifice controlling this parameter was replaced and a second run was made. The crankcase vacuum decreased, however, the turbocharger vacuum was too high (in excess of 12 inches of water). Again the run was aborted. After removal of the vent screens, the test (3hr load test) was completed successfully.

It was noted during the second start of the diesel, that the speed controller had not been returned to the intended low idle speed setting. The operator tripped the diesel to prevent it from exceeding the idle speed. There is no safety significance attached to this operation, as the requirement for low idle speed is established to protect the engine during initial runs.

No unacceptable conditions were observed by the inspector during the tests.

## References

- (1) Startup Work Order (SWO) 2.24A-053, run-in procedure for D/G 2.24A, dated July 7, 1988
- (2) Memorandum from G. A. Hunger, Nuclear Engineering - Engineering Division (PECO), to G. M. Leitch, "Fairbanks Morse Model 38 TD8-1/8 Diesel Engine Pre-start Inspection and Replacements," dated March 28, 1988
- (3) Attachment A to SWO 2.24A-053, with engine parameters and loaded run data sheets. Shows recommended values against actual values.

## 2.3 Test Result Evaluation (70329)

### Scope

The test procedures listed in Attachment B were reviewed to verify that adequate testing was accomplished to satisfy regulatory requirements and licensee commitments. Review was performed to also ascertain that uniform criteria were being applied to the evaluation of completed preoperational tests to assure technical and administrative adequacy.

### Discussion

The test results were reviewed for:

- Test changes
- Test exceptions
- Test deficiencies
- Acceptance criteria
- Performance verification
- Recording of conduct of test
- QC inspection records
- System restoration to normal
- Independent verification of critical steps or parameters
- Identification of test personnel
- Verification that the test results have been approved

It was noted in the review of procedure 2P6.1 that Test Change Notice (TCN) No. 1 identified several drawings which were several revisions behind. The test engineer is responsible for reviewing the design changes associated with these revisions for their impact on the validity of the test procedure. This requirement is discussed in more detail under Section 5.

No unacceptable conditions were observed within the scope of this inspection.

### 3.0 Licensee Action on Previously Identified Items (70302)

(Closed) Unresolved Items 353/88-13-03 and 353/88-11-07, "Procedure for Reviewing Document Changes".

#### References

- (1) PECO's QA Finding Report 2N-577, issued to F. R. Solis of PECO Testing and Labs (T&L), dated 7-15-87
- (2) Memorandum QAFOM L2-4356, "NRC Finding FR-2N-577", dated November 30, 1987
- (3) Memorandum from F. R. Solis, PECO's Testing and Laboratories Division to J. M. Concoran, "Response to Finding FR-2N-577 and QA FOM L2-4356, dated February 25, 1988
- (4) Implementing procedure TL-11-50014, "Control of the Calibration of Plant Instrumentation and Equipment", Rev. No.3, in draft form.
- (5) Memorandum QA FOM L2-4644, "Finding 2N577," dated April 18, 1988.

#### Discussion

Finding Report 2N577 (ref. 1) documented the need for a formal T&L procedure for reviewing document changes for their effect on completed work. Corrective action has been taken on this finding by T&L (ref. 3) in the form of a revision to procedure TL-11-50014. This revision was issued prior to the end of the inspection. The inspector also concurs with the action taken thereby closing Unresolved Item 50-353/88-13-03. Since Unresolved Item 50-353/87-11-07 deals with the same issue, it is also considered to be closed.

#### 4.0 QA/QC Interface (53501)

The QA audits and surveillances listed in Attachment C were reviewed to ascertain continuing QA/QC involvement with the preoperational test program.

Audit 2S-88, on SFRs, SCRs, and SCNs, identified that SFRs are not being processed, logged, and approved as required by Startup Administrative Procedure AD 6.3, Rev. 9. Specifically, Finding Report 2S-146 identified:

- Line out changes were not initialed and dated
- SFRs were signed but not dated
- SFRs were approved but did not have all of the required information.

Corrective action on this finding has not been completed to date.

The corrective action for Audit 2S-96, related to the Startup Preventive Maintenance (PM) Program, states:

- (1) "The reviews of "draft" system PM requirements were not being completed prior to system turnover to startup (FR-2S-149)
- (2) Reports identifying overdue system PMs were not issued as required (FR-2S-163). The corrective action taken to prevent recurrence of the above was to notify all startup group supervisors that the Startup Superintendent of Operations nor the Project Startup Engineer will accept a system for turnover unless the input for the PM Data Base has been sent to the Startup PM Coordinator."

The inspector inquired whether this corrective action will be incorporated in such administrative procedures as AD6.1, "System/Component Turnover to PECO." The Licensee intends to incorporate these corrective actions in a future revision of startup administrative procedures.

#### 5.0 Independent Effort

The startup administrative procedures were reviewed to determine how design and drawing changes are incorporated in applicable test procedures.

The requirements for the review of design/drawing changes, as referred to above, can be found in the Startup Administrative Procedure AD 8.3P (par. 4.7b; 5.1a.1; 5.3C.0, 5.3C1; 5.3C2;5.7).

From a review of Startup Administrative Procedure AD 8.3P, it is clear that control of design drawing changes, in relation to the POT procedures, is adequate if enforced.

For the preoperational test results reviewed during this inspection, the inspector verified that the requirements, except for paragraph 5.3.C.1, were adequately implemented.

#### 6.0 Plant Tours and Diesel Generator Enclosures

The inspector made tours of the plant including the Reactor Enclosure and Turbine Enclosure to observe the status of construction, work in progress, housekeeping, testing activities and cleanliness.

No unacceptable conditions were noted.

#### 7.0 Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable; are items of noncompliance; or are deviations. One unresolved item in this report is identified in Section 2.1.

#### 8.0 Exit Interview

At the conclusion of the site inspection on July 29, 1988, an exit interview was conducted with the licensee's senior site representatives (denoted in Section 1). The findings were identified and previous inspection items were discussed.

At no time during this inspection was written material provided to the licensee by the inspector. Based on the NRC Region I review of this report and discussions held with licensee representatives during this inspection, it was determined that this report does not contain information subject to 10 CFR 2.790 restrictions.



Attachment A

Preoperational Test Procedures Reviewed

<u>Proc. No.</u>	<u>Description</u>	<u>Rev. No</u>	<u>Appr. Date TRB</u>
2P24.1	Emergency Standby Power	0	06-13-88
2P35.1	Fuel Pool Cooling and Cleanup	0	05-19-88
2P37.1	Cond. and Refuel Water Transfer	0	05-10-88
2P50.1	Reactor Core Isolation Cooling	0	06-27-88
2P56.1A	Reactor Manual Control	0	06-09-88
2P57.1B	Uninterruptible AC Power	0	02-23-88
2P100.4	Standby Diesel Generator Loading	0	06-03-88

Attachment B

Preoperational Test Results Review

<u>Proc. No.</u>	<u>Description</u>	<u>Rev. No</u>	<u>Appr. Date TRB</u> <u>(Test Results)</u>
2P57.1B	Uninterruptible AC Power	0	06-28-88
2P6.1	Safeguards 440V Motor Control Centers	0	07-07-88
2P5.1	Safeguards 440V Load Centers -Startup Subsystem 5A	0	07-07-88

Attachment C

Review of Audit/Surveillance Reports

<u>Report No.</u>	<u>Description</u>	<u>Prep. Date</u>
2S-084	Startup Document Control	05-16-88
2S-088	Startup Field Reports (SFRs), Startup Change Requests (SCRs), Startup Change Notice (SCNs)	06-06-88
2S-095	Blue Tag Testing	07-08-88
2S-096	Startup Preventive Maintenance Program	06-07-88
2S-097	Startup Work Order (SWO) Program	06-16-88
2S101	Startup QC Program	06-08-88
2S102	Startup Procurement of Technical Services	07-15-88
2S-103	System Turnover Walkdowns	07-18-88
2S-105	Blue Tag Testing of System 2-49A	07-05-88
2S-108	Startup Records Control	07-21-88