U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-353/88-13

Docket No. 50-353

License No. CPPR-107 Category B

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

Facility Name: Limerick Nuclear Generating Station, Unit 2

Inspection At: Limerick, Pennsylvania

Inspection Conducted: May 2-6, 1988

Inspector: H. van Kessel 5-24-88
Henri F. van Kessel date

Approved by: P. K. Eapen 5/26/88
P. K. Eapen, Chief Special Test Programs Section, EB, DRS date

Inspection Summary: Inspection on May 2-6, 1988 (Inspection Number 353/88-13)

Areas Inspected: Routine Unannounced Inspection of the 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, and the test witnessing of the preoperational tests for the safeguards 440 V Motor Control Centers and the Instrument AC Power System. Also reviewed were the cleanliness acceptance criteria for the fuel oil and lube oil system/components of the emergency diesel generators.

Inspection Results: Three unresolved items were identified dealing with the cleanliness acceptance criteria of the fuel oil and lube oil system/components of the emergency diesel generators and with the follow up on a QA audit.

Details

1. Persons Contacted

D. D. Basile, Supervisor Startup QC
*J. Corcoran, Manager Quality
T. E. Dey, QA Engineer
*D. A. DiPaolo, Superintendent - Unit 2 QA
L. C. Dyer, QA Engineer
D. M. Kelsey, TEC, P. M. Coordinator
F. W. Krenke, Test Engineer (FE)
*G. Lauderback, Jr., Startup QC Supervisor
J. McGowan, Shift Startup Engineer
*K. W. Meck, Assistant Superintendent QA
*J. J. Milito, Superintendent Startup Support
D. S. Ott, I&C - P.M. Coordinator

*W. T. Ullrich, Startup Manager
*H. R. Wiegle, Startup Superintendent Operations

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*R. L. Fuhrmeister, Resident Inspector

*Denotes those present during exit meeting held on May 6, 1988.

2.1 Preoperational Test Program Implementation (70302)

The inspector verified that preventive maintenance (PM) items or calibrations have been incorporated into a schedule and are accomplished in accordance with that schedule. In the course of this verification the following observations were made:

(1) The Unit 1 PM information from the Component History and Maintenance Planning System (CHAMPS) Computer Program is being used in arriving at the input information for the identical Unit 2 equipment. The time interval for PM Items is the same but the "last done" date will differ.

(2) The startup engineer for the system is responsible for the review and revision of the initial Unit 2 issue, as derived under (1) above. This experience, gained during the startup of the system, will be used to arrive at the final input information for the CHAMPS program.

(3) The CHAMPS program can produce schedules for PM activities in any desired format, including charts, when used in combination with other graphic computer equipment.

(4) The CHAMPS program generates an overdue listing for all PM activities. A 25% grace period is applied to all time intervals. The time required from system turnover to the final CHAMPS inputting for the system does not exceed the shortest PM period.

(5) Equipment Qualification items are a part of the CHAMPS system. Each required PM activity in this category is defined precisely in a scope of work type statement. It identifies the subcomponents requiring replacement.

(6) Prior to system turnover, the responsibility for PM activities rests with the construction contractor (Bechtel). Bechtel maintains a computerized listing for this purpose. The due dates of this listing are used in the CHAMP system.

2.2 Preoperational Test Procedure Review (70311)

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

No noncompliances were identified by the inspector within the scope of this inspection.

2.3 Test Witnessing

Selected steps of the following procedures were witnessed by the inspector:

- 2P6.1, rev. 0, "Safeguard 440V Motor Control Centers"
- 2P17.1, rev. 0, "Instrument AC Power"

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 tests
- 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 the performance of the tests
- Data collection for final analysis by test personnel

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

A Startup Nonconformance Report (S-2-E) was issued against 2P17.1 in connection with the failure of contactor 42-22322 to stay open while performing step 6.4.16(4). The probable cause of this failure was the failure of the seal-in contact of M/42 contactor to open.

No violations were identified by the inspector.

3. Licensee Action on Previously Identified Items

(Open) Unresolved Item 353/88-09 02, "No Revision Number/Date on Forms of Turnover Packages".

The licensee is in the process of adding the revision information to the forms of the turnover packages which are exhibits of turnover procedure CP-T-1. The item will remain open until this work has been completed.

4. QA/QC Interface (35301)

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

It was found in audit 2S-074, Safeguards 440V Load Centers, that BCI's Schematic Drawing E-163, Sheet 1, rev. 12, was revised to rev. 13 prior to the completion of the Blue Tag Test. The T and L (Testing and Labs) data sheet did not reflect this change nor its impact on completed testing. The Finding Report 2N577, dated July 15, 1987 documented the need for a formal procedure for reviewing document changes for their effect on completed work. The corrective action for this finding is pending and is being tracked by the QA department. The inspector established that, in the case of audit 2S-074, the particular drawing change did not affect the test results. T&L has been reviewing change documents for their effect on completed work but this process has not been formally documented. Audit 2S-76 to review Logic Functional Tests also identified incorrect and superseded revisions of design drawings. The Finding Report 2S-147 documented this finding from Audit 2S-76 and the corrective action has been completed on April 25, 1988 The inspector will follow the effectiveness of licensee's corrective actions for these findings in a future inspection.

5. Independent Effort

A review was made of the fuel oil and lube oil systems of the emergency diesel generators (EDGs) for the following aspects:

- Cleaning methods
- Acceptance criteria for cleanliness of systems/components
- Cleaning procedures

References

(1) "Specification for Cleanliness Control of Piping and Equipment," 8013-P-303, rev. 13, approved December 28, 1987

(2) "System Cleanness Verification Procedure, Startup System No. 23B, Diesel Generator Fuel Oil System," Startup Technical Program 2F23.1, Rev. 1, approved October 30, 1987.

The inspector made the following observations during the above mentioned review:

(1) Procedure 2F23.1 (ref 2 above) identifies the cleanliness class for the Day Tanks and the Storage Tank as class D, as identified in paragraph 6.5.1 of ref. 1 above. This classification requires "a nominal degree of cleanliness applicable to fire water, service water and similar systems." According to ref. 1, these components are to be classified as Class B, which states: "a high degree of cleanliness is required for these components since they are eventually connected, directly or indirectly, to class A components." The

"class A components" would include the tubing/piping down stream of the fuel oil filter and the fuel injection pumps (the filter has a 5 micron particle retention capability).

(2) There are no acceptance criteria for the piping and other system components in the fuel oil system, apart from the tanks, in ref. 2. Therefore, this piping and other system components require a cleanness classification higher than class D.

(3) It was not apparent how the licensee maintains manufacturer's recommended cleanliness requirements for the on skid fuel oil piping and components. This is an important consideration during future system intrusions to accomplish system repairs or modifications.

(4) Reference (1) does not have cleanliness criteria and classifications for any fuel oil and lube oil systems. The classification mentioned in ref. 2 applies to water systems. It is inappropriate to use cleanliness standards for water systems to control cleanliness for an oil system in that contaminants and particulates are not controlled for this specific application.

(5) There are no cleanliness acceptance criteria for the manufacturer supplied "on skid" lube oil piping and components, and oil covered surfaces (crankcase, drilled passages, bearings) of the lube oil system. This is important for cleanliness control during present and future system intrusions to accomplish system repairs or modifications. This point was clearly demonstrated by the recent finding on the lapping compound left in the system after bearing re-conditioning.

The licensee agreed to review all of the above concerns. Pending completion of licensee's reviews, these items remain unresolved. Observations (1) through (3) will be the subject of Unresolved item 353/88-13-01. Observations (4) and (5) will be tracked under Unresolved Item 353/88-13-02.

6. Plant Tours

The inspector made several tours of the plant including the control enclosure turbine building, the diesel generator enclosures, and reactor containment to observe the status of construction, work in progress, housekeeping, testing activities and cleanliness. No unacceptable conditions were noted.

7. Unresolved Items

Unresolved items are matters about which more information is required in order to determine whether they are acceptable, an item of noncompliance, or a deviation. New unresolved items in this report are identified in Section 5.

8 Exit Interview

At the conclusion of the site inspection, on May 6, 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 are 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

Proc. No	Description	Rev. No.	Appr. Date TRB
2P-2.2	125/250 Vdc (Div. I and II) Safeguard Power System, Startup Subsystems 2A and 2B	0	4-21-88
2P16.11	Residual Heal Removal Service Water System, Subsystem 16A	0	12-29-88
2P54.1	Emergency Service Water (ESW) System, Sub System 54A	0	11-16-87
2P57.1A	Uninterruptable AC Power System, Sub System 57A	0	2-23-88

Attachment B

Review of Audit/Surveillance Reports

Report No.	Description	Prep Date
2E-281	System Turnover	4-18-88
2S-87	Application and Control of the Startup Work List	3-31-88
2S-74	PECO/Blue Tag Testing of S/U System #2-5 A, Safeguard 440 V Load Centers	3-07-88
2S-76	Blue Tag Testing of System 2-91A, Main Control Room Annunciation	4-13-88
2G-335	Unit 2 Startup, Preop. Test Procedure Control.	4-14-88
25-083	Blue Tag Testing of S/U System 18A&B Instrument Air System	3-29-88