

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 88-20

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: August 8 - 12, 1988

Inspector:

L. J. Priney

for Henri F. vanKessel, Reactor Engineer

9/14/88

date

Approved by:

L. J. Priney

for P. K. Epen, Chief, Special Test Programs
Section, EB, DRS

9/14/88

date

Inspection Summary: Routine Unannounced Inspection on August 8-12, 1988
(Inspection Report No. 353/88-20)

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, the test witnessing of preoperational test for Emergency Diesel Generator C and for the Diesel Generator Fuel Oil System (2P23.1)

Results: No violations were identified.

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1. Persons Contacted

1.1 Philadelphia Electric Company (PECo)

- *J. Corcoran, Manager Quality Assurance
- *D. A. DiPaolo, Superintendent Unit 2 QA
- *W. R. Hatton, Quality Engineer (Bechtel)
- J. Higgins, Startup Engineer
- C. Howard, Startup Engineer
- *G. C. Kelly, QA Engineer (Bechtel)
- D. Kelsey, PM Coordinator
- G. Lauderback, S/U QC Supervisor
- *K. W. Meck, Asst Supt. QA
- W. L. McCullough, Project Startup Engineer (Bechtel)
- J. W. Mehaffy, QA Engineer
- *R. L. Payne, QA Engineer
- L. Perkowski, Sr. Technical Assistant, I&C Branch
- *R. P. Roe, QC-NDE Level III
- *D. L. Schmidt, QC-NDE Level III
- *K. G. Stout, Quality Engineer (Bechtel)
- G. Strong, Startup Engineer
- *W. T. Ullrich, Startup Manager Unit 2
- *R. D. Weingard, Engineer, I&C

1.2 U.S. Nuclear Regulatory Commission

- *R. A. McBrearty, Reactor Engineer
- R. L. Fuhrmeister, Resident Inspector
- *R. A. Gramm, Senior Resident Inspector

*Denotes those present during exit meeting held on August 12, 1988.

2.0 Preoperational Test Program

2.1 Preoperational Test Procedure Review (70336)

Preoperational test procedure 2P49.1, Residual Heat Removal System, was 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.

2.2 Test witnessing

The inspector witnessed the following tests:

- Post Bearing Reconditioning Run-In Test for Standby Diesel Generator C.
- Preoperational Test 2P23.1, Diesel Generator Fuel Oil System.

Test witnessing by the inspector included observations of the following attributes:

- 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 run-in test of D/G-C was performed in accordance with test instructions provided by the vendor. These same instructions were also used for the run in test of D/G-A (See Inspection Report 50-353/88-17). The following run-in schedule was used in terms of percent load versus time period:

<u>Hours</u>	<u>%Load</u>
1	25
1	37.5
2	50
3	62.5
3	75.0
3	87.5
3	100

The inspector made independent readings from the local panel instruments. Pyrometer readings showed a maximum temperature differential of 200°F versus a max allowable of 300°F.

The pressure differential on the lube oil strainer did not exceed the allowable 10 psid. The actual max. pressure differential was 5 psid. Problems had been experienced prior to this test with the thermostatic bypass valve of the jacket water system. This control valve contains a power pill which controls valve motion. It controlled the jacket water at too low a temperature (144°F which is well below the optimum control range of 155-160°F). Temporary (non-qualified) replacement power pills had been installed to permit test continuation. The new power pill was controlling the jacket water at slightly below the optimum range, at 154°F. A non-conformance report (224A-618/S-30M) was issued to address the problem.

There was a test exception for the crankcase vacuum which was too low (.3 inches of water). The desired range is .4 to 2.5 inches of water. The orifice which controls this vacuum will be modified to provide $1\frac{1}{2}$ inches of water of vacuum.

The test was successfully concluded following the run-in schedule shown above. No unacceptable conditions were noted during this test. The inspector witnessed selected steps of preoperational test procedure 2P23.1 for the Diesel Generator Fuel Oil System, Startup Subsystem 23B. Problems were experienced with Level Alarm Switches LISHL 20-220A-D for the high and low level alarms of the diesel fuel oil storage tanks. The switches are designed for tanks of 30 feet height or below. The actual height of the storage tanks is about 3 feet. Control action therefore is taking place over a very small angle on the circular cam (about 7°). Four test exceptions were issued against the high and low level alarm steps of the procedure during the witnessing period. Recalibration of these level alarm switches is planned by the licensee. The inspector will follow all of these test exceptions during future NRC inspections. Apart from the level alarm switch problems, no unacceptable conditions were noted.

3. QA/QC Interface (35301)

The QA Audits and Surveillances listed in Attachment A were reviewed to ascertain the continued QA/QC involvement with the preoperational test program.

With reference to the finding in audit 25-96, as reported in inspection report 50-353/88-17, concerning the timely provision of the input for the PM Data Base prior to system turnover, the licensee had taken the follow-up action to address the inspector's concern. The decision for the Project Startup Engineer, not to sign the turnover document unless the input for the PM Data Base had been sent to the Startup PM Coordinator, has been incorporated in Startup Administrative procedure AD6.1, "System/Component Turnover to PECO."

In Surveillance Check Report 25-041, a water spill incident was investigated. Water (about 6000 gals) was accidentally dumped from the RHR System via the RHR supply to the main steam MSR into the Unit 2 Drywell. As part of the corrective action taken, PECO Startup advised personnel that in the future they are to open tell-tale valve(s) outside the test boundary to ascertain any through leakage.

The inspector enquired whether the licensee plans to incorporate opening of the tell tale valves as a precaution in the pertinent test procedure(s). Startup management agreed to review this matter for feasibility. The inspector will follow the resolution of the above action during future NRC inspections.

In Finding Report 2S-157 (Audit Report 25-090) it was found That Blue Tag Testing had not been performed to the latest revision of drawing M71-48(2), i.e.20BR. In addition, drawing M71-48-24BR was used without amendments when amendment FMC-M-2031 was active. Both documents were current at the time of the start of the test. It was determined that this oversight did not affect the test. The corrective action was to provide additional training to field engineers and startup personnel to identify the latest design document revision, including outstanding change documents, via "system 38" (Network Computer Program). The inspector enquired whether the licensee plans to revise applicable administrative procedures to require that the drawing revisions be checked for latest status prior to the test and that the effects of drawing changes be reviewed for their impact on the test procedure and the validity of the test data obtained from the test. Startup management agreed to review this matter.

4. Independent Effort

A review was made of the calibration records for the indicating instruments, listed in Attachment B for Standby Diesel Generator C local panels.

It was found that the use of calibration stickers for instruments on local and control room panels was discontinued in early 1988 as a result of an INPO recommendation to PECO. Calibration records, however, are being maintained. A calibration sheet was found for all of the instruments listed in Attachment B.

It was noted that the calibration frequency was not shown on the individual calibration sheets. This information, however, is provided in the CHAMPS Preventive maintenance computer output. The calibration frequency of all of the instruments listed in Attachment B was found to be 3 years (every other refueling outage). It was concluded that all of the instruments of Attachment B had a valid calibration.

The inspector also reviewed evidence on the timely transmittal of the Preventive Maintenance (PM) Date Base information prior to system turn over. The inspector verified that the following transmittals were accomplished prior to the turnover date.

1. Speedletter to G. Feenstra, S/U Supervisor, from D. Kelsey, PM Coordinator, on S/U System 28E, D/G Enclosure HVAC System, dated 5-11-88.
2. Speedletter to R. Ballou, GE Startup, from D. Kelsey, PM Coordinator, on S/U System 76F, Post Accident Sampling, dated 5-16-88.

3. Sneedletter to R. Ballou, GE Startup, from D. Kelsey, PM Coordinator, on S/U System 63A, Safeguards Piping Fill, dated 5-13-88.

All of the above speed letters transmitted the following data for review:

- Unit 2 CHAMPS data sheets
- Unit 1 PM Baseline Data marked up for Unit 2
- Unit 1 Lube List marked up for Unit 2

5. Plant Tours

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

No unacceptable conditions were noted.

6. Exit Interview

At the conclusion of the site inspection, on August 12, 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

Review of Audit/Surveillance Reports

<u>Report No.</u>	<u>Description</u>	<u>Prep. Date</u>
2S-41	Investigation of Water Spill into Drywell Unit 2 during RHR test 2F49.1	08-05-88
2S-86	Blue Tag Testing of 2P-54A, "Emergency Service Water"	07-05-88
2S-89	Preop. Testing of System 2-91A, "Control Room Annunciation"	04-28-88
2S-90	Blue Tag Testing of Startup System 24A, Standby Diesel Generators	05-12-88
2S-91	Witnessing of preoperational test 2P4.1, 4KV Safeguards Power	05-04-88
2S-92	Witnessing of Preop. Test 2P17.1, "Instrument AC Power"	05-25-88
2S-200	Control test equipment for Unit 2 S/U support	06-08-88

Attachment B

Limerick 2

"C" Diesel Generator Local Panel Instruments

Instrument No.	Description	Cal. Sheet Available	Cal. Date	Cal. Due Date
PIGA-221C	Saving Air Pressure	Yes	02-04-88	every 3 years
	Water Pressure (R)	Yes	02-04-88	"
PIGA-220C	ICC " (B)			"
	Engine Suction Temp. (B)	Yes	06-22-88	"
TIGA-201C	Pump Disch. Temp. (R)	Yes	04-29-88	"
	Fuel Oil Pressure, to Engine (k)	Yes	04-29-88	"
PI20-225-C-1	Fuel Oil Pressure, to Filter (B)			
	Fuel Oil Pressure, to Engine (R)	Yes	04-29-88	"
PI20-225-C-2	Fuel Oil Pressure, to Filter (B)			
	SA Pressure #1 (R)	Yes	06-22-88	"
PIGA-230C	SA Pressure #2 (B)			
	JW Header Disch Temp.	Yes	06-20-88	
TIGA-210C	Pump Suction Temp. (B)			
	Lube Oil Header Press (R)		04-30-88	"
PIGA-201C	Lube Oil Turbo (B)			
	Lube Oil to Engine Press (R)	Yes	04-30-88	
PIGA-202C	Lube Oil Pump Disch. (B)			
	ICC Temp. (R)	Yes	06-20-88	
TIGA-220C	AC " (B)			
PGGA-201C	Crankcase Vacuum,	Yes	04-30-88	
PIGA-222C	Turbo Blower Vacuum, inches	Yes	02-04-88	
TIGA-222C	Pyrometer (Diesel)	Yes	06-16-88	"
SIGA-201C*	Speed, rpm	Yes	06-18-88	"
PDI-20-224C-1	Pressure Interstitial	Yes	04-30-88	"
PDI-20-224C-2	Pressure Interstitial	Yes	04-30-88	"
A/CG-501-1	Nullmeter	Yes	06-04-88	"
W/ "	KW "	Yes	06-04-88	"

VAR "	VAR "	Yes	06-04-88	"
V/ "	Generator Output	Yes	06-06-88	"
	Voltage			
AF/ "	Generator Field Current	Yes	06-08-88	"
VF/ "	Generator Field Voltage	Yes	06-03-88	"
F/ "	Frequency Meter	Yes	06-10-88	"

*New identification: SI-MI-274-1