

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-387/80-22

Docket No. 50-387

License No. OPPR-101 Priority -- Category B

Licensee: Pennsylvania Power and Light Company

2 North Ninth Street

Allentown, Pennsylvania 18101

Facility Name: Susquehanna Steam Electric Station, Unit 1

Inspection at: Salem Township, Pennsylvania

Inspection conducted: August 25-28, 1980

Inspectors: W A Rekito
W. A. Rekito, Reactor Inspector

9/30/80
date signed

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Approved by: H. H. Nicholas for
D. L. Capton, Chief, Nuclear Support
Section No. 1, RO&NS Branch

9/30/80
date signed

Inspection Summary:

Inspection on August 25-28, 1980 (Report No. 50-387/80-22)

Areas Inspected: Routine, unannounced inspection of the preoperational containment leak rate test procedures, inservice test program for pump and valves, surveillance of pipe supports and restraints, and a general plant tour. The inspection involved 26 inspector-hours on site by one region based NRC inspector.

Results: No items of noncompliance were identified.



DETAILS

1. Persons Contacted

Pennsylvania Power and Light Company

- *G. Adams, Operations Supervisor
- *J. Blakeslee, Jr., Senior Results Engineer
- *S. Cantone, Acting Plant Superintendent
- *T. Clymer, Senior NQA Analyst
- *E. Gorski, Acting Quality Supervisor
- *J. Green, QA Supervisor-Operations
- D. Thompson, Assistant Plant Superintendent

Bechtel Power Corporation

- E. Figuard, Assistant ISG Supervisor
- *M. Fulkerson, ISG Test Engineer
- *R. Webster, ISG Supervisor

U.S. Nuclear Regulatory Commission

- *G. Rhoads, Resident Reactor Inspector

The inspector also interviewed other licensee personnel during the inspection.

*Denotes those present at the exit interview.

2. Containment Integrated Leak Rate Test (CILRT)

a. Documents Reviewed

- Procedure P59.2, Revision B, DRAFT, "Containment Integrated Leak Rate Test".
- Susquehanna FSAR Section 6.2.6, Primary Reactor Containment Leakage Rate Testing.
- Dwg. No. M-113, Revision 13, Reactor Building Closed Cooling Water.
- Dwg. No. M-126, Revision 10, Containment Instrument Gas.
- Dwg. No. M-139, Revision 3, MSIV Leakage Control System.
- Dwg. No. M-141, Revision 10, Nuclear Boiler.

- Dwg. No. M-144, Revision 9, Reactor Water Cleanup.
- Dwg. No. M-148, Revision 7, Standby Liquid Control.
- Dwg. No. M-149, Revision 12, Reactor Core Isolation Cooling.
- Dwg. No. M-151, Revision 15, Residual Heat Removal.
- Dwg. No. M-157, Revision 13, Containment Atmospheric Control.

b. Scope

The inspector reviewed DRAFT procedure P59.2, "Containment Integrated Leak Rate Test", for technical adequacy and compliance with 10 CFR 50, Appendix J, ANS N45.4, and Susquehanna FSAR. The inspector also discussed various aspects of the CILRT with the licensee's representatives including current NRC positions concerning leak rate testing and the licensee's plans for the preoperational CILRT.

With the exception of the items noted below, the inspector identified no inadequacies and had no further questions in this area.

c. Acceptance Criteria

The procedure provides the option of conducting a short duration (less than 24 hour) test in accordance with the Bechtel Power Corporation's Topical Report BN-TOP-1, "Testing Criteria for ILRT of Primary Containment Structures for Nuclear Power Plants", which provides data analysis using both mass point and total time methods. This type of short duration test is acceptable to the NRC but because of inherent bias on the total time method of data analysis, the inspector informed the licensee's representative that the NRC will evaluate the success of the test using the mass point method. In addition the procedure acceptance criteria had no provisions to correct the calculated leakage rate for; (1) systems isolated or not properly vented and drained, or (2) changes in the test volume (containment free air volume) during the test.

In summary:

$$L_{mp} @ 95\% \text{ UCL} + K \leq 0.75 L_a$$

where;

L_{mp} @ 95% UCL is the calculated leakage rate using mass point at the 95% upper confidence level,

L_a is the maximum allowable leakage rate at containment peak accident pressure,



K is a conservative correction factor including

- Type C test results for systems which could become potential leakage paths that are isolated or not properly vented and drained;
- Corrections for sump, reactor vessel, and suppression pool level increases.

Since the procedure acceptance criteria does not include the above identified corrections, this item is unresolved and is designated (387/80-22-01).

d. Value Lineup Review

On a sampling basis, the inspector reviewed the CILRT procedure valve lineup sheets to verify that:

- Each penetration was provided with a valve lineup;
- Containment Isolation Valves (CIVs) were in the correct positions;
- Proper drain and vent paths were provided; and
- Artificial leakage barriers were not created which could mask containment leakage.

During this review the inspector identified the following two problems:

- (1) The current valve lineup does not drain the two recirc pump seal water supply lines to expose the seating surface of CIVs 1F013A and 1F013B to the containment atmosphere as specified in FSAR table 6.2-22 and required by 10 CFR 50 Appendix J.
- (2) The current valve lineup sheets verify the position of instrument sensing line root valves but does not verify the position of each instrument local isolation valve. The inspector stated that this verification was necessary to assure that CILRT boundaries included instrumentation which are containment leakage barriers during a post LOCA condition.

The licensee acknowledged and agreed to correct these discrepancies. This item is unresolved and designated (387/80-22-02).

e. Leakage Repairs

The inspector noted that the test procedure did not contain any precautions against repairing identified leaks and discussed with the licensee's representative the provisions of paragraph III.A.1.(a). of Appendix J

regarding leakage repairs. The inspector explained the NRC position that, if during the CILRT potentially excessive leakage paths are identified, the leak may be isolated and the CILRT restarted provided:

- (1) The leak path is locally testable and is in fact tested both before and after repair;
- (2) The pre-repair leakage is added to the CILRT results to obtain the "as found" leakage; and
- (3) The post-repair leakage is added to the CILRT results to obtain the "as left" leakage.

The inspector further noted that such repairs must be carefully controlled during the test to avoid invalidating test results. The licensee's representative acknowledged these comments.

3. Local Leak Rate Testing (LLRT)

a. Scope

The inspector reviewed LLRT procedure TP 1.22, Revision 1, in addition to documents listed in paragraph 2.a., for technical adequacy and compliance with 10 CFR 50 Appendix J, ANS N45.4, and Susquehanna FSAR.

The inspector also discussed various aspects of LLRT with the licensee's representative including optional test methods acceptable to the NRC and the licensee's plans for the preoperational LLRT program. The first LLRT activities are scheduled to start in September 1980.

No items of noncompliance were identified, however several inspector concerns for the LLRT procedure adequacy are described below.

b. Procedure Review and Approval

The inspector noted and questioned the appropriateness of the LLRT procedure being reviewed and approved by the Integrated Startup Group (ISG) Supervisor. The Assistant Station Superintendent stated that the procedure and test results would be reviewed and approved by the station Test Review Board, as though it were a preoperational test procedure.

This commitment satisfied the inspector's concern but the item will be reviewed at a later date to verify the additional review and approval.
(387/80-22-03)

c. Acceptance Criteria

Section 2.2.(1) of the test procedure specifies that "Containment isolation valves subject to hydraulic Type C tests shall have leakage rates that do not exceed the hydraulic leakage limits specified by plant technical specifications". The inspector noted that Susquehanna TS have not been issued and the licensee's representative explained that the proposed TS do not include specific leakage limits for hydraulic Type C LLRTs which are permitted in lieu of pneumatic tests by specific FSAR approval. The licensee's representative further identified a Startup Field Report No. 1065, dated 4/15/80, which identified this problem and requested the Engineering Department provide the needed Acceptance Criteria.

This matter is considered unresolved pending specification of an acceptable acceptance criteria for hydraulic Type C LLRTs. (387/80-22-04)

d. Procedural Guidance

The inspector noted that the LLRT procedure referenced ANSI/ANS 56.8, Draft No. 2/Revision 3 dated November 15, 1978, "Containment System Leakage Testing Requirements". Further, the licensee's representative explained the intent of the LLRT program was to meet the testing provisions of this Draft Standard to the extent possible.

The inspector identified the following specific areas where the LLRT procedure guidance was not consistent with the guidelines of ANSI/ANS 56.8 and as such the technical adequacy is questionable.

- (1) The LLRT procedure does not identify test instrument requirements for accuracy and range limitations.
- (2) The LLRT procedure does not provide guidance for results error analysis or instrument minimum sensitivity to be used when recording and evaluating data.
- (3) The pressure decay method of test described in the LLRT procedure assumes that temperature is stable/constant if $\Delta T \leq 10^{\circ}\text{F}$ per 10 minute interval. The inspector stated that the NRC requires changes in temperature be included in the leak rate calculation for pneumatic pressure decay tests.

The licensee's representative acknowledged these concerns and agreed to correct the test procedure. The above items are considered unresolved and collectively designated (387/80-22-05).

4. Surveillance of Pipe Support and Restraint Systems

The inspector held discussions with licensee representatives regarding plans for surveillance of shock suppressors (snubbers) on safety related piping systems. All safety related snubbers at the Susquehanna Plant are of the mechanical design and the licensee's representative stated that their proposed technical specifications presently do not include any surveillance requirements for mechanical snubbers. The inspector informed the licensee's representative about proposed changes to the Standard TS (NUREG-0123, Revision 2) which include surveillance requirements for mechanical snubbers and is expected to be issued soon. The licensee's representative acknowledged these comments and stated they were expecting such changes and would prepare for them.

The inspector found no unacceptable conditions and had no further questions in this area.

5. Inservice Testing of Pumps and Valves

The inspector held discussions with the licensee representatives regarding plans for preservice and inservice testing of safety related pumps and valves in accordance with ASME B&PV Code Section XI. The licensee is presently developing the applicable inservice testing program description and has committed to submit it to the NRC for review by January 1, 1981. The licensee's representative further explained that implementing inservice surveillance test procedures are scheduled to be completed by March 1981 and will be used to conduct preservice tests and obtain necessary baseline data.

Included in these discussions were identification of specific code inservice test requirements and acceptable test methods for meeting these requirements.

The inspector identified no unacceptable conditions and had no further questions in this area at this time.

6. Plant Tours

The inspector made several tours of the facility during the course of the inspection including the reactor building, primary containment, control structure and the control room. During these tours the inspector observed work in progress and the general condition of safety related components, such as pumps, valves, penetration assemblies and piping supports.

No unacceptable conditions were identified.

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance or deviations. Unresolved items are identified in paragraphs 2 and 3 of this report.

8. Exit Interview

The inspector met with licensee representatives (see Details 1 for attendees) at the conclusion of the inspection on August 28, 1980. The inspector summarized the scope and findings of the inspection at that time. With regard to the findings in paragraph 3, the Station Superintendent stated that resolution would be completed prior to initiating local leak rate test activities.