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

REGION I

Report No. 50-29/80-13

Docket No. 50-29

License No. DPR-3 Priority - Category C

Licensee: Yankee Atomic Electric Company

25 Research Drive

Westborough Massachusetts 01581

Facility Name: Yankee Nuclear Power Station (Yankee-Rowe)

Inspection At: Rowe, Massachusetts

Inspection Conducted: 8/4 - 6/1980

Inspectors: W. A. Rekito for
W. A. Rekito, Reactor Inspector — 9/18/80 date

_____ date

_____ date

Approved by: D. L. Caphton
D. L. Caphton, Chief, Nuclear Support
Section No. 1, RO&NS Branch — 9/18/80 date

Inspection Summary:
Inspection on 8/4 - 6/1980 (Report No. 50-29/80-13)
Areas Inspected: Routine, unannouned inspection of the containment integrated leak rate test procedure; containment leak rate test activities; inservice testing program for pumps and valves; and licensee action on previous inspection findings. The inspection involved 22 inspector-hours on site by one region based NRC inspector.
Results: No items of noncompliance or deviations were identified.

Region I Form 12
(Rev. April 1977)

DETAILS

1. Persons Contacted

H. Autio, Plant Superintendent
*L. French, Engineering Assistant
*T. Henderson, Reactor Engineer
*D. Long, Shift Technical Advisor
*R. Randall, Shift Technical Advisor
*J. Staub, Technical Assistant to Plant Superintendent
*N. St. Laurent, Assistant Plant Superintendent
*B. Warner, Shift Technical Advisor

NRC Personnel

T. Foley, Resident Reactor Inspector

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Open) Unresolved Item (29/75-14-06): Local leak rate test requirements for containment isolation check valves. The licensee's exemption from leak rate testing these valves continues to be reviewed by NRR. This item remains open.

(Open) Unresolved Item (29/77-11-03): Technical adequacy of the containment integrated leak rate test procedure. Discussion of details is included in paragraph 3 of this report. This item remains open pending revision of procedure OP-4701, "Vapor Container Type A Leakage Test."

(Close) Unresolved Item (29/77-26-01): Technical adequacy of the local leak rate test procedure. The inspector reviewed OP-4702, rev. 7, "Vapor Container Type B and C Penetration Tests", and determined that the following previously identified problems have been corrected.

(1) Valves being tested are required to be closed by their normal means.

(2) The frequency statement for Type C Tests and airlock tests conform to the requirements of 10 CFR 50, Appendix J.

This item is resolved.

(Close) Unresolved Item (29/79-02-08): Valve testing stroke time requirements. The inspector reviewed procedure No. AP-7008, rev. 1, "Pumps and Valves Program" and determined that the method of evaluating the stroke time of power operated valves includes comparison of the results to the previous test and as such conforms to the requirements of ASME Section XI. This item is resolved.

(Open) Unresolved Item (29/79-02-04): Pump differential pressure measurement. The licensee's relief request from this ASME code requirement continues to be reviewed by NRR. Paragraph 5 of this report contains additional information on this subject. The item remains unresolved.

3. Containment Integrated Leak Rate Test (CILRT)

a. Documents Reviewed

-- Procedure OP-4701, rev. 4, "Vapor Container Type A Leakage Test".

-- Yankee-Rowe Technical Specification Section 3/4.6, Containment Systems.

-- Letter to YAEC (Mr. R. Groce) from A. Schwencer dated November 29, 1976.

-- Letter to USNRC (Mr. A. Schwencer) from D. Vandenberg dated February 7, 1977.

-- Dwg FM-26A, "Compressed Air System".

-- Dwg M-9, "Main Coolant Drain and Sample".

-- Dwg M-13, "Vapor Containment Ventilation and Pressurization".

b. Scope

The inspector reviewed procedure OP-4701 "Vapor Container Type A Leakage Test", for technical adequacy and compliance with 10 CFR 50, Appendix J, ANSI 45.4, and Yankee-Rowe Technical Specifications. The inspector also discussed various aspects of the CILRT with the licensees representatives including current NRC positions concerning leak rate testing.

The licensee plans to perform a CILRT during the week of September 8, 1980. The inspector found no items of noncompliance, however other findings are discussed in the following paragraphs.

c. Venting the Reactor Coolant System

Section III.A.1.(d) of Appendix J to 10 CFR 50 requires the Reactor Coolant system be vented to the containment atmosphere during the conduct of the CILRT but permits systems to remain in normal operation if required to maintain the plant in a safe condition during the test.

Procedure OP-4701, rev. 4, requires the Reactor Coolant system be pressurized and the pressurizer in steam phase at 300 to 350°F. The licensee's representative explained this practice was carried over from previous tests due to possible damage of the main coolant pump stator housing. However, one of the pumps is fitted with a stator cavity vent plug which is removed for the test to protect it against possible damage. The licensee stated his intentions to install similar stator cavity vent plugs in the other main coolant pumps and revise the CILRT procedure to require venting the Reactor Coolant system.

This matter was previously identified as unresolved item (29/77-11-03) which will remain open pending completion of licensee actions described above.

d. Acceptance Criteria

The NRC requires that the CILRT Acceptance Criteria include corrections of the measured leakage for; (1) containment free volume changes (such as pressurizer level and sump water levels), and (2) addition of local leak rate test results for CIVs of systems not vented as required by section III.A.1.(d) of Appendix J to 10 CFR 50. The inspector noted that procedure OP-4701, rev. 4, contained instructions to add to the CILRT leakage rate; (1) local leak rate test results for certain systems not properly vented, and (2) an equivalent leakage resulting from water accumulation in the drain tank. However, these leakage rate additions are not specified as part of the CILRT Acceptance Criteria.

The licensee's representative stated that the procedure would be revised to clarify the correct acceptance criteria. This item is unresolved and designated item No. (29/80-13-01).

e. Valve Line-up Review

On a sampling basis the inspector checked the CILRT procedure valve line-up to verify that containment isolation valves (CIVs) are closed and systems adequately vented, both inside and outside of containment to assure that CIVs will be subjected to test differential pressure.

The inspector discussed with the licensee's representative, the need to revise the procedure valve line-up to support the decision to vent the reactor coolant system. In addition the inspector identified several systems lacking vent paths outside the test boundary (CIVs) creating artificial leakage barriers which could mask containment leakage. Among these systems were:

(1) Cavity fill line (CS-V-601);

(2) V.C. Service Air Supply (CA-V-688)

(3) V.C. Air Charge (CA-V-746)

(4) CILRT Pressurization (HC-V-602)

The licensee agreed to correct these discrepancies and conduct a complete review of all system valve line-ups to assure they are properly vented for the test. The above items are unresolved and are collectively designated item No. (29/80-13-02)

f. Leakage Repairs

The inspector 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 "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.

4. Local Leak Rate Testing (LLRT)

a. Documents Reviewed in Addition to those in Paragraph 3.a.

-- Procedure OP-4702, rev. 7, "Vapor Containment Type B&C Penetration Tests.".

-- Procedure AP-7003, rev. 4, "Vapor Containment Type B&C Penetration Test Guidelines", with current computer printout of LLRT program summary.

-- Procedure OP-4702, Test Records.

(1) Attachment W, Personnel Hatch, dated 12/21/79 and 7/18/80;

(2) Attachment G, Neutron Shield Tank Sample Line Trip Valve (TV-207) dated 7/3/80;

(3) Attachment H, VC Pressure Sensing System Trip Valve (TV-211), dated 7/15/80.

(4) Attachment 2, DM Water Supply, dated 2/3/80.

(5) Attachment AA, LP Vent Header, dated 2/3/80.

(6) Attachment ec, Neutron Shield Tank Tell Tales, dated 6/30/80.

(7) Attachment J. MC Vent Header Trip Valve (TV-203), dated 6/30/80.

b. Scope

The inspector reviewed the LLRT procedures and records listed above for technical adequacy and compliance with 10 CFR 50 Appendix J. ANS 45.4, and Yankee Rowe Technical Specifications.

The inspector also discussed the status of the current LLRT program with the licensee's representative. Approximately 60 percent of the tests had been completed. With the exception of the item below, no discrepancies were identified from the procedure and record review and the inspector had no further questions in this area.

c. Type C LLRT of Main Coolant Pressure Sensing Line CIV

Attachment EE of procedure OP 4702, revision 7, provides a leakage rate test of the Main Coolant Heise Pressure Gauge line and valve PR-V-623, which is a manual vent valve located inside the vapor containment (V.C.) The inspector noted a discrepancy between this procedure and TS 4.6.1.2 plus Table 3.6-1 which requires type C testing of valve PR-V-610, which is the first manual isolation valve outside of the V.C. Further review revealed that TS Amendment No. 58, issued April 3, 1979, revised Table 3.6-1 by substituing valve PR-V-610 for valve PR-V-623 previously identified as the manual CIV.

The inspector questioned the licensee's representative regarding the apparent discrepancy including plans for resolution. The licensee's representative explained that the TS requirement to Type C test valve PR-V-610 was being reviewed and may not be correct. He further explained that a design change to install a test connection would be necessary to conduct a valid Type C test of valve PR-V-610.

The Assistant Plant Superintendent stated that this discrepancy would be resolved prior to conducting the Type A (CILRT) test scheduled for September 1980.

This item is unresolved pending review of licensee's actions and justifications for resolution of the discrepancy. (29/80-13-03).

5. Inservice Testing of Pumps and Valves

a. Documents Reviewed

-- Yankee Rowe Inservice Inspection Program for the 40 Month Period March 1, 1978 through June 30, 1981, dated December 1, 1977 (Program Submittal to NRC).

-- Revision 1, to Yankee Rowe Inservice Inspection Program, dated June 26, 1979.

-- Procedure AP-7008, rev. 1, "Pumps and Valves Program", with Test Summary logs from 1979.

-- Procedure OP-4211, rev. 9, "Emergency Boiler Feed Water System Operability Test", with records from test completed 12/30/79.

-- Procedure OP-4204, rev. 18, "Monthly Test or Special Operation of the Safety Injection Pumps", with records from test completed 12/20/79.

-- Procedure OP-4610, rev. 6, "Containment Isolation System Containment Pressure Switch Calibrator and Trip Valve Operability Test", with records from test completed 5/13/80.

-- Procedure OP-4707, rev. 1, "Inservice Inspection Check Valve Operability Check During Refueling Intervals", with records from test completed 10/27/79.

b. Scope

The inspector reviewed the procedures and records listed above for technical adequacy and conformance with subsections IWP and IWV of Section XI of ASME B&PV Code as described in the applicable program submittals to the NRC and Yankee Rowe Technical Specifications. The inspector also discussed the status of inservice testing program implementation with the licensee representative. During this discussion the inspector explained that the inservice testing program being implemented must meet existing TS requirements and Code requirements described in the most recent program submittal recognizing it's improvement after NRR on-site review of the original program submittal.

c. Findings

With the exception of the items below, no discrepancies were identified from the procedure and record review and the inspector had no further questions in this area.

(1) Pump Differential Pressures

During review of the IST program description the inspector recognized the licensee's request for relief from measuring pump differential pressure as required by IWP-3100 for all seven pumps within the scope of the program. The basis for this request was identiffed to be; (1) lack of installed suction pressure indication, (2) continuation of the current testing method to satisfy TS minimum operability requirements.

During a tour of the Primary Auxiliary Building (PAB), the inspector recognized the existance of casing drains at the suction of each of the six safety injection pumps. The inspector stated to the licensee's representative that the NRC requires that IST operability tests meet all code requirements that are technically feasible. It appeared to the inspector that the available pump casing drain connections could be used to monitor pump suction pressure during surveillance tests and therefore an exemption from the code requirement may not be considered valid. The inspector stated that this information would be forwarded to NRR for use during review and determing acceptability of the licensee's IST program submittal.

The licensees representative acknowledged the inspectors comments and committed to conducting an engineering review to determine the feasibility of revising their test program to include monitoring pump suction pressures. The effort is to be completed prior to the next plant startup which is the next time the surveillance tests are required.

This matter was previously identified as unresolved item (29/79-02-04) which remains unresolved.

(2) Analysis of Results (IWP-3200)

The inspector recognized that pump differential pressure (ΔP) measurement is not presently included in the IST program but questioned why the alternate parameter, discharge pressure, in lieu of ΔP was not being evaluated in accordance with all of the provisions of subsection IWP. With regard to the available operating parameter, discharge pressure, the inspector identified that the licensee's IST pump operability procedures do not meet the following specific code requirements:

-- Specific reference values for individual safety injection pumps are not established in accordance with IWP-3110.

-- Allowable ranges of test quantities are not established in accordance with IWP-3210.

-- Corrective actions to increase testing frequency in accordance with IWP-3230 is not specified.

-- Test results from each test are not evaluated for IWP acceptance criteria.

The licensee's representative acknowledged the inspectors concerns for appropriate conduct and evaluation of test results to meet the codes inservice testing requirements and committed to making appropriate revisions to the test procedures prior to the next plant startup.

This matter is unresolved pending review of revised test and evaluation procedures. (29/80-13-04)

6. Plant Tours

The inspector conducted periodic tours of the control room and primary auxiliary building (PAB) to observe operations and activities in progress, and the general condition of safety related equipment.

During these tours no noncompliances or unacceptable conditions were identified.

7. Unresolved Items

Items about which more information is required to determine acceptability are considered unresolved. Paragraphs 2, 3, 4, and 5 of this report contain unresolved items.

8. Exit Interview

The inspector met with licensee representatives (see Detail 1 for Attendees) at the conclusion of the inspection on August 13, 1980. The inspector summarized the scope and findings of the inspection at that time.