

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

Region I

Report No. 79-19

Docket No. 50-271

License No. DPR-28 Priority - Category C

Licensee: Vermont Yankee Nuclear Power Corporation

20 Turnpike Road

Westborough, Massachusetts 01581

Facility Name: Vermont Yankee Nuclear Power Station

Inspection at: Vernon, Vermont

Inspection conducted: October 29 and 30, 1979

Inspectors: R.S. Markowski for  
J. C. Higgins, Reactor Inspector

12/14/79  
date signed

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date signed

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date signed

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

12/18/79  
date signed

Inspection Summary:

Inspection on October 29 and 30, 1979 (Report No. 50-271/79-19)

Areas Covered: Routine onsite, unannounced inspection (19 inspector-hours) by a regional based inspector of the containment integrated leak rate test, backshift operations, previous inspection items and system seismic design.

Results: No items of noncompliance were identified.

## DETAILS

### 1. Persons Contacted

\*R. Burke, Engineering Support Supervisor  
S. Chin, Engineer  
\*W. Conway, Plant Superintendent  
H. Eichenholy, Leak Rate Testing Consultant  
\*W. Murphy, Assistant Plant Superintendent  
\*J. Pelletier, Maintenance Supervisor  
\*D. Reid, Lead Technical Assistant  
S. Vekasy, Technical Assistant

\*Denotes those present at the exit interview. The inspector also talked with and interviewed other licensee employees, including members of the operations, instrument and control, engineering and health physics staffs.

### 2. Update on Previous Inspection Items

(Closed) Unresolved Item (271/79-13-02): The inspector reviewed Department Instruction (DI) 79-19 which included the requirement that atmospheric conditions in the reactor building be recorded hourly. The inspector also observed several of these readings being recorded during the test. DI 79-19 modified the test acceptance criteria to require that corrections be made to the measured leakage rate for changes in containment sump levels, reactor vessel level and for Type C leakage measurements prior to comparison with acceptance criteria. This item is closed.

(Closed) Unresolved Item (271/79-13-03): Department Instruction 79-19 changed the test penetration valve line ups to ensure that the design differential pressure was imposed across containment isolation valves. The inspector observed several of the valves in the correct position during plant tours. This item is closed.

(Open) Unresolved Item (271/78-16-03): Based on preliminary results, this test appears to be the first of two consecutive successful periodic tests required by III. A.6.(b) of Appendix J (see discussion in paragraph 2.c). This item remains open pending the results of the second test to be conducted at the next shutdown for refueling or approximately 18 months from this test, whichever occurs first.

### 3. Containment Integrated Leak Rate Test (CILRT)

#### a. Chronology

10/29/79 -	0040	Commenced pressurization of primary containment
	0320	15 psig leak check - No leaks found.
	0630	30 psig leak check - No leaks found.
	0945	Secured pressurization with containment pressure above 44 psig (Pa).
	1015	Discovered leak from 1/4 inch tubing fitting to spare electrical penetration.
	1220	Isolated leak and repressurized above 44 psig.
	1621	Stabilization completed; 24 hour test begun.
10/30/79	1721	CILRT completed and supplemental verification test commenced.

#### b. Test Witness

The inspector reviewed procedure OP 4030, Rev. 5, "Primary Containment Leak Rate" and Department Instruction (DI) 79-19 against the criteria of 10 CFR 50 Appendix J, ANSI N 45.4, Vermont Yankee Technical Specifications and established NRC positions relating to containment leak rate testing. The inspector witnessed various portions of the CILRT including: pressurization, leak detection, data collection, leakage rate calculations and the supplemental pump back test. The inspector also verified on a sampling basis that: instruments were calibrated by a method traceable to the National Bureau of Standards; test valve lineups were per Appendix J; in plant valve positions during the test were as specified in the procedure; and, test prerequisites were met. Based on a preliminary review of leakage rate computations the CILRT appears to have been satisfactorily completed.

#### c. As Found Leakage Results

After pressurization to 44 psig was completed, leakage searches discovered a leak from a mechanical fitting in a 1/4 inch tubing line from a spare electrical penetration to an instrument panel used for monitoring nitrogen pressure in the penetration. All operable electrical penetrations are normally pressurized with nitrogen and monitored with gages and pressure switches mounted on the instrument panel. The spare electrical penetration is open inside containment and welded shut outside, therefore the tubing appeared to serve no useful function. After discovery of the leak the licensee capped the line between the penetration and the leak, repressurized containment in order to restart the CILRT, and performed a local leak rate test (LLRT) on the tubing leak. The LLRT results were approximately 0.19%/day.

CILRT leakage at the 95% upper confidence level	0.33%/Day
<u>Type C corrections</u>	<u>+0.01%/Day</u>
As left leakage	0.34%/Day
<u>Tubing leak</u>	<u>+0.19%/Day</u>
As found leakage	0.53%/Day
Acceptance Criteria (.75 La)	0.60%/Day

Based on the above preliminary numbers, the inspector noted that the test appeared to have been successfully completed on the first attempt and therefore constituted the first of two consecutive successful tests required by paragraph III.A.6.(b) of Appendix J (reference item number 271/78-16-03).

#### 4. Identified Leakage

##### a. Tubing Leak

The inspector noted that for the spare electrical penetration the containment boundary was extended the length of the 1/4 inch tubing and contained several mechanical joints. The licensee's representative stated that this arrangement would be reviewed prior to startup in order to determine the feasibility of permanently capping the tubing at the penetration in order to improve containment integrity. He also stated that all penetrations would be reviewed to determine if any other similar arrangements existed and if modifications could be made. This item is unresolved pending the outcome of the engineering review and is designated item number (271/79-19-01).

##### b. Minor Leakage

During the CILRT inspections the licensee also discovered and documented several other minor leaks, such as valve packing and tubing leaks. The inspector noted that even though the overall results were within regulatory limits, containment integrity could be improved readily by correcting these already identified leaks. The licensee's representative stated that each one would be reviewed and corrected if feasible. This item will receive further inspector followup. (Item no. 271/79-19-02).

5. Type B and C Testing

The inspector reviewed the results of the Type B and C leak rate testing program conducted during the recently completed refueling outage. Overall, as left, leakage totals appeared acceptable. The inspector noted that three valves, the containment purge makeup valve, a radiation monitor return valve and a reactor water cleanup valve, had initial leakage in excess of technical specification limits. The licensee's representative stated that a licensee event report (LER) was being prepared and would be submitted shortly. The inspector had no further questions in this area.

6. Plant Tour

The inspector conducted a tour of various accessible areas of the plant, including the control room, reactor building, diesel generator rooms and control point and, observed health physics practices, general housekeeping, seismic supports and equipment condition. With the exception of the below item the inspector had no further questions.

The inspector questioned the seismic qualification of the diesel engine air start receivers and piping based on actual appearances. The licensee's representative agreed that system merited further review and conducted the initial engineering evaluation per Bulletin 79-14 on the system. Initial results indicated seismic capability was acceptable based on engineering judgement and limited record review and calculations. The full review will be completed within 30 days in accordance with the Bulletin. The inspector noted that this course of action appeared acceptable.

7. Unresolved Items

Items about which more information is required to determine acceptability are considered unresolved. Paragraph 4 of this report contains an unresolved item.

8. Exit Interview

At the inspection's end the inspector held a meeting (see Detail 1 for attendees) to discuss the inspection scope and findings. The unresolved item was identified.