

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

REPORT/DOCKET NOS. 50-443/92-26

LICENSE NO. NPF-86

LICENSEE: North Atlantic Energy Service Corporation
Seabrook Station
Rt. 1 Site Access Road
Seabrook, New Hampshire

FACILITY NAME: Seabrook Station, Unit 1

INSPECTION AT: Seabrook, New Hampshire

INSPECTION DATES: October 23-30, 1992

INSPECTOR:

Michael J. Buckley
Michael J. Buckley, Reactor Engineer,
Systems Section, EB, DRS

12/22/92
Date

APPROVED BY:

Harold L. Gugg
for Dr. P. K. Eapen, Chief, Systems Section,
Engineering Branch, DRS

12/22/92
Date

Inspection Summary: A routine, announced inspection was conducted to review the Containment Integrated Leak Rate Test (CILRT), and Local Leak Rate Test (LLRT) procedures; to witness CILRT and LLRT test and to review CILRT and LLRT test results. The inspector also verified primary containment leakage rates and conducted general tours of the station.

Results: The containment leak tight integrity is being maintained as required by licensee's procedures and NRC requirements. A non-cited violation was identified pertaining to a lack of procedure adherence in the use of a valve locking device, configuration control, and equipment tagging areas.

1.0 CONTAINMENT INTEGRATED LEAK RATE TESTING

During the period October 23-30, 1992, a Containment Integrated Leak Rate Test (CILRT) was conducted at Seabrook Station, as required by 10 CFR 50, Appendix J.

The purpose of this inspection was to ascertain that the CILRT was conducted in accordance with the requirements and commitments referenced in the following sections, and the test results met the acceptance criteria specified in the station procedures, technical specifications and Appendix J, 10 CFR 50. The procedures were reviewed for their technical adequacy to perform the intended activities.

The test was performed in accordance with Station Operating Procedure No. EX1803.001, "REACTOR CONTAINMENT INTEGRATED LEAKAGE RATE TEST - TYPE A," Revision 2. The inspector reviewed this test procedure and witnessed preparations and various portions of the "as left" CILRT. The Local Leak Rate Tests (LLRTs) for CAP-V1, V2 and CAP V3, V4, "Containment Refueling Purge Supply Air," and "Containment Refueling Purge Return Air" were witnessed by the inspector.

1.1 References

- Seabrook Station Technical Specifications
- 10 CFR Part 50, Appendix J, Primary Reactor Containment Leakage Testing for Water Cooled Power Reactors
- Updated Final Safety Analysis Report (UFSAR)
- ANSI/ANS S6.8-1987, Containment System Leakage Testing Requirements (reference only)
- ANSI N45.4-1972, Leakage Rate Testing of Containment Structures for Nuclear Reactors
- USNRC I&E Information Notice No. 85-71; Containment Integrated Leak Rate Tests

1.2 Documents Reviewed

- EX1803.001 "Reactor Containment Integrated Leakage Rate", Test-type A, Revision 2
- EX1803.003 "Reactor Containment Type B and C Leakage Rate Tests"
- Yankee Atomic Electric Company Vendor Audit Report No. 92-031 "ILRT Software Marketed by UESC"
- Calibration records for CILRT instrumentation
- MA 4.2 "Equipment Tagging and Isolation"
- OS1090.05 "Component Configuration Control"
- Lock Component Log OS1090.05B
- Tagging Order Log Book
- Operational Information Report No. 92-111 (Draft)

1.3 Administrative Control of CILRT and Procedure Review

A review of the CILRT and LLRT station procedure, including the ILRT log of events was performed by the inspector and the following were verified:

- The procedures were adequately detailed to assure satisfactory performance of the tests.
- Test prerequisites were clearly stated and adequately signed off when completed.
- Systems required to maintain the plant in a safe condition were operable in the required mode.
- All required plant parameters were being recorded on at least an hourly basis.
- Acceptance criteria were clearly stated.
- Test supervisor was designated and his responsibilities were clearly defined in the procedure.

The ILRT supervisor provided plant personnel a CILRT briefing prior to the test to ensure that people not directly involved with testing activities were aware of the importance of maintaining control of CILRT activities, temperature requirements, and access control.

1.4 Test Witnessing

Portions of the following test activities were witnessed by the inspector:

1. Containment pressurization
2. Containment Atmospheric Stabilization
3. Twelve-hour CILRT data acquisition
4. Six-hour instrument verification

The inspector performed several reactor building walkdowns to observe the test boundaries and leakage monitoring equipment. During the pretest containment closeout walkdown with the test supervisor and station personnel, portions of the valve lineups as required in the CILRT Procedure EX1803.001 were independently verified.

During the walkdown, the inspector identified several licensee actions that were not in accordance with station procedures. These inappropriate licensee actions involved valve locked closed capability, discrepancies in the control room logging of locked components, and a caution tag configuration control omission. The licensee took immediate actions and corrected each of the inspector identified deficiencies. The inspector also verified that the valves were in the required closed position for the testing. The inspector concluded there was minimal safety significance because the plant was in cold shutdown, the valves were in the required position, and the licensee performed an in-depth review of the locked component log. Therefore, in accordance with the enforcement discretion provisions of 10 CFR Part 2, Appendix C, these violations are not being sited because of the minimal safety significance and the licensee's immediate and effective corrective actions.

During the early part of the outage the licensee determined through a local leak rate test (LLRT) that the leakages during station operation through CAP-V1, V2, V3, and V4 were within 10 CFR Part 50, Appendix J allowable limits. These valves were manipulated during the outage which caused them to leak. The licensee was aware of the potential for leakage after manipulations, and appropriately conducted a LLRT prior to CILRT and observed that these valves were leaking in excess of 100 scfm. Because of this leakage, the licensee installed blank flanges on both sides of these valves and the leakage through these valves was reduced to within the technical specification (TS) limits. The CILRT was conducted and the licensee decided to leave these flanges permanently during the next cycle of operation to prevent leakages through these components. A local leak rate test of these flanges indicated that the leakages were within the technical specification limits and these observed leakages were added to the as-left CILRT results as a penalty. The revised CILRT results were well within the 10 CFR 50, Appendix J limits.

1.5 Test Instrumentation

The calibration records of the Containment Integrated Leak Rate Test instrumentation were reviewed and verified that the instruments had been calibrated within the six-month period prior to the test, in accordance with the requirements of the industrial standard ANSI/ANS-56.8-1987. The calibrations were traceable to the National Bureau of Standards. The inspector also verified that the instrument system met the specifications given in the instrument selection guide of ANSI/ANS-56.8-1987. The operation of the automatic data collection system was observed during the conduct of the test.

The data collection system printed out all temperature, relative humidity, and absolute pressure at fifteen-minute intervals. These data were entered manually into the computer for determination of temperature stabilization, leak rate test calculation, and verification determination. The inspector independently reviewed a selected sample of this data and verified that the manually entered data were accurate.

1.6 Chronology of Events

- October 27, 1992 1825: Commenced containment pressurization.
- October 28, 1992 0200: Completed initial walkdown with no apparent leaks, containment pressure 30 psia.
- 0812: One compressor failed.
- 0942: Replacement compressor valved in.
- 1228: East air dryer secured due to refrigerant problem.

1638: Stopped pressurization at 66.028 psia.

1642: Secured pressurization lineup and vented inlet piping.

1651: Started temperature stabilization phase.

October 29, 1992

0106: Started Type A test.

0430: Leak check walkdown of containment considered satisfactory.

1006: Restarted Type A test based on evaluation of parameter trends toward stabilization.

1030: Continued walkdown.

1630: System elbows at CAP-VI expanding to deck grading; pictures taken.

2206: Completed Type A test.

2210: Air sample of containment taken.

2230: Problem with flow rate from rotameter.

2245: Rotameter test stand modified and test procedure changed.

2314: Established 12.5 SCFM flow for verification test.

0021: Began verification test phase.

0500: Flow rate reading at rotameter maintained at 12.5 SCFM, but corrected to 12.35 SCFM for calculation for 83.23 degrees Fahrenheit.

0626: Verification test phase complete.

0758: Commenced depressurization at 65.348 psi.

1.7 Temperature Stabilization

The containment atmospheric temperature must meet the criteria of less than .5 degrees F per hour per station procedure EX1803.001. The inspector independently calculated the average containment temperature change over the last two hours of the four-hour stabilization period to be .039 degrees F/hr. This met the criteria for temperature stabilization.

1.8 CILRT Results

The inspector independently calculated the CILRT leak rate utilizing an NRC approved computer program. A comparison of licensee and inspector computed results is given below. Results are in weight %/day.

12 HOUR CILRT

	TOTAL TIME METHOD		MASS POINT METHOD	
	Licensee	NRC	Licensee	NRC
Measured (L_{am})	.06313	.063978	.06299	.063072
Lam + UCL	.101450	.096779	.06489	.064948
Acceptable	.1125 %	.1125%	.1125 %	.1125 %

1.9 Test Verification

National Industry Standards recognizes there are uncertainties associated with the performance of leakage-rate tests, and the desirability to use a supplemental method of verifying the measurements. The licensee accomplishes this by intentionally superimposing a calibrated leak from the containment at a convenient penetration. The composite leakage of both the containment leaks and the superimposed leak are measured and verified.

While preparing for the verification phase of testing, the licensee observed that there was not sufficient flow through the rotameter. This rotameter was calibrated for zero back pressure, however the downstream tubing of this rotameter did not permit zero backpressure. The licensee appropriately disconnected the tubing downstream of the rotameter to ensure the proper flow through the rotameter.

2.0 EXIT MEETING

The licensee's management was apprised of the purpose and scope of this inspection at the entrance interview. The findings of the inspection were periodically discussed with the licensee's staff and were summarized at the exit meeting on October 30, 1992.

Attendees at the exit meeting are listed in Attachment 1 of this report.

ATTACHMENT 1

Persons Contacted

North Atlantic Energy Service Corporation

* T. Pucko	NRC Coordinator
* W. DiProfio	Station Manager
* R. Cooney	Assistant Station Manager
* G. Kann	Program Support Manager
* L. Bozek	Quality Assurance Engineer
* J. Rickett	Quality Assurance Engineer
* R. Donald	Auditor
* B. Drawbridge	Executive Director of Nuclear Production
* J. Petro	Senior Engineer
* G. Kline	Technical Support Manager
J. Malone	Assistant to Executive Director of Nuclear Production
J. Peterson	Maintenance Manager
J. Grillo	Operations Manager
L. Walsh	Manager of Operations Support
E. Sovatsky	Technical Projects Supervisor
D. Covill	NQ Surveillance Supervisor
R. Parry	Program Support Project Engineer (CILRT Supervisor)

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* N. Dudley	Senior Resident Inspector
* R. Laura	Resident Inspector

* Present at Exit Meeting