TENNESSEE VALLEY AUTHORITY
OFFICE OF NUCLEAR POWER

REACTOR BUILDING CONTAINMENT INTEGRATED LEAK RATE TEST SUPPLEMENT WATTS BAR NUCLEAR PLANT UNIT 1 CONDUCTED MAY 19-20, 1983 DOCKET NUMBER 50-390

Submitted to
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Facility Operating Licensing

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1.0 PURPOSE

The purpose of this supplemental report is to update the CILRT results shown in the report "Reactor Building Containment Integrated Leak Rate Test, Watts Bar Nuclear Plant Unit 1, Docket Number 50-390." Post modification leak rate testing of the PAS, hydrogen analyzer, ERCW, chilled water valves, RVLIS lines and steam generator blowdown valve flanges, was necessary to complete the CILRT results.

2.0 INTRODUCTION

As prescribed in "Reactor Building Containment Integrated Leak Rate Test, Watts Bar Nuclear Plant Unit 1, Docket Number 50-390," a supplemental report containing the final CILRT results will be transmitted after post modification testing has been completed on the PAS, ERCW, hydrogen analyzer, and chilled water valves.

The containment isolation valves for the PAS system were not shipped from the manufacturer in time for installation prior to the CILRT. Prior to the CILRT, the PAS lines were installed from primary containment to each respective isolation valve location. These lines were then capped and welded shut at the point where the isolation valves would be welded to the line. Since the CILRT, the isolation valves have been installed and type C leak rate tested. The type C leak rates for these valves have been added to the previously measured CILRT value and the type C leakage rate results table has been updated to reflect the new valve leak rates.

During the CILRT, the hydrogen analyzer valves (43-201, 202, 207, 208) are in the open position. However, operation of these valves was opposite of their respective handswitch positions. After the CILRT, the hydrogen analyzer valves were repaired to work in proper open-close position as shown by the handswitch. The type C leak rates for these valves have been measured and are shown in table 1.

To improve the seating characteristics of the valves, several ERCW bypass check valves had a new "soft" seat installed after the CILRT. Therefore, the type C leak rate tests for the valves have been rerun and the results are shown in table 1.

The flow control valves (FCV) for the chilled water system were replaced after completion of the CILRT. This replacement was made because the manufacturer of the valves stated that they could not be made to pass a type C air leak rate test. The new valves have since been leak rate tested and the results shown in table 1.

Although the reactor vessel level indicator system (RVLIS) has no containment isolation valves to be leak rate tested, the installation of this system was made after the CILRT. Therefore, the system penetrations required leak checking. As shown in table 1, the penetrations were leak checked and showed no visible signs of leakage.

The system generator blowdown system (SGBD) is also a possible source of leakage during the CILRT. After the CILRT several SGBD valves were replaced, and STEAR 83-03 was run to ensure the leak tightness of the valve flanges.

3.0 SUMMARY

A Reactor Building Containment Integrated Leak Rate Test (CILRT) was conducted on Watts Bar Nuclear Plant Unit 1 May 19-20, 1983. Post modification leak rate testing of the post accident sampling (PAS) system, hydrogen analyzer, essential raw cooling water (ERCW), and chilled water valves was completed on July 6, 1984.

The total type C penetration leakage of the PAS, ERCW, and chilled water valves was 0.0000 SCFH, as shown in table 1. Since these leak rates are lower than the previously reported leak rates, the following results are conservative and final.

The reportable mass leak rate (MLR) for the CILRT was 0.122 percentage of containment air mass per day (% per day), and the observed 95% upper confidence limit (UCL) was 0.124% per day. The above mentioned 95% UCL includes leakage measured from type B and C for testable lines that were in service during the test. The measured mass leak rate was 65% of the allowable 0.18% per day (0.75 L_A).

The reportable total time leak rate (TTLR) for the CILRT was 0.097 per day, and the associated 95% upper confidence limit (including the type B and C test leakage from testable inservice lines) was 0.1098% per day.

TABLE 1
TYPE C TEST DATA
PRE-OP UNIT 1

Penetration Number	System Name	Valve Number(s)	Test Date	Individual Leakage (SCFH)	Penetration Leakage (SCFH)
X-57A	ERCW	67-111/575D	01/18/84	0.0000	0.0000
		67-112	01/18/84	0.0000	
X-59A	ERCW	67-87/575D	01/16/84	0.0000	0.0000
		67-88	01/10/84	0.0000	
X-61A	ERCW	67-103/575B	01/23/84	0.0000	0.0000
		67-104	01/19/84	0.0000	
X-64	Chilled Water	31-305	01/26/84	0.0000	0.0000
		31-306/3421	01/27/84	0.0000	
X-65	Chilled Water	31-309	02/02/84	0.0000	0.0000
		31-308/3407	02/01/84	0.0000	
X-66	Chilled Water	31-326	01/27/84	0.0000	0.0000
		31-327/3392	01/27/84	0.0000	
X-67	Chilled Water	31-330	01/27/84	0.0000	0.0000
		31-329/3378	02/01/84	0.0000	
X-70A	ERCW	67-297/585A	06/01/84	0.0000	0.0000
		67-139	01/11/84	0.0000	
X-71	ERCW	67-296/585C	06/01/84	0.0000	0.0000
		67-134	01/12/84	0.0000	
X-72	ERCW	67-298/585D	06/07/84	0.0000	0.0000
		67-142	01/11/84	0.0000	
X-73	ERCW	67-295/585A	06/01/84	0.0000	0.0000
		67-131	01/12/84	0.0000	

TABLE 1
TYPE C TEST DATA
PRE-OP UNIT 1

Penetration Number	System Name	Valve Number(s)	Test Date	Individual Leakage (SCFH)	Penetration Leakage (SCFH)
X-23	Post Accident Sampling	43-318 43-319	05/16/84 05/16/84	0.0000 0.0000	0.0000
X-28	Post Accident Sampling	43-341 43-CV(341)	05/17/84 05/17/84	0.0000 0.0000	0.0000
X-86A	Post Accident Sampling	43-287 43-288	05/15/84 05/15/84	0.0000 0.0000	0.0000
X-86B	Post Accident Sampling	43-307 43-CV(307)	05/17/84 05/17/84	0.0000 0.0000	0.0000
X-86C	Post Accident Sampling	43-342 43-CV(342)	05/17/84 05/17/84	0.0000 0.0000	0.0000
X-92C	Post Accident Sampling	43-250 43-251	05/15/84 05/15/84	0.0000 0.0000	0.0000
X-105	Post Accident Sampling	43-325 43-CV(325)	05/17/84 05/17/84	0.0000 0.0000	0.0000
X-106	Post Accident Sampling	43-309 43-310	05/16/84 05/16/84	0.0000 0.0000	0.0000
X-92A	Sampling System	43-207	07/06/84	0.0000	0.0000
X-92B	Sampling System	43-208	07/06/84	0.0000	0.0000
X-99	Sampling System	43-202	07/06/84	0.0000	0.0000
X-100	Sampling System	43-201	07/06/84	0.0000	0.0000

TABLE 1
TYPE C TEST DATA
PRE-OP UNIT 1

Penetration Number	System Name	Valve Number(s)	Test Date	Individual Leakage (SCFH)	Penetration Leakage (SCFH)
X-14A*	SGBD	1-182 1-14	01/20/84	No Visible Leakage	
X-14B*	SGBD	1-184 1-32	01/20/84	No Visible Leakage	
X-14C*	SGBD	1-183 1-25	01/20/84	No Visible Leakage	
X-14D*	SGBD	1-181 1-7	01/20/84	No Visible Leakage	
X-84A	RVLIS	-----	02/08/84	No Visible Leakage	
X-84B	RVLIS	-----	02/08/84	No Visible Leakage	
X-84C	RVLIS	-----	02/09/84	No Visible Leakage	
X-87A	RVLIS	-----	02/08/84	No Visible Leakage	
X-87B	RVLIS	-----	02/08/84	No Visible Leakage	
X-87C	RVLIS	-----	02/08/84	No Visible Leakage	

*Flanges for the FCV's listed on these penetrations leak checks as described in STEAR 83-03.