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Quad Cities Nuclear Power Station
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RLB-90-011

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U. S. Nuclear Regulatory Commission
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Reference: Quad Cities Nuclear Power Station
Docket Number 50-254, DPR-29, Unit One

Enclosed is Licensee Event Report (LER) 89-001, Revision 00, for Quad Cities Nuclear Power Station.

This report is submitted as a voluntary report.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD CITIES NUCLEAR POWER STATION


R. L. Bax
Station Manager

RLB/MJB/eb

Enclosure

cc: R. Stols
R. Higgins
INPO Records Center
NRC Region III

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)

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Quad Cities Unit One

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Title (4) Seven Pathways Were Not Included in the Type B and C Local Leak Rate Testing Program Due to a Recent Interpretation of 10CFR50 Appendix J.

Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)																									
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)																								
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OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																															
POWER LEVEL (10)			<table border="0"> <tr> <td>20.402(b)</td> <td>20.405(c)</td> <td>50.73(a)(2)(iv)</td> <td>73.71(b)</td> </tr> <tr> <td>20.405(a)(1)(i)</td> <td>50.36(c)(1)</td> <td>50.73(a)(2)(v)</td> <td>73.71(c)</td> </tr> <tr> <td>20.405(a)(1)(ii)</td> <td>50.36(c)(2)</td> <td>50.73(a)(2)(vii)</td> <td><input checked="" type="checkbox"/> Other (Specify</td> </tr> <tr> <td>20.405(a)(1)(iii)</td> <td>50.73(a)(2)(i)</td> <td>50.73(a)(2)(viii)(A)</td> <td>in Abstract</td> </tr> <tr> <td>20.405(a)(1)(iv)</td> <td>50.73(a)(2)(ii)</td> <td>50.73(a)(2)(viii)(B)</td> <td>below and in</td> </tr> <tr> <td>20.405(a)(1)(v)</td> <td>50.73(a)(2)(iii)</td> <td>50.73(a)(2)(x)</td> <td>Text)</td> </tr> </table>								20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	<input checked="" type="checkbox"/> Other (Specify	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	in Abstract	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	below and in	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	Text)
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LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
Jay Rolfe, Technical Staff, Extension 2160	AREA CODE 3 0 9 6 5 4 - 2 2 4 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15)	Month	Day	Year
Yes (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO			

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

ABSTRACT:

On December 8, 1989, at 1130 hours, Unit One was at 95% rated core thermal power. A study to improve the Type B and C Local Leak Rate Testing (LLRT) Program at Quad Cities Station concluded that seven pathways should be added to the LLRT Program. These test volumes included: The Reactor Building Closed Cooling (RBCCW) inlet/outlet; the Core Spray Discharge lines; the Instrument Air to the Drywell; the Service Air to the Drywell; the Standby Liquid Control System; the Clean Demineralized Water to the Drywell; and the Drywell Air Sampling lines. These pathways were excluded from the Station's LLRT Program due to an interpretation of 10CFR50 Appendix J which did not consider these test volumes applicable to the Type C testing requirements. Due to a recent interpretation of 10CFR50 Appendix J with respect to licensing design criteria, these volumes shall be added to the Station's Type B and C LLRT program. Modification of the systems will be performed as necessary to install the required vents and test taps to perform the Type C testing.

This report is being submitted as a voluntary report.

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TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 Mwt rated core thermal power.

EVENT IDENTIFICATION: Seven Pathways Were Not Included in the Type B and C Local Leak Rate Testing Program Due to a Recent Interpretation of 10CFR50 Appendix J.

A. CONDITIONS PRIOR TO EVENT:

Unit: One Event Date: December 8, 1989 Event Time: 1130
 Reactor Mode: 4 Mode Name: Run Power Level: 95%

This report was initiated by Deviation Report D-4-1-90-002

RUN Mode (4) - In this position the reactor system pressure is at or above 825 psig, and the reactor protection system is energized, with APRM protection and RBM interlocks in service (excluding the 15% high flux scram).

B. DESCRIPTION OF EVENT:

On December 8, 1989, at 1130 hours, with Unit One at 95% rated core thermal power, seven pathways were identified that should be added to the Quad Cities Station Type B and C Local Leak Rate Testing (LLRT) program. The Commonwealth Edison (CECo) Station Support Services staff was compiling a study of primary containment [NH] penetrations [PEN] and associated isolation valves [ISV]. This study involved the compilation of 10CFR50 Appendix J commitments and station policies in order to document the testing requirements and the technical and regulatory basis for these requirements for each primary containment penetration. This was done to improve the Type B and C LLRT program for the station. A list of all the penetrations which require Type B and C testing requirements was compiled, based on the latest interpretation of 10CFR50 Appendix J, and was compared to the penetrations currently included in the Quad Cities Type B and C LLRT program. The following is a list of pathways which were not included in the station's Type B and C LLRT program:

1. Reactor Building Closed Cooling Water (RBCCW) Inlet/Outlet to Drywell [CC].
2. Core Spray Discharge [BM].
3. Instrument Air to Drywell/Torus [LD].
4. Service Air to Drywell [LF].
5. Standby Liquid Control Discharge [BR].
6. Clean Demineralized Water To Drywell [KC].
7. Drywell Air Sampling (Manual Sample Station)[IL][SMV].

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TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]										

None of these pathways are specifically required to be Type C tested by the Technical Specifications. Consequently, this event is not considered to be a violation of the requirements for the Quad Cities Unit One or Unit Two operating licenses. Also, the physical configurations of these pathways have not been changed since the original construction and licensing of the plant.

C. APPARENT CAUSE OF EVENT:

This report is being submitted as a voluntary report. This event does not meet the reporting criteria of 10CFR50.73, nor does it involve any component failures. The pathways not previously included in the Type B and C LLRT program were discovered through a Commonwealth Edison self-assessment improvement program, and are being reported on a voluntary basis. The root cause for the exclusion of these pathways from the Quad Cities Type B and C LLRT program is that Quad Cities Units One and Two were designed, constructed, and licensed prior to the publication of 10CFR50 Appendix J, and during the initial interpretation of 10CFR50 Appendix J, these pathways were considered exempt from Type C testing requirements.

The RBCCW system, for example, was intended to be a closed loop both inside and outside containment. Three of its four isolation valves are motor operated valves [V] which do not have an auto isolation signal, since this system supplies cooling water for the Reactor Recirculation (RR)[AD] pumps [P] and drywell coolers [VB][[CLR]. Since these valves are not required to close automatically upon receipt of a containment isolation signal, this pathway was considered not to fall under 10CFR50 Appendix J Criteria II.H.2.

The Service Air supply line to the drywell, the Clean Demineralized Water Supply to the Drywell, and the Drywell Air Sampling valves are manually closed during operation. Also, the Standby Liquid Control System is isolated by squib valves which provide a tight seal which would not be broken during a Loss of Coolant Accident (LOCA). These pathways were also considered not to fall under 10CFR50, Appendix J Criteria II.H.2 or 3.

The Core Spray Discharge piping is normally maintained water filled and was considered to meet 10CFR50 Appendix J criteria III.C.3. However, since the two core spray loops are not cross-tied, the system cannot meet the single active failure test required of a qualified seal water system.

Based on recent interpretation of design and regulatory requirements, these volumes are now considered to require Type C testing, and shall be added to the Quad Cities Type B and C LLRT program.

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TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

D. SAFETY ANALYSIS OF EVENT:

The RBCCW System is a water-filled system which was intended to be a closed loop both inside and outside of primary containment. Isolation valves 1-3702, 3703, and 3706 are motor operated valves which do not automatically isolate during a design basis accident because the system supplies cooling water to the RR pumps and Drywell Coolers. In its normal configuration, the only leakage path through this system is through the valve packing of the inboard valves, outboard valves, expansion tank, and pump seals.

The Core Spray system is normally water-filled, but since it is not cross-tied, a failure of either core spray pump could result in potential air leakage in that pump's discharge pipe. Since each loop has its own pump, at least one loop could still maintain seal water at a pressure of 1.1 Pa., 48 psig, even if a single core spray pump failed. The worst case leakage would then include only the loop having the worst minimum pathway leakage.

The Instrument Air Supply to the Drywell and Torus is isolated from primary containment by check valves 1-4799-155, 156, and 1-4799-158, 159. These valves were vented during the Type A test conducted during the recent Unit One refueling outage. The Type A test was conducted with acceptable results.

The Service Air Supply to the Drywell is normally isolated during operating conditions by check valve 1-4699-47 and locked-closed manual isolation valve 1-4699-46. Since it was discovered during the recent refueling outage that the safety related boundary for this line was originally set at the check valve, this pathway was subjected to a Type C test at that time. The minimum pathway leakage was minimal. An analysis was performed by Sargent & Lundy which found that the line is seismically qualified from the penetration to manual isolation valve 1-4699-46. Consequently, the safety related boundary has been extended to include this valve.

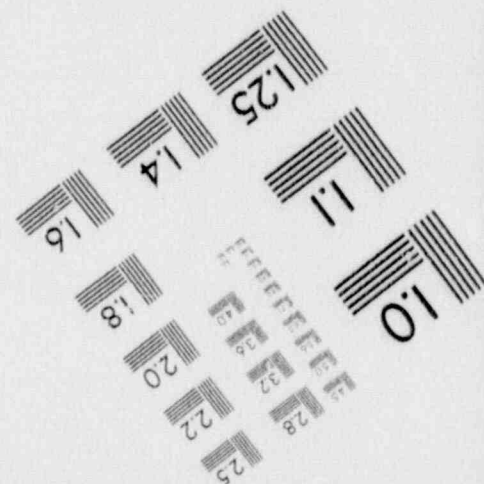
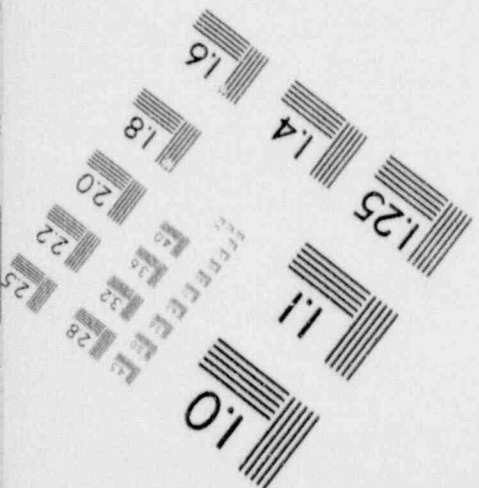
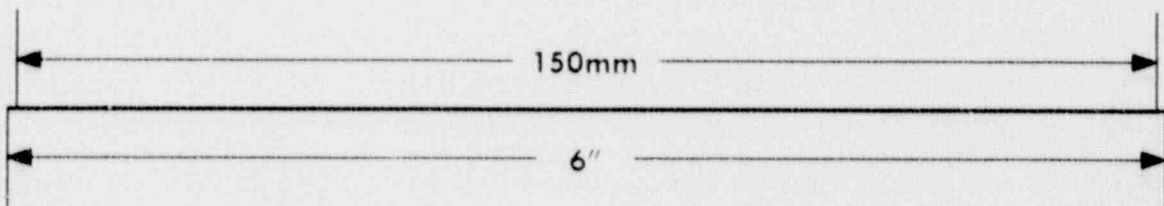
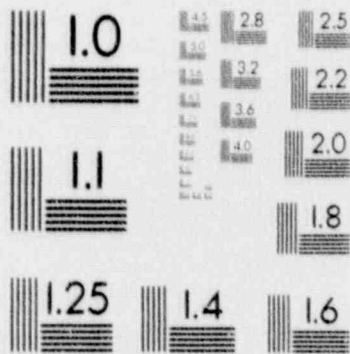
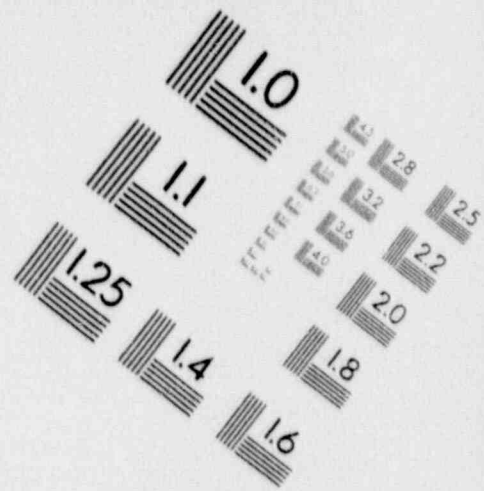
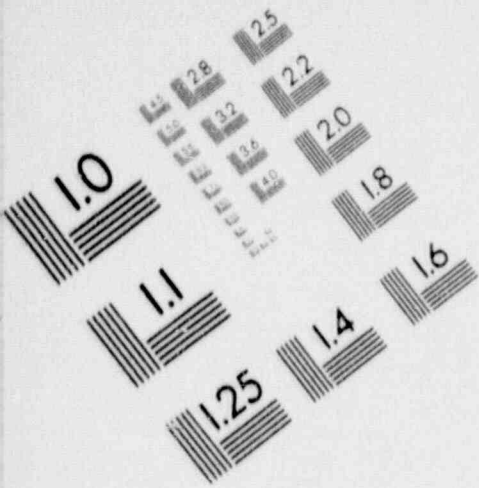
The Standby Liquid Control System is a water-filled system isolated by check valves 1-1101-15 & 16, and explosive squib valves 1-1106A & B. The squib valves, which are normally closed, provide a tight seal, and are not expected to allow leakage of air from primary containment in their normal configuration.

The Clean Demineralized Water Supply line is isolated from primary containment by check valve 1-4399-46 and manual gate valve 1-4399-45, which is normally closed during unit operation. Also, inboard manual valves 1-4399-47 and 1-4399-48 are normally closed. In its present configuration, the expected quantity of air leakage through this pathway is small.

The Drywell Air Sampling System consists of twenty-one 1/2-inch lines, each of which are isolated from primary containment by a pair of manual gate valves. During unit operation, these valves are closed, except for brief periods when they are temporarily opened to collect particulate samples in closed sample cartridges. The leakage through these valves is also expected to be small, when they are in their normally closed positions.

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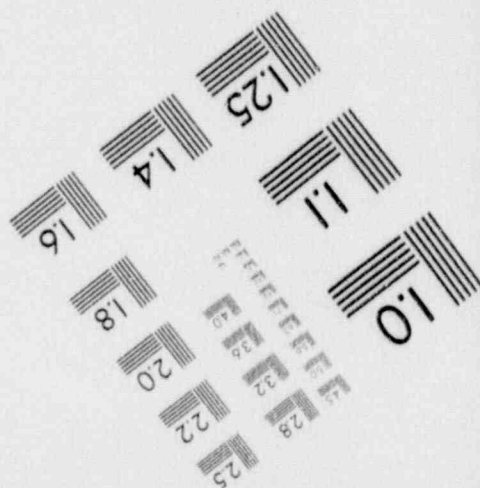
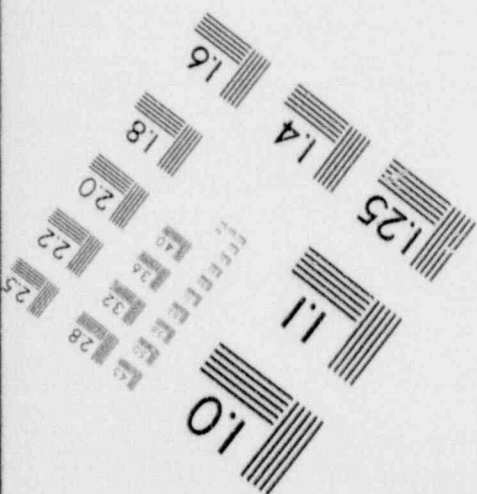
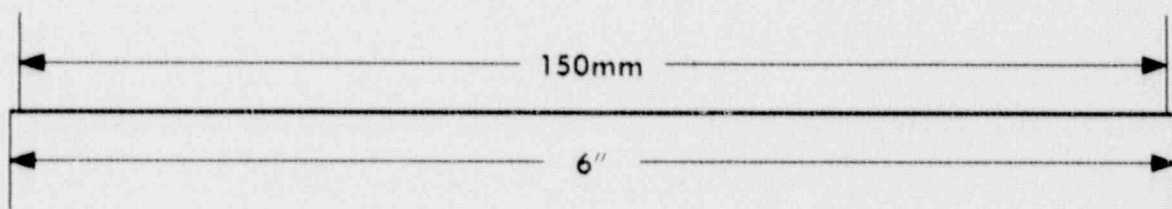
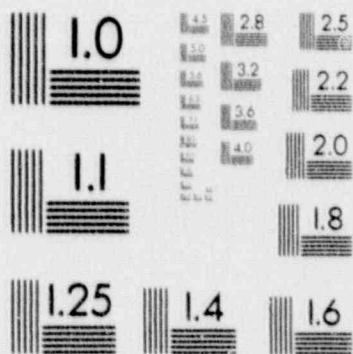
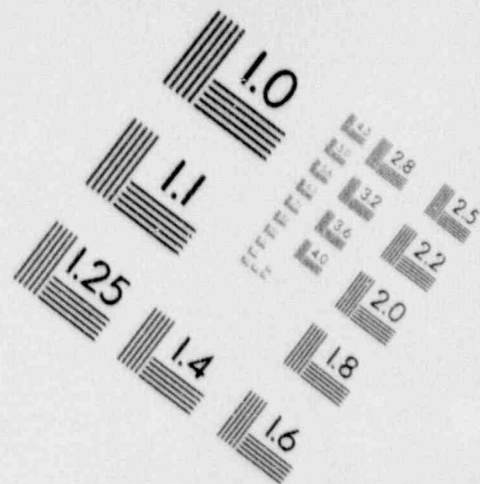
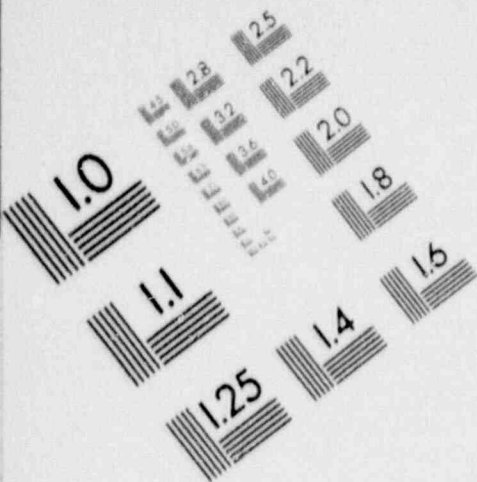
IMAGE EVALUATION TEST TARGET (MT-3)



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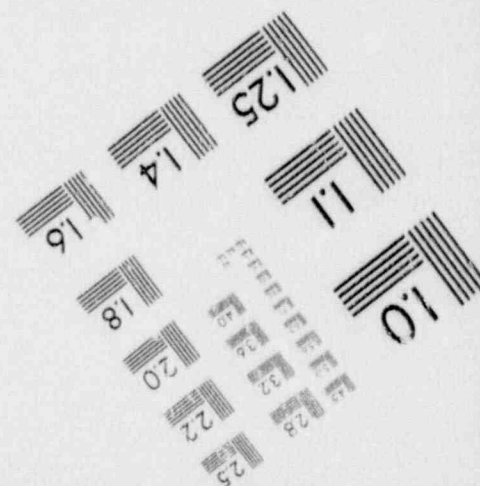
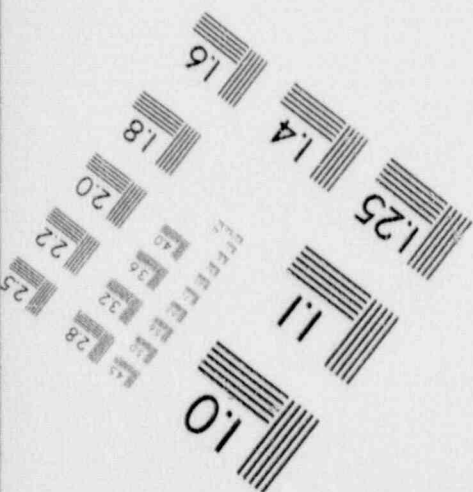
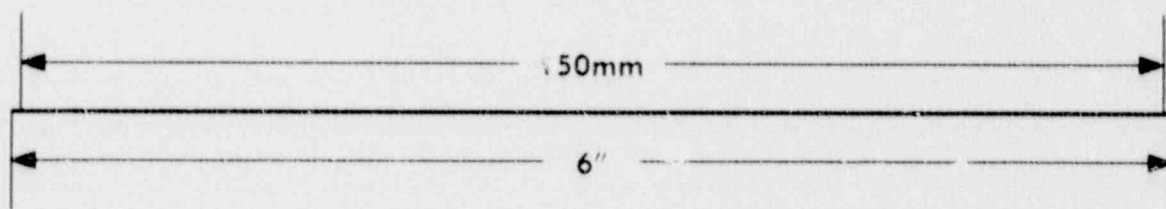
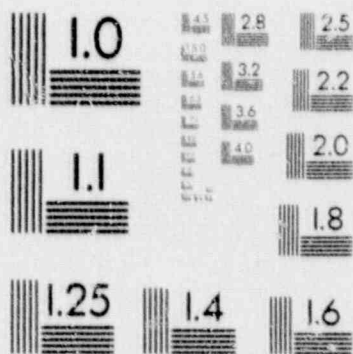
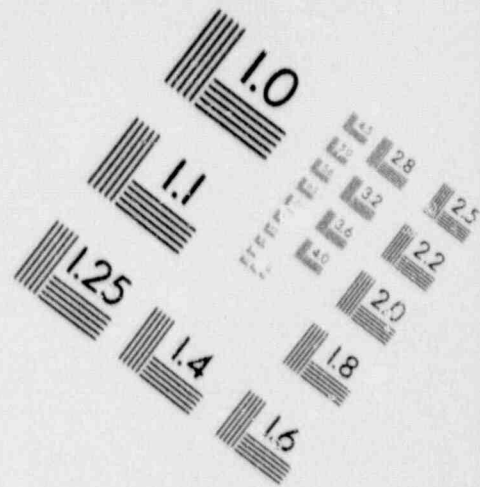
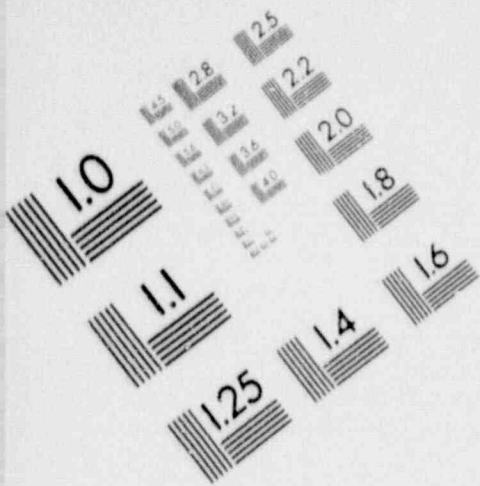
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IMAGE EVALUATION TEST TARGET (MT-3)



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Quad Cities Units One and Two are currently on an accelerated Type A testing schedule which requires a Type A test to be performed each operating cycle. None of these systems have resulted in a Type A test failure in their present configurations. However, only the Instrument Air check valves were specifically vented during these tests. The other systems were challenged to the extent that primary containment was pressurized to Pa, and these systems did not allow excessive air leakage while the associated isolation valves were in their normal positions and all components were intact.

In addition to the Primary Containment System, the Secondary Containment [NG] System and the Standby Gas Treatment System [BH] were available to reduce the possibility or the consequences of a postulated accident in the event that any air leakage did occur from the Primary Containment atmosphere.

E. CORRECTIVE ACTIONS:

The Quad Cities Type B and C LLRT program will be revised to include these seven pathways (NTS 2542009000201). Since some pathways will require the addition of test taps and/or vents to perform proper Type C tests, modification M-4-1(2)-89-166 was initiated to install the necessary test taps. This modification must be installed during a unit shutdown, and is scheduled for installation during the Q2R10 refueling outage on Unit Two, which will begin February 4, 1990, and during the Q1R11 refueling outage on Unit One scheduled for October of 1990 (NTS 2542009000202). Prior to Unit Start-Up, a Type C LLRT Test will be performed on all volumes (NTS 2542009000203). The Type A test procedure will also be revised to drain and vent these pathways where practical, since some systems are required to be operable during the Type A test (NTS 2542009000204).

F. PREVIOUS EVENTS:

None.

G. COMPONENT FAILURE DATA:

None.