

LEAKAGE REDUCTION PROGRAM SUMMARY REPORT
FOR
POST LOCA THERMAL RECOMBINER SYSTEM - (T48-04)

DETROIT EDISON COMPANY
FERMI-2 POWER PLANT

REPORT NO. T48-04-85-01

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LEAKAGE REDUCTION PROGRAM REPORT
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INTRODUCTION: Both the Fermi-2 Technical Specifications, paragraph 6.8.4.a.2, and the Fermi-2 FSAR, Section H.III.D.1.1, require that leakage from systems outside primary containment that could or would contain highly radioactive fluids, be reduced and maintained to as-low-as-practical levels. To demonstrate the leak tight integrity of the Post LOCA Thermal Recombiner System, a system leakage test is conducted once per reactor refueling (approximately once every 18 months). This report is for the initial leakage test.

REFERENCES:

- 1) Dwg. No. 6M721-5739-2, "Hydrogen Recombiner System - Functional Operating Sketch".
- 2) Procedure No. 43.409.01, "Post LOCA Thermal Recombiner System Leakage Test" (A copy of this procedure is on file at the plant).

TEST DESCRIPTION: The Thermal Recombiner System is pressurized to 20 psig (+1 psig, -0 psig) utilizing a fast fill bypass line and a Local Leakrate Monitor to achieve final test pressure. The system is allowed to stabilize at test pressure for a minimum period of 10 minutes after which the test begins. The Local Leakrate Monitor measures the amount of makeup required to maintain test pressure which is equivalent to the total system leakage. If leakage is substantive, corrective maintenance is performed and the test is reperformed.

TEST RESULTS: Two (2) tests were conducted on the Thermal Recombiner System. The first test was conducted on 1-5-85 for both Divisions I and II. These initial tests identified leakage which was then subjected to corrective maintenance. Subsequent to performance of the corrective maintenance, a second and final set of tests was performed on 5-13-85. All test results are presented below:

LEAKAGE REDUCTION PROGRAM REPORT FOR

POST LOCA THERMAL RECOMBINER SYSTEM - (T48-04)

LEAKAGE EXAMINATION DATA SHEET - DIVISION I

TEST NO. 1

DATE: 1-5-85

| Examination Point / Description | Location | Leakage Detected | |
|--|---------------------|------------------|----|
| | | Yes | No |
| 1) T48-F605A, flange farthest from containment. | El. 631' Az. 220 | X | |
| 2) T48-F606A, flange farthest from containment. | El. 578' Az. 185 | | X |
| 3) T48-F008A, Bonnet area. | El. 623' C-11 | | X |
| 4) TEW-N151A, Screw connection. | El. 642' C-10 | X | |
| 5) T48-F003A, Bonnet area & packing. | El. 642' C-10 | X | |
| 6) FXE-N164A, Bonnet areas of root valves. | El. 642' C-10 | X (A) | |
| 7) FXE-N175A, Bonnet areas of root valves. | El. 642' C-10 | X (A) | |
| 8) T48-F002A, Bonnet area | El. 642' C-10 | X | |
| 9) PTT-L200A, Test connection. | El. 642' C-10 | | X |
| 10) Blower C001A, Suction, Blower and Discharge Flanges. | El. 642' C-10 | | X |
| 11) TSE-N667A | El. 642' C-10 | | X |
| 12) B001A, Water Spray Cooler Flange. | El. 642' C-10 | | X |
| 13) TSE-N678A | El. 642' C-10 | | X |
| 14) T48-F001A, Bonnet area. | El. 642' C-10 | | X |

LEAKAGE REDUCTION PROGRAM REPORT
FOR

POST LOCA THERMAL RECOMBINER SYSTEM - (T48-04)

LEAKAGE EXAMINATION DATA SHEET - DIVISION I

TEST NO. 1 CONT'D.

DATE: 1-5-85

| Examination Point / Description | Location | Leakage Detected | |
|--|------------------|------------------|----|
| | | Yes | No |
| 15) PTT-L168A | El. 642' C-10 | | X |
| 16) T48-F604A, Flange farthest from containment | El. 594' B-13 | | X |
| 17) T48-F016A, Flange farthest from containment | El. 594' B-13 | X | |

NOTES:

(A) Leakage at the threaded instrument tap connection.

The total combined leakage for this system from all components within the test boundary and prior to any corrective maintenance, was:

3.041 SCFH

LEAKAGE REDUCTION PROGRAM REPORT FOR

POST LOCA THERMAL RECOMBINER SYSTEM - (T48-04)

LEAKAGE EXAMINATION DATA SHEET - DIVISION I

TEST NO. 2

DATE: 5-13-85

| Examination Point / Description | Location | Leakage Detected | |
|--|---------------------|------------------|----|
| | | Yes | No |
| 1) T48-F605A, Flange farthest from containment. | El. 631' Az. 220 | | X |
| 2) T48-F606A, Flange farthest from containment. | El. 578' Az. 185 | | X |
| 3) T48-F008A, Bonnet area. | El. 623' C-11 | | X |
| 4) TEW-N151A, Screw connection. | El. 642' C-10 | | X |
| 5) T48-F003A, Bonnet area & packing. | El. 642' C-10 | | X |
| 6) FXE-N164A, Bonnet areas of root valves. | El. 642' C-10 | | X |
| 7) FXE-N175A, Bonnet areas of root valves. | El. 642' C-10 | X (Small) | |
| 8) T48-F002A, Bonnet area. | El. 642' C-10 | | X |
| 9) PTT-L200A, Test connection. | El. 642' C-10 | | X |
| 10) Blower C001A, Suction, Blower and Discharge Flanges. | El. 642' C-10 | | X |
| 11) TSE-N667A | El. 642' C-10 | | X |
| 12) B001A, Water Spray Cooler Flange. | El. 642' C-10 | | X |
| 13) TSE-N678A | El. 642' C-10 | | X |
| 14) T48-F001A, Bonnet area. | El. 642' C-10 | | X |

LEAKAGE REDUCTION PROGRAM REPORT FOR

POST LOCA THERMAL RECOMBINER SYSTEM - (T48-04)

LEAKAGE EXAMINATION DATA SHEET - DIVISION I

TEST NO. 2 CONT'D.

DATE: 5-13-85

| Examination Point / Description | Location | Leakage Detected | |
|--|------------------|------------------|----|
| | | Yes | No |
| 15) PTT-L168A | El. 642' C-10 | | X |
| 16) T48-F604A, Flange farthest from containment | El. 594' B-13 | | X |
| 17) T48-F016A, Flange farthest from containment | El. 594' B-13 | X (Small) | |

The total combined leakage for this system from all components within the test boundary and subsequent to all corrective maintenance, was:

0.11 SCFH

TEST RESULTS SUMMARY - DIVISION I: Corrective maintenance yielded a net reduction in total system leakage of: 2.931 SCFH.

As Found Leakage

Leakage Reduced By
Maintenance Activity

As Left Leakage

3.041 SCFH

2.931 SCFH

0.11 SCFH

LEAKAGE REDUCTION PROGRAM REPORT
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LEAKAGE EXAMINATION DATA SHEET - DIVISION II

TEST NO. 1

DATE: 1-5-85

| Examination Point / Description | Location | Leakage Detected | |
|--|---------------------|------------------|-------|
| | | Yes | No |
| 1) T48-F605B, Flange farthest from containment. | El. 630' Az. 45 | | X |
| 2) T48-F606B, Flange farthest from containment. | El. 573' Az. 120 | X | |
| 3) T48-F008B, Bonnet area. | El. 621' C-11 | | X |
| 4) TEW-N151B, Screw connection. | El. 642' D-10 | | X |
| 5) T48-F003B, Bonnet area & packing. | El. 642' D-10 | X | |
| 6) FXE-N164B, Bonnet areas of root valves. | El. 642' D-10 | X (A) | |
| 7) FXE-N175B, Bonnet areas of root valves. | El. 642' D-10 | | X (A) |
| 8) T48-F002B, Bonnet area. | El. 642' D-10 | X | |
| 9) PTT-L200B, Test connection. | El. 642' D-10 | | X |
| 10) Blower C001B, Suction, Blower and Discharge Flanges. | El. 642' D-10 | | X |
| 11) TSE-N667B | El. 642' D-10 | | X |
| 12) B001B, Water Spray Cooler Flange. | El. 642' D-10 | | X |
| 13) TSE-N678B | El. 642' D-10 | | X |
| 14) T48-F001B, Bonnet area. | El. 642' D-10 | X | |

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FOR

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LEAKAGE EXAMINATION DATA SHEET - DIVISION II

TEST NO. 1 CONT'D.

DATE: 1-5-85

| Examination Point / Description | Location | Leakage Detected | |
|--|------------------|------------------|----|
| | | Yes | No |
| 15) PTT-L168B | El. 642' D-10 | | X |
| 16) T48-F604B, Flange farthest from containment | El. 594' B-15 | | X |
| 17) T48-F016B, Flange farthest from containment | El. 596' B-15 | X (Small) | |

NOTES:

(A) Leakage at the threaded instrument tap connection.

The total combined leakage for this system from all components within the test boundary and prior to any corrective maintenance, was:

0.759 SCEH

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LEAKAGE EXAMINATION DATA SHEET - DIVISION II

TEST NO. 2

DATE: 5-13-85

| Examination Point / Description | Location | Leakage Detected | |
|--|---------------------|------------------|----|
| | | Yes | No |
| 1) T48-F605B, Flange farthest from containment. | El. 630' Az. 45 | | X |
| 2) T48-F606B, Flange farthest from containment. | El. 573' Az. 120 | | X |
| 3) T48-F008B, Bonnet area. | El. 621' C-11 | | X |
| 4) TEW-N151B, Screw connection. | El. 642' D-10 | | X |
| 5) T48-F003B, Bonnet area & packing. | El. 642' D-10 | X (Small) | |
| 6) FXE-N164B, Bonnet areas of root valves. | El. 642' D-10 | | X |
| 7) FXE-N175B, Bonnet areas of root valves. | El. 642' D-10 | | X |
| 8) T48-F002B, Bonnet area | El. 642' D-10 | X (Small) | |
| 9) PTT-L200B, Test connection. | El. 642' D-10 | | X |
| 10) Blower CoolB, Suction, Blower and Discharge Flanges. | El. 642' D-10 | | X |
| 11) TSE-N667B | El. 642' D-10 | | X |
| 12) B001B, Water Spray Cooler Flange. | El. 642' D-10 | | X |
| 13) TSE-N678B | El. 642' D-10 | | X |
| 14) T48-F001B, Bonnet area | El. 642' D-10 | | X |

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TEST NO. 2 CONT'D.

DATE: 5-13-85

| Examination Point / Description | Location | Leakage Detected | |
|--|------------------|------------------|----|
| | | Yes | No |
| 15) PTT- L168B | El. 642' C-10 | | X |
| 16) T48-F604B, Flange farthest from containment | El. 594' B-15 | | X |
| 17) T48-F016B, Flange farthest from containment | El. 596' B-15 | X (Small) | |

The total combined leakage for this system from all components within the test boundary and subsequent to all corrective maintenance, was:

0.10 SCFH

TEST RESULTS SUMMARY - DIVISION II: Corrective maintenance yielded a net reduction in total system leakage of: 0.659 SCFH.

| | | |
|-------------------------|--|------------------------|
| <u>As Found Leakage</u> | <u>Leakage Reduced By</u> <u>Maintenance Activity</u> | <u>As Left Leakage</u> |
| 0.759 SCFH | 0.659 SCFH | 0.10 SCFH |

ACCEPTANCE CRITERIA:

The general leakage criteria to be applied during the first fuel cycle as the basis for instituting corrective action in the form of corrective maintenance shall be 2.000 SCFH for each division. Per the EF-2 FSAR, this leakage criteria will be further evaluated at the end of the first refueling cycle to determine the long range leakage reduction program criteria. This will allow experience gained during the initial fuel cycle to be factored into the long range criteria.