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McGuire Nuclear Generation Department
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DUKE POWER

December 28, 1994

TO: U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Document Control
Washington, D. C. 20555

FROM: Bruce F. Caldwell
Manager, McGuire Training

SUBJECT: McGuire Simulator Four Year Report

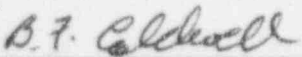
This report is submitted as the Four Year Report for the McGuire Nuclear Station Unit One Simulator in accordance with 10CFR55.45 b.5.ii and b.5.vi. Form 474's are included for each McGuire Unit. The required information is included in the form of attachments to this letter as follows:

ATTACHMENT 1.0	FAILED TEST PROCEDURES
ATTACHMENT 2.0	DESCRIPTION OF TESTS COMPLETED (1991-1994)
ATTACHMENT 3.0	NEXT FOUR YEAR TEST SCHEDULE (1995-1998)

if there are any questions concerning this report, please feel free to call or write:

Terry Tessnear
Nuclear Instructor, McGuire Operator Training
McGuire Nuclear Station
13339 Hagers Ferry Road
Huntersville, N.C. 28078
Phone (704) 875-5033

Thank you for your attention in this matter.


B.F. Caldwell

cc: T.C. McMeekin
E.M. Geddie
R.A. Jones
R.A. Lindsay
D.J. Taylor
Frank Collins (NRC)

A005
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SIMULATION FACILITY CERTIFICATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 120 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0138), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

INSTRUCTIONS: This form is to be filed for initial certification, recertification (if required), and for any change to a simulation facility performance testing plan made after initial submittal of such a plan. Provide the following information and check the appropriate box to indicate reason for submittal.

FACILITY

McGuire Nuclear Station Unit One

DOCKET NUMBER

50-- 369

LICENSEE

Duke Power Company

DATE

12/28/94

This is to certify that:

1. The above named facility licensee is using a simulation facility consisting solely of a plant-referenced simulator that meets the requirements of 10 CFR 55.45.
 2. Documentation is available for NRC review in accordance with 10 CFR 55.45(b).
 3. This simulation facility meets the guidance contained in ANSI/ANS 3.5, 1985, as endorsed by NRC Regulatory Guide 1.149.
- If there are any **EXCEPTIONS** to the certification of this item, **CHECK HERE** ☐ and describe fully on additional pages as necessary.

NAME (or other identification) AND LOCATION OF SIMULATION FACILITY:

McGuire Nuclear Power Plant
Operator Training Simulator
at McGuire Training Center
13339 Hagers Ferry Road
Huntersville, N. C. 28078

SIMULATION FACILITY PERFORMANCE TEST ABSTRACTS ATTACHED. (For performance tests conducted in the period ending with the date of this certification.)

DESCRIPTION OF PERFORMANCE TESTING COMPLETED. (Attach additional pages as necessary and identify the item description being continued.)

SIMULATION FACILITY PERFORMANCE TESTING SCHEDULE ATTACHED. (For the conduct of approximately 25* of performance tests per year for the four-year period commencing with the date of this certification.)

DESCRIPTION OF PERFORMANCE TESTING TO BE CONDUCTED. (Attach additional pages as necessary and identify the item description being continued.)

PERFORMANCE TESTING PLAN CHANGE. (For any modification to a performance testing plan submitted on a previous certification.)

DESCRIPTION OF PERFORMANCE TESTING PLAN CHANGE. (Attach additional pages as necessary and identify the item description being continued.)

RECERTIFICATION (Describe corrective actions taken, attach results of completed performance testing in accordance with 10 CFR 55.45(b)(5)(v).
☒ (Attach additional pages as necessary and identify the item description being continued.)

Any false statement or omission in this document, including attachments, may be subject to civil and criminal sanctions. I certify under penalty of perjury that the information in this document and attachments is true and correct.

SIGNATURE - AUTHORIZED REPRESENTATIVE



TITLE

Manager, McGuire Training

DATE

12/28/94

In accordance with 10 CFR 55.5, Communications, this form shall be submitted to the NRC as follows:

BY MAIL ADDRESSED TO: DIRECTOR, OFFICE OF NUCLEAR REACTOR REGULATION
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

BY DELIVERY IN PERSON
TO THE NRC OFFICE AT:

ONE WHITE FLINT NORTH
11555 ROCKVILLE PIKE
ROCKVILLE, MD

SIMULATION FACILITY CERTIFICATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 120 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0138), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

INSTRUCTIONS: This form is to be filed for initial certification, recertification (if required), and for any change to a simulation facility performance testing plan made after initial submittal of such a plan. Provide the following information and check the appropriate box to indicate reason for submittal.

FACILITY McGuire Nuclear Station Unit Two	DOCKET NUMBER 50- 370
LICENSEE Duke Power Company	DATE 12/28/94

This is to certify that:

1. The above named facility licensee is using a simulation facility consisting solely of a plant-referenced simulator that meets the requirements of 10 CFR 55.45.
 2. Documentation is available for NRC review in accordance with 10 CFR 55.45(b).
 3. This simulation facility meets the guidance contained in ANSI/ANS 3.5, 1985, as endorsed by NRC Regulatory Guide 1.149.
- If there are any **EXCEPTION** to the certification of this item, **CHECK HERE** ☐ and describe fully on additional pages as necessary.

NAME (or other identification) AND LOCATION OF SIMULATION FACILITY.

**McGuire Nuclear Power Plant
Operator Training Simulator
at McGuire Training Center
13339 Hagers Ferry Road
Huntersville, N. C. 28078**

SIMULATION FACILITY PERFORMANCE TEST ABSTRACTS ATTACHED. (For performance tests conducted in the period ending with the date of this certification.)

DESCRIPTION OF PERFORMANCE TESTING COMPLETED. (Attach additional pages as necessary and identify the item description being continued.)

SIMULATION FACILITY PERFORMANCE TESTING SCHEDULE ATTACHED. (For the conduct of approximately 25% of performance tests per year for the four-year period commencing with the date of this certification.)

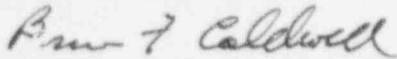
DESCRIPTION OF PERFORMANCE TESTING TO BE CONDUCTED. (Attach additional pages as necessary and identify the item description being continued.)

PERFORMANCE TESTING PLAN CHANGE. (For any modification to a performance testing plan submitted on a previous certification.)

DESCRIPTION OF PERFORMANCE TESTING PLAN CHANGE. (Attach additional pages as necessary and identify the item description being continued.)

☒ **RE-CERTIFICATION.** (Describe corrective actions taken, attach results of completed performance testing in accordance with 10 CFR 55.45(b)(5)(v). (Attach additional pages as necessary and identify the item description being continued.)

Any false statement or omission in this document, including attachments, may be subject to civil and criminal sanctions. I certify under penalty of perjury that the information in this document and attachments is true and correct.

SIGNATURE - AUTHORIZED REPRESENTATIVE 	TITLE Manager, McGuire Training	DATE 12/28/94
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In accordance with 10 CFR 55.5, Communications, this form shall be submitted to the NRC as follows:

BY MAIL ADDRESSED TO: **DIRECTOR, OFFICE OF NUCLEAR REACTOR REGULATION
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001**

BY DELIVERY IN PERSON
TO THE NRC OFFICE AT:

**ONE WHITE FLINT NORTH
11555 ROCKVILLE PIKE
ROCKVILLE, MD**

ATTACHMENT 1

FAILED TEST PROCEDURES

There are no test failures pending. All failed tests have been corrected and retested satisfactorily. Four tests have had Work Requests/Westinghouse Trouble Reports written to correct discrepancies. All discrepancies have been completed satisfactorily. A list of the Tests and related Work Request/Westinghouse Trouble Report follows.

<u>YEAR</u>	<u>TEST NAME</u>	<u>WR #</u>	<u>DISCREPANCY DESCRIPTION</u>
1991	Steady State Drift Test (SPT/A/S/01)	WR PCS-0002	Charging Flow exceeded Hi Limit due to Pzr Lvl Controller swings.
1991	Loss Of Main Feed-water Transient Test (SPT/A/T/6)	WR EOA-C056	Narrow Range S/G Lvl's could not be recovered with correct Aux Feed Flow.
1991	Loss Of CF ATWS Transient Test (SPT/A/T/14)	TR 1846	Reactor Power remains Hi which severely impacts response of Pzr Press, Pzr Lvl and Tavg. (Problem was discovered following installation of new Steam Generator Heat Transfer Model by Westinghouse and was corrected by Westinghouse via Warranty Trouble Report)
1991, 1992, 1993	Small Break Loca/ Inadequate Core Cooling Transient Test (SPT/A/T/15)	TR 1847	Incore Thermocouple and Core Level Response not correct. Inadequate Core Cooling does not occur. (Problem was discovered following installation of new Steam Generator Heat Transfer Model by Westinghouse and was eventually corrected by Westinghouse in 1994 via Warranty Trouble Report after several unsuccessful attempts in 1991, 1992, and 1993.)

ATTACHMENT 2

1991 ANNUAL SIMULATOR TESTS AND COMPLETION DATES

<u>Transients</u>	<u>Completion Date</u>
1. SG Tube Rupture	08/15/91
2. Large Break Loca	10/02/91
3. Small Break Loca	10/02/91
4. Loss Of Offsite Power	09/18/91
5. Single NC Pump Trip	08/01/91
6. Loss Of Main Feedwater	*-09/18/91
7. Loss Of All Feedwater	09/26/91
8. Dropped Rod	07/07/93
9. Load Rejection	08/01/91
10. Pzr Porv Failure	08/01/91
11. Reactor Trip	08/01/91
12. Steam Line Break	09/18/91
13. Feedwater Line Break	09/18/91
14. Loss Of CF ATWS	#-10/03/91
15. Small Break LOCA/ICC	#-10/02/91
16. SG Tube Rupture/SM Porv Failure	08/15/91

<u>Malfunctions</u>	
1. Changing Line Leak Inside Containment (NV-8)	06/12/91
2. Pressurizer PORV Failure (NC-3)	05/09/91
3. D/G Trips on Overspeed (DG-4)	06/10/91
4. Hotwell Level Control Vavle Failure (CM-2)	05/09/91
5. Feedwater Containment Isolation Valve (CF-3)	06/11/91
6. Uncontrolled Rod Motion (IRE-3)	06/10/91
7. Variable NC System Activity (CH-1)	05/21/91
8. Pressurizer Spray Valve Failure (ILE-3)	05/09/91
9. Power Range Detector Failure (ENB-13)	05/09/91
10. Failure of CA Pump to Start (CA-4)	05/09/91

<u>Steady State Operation</u>	
1. Steady State Power Drift Test	*-04/10/91
2. Steady State Power, Heat Balance Check	04/11/91
3. Steady State Power, Critical and Noncritical Parameters Check	12/09/91

*- Test Failed, problem was resolved/corrected and test was rerun satisfactorily during the same year

#- Test Failed, problem was not corrected during the same year

ATTACHMENT 2

1992 ANNUAL SIMULATOR TESTS AND COMPLETION DATES

<u>Transients</u>		<u>Completion Date</u>
1.	SG Tube Rupture	09/03/92
2.	Large Break Loca	07/14/92
3.	Small Break Loca	08/31/92
4.	Loss Of Offsite Power	09/07/92
5.	Single NC Pump Trip	08/25/92
6.	Loss Of Main Feedwater	09/08/92
7.	Loss Of All Feedwater	07/27/92
8.	Dropped Rod	07/13/92
9.	Load Rejection	07/14/92
10.	Pzr Porv Failure	07/28/92
11.	Reactor Trip	09/03/92
12.	Steam Line Break	09/07/92
13.	Feedwater Line Break	08/25/92
14.	Loss Of CF ATWS	07/13/92
15.	Small Break LOCA/ICC	#-12/08/92
16.	SG Tube Rupture/SM Porv Failure	10/01/92
 <u>Malfunctions</u>		
1.	Charging Line Leak Inside Containment (NV-9)	04/13/92
2.	Instrument Air Leak (VI-1)	04/13/92
3.	Loss of 6.9 KV Switchgear (EP-5)	03/11/92
4.	RN System Leak (RN-1)	04/06/92
5.	Failure of Phase A Isolation Signal (ISE-3)	03/05/92
6.	Dropped Rod (IRE-6)	03/16/92
7.	Inadvertent Turbine Trip (DEH-1)	03/11/92
8.	NV System Letdown Valves Fail (NV-20)	03/04/92
9.	Loss of Intermediate Range High Volt (ENB-9)	03/05/92
10.	Failure of Automatic Reactor Trip (IPE-1)	03/05/92
 <u>Steady State Operation</u>		
1.	Steady State Power Drift Test	05/20/92
2.	Steady State Power, Heat Balance Check	05/05/92
3.	Steady State Power, Critical and Noncritical Parameters Check	05/06/92

#- Test Failed, problem was not corrected during same year

ATTACHMENT 2

1993 ANNUAL SIMULATOR TESTS AND COMPLETION DATES

<u>Transients</u>		<u>Completion Date</u>
1.	SG Tube Rupture	09/16/93
2.	Large Break Loca	07/08/93
3.	Small Break Loca	08/03/93
4.	Loss Of Offsite Power	08/05/93
5.	Single NC Pump Trip	08/04/93
6.	Loss Of Main Feedwater	09/28/93
7.	Loss Of All Feedwater	08/23/93
8.	Dropped Rod	07/07/93
9.	Load Rejection	07/07/93
10.	Pzr Porv Failure	07/29/93
11.	Reactor Trip	08/03/93
12.	Steam Line Break	08/18/93
13.	Feedwater Line Break	08/19/93
14.	Loss Of CF ATWS	08/23/93
15.	Small Break LOCA/ICC	#-12/01/93
16.	SG Tube Rupture/SM Porv Failure	09/28/93
<u>Malfunctions</u>		
1.	NC System Leak (NC7)	02/23/93
2.	Blackout (EP1)	02/24/93
3.	NCP Trip (NCP1)	02/25/93
4.	ND HX Outlet or Bypass Vlv Failure (ND5)	03/01/93
5.	Stuck Rod (IRE10)	03/02/93
6.	Improper Bank Overlap (IRE14)	03/03/93
7.	Exciter Breaker Failure (MG2)	03/08/93
8.	Main Steam Header Break (SM9)	03/09/93
9.	TREF Failure - Rod Control (IR1)	03/10/93
<u>Steady State Operation</u>		
1.	Steady State Power Drift Test	02/01/93
2.	Steady State Power, Heat Balance Check	02/09/93
3.	Steady State Power, Critical and Noncritical Parameters Check	02/25/93

#- Test Failed, problem was not corrected during same year

ATTACHMENT 2

1994 ANNUAL SIMULATOR TESTS AND COMPLETION DATES

<u>Transients</u>		<u>Completion Date</u>
1.	SG Tube Rupture	08/31/94
2.	Large Break Loca	07/26/94
3.	Small Break Loca	07/11/94
4.	Loss Of Offsite Power	06/20/94
5.	Single NC Pump Trip	06/21/94
6.	Loss Of Main Feedwater	08/03/94
7.	Loss Of All Feedwater	08/16/94
8.	Dropped Rod	05/24/94
9.	Load Rejection	06/09/94
10.	Pzr Porv Failure	06/14/94
11.	Reactor Trip	06/02/94
12.	Steam Line Break	08/17/94
13.	Feedwater Line Break	08/25/94
14.	Loss Of CF ATWS	07/19/94
15.	Small Break LOCA/ICC	07/11/94
16.	SG Tube Rupture/SM Porv Failure	09/06/94
<u>Malfunctions</u>		
1.	Steam Generator Tube Leak (SG-1)	02/24/94
2.	Pressurizer Safety Valve Failure (NC-4)	02/24/94
3.	Loss Of 4160V Bus (EP-8)	02/24/94
4.	Loss Of Condenser Vacuum (MT-3)	03/03/94
5.	Various KC System Valve Failures (KC-2)	03/03/94
6.	RCCA Disconnects At Spider Assembly (IRE-8)	03/03/94
7.	Rods Fail To Move (IRE-9)	03/03/94
8.	Power Mismatch Unit Failure (IR-2)	03/07/94
9.	Feedline Break Outside Containment (CF-5)	03/07/94
10.	Failure Of NI Pump To Start (NI-1)	03/07/94
<u>Steady State Operation</u>		
1.	Steady State Power Drift Test	02/23/94
2.	Steady State Power, Heat Balance Check	05/06/94
3.	Steady State Power, Critical and Noncritical Parameters Check	05/09/94
<u>Computer Real Time Test</u>		10/10/94

ATTACHMENT 3

ANNUAL SIMULATOR TESTING SCHEDULE YEAR 1995

Transients

1. SG Tube Rupture
2. Large Break Loca
3. Small Break Loca
4. Loss Of Offsite Power
5. Single NC Pump Trip
6. Loss Of Main Feedwater
7. Loss Of All Feedwater
8. Dropped Rod
9. Load Rejection
10. Pzr Porv Failure
11. Reactor Trip
12. Steam Line Break
13. Feedwater Line Break
14. Loss Of CF ATWS
15. Small Break LOCA/ICC
16. SG Tube Rupture/SM Porv Failure

Malfunctions

1. Charging Line Leak Inside Containment (NV8)
2. Pressurizer Porv Failure (NC3)
3. D/G Trips On Overspeed (DG4)
4. Hotwell Level Control Failure (CM2)
5. Feedwater Containment Isolation Valve Failure (CF3)
6. Uncontrolled Rod Motion (IRE3)
7. Variable NC System Activity (CH1)
8. Pressurizer Spray Valve Failure (ILE3)
9. Power Range Detector Failure (ENB13)
10. Failure Of CA Pump To Start (CA4)

Steady State Operation

1. Steady State Power Drift Test
2. Steady State Power, Heat Balance Check
3. Steady State Power, Critical and Noncritical Parameters Check

Computer Real Time Test

ATTACHMENT 3

ANNUAL SIMULATOR TESTING SCHEDULE YEAR 1996

Transients

1. SG Tube Rupture
2. Large Break Loca
3. Small Break Loca
4. Loss Of Offsite Power
5. Single NC Pump Trip
6. Loss Of Main Feedwater
7. Loss Of All Feedwater
8. Dropped Rod
9. Load Rejection
10. Pzr Porv Failure
11. Reactor Trip
12. Steam Line Break
13. Feedwater Line Break
14. Loss Of CF ATWS
15. Small Break LOCA/ICC
16. SG Tube Rupture/SM Porv Failure

Malfunctions

1. Charging Line Leak Outside Containment (NV9)
2. Instrument Air Leak (VI1)
3. Loss Of 6.9KV Switchgear (EP5)
4. RN System Leak (RN1)
5. Failure Of Phase A Isolation Signal (ISE3)
6. Dropped Rod (IRE6)
7. Inadvertent Turbine Trip (DEH1)
8. NV System Letdown Valves Fail (NV20)
9. Loss Of Intermediate Range High Voltage (ENB9)
10. Failure Of Automatic Reactor Trip (IPE1)

Steady State Operation

1. Steady State Power Drift Test
2. Steady State Power, Heat Balance Check
3. Steady State Power, Critical and Noncritical Parameters Check

Computer Real Time Test

ATTACHMENT 3

ANNUAL SIMULATOR TESTING SCHEDULE YEAR 1997

Transients

1. SG Tube Rupture
2. Large Break Loca
3. Small Break Loca
4. Loss Of Offsite Power
5. Single NC Pump Trip
6. Loss Of Main Feedwater
7. Loss Of All Feedwater
8. Dropped Rod
9. Load Rejection
10. Pzr Porv Failure
11. Reactor Trip
12. Steam Line Break
13. Feedwater Line Break
14. Loss Of CF ATWS
15. Small Break LOCA/ICC
16. SG Tube Rupture/SM Porv Failure

Malfunctions

1. NC System Leak (NC7)
2. Blackout (EP1)
3. NCP Trip (NCP1)
4. ND HX Outlet Or Bypass Valve Failure (ND5)
5. Stuck Rod (IRE10)
6. Improper Bank Overlap (IRE14)
7. Exciter Breaker Failure (MG2)
8. Main Steam Header Break (SM9)
9. TREF Failure - Rod Control (IR1)

Steady State Operation

1. Steady State Power Drift Test
2. Steady State Power, Heat Balance Check
3. Steady State Power, Critical and Noncritical Parameters Check

Computer Real Time Test

ATTACHMENT 3

ANNUAL SIMULATOR TESTING SCHEDULE YEAR 1998

Transients

1. SG Tube Rupture
2. Large Break Loca
3. Small Break Loca
4. Loss Of Offsite Power
5. Single NC Pump Trip
6. Loss Of Main Feedwater
7. Loss Of All Feedwater
8. Dropped Rod
9. Load Rejection
10. Pzr Porv Failure
11. Reactor Trip
12. Steam Line Break
13. Feedwater Line Break
14. Loss Of CF ATWS
15. Small Break LOCA/ICC
16. SG Tube Rupture/SM Porv Failure

Malfunctions

1. Steam Generator Tube Leak (SG1)
2. Pressurizer Safety Valve Failure (NC4)
3. Loss Of 4160V Bus (EP8)
4. Loss Of Condenser Vacuum (MT3)
5. Various KC System Valve Failures (KC2)
6. RCCA Disconnects At Spider Assembly (IRE8)
7. Rods Fail To Move (IRE9)
8. Power Mismatch Unit Failure (IR2)
9. Feedline Break Outside Containment (CF5)
10. Failure Of NI Pump To Start (NI1)

Steady State Operation

1. Steady State Power Drift Test
2. Steady State Power, Heat Balance Check
3. Steady State Power, Critical and Noncritical Parameters Check

Computer Real Time Test