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November 27, 1995

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ULNRC - 3293

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT
CALLAWAY PLANT SIMULATOR 4-YEAR REPORT

In accordance with 10 CFR 55.45, we herewith submit the 4-Year Report of Union Electric Company's Callaway Plant Training Simulator.

All required tests have been successfully completed in accordance with the testing plan.

If there are any questions concerning this report, please contact us.

Very truly yours,

A handwritten signature in cursive script that reads "Donald F. Schnell".

Donald F. Schnell

DFS/SMH/bjp
Enclosure

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CALLAWAY PLANT SIMULATOR4 YEAR REPORT**I. Introduction**

The Callaway Plant Simulator 4 Year Report is a supplement to the Simulation Facility Certification form (NRC Form-474), the Simulator Annual Reports and Simulator operating procedures. This report briefly provides a description of the simulator, the Certification Checklist and the current status of the Configuration modifications. Additional information concerning specific tests is available upon request.

II. Simulator Information

Simulator Type:	Reference Plant Simulator
Manufacturer:	Westinghouse Electric Corp.
Owner/Operator:	Union Electric Company
Reference Plant:	Callaway Plant
Plant Location:	Fulton, Missouri
Plant Type:	Pressurized Water Reactor
Plant Rating:	3565 Megawatts thermal
Date available for training:	February 1982
Type of report:	4 Year Report

III. Simulator Procedures

The Simulator is controlled, operated, tested and modified utilizing the following Callaway Plant procedures:

APA-ZZ-00021	Conduct of Operations - Training
TDP-IS-00001	Callaway Plant Simulator Operation and Maintenance
TDP-IS-00002	Simulator Configuration Management
TDP-ZZ-00009	Course Deficiencies

CALLAWAY PLANT SIMULATOR4 YEAR REPORT**IV. Simulator Database**

Controlled drawings and procedures are used as a basis for handler logic and system flow calculations. The Callaway Equipment list, the Plant Engraving list, and Plant computer logs are also used as inputs for the Simulator data base. Plant logs are used whenever possible to compare Callaway Plant data to Simulator response to ensure that the Simulator data base closely matches the plant. Feedback from Plant operators, using the Configuration Control process, is also an essential part of maintaining the Simulator up-to-date with the Plant.

V. Major Changes Since Last Report

The following are the major items that were changed on the simulator:

- Added controls on the Auxiliary Shutdown panel panels RP118A and RP118B
- Added controls on the ventilation control panel RP068
- Replaced the Gould 32/8750 computer with an ENCORE RSX computer
- Added a simulated plant computer system on a DIGITAL VAX 3800 computer
- Replaced Main Control Board recorders with Chessel recorders
- Replaced the positive displacement charging pump with a centrifugal charging pump
- Retired the BIT in place and realigned flow through a Boron Injection Header
- Removed the Containment Spray Surge tank.
- Replaced the Radiation Monitoring panel CRT with a personal computer
- Added RM11 Printer capability
- Added capability for RCS Midloop Level Indications
- Changed many lamacoid engravings during human factors review

A total of 623 SIFT items were tested from December 1991 through November 1995.

CALLAWAY PLANT SIMULATOR

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VI. Outstanding Plant Modification Items

SIFT 92-03-06 SG N-16 DETECTOR

REFERENCE RFR 10301A, MP 92-3014, MP 93-1060

This item is still an open plant modification. The RFR that controls this item is anticipated to be completed in the plant during November of 1995. The SIFT is in the process of being completed at this time.

SIFT 93-05-22 RADIO SYSTEM UPGRADE

REFERENCE RFR 14870 MP 94-1016

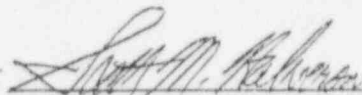
This item is still an open plant modification. The plant radio upgrade is in progress. Some items have been installed for trial implementation in the plant and on the simulator. This modification is not completed in the plant, awaiting a software correction for the main computer controlled radio console.

VII. Certification Testing Checklist

The attached Callaway Plant Simulator Certification Checklist No. 1, Attachment 1, indicates the completion of the required performance tests. Specific testing data is available upon request.

The Callaway Plant Simulator Certification Checklist, Certification Tests and Configuration Control Tests that were performed during the previous four years have been reviewed and accepted, meeting the testing requirements of 10CFR55.45, Reg. Guide 1.149 - 1987 and ANSI/ANS-3.5-1985.

Senior Training Supervisor, Simulator



Date: 11/22/95

Certification tests are divided into three distinct groups:

Annual Tests - performed each year

Yearly Tests - 25% performed during this year

Random Tests - verify operation of various instructor interface features

VIII. Simulator Testing Plan

The projected Callaway Plant Simulator Testing Plan, Attachment 2, indicates the Configuration modification tests and Certification tests to be completed. The plan also identifies the four year testing schedule from January 1996 through December 1999

CALLAWAY PLANT SIMULATOR

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VIX. Documentation

The summary of all simulator tests that have been performed during any specific year are documented in the Simulator Annual Report. This report is maintained on-site as a QA record. The individual certification tests contain the detailed testing documentation information required in ANSI/ANS 3.5 - 1985 Appendix A, Nuclear Power Plant Simulators for use in Operator training. The individual certification tests are also maintained on-site as QA records.

X. References

- Title 10, Code of Federal Regulations, Part 55, "Operator Licenses".
- American National Standard Nuclear Power Plant Simulators for Use in Operator Training, ANSI/ANS-3.5-1985
- U. S. Regulatory Commission Regulatory Guide 1.149, "Nuclear Power Plant Simulation Facilities for use in Operator License Examinations", April 1987.

Person(s) Completing Checkoff List (Print)	Initials	CALLAWAY PLANT SIMULATOR
		CERTIFICATION
		CHECK LIST
JOHN R. HOSTMAN	JRH	FOUR YEAR SUMMARY: 1992 - 1995
		Date/Time Started 9/12/01 0000
		Date/Time Completed 9/5/03 2359

1. ENVIRONMENTAL EVALUATION

1.1 CONTROL ROOM

NOTE: These items are reviewed on a 4-year cycle. The performance is required only for the year in which they are scheduled if the control room was modified and an evaluation indicated that the item had a training impact.

- JRH 1. Obtained latest revision copy of Reference Plant Control Room floor plan. Obtained drawing of Reference Plant Simulator control room floor plan. A comparison of the floor plans was completed. A list of difference is available for inspection.
- JRH 2. Compared lighting in the plant and simulator control rooms. A list of differences is available for inspection.
- JRH 3. Communications systems available in the plant and simulator control rooms have been compared. Differences are indicated on the attached list.
- JRH 4. Furnishings in the plant and the simulator have been reviewed. A list of differences is attached.

1.2 CONTROL PANELS

NOTE: These items are reviewed on a 4-year cycle. The performance is required only for the year in which they are scheduled if the control panels were modified and an evaluation indicated that the item had a training impact.

- JRH 1. Pictures of the Reference Plant Main Control Boards have been taken. Pictures of the Reference Plant Simulator Main Control Boards have been taken. A comparison of the pictures was completed. The pictures are available for inspection.

- glt 2. The control panels have been verified to be correct as compared to the plant engraving list. The engraving list is available for inspection.
- glt 3. The simulator will support the plant computer keyboard functions identified on the attached list.
- glt 4. The simulator will support the plant computer displays identified on the attached list.
- glt 5. The simulator will support plant computer trending capabilities identified on the attached list.
- glt 6. The simulator will support the plant computer alarm displays identified on the attached list.

1.3 SPECIAL FEATURES

NOTE: This item is reviewed on a 4-year cycle. The performance is required only for the year in which it is scheduled.

- glt 1. Special features available on the Callaway Plant Simulator are indicated on the attached list.

2. REAL TIME VERIFICATION

NOTE: This item is performed on a 4 year cycle. The performance is required only for the year it is scheduled in.

- glt 1. The simulator runs in real time.

3. STEADY STATE OPERATIONS

3.1 INITIAL CONDITIONS

- glt 1. For each initial condition to be certified technical specification logs have been taken and are available for both the plant and the simulator.
- glt 2. Heat Balances have been performed at 50%, 80%, and 100% Initial conditions.

3.2 STEADY STATE STABILITY

- glt 1. Stability tests have been performed at 100% Initial conditions.

4. NORMAL OPERATIONS

NOTE: These items are performed on a 4 year cycle. The performance is required only for the year they are scheduled in.

- 9/10
1. Normal plant operations are performed during the control board certification course. Problems identified via feedback from instructors and students are either corrected or indicated on the attached list.
 2. All applicable surveillance procedures were performed on the simulator. Problems identified via feedback from instructors and students are either corrected or indicated on the attached list.

5. TRANSIENTS

- 9/10
1. Transients listed in Appendix B of ANSI/ANS-3.5-1985 have been graphed on the simulator. The tests have been reviewed by the SCRG. Problems identified have either been corrected or are identified on the attached list.

6. SIMULATOR OPERATING LIMITS

NOTE: This item is reviewed on a 4-year. The performance is required only for the year in which it is scheduled if the operating limits were modified and an evaluation indicated that the item had a training impact.

- 9/10
1. When parameters monitored on the SPDS panel are exceeding the expected values on amber light is displayed on the panel warning operators that an unusual condition exists and that indications can no longer be relied upon.

7. INSTRUCTOR INTERFACE

7.1 MALFUNCTIONS

NOTE: These items are performed on a 4 year cycle. The performance is required only for the year they are scheduled in.

- 9/10
1. 25% of all ANSI 3.1.2 MALFUNCTIONS have been tested. The tests have been reviewed by the SCRG. Problems identified have either been corrected or are identified on the attached list.

7.2 LOCAL OPERATOR ACTIONS

- glt
1. Random selection testing has been conducted to validate the operability of local operator actions. The tests have been reviewed by a committee with members from operations, engineering and training. Problems identified have either been corrected or are identified on the attached list.

7.3 PLANT PARAMETERS

- glt
1. Random selection testing has been conducted to validate the operability of local operator actions. The tests have been reviewed by a committee with members from operations, engineering and training. Problems identified have either been corrected or are identified on the attached list.

7.4 BISTABLES

- glt
1. Random selection testing has been conducted to validate the operability of local operator actions. The tests have been reviewed by a committee with members from operations, engineering and training. Problems identified have either been corrected or are identified on the attached list.

7.5 ANNUNCIATORS

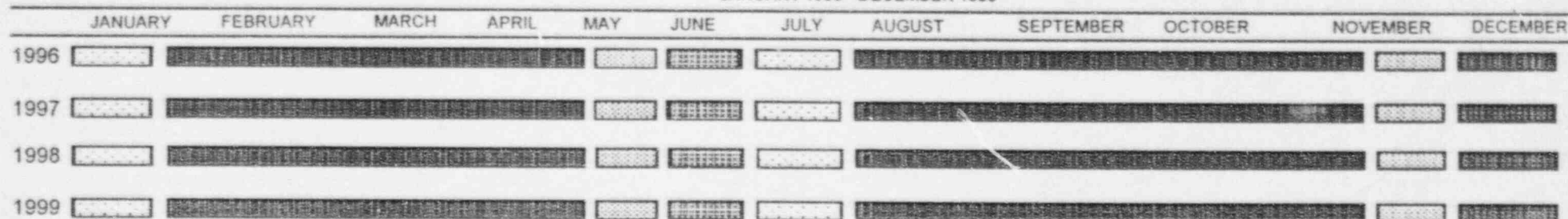
- glt
1. An automatic testing sequence has been conducted to validate the operability of the annunciators. The tests have been reviewed by a committee with members from operations, engineering and training. Problems identified have either been corrected or are identified on the attached list.

7.6 COMPONENT OVERRIDE

- glt
1. Random selection testing has been conducted to validate the operability of local operator action. The tests have been reviewed by a committee with members from operations, engineering and training. Problems identified have either been corrected or are identified on the attached list.

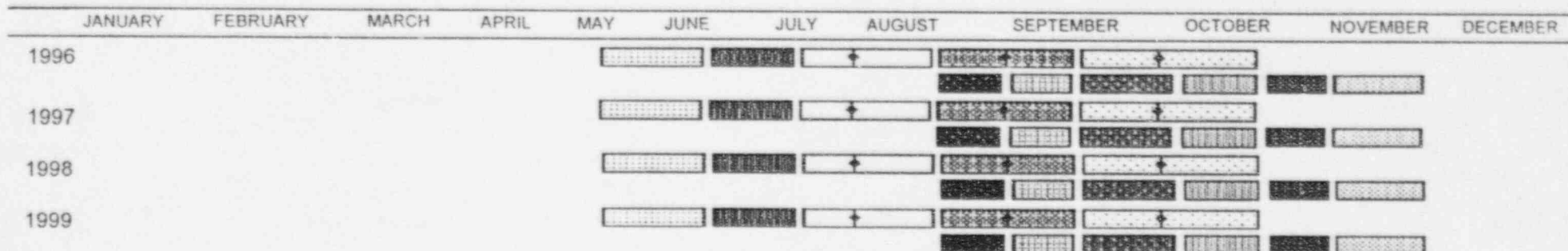
CALLAWAY PLANT SIMULATOR TESTING PLAN

JANUARY 1996 - DECEMBER 1999



CONFIGURATION TESTING SCHEDULE 4 YEAR *

[Shift Development to Training] Shift Development to Training [Modification testing] Modification testing [Major hardware changes] Major hardware changes [initial conditions snapshots] initial conditions snapshots



CERTIFICATION TESTING SCHEDULE 4 YEAR *

[snapshot & log testing] snapshot & log testing [steady state & heat balance testing] steady state & heat balance testing [normal operations & transient testing] normal operations & transient testing [instructor interface testing] instructor interface testing
 [corrections testing] corrections testing [control room evaluation] control room evaluation [plant slide review] plant slide review [engraving list review] engraving list review [plant computer capabilities] plant computer capabilities
 [special features] special features [real-time testing] real-time testing [prepare simulator Annual Certification report] prepare simulator Annual Certification report

* NOTE: The actual schedule may vary due to Plant outages, however, all required testing will be performed prior to submittal of the Simulator Annual Certification Report.