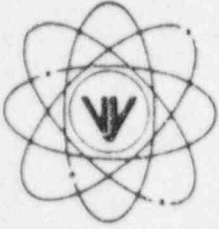


VERMONT YANKEE NUCLEAR POWER CORPORATION



Ferry Road, Brattleboro, VT 05301-7002

(802) 257-5271

May 10, 1995
BVY 95-50
TDL 95-07

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

References: (a) 10 CFR 55.5

Subject: Simulator Facility Certification

In accordance with the provisions of 10 CFR 55.5, attached is a four year update for the certification of the Vermont Yankee Simulator.

If you have any questions, please call me at (802) 258-4153 or E-mail - mervine@yankee.com.

Sincerely,

Mark L. Mervine
Training Manager

Attachment

c: Document Control Desk - Washington, DC
USNRC Project Manager - VYNPS
USNRC Resident Inspector - VYNPS (Without Attachment)

9511070084 950510
PDR ADOCK 05000271
P PDR

1005/1

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 Vermont Yankee Nuclear Power Station | DOCKET NUMBER 50-271 |
| LICENSEE Vermont Yankee Nuclear Power Corporation | DATE 4/19/95 |

This is to certify that:

- 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.
- Documentation is available for NRC review in accordance with 10 CFR 55.45(b).
- 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 identifier) AND LOCATION OF SIMULATION FACILITY:

Vermont Yankee Training Center
Ferry Road
Brattleboro, Vermont 05301

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.)

Performance Testing Completed - See Attachment 1 of this Report

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 Scheduled - See Attachment 2 of this Report

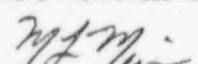
PERFORMANCE TESTING PLAN CHANGE. (For any modification to a performance testing plan submitted on a previous certification.)

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

Not Applicable

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 Training Manager Vermont Yankee Nuclear Power Corp. | DATE 4/19/95 |
|--|---|-----------------|

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 11565 ROCKVILLE PIKE ROCKVILLE, MD |
|---|---|--|

VERMONT YANKEE PLANT SIMULATOR
FOUR YEAR CERTIFICATION REPORT

I. Introduction

The Vermont Yankee Plant Four Year Certification Report is a supplement to the Simulation Facility Certification form (NRC Form-474), the Simulator Annual Certification Report, and Simulator Administration Procedures. This report briefly provides a description of the simulator, a summary of past four years performance testing and an outline of performance testing to be performed during the next four years. Additional information concerning specific tests is available upon request.

II. References

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

III. Simulator Information

| | |
|--------------------------|------------------------------------|
| Simulator Type: | Reference Plant Simulator |
| Manufacturer: | Singer Link Company |
| Owner/Operator: | Vermont Yankee Nuclear Power Corp. |
| Reference Plant: | Vermont Yankee |
| Plant Location: | Vernon, Vermont |
| Plant Type: | Boiling Water Reactor |
| Plant Rating: | 1593 MWth |
| Date Ready for Training: | March 6, 1986 |
| Type of Report: | Four Year Certification |

VERMONT YANKEE PLANT SIMULATOR
FOUR YEAR CERTIFICATION REPORT
(Continued)

IV. Simulator Procedures

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

Simulator Administrative Procedures

Vermont Yankee Plant Operating Procedures

Vermont Yankee Training Department Directives

V. Simulator Design Database

Controlled drawings, wiring diagrams and plant procedures are used as a bases for logic and system flow calculations. The plant setpoint change requests and design changes are also used as inputs for the Simulator data base. Plant data from logs, charts and the process computer are used when ever possible to compare actual plant data to simulator data, ensuring that the simulator data base closely matches the plant. Feedback from Licensed Plant Operators and the Operations Training Group, using the Simulator Configuration Management system, is an essential part of maintaining the simulator up-to-date with the plant.

VI. Major changes to the simulator environment since the last report

Facility Environment Changes:

- Simulator Instructor Station booth and Instructor Interface replacement. Complete replacement of Instructor Station hardware and software with user friendly graphical interface.
- Back panel emergency lighting added. Back panel overhead emergency lighting added to enhance Simulator fidelity during loss of AC power conditions.

VERMONT YANKEE PLANT SIMULATOR
FOUR YEAR CERTIFICATION REPORT
(Continued)

Simulation Software Changes:

- Primary Containment
Complete model replacement. Installation of a 31 node containment model replacing original 3 node model providing a more detailed and realistic response to accident conditions.

- Secondary Containment
Complete model replacement. State of the art multi-nodal containment model replacing original single node model. Providing a more realistic response to malfunctions in the Secondary Containment.

- Annunciators
Code rewritten in FORTRAN and enhanced

- Simulator Operating Systems
Encore MPX and S3 software upgraded
Simulator Instructor Station Software upgrade

VII. Documentation

The results of the annual simulator testing are documented in the Annual Simulator Testing Report and is maintained on site. The Report contains the information required in ANSI/ANS-3.5, Nuclear Power Plant Simulators for use in Operator Training.

VERMONT YANKEE PLANT SIMULATOR
FOUR YEAR PERFORMANCE TEST ABSTRACT
(ATTACHMENT 1)

1991

1. ANSI/ANS 3.5 B1.1 Startup, Shutdown and Steady State Tests
2. ANSI/ANS 3.5 3.1.1 Normal Plant Evolutions
3. ANSI/ANS 3.5 4.3 Simulator Operating Limits
4. ANSI/ANS 3.5 b1.2 Transient Performance Tests
5. Computer Real Time Verification
6. ANSI/ANS 3.5 A3.4 Malfunction Tests

No uncorrected performance failures remain from the 1991 certification testing.

1992

1. ANSI/ANS 3.5 B1.1 Startup, Shutdown and Steady State Tests
2. ANSI/ANS 3.5 3.1.1 Normal Plant Evolutions
3. ANSI/ANS 3.5 4.3 Simulator Operating Limits
4. ANSI/ANS 3.5 b1.2 Transient Performance Tests
5. Computer Real Time Verification
6. ANSI/ANS 3.5 A3.4 Malfunction Tests

No uncorrected performance failures remain from the 1992 certification testing.

1993

1. ANSI/ANS 3.5 B1.1 Startup, Shutdown and Steady State Tests
2. ANSI/ANS 3.5 3.1.1 Normal Plant Evolutions
3. ANSI/ANS 3.5 4.3 Simulator Operating Limits
4. ANSI/ANS 3.5 b1.2 Transient Performance Tests
5. Computer Real Time Verification
6. ANSI/ANS 3.5 A3.4 Malfunction Tests

No uncorrected performance failures remain from the 1993 certification testing.

VERMONT YANKEE PLANT SIMULATOR
FOUR YEAR PERFORMANCE TEST ABSTRACT
(ATTACHMENT 1 CONTINUED)

1994

1. ANSI/ANS 3.5 B1.1 Startup, Shutdown and Steady State Tests
2. ANSI/ANS 3.5 3.1.1 Normal Plant Evolutions
3. ANSI/ANS 3.5 4.3 Simulator Operating Limits
4. ANSI/ANS 3.5 b1.2 Transient Performance Tests
5. Computer Real Time Verification
6. ANSI/ANS 3.5 A3.4 Malfunction Tests

No uncorrected performance failures remain from the 1994 certification testing.

VERMONT YANKEE PLANT SIMULATOR
FOUR YEAR PERFORMANCE TESTING SCHEDULE
(ATTACHMENT 2)

Each year the following tests will be performed:

1. ANSI/ANS 3.5 B1.1 Startup, Shutdown and Steady State Tests
 - a. Startup from cold to rated power
 - b. Shutdown to cold conditions from rated power
 - c. Recovery from plant Scram to rated power
 - d. Critical (Heat Balance) and non-critical data comparisons at three power levels
 - e. One hour stability test

2. ANSI/ANS 3.5 3.1.1 Normal Plant Evolutions
 - a. Safety Related Systems Surveillances

3. ANSI/ANS 3.5 4.3 Simulator Operating Limits
 - a. Simulator Out of Limits Test

4. ANSI/ANS 3.5 b1.2 Transient Performance Tests
 - a. ANSI B1.2(1) Manual Scram
 - b. ANSI B1.2(2) Simultaneous Trip Of All Feedwater Pumps
 - c. ANSI B1.2(3) Simultaneous Closure Of All Main Steam Isolation Valves
 - d. ANSI B1.2(4) Simultaneous Trip Of All Recirc Pumps
 - e. ANSI B1.2(5) Single Recirculation Pump Trip
 - f. ANSI B1.2(6) Main Turbine Trip

VERMONT YANKEE PLANT SIMULATOR
FOUR YEAR PERFORMANCE TESTING SCHEDULE
(ATTACHMENT 2 CONTINUED)

- g. ANSI B1.2(7) Maximum Rate Power Ramp
 - h. ANSI B1.2(8) Reactor Coolant System Rupture
 - i. ANSI B1.2(9) Maximum Unisolable Main Steam Line Rupture
 - j. ANSI B1.2(10) Simultaneous Closure of All Main Steam Isolation Valves with a Stuck Open Safety Relief Valve
5. Computer Real Time Verification
6. ANSI/ANS 3.5 A3.4 Malfunction Tests
- a. All malfunctions will be tested in a four year cycle at approximately 25% of all malfunctions per year. The following identifies the system malfunctions to be tested during that year:

1995

ANNUNCIATORS (AN)
CORE SPRAY (CS)
TURBINE (TU)
PRIMARY CONTAINMENT (PC)
MAIN STEAM (MS)
NUCLEAR MONITORS (NM)
CONTROL RODS (RD)

1997

AUTO DEP SYS (ADS)
DIESEL GENERATORS (DG)
REACTOR PROTECTION (RP)
MAIN GENERATOR (EG)
MAIN CONDENSER (MC)
SERVICE WATER (SW)

1996

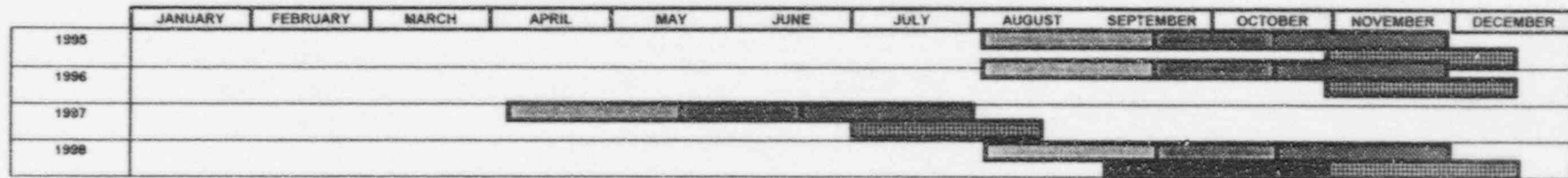
SLC (SL)
RWCU (CU)
INSTRUMENT AIR (IA)
RHR (RH)
TURBINE CONTROL (TC)
ELECTRICAL DIST (ED)
REACTOR RECIRC (RR)






1998

ROD CONTROL (RM)
ROD WORTH MIN. (RW)
ROD WORTH (RX)
HPCI (HP)
RCIC (RC)
OFF GAS (OG)
FEEDWATER (FW)
CONDENSATE (CD)

Vermont Yankee Simulator Testing

FOUR YEAR CERTIFICATION TESTING PLAN



-  MALFUNCTION TESTING
-  HEAT BALANCE AND NORMAL OPERATIONS
-  TRANSIENT AND REAL-TIME TESTING
-  PREPARE ANNUAL REPORT
-  CONTROL ROOM VERIFICATION

Attachment 2