

# CATEGORY 1

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ACCESSION NBR: 9810140199 DOC. DATE: 98/10/08 NOTARIZED: YES DOCKET #  
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000315  
 50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M 05000316  
 AUTH. NAME: POWERS, R.P. AUTHOR AFFILIATION: Indiana Michigan Power Co. (formerly Indiana & Michigan Ele  
 RECIP. NAME: RECIPIENT AFFILIATION: *see report*  
 Records Management Branch (Document Control Desk)

SUBJECT: Forwards Cook Nuclear Plant simulation facility four-year  
 rept IAW 10CFR55.45(b)(5)(ii). Additionally included are NRC  
 Forms 474.

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 TITLE: Simulator Facility Certification - GL-90-08

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Indiana Michigan  
Power Company  
500 Circle Drive  
Buchanan, MI 49107 1373



October 8, 1998

AEP:NRC:1134B

Docket Nos.: 50-315  
50-316

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Stop O-P1-17  
Washington, D.C. 20555-0001


Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2  
Simulation Facility Four Year Report

In accordance with 10 CFR 55.45(b)(5)(ii), American Electric Power Company hereby submits to the Commission the Cook Nuclear Plant Simulation Facility four-year report. This report encompasses both unit 1 (50-315) and unit 2 (50-316). Additionally included are form NRC-474s for both docket numbers.


If additional information is required, please contact Mr. Tim Vriezema at (616)465-5901, x3001.

Sincerely,

  
R. P. Powers  
Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 8th DAY OF October, 1998

  
Notary Public

VALERIE L. BURNELL

My Commission Expires Notary Public, Berrien County, MI  
My Commission Expires Sept. 5, 2002

/jmc

Attachments

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7810140199 781008  
PDR ADOCK 05000315  
PDR

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U.S. Nuclear Regulatory Commission  
Page 2

AEP:NRC:1134B

c: J. A. Abramson  
J. L. Caldwell, w/attachments  
MDEQ - DW & RPD  
NRC Resident Inspector, w/ attachments  
J. R. Sampson, w/attachments

bc: T. P. Beilman - w/attachments  
E. R. Eckstein/D. R. Hafer/K. R. Baker  
J. J. Euto  
FOLIO - w/attachments  
B. J. Hickie  
G. Honma  
J. B. Kingseed/G. P. Arent/ M. J. Gumns  
J. F. Stang, Jr., NRC - Washington, DC - w/attachments

ATTACHMENT 1 TO AEP:NRC:1134B  
SIMULATION FACILITY CERTIFICATION

.9810140199

## SIMULATION FACILITY CERTIFICATION

Estimated burden per response to comply with this mandatory information collection request: 120 hours. This information is used to certify a simulation facility. Forward comments regarding burden estimate to the Information and Records Management Branch (T-6 F33), 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. NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

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 <b>COOK NUCLEAR PLANT</b>	DOCKET NUMBER <b>50— 315</b>
LICENSEE <b>AMERICAN ELECTRIC POWER COMPANY</b>	DATE <b>8/20/98</b>

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 ANSVANS 3.5-1985 or ANSVANS 3.5-1993, 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.

**COOK TRAINING CENTER  
ONE COOK PLACE  
BRIDGMAN, MI 49106**

☒ 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.)

No performance testing was performed specific to Cook Unit One during the last four year period. Performance testing of the simulator was performed in accordance with the testing schedule per the certification submittal in the Four Year Report of August 1994. Refer to the Cook Plant Simulator Four Year Report Unit Two for performance testing abstract and completion dates.

☒ 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.)

No performance testing will be performed specific to Cook Unit 1. Refer to the Cook Plant Simulator Four Year Report Unit Two, Attachment 2 for the schedule of certification testing to be performed over the next four year period on the Unit Two simulator. Approximately 25% of all malfunction testing is scheduled annually.

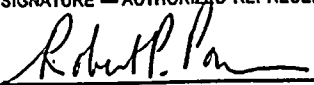
☒ PERFORMANCE TESTING PLAN CHANGE. (For any modification to a performance testing plan submitted on a previous certification.)

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

See attached, Cook Plant Simulator Four Year Report Unit Two, for a description of performance test schedule changes.

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 <b>VP</b>	DATE <b>10/3/98</b>
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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

# **DONALD C. COOK NUCLEAR PLANT SIMULATOR**

## **FOUR-YEAR REPORT**

### **UNIT 1**

#### **A. Purpose**

The Cook Nuclear Plant simulator is used in the licensing of operations personnel and is therefore required to meet the criteria established in 10 CFR 50.55 Subpart E, Section 55.45.

To comply with 10 CFR 55.45, a report to the Commission, which identifies simulator testing status, must be submitted every four years from original date of certification. The purpose of this report is to satisfy this reporting requirement for the Cook Nuclear Plant simulator.

#### **B. References**

1. Title 10, Code of Federal regulations, Part 55, "Operator Licenses", Subpart E, Section 45.
2. U. S. Nuclear Regulatory Guide 1.149 "Nuclear Power Plant Simulation Facilities for use in Operator License Examinations".
3. ANSI 3.5, 1985, "Nuclear Power Plant Simulators for use in Operator Training".

#### **C. Reporting Requirements**

The requirements of this report as outlined in 10 CFR 50.55 are:

1. Identification of any uncorrected performance test failures and a schedule for correction of such performance failures, if any. Subpart E Section 55.45 (b)(5)(ii).
2. A description of performance testing completed for the simulation facility. Subpart E, Section 55.45 (b)(5)(vi).



3. A description of the performance tests, if different, to be conducted on the simulation facility during the subsequent four-year period. Subpart E, Section 55.45 (b)(5)(vi).
4. A schedule for the conduct of approximately 25 percent of the performance tests per year for the subsequent four years. Subpart E, Section 55.45 (b)(5)(vi).

**D. Discussion**

The Cook Nuclear Plant simulator is modeled to Cook Unit 2 and functions to provide training for both Units of the Cook Nuclear Plant. The following reviews are intended to provide reasonable assurance that the original certification study of differences between units has not been significantly impacted, and that operator performance is not indicating a declining trend as a result of simulator training on the Unit 2 simulator. Unit 2 four-year report is also provided herein.

1. Unit 1 specific plant modifications installed from January 1, 1994, to present have been reviewed to determine the impact of those changes upon the original certification differences study. This evaluation determined that, as a result of design changes made in the Unit 1 control room, training on Cook Nuclear Plant Unit 2 simulator would not result in an operator error resulting in a challenge to a critical safety function in Unit 1.
2. Unit 1 plant condition reports, written between January 1, 1994 to present, with causal codes identifying training qualification methods/content and operations identified as the involved department, have been reviewed. This review identified no cases in which training on the Unit 2 simulator resulted in an error in operation of Unit 1.
3. Reactor trips occurring in the four-year period since the previous report submitted in August 1994 have been reviewed. This review determined that the lack of unit specific simulator training on Unit 1 had no impact on these events.

**E. Implementation**

**Requirement #1: Uncorrected performance test failures and a schedule for correction of such performance failures.**

Refer to Cook Nuclear Plant Simulator, Four-year Report Unit 2 for a list of performance test failures and scheduled correction dates.

**Requirement #2: Description of performance testing performed in the last four-year period.**

No performance testing was scheduled specific to Unit 1 as identified in the previous four-year report dated August 31, 1994. Refer to Cook Nuclear Plant Simulator Four-year Report Unit 2 for performance testing abstract and completion dates.

**Requirement #3: Description of performance tests, if different, to be conducted on the simulation facility during the subsequent four year period.**

No performance testing specific to Unit 1 is scheduled for the next four-year period. All performance testing will be conducted on the Unit 2 simulation load only. Refer to Cook Nuclear Plant Simulator Four-year Report Unit 2 for a list of certification tests to be performed on the simulator in the next four-year period.

**Requirement #4: Schedule for the conduct of approximately 25 percent of the performance tests per year for the subsequent four years.**

No performance testing specific to Unit 1 is scheduled for the next four-year period. All performance testing will be conducted on the Unit 2 simulation load. Refer to Cook Nuclear Plant Simulator Four-year Report Unit 2 for a list of certification tests to be performed on the simulator in the next four-year period.

ATTACHMENT 2 TO AEP:NRC:1134B  
SIMULATION FACILITY CERTIFICATION



## SIMULATION FACILITY CERTIFICATION

Estimated burden per response to comply with this mandatory information collection request: 120 hours. This information is used to certify a simulation facility. Forward comments regarding burden estimate to the Information and Records Management Branch (T-6 F33), 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. NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

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 <b>COOK NUCLEAR PLANT</b>	DOCKET NUMBER <b>50- 316</b>
LICENSEE <b>AMERICAN ELECTRIC POWER COMPANY</b>	DATE <b>8/20/98</b>

## 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 ANSIANS 3.5-1985 or ANSIANS 3.5-1993, 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.

**COOK TRAINING CENTER  
ONE COOK PLACE  
BRIDGMAN, MI 49106**

<input checked="" type="checkbox"/>	SIMULATION FACILITY PERFORMANCE TEST ABSTRACTS ATTACHED. (For performance tests conducted in the period ending with the date of this certification.)
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## DESCRIPTION OF PERFORMANCE TESTING COMPLETED. (Attach additional pages as necessary and identify the item description being continued.)

**See attached, Cook Plant Simulator Four Year Report Unit Two, Attachment One.**

<input checked="" type="checkbox"/>	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.)
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## DESCRIPTION OF PERFORMANCE TESTING TO BE CONDUCTED. (Attach additional pages as necessary and identify the item description being continued.)

**See attached, Cook Plant Simulator Four Year Report Unit Two, Attachment Two.**

<input checked="" type="checkbox"/>	PERFORMANCE TESTING PLAN CHANGE. (For any modification to a performance testing plan submitted on a previous certification.)
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## DESCRIPTION OF PERFORMANCE TESTING PLAN CHANGE (Attach additional pages as necessary and identify the item description being continued.)

**See attached, Cook Plant Simulator Four Year Report Unit Two (Page 5 of 5).**

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 <b>UP</b>	DATE <b>10/9/98</b>
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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

# **DONALD C. COOK NUCLEAR PLANT SIMULATOR**

## **FOUR-YEAR REPORT**

### **UNIT 2**

#### **E. Purpose**

The Cook Nuclear Plant simulator is used in the licensing of operations personnel and is therefore required to meet the criteria established in 10 CFR 50.55 Subpart E, Section 55.45.

To comply with 10 CFR 55.45, a report to the Commission which identifies simulator testing status must be submitted every four years from original date of certification. The purpose of this report is to satisfy this reporting requirement for the Cook Nuclear Plant simulator.

#### **F. References**

4. Title 10, Code of Federal regulations, Part 55, "Operator Licenses", Subpart E, Section 45.
5. U. S. Nuclear Regulatory Guide 1.149 "Nuclear Power Plant Simulation Facilities for use in Operator License Examinations".
6. ANSI 3.5, 1985, "Nuclear Power Plant Simulators for use in Operator Training".

#### **G. Reporting Requirements**

The requirements of this report as outlined in 10 CFR 50.55 are:

2. Identification of any uncorrected performance test failures and a schedule for correction of such performance failures, if any. Subpart E, Sections 55.45 (b)(5)(ii).
2. A description of performance testing completed for the simulation facility. Subpart E, Section 55.45 (b)(5)(vi).
3. A description of the performance tests, if different, to be conducted on the simulation facility during the subsequent four-year period. Subpart E, Section 55.45 (b)(5)(vi).

4. A schedule for the conduct of approximately 25 percent of the performance tests per year for the subsequent four years. Subpart E, Section 55.45 (b)(5)(vi).

## **H. Implementation**

### **Requirement #1: Uncorrected performance test failures and a schedule for correction of such performance failures.**

Uncorrected performance test failures include:

- DR 98026: RCS mass increase due to cycling of a RHR system check valve during plant cooldown.
- DR 98054: During plant heatup to mode 5, shutting down the RHR pump caused loop return temperature to momentarily spike low.

These tests are scheduled for completion within one year of origination dates.

- DR 98026 Completion date: Prior to 3/4/99.
- DR 98054 Completion date: Prior to 6/2/99.

### **Requirement #2: Description of performance testing performed in the last four-year period.**

ANSI 3.5, 1985 Appendix A lists the requirements relative to certification testing for nuclear plant simulators. These requirements fall into four separate categories.

1. Computer Real Time Tests- Verification of real time simulation by the simulator.
2. Steady State and Normal Plant Evolution Performance Tests.
  - a) Steady State Tests- Verification of simulator stability and verification that process parameter values reflect actual reference plant values.
  - b) Normal Plant Evolution Performance Tests- Verification of simulator ability to perform in accordance with reference plant operating procedures.
3. Transient Tests- Testing of simulator's ability to reproduce a defined set of transients.



4. **Malfunction Testing-** Testing of each generic malfunction to verify simulator response and system interaction.

**1. Computer Real Time Testing.**

ANSI 3.5, 1985 requires real time verification to ensure the simulation dynamic performance is in the same time base relationships, sequences, durations, rates and accelerations as the dynamic performance of the reference plant.

The Cook Nuclear Plant simulator uses Real Time Executive Tasks (RTEEXEC) to ensure that the simulator remains in real time during all simulation. This task uses a frame counter routine to ensure an overtime abort and simulator "freeze" condition occurs if the Real Time Executive Task fails to execute in the allotted time period.

Simulator real-time tests have been performed annually with no failures identified. See Attachment 1 (page 2) for test performance dates.

**2. Steady State and Normal Plant Evolutions Testing.**

To ensure compliance with the standard regarding simulator steady state operation, the simulator has been operated for periods of one hour without operator action at rated thermal power conditions. Computed values were collected at half second intervals over the one hour time period. This data has been verified accurate against actual plant data and heat balance information within the tolerances for critical and non-critical parameters as established in ANSI 3.5, 1985. The data has also been plotted and verified not to vary more than 2% from original values.

Additional Steady State Testing has been performed at three additional power levels for which plant data exists. Simulator and reference plant data for critical and non-critical parameters have been recorded and verified not to deviate from the tolerances stated in ANSI 3.5, 1985.

See Attachment 1 (page 3) for Steady State Test abstract and performance dates.

Normal plant evolutions are tested and verified against the criteria established in ANSI 3.5 Section 3.1.1 annually per the certification schedule in the four year report submitted August 31, 1994. These tests are performed in accordance with approved plant procedures. See Attachment 1 (page 4) for Normal Plant Evolution test abstract and performance dates.

In addition to testing performed by simulator personnel, these evolutions have been tested as an integral step of the Reactor Operation Replacement training program. This program involves continuous operation (per

approved plant procedures) of the simulator from full power to half loop conditions, and from half loop conditions back to full power operation by instructors and SRO candidates with numerous years of plant operating experience.

ANSI 3.5 tests not listed or performed on a regular schedule are clarified below.

Core performance testing (3.1.1.9) is performed on the simulator when core cycle upgrades are made on the simulator (currently the same cycle as the reference plant).

Operations surveillance tests (3.1.1.10) are performed on an as needed basis within the operations training program using approved plant procedures.

### **3. Transient Testing.**

All transient tests required by ANSI 3.5, Appendix B section B.2.2 have been conducted on the simulator per the certification schedule submitted in the August 1994 four-year report. Additionally, complete retesting of all eleven transients was performed in May 1996 (testing of new RETACT model) and also in October 1996 (testing of simulator rehost running on the Windows NT™ platform).

The data collected in the performance of these tests is collected at one half second intervals and has been compared to best estimate information or actual plant data where actual plant data was available.

Refer to Attachment 1 (pages 5-7) for Transient test abstract and performance dates. Dates for the RETACT testing and rehost testing have also been included.

### **4. Malfunction Testing.**

The Cook Nuclear Plant simulator has 317 malfunctions used to introduce transients and/or faults into the simulator for operator training. All malfunctions have been tested in the previous four year period with approximately 25% tested annually. Additionally, a complete retest of all malfunctions was performed as part of the simulator upgrade project (simulator rehosting to Windows NT™ platform).

Refer to Attachment 1 (pages 8-15) for Malfunction test abstract and performance dates.



**Requirement #3: Description of performance tests, if different, to be conducted on the simulation facility during the subsequent four year period.**

Changes to the performance testing over the next four year period include the following:

- ◆ Malfunction test schedule has been modified from the last report to reflect the deletions and additions to the current malfunction list.

The following were deleted from the malfunction list:

RD12: Failure of control rods to move. This malfunction has been replaced by new malfunction RD20 to improve malfunction accuracy.

RX22: SG programmed level signal failure. SG level setpoint is now a constant 44% and level program is no longer used.

The following were added to the malfunction list:

CH03: Wide range containment pressure transmitter failure.

CH04: Containment leakage.

CV34: Chg. Flow instrument failure.

FP06: Fire protection storage tank leak

FW58: Condensate Booster Pump failure to auto start.

MS22: MSIV mechanical binding.

RD20: Rod Control power cabinet failure.

RP22: RPS relay K621X2 failure.

RX15: Steam dump system failure to respond.

TP06: Stator Cooling Tube leakage.

- ◆ The Normal Plant Evolution schedule has been reduced to a four year test program in place of the current yearly testing. There is no standard for testing programs and our past practice has been to do all the tests annually. Since there have been few malfunctions identified and for economic reasons, the testing frequency has been reduced.
- ◆ The Special Transient testing category has been deleted from the testing schedule. These were in-house tests not associated with ANSI 3.5, 1985.

**Requirement #4: Schedule for the conduct of approximately 25 percent of the performance tests per year for the subsequent four years.**

Attachment 2 outlines the schedule for certification testing to be performed over the next four year period. Approximately 25% of all malfunction testing and Normal Plant Evolutions are scheduled annually.

## ATTACHMENT 1 COOK PLANT SIMULATOR CERTIFICATION TESTING

This attachment consists of testing information relative to the Cook Plant Simulator certification requirements. The sections of this attachment are:

- ◆ Computer Real Time testing
- ◆ Normal Plant Evolution (NPE) testing
- ◆ Steady State testing
- ◆ Transient testing
- ◆ Malfunction testing

All testing has been completed per requirements of ANSI 3.5, 1985 as amended by Regulator Guide 1.149.

Deviations from test schedule submitted in the 1994 four year report follow:

Special Transient Test (ST-4) scheduled for the last quarter of 1995 was not completed or all data pertaining to the test was lost. This test was not identified as being untimely until it became due in the last quarter of 1996. This is an in-house test not required by ANSI 3.5, 1985 appendix A.

Special Transient Tests (ST-1,2,3) scheduled for the first 3 quarters of 1996 were deferred to the last quarter of 1996. This was done to correspond to the testing of the rehosted simulator configuration.

Normal Plant Evolutions scheduled for the first two quarters of 1996 were deferred to the last half of 1996. This was done to correspond to the testing of the rehosted simulator configuration.

Steady State Tests scheduled for the third quarter of 1996 was deferred to the last quarter of 1996. This was done to correspond to the testing of all steady state power levels in the rehosted simulator configuration.



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COOK NUCLEAR PLANT SIMULATOR  
REAL TIME TEST REPORT

<u>Test Number</u>	<u>Title</u>	<u>Date Tested</u>
CRT-1	COMPUTER REAL TIME TESTING	1/12/94
CRT-1	COMPUTER REAL TIME TESTING	3/13/95
CRT-1	COMPUTER REAL TIME TESTING	4/4/96
CRT-1	COMPUTER REAL TIME TESTING	3/28/97
CRT-1	COMPUTER REAL TIME TESTING	4/17/98



**COOK NUCLEAR PLANT SIMULATOR  
STEADY STATE TESTING REPORT**

<u>Test Number</u>	<u>Title (Power Level)</u>	<u>Date Tested</u>
SS-1	STEADY STATE (30%)	3/28/94
SS-2	STEADY STATE (47%)	6/26/94
SS-3	STEADY STATE (75%)	8/28/94
SS-4	STEADY STATE (100%)*	12/19/94
SS-1	STEADY STATE (30%)	3/13/95
SS-2	STEADY STATE (47%)	6/30/95
SS-3	STEADY STATE (75%)	10/4/95
SS-4	STEADY STATE (100%)*	12/17/95
SS-1	STEADY STATE (7%)	3/30/96
SS-2	STEADY STATE (33%)	6/12/96
SS-1	STEADY STATE (30%)	12/16/96
SS-2	STEADY STATE (47%)	12/16/96
SS-3	STEADY STATE (75%)	12/17/96
SS-4	STEADY STATE (100%)*	10/12/96
SS-1	STEADY STATE (27%)	3/31/97
SS-2	STEADY STATE (47%)	9/23/97
SS-3	STEADY STATE (75%)	6/25/97
SS-4	STEADY STATE (100%)*	12/30/97
SS-1	STEADY STATE (27%)	3/27/98
SS-2	STEADY STATE (47%)	6/2/98

\* Stability testing performed in conjunction with steady state test at rated power.

1 2 3 4 5 6 7 8 9 10 11 12



1 2 3 4 5 6 7 8 9 10 11 12

**COOK NUCLEAR PLANT SIMULATOR  
NORMAL PLANT EVOLUTION PERFORMANCE TESTING**

<u>Test Number</u>	<u>Title</u>	<u>Date Tested</u>
NPE-1	RCS FILL AND VENT	1/17/94
NPE-1	RCS FILL AND VENT	3/18/95
NPE-1	RCS FILL AND VENT	10/11/96
NPE-1	RCS FILL AND VENT	3/31/97
NPE-1	RCS FILL AND VENT	3/20/98
NPE-2	HEATUP FROM MODE 5 TO MODE 3	6/26/94
NPE-2	HEATUP FROM MODE 5 TO MODE 3	6/27/95
NPE-2	HEATUP FROM MODE 5 TO MODE 3	10/6/96
NPE-2	HEATUP FROM MODE 5 TO MODE 3	4/28/97
NPE-2	HEATUP FROM MODE 5 TO MODE 3	6/2/98
NPE-3	REACTOR STARTUP	8/28/94
NPE-3	REACTOR STARTUP	10/4/95
NPE-3	REACTOR STARTUP	11/2/96
NPE-3	REACTOR STARTUP	6/3/97
NPE-4	POWER ESCALATION	12/20/94
NPE-4	POWER ESCALATION	10/3/95
NPE-4	POWER ESCALATION	9/29/96
NPE-4	POWER ESCALATION	12/1/97
NPE-5	POWER REDUCTION	6/27/94
NPE-5	POWER REDUCTION	3/19/95
NPE-5	POWER REDUCTION	8/12/96
NPE-5	POWER REDUCTION	3/17/97
NPE-5	POWER REDUCTION	3/27/98
NPE-6	PLANT COOLDOWN	9/26/94
NPE-6	PLANT COOLDOWN	6/26/95
NPE-6	PLANT COOLDOWN	8/14/96
NPE-6	PLANT COOLDOWN	6/24/97
NPE-6	PLANT COOLDOWN	6/1/98
NPE-7	RCS DRAIN TO HALF LOOP	12/21/94
NPE-7	RCS DRAIN TO HALF LOOP	3/17/95
NPE-7	RCS DRAIN TO HALF LOOP	10/9/96
NPE-7	RCS DRAIN TO HALF LOOP	8/8/97

# COOK NUCLEAR PLANT SIMULATOR TRANSIENT TESTS

<u>Test Number</u>	<u>Title</u>	<u>Date Tested</u>
Trans 1	MANUAL REACTOR TRIP	1/22/94
Trans 1	MANUAL REACTOR TRIP	3/27/95
Trans 1	MANUAL REACTOR TRIP	4/4/96
Trans 1	MANUAL REACTOR TRIP	5/10/96
Trans 1	MANUAL REACTOR TRIP	10/10/96
Trans 1	MANUAL REACTOR TRIP	3/28/97
Trans 1	MANUAL REACTOR TRIP	3/27/98
Trans 2	TRIP OF ALL MAIN FEEDPUMPS	6/10/94
Trans 2	TRIP OF ALL MAIN FEEDPUMPS	6/26/95
Trans 2	TRIP OF ALL MAIN FEEDPUMPS	5/10/96
Trans 2	TRIP OF ALL MAIN FEEDPUMPS	10/10/96
Trans 2	TRIP OF ALL MAIN FEEDPUMPS	5/1/97
Trans 2	TRIP OF ALL MAIN FEEDPUMPS	5/26/98
Trans 3	CLOSURE OF ALL MSIV'S	8/28/94
Trans 3	CLOSURE OF ALL MSIV'S	10/3/95
Trans 3	CLOSURE OF ALL MSIV'S	5/10/96
Trans 3	CLOSURE OF ALL MSIV'S	10/10/96
Trans 3	CLOSURE OF ALL MSIV'S	9/18/97
Trans 4	TRIP OF ALL REACTOR COOLANT PUMPS	12/17/94
Trans 4	TRIP OF ALL REACTOR COOLANT PUMPS	12/17/95
Trans 4	TRIP OF ALL REACTOR COOLANT PUMPS	5/10/96
Trans 4	TRIP OF ALL REACTOR COOLANT PUMPS	10/10/96
Trans 4	TRIP OF ALL REACTOR COOLANT PUMPS	12/31/97
Trans 5	TRIP OF REACTOR COOLANT PUMP #23	1/22/94
Trans 5	TRIP OF REACTOR COOLANT PUMP #23	3/27/95
Trans 5	TRIP OF REACTOR COOLANT PUMP #23	4/4/96
Trans 5	TRIP OF REACTOR COOLANT PUMP #23	5/10/96
Trans 5	TRIP OF REACTOR COOLANT PUMP #23	10/10/96
Trans 5	TRIP OF REACTOR COOLANT PUMP #23	3/28/97
Trans 5	TRIP OF REACTOR COOLANT PUMP #23	3/27/98
Trans 6	MAIN TURBINE TRIP W/O REACTOR TRIP	6/26/94
Trans 6	MAIN TURBINE TRIP W/O REACTOR TRIP	6/26/95
Trans 6	MAIN TURBINE TRIP W/O REACTOR TRIP	5/10/96
Trans 6	MAIN TURBINE TRIP W/O REACTOR TRIP	10/11/96
Trans 6	MAIN TURBINE TRIP W/O REACTOR TRIP	5/1/97
Trans 6	MAIN TURBINE TRIP W/O REACTOR TRIP	5/26/98
Trans 7	MAXIMUM POWER RAMP 100%-75%-100%	8/28/94
Trans 7	MAXIMUM POWER RAMP 100%-75%-100%	10/3/95
Trans 7	MAXIMUM POWER RAMP 100%-75%-100%	5/10/96
Trans 7	MAXIMUM POWER RAMP 100%-75%-100%	10/11/96
Trans 7	MAXIMUM POWER RAMP 100%-75%-100%	9/19/97
Trans 8	MAXIMUM SIZE LOCA WITH BLACKOUT	12/17/94

Trans 8	MAXIMUM SIZE LOCA WITH BLACKOUT	12/17/95
Trans 8	MAXIMUM SIZE LOCA WITH BLACKOUT	5/10/96
Trans 8	MAXIMUM SIZE LOCA WITH BLACKOUT	10/11/96
Trans 8	MAXIMUM SIZE LOCA WITH BLACKOUT	12/31/97
Trans 9	MAXIMUM SIZE MAIN STEAMLINE	1/21/94
Trans 9	MAXIMUM SIZE MAIN STEAMLINE	3/14/95
Trans 9	MAXIMUM SIZE MAIN STEAMLINE	4/4/96
Trans 9	MAXIMUM SIZE MAIN STEAMLINE	5/10/96
Trans 9	MAXIMUM SIZE MAIN STEAMLINE	10/11/96
Trans 9	MAXIMUM SIZE MAIN STEAMLINE	3/28/97
Trans 9	MAXIMUM SIZE MAIN STEAMLINE	3/27/98
Trans 10	SLOW RCS DEPRESSURIZATION TO	6/26/94
Trans 10	SLOW RCS DEPRESSURIZATION TO	6/26/95
Trans 10	SLOW RCS DEPRESSURIZATION TO	5/10/96
Trans 10	SLOW RCS DEPRESSURIZATION TO	10/11/96
Trans 10	SLOW RCS DEPRESSURIZATION TO	5/1/97
Trans 11	LOAD REJECTION	9/26/94
Trans 11	LOAD REJECTION	10/3/95
Trans 11	LOAD REJECTION	5/10/96
Trans 11	LOAD REJECTION	10/11/96
Trans 11	LOAD REJECTION	9/19/97

**COOK NUCLEAR PLANT SIMULATOR  
SPECIAL TRANSIENT TESTING**

<u>Test Number</u>	<u>Title</u>	<u>Date Tested</u>
ST-1	NATURAL CIRC C/D WITH VESSEL HEAD VOID FORMATION	3/30/94
ST-1	NATURAL CIRC C/D WITH VESSEL HEAD VOID FORMATION	3/31/95
ST-1	NATURAL CIRC C/D WITH VESSEL HEAD VOID FORMATION	12/20/96
ST-1	NATURAL CIRC C/D WITH VESSEL HEAD VOID FORMATION	3/28/97
ST-1	NATURAL CIRC C/D WITH VESSEL HEAD VOID FORMATION	3/27/98
ST-2	ANTICIPATED TRANSIENT W/O SCRAM (ATWS)	6/10/94
ST-2	ANTICIPATED TRANSIENT W/O SCRAM (ATWS)	6/26/95
ST-2	ANTICIPATED TRANSIENT W/O SCRAM (ATWS)	12/20/96
ST-2	ANTICIPATED TRANSIENT W/O SCRAM (ATWS)	6/25/97
ST-2	ANTICIPATED TRANSIENT W/O SCRAM (ATWS)	6/2/98
ST-3	STEAM GENERATOR TUBE RUPTURE	9/29/94
ST-3	STEAM GENERATOR TUBE RUPTURE	10/6/95
ST-3	STEAM GENERATOR TUBE RUPTURE	12/20/96
ST-3	STEAM GENERATOR TUBE RUPTURE	9/26/97
ST-4	UNIT 2 REACTOR TRIP, NOVEMBER 13, 1985	12/17/94
ST-4	UNIT 2 REACTOR TRIP, NOVEMBER 13, 1985	12/20/96
ST-4	UNIT 2 REACTOR TRIP, NOVEMBER 13, 1985	12/30/97

**COOK NUCLEAR PLANT SIMULATOR  
MALFUNCTION TESTING**

<u>Test Number</u>	<u>Title</u>	<u>Date Tested</u>
CC06	SEAL WATER HX TUBE LEAK	8/1/94
CS03	REFUELING WATER STORAGE TANK LEAK	11/19/94
CV09	LETDOWN TEMPERATURE CONTROL FAILURE	11/19/94
CV26	REACTOR COOLANT PUMP #1 SEAL FAILURE	11/19/94
CW02	CW PUMP DISCHARGE VALVE FAILURE	8/1/94
ED03	LOSS OF RESERVE AUXILIARY TRANSFORMER	11/19/94
ED07	LOSS OF 480 VAC BUS	11/19/94
ED16	AUXILIARIES AUTO BUS TRANSFER FAILURE	11/19/94
ED19	ELECTRICAL GRID LOAD REJECTION	9/26/94
ED20	ANN PANEL POWER SUPPLY FAILURE	8/1/94
ED24	LOSS OF 250 VDC TRAIN "N" BATTERY	8/13/94
EG03	MG AUTO VOLTAGE REG FAILURE TO MANUAL	8/13/94
EG11	DIESEL GENERATOR FAILURE TO TRIP	8/13/94
FP05	CONTROL ROOM CABLE VAULT FIRE	8/13/94
FW05	MAIN FEEDPUMP TURBINE TRIP	11/20/94
FW30	LP HTR #3 LVL CONTROL VALVE FAILURE	11/20/94
FW42	CONDENSATE STORAGE TANK LEAK	8/13/94
FW56	FEEDPUMP STEAM SUPPLY CONT FAILURE	8/13/94
MS03	MAIN STM LINE BREAK OUTSIDE CONTAINMENT	12/5/94
MS12	MSR DRAIN TK ALT DRAIN LVL CONT FAILURE	12/18/94
NI06	INTERMEDIATE RANGE MONITOR FAILURE	8/13/94
NI10	POWER RANGE CHANNEL FAILURE	12/5/94
RC03	RCS LEAK	8/13/94
RC07	REACTOR COOLANT PUMP LOCKED ROTOR	12/5/94
RC17	PRESSURIZER PORV FAILURE	12/16/94
RD08	IN-HOLD-OUT SWITCH FAILURE	8/13/94
RD12	FAILURE OF CONTROL RODS TO MOVE	12/16/94
RD16	IRPI FAILURE	12/16/94
RH15	SI ACCUMULATOR N2 PRESSURE LOSS	12/18/94
RP03	FAILURE OF REACTOR TRIP BREAKER	8/13/94
RP12	SPURIOUS ACTUATION OF SI	8/13/94
RP20	TRAIN "B" K600 RELAY FAILURES	8/13/94
RX08	PZR SPRAY VALVE AUTO CONTROL FAILURE	12/18/94
RX16	STEAM DUMP "PRESS CONTROL" ERRATIC OPS	12/18/94
RX24	FW CONTROL VALVE CONTROLLER FAILURE	12/18/94
RX28	LOSS OF 480V MCC	8/13/94
SW01	NON ESSENTIAL SERVICE WATER PUMP TRIP	8/13/94
SW05	ESW PIPING RUPTURE	8/13/94
TC02	MAIN TURBINE FAILURE TO TRIP	12/18/94



TU03	MAIN TURBINE HIGH VIBRATION	8/13/94
CC03	COMPONENT COOLING WATER RUPTURE	7/17/95
CC07	COMPONENT COOLING HX TUBE RUPTURE	1/14/95
CH02	CONTAIN. PRESSURE TRANSMITTER FAILURE	6/20/95
CS04	RWST LEVEL TRANSMITTER FAILURE	11/14/95
CV05	LETDOWN HEAT EXCHANGER TUBE LEAK	1/14/95
CV10	NORMAL CHG LINE LEAK INSIDE CONTAIN.	7/17/95
CV14	CHARGING PUMP SUCTION LINE LEAKAGE	11/14/95
CV20	INADVERTENT BORATION	1/14/95
CV27	REACTOR COOLANT PUMP #2 SEAL FAILURE	6/20/95
CV32	PW FLOW TRANSMITTER (QFC-422) FAILURE	7/17/95
CW03	TRAVELING WATER SCREEN FOULING	6/20/95
ED04	LOSS OF EP SUPPLY TRANS TR-12-EP	11/14/95
ED05	LOSS OF 4160 VAC BUS	6/20/95
ED14	LOSS OF 250 VDC BATTERY CHARGER	6/26/95
ED18	GRID VOLTAGE OSCILLATION	7/17/95
ED21	4KV/600V AUX TRANSFORMER LOSS	7/17/95
EG04	MG AUTO VOLTAGE REGULATOR FAILURE	1/14/95
EG08	DG SPEED GOVERNOR FAILURE	6/26/95
EG12	DG OUTPUT BREAKER FAILURE TO AUTO CLOSE	7/17/95
FP01	FIRE PROTECTION SYSTEM RUPTURE	11/14/95
FW01	MAIN FEEDWATER RUPTURE AT SG INLET	11/17/95
FW06	MFP TURBINE SHEARED SHAFT	2/12/95
FW15	FEEDWATER CONTROL VALVE FAILURE	3/3/95
FW19	HP HEATER #6 TUBE RUPTURE	6/26/95
FW23	HP HEATER #5 TUBE RUPTURE	8/28/95
FW27	LP HTR #4 LVL CONTROL VALVE FAILURE	6/26/95
FW31	LP HEATER #3 TUBE RUPTURE	11/17/95
FW35	COND BOOSTER PP DISCHARGE PIPING RUPTURE	9/13/95
FW39	CONDENSER TUBE LEAK	11/17/95
FW43	HEAER DRAIN PUMP TRIP	3/3/95
FW47	AUX FEEDPUMP SUCTION LINE LEAKAGE	6/26/95
FW51	TDAFP TRIP & THROTTLE VALVE FAILURE	9/13/95
IA01	PLANT AIR COMPRESSOR TRIP	3/3/95
IA05	CONT AIR SYS RUPTURE IN CONTAINMENT	11/17/95
MS04	MS LINE BREAK DOWNSTREAM OF SG STOP VLVS	3/6/95
MS09	MSR TUBE RUPTURE	12/31/95
MS13	MSR DRAIN TK ALT LVL CONTROL VALVE FAILURE	9/13/95
MS18	STEAM DUMP CONTROL VALVE FAILURE	12/31/95
NI03	INCORRECT SR CHANNEL RESPONSE	11/17/95
NI07	IR IMPROPER COMPENSATION	3/6/95
NI11	PR CHANNEL OUTPUT OSCILLATION	6/26/95
NI15	POWER RANGE CHANNEL BLOWN FUSE	9/28/95



RC04	PRESSURIZER SURGE LINE LEAK	11/14/95
RC08	REACTOR COOLANT PUMP SHAFT BREAK	3/6/95
RC14	PZR HIGH GAS CONCENTRATION IN VAPOR SPACE	9/28/95
RC19	PRESSURIZER SAFETY VALVE FAILURE	6/26/95
RC25	SG BLOWDOWN LINE LEAK DOWNSTREAM OF CIV	11/17/95
RC29	SG BLOWDOWN LINE LEAK UPSTREAM OF CIV	6/30/95
RD01	DROPPED CONTROL ROD	3/13/95
RD05	EJECT OF ROD WITH RUPTURED MECH HOUSING	6/26/95
RD09	UNCONTROLLED ROD MOTION DEMAND (AUTO)	9/28/95
RD13	ROD GROUP FAILURE TO MOVE	9/28/95
RD17	ROD GROUP STEP COUNTER FAILURE	11/20/95
RH03	RHR HX BYPASS FLOW CONTROL VALVE FAILURE	11/20/95
RH07	RHR NORMAL SUCTION LINE LK INSIDE CONT	10/2/95
RH12	SI LOOP CHECK VALVE LEAKAGE	3/13/95
RM01	AREA RADIATION MONITOR FAILURE	11/20/95
RP05	REACTOR COOLANT FLOW TRANSMITTER FAILURE	6/26/95
RP09	FAILURE OF FW ISOLATION TRIP TO OCCUR	10/2/95
RP13	FAILURE OF CI PHASE A TO AUTO ACTUATE	11/14/95
RP15	SPURIOUS ACTUATION OF CI PHASE A	6/30/95
RP17	FAILURE OF CI PHASE B TO MANUALLY ACTUATE	3/13/95
RX01	RCS HOT LEG PRESSURE TRANSMITTER FAILURE	6/27/95
RX05	PRESSURIZER LVL TRANS FAILURE	10/2/95
RX09	PZR PRESSURE MASTER CONTROLLER FAILURE	11/14/95
RX13	STEAM DUMP "TAVG" CONTROLLER FAILURE	1/14/95
RX17	SG PRESSURE TRANSMITTER FAILURE	6/26/95
RX21	SG FEED FLOW TRANSMITTER FAILURE	10/2/95
RX25	FEEDWATER CONTROL VALVE OSCILLATION	11/20/95
SI01	SAFETY INJECTION PUMP TRIP	9/28/95
SW02	NESW PIPING RUPTURE IN TURBINE BUILDING	3/13/95
SW06	FP TURBINE OIL COOLING CONTROLLER FAILURE	6/30/95
TC03	MAIN TURBINE AUTO TRIP FAILURE	11/20/95
TC07	MAIN TURBINE INTERCEPT VALVE FAILURE	11/20/95
TC12	MAIN TURBINE SPEED SIGNAL FAILURE	11/20/95
TP03	MG STATOR COOLING SYSTEM RUPTURE	6/30/95
TU01	AUXILIARY LUBE OIL PUMP TRIP	6/20/95
TU05	MAIN TURBINE BEARING FAILURE	10/2/95
CC04	MISC CCW HEADER RUPTURE INSIDE CONT.	12/19/96
CC08	CCW LEAKAGE INTO RCP BEARING OIL RES.	12/20/96
CS01	CONTAINMENT SPRAY PUMP TRIP	6/25/96
CV01	LETDOWN LINE RUPTURE INSIDE CONT.	7/1/96
CV06	LETDOWN PRESS CONT VLV FAILURE (QRV-301)	7/1/96
CV11	NORMAL CHG LINE LEAK OUTSIDE CONTAINMENT	7/1/96
CV15	VCT LEVEL CONTROL VALVE FAILURE	7/1/96
CV21	INADVERTENT DILUTION	7/2/96

CV28	REACTOR COLANT PUMP #3 SEAL FAILURE	12/20/96
CV33	BA FLOW CONTROLLER (QFC-421) FAILURE	12/20/96
ED01	LOSS OF 345KV BUS NO. 1	6/26/96
ED08	LOSS OF 600V MCC	6/26/96
ED10	LOSS OF 120 VAC CONTROL ROOM POWER	6/28/96
ED17	LOSS OF PLANT LIGHTING	12/19/96
ED22	LOSS OF SWITCHGEAR CONT POWER TRAIN B	12/20/96
ED26	LOSS OF 765KV DUMONT LINE	6/26/96
EG05	MG OUTPUT BREAKER FAILURE TO TRIP	7/2/96
EG09	DG VOLTAGE CONTROL FAILURE	12/20/96
EG13	DG OUTPUT BREAKER FAILURE TO CLOSE	12/20/96
FP02	INADV ACT OF CHARCOAL FILT FIRE PROT.	12/20/96
FW02	MFW RUPTURE BEFORE SG CHECK VALVE	7/3/96
FW07	MAIN FEEDPUMP TURBINE BEARING FAILURE	7/3/96
FW16	HP HEATER #6 LVL CONT TRANSMITTER FAILURE	12/20/96
FW20	HP HEATER #5 LVL CONT TRANSMITTER FAILURE	12/20/96
FW24	HP HEATER #5 STEAM INLET RUPTURE	7/8/96
FW28	LP HEATER #4 TUBE RUPTURE	7/8/96
FW32	LP HEATER #3 STEAM INLET RUPTURE	12/20/96
FW36	COND BOOSTER PP RECIRC VALVE FAILURE	12/20/96
FW40	HOTWELL LEVEL CONTROLLER FAILURE	7/8/96
FW44	HEATER DRAIN PUMP BEARING FAILURE	7/22/96
FW48	AUX FEEDPUMP AUTO START FAILURE	7/22/96
FW52	STEAM BOUND AFW PUMP	12/20/96
IA02	PLANT AIR SYSTEM RUPTURE	7/23/96
IA04	CONT AIR SYS RUPT IN TURBINE BUILDING	7/23/96
MS01	MS LINE BREAK AT SG EXIT	7/23/96
MS05	MAIN STEAM POWER RELIEF VALVE LEAK	7/23/96
MS10	MSR COIL DRAIN TANK LVL CONT FAILURE	7/23/96
MS14	MSR STEAM SUPPLY VALVE FAILURE	12/20/96
MS21	AUX STM 150# HDR CONTROL VALVE FAILURE	12/20/96
NI04	SR ENERGIZATION AT POWER (P10 FAILURE)	7/24/96
NI08	PR CHANNEL UPPER DETECTOR FAILURE	12/19/96
NI12	AUDIO COUNT RATE CHANNEL FAILURE	7/24/96
RC01	RCS COLD LEG LOOP RUPTURE	10/11/96
RC05	REACTOR VESSEL HEAD FLANGE LEAK	7/24/96
RC09	REACTOR COOLANT PUMP TRIP	7/24/96
RC15	RPESSURIZER SPRAY VALVE FAILURE	7/31/96
RC21	PRT RUPTURE DISC FAILURE	12/19/96
RC26	FAILED FUEL ELEMENT	10/10/96
RD02	BROKEN CONTROL ROD	8/6/96
RD06	UNCONT ROD BANK CONTINUOUS WITHDRAWL	8/6/96
RD10	CR MOVE OPPOSITE TO DEMAND SIGNAL	7/31/96
RD14	IMPROPER BANK OVERLAP	10/10/96

RD18	ROD CONTROL MG SET TRIP	7/31/96
RH04	RHR HX FLOW CONTROL VALVE FAILURE	10/9/96
RH08	RWST SUPPLY LINE TO RHR PUMP RUPTURE	10/9/96
RH13	SI ACC TANK CHECK VALVE LEAKAGE	12/19/96
RM02	PROCESS RADIATION MONITOR FAILURE	10/8/96
RP06	SPURIOUS STEAM LINE ISOLATION	8/6/96
RP10	FAILURE OF SI TO ACTUATE-AUTOMATIC	8/6/96
RP14	FAILURE OF CI PAHSE A TO MANUAL ACT	12/19/96
RP18	SPURIOUS ACTUATION OF CI PHASE B	8/6/96
RX02	RCS HOT LEG TEMP TRANS FAILURE (NR)	8/7/96
RX06	PZR CAL LEVEL TRANSMITTER FAILURE	12/19/96
RX10	PZR WATER LEVEL CONT OSCILLATION	12/19/96
RX14	STEAM DUMP PRESSURE CONTROLLER FAILURE	8/7/96
RX18	MS TURB BYPASS HDR PRESS TRANS FAILURE	8/7/96
RX22	SG PROGRAMMED LEVEL SIGHNAL FAILURE	Deleted
RX26	FP TURBINE SPEED CONTROLLER FAILURE	8/8/96
SI02	SAFETY INJECTION PUMP SHEARED SHAFT	12/20/96
SW03	NESW RUPT ON LWR CONT VENT CLR SUPPLY	8/8/96
SW07	MT OIL TEMPERATURE CONTROLLER FAILURE	12/19/96
TC04	MAIN TURBINE STOP VALVE FAILURE	8/8/96
TC09	MAIN GENERATOR LOAD LIMITER FAILURE	8/8/96
TC13	TURBINE RUNBACK FAILURE	12/20/96
TP05	STATOR COOLING WTR SYS HIGH CONDUCTIVITY	8/8/96
TU06	TURBINE BLADE EJECTION	8/8/96
CC01	COMPONENT COOLING WATER PUMP TRIP	10/13/97
CC05	MISC CCW HDR RUPTURE IN AUX BUILDING	10/27/97
CC09	CCW LEAK ON RHR PUMP SUPPLY LINE	10/27/97
CC10	CCW LEAKAGE INTO RCP L. BRNG OIL RESERV.	10/30/97
CS02	CONTAIN. SPRAY PUMP SUCTION BLOCKAGE	10/27/97
CV02	LETDOWN LINE RUPTURE OUTSIDE CONTAIN.	10/27/97
CV08	LETDOWN LINE RELIEF VLV SV-51 LEAKAGE	10/13/97
CV12	CCP FLOW CONTROL VALVE FAILURE	10/13/97
CV16	VCT LEVEL TRANSMITTER FAILURE	10/13/97
CV25	RCP THERMAL BARRIER HX RUPTURE	13/13/97
CV30	REDUCED CCP CAPACITY	10/16/97
CW01	CIRCULATING WATER PUMP TRIP	10/16/97
ED12	LOSS OF 250 VDC POWER (TRAIN A)	10/16/97
ED13	LOSS OF 250 VDC POWER (TRAIN B)	10/27/97
ED23	LOSS OF SWITCHGEAR CONT POWER TRAIN A	10/27/97
ED25	LOSS OF 765/345KV TRANSFORMER BANK #4	10/27/97
EG01	MAIN GENERATOR TRIP	10/16/97
EG06	DIESEL GENERATOR TRIP	10/16/97
EG10	DIESEL GENERATOR FAILURE TO START	10/16/97
EG14	DG RUNNING RELAY FAILURE	10/23/97

FP03	DIESEL GENERATOR ROOM CO2 ACTUATION	10/16/97
FW03	MFV RUPT BETWEEN FEEDFLOW ELMT & FRV	10/27/97
FW12	FEEDPUMP TURBINE LUBE OIL SYSTEM LEAK	10/16/97
FW17	HP HTR #6 LVL CONTROLLER AUTO FAILURE	10/27/97
FW21	HP HTR #5 LVL CONTROLLER AUTO FAILURE	10/27/97
FW25	HOTWELL PUMP TRIP	10/25/97
FW29	LP HTR #3 LVL CONT TRANSMITTER FAIL	10/27/97
FW33	LP HEATER BY PASS VALVE FAILURE	10/22/97
FW37	HOTWELL PUMP DISCHARGE PIPING RUPTURE	10/27/97
FW41	HW LEVEL CONTROL TRANSMITTER FAILURE	10/28/97
FW45	HEATER DRAIN PUMP ELO VLV FAILS OPEN	10/23/97
IA03	CONTROL AIR COMPRESSOR TRIP	10/21/97
MS02	MAIN STEAM LINE BREAK AT SG EXIT	10/21/97
MS06	STEAM GENERATOR SAFETY VALVE LEAK	10/28/97
MS11	MSR COIL DRAIN TANK LVL CONT LVL FAIL	10/28/97
MS16	STEAM SEAL CONTROLLER FAILURE	10/28/97
NI01	SOURCE RANGE MONITOR FAILURE	10/28/97
NI05	SOURCE RANGE CHANNEL SPIKES	10/28/97
NI09	PR CHANNEL LOWER DETECTOR FAILURE	10/28/97
NI13	SOURCE RANGE INSTRUMENT BLOWN FUSE	10/21/97
RC02	RCS HOT LEG LOOP LEAK	10/28/97
RC06	RCS EMERGENCY VENT LEAKAGE	12/15/97
RC10	RCS COLD LEG LEAK	10/30/97
RC11	REACTOR COOLANT PUMP HIGH VIBRATION	10/28/97
RC12	RCP LOWER BEARING OIL RESERVOIR LEAK	12/15/97
RC16	PRESSURIZER STEAM SPACE MANWAY LEAK	10/29/97
RC23	STEAM GENERATOR TUBE RUPTURE	10/21/97
RC27	RTD BYPASS MANIFOLD FLOW DEGRADATION	10/29/97
RD03	STUCK CONTROL ROD (TRIPPABLE)	10/28/97
RD07	UNCONT ROD BANK CONTINUOUS INSERTION	10/28/97
RD11	AUTO CONTROL ROD SPEED FAILURE	10/28/97
RD15	IRPI POWER LOSS	10/27/97
RD19	IMPOPER ROD WORTH	12/16/97
RH01	RHR PUMP TRIP	10/21/97
RH05	RHR HEAT EXCHANGER TUBE LEAK	10/30/97
RH09	RHR PUMP SUCTION PIPE RUPTURE	10/29/97
RH14	SI ACCUMULATOR TANK LEVEL LOW	10/30/97
RM03	EBERLINE AREA RADIATION MONITOR FAILURES	10/31/97
RP01	REACTOR TRIP ACB AUTO TRIP FAILURE	10/21/97
RP07	FAILURE OF STEAM LINE ISO TO ACTIVATE	10/21/97
RP11	FAILURE OF SI TO ACTUATE-MANUALLY	10/21/97
RP19	TRAIN "A" K600 RELAY FAILURES	10/21/97
RP21	FAILURE OF FWI TRIP TO OCCUR	10/30/97
RX03	RCS COLD LEG TEMP TRANS FAILURE (NR)	10/22/97



RX07	REDUCED PRESSURIZER HEATER CAPACITY	10/21/97
RX11	SG RELIEF VALVE CONTROLLER FAILURE	10/21/97
RX19	TURBINE IMPULSE TRANSMITTER FAILURE	10/21/97
RX23	SG LEVEL TRANSMITTER FAILURE	10/22/97
RX29	FPC-250 TRANSMITTER FAILURE	10/30/97
SI03	HIGH HEAD SI LINE RUPTURE	10/30/97
SW04	ESSENTIAL SERVICE WATER PUMP TRIP	10/22/97
TC01	MAIN TURBINE TRIP	10/22/97
TC05	MAIN TURBINE CONTROL VALVE FAILURE	10/22/97
TC10	MAIN GEN OPERATING DEVICE FAILURE	10/30/97
TP01	TURBINE AUX COOLING PUMP TRIP	10/22/97
WD01	RELEASE OF RADIOACTIVE GAS FROM GDT	10/30/97
CC02	CCW PUMP FAILURE TO AUTO START	7/13/98
CC06	SEAL WATER HX TUBE LEAK	7/13/98
CH01	CONTAIN. PRESS. RELIEF VLV FAILURE	7/13/98
CS03	REFUELING WATER STORAGE TANK LEAK	7/13/98
CV04	LETDOWN LINE ORIFICE ISO. VLV FAILURE	7/13/98
CV09	LETDOWN TEMPERATURE CONTROL FAILURE	7/13/98
CV13	CHARGING PUMP TRIP	7/13/98
CV17	VOLUME CONTROL TANK LEAKAGE	7/13/98
CV26	REACTOR COOLANT PUMP #1 SEAL FAILURE	7/13/98
CV31	BACKPRESSURE CONT VLV FAILURE-QRV-200	7/13/98
CW02	CW PUMP DISCHARGE VALVE FAILURE	7/13/98
ED02	LOSS OF AUXILIARY TRANSFORMER	7/13/98
ED03	LOSS OF RESERVE AUXILIARY TRANSFORMER	7/13/98
ED06	LOSS OF 600 VAC BUS	7/14/98
ED07	LOSS OF 480 VAC BUS	7/14/98
ED11	LOSS OF 250 VDC BUS	7/14/98
ED15	LOSS OF VITAL INST BUS STATIC SWITCH	7/14/98
ED16	AUXILIARIES AUTO BUS TRANSFER FAILURE	7/14/98
ED19	ELECTRICAL GRID LOAD REJECTION	7/14/98
ED20	ANN PANEL POWER SUPPLY FAILURE	7/14/98
ED24	LOSS OF 250 VDC TRAIN "N" BATTERY	7/14/98
EG03	MG AUTO VOLTAGE REG FAILURE TO MANUAL	7/14/98
EG07	DG SPEED CONTROL FAILURE	7/14/98
EG11	DIESEL GENERATOR FAILURE TO TRIP	7/14/98
EG15	MG SEAL OIL UNIT PIPING RUPTURE	7/14/98
FP05	CONTROL ROOM CABLE VAULT FIRE	7/14/98
FW05	MAIN FEEDPUMP TURBINE TRIP	7/14/98
FW18	HP HTR #6 LVL CONTROL VALVE FAILURE	7/14/98
FW22	HP HTR #5 LVL CONTROL VALVE FAILURE	7/14/98
FW26	LP HTR #4 LVL CONT TRANSMITTER FAIL	7/15/98
FW30	LP HTR #3 LVL CONTROL VALVE FAILURE	7/15/98
FW34	CONDENSATE BOOSTER PUMP TRIP	7/15/98



FW38	LOSS OF CONDENSER VACUUM	7/15/98
FW42	CONDENSATE STORAGE TANK LEAK	7/15/98
FW46	AUX FEEDPUMP TRIP	7/15/98
FW50	TDAFW PUMP SPEED CONTROLLER FAILURE	7/15/98
FW54	FDWTR RUPT OUTSIDE CONTAINMENT	7/15/98
FW56	FEED PUMP STEAM SUPPLY CONT FAILURE	7/15/98
MS03	MAIN STM LINE BREAK OUTSIDE CONT	7/15/98
MS08	SG STOP VALVE DRIFTS SHUT	7/15/98
MS12	MSR DRAIN TK ALT DRAIN LVL CONT FAIL	7/15/98
MS17	STEAM SEAL CONTROLLER OSCILLATION	7/15/98
NI02	SOURCE RANGE HV FAILURE TO DEENERGIZE	7/15/98
NI06	INTERMEDIATE RANGE MONITOR FAILURE	7/15/98
NI10	POWER RANGE CHANNEL FAILURE	7/15/98
NI14	INTERMEDIATE RANGE CHANNEL BLOWN FUSE	7/15/98
RC03	RCS LEAK	7/16/98
RC07	REACTOR COOLANT PUMP LOCKED ROTOR	7/16/98
RC13	RCP UPPER BEARING OIL RESERVOIR LEAK	7/16/98
RC17	PRESSURIZER PORV FAILURE	7/16/98
RC24	STEAM GENERATOR TUBE LEAK	7/16/98
RC28	PRESSURIZER INSTRUMENT LINE LEAKAGE	7/16/98
RD04	STUCK CONTROL ROD (UNTRIPPABLE)	7/16/98
RD08	IN-HOLD-OUT SWITCH FAILURE	7/16/98
RD16	IRPI FAILURE	7/16/98
RH02	RHR PUMP SEAL FAILURE	7/16/98
RH06	RHR INJ HDR RELIEF VALVE FAIL (SV-104)	7/16/98
RH11	RHR RET FLOW TRANS FAILURE (IFI-335)	7/16/98
RH15	SI ACCUMULATOR N2 PRESSURE LOSS	7/16/98
RP03	FAILURE OF REACTOR TRIP BREAKER	7/16/98
RP08	SPURIOUS FEEDWATER ISLOATION TRIP	7/16/98
RP12	SPURIOUS ACTUATION OF SI	7/16/98
RP16	FAILURE OF CI PHASE B TO AUTO ACTUATE	7/16/98
RP20	TRAIN "B" K600 RELAY FAILURES	7/16/98
RX04	PRESSURIZER PRESSURE TRANS FAILURE	7/16/98
RX08	PZR SPRAY VALVE AUTO CONTROL FAILURE	7/16/98
RX12	MS RELIEF VLV CONTROLLER OSCILLATION	7/16/98
RX16	STEAM DUMP "PRES CONT" ERRATIC OPS	7/17/98
RX20	SG STEAM FLOW TRANSMITTER FAILURE	7/17/98
RX24	FW CONTROL VALVE CONTROLLER FAILURE	7/17/98
RX27	FEED PUMP DP CONTROLLER FAILURE	7/17/98
RX28	LOSS OF 480V MCC	7/17/98
SW01	NON ESSENTIAL SERVICE WATER PUMP TRIP	7/17/98
SW05	ESW PIPING RUPTURE	7/17/98
TC02	MAIN TURBINE FAILURE TO TRIP	7/17/98
TC06	MAIN TURBINE ERRATIC CONTROL VALVE	7/17/98



TC11 AUTO LOAD SET OSCILLATION  
TP02 TURBINE AUX COOLING PIPING RUPTURE  
TU03 MAIN TURBINE HIGH VIBRATION

7/17/98  
7/17/98  
7/17/98

## **ATTACHMENT 2**

### **COOK PLANT SIMULATOR CERTIFICATION TEST SCHEDULE**

The following pages consist of the Cook Nuclear Plant Simulator Certification schedule through the year 2002. This section is designed to meet the requirements of Appendices A and B of ANSI 3.5, 1985 performance testing.



**COOK NUCLEAR PLANT SIMULATOR  
ANSI 3.5 APPENDICIES A AND B**

**ANNUAL TESTING SCHEDULE**

<u>QTR 1</u> CRT-1	<u>QTR 2</u>	<u>QTR 3</u>	<u>QTR 4</u>
SS-01	SS-02	SS-03	SS-04
TRANS-01	TRANS-02	TRANS-03	TRANS-04
TRANS-05	TRANS-06	TRANS-07	TRANS-08
TRANS-09	TRANS-10	TRANS-11	

**NORMAL PLANT EVOLUTION  
TESTING SCHEDULE**

<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
NPE-1	NPE-2	NPE-3	NPE-4
NPE-5	NPE-6	NPE-7	

**Test Descriptions:**

CRT-1	Computer Real Time Test
SS-1	Steady State Test 1
SS-2	Steady State Test 2
SS-3	Steady State Test 3
SS-4	Steady State Test 4
Trans-01	Manual Reactor Trip
Trans-02	Trip of all Main Feedpumps
Trans-03	Closure of all MSIV's
Trans-04	Trip of all Reactor Coolant Pumps
Trans-05	Trip of Reactor Coolant Pump #23
Trans-06	Main Turbine Trip W/O Reactor Trip
Trans-07	Maximum Power Ramp 100%-75%-100%
Trans-08	Maximum Size Loca with Blackout
Trans-09	Maximum Size Main Steamline Rupture
Trans-10	Slow RCS Depressurization to Saturation
Trans-11	Load Rejection
NPE-1	RCS Fill and Vent
NPE-2	Cold Shutdown to Hot Standby
NPE-3	Reactor Startup
NPE-4	Plant Startup/Power Escalation
NPE-5	Power Reduction



NPE-6  
NPE-7

Plant Cooldown  
RCS Drain

# MALFUNCTION TEST SCHEDULE

<u>Test Number</u>	<u>Title</u>	<u>Scheduled</u>
CC03	COMPONENT COOLING WATER RUPTURE	1999
CC07	COMPONENT COOLING HX TUBE RUPTURE	1999
CH02	CONTAIN. PRESSURE TRANSMITTER FAILURE	1999
CH03	CONTAIN. PRESSURE TRANSMITTER FAILURE (WR)	1999
CS04	RWST LEVEL TRANSMITTER FAILURE	1999
CV05	LETDOWN HEAT EXCHANGER TUBE LEAK	1999
CV10	NORMAL CHG LINE LEAK INSIDE CONTAIN.	1999
CV14	CHARGING PUMP SUCTION LINE LEAKAGE	1999
CV20	INADVERTENT BORATION	1999
CV27	REACTOR COOLANT PUMP #2 SEAL FAILURE	1999
CV32	PW FLOW TRANSMITTER (QFC-422) FAILURE	1999
CW03	TRAVELING WATER SCREEN FOULING	1999
ED04	LOSS OF EP SUPPLY TRANS TR-12-EP	1999
ED05	LOSS OF 4160 VAC BUS	1999
ED14	LOSS OF 250 VDC BATTERY CHARGER	1999
ED18	GRID VOLTAGE OSCILLATION	1999
ED21	4KV/600V AUX TRANSFORMER LOSS	1999
EG04	MG AUTO VOLTAGE REGULATOR FAILURE	1999
EG08	DG SPEED GOVERNOR FAILURE	1999
EG12	DG OUTPUT BREAKER FAILURE TO AUTO CLOSE	1999
FP01	FIRE PROTECTION SYSTEM RUPTURE	1999
FP06	FIRE PROTECTION STORAGE TANK LEAK	1999
FW01	MAIN FEEDWATER RUPTURE AT SG INLET	1999
FW06	MFP TURBINE SHEARED SHAFT	1999
FW15	FEEDWATER CONTROL VALVE FAILURE	1999
FW19	HP HEATER #6 TUBE RUPTURE	1999
FW23	HP HEATER #5 TUBE RUPTURE	1999
FW27	LP HTR #4 LVL CONTROL VALVE FAILURE	1999
FW31	LP HEATER #3 TUBE RUPTURE	1999
FW35	COND BOOSTER PP DISCHARGE PIPING RUPTURE	1999
FW39	CONDENSER TUBE LEAK	1999
FW43	HEAER DRAIN PUMP TRIP	1999
FW47	AUX FEEDPUMP SUCTION LINE LEAKAGE	1999
FW51	TDAFP TRIP & THROTTLE VALVE FAILURE	1999
IA01	PLANT AIR COMPRESSOR TRIP	1999
IA05	CONT AIR SYS RUPTURE IN CONTAINMENT	1999
MS04	MS LINE BREAK DOWNSTREAM OF SG STOP VLVS	1999
MS09	MSR TUBE RUPTURE	1999



MS13	MSR DRAIN TK ALT LVL CONTROL VALVE FAILURE	1999
MS18	STEAM DUMP CONTROL VALVE FAILURE	1999
NI03	INCORRECT SR CHANNEL RESPONSE	1999
NI07	IR IMPROPER COMPENSATION	1999
NI11	PR CHANNEL OUTPUT OSCILLATION	1999
NI15	POWER RANGE CHANNEL BLOWN FUSE	1999
RC04	PRESSURIZER SURGE LINE LEAK	1999
RC08	REACTOR COOLANT PUMP SHAFT BREAK	1999
RC14	PZR HIGH GAS CONCENTRATION IN VAPOR SPACE	1999
RC19	PRESSURIZER SAFETY VALVE FAILURE	1999
RC25	SG BLOWDOWN LINE LEAK DOWNSTREAM OF CIV	1999
RC29	SG BLOWDOWN LINE LEAK UPSTREAM OF CIV	1999
RD01	DROPPED CONTROL ROD	1999
RD05	EJECT OF ROD WITH RUPTURED MECH HOUSING	1999
RD09	UNCONTROLLED ROD MOTION DEMAND (AUTO)	1999
RD13	ROD GROUP FAILURE TO MOVE	1999
RD17	ROD GROUP STEP COUNTER FAILURE	1999
RD20	ROD CONTROL POWER CABINET FAILURE	1999
RH03	RHR HX BYPASS FLOW CONTROL VALVE FAILURE	1999
RH07	RHR NORMAL DC SUCTION LINE LK INSIDE CONT	1999
RH12	SI LOOP CHECK VALVE LEAKAGE	1999
RM01	AREA RADIATION MONITOR FAILURE	1999
RP05	REACTOR COOLANT FLOW TRANSMITTER FAILURE	1999
RP09	FAILURE OF FW ISOLATION TRIP TO OCCUR	1999
RP13	FAILURE OF CI PHASE A TO AUTO ACTUATE	1999
RP15	SPURIOUS ACTUATION OF CI PHASE A	1999
RP17	FAILURE OF CI PHASE B TO MANUALLY ACTUATE	1999
RX01	RCS HOT LEG PRESSURE TRANSMITTER FAILURE	1999
RX05	PRESSURIZER LVL TRANS FAILURE	1999
RX09	PZR PRESSURE MASTER CONTROLLER FAILURE	1999
RX13	STEAM DUMP "TAVG" CONTROLLER FAILURE	1999
RX17	SG PRESSURE TRANSMITTER FAILURE	1999
RX21	SG FEED FLOW TRANSMITTER FAILURE	1999
RX25	FEEDWATER CONTROL VALVE OSCILLATION	1999
SI01	SAFETY INJECTION PUMP TRIP	1999
SW02	NESW PIPING RUPTURE IN TURBINE BUILDING	1999
SW06	FP TURBINE OIL COOLING CONTROLLER FAILURE	1999
TC03	MAIN TURBINE AUTO TRIP FAILURE	1999
TC07	MAIN TURBINE INTERCEPT VALVE FAILURE	1999
TC12	MAIN TURBINE SPEED SIGNAL FAILURE	1999
TP03	MG STATOR COOLING SYSTEM RUPTURE	1999
TU01	AUXILIARY LUBE OIL PUMP TRIP	1999
TU05	MAIN TURBINE BEARING FAILURE	1999
CC04	MISC CCW HEADER RUPTURE INSIDE CONT.	2000



CC08	CCW LEAKAGE INTO RCP BEARING OIL RES.	2000
CH04	CONTAINMENT LEAKAGE	2000
CS01	CONTAINMENT SPRAY PUMP TRIP	2000
CV01	LETDOWN LINE RUPTURE INSIDE CONT.	2000
CV06	LETDOWN PRESS CONT VLV FAILURE (QRV-301)	2000
CV11	NORMAL CHG LINE LEAK OUTSIDE CONTAINMENT	2000
CV15	VCT LEVEL CONTROL VALVE FAILURE	2000
CV21	INADVERTENT DILUTION	2000
CV28	REACTOR COLANT PUMP #3 SEAL FAILURE	2000
CV33	BA FLOW CONTROLLER (QFC-421) FAILURE	2000
ED01	LOSS OF 345KV BUS NO. 1	2000
ED08	LOSS OF 600V MCC	2000
ED10	LOSS OF 120 VAC CONTROL ROOM POWER	2000
ED17	LOSS OF PLANT LIGHTING	2000
ED22	LOSS OF SWITCHGEAR CONT POWER TRAIN B	2000
ED26	LOSS OF 765KV DUMONT LINE	2000
EG05	MG OUTPUT BREAKER FAILURE TO TRIP	2000
EG09	DG VOLTAGE CONTROL FAILURE	2000
EG13	DG OUTPUT BREAKER FAILURE TO CLOSE	2000
FP02	INADV ACT OF CHARCOAL FILT FIRE PROT.	2000
FW02	MFV RUPTURE BEFORE SG CHECK VALVE	2000
FW07	MAIN FEEDPUMP TURBINE BEARING FAILURE	2000
FW16	HP HEATER #6 LVL CONT TRANSMITTER FAILURE	2000
FW20	HP HEATER #5 LVL CONT TRANSMITTER FAILURE	2000
FW24	HP HEATER #5 STEAM INLET RUPTURE	2000
FW28	LP HEATER #4 TUBE RUPTURE	2000
FW32	LP HEATER #3 STEAM INLET RUPTURE	2000
FW36	COND BOOSTER PP RECIRC VALVE FAILURE	2000
FW40	HOTWELL LEVEL CONTROLLER FAILURE	2000
FW44	HEATER DRAIN PUMP BEARING FAILURE	2000
FW48	AUX FEEDPUMP AUTO START FAILURE	2000
FW52	STEAM BOUND AFW PUMP	2000
FW58	CBP FAILURE TO AUTO START	2000
IA02	PLANT AIR SYSTEM RUPTURE	2000
IA04	CONT AIR SYS RUPT IN TURBINE BUILDING	2000
MS01	MS LINE BREAK AT SG EXIT	2000
MS05	MAIN STEAM POWER RELIEF VALVE LEAK	2000
MS10	MSR COIL DRAIN TANK LVL CONT FAILURE	2000
MS14	MSR STEAM SUPPLY VALVE FAILURE	2000
MS21	AUX STM 150# HDR CONTROL VALVE FAILURE	2000
NI04	SR ENERGIZATION AT POWER (P10 FAILURE)	2000
NI08	PR CHANNEL UPPER DETECTOR FAILURE	2000
NI12	AUDIO COUNT RATE CHANNEL FAILURE	2000
RC01	RCS COLD LEG LOOP RUPTURE	2000
RC05	REACTOR VESSEL HEAD FLANGE LEAK	2000



RC09	REACTOR COOLANT PUMP TRIP	2000
RC15	RPESSURIZER SPRAY VALVE FAILURE	2000
RC21	PRT RUPTURE DISC FAILURE	2000
RC26	FAILED FUEL ELEMENT	2000
RD02	BROKEN CONTROL ROD	2000
RD06	UNCONT ROD BANK CONTINUOUS WITHDRAWL	2000
RD10	CR MOVE OPPOSITE TO DEMAND SIGNAL	2000
RD14	IMPROPER BANK OVERLAP	2000
RD18	ROD CONTROL MG SET TRIP	2000
RH04	RHR HX FLOW CONTROL VALVE FAILURE	2000
RH08	RWST SUPPLY LINE TO RHR PUMP RUPTURE	2000
RH13	SI ACC TANK CHECK VALVE LEAKAGE	2000
RM02	PROCESS RADIATION MONITOR FAILURE	2000
RP06	SPURIOUS STEAM LINE ISOLATION	2000
RP10	FAILURE OF SI TO ACTUATE-AUTOMATIC	2000
RP14	FAILURE OF CI PAHSE A TO MANUAL ACT	2000
RP18	SPURIOUS ACTUATION OF CI PHASE B	2000
RP22	RPS RELAY K621X2 FAILURE	2000
RX02	RCS HOT LEG TEMP TRANS FAILURE (NR)	2000
RX06	PZR CAL LEVEL TRANSMITTER FAILURE	2000
RX10	PZR WATER LEVEL CONT OSCILLATION	2000
RX14	STEAM DUMP PRESSURE CONTROLLER FAILURE	2000
RX18	MS TURB BYPASS HDR PRESS TRANS FAILURE	2000
RX26	FP TURBINE SPEED CONTROLLER FAILURE	2000
SI02	SAFETY INJECTION PUMP SHEARED SHAFT	2000
SW03	NESW RUPT ON LWR CONT VENT CLR SUPPLY	2000
SW07	MT OIL TEMPERATURE CONTROLLER FAILURE	2000
TC04	MAIN TURBINE STOP VALVE FAILURE	2000
TC09	MAIN GENERATOR LOAD LIMITER FAILURE	2000
TC13	TURBINE RUNBACK FAILURE	2000
TP05	STATOR COOLING WTR SYS HIGH CONDUCTIVITY	2000
TU06	TURBINE BLADE EJECTION	2000
CC01	COMPONENT COOLING WATER PUMP TRIP	2001
CC05	MISC CCW HDR RUPTURE IN AUX BUILDING	2001
CC09	CCW LEAK ON RHR PUMP SUPPLY LINE	2001
CC10	CCW LEAKAGE INTO RCP L. BRNG OIL RESERV.	2001
CS02	CONTAIN. SPRAY PUMP SUCTION BLOCKAGE	2001
CV02	LETDOWN LINE RUPTURE OUTSIDE CONTAIN.	2001
CV08	LETDOWN LINE RELIEF VLV SV-51 LEAKAGE	2001
CV12	CCP FLOW CONTROL VALVE FAILURE	2001
CV16	VCT LEVEL TRANSMITTER FAILURE	2001
CV25	RCP THERMAL BARRIER HX RUPTURE	2001
CV30	REDUCED CCP CAPACITY	2001
CV34	CHG FLOW INSTRUMENT FAILURE (QFI-200)	2001
CW01	CIRCULATING WATER PUMP TRIP	2001

ED12	LOSS OF 250 VDC POWER (TRAIN A)	2001
ED13	LOSS OF 250 VDC POWER (TRAIN B)	2001
ED23	LOSS OF SWITCHGEAR CONT POWER TRAIN A	2001
ED25	LOSS OF 765/345KV TRANSFORMER BANK #4	2001
EG01	MAIN GENERATOR TRIP	2001
EG06	DIESEL GENERATOR TRIP	2001
EG10	DIESEL GENERATOR FAILURE TO START	2001
EG14	DG RUNNING RELAY FAILURE	2001
FP03	DIESEL GENERATOR ROOM CO2 ACTUATION	2001
FW03	MFV RUPT BETWEEN FEEDFLOW ELMT & FRV	2001
FW12	FEEDPUMP TURBINE LUBE OIL SYSTRM LEAK	2001
FW17	HP HTR #6 LVL CONTROLLER AUTO FAILURE	2001
FW21	HP HTR #5 LVL CONTROLLER AUTO FAILURE	2001
FW25	HOTWELL PUMP TRIP	2001
FW29	LP HTR #3 LVL CONT TRANSMITTER FAIL	2001
FW33	LP HEATER BY PASS VALVE FAILURE	2001
FW37	HOTWELL PUMP DISCHARGE PIPING RUPTURE	2001
FW41	HW LEVEL CONTROL TRANSMITTER FAILURE	2001
FW45	HEATER FRAIN PUMP ELO VLV FAILS OPEN	2001
IA03	CONTROL AIR COMPRESSOR TRIP	2001
MS02	MAIN STEAM LINE BREAK AT SG EXIT	2001
MS06	STEAM GENERATOR SFETY VALVE LEAK	2001
MS11	MSR COIL DRAIN TANK LVL CONT LVL FAIL	2001
MS16	STEAM SEAL CONTROLLER FAILURE	2001
MS22	MSIV MECHANICAL BINDING	2001
NI01	SOURCE RANGE MONITOR FAILURE	2001
NI05	SOURCE RANGE CHANNEL SPIKES	2001
NI09	PR CHANNEL LOWER DETECTOR FAILURE	2001
NI13	SOURCE RANGE INSTRUMENT BLOWN FUSE	2001
RC02	RCS HOT LEG LOOP LEAK	2001
RC06	RCS EMERGENCY VENT LEAKAGE	2001
RC10	RCS COLD LEG LEAK	2001
RC11	REACTOR COOLANT PUMP HIGH VIBRATION	2001
RC12	RCP LOWER BEARING OIL RESERVOIR LEAK	2001
RC16	PRESSURIZER STEAM SPACE MANWAY LEAK	2001
RC23	STEAM GENERATOR TUBE RUPTURE	2001
RC27	RTD BYPASS MANIFOLD FLOW DEGRADATION	2001
RD03	STUCK CONTROL ROD (TRIPPABLE)	2001
RD07	UNCONT ROD BANK CONTINUOUS INSERTION	2001
RD11	AUTO CONTROL ROD SPEED FAILURE	2001
RD15	IRPI POWER LOSS	2001
RD19	IMPOPER ROD WORTH	2001
RH01	RHR PUMP TRIP	2001
RH05	RHR HEAT EXCHANGER TUBE LEAK	2001
RH09	RHR PUMP SUCTION PIPE RUPTURE	2001



RH14	SI ACCUMULATOR TANK LEVEL LOW	2001
RM03	EBERLINE AREA RADIATION MONITOR FAILURES	2001
RP01	REACTOR TRIP ACB AUTO TRIP FAILURE	2001
RP07	FAILURE OF STEAM LINE ISO TO ACTIVATE	2001
RP11	FAILURE OF SI TO ACTUATE-MANUALLY	2001
RP19	TRAIN "A" K600 RELAY FAILURES	2001
RP21	FAILURE OF FWI TRIP TO OCCUR	2001
RX03	RCS COLD LEG TEMP TRANS FAILURE (NR)	2001
RX07	REDUCED PRESSURIZER HEATER CAPACITY	2001
RX11	SG RELIEF VALVE CONTROLLER FAILURE	2001
RX15	STEAM DUMP FAILURE TO RESPOND	2001
RX19	TURBINE IMPULSE TRANSMITTER FAILURE	2001
RX23	SG LEVEL TRANSMITTER FAILURE	2001
RX29	FPC-250 TRANSMITTER FAILURE	2001
SI03	HIGH HEAD SI LINE RUPTURE	2001
SW04	ESSENTIAL SERVICE WATER PUMP TRIP	2001
TC01	MAIN TURBINE TRIP	2001
TC05	MAIN TURBINE CONTROL VALVE FAILURE	2001
TC10	MAIN GEN OPERATING DEVICE FAILURE	2001
TP01	TURBINE AUX COOLING PUMP TRIP	2001
WD01	RELEASE OF RADIOACTIVE GAS FROM GDT	2001
CC02	CCW PUMP FAILURE TO AUTO START	2002
CC06	SEAL WATER HX TUBE LEAK	2002
CH01	CONTAIN. PRESS. RELIEF VLV FAILURE	2002
CS03	REFUELING WATER STORAGE TANK LEAK	2002
CV04	LETDOWN LINE ORIFICE ISO. VLV FAILURE	2002
CV09	LETDOWN TEMPERATURE CONTROL FAILURE	2002
CV13	CHARGING PUMP TRIP	2002
CV17	VOLUME CONTROL TANK LEAKAGE	2002
CV26	REACTOR COOLANT PUMP #1 SEAL FAILURE	2002
CV31	BACKPRESSURE CONT VLV FAILURE-QRV-200	2002
CW02	CW PUMP DISCHARGE VALVE FAILURE	2002
ED02	LOSS OF AUXILIARY TRANSFORMER	2002
ED03	LOSS OF RESERVE AUXILIARY TRANSFORMER	2002
ED06	LOSS OF 600 VAC BUS	2002
ED07	LOSS OF 480 VAC BUS	2002
ED11	LOSS OF 250 VDC BUS	2002
ED15	LOSS OF VITAL INST BUS STATIC SWITCH	2002
ED16	AUXILIARIES AUTO BUS TRANSFER FAILURE	2002
ED19	ELECTRICAL GRID LOAD REJECTION	2002
ED20	ANN PANEL POWER SUPPLY FAILURE	2002
ED24	LOSS OF 250 VDC TRAIN "N" BATTERY	2002
EG03	MG AUTO VOLTAGE REG FAILURE TO MANUAL	2002
EG07	DG SPEED CONTROL FAILURE	2002
EG11	DIESEL GENERATOR FAILURE TO TRIP	2002



EG15	MG SEAL OIL UNIT PIPING RUPTURE	2002
FP05	CONTROL ROOM CABLE VAULT FIRE	2002
FW05	MAIN FEEDPUMP TURBINE TRIP	2002
FW18	HP HTR #6 LVL CONTROL VALVE FAILURE	2002
FW22	HP HTR #5 LVL CONTROL VALVE FAILURE	2002
FW26	LP HTR #4 LVL CONT TRANSMITTER FAIL	2002
FW30	LP HTR #3 LVL CONTROL VALVE FAILURE	2002
FW34	CONDENSATE BOOSTER PUMP TRIP	2002
FW38	LOSS OF CONDENSER VACUUM	2002
FW42	CONDENSATE STORAGE TANK LEAK	2002
FW46	AUX FEEDPUMP TRIP	2002
FW50	TDAFW PUMP SPEED CONTROLLER FAILURE	2002
FW54	FDWTR RUPT OUTSIDE CONTAINMENT	2002
FW56	FEED PUMP STEAM SUPPLY CONT FAILURE	2002
MS03	MAIN STM LINE BREAK OUTSIDE CONT	2002
MS08	SG STOP VALVE DRIFTS SHUT	2002
MS12	MSR DRAIN TK ALT FRAIN LVL CONT FAIL	2002
MS17	STEAM SEAL CONTROLLER OSCILLATION	2002
NI02	SOURCE RANGE HV FAILURE TO DEENERGIZE	2002
NI06	INTERMEDIATE RANGE MONITOR FAILURE	2002
NI10	POWER RANGE CHANNEL FAILURE	2002
NI14	INTERMEDIATE RANGE CHANNEL BLOWN FUSE	2002
RC03	RCS LEAK	2002
RC07	REACTOR COOLANT PUMP LOCKED ROTOR	2002
RC13	RCP UPPER BEARING OIL RESERVOIR LEAK	2002
RC17	PRESSURIZER PORV FAILURE	2002
RC24	STEAM GENERATOR TUBE LEAK	2002
RC28	PRESSURIZER INSTRUMENT LINE LEAKAGE	2002
RD04	STUCK CONTROL ROD (UNTRIPPABLE)	2002
RD08	IN-HOLD-OUT SWITCH FAILURE	2002
RD16	IRPI FAILURE	2002
RH02	RHR PUMP SEAL FAILURE	2002
RH06	RHR INJ HDR RELIEF VALVE FAIL (SV-104)	2002
RH11	RHR RET FLOW TRANS FAILURE (IFI-335)	2002
RH15	SI ACCUMULATOR N2 PRESSURE LOSS	2002
RP03	FAILURE OF REACTOR TRIP BREAKER	2002
RP08	SPURIOUS FEEDWATER ISLOATION TRIP	2002
RP12	SPURIOUS ACTUATION OF SI	2002
RP16	FAILURE OF CI PHASE B TO AUTO ACTUATE	2002
RP20	TRAIN "B" K600 RELAY FAILURES	2002
RX04	PRESSURIZER PRESSURE TRANS FAILURE	2002
RX08	PZR SPRAY VALVE AUTO CONTROL FAILURE	2002
RX12	MS RELIEF VLV CONTROLLER OSCILLATION	2002
RX16	STEAM DUMP "PRES CONT" ERRATIC OPS	2002
RX20	SG STEAM FLOW TRANSMITTER FAILURE	2002

RX24	FW CONTROL VALVE CONTROLLER FAILURE	2002
RX27	FEED PUMP DP CONTROLLER FAILURE	2002
RX28	LOSS OF 480V MCC	2002
SW01	NON ESSENTIAL SERVICE WATER PUMP TRIP	2002
SW05	ESW PIPING RUPTURE	2002
TC02	MAIN TURBINE FAILURE TO TRIP	2002
TC06	MAIN TURBINE ERRATIC CONTROL VALVE	2002
TC11	AUTO LOAD SET OSCILLATION	2002
TP02	TURBINE AUX COOLING PIPING RUPTURE	2002
TP06	STATOR COOLING TUBE LEAKAGE	2002
TU03	MAIN TURBINE HIGH VIBRATION	2002



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ATTACHMENT TO AEP:NRC:1260G9

RESTART PLAN - REVISION 4