CP&L

Carolin : Power & Light Company

P.O. Box 1551 • Raleigh, N.C. 27602

JUL 31 1991

SERIAL: NLS-91-193
10CFR55.45(b)(2)

G. E. VAUGHN
Vice President
Nuclear Services Department

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
BRUNSWICK SIMULATOR CERTIFICATION - REQUEST FOR ADDITIONAL INFORMATION

Gentlemen:

In a letter dated May 24, 1991, Carolina Power & Light Company (CP&L) was informed that the initial review of the March 24, 1991 simulator certification submittal for the Brunswick Steam Electric Plant (BSEP) was completed by the NRC. The review identified several areas where additional information was necessary to ensure complete documentation of the BSEP certification.

Enclosure 1 addresses the issues identified in your May 24, 1991 letter.

Enclosure 2 and Enclosure 3 provide a replacement package for the Unit One Simulator Certification and the Unit Two Simulator Certification, respectively. These replacement packages are updated in response to your questions that are addressed in Enclosure 1.

Should you have any questions regarding this matter, please contact Mr. S. D. Floyd at (919) 546-6901.

Yours very truly,

G. E. Vaughn

DBB/jbw (1229GLU)

Enclosures

cc: Mr. S. D. Ebneter (w/o enclosures)
Mr. N. B. Le (w/o enclosures)
Mr. R. L. Prevatte (NRC-BSEP) (w/o enclosures)

A005
1/1

050091

ENCLOSURE 1

RESPONSE TO SIMULATOR CONCERNS

CONCERN 1

Regulatory Guide 1.149 states that if a facility licensee wishes to use a simulation facility for more than one nuclear power plant, it must demonstrate in its certification that the differences between the plants are not so significant that they have an impact on the ability of the simulation facility to meet the requirements and guidance of ANSI/ANS-3.5-1985 as qualified in this regulatory guide for each of the plants. While the Unit 1 certification describes the differences between the two units, it does not demonstrate that these differences have no impact on the ability of the Brunswick simulator to meet the certification requirements. There is no analysis of the impact of the differences and, other than for bypass valve operation and MSIV steam flow isolation logic, no description of how the effects of the differences may be mitigated. Please provide an analysis of the impact of the differences described in Appendices A and B of the Unit 1 certification.

RESPONSE

An analysis of the impact of the differences described in the Appendices A and B of the Unit 1 Certification has been conducted. The results have been provided below in the same format as the Certification package.

Appendix A - Emergency Operating Procedures (EOPs)

I. REACTOR SCRAM PROCEDURE (RSP)

The procedural difference is a result of the Bypass Valve physical configuration and high steam flow isolation on Unit 2 when not in RUN Mode. From the simulator instructor station, Instructors have the capability to select Unit 1 or Unit 2 mode of operation, which allows Bypass Valve operation and MSIV steam flow isolation logic to be activated for the respective unit. There is only one set of EOPs, and it provides steps to be performed for both units; therefore, there is no impact on training.

II. REACTOR VESSEL CONTROL PROCEDURE (RVCP)

The procedural difference is a result of the Bypass Valve physical configuration and high steam flow isolation on Unit 2 when not in RUN Mode. From the simulator instructor station, Instructors have the capability to select Unit 1 or Unit 2 mode of operation, which allows Bypass Valve operation and MSIV steam flow isolation logic to be activated for the respective unit. There is only one set of EOPs, and it provides steps to be performed for both units. There is, therefore, no impact on training.

III. LEVEL POWER CONTROL (LPC)

The procedural difference is a result of the Bypass Valve physical configuration and high steam flow isolation on Unit 2 when not in RUN Mode. From the simulator instructor station, Instructors have the capability to select Unit 1 or Unit 2 mode of operation which allows Bypass Valve operation and MSIV steam flow isolation logic to be activated for the respective unit. There is only one set of EOPs, and it provides steps to be performed for both units; therefore, there is no impact on training.

IV. SUPPLEMENTAL EMERGENCY PROCEDURE (SEP-01)
Sections 1, 2, 3, 4, and 7

Procedural differences between Unit 1 and Unit 2 are due to the placement and removai of jumpers on associated terminal boards that allow the operation of primary containment purge valves and fans. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for jumpers to be installed/removed in accordance with procedural steps. The instructor then inputs an override that simulates the installation/removal of the requested jumper(s). Once installed/removed, the associated system is operated using only one set of procedures which provides steps to be performed for both units. There is no impact on training as a result of jumper placement/removal. Training and testing of the knowledge required for jumper installation/removal are covered outside of the simulator setting.

V. SUPPLEMENTAL EMERGENCY PROCEDURE (SEP-02)

Procedural differences between Unit 1 and Unit 2 are due to the placement and removal of jumpers on associated terminal boards that allow defeat of the automatic start of the Drywell Coolers due to a reactor scram signal. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for jumpers to be installed or removed in accordance with procedural steps. The instructor then inputs an override that simulates the installation or removal of the requested jumper(s). Once installed or removed, the associated system is operated using only one set of procedures, which provides steps to be performed for both units. Training and testing of the knowledge required for jumper installation or removal are covered outside of the simulator setting. There is no impact on training as a result of jumper placement or removal.

VI. SUPPLEMENTAL EMERGENCY PROCEDURE (SEP-05)
Sections 1 and 3

The procedural differences are a result of switch labeling disagreements between CAC-V5 and CAC-V6 valves. There are two switches associated with CAC-V5 and two for CAC-V6. For Unit 1 these switches are labeled "ON/OFF" and "STOP/CLOSE" for both V-5 and V-6. For Unit 2 the switches are labeled "STOP/OPEN" and "CLOSE/ON" for both V-5 and V-6. The functions of each switch position and resultant valve operations are the same on both units. Once the labeling differences are identified, the associated system is operated similarly using only one set of procedures which provides steps to be performed for both units. This labeling disagreement has minimal training impact and no action will be taken to change the simulator as a result of these differences.

Section 2

The Containment Atmosphere Dilution (CAD) System consists of two fully redundant loops that are common to both Unit 1 and Unit 2. All control switches and labels are identical on both of the Control Room XU-51 Panels. Normally, the Loop A vaporizer is used for Unit 1 and Loop B vaporizer is used for Unit 2. Procedural provisions exist to allow the use of crosstie valves to supply either unit from Loop A or B and to select the main point of control, either Unit 1 or 2. These differences have no impact on training.

VII. SUPPLEMENTAL EMERGENCY PROCEDURE (SEP-08)
Section 5

The procedural difference between Unit 1 and Unit 2 is the termination of lifted leads on the associated terminal boards that restore RCIC low reactor pressure isolation logic to normal. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be terminated in accordance with procedural steps. The instructor then inputs an override that simulates the termination of the requested lead(s). Training and testing of the knowledge required for termination of wire leads are covered outside of the simulator setting. Once terminated, the RCIC System is operated using only one set of procedures which provides steps to be performed for both units. There is, therefore, no impact on training.

Section 6

The procedural difference between Unit 1 and Unit 2 is the termination of lifted leads on the associated terminal boards that restore the Drywell Cooler LOCA Lockout Logic to normal. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be terminated in accordance with procedural steps. The instructor then inputs an override that simulates the termination of the requested lead(s). Training and testing of the knowledge required for termination of wire leads are covered outside of the simulator setting. Once terminated, the system is operated using only one set of procedures which provides steps to be performed for both units. There is no impact on training.

Section 7

The procedural difference between Unit 1 and Unit 2 is the termination of lifted leads on the associated terminal boards that restore the HPCI High Suppression Pool Level Suction Transfer Logic to normal. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be terminated in accordance with procedural steps. The instructor then inputs an override that simulates the termination of the requested lead(s). Training and testing of the knowledge required for termination of wire leads are covered outside of the simulator setting. Once terminated, the HPCI System is operated using only one set of procedures which provide steps to be performed for both units. There is no impact on training.

VIII. JUMPER INSTALLATION PROCEDURE (SEP-10)

Section 1

The procedural difference between Unit 1 and Unit 2 is the lifting of leads on the associated terminal boards that defeat the HPCI High Suppression Pool Level Suction Transfer Logic. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be lifted in accordance with procedural steps. The instructor then inputs an override that simulates the lifting of the requested lead(s). Training and testing of the knowledge required for lifting of leads are covered outside of the simulator setting. Once lifted, the HPCI System is operated using only one set of procedures which provides steps to be performed for both units; therefore, there is no impact on training.

Section 3

The procedural difference between Unit 1 and Unit 2 is the lifting of leads on the associated terminal boards that defeat RCIC low reactor pressure isolation logic. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be lifted in accordance with procedural steps. The instructor then inputs an override that simulates the lifting of the requested lead(s). Training and testing of the knowledge required for lifting leads are covered outside of the simulator setting. Once lifted, the RCIC System is operated using only one set of procedures which provides steps to be performed for both units. There is no impact on training.

Section 4

The procedural difference between Unit 1 and Unit 2 is the lifting of leads on the associated terminal boards that defeat the Drywell Cooler LOCA Lockout Logic. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be lifted in accordance with procedural steps. The instructor then inputs an override that simulates the lifting of the requested lead(s). Training and testing of the knowledge required for lifting leads are covered outside of the simulator setting. Once terminated, the system is operated using only one set of procedures which provides steps to be performed for both units. Therefore, there is no impact on training.

IX. Alternate Coolant Injection (LEP-01)
Section 3

These procedural differences between Unit 1 and Unit 2 are related to energizing/deenergizing Appendix R (ASSD) equipment to allow Service Water Injection to the Reactor Vessel. The equipment identified in the procedure is located outside of the Main Control Room and is not physically simulated. During a training exercise, the operators call the simulator instructor for energizing/deenergizing components in accordance with procedural steps. The instructor then inputs an override that simulates the supply/removal of electrical power to the associated component. Training and testing of the knowledge required for breaker/ disconnect switch are covered outside of the simulator setting. Once energized/deenergized, the system is operated using only one set of procedures which provides steps to be performed for both units. There is no impact on training.

Section 5

The procedural differences between Unit 1 and Unit 2 are related to energizing or deenergizing Appendix R (ASSD) equipment and the routing of Fire Protection Water to allow injection to the Reactor Vessel. The equipment identified in the procedure is located outside of the Main Control Room and is not physically simulated. During a training exercise, the operators call the simulator instructor for energizing or deenergizing components in accordance with procedural steps. The instructor then inputs an override that simulates the supply/removal of electrical power to the associated component. The routing of Fire Protection Water is not within the current scope of simulation; however, a Simulator Modification Request (SMR 90-0451) has been generated to correct this item. Training and testing of the knowledge required for breaker/disconnect switch and routing of Fire Protection Water are covered outside of the simulator setting. Once aligned, the system is operated using only one set of procedures which provides steps to be performed for both units. Therefore, after the SMR has been completed, there will be no impact on training.

X. Alternate Boron Injection (LEP-03)
Section 1

The procedural differences between Unit 1 and Unit 2 are related to the dissimilarity between the units for location of equipment that is located outside of the Main Control Room. Training and testing of the knowledge required for this evolution are covered outside of the simulator setting. There is no impact on training.

Appendix B - Abnormal Operating Procedures (AOPs)

I. RPIS FAILURE (AOP-2.2)

The procedural differences between Unit 1 and Unit 2 are related to the 120 VAC UPS and Instrument Power Systems and their unit-specific panel designations. The equipment identified in the procedure is located outside of the Main Control Room and is not physically simulated. The electrical output from the panels is currently simulated, but individual breakers are not. During a training exercise, the operators call the simulator instructor for component verification in accordance with procedural steps. The instructor then deletes an override or malfunction that simulates the supply of electrical power to the associated component or reports the problem cannot be cleared. Once energized/deenergized, the system is operated using only one set of procedures which provides steps to be performed for both units. Training and testing of the knowledge required for this procedural evolution are covered outside of the simulator setting. There is, therefore, no impact on training.

II. MODERATOR TEMPERATURE DECREASE (AOP-3.0)

The procedural differences between Unit 1 and Unit 2 are related to the Select Rod Insert (SRI) function of the Reactor Protection System. This equipment identified in the procedure is located on the Unit 2 Main Control Panel P603 and does not exist on Unit 1. The simulator presently models Unit 2. When using the simulator for Unit 1 training, the instructor overrides the Select Rod Insert switch to prevent its operation. If the function is available for Unit 2 and can be inhibited for Unit 1 operation, there is only minimal impact on training due to the physical location of the push button.

III. TBCCW SYSTEM FAILURE (AOP-17)

Procedural differences related to the TBCCW System Failure are a result of switch labeling disagreements between Service Air Isolation Valves SA-PV-706 1 and 2 for Units 1 and 2. A deficiency exists because the procedure does not agree with the actual reference plant labeling. For Unit 1 these switches are labeled "OFF/ON" and for Unit 2 the switches are labeled "CLOSE/OPEN." Unit 2 switch labels are in disagreement with the procedure. An OI-18 Procedure Change Request has been submitted to the reference plant to change the procedure to match the plant labeling. The functions of each switch position and resultant valve operations are the same for both units. Once the operator has identified these labeling differences, the system is operated using only one set of procedures which provide steps to be performed for both units. This labeling disagreement has minimal training impact and no action will be taken to change the simulator as a result of these differences.

IV. NUCLEAR SERVICE WATER SYSTEM FAILURE (AOP-18)

The procedural differences between Unit 1 and Unit 2 are related to Fire Protection (Well Water) to Service Water Flush Shut-off Valves. Equipment identified in the procedure is located outside of the Main Control Room and is not physically simulated. During a training exercise, the operators call the simulator instructor for manipulation of these components in accordance with procedural steps. Once completed, the system is operated using only one set of procedures which provides steps to be performed for both units. Training and testing of the knowledge required for this evolution are covered outside of the simulator setting. There is no impact on training.

V. PLANT SHUTDOWN FROM OUTSIDE THE CONTROL ROOM (AOP-32)

The main procedural differences between Unit 1 and Unit 2 are related to the dissimilarity between the units for equipment that is located outside of the Main Control Room. The only portion of this procedure that is trained on in the simulator is the Immediate Actions that are required to be performed prior to evacuation of the Control Room. All other actions are performed outside of the Control Room and the simulator is not utilized for this training. Training and testing of the knowledge required for this evolution are covered outside of the simulator setting. There is no impact on training.

An additional procedural difference, that may be trained on in the simulator, is a result of the Bypass Valve physical configuration and high steam flow isolation on Unit 2 when not in RUN Mode. From the simulator instructor station Instructors have the capability to select Unit 1 or Unit 2 mode of operation which allows Bypass Valve operation and MSIV steam flow isolation logic to be activated for the respective unit. There is only one set of AOPs, and it provides steps to be performed for both units; therefore, there is no impact on training.

CONCERN 2

In the performance test abstracts, the descriptions of the baseline data appear to be incomplete.

Over 15 percent of the abstracts have no description of the baseline data. Please provide descriptions of the baseline data for these test abstracts.

Over 60 percent of the abstracts list the "Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision" as the only source of baseline data. Generally, malfunction cause and effects documents describe how the simulator should perform, based on the modeling, when a given malfunction is initiated. These documents are then verified as a product of performance testing. Baseline data should be independent data that can be used to verify that the performance of the simulator adequately matches the expected performance of the reference plant. Please provide augmented descriptions of the baseline data for the test abstracts which listed only the malfunction cause and effects document, or provide a justification for using the malfunction cause and effects document as the only baseline data.

RESPONSE

The 15 percent of abstracts having no description in the "Baseline Data" section are plant surveillance tests conducted on the simulator. Each of these tests is performed utilizing Simulator Test Procedure form STP-MV-700, and the associated reference plant Periodic Test (PT).

The baseline data is considered to be identical to the reference plant PT. A decision was made not to provide descriptions of the baseline data with each abstract to limit redundancy (PTA-MV-740 is included in the replacement package). A limited number of abstracts list the associated PT. This was done if a copy of the PT was obtained from the Plant Vault to support software modeling upgrades and acceptance testing (PTA-MV-720 is included in the replacement package). Additionally, the Acceptance Criteria in STP-MV-700 section 1.4, states, "The intent of the Acceptance Criteria listed in the associated PT has been satisfied."

Simulator Malfunction tests represent the 60 percent of abstracts using the "Malfunction Cause and Effect" (C&E) as the source of baseline data. This was done intentionally to provide a single document that can be utilized by both Simulator Support and Operator Training. The Malfunction C&E was totally rewritten to provide an independent source of data that can be used to verify that the performance of the simulator adequately matches the expected performance of the Reference Plant. The C&E Document was rewritten by two experienced Senior Reactor Operators and then reviewed by the Training System Matter Experts. Reference material utilized for the development of the C&E Document included, but was not limited to the following.

* Task Analysis
* Industry Events
* Brunswick Training Transient Report
* Engineering Best Estimate Data
* Annunciator Panel Procedures (APP)
* Operating Procedures (OP)
* System Descriptions (SD)
* OER, SOER, LER, etc..
* Reference Unit P&ID, Schematic, Logic and Vendor Prints
* Reference Unit Emergency Response Facility Information System (ERFIS)

The C&E malfunctions shown/listed here are included in the replacement package as examples.

* Auto SCRAM Defeat
* Condensate Pump Shaft Shear
* MSIV Closure
* Start-up Level Control Valve Fails Closed
* RHR Service Water Pump Breaker Fault

CONCERN 3

Appendix C, "Simulator Back Panel Plans," indicated that a training value assessment has been completed and that modifications to the simulator resulting from this assessment are scheduled to be completed by July 31, 1993. This schedule is not in accordance with the guidance of ANSI/ANS-3.5-1985, Sections 5.2 and 5.3, which allow for 12 months to review the need for modifications and an additional 12 months to implement modifications. Please provide justification for exception to the guidance of ANSI/ANS-3.5-1985, Sections 5.2 and 5.3, or provide a revised schedule which is in accordance with this guidance.

RESPONSE

Sections 5.2 and 5.3 of ANSI 3.5 ensure simulators are maintained as closely as possible with the reference plant following plant modifications, upgrades, and other improvements. The Back Panel project was not driven by the need for improvement due to an upgrade or improvement to the plant but by a Training Assessment to determine the need for additional training or training in a different setting.

As a result, changes to the simulator as part of this project are considered enhancements to the simulator to support a training need and not a modification based on a plant change. Consequently the two year requirement of the Standard does not apply. The project is currently on schedule.

CONCERN 4

In Appendix A, Item III.E.2.h, on pages 12 and 13, the simulator operating limits are described. However, no testing of the means by which the instructor is to be alerted when these limits are exceeded appears to have been performed. As this is one of the performance criteria in ANSI/ANS-3.5-1985, Section 4.3, such testing should have been conducted in accordance with Section 5.4.1. Please provide performance test abstracts for tests of the simulator operating limits or provide justification for exception to the guidance of ANSI/ANS-3.5-1985, Section 5.4.1, with regard to such tests.

RESPONSE

Our initial evaluation of Section 4.3 did not indicate the need for a simulator operating limits Certification Test. After further evaluation a test has been developed to verify the proper operation of the Operating Limits (STP-OL-001). The abstract has been included in the replacement package.

CONCERN 5

ANSI/ANS-3.5-1985, Section 3.1.2(22), states that failures of process instrumentation, alarms, and control systems shall be included in the malfunctions available on the simulator. Only performance test "STP-MA-126, Reactor Level Transmitter B21-N004A Fails," is listed in the Brunswick certification as fulfilling this guidance. This is a test for the failure of process instrumentation malfunction only. There appear to be no malfunctions for failures of alarms or control systems. Please provide malfunction performance test abstracts for failures of alarms and control systems or provide justification for exception to performing such tests.

RESPONSE

The Brunswick simulator has complete override capability for all annunciators, potentiometers, meters, lights and switches located on the Control Board. The simulator instructor can override any of these items to accomplish a desired dynamic response. If an integrated system failure is desired a malfunction is utilized or a request is submitted to have a new malfunction developed. Task Analysis, Industry Events, Related and/or Reference Plant LER's, etc., will be utilized to define the need for new Malfunctions as necessary to support new and existing training requirements. Presently no malfunctions exist that fit under the heading of "alarm failures." However, each annunciator can be overridden by the Instructor to provide no alarm, false alarm or random actuating alarms. An override is not considered to be a malfunction and in accordance with ANS/ANSI 3.5 does not require testing. Therefore, an exception is being taken to the standard Section 3.1.2 (22) requiring malfunctions for the failure of alarms.

Many of the Simulator Certification Tests will satisfy more than one of the criteria listed in Section 3.1.2. The ANSI to test cross-reference provided as Appendix F did not adequately reflect the tests conducted to satisfy Section 3.1.2 (22). A revised cross-reference is included in the replacement package showing the overlap. Specifically, the following malfunctions included in the Certification will satisfy Section 3.1.2 (22) control system failures and process instrument failures, in addition to other areas previously identified:

042- RBM A FAILS DOWNSCALE
044- ROD MOTION TIMER FAILURE
046- SRM FAILS HIGH
047- SRM FAILS LOW
058- IRM FAILS HIGH
061- IRM FAILS LOW
076- APRM FAILS HIGH
077- APRM FAILS LOW
092- LPRM FAILS HIGH
093- LPRM FAILS LOW
113- ADS LOGIC FAILURE
130- RECIR/APRM FLOW INST. FAILS DOWNSCALE
162- EHC PRESSURE REG. FAILS HIGH
163- EHC PRESSURE REG. FAILS LOW
168- EHC PRESSURE REG. OSCILLATION
191- TURBINE LUBE OIL TEMP. CONTROLLER FAILURE
193- HOTWELL MAKE-UP VALVE FAILS CLOSED
194- HOTWELL REJECT VALVE FAILS CLOSED
227- FW PUMP FLOW CONTROLLER FAILS HIGH
228- FW PUMP FLOW CONTROLLER FAILS LOW
235- FW CONTROL STEAM FLOW TOTALIZER FAILS LOW
237- THREE ELEMENT CONTROLLER FAILS LOW
269- RCIC TURBINE SPEED CONTROL FAILURE
296- RHR SHUTDOWN COOLING HIGH PRESSURE PERMISSIVE
314- GENERATOR HYDROGEN COOLING TCV FAILURE
317- STATOR COOLING TCV FAILURE
330- DIESEL GENERATOR #3 GOVERNOR FAILURE

PERFORMANCE TEST ABSTRACT
PTA-MV-740

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-740 , NSSSS AND FEEDWATER SYSTEM ISOLATION VALVE OPERABILITY TEST

1.2 PT-25.1

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 ALL MSIV's AND ALL F.W. STOPS VALVES

3.0 TESTED OPTIONS

3.1 ENTIRE TEST PERFORMED

4.0 INITIAL CONDITIONS

4.1 COLD SHUTDOWN, IC-1

5.0 TEST DURATION

5.1 40 MINUTES

6.0 BASE LINE DATA

6.1 NONE

7.0 DATE PERFORMED: 1-12-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

ATTACHMENT 1
SIMULATOR TEST PROCEDURE DOCUMENT

STP NUMBER: STP-MV-740

PT NUMBER : PT 25.1

PROCEDURE TITLE: NS3 Main Steam Feedwater and Valve Operability Test

FREQUENCY : ONCE PER CALENDAR YEAR ✓

POST MAINTENANCE TESTING ________

PERFORMANCE DATE: 1/12/91

ATTACHMENT 1(con't)
SIMULATOR TEST PROCEDURE DOCUMENT

1.0 ACCEPTANCE CRITERIA

The simulator test will be considered satisfactory when the following criteria are met:

1.1 The observable changes in simulator parameters correspond in direction to those expected from a best estimate for the simulated transient and does not violate the physical laws of nature. (ANSI/ANS 3.5)

1.2 The simulator shall not fail to cause an alarm or automatic action to occur if the reference plant would have caused an alarm or automatic action. (ANSI/ANS 3.5)

1.3 The simulator shall not cause an alarm or automatic action to occur if the reference plant would not have caused an alarm or automatic action. (ANSI/ANS 3.5)

1.4 The intent of the Acceptance Criteria listed in the associated PT has been satisfied.

2.0 PROCEDURE STEPS

		INITIALS
2.1	Ensure the simulator specific Prerequisites of PT- 25.1 are met.	WBB
2.2	Place/verify the simulator is in the RUN mode.	WBB
2.3	Complete the latest revision of the selected PT.	WBB
2.4	Place/verify the simulator is in the FREEZE mode.	WBB
2.5	Retain the completed copies of the PT and attach to the back of this test.	WBB
2.6	All procedure steps in this test and the PT have been addressed, performed and initialed or marked N/A and any discrepancies noted in Section 3.0, Remarks.	WBB
2.7	Review Section 1.0, Acceptance Criteria, and ensure all criteria has been met or an SSR has been initiated.	

Senior Specialist-Simulator: W. Lewis
(Signature)

ATTACHMENT 1(con't)
SIMULATOR TEST PROCEDURE DOCUMENT

3.0 REMARKS

N1 - Steps 2.4.14 and 2.4.15 were not performed. ~~These~~ Panel P623 is not simulated, fuses are not part of the instructor menu and can not be removed.

4.0 REVIEW AND APPROVAL

	INITIALS	NAME(PRINT)
Test Performed By:	WPG	GEISE

NOTE: Satisfactory completion of this test requires that all Acceptance Criteria be met.

Test has been satisfactorily completed:

Senior Specialist-Simulator: R.W. Eden DATE: 1-19-91

Test has not been satisfactorily completed:

Senior Specialist-Simulator: NA DATE: ______

Test reviewed by:

~~Project Specialist~~ Manager -Simulator: William Shaw DATE: ______

Automated CMS entry made: Susan E Johnson DATE: 1-23-91

DATE COMPLETED 1/12/91

UNIT Sim % POWER ______ GMWE ________

FOREMAN/SUPERVISOR N/A Sim

REASON FOR TEST (check one or more):

____ Routine Surveillance

____ OWP #____________

____ WR/JO #____________

X Other (Explain)

Sim Cert.

CAROLINA POWER & LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT

UNIT 0

PROCEDURE TYPE: PERIODIC TEST (PT)

NUMBER: 25.1

PROCEDURE TITLE: NUCLEAR STEAM SUPPLY SYSTEM MAIN STEAM AND FEEDWATER ISOLATION VALVE OPERABILITY TEST

FREQUENCY:

A. Cold shutdown if not performed in the previous 92 days
B. Prior to returning Containment Isolation Valves B21-F022A(B,C,D), B21-F028A(B,C,D) and B21-F032A(B) to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit
C. STEM VERIFICATION - Each refueling not to exceed two years

REVISION 19

ISI CONCURRENCE: ____________ 11-27-90 Date

APPROVED BY: ____________ 12/10/90 Date
General Manager/
Manager - Operations

1.0 PURPOSE

1.1 This test is performed to determine the operability of the Nuclear Steam Supply System valves in conformance with the requirements specified in the ASME Boiler and Pressure Vessel Code, Section XI, and Technical Specifications Sections 4.0.5, 4.6.3.1, 4.6.3.3, and 4.4.7.

1.2 The following test quantities shall be measured or observed as applicable:

1.2.1 Valve stem travel or disk movement.

1.2.2 Proper operation of the valve remote position indicator (RPI).

1.2.3 Time required for valve stroke.

NOTE:

Closing valve stroke time shall be from when the control switch is placed in the close position until the red position indicating light extinguishes.

1.2.4 Valve fails to proper position on loss of power.

2.0 REFERENCES

2.1 Technical Specifications

2.2 FSAR, Section 6.2

2.3 System Description SD-01, Nuclear Boiler System

2.4 ASME Boiler and Pressure Vessel Code, Section XI

2.5 Engineering Procedure ENP-16, Procedure for Administrative Control of Inservice Inspection Activities

2.6 Engineering Procedure ENP-16.1, IST Pump and Valve Data

2.7 Engineering Procedure ENP-17, Pump and Valve Inservice Testing (IST)

3.0 PREREQUISITES

3.1 No other testing or maintenance is in progress that will adversely affect the performance of this test.

3.2 The unit is in Condition 4 (Cold Shutdown) or Condition 5 (Refuel).

4.0 PRECAUTIONS AND LIMITATIONS

4.1 This test is to be performed only during cold shutdowns which exceed 48 hours.

4.0 PRECAUTIONS AND LIMITATIONS (Continued)

4.2 When performing the loss of power test, the DC solenoid fuse should be replaced first in order to regain MSIV position indication.

4.3 Some steps in this procedure may require independent verification.

5.0 SPECIAL TOOLS AND EQUIPMENT

5.1 A stopwatch with the required data recorded as follows:

5.1.1 Stopwatch identification number N/A

5.1.2 Stopwatch calibration date N/A

5.1.3 Stopwatch calibration due date N/A

6.0 ACCEPTANCE CRITERIA

6.1 This test may be considered satisfactory when the following criteria are met:

NOTE:

Changes in system parameters (i.e., pressure, flow rate, temperature) or an appropriate indicator may be used to verify the required disk movement.

6.1.1 The necessary valve stem or disk movement is established.

6.1.2 The stroke time of the power operated valves does not exceed the maximum allowed and is greater than the minimums allowed.

NOTE:

MSIV stroke times are multiplied by a correction factor of 1.1 to compensate for indicating light settings of 10%/100%, respectively.

6.1.3 The valves with fail-safe actuators fail to proper position upon loss of operator power.

6.1.4 At a refueling frequency, the valve position indicator is verified to accurately reflect valve stem/disk position.

7.0 PROCEDURE STEPS Initials

7.1 Obtain permission from the Shift Foreman to perform this test. WBC

7.2 Ensure that all prerequisites listed in Section 3.0 are met. WBC

7.3 Verify that the required data has been recorded in Section 5.0. WBC

7.0 PROCEDURE STEPS | Initials

NOTE:

Valves with remote position indicators shall be visually observed during each refueling outage to verify that remote valve indications accurately reflect valve operation. Verification of remote position indication should be performed simultaneously with observation of valve stroke time.

7.4 Inboard MSIV Operability Checks

7.4.1 If necessary, open Inboard MSIV A, B21-F022A. WB

7.4.2 Close Inboard MSIV A, B21-F022A, from Panel H12-P601 and record the stroke time in the following space: WB

4.1 seconds.

7.4.3 Multiply the stroke time recorded in step 7.4.2 by 1.1 in the space below and record the corrected stroke time on Test Information Attachment 1. WB

4.1 X 1.1 = 4.5
measured stroke time — corrected stroke time

7.4.4 If necessary, open Inboard MSIV B, B21-F022B. WB

7.4.5 Close Inboard MSIV B, B21-F022B, from Panel H12-P601 and record the stroke time in the following space: WB

3.8 seconds.

7.4.6 Multiply the stroke time recorded in step 7.4.5 by 1.1 in the space below and record the corrected stroke time on Test Information Attachment 1. WB

3.8 X 1.1 = 4.2
measured stroke time — corrected stroke time

7.4.7 If necessary, open Inboard MSIV C, B21-F022C. WB

7.4.8 Close Inboard MSIV C, B21-F022C, from Panel H12-P601 and record the stroke time in the following space: WB

4.1 seconds.

7.0 PROCEDURE STEPS | Initials

7.4.9 Multiply the stroke time recorded in step 7.4.8 by 1.1 in the space below and record the corrected stroke time on Test Information Attachment 1. WPB

4.1 X 1.1 = 4.5
measured stroke time — corrected stroke time

7.4.10 If necessary, open Inboard MSIV D, B21-F022D. WPB

7.4.11 Close Inboard MSIV D, B21-F022D, from Panel H12-P601 and record the stroke time in the following space: WPB

3.7 seconds.

7.4.12 Multiply the stroke time recorded in step 7.4.11 by 1.1 in the space below and record the corrected stroke time on Test Information Attachment 1. WPB

3.7 X 1.1 = 4.1
measured stroke time — corrected stroke time

7.4.13 Open the following valves:

7.4.13.1 Inboard MSIV A, B21-F022A. WPB

7.4.13.2 Inboard MSIV B, B21-F022B. WPB

7.4.13.3 Inboard MSIV C, B21-F022C. WPB

7.4.13.4 Inboard MSIV D, B21-F022D. WPB

NOTE:

Removal of the AC and DC fuses fails power to the MSIV solenoids and the valves will close.

NOTE:

Fuses are labeled top to bottom, F1, F2, F3...etc.

See Remarks * 7.4.14 Remove the following fuses from the solenoid power supplies in Panel H12-P622:

7.4.14.1 Unit 1 only - Fuses F22 and F23 on Terminal AA. N/A Sim Mi

7.4.14.2 Unit 2 only - Fuses F12 and F13 on Terminal AA. N/A

7.0 PROCEDURE STEPS

Initials

NOTE:

The performance of Step 7.4.15 and 7.4.16 should be closely coordinated between the operator replacing the DC fuse and the operator watching MSIV position to ensure that the valves closed on the loss of power test. The MSIVs will start to open when the DC fuse makes contact.

7.4.15 Replace the DC fuse for the solenoid power supply in Panel H12-P622:

7.4.15.1 Unit 1 only - Fuse F22 on Terminal AA. ____/ N/A
Ind.Ver.

7.4.15.2 Unit 2 only - Fuse F12 on Terminal AA. ____/ N/A
Ind.Ver.

7.4.16 Observe that the remote position indicators indicates closed for the following valves: N/A

7.4.16.1 Inboard MSIV A, B21-F022A. N/A

7.4.16.2 Inboard MSIV B, B21-F022B. N/A

7.4.16.3 Inboard MSIV C, B21-F022C. N/A

7.4.16.4 Inboard MSIV D, B21-F022D. N/A

7.4.17 If all valves listed in 7.4.16 indicate closed, document a satisfactory loss of power test for the inboard MSIVs on Test Information Attachment 1. N/A

7.4.18 Replace the AC fuse for the solenoid power supply in Panel H12-P622:

7.4.18.1 Unit 1 only - Fuse F23 on Terminal AA. ____/ N/A
Ind.Ver.

7.4.18.2 Unit 2 only - Fuse F13 on Terminal AA. ____/ N/A
Ind.Ver.

7.0 PROCEDURE STEPS

Initials

7.5 Outboard MSIV Operability Checks

7.5.1 If necessary, open Outboard MSIV A, B21-F028A. WHB

7.5.2 Close Outboard MSIV A, B21-F028A, from Panel H12-P601 and record the stroke time in the following space: WHB

3.8 seconds.

7.5.3 Multiply the stroke time recorded in step 7.5.2 by 1.1 in the space below and record the corrected stroke time on Test Information Attachment 1. WHB

3.8 (measured stroke time) X 1.1 = 4.2 (corrected stroke time)

7.5.4 If necessary, open Outboard MSIV B, B21-F028B. WHB

7.5.5 Close Outboard MSIV B, B21-F028B, from Panel H12-P601 and record the stroke time in the following space: WHB

4.2 seconds.

7.5.6 Multiply the stroke time recorded in step 7.5.5 by 1.1 in the space below and record the corrected stroke time on Test Information Attachment 1. WHB

4.2 (measured stroke time) X 1.1 = 4.6 (corrected stroke time)

7.5.7 If necessary, open Outboard MSIV C, B21-F028C. WHB

7.5.8 Close Outboard MSIV C, B21-F028C, from Panel H12-P601 and record the stroke time in the following space: WHB

4.1 seconds.

7.5.9 Multiply the stroke time recorded in step 7.5.8 by 1.1 in the space below and record the corrected stroke time on Test Information Attachment 1. WHB

4.1 (measured stroke time) X 1.1 = 4.5 (corrected stroke time)

7.5.10 If necessary, open Outboard MSIV D, B21-F028D. WHB

7.0 PROCEDURE STEPS

Initials

7.5.11 Close Outboard MSIV D, B21-F028D, from Panel H12-P601 and record the stroke time in the following space: WB

3.7 seconds

7.5.12 Multiply the stroke time recorded in step 7.5.11 by 1.1 in the space below and record the corrected stroke time on Test Information Attachment 1. WB

3.7 X 1.1 = 4.1

measured stroke time — corrected stroke time

7.5.13 Open the following valves:

7.5.13.1 Outboard MSIV A, B21-F028A. WB

7.5.13.2 Outboard MSIV B, B21-F028B. WB

7.5.13.3 Outboard MSIV C, B21-F028C. WB

7.5.13.4 Outboard MSIV D, B21-F028D. WB

NOTE:

Removal of the AC and DC fuses fails power to the MSIV solenoids and the valves will close.

NOTE:

Fuses are labeled top to bottom F1, F2, F3...etc.

* 7.5.14 Remove the following fuses from the solenoid power supplies in Panel H12-P623:
See Remarks

7.5.14.1 Unit 1 only - Fuses F2 and F12 on Terminal DD. N/A N

7.5.14.2 Unit 2 only - Fuses F2 and F3 on Terminal DD. N/A

NOTE:

The performance of Step 7.5.15 and 7.5.16 should be closely coordinated between the operator replacing the DC fuse and the operator watching MSIV position to ensure that the valves closed on the loss of power test. The MSIVs will start to open when the DC fuse makes contact.

7.5.15 Replace the DC fuse for the solenoid power supply in Panel H12-P623:

7.0 PROCEDURE STEPS

Initials

7.5.15.1 Unit 1 only - Fuse F2 on Terminal DD. ____/ N/A Ind.Ver.

7.5.15.2 Unit 2 only - Fuse F2 on Terminal DD. ____/ N/A Ind.Ver.

7.5.16 Observe that the remote position indicators indicates closed for the following valves: N/A

7.5.16.1 Outboard MSIV A, B21-F028A. N/A

7.5.16.2 Outboard MSIV B, B21-F028B. N/A

7.5.16.3 Outboard MSIV C, B21-F028C. N/A

7.5.16.4 Outboard MSIV D, B21-F028D. N/A

7.5.17 If all valves listed in 7.5.16 indicate closed, document a satisfactory loss of power test for the outboard MSIVs on Test Information Attachment 1. N/A

7.5.18 Replace the AC fuse for the solenoid power supply in Panel H12-P623:

7.5.18.1 Unit 1 only - Fuse F12 on Terminal DD. ____/ N/A Ind.Ver.

7.5.18.2 Unit 2 only - Fuse F3 on Terminal DD. ____/ N/A Ind.Ver.

7.5.19 Return the inboard and outboard MSIVs to the position required by plant conditions. Record valve positions on Test Attachment 2 by circling the final restored position. WB6

7.0 PROCEDURE STEPS | Initials

7.6 Feedwater Line Isolation Valve Operability Checks

7.6.1 Open the Feedwater Line A Isolation Valve, B21-F032A. LWB

7.6.2 Close the Feedwater Line A Isolation Valve, B21-F032A, and document the valve stroke time on Test Information Attachment 1. LWB

7.6.3 Open the Feedwater Line B Isolation Valve, B21-F032B. LWB

7.6.4 Close the Feedwater Line B Isolation Valve, B21-F032B, and document the valve stroke time on Test Information Attachment 1. LWB

7.6.5 Verify that the required information has been recorded on the cover page. LWB

7.6.6 Notify the Shift Foreman when this test is complete or found to be unsatisfactory. N/A

CERTIFICATION AND REVIEW FORM

PT-25.1
Nuclear Steam Supply System Main Steam and Feedwater Isolation Valve Operability Test

General Comments and Recommendations step 7.4.14 and step 7.4.15 were not performed. These functions are not simulated.

	Initials	Name (Print)
Test procedure performed by:	WRG	Geise

Exceptions to satisfactory performance: None

Corrective action required: None

Test procedure has been satisfactorily completed:

Foreman N/A
Signature Date

Test procedure has not been satisfactorily completed:

Foreman N/A
Signature Date

Test has been reviewed by:

Supervisor N/A
Signature Date

TEST INFORMATION ATTACHMENT 1
NUCLEAR STEAM SUPPLY SYSTEM VALVES

Unit Simulator Date 1/12/91

ITEM NO.	VALVE NUMBER	PRETEST POSITION	FULL STROKE VERIFICATION OF TRAVEL BY*			FULL STROKE TIME (SECONDS)		LOSS OF POWER TEST	POWER RESTORED	POSTTEST POSITION	REMARKS	ACCEPTANCE CRITERIA (secs.)	
			STEM	IND. LIGHTS	OTHER	OPEN	CLOSED					Unit 1	Unit 2
1	B21-F022A	O,C	N/A	WB	N/A	N/A	4.5	N/A	N/A	O,C	N/A	3-5	3-5
2	B21-F022B	O,C	N/A	WB	N/A	N/A	4.2	N/A	N/A	O,C	N/A	3-5	3-5
3	B21-F022C	O,C	N/A	WB	N/A	N/A	4.5	N/A	N/A	O,C	N/A	3-5	3-5
4	B21-F022D	O,C	N/A	WB	N/A	N/A	4.1	N/A	N/A	O,C	N/A	3-5	3-5
5	B21-F028A	O,C	N/A	WB	N/A	N/A	4.2	N/A	N/A	O,C	N/A	3-5	3-5
6	B21-F028B	O,C	N/A	WB	N/A	N/A	4.6	N/A	N/A	O,C	N/A	3-5	3-5
7	B21-F028C	O,C	N/A	WB	N/A	N/A	4.5	N/A	N/A	O,C	N/A	3-5	3-5
8	B21-F028D	O,C	N/A	WB	N/A	N/A	4.1	N/A	N/A	O,C	N/A	3-5	3-5
9	B21-F032A	C	N/A	WB	N/A	N/A	129	N/A	N/A	C	N/A	190	200
10	B21-F032B	C	N/A	WB	N/A	N/A	127	N/A	N/A	C	N/A	190	205

NOTES: All spaces next to valve number shall be filled in with an appropriate entry, initials, or NA.

*Verify valve operation by observing stem travel and valve position indicator lights during each refueling outage.

Performed by (Signature) WBlue Date 1/13/91

Performed by (Signature) N/A - Sim. Date

Reviewed, ISI Group (Signature) N/A - Sim Date

ATTACHMENT 2

MSIV Test Restoration Record

UNIT Simulator

Circle restored position for each MSIV:

Valve Number	Position	Initials
B21-F022A	Open/Closed	[illegible]
B21-F022B	Open/Closed	[illegible]
B21-F022C	Open/Closed	[illegible]
B21-F022D	Open/Closed	[illegible]
B21-F028A	Open/Closed	[illegible]
B21-F028B	Open/Closed	[illegible]
B21-F028C	Open/Closed	[illegible]
B21-F028D	Open/Closed	[illegible]

PERFORMANCE TEST ABSTRACT
PTA-MV-720

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-720 , HPCI System 165 PSIG Flow Test

1.2 PT- 09.3

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 None

3.0 TESTED OPTIONS

3.1 None

4.0 INITIAL CONDITIONS

4.1 IC - 21 160 psig Rx S/U in progress

5.0 TEST DURATION

5.1 1.5 hours

6.0 BASE LINE DATA

6.1 P.T. 9.3 run on Unit 2 dated 3-13-90

7.0 DATE PERFORMED: 1-6-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

ATTACHMENT 1
SIMULATOR TEST PROCEDURE DOCUMENT

STP NUMBER: STP-MV-720

PT NUMBER : OPT-09.3

PROCEDURE TITLE: HPCI System 165 PSIG Flow Test

FREQUENCY : ONCE PER CALENDAR YEAR x

POST MAINTENANCE TESTING x

1-6-91

PERFORMANCE DATE: ~~12/7/90~~ 1-6-91

ATTACHMENT 1(con't)
SIMULATOR TEST PROCEDURE DOCUMENT

1.0 ACCEPTANCE CRITERIA

The simulator test will be considered satisfactory when the following criteria are met:

1.1 The observable changes in simulator parameters correspond in direction to those expected from a best estimate for the simulated transient and does not violate the physical laws of nature. (ANSI/ANS 3.5)

1.2 The simulator shall not fail to cause an alarm or automatic action to occur if the reference plant would have caused an alarm or automatic action. (ANSI/ANS 3.5)

1.3 The simulator shall not cause an alarm or automatic action to occur if the reference plant would not have caused an alarm or automatic action. (ANSI/ANS 3.5)

1.4 The intent of the Acceptance Criteria listed in the associated PT has been satisfied.

2.0 PROCEDURE STEPS

		INITIALS
2.1	Ensure the simulator specific Prerequisites of PT- 09.3 are met.	EJ
2.2	Place/verify the simulator is in the RUN mode.	Ed
2.3	Complete the latest revision of the selected PT.	Ed
2.4	Place/verify the simulator is in the FREEZE mode.	Ed
2.5	Retain the completed copies of the PT and attach to the back of this test.	Ed
2.6	All procedure steps in this test and the PT have been addressed, performed and initialed or marked N/A and any discrepancies noted in Section 3.0, Remarks.	Ed
2.7	Review Section 1.0, Acceptance Criteria, and ensure all criteria has been met or an SSR has been initiated.	

Senior Specialist-Simulator: E. [signature]
(Signature)

ATTACHMENT 1(con't)
SIMULATOR TEST PROCEDURE DOCUMENT

3.0 REMARKS

SAT

Performed for Once per Calendar Year Frequency and for Post Maintenance Testing of SSR 90-0145 and CMR 89-0180

4.0 REVIEW AND APPROVAL

	INITIALS	NAME(PRINT)
Test Performed By:	ED	E HAWKINS

NOTE: Satisfactory completion of this test requires that all Acceptance Criteria be met.

ED Test has been satisfactorily completed:

Senior Specialist-Simulator: [signature] DATE: 1/16/91

Test has not been satisfactorily completed:

Senior Specialist-Simulator: NA DATE: ______

Test reviewed by:

Project Specialist-Simulator: William [signature] DATE: 1/19/91

Automated CMS entry made: Susan E Johnson DATE: 1/23/91

DATE COMPLETED 1-6-91

UNIT Sino % POWER 8 GMWE Ø

FOREMAN/SUPERVISOR N/A

REASON FOR TEST (check one or more):

___ Routine Surveillance

___ OWP # ___

___ WR/JO # ___

✓ Other (Explain)

STP-MV-720

SSR 90-0145

SMR 89-0180

CAROLINA POWER & LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT

UNIT 0

PROCEDURE TYPE:	PERIODIC TEST (PT)
NUMBER:	09.3
PROCEDURE TITLE:	HPCI SYSTEM - 165 PSIG FLOW TEST
FREQUENCY:	At least once every 18 months

REVISION 30

APPROVED BY: C H Blackmon 1-10-90

General Manager/
Manager - Operations

Date

1.0 PURPOSE

1.0.1 This test is performed to determine the operability of the High Pressure Coolant Injection System in conformance with the requirements specified in Technical Specifications Section 4.5.1.C.2.

1.0.2 It also satisfies the requirements of Technical Specification 4.6.2.1.b.1 to monitor suppression pool temperature at least every five minutes while adding heat.

2.0 REFERENCES

2.0.1 Technical Specifications

2.0.2 FSAR

2.0.3 Operating Procedure OP-10, Standby Gas Treatment System

2.0.4 Operating Procedure OP-17, RHR System

2.0.5 Operating Procedure OP-19, High Pressure Coolant Injection System

2.0.6 Operating Procedure OP-51, DC Electrical System

2.0.7 System Description SD-19, High Pressure Coolant Injection System

2.0.8 Periodic Test PT-02.3.1, Suppression Pool to Drywell Vacuum Breaker Operability Test

2.0.9 CP&L Response to NRC Bulletin 88-04, "Potential Safety-Related Pump Loss"

3.0 PREREQUISITES

3.0.1 No other testing or maintenance is in progress that will adversely affect the performance of this test.

3.0.2 The HPCI System is in standby per OP-19, High Pressure Coolant Injection System.

3.0.3 The station battery chargers are in operation per OP-51, DC Electrical System.

3.0.4 The suppression chamber level is between -31 inches and -27 inches.

3.0.5 The unit is in Condition 2 (Startup or Hot Standby) with HPCI turbine inlet steam pressure between 150 psig and 180 psig.

4.0 PRECAUTIONS AND LIMITATIONS

4.0.1 Oil temperature leaving the turbine bearings should not exceed 160°F. Oil temperature rise across any turbine bearing should not exceed 50°F.

NOTE:

The maximum allowable average suppression pool temperature during testing which adds heat to the suppression pool is 105°F.

4.0.2 If average suppression pool temperature exceeds 110°F, the reactor shall be Scrammed.

4.0.3 A second operator is necessary to monitor suppression pool level when evolutions are in progress that have the potential to change the level.

4.0.4 Both RHR loops may be required for suppression pool cooling if average cooling water inlet temperature is greater than 80°F.

4.0.5 The steam lines to and from the turbine must be completely drained prior to any turbine operation.

4.0.6 At no time during the test activity shall the water from the suppression pool be injected into the reactor vessel.

4.0.7 When the HPCI turbine is running, operating time at or below 3000 rpm must be minimized to prevent cycling of auxiliary oil pump and tripping breaker on thermals.

4.0.8 Duration of operation through the minimum flow bypass should be
R9 as short as possible to minimize increase in suppression chamber level.

4.0.9 During HPCI testing, the GEMAC flow controller should remain in AUTO, with the setpoint tape at 4300 gpm.

4.0.10 The following annunciators may alarm during the performance of this test:

4.0.10.1 HPCI TURB TRIP (A-01 3-1)

4.0.10.2 HPCI TURB TRIP SOL ENER (A-01 4-1)

4.0.11 DC Limitorque valves are limited to a duty cycle of three starts in 5 minutes followed by a 50-minute cooldown period. Any valve actuation whether in the form of a throttle action, a continuous stroke, or an auto-actuated movement is considered a motor start. Adherence to the duty cycle requirements will minimize dc valve motor failures.

4.0 PRECAUTIONS AND LIMITATIONS

4.0.12 Some steps of this test require independent verification.

4.0.13 Ensure sufficient bypass capacity (Unit 1 ≥ 1.5 bypass valves, Unit 2 ≥ 1 bypass valve) is available to prevent reducing reactor pressure while HPCI is being tested.

5.0 SPECIAL TOOLS AND EQUIPMENT

5.0.1 Vent and drain rig

5.0.2 Fill in applicable calibration data.

5.0.2.1 Suction Pressure

RTGB	E41-PI-R606	Calibration Date	N/A
	E41-PI-R606	Calibration Due Date	N/A
Local	E41-PI-R004	Calibration Date	N/A
	E41-PI-R004	Calibration Due Date	N/A
	E41-PT-N019	Calibration Date	N/A
	E41-PT-N019	Calibration Due Date	N/A

5.0.2.2 Disch Pressure

RTGB	E41-PI-R601	Calibration Date	N/A
	E41-PI-R601	Calibration Due Date	N/A
Local	E41-PI-R001	Calibration Date	N/A
	E41-PI-R001	Calibration Due Date	N/A
	E41-PT-N009	Calibration Date	N/A
	E41-PT-N009	Calibration Due Date	N/A

5.0.2.3 Steam Supply Pressure

RTGB	E41-PI-R602	Calibration Date	N/A
	E41-PI-R602	Calibration Due Date	N/A
Local	E41-PI-R003	Calibration Date	N/A
	E41-PI-R003	Calibration Due Date	N/A
	E41-PT-N013	Calibration Date	N/A
	E41-PT-N013	Calibration Due Date	N/A

5.0.2.4 Rx Pressure Wide Range

RTGB	C32-LPR-R608	Calibration Date	N/A
	C32-LPR-R608	Calibration Due Date	N/A
	C32-PI-R605	Calibration Date	N/A
	C32-PI-R605	Calibration Due Date	N/A

5.0 SPECIAL TOOLS AND EQUIPMENT

Local	C32-PT-N005A	Calibration Date	N/A
	C32-PT-N005A	Calibration Due Date	N/A
	C32-PT-N005B	Calibration Date	N/A
	C32-PT-N005B	Calibration Due Date	N/A

5.0.2.5 Flow

RTGB	E41-FY-K601	Calibration Date	N/A
	E41-FY-K601	Calibration Due Date	N/A
	E41-FIC-R600	Calibration Date	N/A
	E41-FIC-R600	Calibration Due Date	N/A
Local	E41-FT-N008	Calibration Date	N/A
	E41-FT-N008	Calibration Due Date	N/A

5.0.2.6 Keepfill pressure

Local	E41-PI-3019	Calibration Date	N/A
	E41-PI-3019	Calibration Due Date	N/A

5.0.3 Suitable test gauges may be used to obtain data in place of any installed instrument. If used note:

ID No. N/A
Range of Instrument N/A
Calibration Date N/A
Calibration Due Date N/A
Parameter being measured N/A

6.0 ACCEPTANCE CRITERIA

6.0.1 This test may be considered satisfactory when the following criterion is:

NOTE:

The pump discharge piping static head and frictional losses are taken into account by the addition of increased discharge pressure requirements above reactor pressure.

6.0.1.1 The HPCI pump develops a flow of 4250 gpm or greater with a pump discharge pressure of 220 psig or more when turbine steam inlet pressure is between 150 psig and 180 psig.

7.0 PROCEDURE STEPS

Initials

7.0.1 Obtain permission from the Shift Foreman to perform this test. Ed

7.0 PROCEDURE STEPS

		Initials
7.0.2	Shift Foreman to notify Health Physics of the estimated time of HPCI turbine operation.	N/A
7.0.3	Ensure that the prerequisites listed in Section 3.0 are met.	EL

7.1 Pump Operability Test

7.1.1	Observe that the HPCI pump piping pressure is 25 psig or greater on Pressure Indicator E41-PI-3019 (Local).	EL N-1

NOTE:

HPCI pump piping pressure of 25 psig or greater indicates operation of the keepfill station. If air is observed in the discharge piping, a WR/JO should be prepared to correct any problems.

7.1.2	Connect a vent and drain rig to the HPCI Injection Line Outboard Vent Valve, E41-V54.	N/A
7.1.3	Open HPCI Injection Line Outboard Vent Valve, E41-V54.	N/A
7.1.4	Throttle open HPCI Injection Line Inboard Vent Valve, E41-V53, and observe the water flow.	N/A
7.1.5	When no air is observed, close HPCI Injection Line Inboard Vent Valve, E41-V53.	N/A / N/A Ind. Ver.
7.1.6	Close HPCI Injection Line Outboard Vent Valve, E41-V54.	N/A / N/A Ind. Ver.
7.1.7	If desired, remove the vent and drain rig from HPCI Injection Line Outboard Vent Valve, E41-V54.	N/A
7.1.8	Place the SBGT System in operation per OP-10, Standby Gas Treatment System, and proceed with Step 7.1.9 of this test.	EL
7.1.9	Open Primary Containment Post LOCA Vent Valve, SGT-V8.	EL
7.1.10	Open Primary Containment Post LOCA Vent Valve, SGT-V9.	EL
7.1.11	Start the HPCI auxiliary oil pump and verify proper lubricant oil level.	ED N-3
7.1.12	Depress the remote HPCI turbine trip button and observe that HPCI Turbine Stop Valve, E41-V8, closes.	EL
7.1.13	Observe that HPCI Turbine Stop Valve, E41-V8, opens when the turbine trip button is released.	EL

7.0 PROCEDURE STEPS

Initials

****

CAUTION

Both RHR loops may be required for suppression pool cooling if average cooling water inlet temperature exceeds 80°F.

****

7.1.14 Verify or place the RHR System in suppression pool cooling per OP-17 and proceed with Step 7.1.15. EL

7.1.15 Verify that the steam supply piping is free of condensate buildup by performing the following steps: EL

7.1.15.1 Open or verify open Supply Drain Pot Inboard Drain Valve, E41-F028. EL

7.1.15.2 Open or verify open Supply Drain Pot Outboard Drain Valve, E41-F029. EL

7.1.15.3 Open the Supply Drain Pot Drain Bypass Valve, E41-F054. EL

7.1.15.4 Verify HPCI TURB IN STM LN DR POT LVL HI (A-01 6-2) clears. EL

7.1.15.5 Close the Supply Drain Pot Drain Bypass Valve, E41-F054. EL

7.1.16 Stop the auxiliary oil pump and place the control switch in AUTO. EL

7.1.17 Open Cooling Water Supply Valve, E41-F059. EL

7.1.18 Start the barometric condenser vacuum pump. EL

7.1.19 Open Redundant Isolation To Condensate Storage Tank Valve, E41-F011. EL

7.1.20 Station an operator to observe the HPCI discharge piping for excessive motion and/or water hammer. N/A

NOTE:

Minimize operation of HPCI below 3000 rpm to minimize cycling of auxiliary oil pump which could trip on thermals.

7.0 PROCEDURE STEPS

Initials

****

CAUTION

A second operator is necessary to monitor suppression pool level.

CAUTION

DC Limitorque valves are limited to a duty cycle of three starts in 5 minutes followed by a 50-minute cooldown period. Any valve actuation whether in the form of a throttle action, a continuous stroke, or an auto-actuated movement is considered a motor start. Adherence to the duty cycle requirements will minimize dc valve motor failures.

****

NOTE:

Suppression pool bulk average temperatures can be monitored using process computer points G050 and G051.

****

CAUTION

If the suppression pool average temperature reaches 104°F, testing which adds heat should be terminated. If the suppression pool average temperature reaches 110°F, the reactor should be manually Scrammed to comply with technical specifications.

****

7.1.21 Open Turbine Steam Supply Valve, E41-F001. Ed

7.1.22 Start the HPCI auxiliary oil pump and leave the control switch in the START position. Ed

7.1.23 Verify that the following actions occur:

7.1.23.1 Turbine Stop Valve, E41-V8, opens. Ed

7.1.23.2 Turbine Control Valve, E41-V9, opens. Ed

7.1.23.3 The HPCI turbine accelerates to greater than 1000 rpm. Ed

7.1.23.4 Minimum Flow Bypass To Suppression Pool Valve, E41-F012, opens. Ed

NOTE:

Depending on the number of valve motor starts, consideration may be given to manually throttling Bypass to Condensate Storage Tank Valve, E41-F008.

7.1.24 Throttle the Bypass To Condensate Storage Tank Valve, E41-F008, or increase turbine speed to establish HPCI discharge pressure of 220 psig or more at a flow rate greater than or equal to 4300 gpm. Ed

7.0 PROCEDURE STEPS | Required | Actual

7.1.25 Monitor suppression pool temperatures at intervals of five minutes or less to verify that the average suppression pool temperature is less than 104°F and record the maximum average temperature achieved during this time in the space below: EL

90 °F.

NOTE:

The pump discharge piping head and frictional losses are taken into account by the addition of increased discharge pressure above reactor pressure (220 psig vs. 165 psig).

7.1.26 Open the instrument isolation valves to the following instruments if used to obtain data:

7.1.26.1 E41-PI-R004 N/A

7.1.26.2 E41-PI-R001 N/A

7.1.26.3 E41-PI-R003 N/A

7.1.27 Record the following data in the designated spaces and circle indicator used to obtain data. N/A

		Required	Actual
7.1.27.1	HPCI pump suction pressure. ~~E41-PI-R004 (Local)~~ or E41-PI-R606 (RTGB) or Suitable test gauge	greater than 15 inches of Hg vacuum	95 psig
7.1.27.2	HPCI pump discharge pressure. ~~E41-PI-R001 (Local)~~ or E41-PI-R601 (RTGB) or Suitable test gauge	220 psig or more	510 psig
7.1.27.3	Reactor steam pressure. C32-LPR-R608 or C32-PI-R605 or Suitable test gauge	N/A	160 psig
7.1.27.4	HPCI turbine steam inlet pressure. ~~E41-PI-R003~~ (Local) or E41-PI-R602 (RTGB)	150 to 180 psig	155 psig
7.1.27.5	HPCI pump flow. E41-FI-R600	greater than or equal to 4300 gpm	4300 gpm

7.0 PROCEDURE STEPS

Initials

7.1.28 Close the instrument isolation valves to the following instruments if opened:

Initials

7.1.28.1 E41-PI-R004 N/A

7.1.28.2 E41-PI-R001 N/A

7.1.28.3 E41-PI-R003 N/A

7.1.29 Stop the HPCI System as follows:

****

CAUTION:

The turbine trip button must be depressed until F001 is fully shut.

****

7.1.29.1 Reduce turbine speed to approximately 3000 rpm and manually trip the turbine by depressing the Turbine Trip push button. El

7.1.29.2 Close HPCI Turbine Steam Supply Valve, E41-F001. El

7.1.29.3 After the turbine stops, close Bypass To Condensate Storage Tank Valve, E41-F008. El

7.1.29.4 Close Redundant Isolation To Condensate Storage Tank Valve, E41-F011. El

7.1.29.5 Close Cooling Water Supply Valve, E41-F059. El

7.1.30 When 15 minutes have elapsed since turbine trip, stop the barometric condenser vacuum pump and place the control switch to AUTO. El

7.1.31 When the temperature rise across the HPCI bearings is minimal, stop the auxiliary oil pump and return the control switch to AUTO. El

7.1.32 Return the SBGT System to standby per OP-10, Standby Gas Treatment System, and proceed with Step 7.1.33. El

7.1.33 If desired, stop the suppression pool coolig mode of RHR per OP-17, RHR System, and proceed with Step 7.2.1. El

7.2 System Restoration

7.2.1 Perform PT-02.3.1, Suppression Chamber to Drywell Vacuum Breakers Operability Test. N-3 ~~N-6~~ El 11/6/91

7.0 PROCEDURE STEPS — Initials

7.2.2 Verify that HPCI Flow Controller E41-FIC-R600 is in AUTO and set at 4300 gpm. — ED / N/A Ind. Ver.

7.2.3 Verify that the following HPCI pump control switches are in AUTO:

7.2.3.1 Auxiliary oil pump. — ED / N/A Ind. Ver.

7.2.3.2 Barometric condenser vacuum pump. — ED / N/A Ind. Ver.

7.2.3.3 Barometric condenser condensate pump. — ED / N/A Ind. Ver.

7.2.4 Verify that the valves listed in Table 1 are in the required position. — ED / N/A Ind. Ver.

7.2.5 Verify that the required information has been recorded on the cover page. — ED

7.2.6 Notify the Shift Foreman when this test is complete or found to be unsatisfactory. — ED

TABLE 1
HPCI SYSTEM VALVE LINEUP

Valve No.	Valve Description	Position	Initials Ind. Ver.
E41-V9	Turbine Control Valve	CLOSED	Ed / NA
E41-V8	Turbine Stop Valve	CLOSED	Ed /
E41-F025	Condensate Pump Discharge Outboard Drain Valve	OPEN	Ed /
E41-F026	Condensate Pump Discharge Inboard Drain Valve	CLOSED	Ed /
E41-F028	Supply Drain Pot Inboard Drain Valve	OPEN	Ed /
E41-F029	Supply Drain Pot Outboard Drain Valve	OPEN	Ed /
E41-F012	Minimum Flow Bypass To Suppression Pool Valve	CLOSED	Ed /
E41-F054	Supply Drain Pot Drain Bypass Valve	CLOSED	Ed /
E41-F079	Turbine Exhaust Vacuum Breaker Valve	OPEN	Ed /
E41-F075	Turbine Exhaust Vacuum Breaker Valve	OPEN	Ed /
E41-F004	Condensate Storage Tank Suction Valve	OPEN	Ed /
E41-F053	Exhaust Drain Pot Drain Bypass Valve	CLOSED	Ed /
E41-F006	HPCI Injection Valve	CLOSED	Ed /
E41-F007	HPCI Pump Discharge Valve	OPEN	Ed /
E41-F002	Steam Supply Inboard Isolation Valve	OPEN	Ed /
E41-F003	Steam Supply Outboard Isolation Valve	OPEN	Ed /
E41-F001	HPCI Turbine Steam Supply Valve	CLOSED	Ed /
E41-F059	Cooling Water Supply Valve	CLOSED	Ed /
E41-F008	Bypass To Condensate Storage Tank Valve	CLOSED	Ed /
E41-F011	Redundant Isolation To Condensate Storage Tank Valve	CLOSED	Ed /
E41-F041	Suppression Pool Suction Valve	CLOSED	Ed /
E41-F042	Suppression Pool Suction Valve	CLOSED	Ed / NA

CERTIFICATION AND REVIEW FORM

PT-09.3
HPCI System Operability Test

General Comments and Recommendations N-1 not simulated used Reach [illegible]
N-2 level not simulated for observation N-3 not required for the purpose
of this test

	Initials	Name (Print)
Test procedure performed by	Eh	E. HAWKINS

Exceptions to satisfactory performance NONE

Corrective action required NONE

Test procedure has been satisfactorily completed

Foreman [signature] Signature — Date 1-6-91

Test procedure has not been satisfactorily completed

Foreman N/A Signature — Date

Test has been reviewed by

Supervisor N/A Signature — Date N/A

(Final Page)

RECEIVED

9004100238

DATE COMPLETED 3-13-90

UNIT 2 % POWER 1 GMWE Ø

FOREMAN/SUPERVISOR M. SCHALL / O. LASELLE

REASON FOR TEST (check one or more):

X Routine Surveillance

___ OWP # __________

___ WR/JO # __________

___ Other (Explain)

CAROLINA POWER & LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT

UNIT 0

PROCEDURE TYPE:	PERIODIC TEST (PT)
NUMBER:	09.[illegible]
PROCEDURE TITLE:	HP[illegible] SYSTEM - 165 PSIG FLOW TEST
FREQUENCY:	At [illegible]ast once every 18 months

REV[illegible] 30

APPROVED BY: C. H. Blackmon Jr. 1-10-90

General Manager/ Date

Manager - Operations

1.0 PURPOSE

1.0.1 This test is performed to determine the operability of the High Pressure Coolant Injection System in conformance with the requirements specified in Technical Specifications Section 4.5.1.C.2.

1.0.2 It also satisfies the requirements of Technical Specification 4.6.2.1.b.1 to monitor suppression pool temperature at least every five minutes while adding heat.

2.0 REFERENCES

2.0.1 Technical Specifications

2.0.2 FSAR

2.0.3 Operating Procedure OP-10, Standby Gas Treatment System

2.0.4 Operating Procedure OP-17, RHR System

2.0.5 Operating Procedure OP-19, High Pressure Coolant Injection System

2.0.6 Operating Procedure OP-51, DC Electrical System

2.0.7 System Description SD-19, High Pressure Coolant Injection System

2.0.8 Periodic Test PT-02.3.1, Suppression Pool To Drywell Vacuum Breaker Operability Test

2.0.9 CP&L Response to NRC Bulletin 88-04, "Potential Safety-Related Pump Loss"

3.0 PREREQUISITES

3.0.1 No other testing or maintenance is in progress that will adversely affect the performance of this test.

3.0.2 The HPCI System is in standby per OP-19, High Pressure Coolant Injection System.

3.0.3 The station battery chargers are in operation per OP-51, DC Electrical System.

3.0.4 The suppression chamber level is between -31 inches and -27 inches.

3.0.5 The unit is in Condition 2 (Startup or Hot Standby) with HPCI turbine inlet steam pressure between 150 psig and 180 psig.

4.0 PRECAUTIONS AND LIMITATIONS

4.0.1 Oil temperature leaving the turbine bearings should not exceed 160°F. Oil temperature rise across any turbine bearing should not exceed 50°F.

NOTE:

The maximum allowable average suppression pool temperature during testing which adds heat to the suppression pool is 105°F.

4.0.2 If average suppression pool temperature exceeds 110°F, the reactor shall be Scrammed.

4.0.3 A second operator is necessary to monitor suppression pool level when evolutions are in progress that have the potential to change the level.

4.0.4 Both RHR loops may be required for suppression pool cooling if average cooling water inlet temperature is greater than 80°F.

4.0.5 The steam lines to and from the turbine must be completely drained prior to any turbine operation.

4.0.6 At no time during the test activity shall the water from the suppression pool be injected into the reactor vessel.

4.0.7 When the HPCI turbine is running, operating time at or below 3000 rpm must be minimized to prevent cycling of auxiliary oil pump and tripping breaker on thermals.

4.0.8 Duration of operation through the minimum flow bypass should be
R9 as short as possible to minimize increase in suppression chamber level.

4.0.9 During HPCI testing, the GEMAC flow controller should remain in AUTO, with the setpoint tape at 4300 gpm.

4.0.10 The following annunciators may alarm during the performance of this test:

4.0.10.1 HPCI TURB TRIP (A-01 3-1)

4.0.10.2 HPCI TURB TRIP SOL ENER (A-01 4-1)

4.0.11 DC Limitorque valves are limited to a duty cycle of three starts in 5 minutes followed by a 30-minute cooldown period. Any valve actuation whether in the form of a throttle action, a continuous stroke, or an auto-actuated movement is considered a motor start. Adherence to the duty cycle requirements will minimize dc valve motor failures.

4.0 PRECAUTIONS AND LIMITATIONS

4.0.12 Some steps of this test require independent verification.

4.0.13 Ensure sufficient bypass capacity (Unit 1 ≥ 1.5 bypass valves, Unit 2 ≥ 1 bypass valve) is available to prevent reducing reactor pressure while HPCI is being tested.

5.0 SPECIAL TOOLS AND EQUIPMENT

5.0.1 Vent and drain rig

5.0.2 Fill in applicable calibration data.

5.0.2.1 Suction Pressure

RTGB	E41-PI-R606	Calibration Date	1-8-90
	E41-PI-R606	Calibration Due Date	7-9-90
Local	E41-PI-R004	Calibration Date	6-5-89
	E41-PI-R004	Calibration Due Date	6-4-90
	E41-PT-N019	Calibration Date	5-15-89
	E41-PT-N019	Calibration Due Date	3-19-91

5.0.2.2 Disch Pressure

RTGB	E41-PI-R601	Calibration Date	11-20-89
	E41-PI-R601	Calibration Due Date	5-21-90
Local	E41-PI-R001	Calibration Date	6-5-89
	E41-PI-R001	Calibration Due Date	6-4-90
	E41-PT-N009	Calibration Date	11-20-89
	E41-PT-N009	Calibration Due Date	~~[illegible]~~ 5-21-90 3-12-90

5.0.2.3 Steam Supply Pressure

RTGB	E41-PI-R602	Calibration Date	11-20-89
	E41-PI-R602	Calibration Due Date	5-21-90
Local	E41-PI-R003	Calibration Date	6-5-89
	E41-PI-R003	Calibration Due Date	6-4-90
	E41-PT-N013	Calibration Date	11-20-89
	E41-PT-N013	Calibration Due Date	5-21-90

5.0.2.4 Rx Pressure Wide Range

RTGB	C32-LPR-R608	Calibration Date	9-4-89
	C32-LPR-R608	Calibration Due Date	3-5-90 (OVERDUE 4-19-9[illegible]
	C32-PI-R605	Calibration Date	11-15-89
	C32-PI-R605	Calibration Due Date	1-27-91

5.0 SPECIAL TOOLS AND EQUIPMENT

Local	C32-PT-N005A	Calibration Date	1-3-90
	C32-PT-N005A	Calibration Due Date	1-27-91
	C32-PT-N005B	Calibration Date	11-14-89
	C32-PT-N005B	Calibration Due Date	1-27-91

5.0.2.5 Flow

RTGB	E41-FY-K601	Calibration Date	9-15-89
	E41-FY-K601	Calibration Due Date	9-17-90
	E41-FIC-R600	Calibration Date	9-18-89
	E41-FIC-R600	Calibration Due Date	9-17-90
Local	E41-FT-N008	Calibration Date	6-5-89
	E41-FT-N008	Calibration Due Date	6-4-90

5.0.2.6 Keepfill pressure

Local	E41-PI-3019	Calibration Date	6-5-89
	E41-PI-3019	Calibration Due Date	6-4-90

5.0.3 Suitable test gauges may be used to obtain data in place of any installed instrument. If used note:

ID No. NA
Range of Instrument NA
Calibration Date NA
Calibration Due Date NA
Parameter being measured NA

6.0 ACCEPTANCE CRITERIA

6.0.1 This test may be considered satisfactory when the following criterion is:

NOTE:

The pump discharge piping static head and frictional losses are taken into account by the addition of increased discharge pressure requirements above reactor pressure.

6.0.1.1 The HPCI pump develops a flow of 4250 gpm or greater with a pump discharge pressure of 220 psig or more when turbine steam inlet pressure is between 150 psig and 200 psig.

7.0 PROCEDURE STEPS

Initials

7.0.1 Obtain permission from the Shift Foreman to perform this test.

79 4625 1993

7.0 PROCEDURE STEPS

Initials

7.0.2 Shift Foreman to notify Health Physics of the estimated time of HPCI turbine operation.

7.0.3 Ensure that the prerequisites listed in Section 3.0 are met.

7.1 Pump Operability Test

7.1.1 Observe that the HPCI pump piping pressure is 25 psig or greater on Pressure Indicator E41-PI-3019 (Local).

NOTE:

HPCI pump piping pressure of 25 psig or greater indicates operation of the keepfill station. If air is observed in the discharge piping, a WR/JO should be prepared to correct any problems.

7.1.2 Connect a vent and drain rig to the HPCI Injection Line Outboard Vent Valve, E41-V54.

7.1.3 Open HPCI Injection Line Outboard Vent Valve, E41-V54.

7.1.4 Throttle open HPCI Injection Line Inboard Vent Valve, E41-V53, and observe the water flow.

7.1.5 When no air is observed, close HPCI Injection Line Inboard Vent Valve, E41-V53. Ind. Ver.

7.1.6 Close HPCI Injection Line Outboard Vent Valve, E41-V54. Ind. Ver.

7.1.7 If desired, remove the vent and drain rig from HPCI Injection Line Outboard Vent Valve, E41-V54. NA

7.1.8 Place the SBGT System in operation per OP-10, Standby Gas Treatment System, and proceed with Step 7.1.9 of this test.

7.1.9 Open Primary Containment Post LOCA Vent Valve, SGT-V8.

7.1.10 Open Primary Containment Post LOCA Vent Valve, SGT-V9.

7.1.11 Start the HPCI auxiliary oil pump and verify proper lubricant oil level.

7.1.12 Depress the remote HPCI turbine trip button and observe that HPCI Turbine Stop Valve, E41-V8, closes.

7.1.13 Observe that HPCI Turbine Stop Valve, E41-V8, opens when the turbine trip button is released.

79 4625 1954

7.0 PROCEDURE STEPS

Initials

****

CAUTION

Both RHR loops may be required for suppression pool cooling if average cooling water inlet temperature exceeds 80°F.

****

7.1.14 Verify or place the RHR System in suppression pool cooling per OP-17 and proceed with Step 7.1.15.

7.1.15 Verify that the steam supply piping is free of condensate buildup by performing the following steps:

7.1.15.1 Open or verify open Supply Drain Pot Inboard Drain Valve, E41-F028.

7.1.15.2 Open or verify open Supply Drain Pot Outboard Drain Valve, E41-F029.

7.1.15.3 Open the Supply Drain Pot Drain Bypass Valve, E41-F054.

7.1.15.4 Verify HPCI TURB IN STM LN DR POT LVL HI (A-01 6-2) clears.

7.1.15.5 Close the Supply Drain Pot Drain Bypass Valve, E41-F054.

7.1.16 Stop the auxiliary oil pump and place the control switch in AUTO.

7.1.17 Open Cooling Water Supply Valve, E41-F059.

7.1.18 Start the barometric condenser vacuum pump.

7.1.19 Open Redundant Isolation To Condensate Storage Tank Valve, E41-F011.

7.1.20 Station an operator to observe the HPCI discharge piping for excessive motion and/or water hammer.

NOTE:

Minimize operation of HPCI below 3000 rpm to minimize cycling of auxiliary oil pump which could trip on thermals.

79 4625 1955

7.0 PROCEDURE STEPS

Initials

****

CAUTION

A second operator is necessary to monitor suppression pool level.

CAUTION

DC Limitorque valves are limited to a duty cycle of three starts in 5 minutes followed by a 50-minute cooldown period. Any valve actuation whether in the form of a throttle action, a continuous stroke, or an auto-actuated movement is considered a motor start. Adherence to the duty cycle requirements will minimize dc valve motor failures.

****

NOTE:

Suppression pool bulk average temperatures can be monitored using process computer points G050 and G051.

****

CAUTION

If the suppression pool average temperature reaches 104°F, testing which adds heat should be terminated. If the suppression pool average temperature reaches 110°F, the reactor should be manually Scrammed to comply with technical specifications.

****

7.1.21 Open Turbine Steam Supply Valve, E41-F001.

7.1.22 Start the HPCI auxiliary oil pump and leave the control switch in the START position.

7.1.23 Verify that the following actions occur:

7.1.23.1 Turbine Stop Valve, E41-V8, opens.

7.1.23.2 Turbine Control Valve, E41-V9, opens.

7.1.23.3 The HPCI turbine accelerates to greater than 1000 rpm.

7.1.23.4 Minimum Flow Bypass To Suppression Pool Valve, E41-F012, opens.

NOTE:

Depending on the number of valve motor starts, consideration may be given to manually throttling Bypass to Condensate Storage Tank Valve, E41-F008.

7.1.24 Throttle the Bypass To Condensate Storage Tank Valve, E41-F008, or increase turbine speed to establish HPCI discharge pressure of 220 psig or more at a flow rate greater than or equal to 4300 gpm.

7.0 PROCEDURE STEPS | Required | Actual

7.1.25 Monitor suppression pool temperatures at intervals of five minutes or less to verify that the average suppression pool temperature is less than 104°F and record the maximum average temperature achieved during this time in the space below:

71 °F.

NOTE:

The pump discharge piping head and frictional losses are taken into account by the addition of increased discharge pressure above reactor pressure (220 psig vs. 165 psig).

7.1.26 Open the instrument isolation valves to the following instruments if used to obtain data:

7.1.26.1 E41-PI-R004 NA

7.1.26.2 E41-PI-R001 NA

7.1.26.3 E41-PI-R003 NA

7.1.27 Record the following data in the designated spaces and circle indicator used to obtain data.

		Required	Actual
7.1.27.1	HPCI pump suction pressure. E41-PI-R004 (Local) or E41-PI-R606 (RTGB) or Suitable test gauge	greater than 15 inches of Hg vacuum	23 psig
7.1.27.2	HPCI pump discharge pressure. E41-PI-R001 (Local) or E41-PI-R601 (RTGB) or Suitable test gauge	220 psig or more	500 psig
7.1.27.3	Reactor steam pressure. C32-LPR-R608 or C32-PI-R605 or Suitable test gauge	N/A	160 psig
7.1.27.4	HPCI turbine steam inlet pressure. E41-PI-R003 (Local) or E41-PI-R602 (RTGB)	150 to 180 psig	160 psig
7.1.27.5	HPCI pump flow. E41-FI-R600	greater than or equal to 4300 gpm	4300 gpm

Initials

7.0 PROCEDURE STEPS

7.1.28 Close the instrument isolation valves to the following instruments if opened: Initials

7.1.28.1 E41-PI-R004 NA

7.1.28.2 E41-PI-R001 NA

7.1.28.3 E41-PI-R003 NA

7.1.29 Stop the HPCI System as follows:

****

CAUTION:

The turbine trip button must be depressed until F001 is fully shut.

****

7.1.29.1 Reduce turbine speed to approximately 3000 rpm and manually trip the turbine by depressing the Turbine Trip push button.

7.1.29.2 Close HPCI Turbine Steam Supply Valve, E41-F001.

7.1.29.3 After the turbine stops, close Bypass To Condensate Storage Tank Valve, E41-F008.

7.1.29.4 Close Redundant Isolation To Condensate Storage Tank Valve, E41-F011.

7.1.29.5 Close Cooling Water Supply Valve, E41-F059.

7.1.30 When 15 minutes have elapsed since turbine trip, stop the barometric condenser vacuum pump and place the control switch to AUTO.

7.1.31 When the temperature rise across the HPCI bearings is minimal, stop the auxiliary oil pump and return the control switch to AUTO.

7.1.32 Return the SBGT System o standby per OP-10, Standby Gas Treatment System, and proceed with Step 7.1.33.

7.1.33 If desired, stop the suppression pool coolig mode of RHR per OP-17, RHR System, and proceed with Step 7.2.1. NA

7.2 System Restoration

7.2.1 Perform PT-02.3.1, Suppression Chamber to Drywell Vacuum Breakers Operability Test.

Initials

7.0 PROCEDURE STEPS

7.2.2 Verify that HPCI Flow Controller E41-FIC-R600 is in AUTO and set at 4300 gpm. — Ind. Ver.

7.2.3 Verify that the following HPCI pump control switches are in AUTO:

7.2.3.1 Auxiliary oil pump. — Ind. Ver.

7.2.3.2 Barometric condenser vacuum pump. — Ind. Ver.

7.2.3.3 Barometric condenser condensate pump. — Ind. Ver.

7.2.4 Verify that the valves listed in Table 1 are in the required position. — Ind. Ver.

7.2.5 Verify that the required information has been recorded on the cover page.

7.2.6 Notify the Shift Foreman when this test is complete or found to be unsatisfactory.

79 4625 1959

TABLE 1
HPCI SYSTEM VALVE LINEUP

Valve No.	Valve Description	Position	Initials Ind.	Initials Ver.
E41-V9	Turbine Control Valve	CLOSED	[illegible]	[illegible]
E41-V8	Turbine Stop Valve	CLOSED	[illegible]	[illegible]
E41-F025	Condensate Pump Discharge Outboard Drain Valve	OPEN	[illegible]	[illegible]
E41-F026	Condensate Pump Discharge Inboard Drain Valve	CLOSED	[illegible]	[illegible]
E41-F028	Supply Drain Pot Inboard Drain Valve	OPEN	[illegible]	[illegible]
E41-F029	Supply Drain Pot Outboard Drain Valve	OPEN	[illegible]	[illegible]
E41-F012	Minimum Flow Bypass To Suppression Pool Valve	CLOSED	[illegible]	[illegible]
E41-F054	Supply Drain Pot Drain Bypass Valve	CLOSED	[illegible]	[illegible]
E41-F079	Turbine Exhaust Vacuum Breaker Valve	OPEN	[illegible]	[illegible]
E41-F075	Turbine Exhaust Vacuum Breaker Valve	OPEN	[illegible]	[illegible]
E41-F004	Condensate Storage Tank Suction Valve	OPEN	[illegible]	[illegible]
E41-F053	Exhaust Drain Pot Drain Bypass Valve	CLOSED	[illegible]	[illegible]
E41-F006	HPCI Injection Valve	CLOSED	[illegible]	[illegible]
E41-F007	HPCI Pump Discharge Valve	OPEN	[illegible]	[illegible]
E41-F002	Steam Supply Inboard Isolation Valve	OPEN	[illegible]	[illegible]
E41-F003	Steam Supply Outboard Isolation Valve	OPEN	[illegible]	[illegible]
E41-F001	HPCI Turbine Steam Supply Valve	CLOSED	[illegible]	[illegible]
E41-F059	Cooling Water Supply Valve	CLOSED	[illegible]	[illegible]
E41-F008	Bypass To Condensate Storage Tank Valve	CLOSED	[illegible]	[illegible]
E41-F011	Redundant Isolation To Condensate Storage Tank Valve	CLOSED	[illegible]	[illegible]
E41-F041	Suppression Pool Suction Valve	CLOSED	[illegible]	[illegible]
E41-F042	Suppression Pool Suction Valve	CLOSED	[illegible]	[illegible]

CERTIFICATION AND REVIEW FORM

PT-09.3
HPCI System Operability Test

General Comments and Recommendations P.T. SAT.

	Initials	Name (Print)
Test procedure performed by	TP	Tom Pittman
	GM	Gene McMillian
	DP	Doug Porter
	MP	Michael Porter
	JDB	J. Darrell Bryant

Exceptions to satisfactory performance NONE

Corrective action required NONE

Test procedure **has** been satisfactorily completed

Foreman [signature] 3-13-90
Signature Date

Test procedure **has not** been satisfactorily completed

Foreman ______________________ ________
Signature Date

Test has been reviewed by

Supervisor [signature] 3-13-90
Signature Date

79 4525 1981

```
*********************************************************
* MALFUNCTION MENU..:RP          VARIABLE NAME:MRP005F  *
* MALFUNCTION NUMBER:110                                *
* MALFUNCTION TITLE.:Auto SCRAM Defeat                  *
* SELECT COMPONENT..:N/A                                *
* SEVERITY..........:N/A                                *
* SEVERITY RATE.....:N/A                                *
*********************************************************
```

1.0 SPECIFIC CAUSE

An electronic failure of Automatic Scram Relays.

2.0 TEST CONDITION

The simulator is operating at approximately 100% steady state reactor power. Select and activate Malfunction 110, Auto Scram Defeat and then initiate an Automatic reactor scram signal.

3.0 INITIAL ALARMS RECEIVED

None

4.0 TEST RESPONSE

THE FOLLOWING INDICATIONS SHOULD BE OBSERVED:

1. With this malfunction active in coincidence with an automatic scram signal, a reactor scram will not occur.

THE FOLLOWING AUTOMATIC ACTIONS AND ANNUNCIATORS SHOULD BE OBSERVED:

1. There are no automatic actions or annunciators directly associated with this malfunction.

5.0 INSTRUCTOR ACTION

If both manual scram pushbuttons are depressed, a manual scram should occur.

6.0 SIMILAR MALFUNCTIONS

None

7.0 SIMULATOR MODEL INITIATED IN

Reactor Protection System

8.0 MAJOR SYSTEMS AFFECTED

Reactor Protection System

9.0 REFERENCES

1. STP-MA-135, Simulator Test Procedure, Auto Scram Defeat.

```
***********************************************************
* MALFUNCTION MENU..:CF          VARIABLE NAME:MCF004F   *
* MALFUNCTION NUMBER:200                                  *
* MALFUNCTION TITLE.:Condensate Pump Sheared Shaft        *
* SELECT COMPONENT..:Condensate Pump 2A, 2B or 2C         *
* SEVERITY..........:N/A                                  *
* SEVERITY RATE.....:N/A                                  *
***********************************************************
```

1.0 SPECIFIC CAUSE

Condensate Pump 2A(2B or 2C) shaft shears due to a mechanical failure.

2.0 TEST CONDITION

The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

3.0 INITIAL ALARMS RECEIVED

COND PUMP DISCH HDR PRESS-LOW (UA-04 6-6)
COND BOOSTER DISCH/SUCT PRESS LOW (UA-04 4-7)

4.0 TEST RESPONSE

THE FOLLOWING INDICATIONS SHOULD BE OBSERVED:

1. Condensate Pump Discharge Press - CFP1200: Condensate header pressure will decrease when the Condensate Pump trips. This decreases the Condensate Booster Pump suction pressure and automatically starts the stand-by Condensate Pump which will restore system pressure.

2. Condensate Booster Pump Suction Pressure - CFP1400: Pressure will initially decrease to the automatic start set point of the stand-by Condensate Pump. After the stand-by pump has started pressure will return to its original value.

3. Reactor Water Level (150 to 210") - IARXLVL: Water level will oscillate slightly and then return to the original value as the Three Element Controller regulates Feedwater flow.

4. Total Feedwater Flow - CFW1REV: Feedwater flow will decrease slightly when the Condensate Pump trips. Flow will be restored when the stand-by pump auto starts.

THE FOLLOWING AUTOMATIC ACTIONS AND ANNUNCIATORS SHOULD BE OBSERVED:

1. Condensate Pump coast down time will be faster than normal due to the sheared shaft. This will cause pressure and flow to decrease rapidly. When Condensate discharge pressure decreases to 145 psig (CO-PSL-22) an annunciator is actuated.
   COND PUMP DISCH HDR PRESS-LOW (UA-04 6-6)

2. When Condensate Booster Pump suction pressure decreases to 21 psig (COD-PSL-31) an annunciator is actuated. As pressure decreases to 20 psig (COD-PS-21) the stand-by Condensate Pump is automatically started.
   COND BOOSTER DISCH/SUCT PRESS LOW (UA-04 4-7)

3. The COND PUMP DISCH HDR PRESS-LOW and COND BOOSTER DISCH/SUCT PRESS LOW annunciators will reset after the stand-by Condensate Pump is at rated flow and pressure.

4. The COND PUMP A(B or C) TRIP annunciators located on UA-04 will not be actuated by this Malfunction. When the pump shaft shears motor current will decrease rapidly and the annunciators are actuated by energizing Overcurrent Device 74.

5.0 INSTRUCTOR ACTION

NONE

6.0 SIMILAR MALFUNCTIONS

NOTE:Variable Names for Condensate Pump 2A - MCF004F
Condensate Pump 2B - MCF005F
Condensate Pump 2C - MCF006F

7.0 SIMULATOR MODEL INITIATED IN

Drivers

8.0 MAJOR SYSTEMS AFFECTED

Condensate and Feedwater

9.0 REFERENCES

1. Annunciator Procedures (APP) - Refer to the Test Response Section.

2. STP-MA-063, Simulator Test Procedure, Condensate Pump Sheared Shaft.

3. Drawings: D-2030, D-2031, D-2032 (see APP for further print references).

4. System Description: SD-32, Condensate and Feedwater System

```
**************************************************************
* MALFUNCTION MENU..:MS          VARIABLE NAME:MMS005F   *
* MALFUNCTION NUMBER:166                                  *
* MALFUNCTION TITLE.:MSIV Closure                         *
* SELECT COMPONENT..:N/A                                  *
* SEVERITY..........:N/A                                  *
* SEVERITY RATE.....:N/A                                  *
**************************************************************
```

1.0 SPECIFIC CAUSE

Vibration on Condenser 2B-S vacuum sensing line resulted in failure of Instrument Isolation Valve V42. The keeper ring and stem shoulder had worn causing the disc to fail from the stem. The fallen disc isolated the sensing line and tripped vacuum switches PT-N056C (A2 trip channel) and PT-N056D (B2 trip channel) resulting in a Group 1 isolation.

2.0 TEST CONDITION

The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

3.0 INITIAL ALARMS RECEIVED

MAIN STEAM ISOL VLV NOT FULL OPEN (A-05 4-6)

4.0 TEST RESPONSE

NOTE: Refer to Section 10, Training Transient Report Graphics, for an engineering Best Estimate malfunction response.

THE FOLLOWING INDICATIONS SHOULD BE OBSERVED:

1. Reactor Power (APRM) - NIJAPRM: When the MSIVs reach 90% open a reactor scram is actuated. Reactor power is reduced rapidly by the reactor scram. A prompt drop to less than 10% power occurs as the control rods are inserted. The power decrease will then continue at a slower rate until the reactor is subcritical.

2. Total Steam Flow - MSW4111: As the MSIVs close total steam flow decreases rapidly.

3. Total Feedwater Flow - CFW1REV: The reactor scram and resultant void collapse will cause a decrease in reactor water level which will cause feedwater flow to increase. Flow will then decrease as the SRVs open and reactor water level increases.

4. Reactor Pressure (0 to 1500) and (800 to 1100) - NBPITAPT(31) & NBPITAPT(32): The MSIV closure will cause pressure to increase until the SRVs lift. The SRVs cycle to remove the steam produced by decay heat. As decay heat decreases, inlet subcooling is sufficient to stop steam production and the pressure rise. When feedwater flow is lost inlet subcooling is reduced and vessel pressure increases again.

5. Reactor Water Level (150-210") and (0-210") - NBLEVELT(5) & IARXLVL: Level will decrease due to the void collapse caused by the pressure increase and reactor scram. The low level will cause feedwater flow to increase. The increased feedwater flow and decreased pressure from the SRV lift will cause level to increase rapidly.

6. Gross Generator Electric Power - EGJGMWE: Electric output decreases rapidly as the reactor scrams and the Main Turbine trips.

7. Turbine Steam Flow - MSW4000: Turbine steam flow decreases rapidly when the Main Turbine trips.

8. Total Core Flow - NBWFLOW(7): The reactor scram and increased reactor pressure cause a momentary increase in core flow. The Recirc pumps trip due to high reactor pressure and total core flow decreases.

9. Total Recirculation Loop Flow - NBWFLOW(10) & NBWFLOW(11): Initially the loop flow will increase in response to the total core flow increase. Both Recirc. Pumps trip on high reactor pressure causing loop flow to decrease rapidly.

THE FOLLOWING AUTOMATIC ACTIONS AND ANNUNCIATORS SHOULD BE OBSERVED:

1. When the MSIVs are less than 90% open (relay C32-K3A through H) a reactor scram is initated.
   MAIN STEAM ISOL VLV NOT FULL OPEN (A-05 4-6)

2. The scram will cause reactor water level to decrease due to the void collapse. As reactor water level decreases to 166" (LL-1) a redundant reactor scram occurs. Groups 2, 6, and 8 isolate:
   REACTOR WATER LEVEL HIGH/LOW (182")(A-07 2-2)
   REACTOR VESSEL LO WATER LEVEL (A-05 2-6)
   REACTOR ADS LO WATER LEVEL (A-03 4-10)
   DISCH VOL HI WTR LVL RPS TRIP (A-05 1-6)
   REACTOR AUTO SCRAM SYS A (A-05 1-7)

REACTOR AUTO SCRAM SYS B (A-05 2-7)
ROD OUT BLOCK (A-05 2-2)
SCRAM DISCH VOL NOT DRAINED (A-05 2-5)
LPRM DSCALE (A-06 1-7)
APRM DSCALE (A-06 2-7)
RBM DOWNSCALE (A-06 4-7)
SCRAM VLV PLT AIR HDR HI/LO PRESS (A-07 5-1)

3. The MSIV closure will cause reactor pressure to increase. As pressure increases to 1048 psig a redundant reactor scram is initiated.
REACTOR VESSEL HI PRESS (1038 psig) (A-05 3-5)
REACTOR VESS HI PRESS TRIP (A-05 3-6)
REACTOR PRESSURE HIGH (A-07 3-2)

4. When reactor pressure increases to 1100 psig (B21-PTM-N045A or B and C or D) OR if reactor water level decreases to +118 inches (B21-LTM-N024A-2 or N025-2) the RPT/ARI System is actuated. Both A and B Recirc MG Set Drive Motor Breakers trip and the Alternate Rod Injection System is initiated.
RPT/ARI TRIP A HI PRESS/LO LVL (A-04 3-8)
RPT/ARI TRIP B HI PRESS/LO LVL (A-04 5-8)

5. As reactor pressure increases to 1105 psig the Group 1 SRVs lift. Steam flow through the open SRVs activate the associated Acoustic Monitor, the RED open and AMBER memory indication lamps illuminate.
SAFETY/RELIEF VALVE OPEN (A-03 1-10)

6. When Safety/Relief Valve Tailpipe Temperatures increase to approximately 290° F an annunciator is actuated.
SAFETY OR DEPRESS VLV LEAKING (A-03 1-1)

7. Torus temperature increases in accordance with the amount of heat input.

8. The Main Turbine trips due to Reverse Power and the following automatic actions occur:
   a. Turbine Stop Valves and Control Valves close
   b. Intercept Valves and Intermediate Stop Valves Close
   c. Bypass Valves will cycle in an attempt to maintain the pressure set point.
   d. On panel XU-1, All MSV, CV, & CIV's indicate closed and the green Tripped Light is illuminated.
   e. Annunciators -
      TURBINE MASTER TRIP (UA-23 1-4)
      TURB STOP VLV CLOS TRIP (A-05 5-7)

9. The Generator trips (#299, Main Generator Trip), PCB-29A and B open and the recorder on XU-1 will change from indicating Control Valve position to turbine speed.

10. Another scram is actuated by the Main Turbine CV Fast Closure and/or SV Closure if initial power is ≥ 30%.
TURB CONTROL VLV FST CLOS TRIP (A-05 6-6)
TURB STOP VLV CLOS TRIP (A-05 5-7)

5.0 INSTRUCTOR ACTION

NONE

6.0 SIMILAR MALFUNCTIONS

NONE

7.0 SIMULATOR MODEL INITIATED IN

Panel Logic

8.0 MAJOR SYSTEMS AFFECTED

Main Steam
Reactor Protection
Feedwater
Nuclear Boiler

9.0 REFERENCES

1. Brunswick Training Transient Report, MSIV Fast Closure, 2/20/88.

2. Annunciator Procedures (APP) - Refer to the Test Response Section.

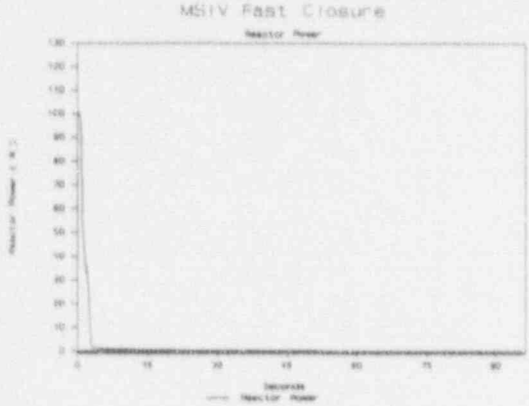
3. STP-TN-003, Simulator Test Procedure, Simultaneous Closure Of All Main Steam Isolation Valves

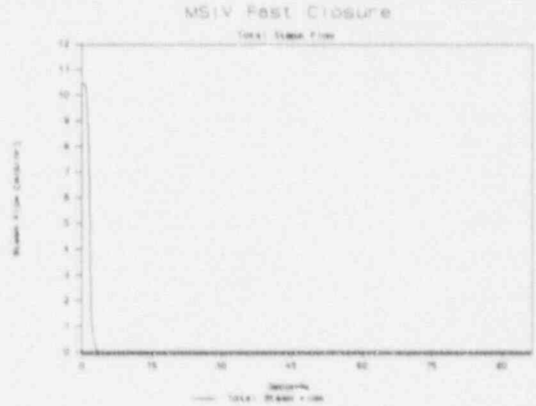
4. OEF INFO, Serial Number:B4527D, Component Failure and Inadequate Design Cause Group 1 Isolation and Scram, 04/20/90.

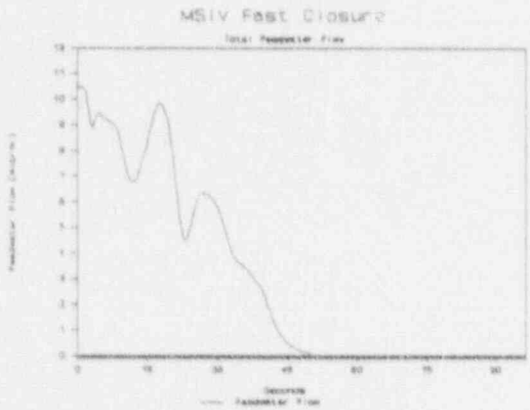
5. Plant Incident Summary 90-059, Unit 2 Reactor Scram on 8/19/90 Due to Procedure Violation.

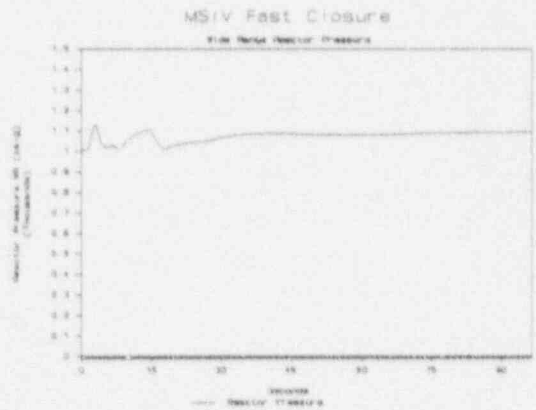
6. LER 2-90-009, ESF Actuation/RPS Trip While Performing a Surveillance Test on Condenser Low Vacuum Instrumentation and Isolation Logic, 8/19/90.

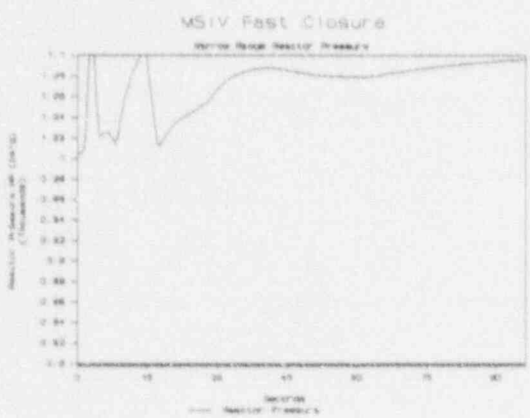
10.0 TRAINING TRANSIENT REPORT GRAPHICS

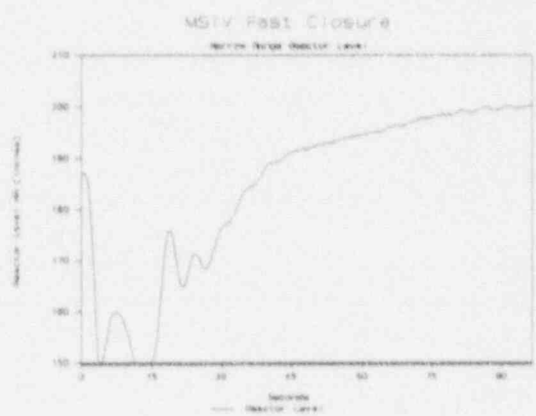




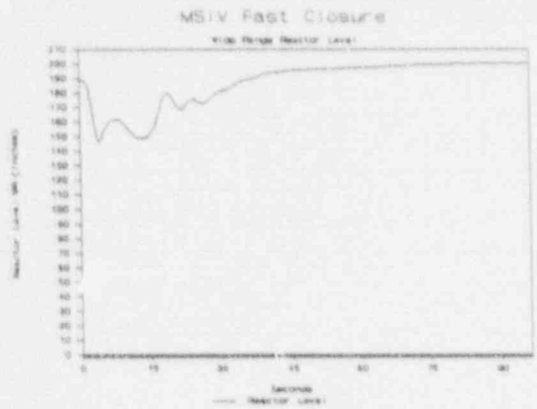


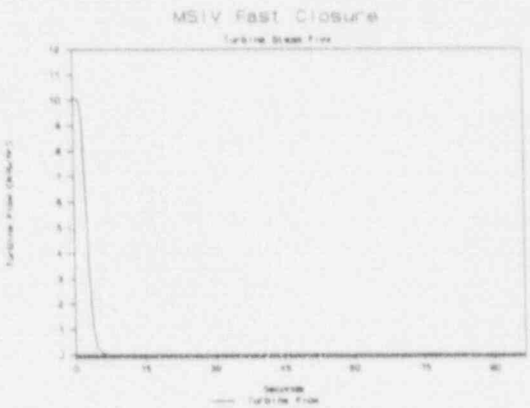


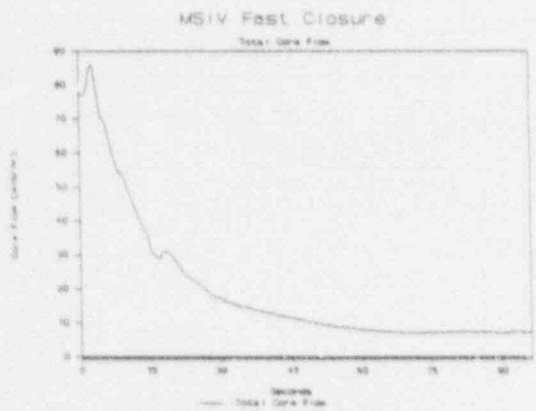


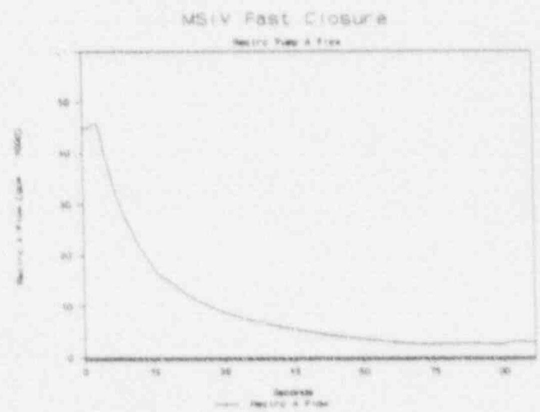


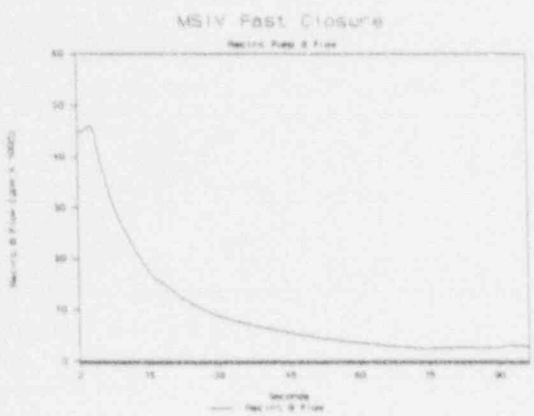
10.0 TRAINING TRANSIENT REPORT GRAPHICS (con't)











```
***********************************************************
* MALFUNCTION MENU..:CF          VARIABLE NAME:MCF035F *
* MALFUNCTION NUMBER:233                                  *
* MALFUNCTION TITLE.:Startup Level Control Valve          *
*                    Fails Closed                         *
* SELECT COMPONENT..:N/A                                  *
* SEVERITY..........:N/A                                  *
* SEVERITY RATE.....:N/A                                  *
***********************************************************
```

1.0 SPECIFIC CAUSE

The Startup Level Control Valve, LV-3269, fails closed due to worn o-ring seals (LER-90-012).

2.0 TEST CONDITION

The simulator is operating at less than 5% reactor power. A Condensate Booster Pump is in service and reactor water level is being controlled with LV-3269 in Automatic.

3.0 INITIAL ALARMS RECEIVED

REACTOR WATER LEVEL HIGH/LOW (A-07 2-2)

4.0 TEST RESPONSE

THE FOLLOWING INDICATIONS SHOULD BE OBSERVED:

1. Total Feedwater Flow - CFW1REV: Feedwater flow decreases to zero as LV-3269 fails closed.

2. Rx Water Level (0 to 210") - NBLEVELT(5): Reactor water level will decrease as the Start-up Level Control Valve fails closed. The low level scram set point will be exceeded and level will continue to decrease until HPCI and RCIC are initiated. Water level will then increase rapidly to the high water level turbine trip set point.

3. Reactor Power - NIJAPRM: Reactor power is reduced rapidly by the low water level reactor scram.

THE FOLLOWING AUTOMATIC ACTIONS AND ANNUNCIATORS SHOULD BE OBSERVED:

1. As reactor level decreases to 166 inches (LL-1) a reactor SCRAM occurs. Groups 2, 6, and 8 isolate:
REACTOR WATER LEVEL HIGH/LOW (182") (A-07 2-2)
REACTOR VESSEL LO LVL TRIP (A-05 2-6)
REACTOR ADS LO WATER LEVEL (A-03 4-10)

2. As the reactor level decreases to 118 inches (LL-2) the Recirc Pumps trip, Group 3 isolates, HPCI and RCIC are initiated:
   RECIRC A TRIP HIGH PRESS/LOW LEVEL (A-04 3-8)
   RECIRC B TRIP HIGH PRESS/LOW LEVEL (A-04 5-8)
   REACTOR VESS LO-LO WATER LEVEL SYS A (A-06 1-6)
   REACTOR VESS LO-LO WATER LEVEL SYS B (A-06 2-6)

3. HPCI and RCIC will increase reactor water level to 208" and the Main Turbine, Reactor Feedwater Pump Turbines, HPCI and RCIC Turbines trip (*NOTE: HPCI and RCIC trip only if running).
   REACTOR WATER LEVEL HIGH/LOW (192") (A-07 2-2)
   TURBINE MASTER TRIP (UA-23 1-4)
   RFP A TURBINE TRIPPED (UA-04 1-2)
   RFP B TURBINE TRIPPED (UA-04 1-4)
   * HPCI TURB TRIP (A-01 3-1)
   * RCIC TURB TRIPPED (A-03 5-3)

4. IF reactor pressure decreases to 850 psig, a Group 1 isolation is actuated:
   STM LN LO PRESS A (A-04 1-8)
   STM LN LO PRESS B (A-04 2-8)

5.0 INSTRUCTOR ACTION

NONE

6.0 SIMILAR MALFUNCTIONS

NONE

7.0 SIMULATOR MODEL INITIATED IN

Feedwater Control

8.0 MAJOR SYSTEMS AFFECTED

Condensate and Feedwater
Nuclear Boiler
Main Steam
Main Turbine

9.0 REFERENCES

1. Annunciator Procedures (APP) - Refer to the Test Response Section.

2. STP-MA-076, Simulator Test Procedure, Startup Level Control Valve Fails Closed.

3. Drawings: D-2030, D-2031, D-2032 (see APP for further print references).

4. System Description: SD-32, Condensate and Feedwater System, SD-32.2, Feedwater Control System.

5. Licensee Event Report 90-012, Scram Caused by Failure of the Startup Level Control Valve Resulting in a Low Level RPS Actuation, 08/30/90.

6. Plant Incident Summary 90-0058, Startup Level Control Valve Malfunction, 08/19/90 to 08/30/90.

7. Operational Experience Feedback, Serial #B4918D, 4/18/91, O&MR 386, Reactor Transients Resulting From Feedwater Regulating Bypass Valve Problems.

```
***********************************************************
* MALFUNCTION MENU..:CW          VARIABLE NAME:MCW008F  *
* MALFUNCTION NUMBER:286                                 *
* MALFUNCTION TITLE.:RHR Service Water Pump Bkr Fault    *
* SELECT COMPONENT..:RHRSW Pumps A, B, C or D            *
* SEVERITY..........:N/A                                 *
* SEVERITY RATE.....:N/A                                 *
***********************************************************
```

1.0 SPECIFIC CAUSE

Instantaneous overcurrent trips the selected RHRSW Pump Breaker.

2.0 TEST CONDITION

The simulator is operating in Cold Shutdown with the Shutdown Cooling Mode of RHR in service.

3.0 INITIAL ALARMS RECEIVED

RHR SW Pump 2A Trip (A-01 1-9),
RHR SW Pump 2C Trip (A-01 3-9),
RHR SW Pump 2B Trip (A-03 1-8) or
RHR SW Pump 2D Trip (A-03 3-8)

4.0 TEST RESPONSE

THE FOLLOWING INDICATIONS SHOULD BE OBSERVED:

1. 2A(2B) RHR Htx Service Water Flow - SWW0132(1) (SWW0132(2)): Service Water flow will decrease when the RHRSW Pump breaker trips.

2. 2A(2B) RHR Htx Flow - RHW0032(1)(RHW0032(2)): RHR flow through the RHR Heat Exchanger will remain relatively constant.

3. 2A(2B) Recirc Pump Suction Temp - RCTRCPF(1)(RCTRCPF(2)): The suction temperature will increase as cooling water flow through the RHR Heat Exchanger is decreased.

THE FOLLOWING AUTOMATIC ACTIONS AND ANNUNCIATORS SHOULD BE OBSERVED:

1. When the RHR Service Water Pump breaker trips an annunciator is actuated.
   RHR SW Pump 2A Trip (A-01 1-9),
   RHR SW Pump 2C Trip (A-01 3-9),
   RHR SW Pump 2B Trip (A-03 1-8) or
   RHR SW Pump 2D Trip (A-03 3-8)

2. If only one RHRSW Pump on the affected loop of RHR was in service, the RHR Heat Exchanger 2A (2B) Service Water Discharge Valve, E11-F068A (B), will automatically close.

5.0 INSTRUCTOR ACTION

NONE

6.0 SIMILAR MALFUNCTIONS

NOTE: Variable Names for RHRSW Pump A - MCW008F, RHRSW Pump B - MCW009F, RHRSW Pump C - MCW010F, RHRSW Pump D - MCW011F.

7.0 SIMULATOR MODEL INITIATED IN

Comparators

8.0 MAJOR SYSTEMS AFFECTED

Service Water
Residual Heat Removal (RHR)
Nuclear Boiler

9.0 REFERENCES

1. Annunciator Procedures (APP) - Refer to the Test Response Section.

2. STP-MA-061, Simulator Test Procedure, RHR Service Water Pump Breaker Fault.

3. Drawings: D-2537, D-2041 (see APP for further print references).

4. System Description: SD-43, Service Water System

PERFORMANCE TEST ABSTRACT
PTA-OL-001

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-OL-001, Simulator Operating Limits Test

1.2 ANSI/ANS 3.5 1985, Section 4.3, Simulator Operating Limits.

2.0 AVAILABLE OPTIONS

2.1 T,T.CPUA and T,T.IPUA for the Training load.

OR

2.2 T,T.CPUT and T,T.IPUT for the Developement load.

3.0 TESTED OPTIONS

3.1 Training Load

4.0 INITIAL CONDITIONS

The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

5.0 TEST DURATION

The simulator will be placed in the FREEZE mode after the selected operating limits are proven to provide an alarm to the simulator instructor when the predetermined setpoints are exceeded. Approximate time required is 15 minutes.

6.0 BASE LINE DATA

NONE

7.0 DATE PERFORMED: 07/15/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

ENCLOSURE 2

UNIT ONE SIMULATOR CERTIFICATION REPLACEMENT PACKAGE

ANSI 3.5 1985 APPENDIX A INFORMATION
CP&L BRUNSWICK UNIT ONE SIMULATOR CERTIFICATION

TABLE OF CONTENTS

ANSI 3.5 1985 APPENDIX A INFORMATION
CP&L BRUNSWICK UNIT ONE SIMULATOR CERTIFICATION

INTRODUCTION

General Information

The Brunswick Steam Electric Plant Simulator Certification Package is provided to demonstrate compliance with the requirements of 10CFR55.45(b) including compliance with ANSI/ANS 3.5 1985 as implemented by NRC Regulatory Guide 1.149, 1987. The subject simulator facility consists solely of a plant referenced full scope simulator, which is the primary vehicle for providing positive, practical license training. The documentation provided herein is intended to constitute sufficient basis for the certification of the Brunswick Simulator.

Simulator Configuration Control Board

One means of evaluation and review of the simulator operations is the Simulator Configuration Control Board (SCCB). This group is made up of Plant Operations Training and Simulator Support Personnel. The Simulator Configuration Control Board includes one currently licensed Brunswick Plant operator and one SRO licensed or certified simulator instructor. The group reviews all proposed non-routine changes to the Simulator, such as changes to the scope of simulation or any desired changes in simulator capability. These evaluations are documented as training value assessments. The Control Board reviews outstanding simulator certification discrepancies for their impact on training to identify high priority items. The Control Board reviews differences between the simulator and the plant to ensure they do not detract form training. Minutes of board meetings are maintained to serve as a record of Control Board decisions. Qualifications of current Control Board members are included as Appendix G to the Brunswick Unit 2 Certification Package.

Exceptions to ANSI/ANS 3.5

The exceptions identified during certification testing or the review/analysis of ANSI/ANS 3.5 are contained in this section of the submittal package. The exceptions are listed by ANSI/ANS 3.5 reference and subject. Each specific exception taken and its associated justification is addressed individually and was reviewed and approved by the Configuration Control Board to ensure the exceptions do not adversely impact the license operator training program and do not prevent 10CRF55 compliant simulator examinations (operating tests) from being conducted.

ANSI 3.5 1985 APPENDIX A INFORMATION
CP&L BRUNSWICK UNIT ONE SIMULATOR CERTIFICATION

1. ANS Section 3.2.1 - Degree of Panel Simulation

   The simulator is referenced to the Unit 2 Control Room for panels, controls, instrumentation, alarms, and other man-machine interfaces. The differences between the control boards are limited. Plant modifications implemented on one unit usually appear on the opposite unit during a future outage. All labels and other identifiers are for Unit 2. The Control Room is a two Unit Control Room, the simulator is a single unit control room which models only Unit 2.

   None of the Unit 1 Back Panels are simulated. See Unit 2 Certification Appendix C for details about back panel modifications.

2. ANS Section A1.4 - Operating Procedures for Reference Plant

   Unit 2 controlled procedures are used for training on the simulator. The Unit 1 Technical Specifications are available for use on the simulator to allow a comparison of the units. When Unit 1 training is conducted, operators use the procedures available to them. The Emergency Operating Procedures are used for both Units. When Unit 1 training is conducted operators use the appropriate section of the procedures.

3. The following ANSI/ANS 3.5 sections are noted in the Unit 2 Certification package submittal and also apply to the Unit 1 exception listing. Refer to Unit 2 Exceptions for additional information.

Section 3.1.1 (4)	- Normal Plant Evolutions, Reactor Trip Followed by Recovery To Rated Power.
3.1.1 (7)	- Ops. At Less Than Full Rated Core Flow.
Section 3.1.2 (1)a	- Significant PWR Steam Gen. Tube Leaks
3.1.2 (12)	- Misaligned Control Rods
3.1.2 (18)	- Failure Of Reactor Coolant Pressure Volume Control Systems
3.1.2 (20)	- Main Feedwater Line Break Inside Drywell
3.1.2 (22)	- Process Instrumentation, Alarms, and Control System Failures
Section 3.2.3	- Control Room Environment
Section 4.1	- Steady State Operations
Section 4.3 (4)	- Reactor Coolant System pressure versus temperature relationship indicative of gross core voiding.
Section 5.2	- Simulator Update Design Data
Section 5.3	- Simulator Modification
Appendix B2	- PWR Simulator Operability Test

ANSI 3.5 1985 APPENDIX A INFORMATION
CP&L BRUNSWICK UNIT ONE SIMULATOR CERTIFICATION

I. GENERAL DESCRIPTION

A. Owner

The Brunswick Simulator is owned by Carolina Power and Light (CP&L). The Simulator is located on the Brunswick Steam Electric Plant, about 2.5 miles north of Southport, North Carolina. CP&L has its headquarters in Raleigh, North Carolina about 135 miles northwest of the city of Southport.

B. Reference Plant

The Brunswick Simulator simulates the Brunswick Unit 2 Control Room. Brunswick site is a two unit, 850 MWe, General Electric Boiling Water Reactor.

C. Ready for Training Date

The Simulator was built by Electronics Associates, Inc. (EAI) of West Long Branch, New Jersey. The contract for the Simulator was signed August of 1980. EAI delivered the Simulator to the Brunswick site and training was started in February of 1984.

II. CONTROL ROOM COMPARISON

A. Physical Arrangement

There are two major exceptions taken to the Plant Control Room physical layout. The first is Fire Detection panel XU-69. This panel is unique to Unit 1 and was originally placed on the Unit 1 side of the Simulator Control Room. This location proved to be detrimental to training and subsequently the panel has been removed. The second exception is the location of the STA desk. Which is placed several feet away from where it is in the Plant Control Room. This change has no impact on training since the STA is rarely at his desk during training sessions. There are minor spatial differences due to the Simulator Control Room not conforming exactly to Plant Control Room dimensions. These differences do not adversely affect training. The physical arrangement of the Simulator Control Room is shown in Figure 1 and the Plant Control Room is shown in Figure 2 of the Brunswick Unit 2 Simulator Certification submittal.

B. Panels and Equipment

The original Simulator scope included all front and selected back panels and controls, these consisted of the following:

1. ECCS equipment panel (P601).
2. Reactor control panel (P603).
3. Main Generator/EHC control panel (XU-1).
4. Feedpump/EDG control panel (XU-2).
5. Turbine/BOP control panel (XU-3).
6. Turbine/BOP recorder panel (XU-4).
7. Switchyard control panel (XU-5).
8. Primary Containment vent/purge panel (XU-51).
9. Main fire control panel (XU-69).
10. SRM/IRM/Rad Monitoring panel (P604).
11. TIP panel [includes RWM panel] (P607-partial panel).
12. APRM panels (P608).
13. Drain sump timer panel (P604).
14. Reactor Building ventilation Radiation monitoring panel (XU-55).
15. Drywell rad monitoring panel (XU-61).

Plant modifications have prompted some major modifications to the simulator complex. These include the addition of an Off-Gas panel (XU-80), Emergency Response Facility Information System (ERFIS) computer system, control room furniture change out, panel color change, and control room carpet addition. These changes were accomplished on the Simulator before the end of 1987.

C. Systems

A system by system survey was conducted to determine Unit operational differences for each plant system. System Engineers were asked a series of questions to determine the scope and depth of the Unit differences. The information gathered on these survey sheets formed the basis for the Unit 1 to Simulator Control Room differences. These survey sheets have been retained on site. A summary of the primary differences that were identified during the process are listed below.

System: Main Turbine

Major differences identified were the Main Turbine bypass valves. Unit 1 has four bypass valves for approximately 30% bypass capacity and Unit 2 has ten bypass valves for approximately 85% bypass capacity. This difference is also reflected in Electro-Hydraulic Control (EHC), Primary Containment Isolation (PCIS) and the Main Steam (MS) Systems.

System: PCIS

The difference in PCIS is the addition of an isolation signal for Unit 2 which actuates at > 40% steam flow while the Mode Switch is not in RUN. The Main Steam System for Unit 2 has an additional steam flow sensor to support this isolation.

System: Emergency Diesel Generators

The four Emergency Diesel Generators (EDG) are split between the Units, Unit 1 has EDGs one and two and Unit 2 has EDGs three and four. This configuration also causes the 4160 VAC system to be different for each Unit. Unit 1 has Emergency Buses E-1 and E-2 and Unit 2 has E-3 and E-4.

System: Hydrogen Water Chemistry

The Hydrogen Water Chemistry system is operable on Unit 2 but is not in use on Unit 1. Unit 1 operability is scheduled for April 1991.

System: High Pressure Coolant Injection System

The High Pressure Coolant Injection System (HPCI) is identical except for the time from receipt of initiation signal to the start of the ramp generator which is 17 seconds on Unit 2 and 12 seconds on Unit 1. The time from start of ramp generator to full flow is 12 seconds for each unit.

System: Stand-By Gas Treatment

Stand-By Gas Treatment System (SBGT) inlet and outlet valves for each train will auto open on an initiation signal for Unit 2. Unit 1 valves do not receive an automatic open signal.

System: Rod Sequence Control System

Rod Sequence Control System (RSCS) has been functionally eliminated from Unit 2 and completely decommissioned on Unit 1. It is expected to be removed from Unit 2 during the fall, 1991, outage.

D. Environment

Slight environmental differences exist between the Simulator Control Room and Plant Control Room. The primary differences consist of locations of doors and windows, and the shape of the room. The Simulator Control Room has the same lighting controls and configuration as the Plant Control Room. The predominant environmental difference is the sound of the unit annunciators. The Simulator Control Room annunciator is notably different from the Plant Control Room annunciator. This discrepancy has not been corrected since the plant is installing a new annunciator sound system. After that modification is complete, the Simulator Control Room will be modified to match the sounds as close as possible. Plant Control Room carpet color and arrangement as well as panel paint color have also been matched as close as possible.

III. Instructor Interface

Refer to Section III of the Brunswick Unit Two Simulator Certification for additional details on this section. The instructor may select Unit 1 responses for two operational characteristics by toggling one switch. This allows bypass valve operation and steam flow MSIV isolation logic to be activated to duplicate Unit 1.

IV. Procedure Analysis

A. Emergency Operating Procedures

The Emergency Operating Procedures (EOP) were reviewed for differences in operator actions between Unit 1 and Unit 2. Discrepancy sheets were generated for each difference noted. These sheets are included as Appendix A to this document. The notable differences are summarized below.

1. Direction is given for Unit 2 to wait until steam flow is less than 3×10^6 lb/hr before taking the mode switch out of RUN. This is done to avoid the Group I isolation due to high steam flow with the Mode switch not in the RUN position.

2. Direction is given to specify which terminal lugs and terminal boards are needed to install jumpers for various overrides. These locations are different for each unit.

3. Locations are provided for plant components which do not have the same location on each unit.

B. Abnormal Operating Procedures

The Abnormal Operating Procedures (AOP) were reviewed for differences in operator actions between Unit 1 and Unit 2. Discrepancy sheets were generated for each difference noted. These sheets are included as Appendix B to this document. The notable differences are summarized below.

1. Directions are given for Unit 2 to initiate a SELECT ROD INSERT (SRI). Unit 1 does not have SRI.

2. Direction is given for Unit 2 to wait until steam flow is less than 3×10^6 lb/hr before taking the mode switch out of RUN. This is done to avoid the Group I isolation due to high steam flow with the Mode switch not in the RUN position.

3. Locations are provided for plant components which do not have the same location on each unit.

C. Technical Specifications

The Unit 1 and Unit 2 Technical Specifications were compared through Amendments 146 for Unit 1 and 177 for Unit 2. Individual discrepancy sheets were generated for each difference noted. The notable differences are summarized below.

1. Unit 2 has 10 Turbine Bypass valves and Unit 1 has only four.

2. Only Unit 2 has the Recirculation Pump Trip (RPT) breakers.

3. The Maximum Extended Operating Domain (MEOD) modification is installed on Unit 2. It will be installed on Unit 1 at a later date.

4. Unit 1 and Unit 2 have different fuel types.

D. Normal Operating Procedures

The simulator uses controlled copies of Unit 2 procedures. None of the Normal Operating Procedures (OPs) for Unit 1 are available in the simulator.

A systematic comparison of plant systems indicated limited differences (see II.C. Systems) between Unit 1 and Unit 2. As a result a detailed review of Normal Operating Procedures was not conducted.

V. Simulator Design Data Base

Information on this item is contained in Section V of the Brunswick Unit 2 Simulator Certification submittal.

VI. Simulator Discrepancy Resolution and Upgrading Programs

Information on this item is contained in Section VI of the Brunswick Unit 2 Simulator Certification submittal.

VII. Simulator Tests

Based on the systematic review of plant systems and reviews by the Transient Analysis Subunit of the Fuels Group, only two tests were determined to be significant enough to run using the Unit 1 simulator option. These tests were STP-TN-006.1, Unit 1, Turbine Trip at less than 30% power, and STP-MA-99.1, Unit 1, Turbine Trip from rated power. Information on these tests is contained in Section VII of the Brunswick Unit 2 Simulator Certification submittal.

APPENDIX A
EMERGENCY OPERATING PROCEDURE REVIEW
FOR DIFFERENCES BETWEEN UNIT ONE AND UNIT TWO

I. EOP-01-REACTOR SCRAM PROCEDURE (RSP)

A. **Step 030**, This step has the operator place the Mode switch to SHUTDOWN for Unit two only if steam flow is $< 3 \times 10^6$ LB/HR. **Step 031**, This step has the operator place the Mode switch to SHUTDOWN for Unit one with no qualification.

B. **Impact of Procedural Differences.** The procedural difference is a result of the Bypass Valve physical configuration and high steam flow isolation on Unit 2 when not in RUN Mode. From the simulator instructor station, Instructors have the capability to select Unit 1 or Unit 2 mode of operation which allows Bypass Valve operation and MSIV steam flow isolation logic to be activated for the respective unit. There is only one set of EOP procedures and it provides steps to be performed for both units, therefore, there is no impact on training.

II. EOP-01-REACTOR VESSEL CONTROL PROCEDURE (RVCP)

A. **Step RC/P-11**, This CAUTION statement for Unit two only warns that a Group I isolation may occur if steam flow is raised above 3×10^6 LB/HR.

B. **Impact of Procedural Differences.** The procedural difference is a result of the Bypass Valve physical configuration and high steam flow isolation on Unit 2 when not in RUN Mode. From the simulator instructor station, Instructors have the capability to select Unit 1 or Unit 2 mode of operation which allows Bypass Valve operation and MSIV steam flow isolation logic to be activated for the respective unit. There is only one set of EOP procedures and it provides steps to be performed for both units. There is, therefore, no impact on training.

III. EOP-01-LEVEL POWER CONTROL (LPC)

A. **Step RC/Q-02**, This step has the operator place the Mode switch to SHUTDOWN for Unit two only if steam flow is $< 3 \times 10^6$ LB/HR. **Step RC/Q-03**, This step has the operator place the Mode switch to SHUTDOWN for Unit one with no qualification.

B. **Impact of Procedural Differences.** The procedural difference is a result of the Bypass Valve physical configuration and high steam flow isolation on Unit 2 when not in RUN Mode. From the simulator instructor station, Instructors have the capability to select Unit 1 or Unit 2 mode of operation which allows Bypass Valve operation and MSIV steam flow isolation logic to be activated for the respective unit. There is only one set of EOP procedures and it provides steps to be performed for both units, therefore, there is no impact on training.

IV. EOP-01-SUPPLEMENTAL EMERGENCY PROCEDURE (SEP)-01

A. Section 1

1. **Step 4a** is for Unit 1 only: jumpers are installed in cabinet XU-28 between terminals 75 and 82 on terminal board BB and in cabinet XU-27 between terminals 75 and 82 on terminal board CC.

2. **Step 4b** is for Unit 2 only: jumpers are installed in cabinet XU-28 between terminals 79 and 84 on terminal board BB and in cabinet XU-27 between terminals 79 and 84 on terminal board CC.

B. Section 2

1. **Step 5a** is for Unit 1 only: jumpers are installed in cabinet XU-28 between terminals 75 and 82 on terminal board BB and in cabinet XU-27 between terminals 75 and 82 on terminal board CC.

2. **Step 5b** is for Unit two only: jumpers are installed in cabinet XU-28 between terminals 79 and 84 on terminal board BB and in cabinet XU-27 between terminals 79 and 84 on terminal board CC.

C. Section 3

1. **Step 3.a.1** is for Unit 1 only: jumpers are installed in cabinet XU-28 between terminals 75 and 82 on terminal board BB and in cabinet XU-27 between terminals 75 and 82 on terminal board CC.

2. **Step 3.a.2** is for Unit 2 only: jumpers are installed in cabinet XU-28 between terminals 79 and 84 on terminal board BB and in cabinet XU-27 between terminals 79 and 84 on terminal board CC.

D. Section 4

1. **Step 3.a.1** is for Unit 1 only: jumpers are installed in cabinet XU-28 between terminals 75 and 82 on terminal board BB and in cabinet XU-27 between terminals 75 and 82 on terminal board CC.

2. **Step 3.a.2** is for Unit 2 only: jumpers are installed in cabinet XU-28 between terminals 79 and 84 on terminal board BB and in cabinet XU-27 between terminals 79 and 84 on terminal board CC.

E. Section 7

1. **Step 9a** is for Unit 1 only: removes jumpers, if installed earlier, in cabinet XU-28 between terminals 75 and 82 on terminal board BB and between terminals 28 and 30 on terminal board E. In cabinet XU-27 it removes jumpers between terminals 75 and 82 on terminal board CC and between terminals 28 and 30 on terminal board E.

2. **Step 9b** is for Unit 2 only: removes jumpers, if installed earlier, in cabinet XU-28 between terminals 79 and 84 on terminal board BB and between terminals 28 and 30 on terminal board E. In cabinet XU-27 it removes jumpers between terminals 79 and 84 on terminal board CC and between terminals 28 and 30 on terminal board E.

F. Impact of Procedural Differences Sections 1, 2, 3, 4, and 7

Procedural differences between Unit 1 and Unit 2 are due to the placement and removal of jumpers on associated terminal boards that allow the operation of primary containment purge valves and fans. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for jumpers to be installed/removed in accordance with procedural steps. The instructor then inputs an override that simulates the installation/removal of the requested jumper(s). Once installed/removed, the associated system is operated using only one set of procedures which provides steps to be performed for both units.

APPENDIX A
EMERGENCY OPERATING PROCEDURE REVIEW
FOR DIFFERENCES BETWEEN UNIT ONE AND UNIT TWO

There is no impact on training as a result of jumper placement/removal. Training and testing of the knowledge required for jumper installation/removal are covered outside of the simulator setting.

V. EOP-01-SUPPLEMENTAL EMERGENCY PROCEDURE (SEP)-02

A. **Step C.1.a** is for Unit 1 only: in panel XU-27 lifts and tapes black wire 3363-X-9 from terminal 23 on terminal board G and in panel XU-28 lifts and tapes white wire 1-HRO-22-19 from terminal 26 on terminal board B.

B. **Step C.1.b** is for Unit 2 only: in panel XU-27 lifts and tapes black wire 3363-X-9 from terminal 43 on terminal board G and in panel XU-28 lifts and tapes white wire 2-HRO-22-19 from terminal 26 on terminal board B.

C. **Step C.11.d.1** is for Unit 1 only: in panel XU-27 terminates black wire 3363-X-9 on terminal 23 on terminal board G and in panel XU-28 terminates white wire 1-HRO-22-19 on terminal 26 on terminal board B.

D. **Step C.11.d.2** is for Unit 2 only: in panel XU-27 terminates black wire 3363-X-9 on terminal 43 on terminal board G and in panel XU-28 terminates white wire 2-HRO-22-19 on terminal 26 on terminal board B.

E. **Impact of Procedural Differences.** Procedural differences between Unit 1 and Unit 2 are due to the placement and removal of jumpers on associated terminal boards that allow defeat of the automatic start of the Drywell Coolers due to a reactor scram signal. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for jumpers to be installed/ removed in accordance with procedural steps. The instructor then inputs an override that simulates the installation/ removal of the requested jumper(s). Once installed/ removed, the associated system is operated using only one set of procedures which provides steps to be performed for both units. Training and testing of the knowledge required for jumper installation/ removal are covered outside of the simulator setting. There is no impact on training as a result of jumper placement/ removal.

APPENDIX A
EMERGENCY OPERATING PROCEDURE REVIEW
FOR DIFFERENCES BETWEEN UNIT ONE AND UNIT TWO

VI. EOP-01-SUPPLEMENTAL EMERGENCY PROCEDURE (SEP)-05

A. Section 1

1. **Step 1d**

   a. **Step 1.d.1** is for Unit 1 only: place the ON/OFF control switch to the "ON" position (with the STOP/CLOSE switch in "STOP") until "FULL OPEN" indication is received. Then, RETURN the "ON/OFF" switch to the "OFF" position which will allow CAC-V6 to close. Place the STOP/CLOSE switch to "CLOSE" as CAC-V6 closes to the "2/3 OPEN" position. This will lock CAC-V6 in the "2/3 OPEN" position.

   b. **Step 1.d.2** is for Unit 2 only: place the STOP/OPEN control switch to the "OPEN" position (with the CLOSE/ON switch in "CLOSE") until "FULL OPEN" indication is received. Then, RETURN the "STOP/OPEN" switch to the "STOP" position which will allow CAC-V6 to close. Place the CLOSE/ON switch to "ON" as CAC-V6 closes to the "2/3 OPEN" position. This will lock CAC-V6 in the "2/3 OPEN" position.

2. **Step 1e**

   a. **Step 1.e.1** is for Unit 1 only: place the ON/OFF control switch to the "ON" position (with the STOP/CLOSE switch in "STOP") until "FULL OPEN" indication is received. Then, RETURN the "ON/OFF" switch to the "OFF" position which will allow CAC-V5 to close. Place the STOP/CLOSE switch to "CLOSE" as CAC-V5 closes to the "1/3 OPEN" position. This will lock CAC-V5 in the "1/3 OPEN" position.

   b. **Step 1.e.2** is for Unit 2 only: place the STOP/OPEN control switch to the "OPEN" position (with the CLOSE/ON switch in "CLOSE") until "FULL OPEN" indication is received. Then, RETURN the "STOP/OPEN" switch to the "STOP" position which will allow CAC-V5 to close. Place the CLOSE/ON switch to "ON" as CAC-V5 closes to the "1/3 OPEN" position. This will lock CAC-V5 in the "1/3 OPEN" position.

B. Section 2

1. **Step 1.d.1** is for Unit 1 only: IF vaporizer B is being placed into service, THEN OPEN either or both of the following valves:
   a. CAD LOOP A/LOOP B X-TIE VLV, CAC-CV-2715
   b. CAC LOOP A/LOOP B X-TIE VLV, CAC-CV-2716

2. **Step 1.d.2** is for Unit 2 only: IF vaporizer A is being placed into service, THEN OPEN either or both of the following valves:
   a. CAD LOOP A/LOOP B X-TIE VLV, CAC-CV-2715
   b. CAD LOOP A/LOOP B X-TIE VLV, CAC-CV-2716

3. **Step 1.d.5** is for Unit 1 only: Place the CAC-FIC-2717 (2720) SELECTOR switch to the "FIC-2717-1 (FIC-2720-1)" position.

4. **Step 1.d.6** is for Unit 2 only: Place the CAC-FIC-2717 (2720) SELECTOR switch to the "FIC-2717-2 (FIC-2720-2)" position.

C. Section 3

1. **Step 3c**
   a. **Step 3.c.1** is for Unit 1 only: PLACE the ON/OFF control switch to the "ON" position (with the STOP/CLOSE switch in "STOP") until "FULL OPEN" indication is received. Then, RETURN the "ON/OFF" switch to the "OFF" position which will allow CAC-V6 to close. PLACE the STOP/CLOSE switch to "CLOSE" as CAC-V6 closes to the "2/3 OPEN" position. This will lock CAC-V6 in the "2/3 OPEN" position.

   b. **Step 3.c.2** is for Unit 2 only: PLACE the STOP/OPEN control switch to the "OPEN" position (with the CLOSE/ON switch in "CLOSE") until "FULL OPEN" indication is received. Then, RETURN the "STOP/OPEN" switch to the "STOP" position which will allow CAC-V6 to close. PLACE the CLOSE/ON switch to "ON" as CAC-V6 closes to the "2/3 OPEN" position. This will lock CAC-V6 in the "2/3 OPEN" position.

2. **Step 3d**

   a. **Step 3.d.1** is for Unit 1 only: PLACE the ON/OFF control switch to the "ON" position (with the STOP/CLOSE switch in "STOP") until "FULL OPEN" indication is received. Then, RETURN the "ON/OFF" switch to the "OFF" position which will allow CAC-V5 to close. PLACE the STOP/CLOSE switch to "CLOSE" as CAC-V5 closes to the "1/3 OPEN" position. This will lock CAC-V5 in the "1/3 OPEN" position.

   b. **Step 3.d.2** is for Unit 2 only: PLACE the STOP/OPEN control switch to the "OPEN" position (with the CLOSE/ON switch in "CLOSE") until "FULL OPEN" indication is received. Then, RETURN the "STOP/OPEN" switch to the "STOP" position which will allow CAC-V5 to close. PLACE the CLOSE/ON switch to "ON" as CAC-V5 closes to the "1/3 OPEN" position. This will lock CAC-V5 in the "1/3 OPEN" position.

D. Impact of Procedural Differences

1. **Section 1 and 3**

The procedural differences are a result of switch labeling disagreements between CAC-V5 and CAC-V6 valves. There are two switches associated with CAC-V5 and two for CAC-V6. For Unit 1 these switches are labeled "ON/OFF" and "STOP/CLOSE" for both V-5 and V-6. For Unit 2 the switches are labeled "STOP/OPEN" and "CLOSE/ON" for both V-5 and V-6. The functions of each switch position and resultant valve operations are the same on both units. Once the labeling differences are identified, the associated system is operated similarly using only one set of procedures which provides steps to be performed for both units. This labeling disagreement has minimal training impact and no action will be taken to change the simulator as a result of these differences.

2. **Section 2**

The Containment Atmosphere Dilution (CAD) System consists of two fully redundant loops that are common to both Unit 1 and Unit 2. All control switches and labels are identical on both of the Control Room XU-51 Panels. Normally, the Loop A vaporizer is used for Unit 1 and Loop B vaporizer is used for Unit 2. Procedural provisions exist to allow the use of crosstie valves to supply either unit from Loop A or B and to select the main point of control, either Unit 1 or 2. These differences have no impact on training.

VII. EOP-01-SUPPLEMENTAL EMERGENCY PROCEDURE (SEP)-08

A. Section 5

1. **Step 1a** is for Unit 1 only: In panel H12-P621 TERMINATE white wire, 1-E51-304, lifted from terminal 99 on terminal board BB. In panel H12-P617 TERMINATE black wire, 1-E51-305, lifted from terminal 62 on terminal board CC.

2. **Step 1b** is for Unit 2 only: In panel H12-P621 TERMINATE white wire, 2-E51-304, lifted from terminal 99 on terminal board BB. In panel H12-P617 TERMINATE black wire, 2-E51-305, lifted from terminal 62 on terminal board CC.

3. **Impact of Procedural Differences.** The procedural difference between Unit 1 and Unit 2 is the termination of lifted leads on the associated terminal boards that restore RCIC low reactor pressure isolation logic to normal. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be terminated in accordance with procedural steps. The instructor then inputs an override that simulates the termination of the requested lead(s). Training and testing of the knowledge required for termination of wire leads are covered outside of the simulator setting. Once

terminated, the RCIC System is operated using only one set of procedures which provides steps to be performed for both units. There is, therefore, no impact on training.

B. Section 6

1. **Step 1a** is for Unit 1 only: In panel XU-27 TERMINATE black wire, K11A-X-9, lifted from terminal 21 on terminal board B. In panel XU-28 TERMINATE white wire, 1-HRO-22-113, lifted from terminal 27 on terminal board B.

2. **Step 1b** is for Unit 2 only: In panel XU-27 TERMINATE black wire, K11A-X-9, lifted from terminal 41 on terminal board G. In panel XU-28 TERMINATE white wire, AV9, lifted from term. 27 on terminal board B.

3. **Impact of Procedural Differences.** The procedural difference between Unit 1 and Unit 2 is the termination of lifted leads on the associated terminal boards that restore the Drywell Cooler LOCA Lockout Logic to normal. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be terminated in accordance with procedural steps. The instructor then inputs an override that simulates the termination of the requested lead(s). Training and testing of the knowledge required for termination of wire leads are covered outside of the simulator setting. Once terminated, the system is operated using only one set of procedures which provides steps to be performed for both units. There is no impact on training.

C. Section 7

1. **Step 2a** is for Unit 1 only: In panel H12-P620 TERMINATE black wire, CC-F2-2, lifted from terminal 58 on terminal board AA. In panel H12-P620 TERMINATE red wire, 1-E41-34, lifted from terminal 60 on terminal board AA.

2. **Step 2b** is for Unit 2 only: In panel H12-P620 TERMINATE black wire, BB-F2-2, lifted from terminal 58 on terminal board AA. In panel H12-P620

TERMINATE red wire, 2-E41-34, lifted from terminal 60 on terminal board AA.

3. **Impact of Procedural Differences.** The procedural difference between Unit 1 and Unit 2 is the termination of lifted leads on the associated terminal boards that restore the HPCI High Suppression Pool Level Suction Transfer Logic to normal. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be terminated in accordance with procedural steps. The instructor then inputs an override that simulates the termination of the requested lead(s). Training and testing of the knowledge required for termination of wire leads are covered outside of the simulator setting. Once terminated, the HPCI System is operated using only one set of procedures which provide steps to be performed for both units. There is no impact, therefore, on training.

VIII. EOP-01-SUPPLEMENTAL EMERGENCY PROCEDURE (SEP)-10

A. Section 1

1. **Step 1a** is for Unit 1 only: In panel H12-P620 LIFT AND TAPE black wire, CC-F2-2, from terminal 58 on terminal board AA. In panel H12-P620 LIFT AND TAPE red wire, 1-E41-34, from terminal 60 on terminal board AA.

2. **Step 1b** is for Unit 2 only: In panel H12-P620 LIFT AND TAPE black wire, BB-F2-2, from terminal 58 on terminal board AA. In panel H12-P620 LIFT AND TAPE red wire, 2-E41-34, from terminal 60 on terminal board AA.

3. **Impact of Procedural Differences.** The procedural difference between Unit 1 and Unit 2 is the lifting of leads on the associated terminal boards that defeat the HPCI High Suppression Pool Level Suction Transfer Logic. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be lifted in accordance with procedural steps. The

instructor then inputs an override that simulates the lifting of the requested lead(s). Training and testing of the knowledge required for lifting of leads are covered outside of the simulator setting. Once lifted, the HPCI System is operated using only one set of procedures which provides steps to be performed for both units; therefore, there is no impact on training.

B. Section 3

1. **Step 1a** is for Unit 1 only: In panel H12-P621 LIFT AND TAPE white wire, 1-E51-304, on terminal 99 on terminal board BB. In panel H12-P617 LIFT AND TAPE black wire, 1-E51-305, on terminal 62 on terminal board CC.

2. **Step 1b** is for Unit 2 only: In panel H12-P621 LIFT AND TAPE white wire, 2-E51-304, on terminal 99 on terminal board BB. In panel H12-P617 LIFT AND TAPE black wire, 2-E51-305, on terminal 62 on terminal board CC.

3. **Impact of Procedural Differences.** The procedural difference between Unit 1 and Unit 2 is the lifting of lifted leads on the associated terminal boards that defeat RCIC low reactor pressure isolation logic. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be lifted in accordance with procedural steps. The instructor then inputs an override that simulates the lifting of the requested lead(s). Training and testing of the knowledge required for lifting leads are covered outside of the simulator setting. Once lifted, the RCIC System is operated using only one set of procedures which provides steps to be performed for both units. There is no impact on training.

C. Section 4

1. **Step 1a** is for Unit 1 only: In panel XU-27 LIFT AND TAPE black wire, K11A-X-9, from terminal 21 on terminal board B. In panel XU-28 LIFT AND TAPE white wire, 1-HRO-22-113, from terminal 27 on terminal board B.

2. **Step 1b** is for Unit 2 only: In panel XU-27 LIFT AND TAPE black wire, K11A-X-9, from terminal 41 on terminal board G. In panel XU-28 LIFT AND TAPE white wire, AV9, from terminal 27 on terminal board B.

3. **Impact of Procedural Differences.** The procedural difference between Unit 1 and Unit 2 is the lifting of lifted leads on the associated terminal boards that defeat the Drywell Cooler LOCA Lockout Logic. The panels identified in the procedure are not part of the current scope of simulation. During a training exercise, the operators call the simulator instructor for leads to be lifted in accordance with procedural steps. The instructor then inputs an override that simulates the lifting of the requested lead(s). Training and testing of the knowledge required for lifting leads are covered outside of the simulator setting. Once terminated, the system is operated using only one set of procedures which provides steps to be performed for both units. Therefore, there is no impact on training.

IX. EOP-01-LOCAL EMERGENCY PROCEDURE (LEP)-01

A. Section 3

1. **Step 4** is for Unit 1 only: PLACE the RHR SERVICE WATER CROSS-TIE VALVE, 1-E11-F073, breaker switch to "ON" at MCC 1XB COMPT 1-DN2.

2. **Step 5** is for Unit 2 only: PLACE the RHR SERVICE WATER CROSS-TIE VALVE, 2-E11-F073, Appendix R local breaker/disconnect, to "ON" at NODE L1G in cable spread area.

3. **Step 11**
   a. **Step 11d** is for Unit 1 only: PLACE the RHR SERVICE WATER CROSS-TIE VALVE, 1-E11-F073, breaker switch to "OFF" at MCC 1XB COMPT 1-DN2.

   b. **Step 11e** is for Unit 2 only: PLACE the RHR SERVICE WATER CROSS-TIE VALVE, 2-E11-F073, Appendix R local breaker/disconnect, to "OFF" at NODE L1G in cable spread area.

4. **Impact of Procedural Differences.** These procedural differences between Unit 1 and Unit 2 are related to energizing/deenergizing Appendix R (ASSD) equipment to allow Service Water Injection to the Reactor Vessel. The equipment identified in the procedure is located outside of the Main Control Room and is not physically simulated. During a training exercise, the operators call the simulator instructor for energizing/deenergizing components in accordance with procedural steps. The instructor then inputs an override that simulates the supply/removal of electrical power to the associated component. Training and testing of the knowledge required for breaker/ disconnect switch are covered outside of the simulator setting. Once energized/deenergized, the system is operated using only one set of procedures which provides steps to be performed for both units. There is no impact on training.

B. Section 5

1. **Step 4** is for Unit 1 only: UNLOCK and OPEN fire protection (well water) to service water flush shutoff valve, 2-FP-PIV-20 (located adjacent to the hot maintenance shop).

2. **Step 5** is for Unit 2 only: UNLOCK and OPEN fire protection (well water) to service water flush shutoff valve, 2-FP-PIV-10 (located adjacent to the hot maintenance shop).

3. **Step 7** Unit 1 only: PLACE the RHR SERVICE WATER CROSS-TIE VALVE, 1-E11-F073, breaker switch to "ON at MCC 1XB COMPT 1-DN2.

4. **Step 8** is for Unit 2 only: PLACE the RHR SERVICE WATER CROSS-TIE VALVE, 2-E11-F073, Appendix R local breaker/disconnect, to "On" at NODE L1G in cable spread area.

5. **Step 12**

   a. **Step 12b** is for Unit 1 only: PLACE the RHR SERVICE WATER CROSS-TIE VALVE, 1-E11-F073, breaker switch to "OFF" at MCC 1XB COMPT 1-DN2.

b. **Step 12c** is for Unit 2 only: PLACE the RHR SERVICE WATER CROSS-TIE VALVE, 2-E11-F073, A[illegible]ndix R local breaker/disconnect, to "OFF" [illegible]ODE L1G in cable spread area.

c. **Step 12d** is for Unit 1 only: CLOSE AND LOCK CLOSED fire protection (well water) to service water flush shutoff valve, 2-FP-PIV-20.

d. **Step 12e** is for Unit 2 only: CLOSE AND LOCK CLOSED fire protection (well water) to service water flush shutoff valve, 2-FP-PIV-10.

6. **Impact of Procedural Differences.** These procedural differences between Unit 1 and Unit 2 are related to energizing/deenergizing Appendix R (ASSD) equipment and the routing of Fire Protection Water to allow injection to the Reactor Vessel. The equipment identified in the procedure is located outside of the Main Control Room and is not physically simulated. During a training exercise, the operators call the simulator instructor for energizing/ deenergizing components in accordance with procedural steps. The instructor then inputs an override that simulates the supply/removal electrical power to the associated component. The routing of Fire Protection Water is outside the current scope of simulation. A Simulator Modification Request (SMR 90-0451) has been generated to correct this item. Training and testing of the knowledge required for breaker/disconnect switch and routing of Fire Protection Water are covered outside of the simulator setting. Once aligned, the system is operated using only one set of procedures which provides steps to be performed for both units. Therefore, after the SMR has been completed, there will be no impact on training.

APPENDIX A
EMERGENCY OPERATING PROCEDURE REVIEW
FOR DIFFERENCES BETWEEN UNIT ONE AND UNIT TWO

X. EOP-01-LOCAL EMERGENCY PROCEDURE (LEP)-03

A. Section 1

1. **Step 3**

a. **Step 3c**

(1) **Step 3.c.1** is for Unit 1 only: To the southeast stairwell.

(2) **Step 3.c.2** is for Unit 2 only: To the 50-foot elevation via the refueling floor crane access.

b. **Step 3d**

(1) **Step 3.d.1** is for Unit 1 only: To the discharge of the submersible pump via the southeast stairwell on the 80-foot elevation.

(2) **Step 3.d.2** is for Unit 2 only: To the discharge of the submersible pump at he refueling floor crane access on the 50-foot elevation.

c. **Step 3f**

(1) **Step 3.f.1** is for Unit 1 only: Through the southeast stairwell.

(2) **Step 3.f.2** is for Unit 2 only: Through the refueling floor crane access.

d. **Step 3g**

(1) **Step 3.g.1** is for Unit 1 only: From the 20-foot elevation to the B RHR HX 9-foot elevation via the soutneast stairwell.

(2) **Step 3.g.2** is for Unit 2 only: From the 20-foot elevation refueling floor carne access to the A RHR HX via the northeast stairwell.

2. **Step 4**

a. **Step 4b**

(1) **Step 4.b.1** is for Unit 1 only: Through the southeast stairwell.

(2) **Step 4.b.2** is for Unit 2 only: Through the refueling floor crane access.

b. **Step 4c**

(1) **Step 4.c.1** is for Unit 1 only: From the 20-foot elevation to the B RHR HX 9-foot elevation via the southeast stairwell.

(2) **Step 4.c.2** is for Unit 2 only: From the 20-foot elevation refueling floor crane access to the A RHR HX via the northeast stairwell.

3. **Impact of Procedural Differences.** These procedural differences between Unit 1 and Unit 2 are related to the dissimilarity between the units for routing of equipment that is located outside of the Main Control Room. Training and testing of the knowledge required for this evolution are covered outside of the simulator setting. There will be no impact on training.

APPENDIX B

ABNORMAL OPERATING PROCEDURE REVIEW FOR DIFFERENCES BETWEEN UNIT ONE AND UNIT TWO

I. AOP-2.2 RPIS FAILURE

A. **Step 3.2.3.a**

1. Unit 1: 120 VAC UPS panel V7A, CKT 12, V9A, CKT 1, 120 VAC INSTRUMENT POWER panel 1AB, CKT 2.

2. Unit 2: 120 VAC UPS panel V8A, CKT 12, V10A, CKT 1, 120 VAC INSTRUMENT POWER panel 2AB, CKT 2.

3. **Impact of Procedural Differences.** These procedural differences between Unit 1 and Unit 2 are related to the 120 VAC UPS and Instrument Power Systems and their unit-specific panel designations. The equipment identified in the procedure is located outside of the Main Control Room and is not physically simulated. The electrical output from the panels is currently simulated, but individual breakers are not. During a training exercise, the operators call the simulator instructor for component verification in accordance with procedural steps. The instructor then deletes an override or malfunction that simulates the supply of electrical power to the associated component or reports the problem cannot be cleared. Once energized/deenergized, the system is operated using only one set of procedures which provides steps to be performed for both units. Training and testing of the knowledge required for this procedural evolution are covered outside of the simulator setting. There is, therefore, no impact on training.

II. AOP-3.0 MODERATOR TEMPERATURE DECREASE

A. **Step 3.2.4:** If necessary to prevent a reactor scram, manually INITIATE a select rod insert (Unit 2 only).

B. **Impact of Procedural Differences.** These procedural differences between Unit 1 and Unit 2 are related to the Select Rod Insert (SRI) function of the Reactor Protection System. This equipment identified in the procedure is located on the Unit 2 Main Control Panel P603 and does not exist on Unit 1. The simulator presently models Unit 2. When using the simulator for Unit 1 training, the instructor overrides the Select Rod Insert switch to prevent its operation. If the function is available for Unit 2 and can be inhibited for Unit 1 operation, there is only minimal impact on training due to the physical location of the pushbutton.

III. AOP-17.0 TBCCW SYSTEM FAILURE

A. **Step 3.2** Supplementary Actions

1. G.1 for Unit 1 only: PLACE control switch SERVICE AIR ISOL VLVS, SA-PV-706-1 AND 2 to "OFF".

2. G.2 for Unit 2 only: PLACE control switch SERVICE AIR ISOL VLVS, SA-PV-706-1 AND 2 to "ON".

B. **Impact of Procedural Differences.** Procedural differences related to the TBCCW System Failure are a result of switch labeling disagreements between Service Air Isolation Valves SA-PV-705 1 & 2 for Units 1 and 2. A deficiency exists because the procedure does not agree with the actual reference plant labeling. For Unit 1 these switches are labeled "OFF/ON" and for Unit 2 the switches are labeled "CLOSE/OPEN". Unit 2 switch labels are in disagreement with the procedure. An OI-18 Procedure Change Request has been submitted to the reference plant to change the procedure to match the plant labeling. The functions of each switch position and resultant valve operations are the same for both units. Once the operator has identified these labeling differences, the system is operated using only one set of procedures which provide steps to be performed for both units. This labeling disagreement has minimal training impact and no action will be taken to change the simulator as a result of these differences.

IV. AOP-18.0 NUCLEAR SERVICE WATER SYSTEM FAILURE

A. **Step 3.2** Supplementary Actions

1. **Step 11**

   a. **Step 11d** for Unit 1 only: UNLOCK <u>AND</u> OPEN fire protection (well water) to service water flush shut-off valve, 2-FP-PIV20.

   b. **Step 11e** for Unit 2 only: UNLOCK <u>AND</u> OPEN fire protection (well water) to service water flush shut-off valve, 2-FP-PIV10.

2. **Step 12**

a. **Step 12f** for Unit 1 only: UNLOCK AND OPEN fire protection (well water) to service water flush shut-off valve, 2-FP-PIV20.

b. **Step 12g** for Unit 2 only: UNLOCK AND OPEN fire protection (well water) to service water flush shut-off valve, 2-FP-PIV10.

B. **Impact of Procedural Differences.** These procedural differences between Unit 1 and Unit 2 are related to Fire Protection (Well Water) to Service Water Flush Shut-off Valves. Equipment identified in the procedure is located outside of the Main Control Room and is not physically simulated. During a training exercise, the operators call the simulator instructor for manipulation of these components in accordance with procedural steps. Once completed, the system is operated using only one set of procedures which provides steps to be performed for both units. Training and testing of the knowledge required for this evolution is covered outside of the simulator setting. There is no impact on training.

V. AOP-32.0 PLANT SHUTDOWN FROM OUTSIDE THE CONTROL ROOM

A. **Step 3.1** Immediate Actions

1. **Step A.4**: When steam flow is less than $3X10^6$ lb/hr (Unit 2 only), PLACE mode switch to shutdown.

B. **Step 3.2** Supplementary Actions

1. Notes on page 8 of 54
   a. Note 1: 1-E41-F011 located Unit 1 Rx building, south RHR room, 9' elevation SE corner.

   b. Note 2: 2-E41-F011 located Unit 2 Rx building, north RHR room, above off-gas drain tank.

2. **Step 15**

   a. **Step 15e**

      (1) Station 3, Unit 1 only, E11-F009 at MCC 1XA compt DH3.

(2) Station 2, Unit 2 only, E11-F008 at MCC 2XDB compt B50.

b. **Step 15f**

(1) Station 3, Unit 1 only, E11-F009 at MCC 1XA compt DH3.

(2) Station 2, Unit 2 only, E11-F008 at MCC 2XDB compt B50.

c. **Step 15k**

(1) Station 3, Unit 1 only, E11-F009 at MCC 1XA compt DH3.

(2) Station 2, Unit 2 only, E11-F008 at MCC 2XDB compt B50.

C. **Impact of Procedural Differences.** The main procedural differences between Unit 1 and Unit 2 are related to the dissimilarity between the units for equipment that is located outside of the Main Control Room. The only portion of this procedure that is trained on in the simulator is the Immediate Actions that are required to be performed prior to evacuation of the Control Room. All other actions are performed outside of the Control Room and the simulator is not utilized for this training. Training and testing of the knowledge required for this evolution are covered outside of the simulator setting. There will be no impact on training.

The procedural difference that maybe trained on in the simulator is a result of the Bypass Valve physical configuration and high steam flow isolation on Unit 2 when not in RUN Mode. From the simulator instructor station Instructors have the capability to select Unit 1 or Unit 2 mode of operation which allows Bypass Valve operation and MSIV steam flow isolation logic to be activated for the respective unit. There is only one set of AOP procedures and it provides steps to be performed for both units; therefore, there is no impact on training.

ENCLOSURE 3

UNIT TWO SIMULATOR CERTIFICATION REPLACEMENT PACKAGE

ANSI 3.5 1985 APPENDIX A INFORMATION
CP&L BRUNSWICK UNIT TWO SIMULATOR CERTIFICATION

TABLE OF CONTENTS

ANSI 3.5 1985 APPENDIX A INFORMATION
CP&L BRUNSWICK UNIT TWO SIMULATOR CERTIFICATION

INTRODUCTION

General Information

The Brunswick Steam Electric Plant Simulator Certification Package is provided to demonstrate compliance with the requirements of 10CFR55.45(b) including compliance with ANSI/ANS 3.5 1985 as implemented by NRC Regulatory Guide 1.149, 1987. The subject simulator facility consists solely of a plant referenced full scope simulator, which is the primary vehicle for providing positive, practical license training. The documentation provided herein is intended to constitute sufficient basis for the certification of the Brunswick Simulator.

Simulator Configuration Control Board

One means of evaluation and review of the simulator operations is the Simulator Configuration Control Board (SCCB). This group is made up of Plant Operations Training and Simulator Support Personnel. The Simulator Configuration Control Board includes one currently licensed Brunswick Plant operator and one SRO licensed or certified simulator instructor. The group reviews all proposed non-routine changes to the Simulator, such as changes to the scope of simulation or any desired changes in simulator capability. These evaluations are documented as training value assessments. The Control Board reviews outstanding simulator certification discrepancies for their impact on training to identify high priority items. The Control Board reviews differences between the simulator and the plant to ensure they do not detract form training. Minutes of board meetings are maintained to serve as a record of Control Board decisions. Qualifications of current Control Board members are included as Appendix G.

Exceptions to ANSI/ANS 3.5

The exceptions identified during certification testing or the review/analysis of ANSI/ANS 3.5 are contained in this section of the submittal package. The exceptions are listed by ANSI/ANS 3.5 reference and subject. Each specific exception taken and its associated justification is addressed individually and was reviewed and approved by the Configuration Control Board to ensure the exceptions do not adversely impact the license operator training program and do not prevent 10CRF55 compliant simulator examinations (operating tests) from being conducted.

ANSI 3.5 1985 APPENDIX A INFORMATION
CP&L BRUNSWICK UNIT TWO SIMULATOR CERTIFICATION

1. ANS Section 3.1.1 - Normal Plant Evolutions

   (4) - Reactor Trip Followed by Recovery to Rated Power. The test conducted was to recover the plant to 3% power vice full power. Continuation of this evolution is the same as the startup from a cold shutdown condition. The transient is not part of the training program.

   (7) - Operations at Less than Full Rated Coolant Flow. This is a PWR specific transient.

2. ANS Section 3.1.2 - Plant Malfunctions

   (1) a. - Significant PWR Steam Generator Tube Leaks. This is a PWR specific transient and not related to BWRs.

   (12) - Misaligned Control Rods.
   This is a PWR specific transient and not related to BWRs.

   (18) - Failure of Reactor Coolant Pressure Volume Control Systems.
   This is a PWR specific transient and not related to BWRs.

   (20) - Main Feed Line Break Inside Drywell.
   This malfunction was not part of the original scope of simulation and was not needed for training. The training program is currently being rewritten and the need for the malfunction has been identified. Plans have been implemented to develop the malfunction and have it available for training by December 31, 1991.

   (22) - Process Instrumentation, Alarms, and Control System Failures.
   Presently no malfunctions exist that fit under the heading of "alarm failures". However, each annunciator can be overridden by the Instructor to provide no alarm, false alarm or random actuating alarms. An override is not considered to be a malfunction and in accordance with ANS/ANSI 3.5 they do not require testing. Therefore, an exception is being taken to the standard Section 3.1.2 (22) requiring malfunctions for the failure of alarms.

3. ANS Section 3.2.1 - Degree of Panel Simulation

   The simulator is referenced to the Unit 2 Control Room for panels, controls, instrumentation, alarms, and other man-machine interfaces. The differences between the control boards are limited. Plant modifications implemented on one unit usually appear on the opposite unit during a future outage. All labels and other identifiers are for Unit 2.

The Control Room is a two Unit Control Room, the simulator is a single unit control room which models only Unit 2. Back panels simulated do not match the plant configuration. See Appendix C for a more detailed plan of the back panel upgrade.

4. ANS Section 3.2.3 - Control Room Environment

   The simulator has two video cameras and permanently installed microphones that are used during examinations and training. The Control Rooms do not have cameras and microphones installed. The plant has a two unit control room while the simulator models only the Unit 2 side.

5. ANS Section 4.1 - Steady State Operations

   The data supplied by the plant for steam flow, feed flow, and recirc loop flow was inconsistent. The Simulator Support group used only the data that was consistent with the rest of the plant data. Plans are in progress to replace the inconsistent data with good data from the plant at the next available opportunity.

   The simulated Plant Process Computer does not simulate data points needed for Steady State and Normal Operations. The system is being replaced in conjunction with a Plant Modification. See Appendix E "Deficiencies" for additional information.

6. ANS Section 4.3 (4) - Reactor Coolant System pressure versus temperature relationship indicative of gross core voiding.

   This is a PWR specific transient and not related to BWRs.

7. ANS Section 5.2 - Simulator Update Design Data/
   ANS Section 5.3 - Simulator Modification

   Plant Direct Replacement of components from 1985 to January 1989 were not reviewed for simulator impact. A review by Brunswick Technical Support is in progress to identify Direct Replacements that could impact the simulator. This review is to be completed by April 30, 1991. Following their review, the Brunswick Simulator Support Group will review the Direct Replacements and initiate simulator changes as necessary.

Plant Modification 87-113 - RB and TB Vent Effluent Monitoring has not been implemented on the simulator. It is part of the HVAC upgrade scheduled to be implemented by August 30, 1991.

8. ANS Section Appendix B2 - PWR Simulator Operability Test

This item is specific to PWRs only.

I. GENERAL DESCRIPTION

A. Owner

The Brunswick Simulator is owned by Carolina Power and Light (CP&L). The Simulator Complex is located at the Brunswick Steam Electric Plant, about 2.5 miles north of Southport, North Carolina. CP&L has its headquarters in Raleigh, North Carolina about 135 miles northwest of the city of Southport.

B. Reference Plant

The Brunswick Simulator simulates the Brunswick Unit 2 Control Room. Brunswick site consists of two 850MWe General Electric Boiling Water Reactors.

C. Ready for Training Date

The Simulator was built by Electronics Associates, Inc. (EAI) of West Long Branch, New Jersey. The contract for the Simulator was signed August of 1980. EAI delivered the Simulator to the Brunswick site and training was started in February of 1984.

II. CONTROL ROOM COMPARISON

A. Physical Arrangement

There is only one major exception taken to the Plant Control Room physical layout. The location of the STA desk in the Simulator Control Room is several feet away from where it is located in the Plant Control Room. This was necessary because the Simulator Control Room is not shaped exactly the same as the Plant Control Room. This change has no impact on training since the STA is rarely at his desk during the training sessions. There are minor spatial differences due to the Simulator Control Room not conforming exactly to Plant Control Room dimensions. These differences do not adversely affect training. The physical arrangement of the Simulator Control Room is shown in Figure 1 and the Plant Control Room is shown in Figure 2.

B. Panels and Equipment

The original Simulator scope included all front and selected back panels and controls, these consisted of the following:

1. ECCS equipment panel (P601).
2. Reactor control panel (P603).
3. Main Generator/EHC control panel (XU-1).
4. Feedpump/EDG control panel (XU-2).
5. Turbine/BOP control panel (XU-3).
6. Turbine/BOP recorder panel (XU-4).
7. Switchyard control panel (XU-5).
8. Primary Containment vent/purge panel (XU-51).
9. Main fire control panel (XU-69).
10. SRM/IRM/Rad Monitoring panel (P604).
11. TIP panel [includes RWM panel] (P607-partial panel).
12. APRM panels (P608).
13. Drain sump timer panel (P604).
14. Reactor Building ventilation Radiation monitoring panel (XU-55).
15. Drywell rad monitoring panel (XU-61).

Plant modifications have prompted some major modifications to the Simulator complex. These include the addition of an Off-Gas panel (XU-80), Emergency Response Facility Information System (ERFIS) computer system, Plant Control Room furniture change out, panel color change, and control room carpet addition. These changes were accomplished on the Simulator Control Room before the end of 1987.

C. Systems

The Brunswick Simulator systems were modelled to simulate the Unit 2 systems as closely as data was available to support. However, several differences exist which require the students to operate the Simulator in a different manner than the reference plant. The differences are as follows:

Installation of EOP jumpers in control room equipment cabinets is done by remote function in the Simulator

Bypassing LPRM cards is done by remote function in the Simulator

Bypassing the APRM flow units is done by remote function in the Simulator

Reports to and from Unit 1 staff are done by the Simulator Operator

The major differences between the Simulator Control Room and the Plant Control Room are located in the back panel area. The Simulator Complex has some of the back panels in the Plant Control Room. Figure 3 shows the current Simulator Back Panel arrangement and Figure 4 shows the plant Control Room and Back Panel arrangement. Appendix C describes CP&L plans to upgrade the Simulator Control Room Back Panel configuration.

D. Environment

Slight environmental differences exist between the Simulator Control Room and Plant Control Room. The primary differences consist of locations of doors and windows, and the shape of the room. The Simulator Control Room has the same lighting controls and configuration as the Plant Control Room. The predominant environmental difference is the sound of the unit annunciators. The Simulator Control Room annunciator is notably different from the Plant Control Room annunciator. This discrepancy has not been corrected since the plant is installing a new annunciator sound system. After that modification is complete, the Simulator Control Room will be modified to match the sounds as close as possible. Plant Control Room carpet color and arrangement as well as panel paint color have also been matched as close as possible. The simulator has two video cameras and permanently installed microphones. The Control Rooms do not have cameras or microphones.

III. Instructor Interface

A. General Description

1. The Brunswick Simulator Complex has an instructors booth that is separated from the Simulator Control Room and visually out of sight (one way mirrored glass) from the operators view. The instructor is able to observe the actions of the operator in the Simulator Control Room from the booth.

2. The instructor controls all functions of the Simulator from the Control Booth. This is accomplished by using a key board that is interfaced with three control and monitoring CRTs. The Simulator instructor inputs malfunctions, simulates local operator actions, and is also able to interact with students using other special features of the Simulator to be discussed later. The instructor is also able to monitor most plant parameters from the booth.

3. The instructor has the capability of operating the Simulator from the Instructors Booth or from the Simulator Control Room using a remote key board and CRT.

B. Simulator Initial Conditions

1. After the Simulator has been started, the instructor may select any one of 51 Initial Conditions (ICs). The description of the 51 ICs are as follows:

   ICs 1 through 30 are permanent ICs that are password protected.

   ICs 31 through 50 are instructor selected ICs, which are not password protected.

   IC 51 is a default snapshot IC.

2. After selecting an IC, the Simulator is placed in RUN to commence real time operation.

C. Simulator Malfunction Selection

1. Stored within the Simulator is a wide array of simulated plant malfunctions ranging from major casualties to minor equipment failures. To select a particular malfunction, the instructor selects

from a menu driven malfunction list.

2. The instructor selects the time at which the malfunction is to start. Sixteen (16) malfunctions can be directed to occur at different times or, if desired, all at the same time.

3. A special feature of the Simulator malfunction program is the ability of the instructor to select the severity of certain malfunctions and the rate at which the malfunction is to occur.

4. The delay times, the severity rates, and the ramp time of selected malfunctions can be determined from the instructors console.

D. Controls Outside Control Room

Appendix D lists the Digital and Analog overrides that the instructor may input during training exercises.

In addition to the above, the Simulator instructor also has the capability to override lights, switches, and meters in the Simulator Control Room to any possible position by using the Instructor Override feature.

E. Instructor Station Features

1. Parameter and Equipment Monitoring

a. Plant Parameter Status Display

One CRT in the instructor booth is capable of providing a "log sheet" of the status of selected plant parameters, such as reactor power, vessel temperature, reactor pressure, etc. These parameters are selected by the instructor for his information.

b. Equipment Status Display

A CRT in the instructors booth allows the selection of certain systems, such as RHR, to determine the status of the various pumps, valves, etc., in that system. The status is indicated by color.

c. Parameter Versus Time Plots

Using the CRT in the instructors booth, the instructor is able to monitor trends using graphics. The instructor selects the various parameter(s) that is desired to be plotted.

2. Simulator Special Features

a. Switch Check Status

The switch check feature of the Simulator allows the instructor to assure the proper positioning of control room switches and potentiometers for each IC that is selected. A light on, or very near a switch or potentiometer will blink if it is not in the proper position for the selected IC. The instructor is able to review the status of all switches and potentiometers on the CRT when the SWITCH CHECK STATUS function is selected.

As an added feature, the instructor can override the switch check if the out of position switch is of little significance to the evolution to be run.

b. Simulator Freeze Function

When this function is selected, the Simulator is stopped at any point in an evolution. This is an instructor aid to allow instructors the opportunity to interface with students. When it is desired to recommence operation of the Simulator, the RUN function is selected and the Simulator starts at the point that the freeze function was initiated.

c. Backtrack Function

The backtrack function allows the instructor to back-up and restart the Simulator from a previous time in the training session.

d. Snapshot

The snapshot feature of the Simulator enables the instructor to save a condition at any given point of an evolution. The instructor then can use the snapshot as an IC when desired. This includes saving the malfunctions that were selected. The snapshot is stored in a default IC (IC 51).

e. Fast Time

The Fast Time feature of the Simulator allows the instructor to accelerate through some plant evolutions that are not training intensive to a point where more training intensive evolutions can be given their proper attention.

The following list of plant evolutions can be selected from the menu when the FAST TIME pushbutton is depressed:

* Fission product poison concentration
* Core Decay Heat
* Water Chemistry
* Turbine system heatup

When FAST TIME is selected by the instructor, the dynamics of the selected plant parameters will speed up while all other parameters remain at real time.

f. Slow Time

The slow time feature of the Simulator allows the instructor to slow the dynamics of a particular evolution or scenario. The students are then able to evaluate trends, parameters, etc., that may not be able to be observed in real time operation.

When SLOW TIME is selected by the instructor, all plant dynamics are slowed to a preselected lower frequency.

g. Computer Assisted Exercise

The assisted exercise feature of the Simulator allows the selection of up to 32 preprogrammed lesson scenarios which will automatically step the Simulator through a set of predefined operations and controls. This feature minimizes the setup time and manipulations required by the instructor, and provides standard, repeatable, and preplanned exercises on the Simulator.

h. Simulator Operating Limits

In accordance with ANSI/ANS 3.5 section 4.3, the simulator will alert the instructor, by way of a message displayed on the control CRT, if any number of operating limits are exceeded which could lead to negative operator training or indicate that the simulator is proceeding out of the limits of the model design. The limits used to alert the instructor are the following:

- Drywell Pressure (75 psig)
- Reactor Vessel Pressure (1250 psig)
- Torus Water Temperature (160°F)
- Feedwater Flow ($12X10^6$ lbm/hr)
- Vessel Steam Flow ($12X10^6$ lbm/hr)

IV. Procedure Analysis

The procedures in the Simulator Control Room are controlled copies of the procedures used in the Brunswick Unit 2 Control Room therefore, no discrepancies exist between the two.

V. Simulator Design Data Base

The original simulator design data base consisted of plant reference drawings and system test results which were sent to the simulator vendor for simulator construction. This set of reference documents constitutes the as-built data base and was entered into the CMS system by document name and revision number. The current simulator data base was developed from the original data base and updated with plant modification data. The data base is now kept current with plant data.

VI. Simulator Discrepancy Resolution and Upgrading Programs

A. Simulator Problem Report System

Discrepancies noted in the simulator during testing or training sessions will be documented in the Simulator Problem Report Book. Persons noting a problem in the simulator may submit a Problem Report. In addition, the simulator staff will generate a Problem Report in response to trainee feedback. The Problem Report will describe the problem with sufficient information for the simulator staff to identify the problem for resolution. Problem Reports which are determined by the Senior Specialist - Simulator to be valid and require revisions to the simulator are used to generate Simulator Service Requests as described below.

B. Plant Modification Implementation

All Plant Modifications which are approved for work are reviewed for potential impact on the simulator by the Simulator Configuration Control Board. Plant Mods which are within the current simulator scope and have an effect on the simulator are assigned a Simulator Modification Request (SMR) number. Plant Mods which are outside the current scope of the simulator but which may have an impact on training are reviewed by the Simulator Configuration Control Board for possible implementation on the simulator. If a decision is made to implement the Plant Mod on the simulator, an SMR is generated to perform and document the work.

SMRs are scheduled to be completed no later than two years after they are declared operable by the plant. If the Simulator Configuration Control Board determines that the SMR has significant training value, it will be implemented as soon as possible.

C. Simulator Service Request Program

Problem Reports which are written as a result of simulator training or testing are used to generate Simulator Service Requests (SSR). The SSR is used by the simulator operations and software personnel to evaluate the problem, and to identify the corrective action. Documentation used to research the problem is attached to the SSR for inclusion as part of the simulator data base.

D. Simulator Configuration Management System

A personal computer based Configuration Management System (CMS) is used for recording and tracking SSRs and SMRs. SSRs are entered into the system when written. The system automatically records the entry date and assigns a sequential number to the SSR. The initiator checks whether the SSR is for a known problem or a proposed enhancement to the simulator and this information is entered into the system.

After the SSR is entered into the system, is sent to the Senior Specialist - Simulator for disposition. The Senior Specialist - Simulator assigns a priority number of 1 through 4 to the SSR. For Problem Reports, the SSR is pretested to validate the problem.

Plant Mods are reviewed by the Simulator Support Subunit for applicability to the simulator. The Plant Mod is entered into the CMS system when it is received. When the decision is made as to the Station Mods applicability, this information is also entered into CMS. If the Station Mod is applicable, the CMS system will automatically generate an SMR.

VII. Simulator Tests

A. Certification Test Schedule

1. Annual Operability Tests

The annual operability tests include the simulator Real Time Test, Physical Fidelity Comparison, Steady State Test, and Transient tests. These tests are listed in Appendix A.

2. Malfunction Tests

Selected malfunctions available on the simulator have been tested for Certification. These tests will be scheduled for continuing testing such that 25% are tested each year and all malfunctions are tested during the four year period following the submittal of this report.

Appendix B lists the malfunctions which are currently certified and the schedule for testing over the next four years. The malfunction tests are divided in such a manner that most plant systems are tested each year. Appendix B also contains a cross-reference listing that shows the applicable ANSI/ANS 3.5 reference section.

B. Certification Test Acceptance Criteria

1. Simulator Operating Limits Test

Each of the selected operating limits shall provide an alarm to the simulator instructor when they exceed predetermined setpoints that are indicative of events beyond the model capabilities or known plant behavior.

2. Simulator Real Time Test

For the Simulator Real Time Test, the simulation must be proceeding in real time. This test ensures that processor utilization does not exceed 100% and that the operator is not distracted by hesitation in simulator real time performance.

3. Simulator Steady State Test

Principal mass and energy balances are verified to be within limits as determined by Unit 2 data. The computed steady state operation is stable and does not vary more than ± 2% of the initial values over a 60 minute period. Critical Parameters are within ±2% of actual Unit 2 data. Computed values for Non-Critical Parameters, pertinent to plant operation, are within ±10% of Unit 2 parameters. Parameters which exceed the allowable error shall result in a Trouble Report being written.

4. Normal Operations, Transient and Malfunction Tests

The observable changes in simulator parameters correspond in direction to those expected from a best estimate for the simulated transient and do not violate the conservation of mass, energy, momentum, etc. The simulator shall not fail to cause an alarm or automatic action to occur if the reference plant would have caused an alarm or automatic action. The simulator shall not cause an alarm or automatic action to occur if the reference plant would not have caused an alarm or automatic action. Any tests that do not meet the above acceptance criteria will have a Trouble Report written against it.

C. Certification Test Abstracts

Abstracts of all certification tests are included as Appendix F to this report. A summary of Certification Test deficiencies is contained in Appendix E.

BRUNSWICK SIMULATOR FOUR YEAR CERTIFICATION SCHEDULE

NOTE:The following Simulator Test Procedures should be performed with a frequency of Once Per Calendar Year:

I. SIMULATOR OPERATING LIMITS TEST

STP-OL-001 Simulator Operating Limits Test (4.3)

II. COMPUTER REAL TIME TEST

STP-RT-001 Simulator Real Time Test (Appendix A A3.(1))

III. STEADY STATE

STP-SS-001	30% Power- Steady State Comparison (4.1)
STP-SS-002	50% Power- Steady State Comparison (4.1)
STP-SS-003	75% Power- Steady State Comparison (4.1)
STP-SS-004	100% Power-Steady State Comparison (4.1)

IV. NORMAL PLANT EVOLUTIONS

STP-MV-100		Plant Startup-Cold Shutdown To Hot Standby	(3.1.1 (1)&(5))
STP-MV-200		Unit Startup And Synchronization	(3.1.1 (2),(3)&(4))
STP-MV-300		Increasing Turbine Load to Rated Power	(3.1.1 (2)&(6))
STP-MV-400		Unit Shutdown-Rated Power To Cold Shutdown	(3.1.1 (8))
STP-MV-500		Rx Trip Followed By Recovery To Hot Standby	(3.1.1 (4))
STP-MV-600		Core Performance Testing	(3.1.1 (9))
	STP-MV-601	Thermal Power Calculation	
	STP-MV-602	In Sequence Critical Shutdown Margin Calculation	
	STP-MV-603	Core Performance Parameter Check	
	STP-MV-604	SRM/IRM/APRM Overlap Determination	
	STP-MV-605	Reactivity Anomaly Check	
	STP-MV-606	Flux Response To Control Rod Movement	
	STP-MV-607	Core Power Response To Voids	

STP-MV-700		Operator Conducted Surveillances (PT Guideline)(3.1.1 (10))	
	STP-MV-701	OPT-01.1.6	RPS Manual Scram
	STP-MV-702	OPT-18.1	Refueling Position Interlock Check
	STP-MV-703	OPT-01.10	IRM Detector Position Rod Block Function
	STP-MV-704	OPT-01.14a	Equipment and Instrument Channel Check
	STP-MV-705	OPT-01.14b	Equipment and Instrument Channel Check
	STP-MV-706	OPT-02.3.1	Suppression Chamber To Drywell Vacuum Breaker Operability
	STP-MV-707	OPT-02.3.2	Reactor Building To Suppression Chamber Vacuum Breaker and Valve Operability
	STP-MV-708	OPT-03.1.21	Reactor Recirculation Valves Operability
	STP-MV-709	OPT-04.1.8	Off Gas System Automatic Isolation Operability Check
	STP-MV-710	OPT-07.1.1a	Core Spray Injection Check Valve Operability Test-Loop A
	STP-MV-711	OPT-07.1.1b	Core Spray Injection Check Valve Operability Test-Loop B
	STP-MV-712	OPT-07.2.4a	Core Spray System Operability Test-Loop A
	STP-MV-713	OPT-07.2.4b	Core Spray System Operability Test-Loop B
	STP-MV-714	OPT-08.0	LPCI/RHR System Valve Operability Test
	STP-MV-715	OPT-08.0a	LPCI/RHR Loop A Check Valve Operability Test
	STP-MV-716	OPT-08.0b	LPCI/RHR Loop B Check Valve Operability Test
	STP-MV-717	OPT-08.2.2b	LPCI/RHR System Operability Test Loop B
	STP-MV-718	OPT-08.2.2c	LPCI/RHR System Operability Test Loop A
	STP-MV-719	OPT-09.2	HPCI System Operability Test
	STP-MV-720	OPT-09.3	HPCI System 165 PSIG Flow Test
	STP-MV-721	OPT-10.1.1	RCIC System Operability Test-Flow Requirements at 1000 PSIG
	STP-MV-722	OPT-10.1.3	RCIC System Operability Test-Flow Rates at 150 PSIG

BRUNSWICK SIMULATOR FOUR YEAR CERTIFICATION SCHEDULE

IV. NORMAL PLANT EVOLUTIONS (con't)

STP-MV-723	OPT-11.1.2	ADS and SRV Operability Test
STP-MV-724	OPT-11.3	Drywell Drains System Valve Operability Test
STP-MV-725	OPT-12.2C	# 3 Diesel Generator Monthly Load Test
STP-MV-726	OPT-12.2D	# 4 Diesel Generator Monthly Load Test
STP-MV-727	OPT-13.1	Reactor Recirculation Jet Pump Operability
STP-MV-728	OPT-14.0	Control Rod Drive System Valve Operability Test
STP-MV-729	OPT-14.1	Control Rod Operability Check
STP-MV-730	OPT-14.1A	Control Rod Coupling Check and CRD Test
STP-MV-731	OPT-14.6	Reactor Water Clean-up System Operability Test
STP-MV-732	OPT-15.4A	Secondary Containment Isolation Operability
STP-MV-733	OPT-15.7	Standby Gas Treatment System Operability Test
STP-MV-734	OPT-16.1	CAD System Component Test
STP-MV-735	OPT-16.1.1	CAC System Valve Operability
STP-MV-736	OPT-16.2	Primary Containment Volumetric Average Temperature
STP-MV-737	OPT-22.2	Reactor Building Closed Cooling Water Valve Operability Test
STP-MV-738	OPT-24.0	Service Water Valve Lineup Verification
STP-MV-739	OPT-24.1.2	Miscellaneous Service Water Valve Operability
STP-MV-740	OPT-25.1	NSSS Main Steam and Feedwater Isolation Valve Operability Test
STP-MV-741	OPT-25.4	NSSS Main Steam Drain Valve Operability
STP-MV-742	OPT-31.6	Backup N_2 Supply to Drywell Valve Operability Test
STP-MV-744	2PT-01.6.2-2	RWM Operability
STP-MV-745	2PT-16.0-2	Containment Atmosphere Monitoring System Valve Operability
STP-MV-746	2PT-24.1-2	Service Water Pump and Discharge Valve Operability

V. TRANSIENTS

STP-TN-001	Manual Scram	(Appendix B B1.2)
STP-TN-002	Simultaneous Trip All Feedwater Pumps	(Appendix B B1.2)
STP-TN-003	Simultaneous Closure Of All MSIV's	(Appendix B B1.2)
STP-TN-004	Simultaneous Trip Of Both Recirc. Pumps	(Appendix B B1.2)
STP-TN-005	Single Recirc Pump Trip	(Appendix B B1.2)
STP-TN-006	Turbine Trip Does not result in an immediate Rx SCRAM (Unit 2)	(Appendix B B1.2)
STP-TN-006.1	Turbine Trip Does not result in an immediate Rx SCRAM (Unit 1)	(Appendix B B1.2)
STP-TN-007	Max Rate Power Ramp-Recirc. Flow Controller in Manual.(100%-75%-100%)	(Appendix B B1.2)
STP-TN-008	DB LOCA in Conjunction with Loss OF Off-site-power	(Appendix B B1.2)
STP-TN-009	Maximum Size Unisolable MSL Rupture	(Appendix B B1.2)
STP-TN-010	MSIV Closure With 1 Stuck Open SRV With High Pressure ECCS Inhibited	(Appendix B B1.2)
STP-TN-011	Inadvertent HPCI Initiation	(Appendix A A3.3)

Appendix B
Brunswick Simulator Malfunction Tests

BRUNSWICK SIMULATOR FOUR YEAR CERTIFICATION SCHEDULE

NOTE:The following Malfunction Simulator Test Procedures should be performed in their entirety not less than every four years, approximately 25% per year (Reg Guide 1.149 C.5.) (frequency of Once Per Four (4) Calendar Years):

VI. MALFUNCTIONS - YEAR ONE (1)

Test	Malf Sys	Num.	Description	Severity	Severity Rate	ANSI/ANS 3.5 Ref.
STP-MA-001	NB	140	RECIRC PUMP A SUCTION LINE RUPTURE	0-100%	0-60 min.	3.1.2 (1)(b)&(c)
STP-MA-008	MS	154	MSL D BREAK IN STEAM TUNNEL	0-100%	0-60 min.	3.1.2 (1)(b)&(c);(20)
STP-MA-012	AI	349	INSTR AIR RUPT DNSTR OF DRYERS	0-100%	0-60 min.	3.1.2 (2)
STP-MA-021	DG	311	LOSS OF SUBSTATION E8	NONE	NONE	3.1.2 (3)b
STP-MA-028	EE	395	INDIVIDUAL BUS FAILURES (PARTIAL)	NONE	NONE	3.1.2 (3)d
STP-MA-031	EE	345	LOSS OF 4160V BUS	NONE	NONE	3.1.2 (3)d
STP-MA-035	RC	115	RECRC PMP MG SET FLD BKR TRIP	NONE	NONE	3.1.2 (4)
STP-MA-041	CW	247	NUC SW HDR RUPTURE	0-100%	0-60 min.	3.1.2 (6)
STP-MA-042	CA	255	LOSS OF RBCCW TO DW COOLERS	NONE	NONE	3.1.2 (8)
STP-MA-054	CF	212	COND XFER SYS RUPTURE	NONE	NONE	3.1.2 (5)
STP-MA-055	CN	190	LOSS OF CONDENSER VACUUM	0- +10,000	0-60 min.	3.1.2 (5)
STP-MA-062	RH	284	RHR PUMP TRIP	NONE	NONE	3.1.2 (7)
STP-MA-063	CF	200	CONDENSATE PUMP SHEARED SHAFT	NONE	NONE	3.1.2 (9)
STP-MA-065	CF	206	COND BSTR PMP SHEARED SHAFT	NONE	NONE	3.1.2 (9)
STP-MA-071	CF	221	FEEDWATER PUMP SHEARED SHAFT	NONE	NONE	3.1.2 (9)
STP-MA-074	CF	227	RFP FLOW CNTRLR FAILS HI	NONE	NONE	3.1.2 (9) & (22)
STP-MA-079	CF	237	THREE ELEMENT CNTRLR OUTPUT LOSS	NONE	NONE	3.1.2 (9) & (22)
STP-MA-088	RD	001	CONTROL ROD SLOW INSERTION DRIFT	NONE	NONE	3.1.2 (12)c
STP-MA-090	XX	012 & 016	CONTROL ROD DROP	NONE	NONE	3.1.2 (12)d
STP-MA-091	RD	017	CRD FCV 'A' FAILS CLOSED	NONE	NONE	3.1.2 (13)
STP-MA-099	MS	169	MAIN TURBINE TRIP (Unit 2)	NONE	NONE	3.1.2 (15)
STP-MA-099.1	MS	169	MAIN TURBINE TRIP (Unit 1)	NONE	NONE	3.1.2 (15)
STP-MA-103	ES	269	RCIC TURBINE SPEED CONTROL FAILURE	NONE	NONE	3.1.2 (17) & (22)
STP-MA-105	RP	045	SPURIOUS SCRAM	NONE	NONE	3.1.2 (19)
STP-MA-108	NI	130	REC/APRM FLOW INST FAILS DNSCL	NONE	NONE	3.1.2 (21) & (22)
STP-MA-109	NI	046	SRM FAILS HI	NONE	NONE	3.1.2 (21) & (22)
STP-MA-112	NI	058	IRM FAILS HI	NONE	NONE	3.1.2 (21) & (22)
STP-MA-115	NI	076	APRM FAILS HI	NONE	NONE	3.1.2 (21) & (22)
STP-MA-118	NI	092	LPRM FAILS HIGH	NONE	NONE	3.1.2 (21) & (22)
STP-MA-126	NB	236	RX LVL XMITTER B21-N004A FAILS	NONE	NONE	3.1.2 (22)
STP-MA-127	DG	320	DG AUTO START FAILURE	NONE	NONE	3.1.2 (23)
STP-MA-128	ES	113	ADS LOGIC FAILURE	NONE	NONE	3.1.2 (23) & (22)
STP-MA-130	ES	261	HPCI LOGIC BUS A AUTO START FAILS	NONE	NONE	3.1.2 (23)
STP-MA-136	MS	162	EHC PRESSURE REGULATOR FAILS HIGH	NONE	NONE	3.1.2 (25) & (22)
STP-MA-141	MS	181	ALL TURB BYP VLVS FAIL OPEN	NONE	NONE	3.1.2 (25)

BRUNSWICK SIMULATOR FOUR YEAR CERTIFICATION SCHEDULE

VI. MALFUNCTIONS - YEAR TWO (2)

Test	Malf Sys	Num.	Description	Severity	Severity Rate	ANSI/ANS 3.5 Ref.
STP-MA-002	NB	141	RECIRC PUMP A DISCH LINE RUPTURE	0-100%	0-60 min.	3.1.2 (1)(b)&(c)
STP-MA-009	MS	155	MSL D BREAK IN TURBINE BLDG	0-100%	0-60 min.	3.1.2 (1)(b)&(c);(20)
STP-MA-013	AI	365	SERVICE AIR RUPTURE	NONE	NONE	3.1.2 (2)
STP-MA-025	DG	331	DG #4 GOVERNOR FAILURE HIGH	NONE	NONE	3.1.2 (3)c
STP-MA-026	EE	297	MAIN XFMR SUD PRESS DEV ACTUATES	NONE	NONE	3.1.2 (3)d
STP-MA-028	EE	395	INDIVIDUAL BUS FAILURES (PARTIAL)	NONE	NONE	3.1.2 (3)d
STP-MA-032	DG	333	UPS FAILURE	NONE	NONE	3.1.2 (3)e
STP-MA-036	RC	117	RECRC PMP MG SET BUS BKR TRIP	NONE	NONE	3.1.2 (4)
STP-MA-043	CW	252	TBCCW HX PLUGGED	0-100%	0-60 min.	3.1.2 (6)
STP-MA-050	XY	317	STATOR CLG TEMP CONTROLLER FAILS	NONE	NONE	3.1.2 (8) & (22)
STP-MA-051	MS	191	MTLO TEMP CNTRLR FAILS	NONE	NONE	3.1.2 (8) & (22)
STP-MA-053	CF	194	H/W REJ VLV FAILS CLOSED	NONE	NONE	3.1.2 (5) & (22)
STP-MA-057	CN	242	CW PMP DISC VLV FAILS CLOSED	NONE	NONE	3.1.2 (5)
STP-MA-061	CW	286	RHR SW PUMP BREAKER FAULT	NONE	NONE	3.1.2 (7)
STP-MA-068	CF	216	LP FW HEATER 2B TUBE LEAK	0-500,000	0-60 min.	3.1.2 (9)
STP-MA-077	CF	234	RFP LOW SUCTION PRESS	NONE	NONE	3.1.2 (9)
STP-MA-078	CF	235	FW CONTROL STM FLOW TOTAL FAILS LO	NONE	NONE	3.1.2 (9) & (22)
STP-MA-083	RP	108	RPS M.G. SET TRIP	NONE	NONE	3.1.2 (11)
STP-MA-087	RD	005	CONTROL ROD WITHDRAWAL DRIFT	NONE	NONE	3.1.2 (12)c
STP-MA-092	RD	018	CRD PUMP SUCTION FILTER PLUGGED	NONE	NONE	3.1.2 (13)
STP-MA-094	RD	398	RWM LOSS OF POWER	NONE	NONE	3.1.2 (13)
STP-MA-100	EE	299	MAIN GENERATOR TRIP	NONE	NONE	3.1.2 (16)
STP-MA-102	ES	263	HPCI INVERTER FAILURE	NONE	NONE	3.1.2 (17)
STP-MA-107	NI	103	SRM/IRM DRIVE MTR POWER FAILURE	NONE	NONE	3.1.2 (21)
STP-MA-110	NI	047	SRM FAILS HI	NONE	NONE	3.1.2 (21) & (22)
STP-MA-114	NI	059	IRM FAILS AS IS	NONE	NONE	3.1.2 (21)
STP-MA-119	NI	093	LPRM FAILS LOW	NONE	NONE	3.1.2 (21) & (22)
STP-MA-122	NI	100	SRM C.I A STUCK DETECTOR	NONE	NONE	3.1.2 (21)
STP-MA-131	ES	267	RCIC LOGIC BUS B AUTO START FAILS	NONE	NONE	3.1.2 (23)
STP-MA-137	MS	163	EHC PRESSURE REGULATOR FAILS LOW	NONE	NONE	3.1.2 (25) & (22)
STP-MA-132	XY	393	DEFEAT OF GROUP 2 ISOLATION LOGIC	NONE	NONE	3.1.2 (23)
STP-MA-145	ES	156	ADS VALVE FAILS OPEN	NONE	NONE	3.1.2 (1)(d)

BRUNSWICK SIMULATOR FOUR YEAR CERTIFICATION SCHEDULE

VI. MALFUNCTIONS - YEAR THREE (3)

Test	Malf Sys	Num.	Description	Severity	Severity Rate	ANSI/ANS 3.5 Ref.
STP-MA-006	ES	274	RCIC TURBINE STEAM LINE LEAK	NONE	NONE	3.1.2 (1)(b)&(c)
STP-MA-011	ES	161	SRV B21-F013E SETPT DRIFT LOW	NONE	NONE	3.1.2 (1)(d)
STP-MA-017	AI	368	CONTROL AIR LEAKS IN THE DRYWELL	0-100 scfm	0-60 min.	3.1.2 (2)
STP-MA-018	EE	305	LOSS OF OFF-SITE POWER	NONE	NONE	3.1.2 (3)a
STP-MA-022	DG	334	LOSS OF SUBSTATION E7	NONE	NONE	3.1.2 (3)b
STP-MA-024	DG	330	DG #3 GOVERNOR FAILURE LOW	NONE	NONE	3.1.2 (3)c & (22)
STP-MA-028	EE	395	INDIVIDUAL BUS FAILURES (PARTIAL)	NONE	NONE	3.1.2 (3)d
STP-MA-033	EE	336	LOSS OF 250V DC BUS A	NONE	NONE	3.1.2 (3)e
STP-MA-037	RC	126	RECRC PMP SHAFT SEIZURE	NONE	NONE	3.1.2 (4)
STP-MA-040	CW	248	CONV SW HDR RUPTURE	0-100%	0-60 min.	3.1.2 (6)
STP-MA-045	MS	173	EXH HOOD SPR VLV FAILS CLOSED	FIXED	5-50 min.	3.1.2 (8)
STP-MA-046	CW	249	RBCCW PUMP SUCT HDR RUPTURE	0-100%	0-60 min.	3.1.2 (6)
STP-MA-059	CN	324	LOSS OF SJAE	NONE	NONE	3.1.2 (5)
STP-MA-064	CF	203	CONDENSATE PUMP LOCKED ROTOR	NONE	NONE	3.1.2 (9)
STP-MA-073	CF	224	RFP 2B TURBINE OVERSPEED	NONE	NONE	3.1.2 (9)
STP-MA-075	CF	228	RFP FLOW CNTRLR FAILS LO	NONE	NONE	3.1.2 (9) & (22)
STP-MA-080	CF	239	RFP MIN FLOW VLV FAILS OPEN	NONE	NONE	3.1.2 (9)
STP-MA-081	ZZ	234,261,267	LOSS OF ALL FEEDWATER-NORMAL AND EMERGENCY	NONE	NONE	3.1.2 (10)
STP-MA-082	RP	107	RPS CHANNEL A FAILURE	NONE	NONE	3.1.2 (11)
STP-MA-085	RD	012	STUCK CONTROL ROD	NONE	NONE	3.1.2 (12)a
STP-MA-089	RD	031	CONTROL ROD FAST INSERTION DRIFT	NONE	NONE	3.1.2 (12)c
STP-MA-095	RD	042	ROD BLOCK MONITOR A FAILS DNSCL	NONE	NONE	3.1.2 (13) & (22)
STP-MA-098	NB	143	FUEL CLADDING LEAK	0-100%	0-60 min.	3.1.2 (14)
STP-MA-101	ES	259	CS VALVE F005 FAILS TO OPEN	NONE	NONE	3.1.2 (17)
STP-MA-106	CF	225	FW HTR #5 OUTLET LINE RUPTURE	0-100%	0-60 min.	3.1.2 (20)
STP-MA-111	NI	048	SRM FAILS AS IS	NONE	NONE	3.1.2 (21)
STP-MA-113	NI	061	IRM FAILS LO	NONE	NONE	3.1.2 (21) & (22)
STP-MA-116	NI	077	APRM FAILS LO	NONE	NONE	3.1.2 (21) & (22)
STP-MA-121	NI	098	LPRM ERRATIC OPERATION	NONE	NONE	3.1.2 (21)
STP-MA-125	NI	105	APRM C INCONSISTENT WITH OTHERS	NONE	NONE	3.1.2 (21)
STP-MA-133	RH	296	S/D CLNG HI RX PRESS PERM FAILS	NONE	NONE	3.1.2 (23) & (22)
STP-MA-138	MS	168	EHC PRESSURE REGULATOR OSCILLATION	NONE	NONE	3.1.2 (25) & (22)
STP-MA-139	MS	180	TURB BPV #1 FAILS OPEN	NONE	NONE	3.1.2 (25)
STP-MA-143	CA	350	DW CLG FAN DAMPER FAILURE	NONE	NONE	3.1.2 (8)

Appendix B
Brunswick Simulator Malfunction Tests

BRUNSWICK SIMULATOR FOUR YEAR CERTIFICATION SCHEDULE

VI. MALFUNCTIONS - YEAR FOUR (4)

Test	Malf Sys	Num.	Description	Severity	Severity Rate	ANSI/ANS 3.5 Ref.
STP-MA-004	NB	153	MSL D BRK BEFORE FLOW RESTRICTOR	0-100%	0-60 min.	3.1.2 (1)(b)&(c);(20)
STP-MA-005	RC	335	RECIRC PUMP A DUAL SEAL FAILURE	NONE	NONE	3.1.2 (1)(b)&(c)
STP-MA-010	ES	159/160	SRV NOT PROPERLY SEATED	NONE	NONE	3.1.2 (1)(d)
STP-MA-016	RD	114	LOSS OF CNTRL AIR TO THE SCRAM VLVS	0-100%	NONE	3.1.2 (2)
STP-MA-020	EE	338	UNIT 2 SAT RELAY FAILURE	NONE	NONE	3.1.2 (3)a
STP-MA-023	DG	326	DG OUTPUT BREAKER TRIP	NONE	NONE	3.1.2 (3)c
STP-MA-027	EE	301	4KV COMMON BUS B TRIP	NONE	NONE	3.1.2 (3)d
STP-MA-028	EE	395	INDIVIDUAL BUS FAILURES (PARTIAL)	NONE	NONE	3.1.2 (3)d
STP-MA-034	XY	344	LOSS OF POWER TO PMS	NONE	NONE	3.1.2 (3)e
STP-MA-038	RC	132	RECRC MG SET COOLING WATER LOSS	NONE	NONE	3.1.2 (8)
STP-MA-039	CN	246	TOTAL LOSS OF CW PUMP SEAL WATER	NONE	NONE	3.1.2 (5) & (8)
STP-MA-044	CW	381	TBCCW HX DISCH HDR RUPTURE	0-100%	0-60 min.	3.1.2 (6)
STP-MA-047	RD	019	CRD DRIVE WATER FILTER PLUGGED	NONE	NONE	3.1.2 (8) & (13)
STP-MA-048	RW	151	RWCU N/R HX HI OUTLET TEMP	NONE	NONE	3.1.2 (8)
STP-MA-049	XY	314	GEN H2 CLG TCV FAILS CLOSED	NONE	NONE	3.1.2 (8) & (22)
STP-MA-052	CF	193	H/W MAKE-UP VLV FAILS CLOSED	NONE	NONE	3.1.2 (5) & (22)
STP-MA-060	MS	189	TURB STEAM SEAL REG FAILS CLOSED	NONE	NONE	3.1.2 (5)
STP-MA-070	CF	218	HP FW HEATER 4B TUBE LEAK	0-500,000	0-60 min.	3.1.2 (9)
STP-MA-072	CF	223	RFP 2A LUBE OIL LEAK	1000 gal.	30 min.	3.1.2 (9)
STP-MA-076	CF	233	S/U LVL CONT VLV FAILS CLOSED	NONE	NONE	3.1.2 (9)
STP-MA-084	RP	112	RPS SCRAM GROUP BLOWN FUSE	NONE	NONE	3.1.2 (11)
STP-MA-086	RD	016	CONTROL ROD UNCOUPLED	NONE	NONE	3.1.2 (12)b
STP-MA-097	RD	044	ROD MOTION TIMER FAILURE	NONE	NONE	3.1.2 (13) & (22)
STP-MA-117	NI	078	APRM FAILS AS IS	NONE	NONE	3.1.2 (21)
STP-MA-120	NI	094	LPRM FAILS AS IS	NONE	NONE	3.1.2 (21)
STP-MA-123	NI	101	IRM STUCK DETECTOR	NONE	NONE	3.1.2 (21)
STP-MA-124	NI	104	SRM/IRM OVERLAP INCORRECT	NONE	NONE	3.1.2 (21)
STP-MA-129	ES	392	HPCI INJECT VLV FAILS TO AUTO OPEN	NONE	NONE	3.1.2 (23)
STP-MA-134	RP	382	ATWS	NONE	NONE	3.1.2 (24)
STP-MA-135	RP	110	AUTO SCRAM DEFEAT	NONE	NONE	3.1.2 (24)
STP-MA-140	MS	180A	TURB BPV #1 FAILS CLOSED	NONE	NONE	3.1.2 (25)
STP-MA-142	MS	181A	ALL TURB BYP VLVS FAIL CLOSED	NONE	NONE	3.1.2 (25)
STP-MA-144	CA	357	DW CLG FAN FAILURE	NONE	NONE	3.1.2 (8)

Appendix C
Simulator Back Panel Plans

The current simulated back panels do not match the reference unit in size, shape, or configuration. A training value assessment has been conducted to reanalyze the scope of simulation needed to support training. Figures 3 and 4 show simulator and plant back panel arrangements.

As a result of the assessment and review, the most effective and efficient training environment was selected for each task. The following panels have been identified for partial or complete simulation in addition to those currently simulated.

- XU-65 - Part task trainer, jumper installation
- XU-75 - Process Radiation Monitoring, PASS, Fully simulated
- XU-79 - Process Radiation Monitoring, PASS, Fully simulated
- P-610 - SRI Panel - Fully simulated
- XU-55 - Radiation Monitoring - Upgrade existing panel
- XU-61 - Radiation Monitoring - Upgrade existing panel
- P-600 - Area Radiation Monitoring - Fully simulated
- P-614 - Steam Leak Detection - Fully simulated
- P-608 - LPRM/APRM panel - Upgrade to include APRM flow units

No other back panels will be simulated.

A schedule for modifying the existing simulator will be in place by July 31, 1991. All work is scheduled to be completed by July 31, 1993.

Appendix D
Analog and Digital Instructor Overrides

Analog Overrides

INSTRUMENT AIR

CODE	DESCRIPTION	VARIABLE	UNIT
A.	PNS STORAGE TNK LIQ LVL (1000:11000 GAL)	IAPNSTL	GAL
B.	PNS STORAGE TNK PRESS (0:300 PSIG)	IAPNSTP	PSIG
C.	PNS VAPORIZER DISCH TEMP (-40:120 DEGF)	IAPNSDT	DEGF
D.	PNS DIV I HDR PRESS (0:150 PSIG)	IAPNSHP1	PSIG
E.	PNS DIV II HDR PRESS (0:150 PSIG)	IAPNSHP2	PSIG

CONTAINMENT SYSTEM

CODE	DESCRIPTION	VARIABLE	UNIT
A.	CAC TANK LEVEL (0:21000 GAL)	CAMN200	GAL
B.	CAD TANK LEVEL (0:5000 GAL)	CAMN100	GAL
C.	LEAKAGE INTO DRYWELL (0:20 LB/HR)	IACNLEAK	LB/H
D.	CAC-HV-2683 POSITION CONTROL (0-100%)	IACV2683	%

COMPONENT COOLING

CODE	DESCRIPTION	VARIABLE	UNIT
A.	RB EDT TANK TEMPERATURE (40:300 DEGF)	WDT0900B	DEGF
B.	HEATING SYSTEM LOAD (0:4E4 LBM/HR)	ASW5000	LBMH
C.	RBCCW TANK MASS (0:4500 LBM)	RBM0100	LBM
D.	TBCCW TANK MAKEUP VALVE (0:1)	VMTB040	
E.	RW CONC HEAT INTO RCC (0:1E7 BTU/HR)	RBQINST1	BTUH

CONDENSATE & FEEDWATER

CODE	DESCRIPTION	VARIABLE	UNIT
A.	U1-U2 CST FLOW (0:1E5 LBM/HR)	IAWICST	LBMH
B.	U2 CST CONDUCTIVITY (0.05:10 MICROMHO)	WCXI100	UMHO
C.	CDD MASTER CTLR SETPT (0.0:1.0)	IAMCCDD	DEC%
D.	CFD MASTER CTLR SETPT (0.0:1.0)	IAMCCFD	DEC%
E.	SJAE F049-1,2 MAN SIGNAL (0.0:1.0)	IAF049	DEC%
F.	FEEDWATER TURBIDITY RECORDER(0.0:1.0)	IAFWRECS	FRAC
G.	CDD 2A CAPACITY REMAINING(0.0-360.0)	WCNNORA	UMHO
H.	CDD 2B CAPACITY REMAINING(0.0-360.0)	WCNNORB	UMHO
I.	CDD 2C CAPACITY REMAINING(0.0-360.0)	WCNNORC	UMHO
J.	CDD 2D CAPACITY REMAINING(0.0-360.0)	WCNNORD	UMHO
K.	CDD 2E CAPACITY REMAINING(0.0-360.0)	WCNNORE	UMHO
L.	CDD 2F CAPACITY REMAINING(0.0-360.0)	WCNNORF	UMHO
M.	CFD 2A CAPACITY REMAINING(0.0-360.0)	WCNNOR1	UMHO
N.	CFD 2B CAPACITY REMAINING(0.0-360.0)	WCNNOR2	UMHO
O.	CFD 2C CAPACITY REMAINING(0.0-360.0)	WCNNOR3	UMHO
P.	CFD 2D CAPACITY REMAINING(0.0-360.0)	WCNNOR4	UMHO

Appendix D
Analog and Digital Instructor Overrides

CONDENSATE & FEEDWATER

CODE DESCRIPTION	VARIABLE	UNIT
A. HW MAN CNTRL S.P. FOR M/U (0.0:1.0)	IAHWMUM	DEC%
B. HW AUTO CNTRL S.P. FOR M/U (8.0:-8.0)	IAHWMUA	INCH
C. HW MAN CNTRL S.P. FOR REJECT (0.0:1.0)	IAHWRJM	DEC%
D. HW AUTO CNTRL S.P. FOR REJECT (8.0:-8.0)	IAHWRJA	INCH

EMERGENCY CORE COOLING

CODE DESCRIPTION	VARIABLE	UNIT
A. CS LOOP A CST SUCT VALVE (0:1)	VHCS02AD	
B. CS LOOP B CST SUCT VALVE (0:1)	VHCS02BD	

PLANT ELECTRICAL DISTRIBUTION

CODE DESCRIPTION	VARIABLE	UNIT
A. GRID VOLTAGE (200:250 KV)	IAVGRID	KV
B. GRID LOAD (0:1000 MWE)	IAJLOAD	MWE
C. GRID FREQUENCY (58:61 HZ)	IAFGRID	HZ

TURBINE/GENERATOR & EHC

CODE DESCRIPTION	VARIABLE	UNIT
A. H2 SUPPLY RATE TO GEN (-60:60 PSI/MIN)	IAEGPRES	PSIM
B. H2 PURITY IN GENERATOR (0:100 %)	IAEGHPUR	%

MISCELLANEOUS

CODE DESCRIPTION	VARIABLE	UNIT
A. AMBIENT TEMPERATURE (32:120 DEGF)	IATAMBT	DEGF
B. AMBIENT PRESSURE (14.6:14.7 PSIA)	IAPAMBT	PSIA
C. AMBIENT HUMIDITY (0:100 %)	IAXAMBT	%
D. PASQUAL STABILITY CLASS (1=A,2=B,ETC)	IAPASQUL	
E. WIND DIRECTION (0=N,180=S,ETC)	IAWINDIR	DEG
F. UPPER WIND VELOCITY (0 TO 150)	IAUWVEL	MPH
G. LOWER WIND VELOCITY (0 TO 150)	IALWVEL	MPH
H. MUD TANK LEVEL (0 TO 32) FEET	IAMDLVL	FEET
I. RW EFFLUENT RADIATION (1E-1:1E6 CPS)	IARWEFF	CPS

NUCLEAR INSTRUMENTATION

CODE DESCRIPTION	VARIABLE	UNIT
A. APRM A GAF (BYPASS POTS)	IANITUNE	
B. APRM B GAF (BYPASS POTS)	IANITUNE	
C. APRM C GAF (BYPASS POTS)	IANITUNE	
D. APRM D GAF (BYPASS POTS)	IANITUNE	
E. APRM E GAF (BYPASS POTS)	IANITUNE	
F. APRM F GAF (BYPASS POTS)	IANITUNE	

Appendix D
Analog and Digital Instructor Overrides

STANDBY LIQUID CONTROL

CODE	DESCRIPTION	VARIABLE	UNIT
A.	SLC TANK LEVEL (0 TO 100%,10=100%)	SLL0001	%

SERVICE WATER

CODE	DESCRIPTION	.'ABLE	UNIT
A.	INTAKE CANAL LEVEL (-5:10 FT MSL)	IALRVER	MSL
B.	INTAKE CANAL TEMPERATURE (32:80 DEGF)	IATRVER	DEGF
C.	U1 NET FLOW INTO CANAL (0:7.75E6 LBM/HR)	IAWIANS	LBMH

Appendix D
Analog and Digital Instructor Overrides

STANDBY LIQUID CONTROL

CODE	DESCRIPTION	VARIABLE	UNIT
A.	SLC TANK LEVEL (0 TO 100%,10=100%)	SLL0001	%

SERVICE WATER

CODE	DESCRIPTION	VARIABLE	UNIT
A.	INTAKE CANAL LEVEL (-5:10 FT MSL)	IALRVER	MSL
B.	INTAKE CANAL TEMPERATURE (32:80 DEGF)	IATRVER	DEGF
C.	U1 NET FLOW INTO CANAL (0:7.75E6 LBM/HR)	IAWIANS	LBMH

Digital Overrides

INSTRUMENT AIR

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. U1-U2 AIR X-TIE VLV V7	VHAIV07D	FRAC	SHUT	OPEN
B. CAC N2 TO RB INST AIR V74	VHAIV74D	FRAC	SHUT	OPEN
C. SERVICE AIR ISOLATION RESET	IAAI706	LOGI	NORMAL	RESET
D. INSTRUMENT AIR ISOL RESET	IAAI722	LOGI	NORMAL	RESET

CONTAINMENT SYSTEM

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. CAC LN TO VAPORIZER HV-44	VHCVV44D	FRAC	CLOSE	OPEN

COMPONENT COOLING

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. RBCCW HX 2A OUTLET V45	VHRBV45D	FRAC	CLOSE	OPEN
B. RBCCW HX 2B OUTLET V46	VHRBV46D	FRAC	CLOSE	OPEN
C. RBCCW HX 2C OUTLET V47	VHRBV47D	FRAC	SHUT	OPEN
D. 2A TBCCW HX INLET V16	VHTB016D	FRAC	CLOSE	OPEN
E. 2B TBCCW HX INLET V17	VHTB017D	FRAC	CLOSE	OPEN
F. 2C TBCCW HX INLET V18	VHTB018D	FRAC	SHUT	OPEN
G. 2A TBCCW HX OUTLET V20	VHTB020D	FRAC	CLOSE	OPEN
H. 2B TBCCW HX OUTLET V21	VHTB021D	FRAC	CLOSE	OPEN
I. 2C TBCCW HX OUTLET V22	VHTB022D	FRAC	SHUT	OPEN
J. 2C TBCCW PUMP UNIT ALIGNMENT	IACW4518	LOGI	2	1
K. H2 COOLER 2A INLET V32	VHTB032D	FRAC	CLOSE	OPEN
L. H2 COOLER 2A INLET V36	VHTB036D	FRAC	CLOSE	OPEN

CONDENSATE & FEEDWATER

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. HOTWELL M/U VLV BYP LV-18	VHHD018D	FRAC	SHUT	OPEN
B. HOTWELL REJECT VLV BYP V-44	VHCFV44D	FRAC	SHUT	OPEN
C. HOTWELL M/U VLV CONTROLLER	IAHWMUC	LOGI	AUTO	MANUAL
D. HOTWELL REJECT VLV CONTROLLER	IAHWRJC	LOGI	AUTO	MANUAL
E. CFD A MANUAL OUTLET V25A	VHCF25AD	FRAC	CLOSE	OPEN
F. CFD B MANUAL OUTLET V25B	VHCF25BD	FRAC	CLOSE	OPEN
G. CFD C MANUAL OUTLET V25C	VHCF25CD	FRAC	CLOSE	OPEN
H. CFD D MANUAL OUTLET V25D	VHCF25DD	FRAC	SHUT	OPEN
I. SULCV-3269 MAN ISOL V134	VHCF134D	FRAC	CLOSE	OPEN
J. HEATER DRAIN LVL CTNTRL MODE	IAHDLCTL	LOGI	AUTO	MANUAL
K. SECURE FINAL COND BSTR PMP	EEZTESTA	LOGI	NO	YES
L. CDD OVERRIDE RESET	IAORCDD	LOGI	NORMAL	RESET
M. CFD OVERRIDE RESET	IAORCFD	LOGI	NORMAL	RESET
N. CFD BYP VLV RESET	IACFHIDP	LOGI	NORMAL	RESET
O. MSR 2ND STG DRN VLVS OVERRIDE	IADRAIN	LOGI	NORMAL	CLOSE
P. SJAE F049-1,2 MAN-USE CANA SETPT	IAVRCF	LOGI	NORMAL	MANUAL

CONDENSATE & FEEDWATER (CONT)

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. CO-V11	COND A DISCHG	ZVCF011T	LOGI	OFF	ON
B. CO-V12	COND B DISCHG	ZVCF012T	LOGI	OFF	ON
C. CO-V13	COND C DISCHG	ZVCF013T	LOGI	OFF	ON
D. CO-V4	BOOST A DISCHG	ZVCF904T	LOGI	OFF	ON
E. CO-V5	BOOST B DISCHG	ZVCF905T	LOGI	OFF	ON
F. CO-V6	BOOST C DISCHG	ZVCF906T	LOGI	OFF	ON
G. CO-V49	RFP A SUCTION	ZVCFV49M	LOGI	OFF	ON
H. CO-V50	RFP B SUCTION	ZVCFV50M	LOGI	OFF	ON
I. FW-V3	RFP A DISCHG	ZVCFV03M	LOGI	OFF	ON
J. FW-V4	RFP B DISCHG	ZVCFV04M	LOGI	OFF	ON
K. FW-V13	RFP BYPASS	ZVCFV13M	LOGI	OFF	ON
L. B21-F032A	FEED STOP VLV	ZVCF32AM	LOGI	OFF	ON
M. B21-F032B	FEED STOP VLV	ZVCF32BM	LOGI	OFF	ON
N. CBP A SHORT CYCLE CLEANUP		IACF904O	LOGI	NORMAL	OPEN
O. CBP B SHORT CYCLE CLEANUP		IACF905O	LOGI	NORMAL	OPEN
P. CBP C SHORT CYCLE CLEANUP		IACF906O	LOGI	NORMAL	OPEN

CONDENSATE & FEEDWATER (CONT)

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. CDD VESSEL A		IA4503VA	LOGI	OFF	ON
B. CDD VESSEL B		IA4503VB	LOGI	OFF	ON
C. CDD VESSEL C		IA4503VC	LOGI	OFF	ON
D. CDD VESSEL D		IA4503VD	LOGI	OFF	ON
E. CDD VESSEL E		IA4503VE	LOGI	OFF	ON
F. CDD VESSEL F		IA4503VF	LOGI	OFF	ON
G. CFD VESSEL A		IA4508VA	LOGI	OFF	ON
H. CFD VESSEL B		IA4508VB	LOGI	OFF	ON
I. CFD VESSEL C		IA4508VC	LOGI	OFF	ON
J. CFD VESSEL D		IA4508VD	LOGI	OFF	ON
K. HWC-SV-5717 - H2 INJECTION OPEN VLV		ZVCF5717	LOGI	NORMAL	OPEN
L. HWC-SV-5718 - H2 INJECTION OPEN VLV		ZVCF5718	LOGI	NORMAL	OPEN
M. HWC-SV-5719 - H2 INJECTION OPEN VLV		ZVCF5719	LOGI	NORMAL	OPEN
N. HWC-SV-5748 - O2 INJECTION OPEN VLV		ZVCF5748	LOGI	NORMAL	OPEN
O. HWC-SV-5749 - O2 INJECTION OPEN VLV		ZVCF5749	LOGI	NORMAL	OPEN
P. HWC-SV-5755 - O2 INJECTION OPEN VLV		ZVCF5755	LOGI	NORMAL	OPEN

CONDENSATE & FEEDWATER (CONT)

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. HWC-SV-5717 - H2 INJECTION CLOSE VLV		ZXCF5717	LOGI	NORMAL	CLOSE
B. HWC-SV-5718 - H2 INJECTION CLOSE VLV		ZXCF5718	LOGI	NORMAL	CLOSE
C. HWC-SV-5719 - H2 INJECTION CLOSE VLV		ZXCF5719	LOGI	NORMAL	CLOSE
D. HWC-SV-5748 - O2 INJECTION CLOSE VLV		ZXCF5748	LOGI	NORMAL	CLOSE
E. HWC-SV-5749 - O2 INJECTION CLOSE VLV		ZXCF5749	LOGI	NORMAL	CLOSE
F. HWC-SV-5755 - O2 INJECTION CLOSE VLV		ZXCF5755	LOGI	NORMAL	CLOSE

Appendix D
Analog and Digital Instructor Overrides

CORE SPRAY

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. E21-F001A TORUS SUCTION	ZVCS01AT	LOGI	OFF	ON
B. E21-F001B TORUS SUCTION	ZVCS01BT	LOGI	OFF	ON
C. E21-F031A MIN FLOW	ZVCS31AT	LOGI	OFF	ON
D. E21-F031B MIN FLOW	ZVCS31BT	LOGI	OFF	ON
E. E21-F015A FULL FLOW TEST	ZVCS15AT	LOGI	OFF	ON
F. E21-F015B FULL FLOW TEST	ZVCS15BT	LOGI	OFF	ON
G. E21-F004A OTBD INJ VLV	ZVCS04AM	LOGI	OFF	ON
H. E21-F004B OTBD INJ VLV	ZVCS04BM	LOGI	OFF	ON
I. E21-F005A INBD INJ VLV	ZVCS05AT	LOGI	OFF	ON
J. E21-F005B INBD INJ VLV	ZVCS05BT	LOGI	OFF	ON

CONDENSER COOLING WATER

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. 2CW-V1 PUMP A DISCHG	ZVCW001M	LOGI	OFF	ON
B. 2CW-V2 PUMP B DISCHG	ZVCW002M	LOGI	OFF	ON
C. 2CW-V3 PUMP C DISCHG	ZVCW003M	LOGI	OFF	ON
D. 2CW-V4 PUMP D DISCHG	ZVCW004M	LOGI	OFF	ON

PLANT ELECTRICAL DISTRIBUTION

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. 4160 MTR OVERCURRENT RESET	IAOCRST	LOGI	NORMAL	RESET
B. PNL 2AB-TB PWR (E8=NORM/E7=ALT)	ZIEDH14	LOGI	ALT	NORMAL
C. PNL 2AB-RX PWR (E7=NORM/E8=ALT)	ZIEDH11	LOGI	ALT	NORMAL
D. PNL 2AB PWR (E7=NORM/E8=ALT)	ZIEDH08	LOGI	ALT	NORMAL
E. PNL 32AB PWR (E7=NORM/E8=ALT)	ZIEDHX0	LOGI	ALT	NORMAL
F. PNL 2-OG-2 PWR (E5=NORM/E6=ALT)	ZIEDHB5	LOGI	ALT	NORMAL
G. RPS ALT PWR (E7=NORM/E8=ALT)	IBZNORM	LOGI	ALT	NORMAL
H. X-TIE BKR E1-E3 (AG0) RACK STATUS	IARKAG0	LOGI	OUT	IN
I. X-TIE BKR E3-E1 (AJ5) RACK STATUS	IARKAJ5	LOGI	OUT	IN
J. X-TIE BKR E2-E4 (AH9) RACK STATUS	IARKAH9	LOGI	OUT	IN
K. X-TIE BKR E4-E2 (AL5) RACK STATUS	IARKAL5	LOGI	OUT	IN
L. X-TIE BKR E1-E2 (AG1) RACK STATUS	IARKAG1	LOGI	OUT	IN
M. X-TIE BKR E2-E1 (AH8) RACK STATUS	IARKAH8	LOGI	OUT	IN
N. X-TIE BKR E3-E4 (AJ6) RACK STATUS	IARKAJ6	LOGI	OUT	IN
O. X-TIE BKR E4-E3 (AL4) RACK STATUS	IARKAL4	LOGI	OUT	IN
P. X-TIE BKR E5-E6 (AT4) RACK STATUS	IARKAT4	LOGI	OUT	IN

PLANT ELECTRICAL DISTRIBUTION (CONT)

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. X-TIE BKR E6-E5 (AX1) RACK STATUS	IARKAX1	LOGI	OUT	IN
B. X-TIE BKR E7-E8 (AX5) RACK STATUS	IARKAX5	LOGI	OUT	IN
C. X-TIE BKR E8-E7 (AI0) RACK STATUS	IARKAI0	LOGI	OUT	IN

Appendix D
Analog and Digital Instructor Overrides

TURBINE/GENERATOR & EHC

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. REMOTE ADS RAISE	ADSINCI	LOGI	NORMAL	RAISE
B. REMOTE ADS LOWER	ADSDECI	LOGI	NORMAL	LOWER
C. TURBINE VIBRATION TRIP BYPASS	IATBVBBY	LOGI	NORMAL	BYPASS
D. GEN PCB 29A LOCKOUT RESET	IAEGBRAR	LOGI	NORMAL	RESET
E. GEN PCB 29B LOCKOUT RESET	IAEGBRBR	LOGI	NORMAL	RESET
F. S/U XFMR LOCKOUT RESET	IAEGSATR	LOGI	NORMAL	RESET
G. DG-1 LOCKOUT RESET	IAEERESG	LOGI	NORMAL	RESET
H. DG-2 LOCKOUT RESET	IAEERESG	LOGI	NORMAL	RESET
I. DG-3 LOCKOUT RESET	IAEERESG	LOGI	NORMAL	RESET
J. DG-4 LOCKOUT RESET	IAEERESG	LOGI	NORMAL	RESET
K. DG-1 OUTPUT BKR LOCKOUT RESET	IAEEAE9R	LOGI	NORMAL	RESET
L. DG-2 OUTPUT BKR LOCKOUT RESET	IAEEAG7R	LOGI	NORMAL	RESET
M. DG-3 OUTPUT BKR LOCKOUT RESET	IAEEAI5R	LOGI	NORMAL	RESET
N. DG-4 OUTPUT BKR LOCKOUT RESET	IAEEAK2R	LOGI	NORMAL	RESET
O. DG #1 TO CONTROL ROOM MANUAL	IADGMANL	LOGI	NORMAL	MANUAL
P. DG #2 TO CONTROL ROOM MANUAL	IADGMANL	LOGI	NORMAL	MANUAL

TURBINE/GENERATOR & EHC (CONT)

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. DG #1 CONTROL ROOM STOP	IADGSTOP	LOGI	NORMAL	STOP
B. DG #2 CONTROL ROOM STOP	IADGSTOP	LOGI	NORMAL	STOP
C. DG #1 TO AUTO	IADGAUTO	LOGI	NORMAL	AUTO
D. DG #2 TO AUTO	IADGAUTO	LOGI	NORMAL	AUTO
E. DG #1 TO LOCAL/MANUAL	IADGLOCL	LOGI	NORMAL	LOCAL
F. DG #2 TO LOCAL/MANUAL	IADGLOCL	LOGI	NORMAL	LOCAL
G. DG #1 TO LOCAL START/STOP	IADGLOTP	LOGI	STOP	START
H. DG #2 TO LOCAL START/STOP	IADGLOTP	LOGI	STOP	START
I. DG #3 TO LOCAL START/STOP	IADGLOTP	LOGI	STOP	START
J. DG #4 TO LOCAL START/STOP	IADGLOTP	LOGI	STOP	START

HPCI

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. E41-F012 MIN FLOW	ZVHP012M	LOGI	OFF	ON
B. E41-F006 INJECTION VLV	ZVHP006M	LOGI	OFF	ON
C. E41-F008 BYPASS TO CST	ZVHP008T	LOGI	OFF	ON
D. E41-F011 REDUNDANT VLV	ZVHP011M	LOGI	OFF	ON
E. E41-F002 INBD STM VLV	ZVMS402T	LOGI	OFF	ON
F. E41-F003 OTBD STM VLV	ZVMS403M	LOGI	OFF	ON
G. E41-F001 TUR STM SUP	ZVMS401M	LOGI	OFF	ON

Appendix D
Analog and Digital Instructor Overrides

MISCELLANEOUS

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. LO COND VACUUM GP1 TRIP BYP	IAGP1BYP	LOGI	NORMAL	BYPASS
B. ENG DRIVEN FIRE PMP STATUS	IAENGFPB	LOGI	OFF	ON
C. MOT DRVN FIRE PMP STOP SIGNAL	IAFPRST	LOGI	NORMAL	OFF
D. RESTART RPS MG SET A	IARPSA	LOGI	NORMAL	RESET
E. RESTART RPS MG SET B	IARPSB	LOGI	NORMAL	RESET
F. AREA RAD ANNUNCIATOR RESET	IAALHRES	LOGI	NORMAL	RESET
G. N2 B/U HDR A RECHARGE	IAN2CHGA	LOGI	FALSE	TRUE
H. N2 B/U HDR B RECHARGE	IAN2CHGB	LOGI	FALSE	TRUE
I. SIMULATION OF UNIT NUMBER:	IAUNITPL	LOGI	2	1

MAIN STEAM

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. MECH VAC PMP A DISCH VLV V18	VHCNV18D	FRAC	SHUT	OPEN
B. MECH VAC PMP B DISCH VLV V19	VHCNV19D	FRAC	SHUT	OPEN
C. EXT STEAM DEA TO HTR # 3A V15	IAMHDV15	LOGI	OPEN	CLOSE
D. EXT STEAM DEA TO HTR # 3B V16	IAMHDV16	LOGI	OPEN	CLOSE
E. MAIN STEAM LINE DRN VLV B21-F019	ZVNB019M	LOGI	OFF	ON

NUCLEAR BOILER

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. ADS VLVS F013A-L FLOW RESET	IAADSRST	LOGI	NORMAL	RESET
B. RX SAMPLE VLV F019 LOCAL SWITCH	IAF019	LOGI	SHUT	OPEN
C. RX SAMPLE VLV F020 LOCAL SWITCH	IAF020	LOGI	SHUT	OPEN
D. ENABLE LASALLE TRANSIENT	IALASALL	LOGI	OFF	ON

NUCLEAR INSTRUMENTATION

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A SRM SHORTING LINKS INSTALLED	IASHORTL	LOGI	NO	YES
B. APRM GAF POTS ACTIVE?	ZAPRMFLG	LOGI	YES	NO

REACTOR RECIRCULATION

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. MG SET A GEN LOCKOUT RESET	IAEMGENA	LOGI	NORMAL	RESET
B. MG SET B GEN LOCKOUT RESET	IAEMGENB	LOGI	NORMAL	RESET
C. RPT BKR A BREAKER OPEN SW	IAEMBRAO	LOGI	NORMAL	OPEN
D. RPT BKR A BREAKER CLOSE SW	IAEMBRAC	LOGI	NORMAL	SHUT
E. RPT BKR B BREAKER OPEN SW	IAEMBRBO	LOGI	NORMAL	OPEN
F. RPT BKR B BREAKER CLOSE SW	IAEMBRBC	LOGI	NORMAL	SHUT
G. RPT A BYPASS KEYLOCK	IAEMKEYA	LOGI	BYPASS	NORMAL
H. RPT B BYPASS KEYLOCK	IAEMKEYB	LOGI	BYPASS	NORMAL
I. A RX RECIRC DC OIL PUMP	IARCAUXC	LOGI	AUTO	OFF
J. B RX RECIRC DC OIL PUMP	IARCAUXD	LOGI	AUTO	OFF
K. A RX RECIRC DC OIL PUMP	IARCAUXA	LOGI	AUTO	ON
L. B RX RECIRC DC OIL PUMP	IARCAUXB	LOGI	AUTO	ON

Appendix D
Analog and Digital Instructor Overrides

CONTROL ROD DRIVE

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A.	CRD PMP A DISC VLV	VHRD14AD	FRAC	CLOSE	OPEN
B.	CRD PMP B DISC VLV	VHRD14BD	FRAC	CLOSE	OPEN
C.	DRIVE WATER PCV BYPASS VALVE	VHRD004D	FRAC	SHUT	OPEN
D.	COOLING WATER PCV BYPASS VALVE	VHRD006D	FRAC	SHUT	OPEN
E.	CRD FCV A CONTROL	IACRDFVA	LOGI	MANUAL	AUTO
F.	CRD FCV A ISOLATION VALVE	VHRD47AD	FRAC	CLOSE	OPEN
G.	CRD FCV B CONTROL	IACRDFVB	LOGI	MANUAL	AUTO
H.	CRD FCV B ISOLATION VALVE	VHRD47BD	FRAC	CLOSE	OPEN
I.	RSCS GROUP A12 BYP	IAGRPA12	LOGI	NORMAL	BYPASS
J.	RSCS GROUP A34 BYP	IAGRPA34	LOGI	NORMAL	BYPASS
K.	RSCS GROUP B12 BYP	IAGRPB12	LOGI	NORMAL	BYPASS
L.	RSCS GROUP B34 BYP	IAGRPB34	LOGI	NORMAL	BYPASS
M.	CRD HI TEMP ALM RESET	IACRDHIT	LOGI	NORMAL	RESET
N.	C12-F003 DRIVE PCV	ZVRD003T	LOGI	OFF	ON

RESIDUAL HEAT REMOVAL

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A.	DEMIN WATER TO SDC SUCT F083	VHRH083D	FRAC	SHUT	OPEN
B.	DEMIN WATER TO SDC SUCT F084	VHRH084D	FRAC	SHUT	OPEN
C.	RHR TO FUEL POOL V39	VHRHV39D	FRAC	SHUT	OPEN
D.	FUEL POOL TO RHR V40	VHRHV40D	FRAC	SHUT	OPEN
E.	RHR VLV E11-F007A BREAKER	IARH07AB	LOGI	OFF	ON
F.	RHR VLV E11-F007B BREAKER	IARH07BB	LOGI	OFF	ON
G.	RHR VLV E11-F010 BREAKER	IARH010B	LOGI	OFF	ON
H.	E11-F020A TORUS ISOL	ZVRH20AT	LOGI	OFF	ON
I.	E11-F020B TORUS ISOL	ZVRH20BT	LOGI	OFF	ON
J.	E11-F004A TORUS SUCTION	ZVRH04AT	LOGI	OFF	ON
K.	E11-F004B TORUS SUCTION	ZVRH04BT	LOGI	OFF	ON
L.	E11-F004C TORUS SUCTION	ZVRH04CT	LOGI	OFF	ON
M.	E11-F004D TORUS SUCTION	ZVRH04DT	LOGI	OFF	ON
N.	E11-F006A SDC SUCTION	ZBRH06AT	LOGI	OFF	ON
O.	E11-F006B SDC SUCTION	ZBRH06BT	LOGI	OFF	ON
P.	E11-F006C SDC SUCTION	ZBRH06CT	LOGI	OFF	ON

RESIDUAL HEAT REMOVAL (CONT)

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A.	E11-F006D SDC SUCTION	ZBRH06DT	LOGI	OFF	ON
B.	E11-F008 OTBD SDC ISOL	ZBRH008T	LOGI	OFF	ON
C.	E11-F009 INBD SDC ISOL	ZBRH009M	LOGI	OFF	ON
D.	E11-F028A TORUS ISOLATION	ZVRH28AM	LOGI	OFF	ON
E.	E11-F028B TORUS ISOLATION	ZVRH28BM	LOGI	OFF	ON
F.	E11-F024A FULL FLOW TEST	ZVRH24AT	LOGI	OFF	ON
G.	E11-F024B FULL FLOW TEST	ZVRH24BT	LOGI	OFF	ON
H.	E11-F027A TORUS SPRAY	ZVRH27AM	LOGI	OFF	ON
I.	E11-F027B TORUS SPRAY	ZVRH27BM	LOGI	OFF	ON
J.	E11-F015A INBD INJ VLV	ZVRH15AM	LOGI	OFF	ON
K.	E11-F015B INBD INJ VLV	ZVRH15BM	LOGI	OFF	ON
L.	E11-F017A OTBD INJ VLV	ZVRH17AT	LOGI	OFF	ON
M.	E11-F017B OTBD INJ VLV	ZVRH17BT	LOGI	OFF	ON
N.	E11-F049 RHR TO RAD WASTE	ZBRH049T	LOGI	OFF	ON
O.	E11-F011B HX TO DRAIN SUPP	ZBRH11BM	LOGI	OFF	ON
P.	E11-F026B HX DRAIN TO RCIC	ZBRH26BM	LOGI	OFF	ON

Appendix D
Analog and Digital Instructor Overrides

RESIDUAL HEAT REMOVAL (CONT)

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. E11-F075	SERVICE WATER INJECTION	ZVSW075T	LOGI	OFF	ON
B. E11-F073	SERV WTR INJECTION DISCONNECT	IADIS073	LOGI	CLOSE	OPEN
C. E11-V32	RHR CHECK VLV BYPASS	ZVRHV32T	LOGI	OFF	ON
D. E11-V33	RHR CHECK VLV BYPASS	ZVRHV33T	LOGI	OFF	ON
E. E11-F103B	HX 2B OUTBOARD VENT	ZVRH93BT	LOGI	OFF	ON

RCIC

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. E51-F019	MIN FLOW	ZVRJ019M	LOGI	OFF	ON
B. E51-F013	INJECTION VLV	ZVRJ013M	LOGI	OFF	ON
C. E51-F022	BYPASS TO CST	ZVRJ022T	LOGI	OFF	ON
D. E51-F007	INBD STM VLV	ZVMS507T	LOGI	OFF	ON
E. E51-F008	OTBD STM VLV	ZVMS508M	LOGI	OFF	ON
F. E51-F045	TUR STM SUP	ZVMS545M	LOGI	OFF	ON
G. RCIC	TURB OVERSPEED TRIP RESET	IARJTURB	LOGI	NORMAL	RESET
H. RCIC	V8 THERMAL OVERLOAD RESET	IAOVLRST	LOGI	NORMAL	RESET

RHR SERVICE WATER

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. SW-V101	CSW TO RHR SW	ZVSW101M	LOGI	OFF	ON
B. SW-V102	RHR SW XTIE	ZVSW102M	LOGI	OFF	ON
C. SW-V105	NSW TO RHR SW	ZVSW105M	LOGI	OFF	ON
D. SW-V106	NSW TO RBCCW	ZVSW106M	LOGI	OFF	ON
E. SW-V111	CSW TO VITAL	ZVSW111M	LOGI	OFF	ON
F. SW-V117	NSW TO VITAL	ZVSW117M	LOGI	OFF	ON
G. SW-V118	VITAL XTIE	ZVSW118M	LOGI	OFF	ON
H. E11-F002A	RHR HX SW OUT	ZVSW02AM	LOGI	OFF	ON
I. E11-F002B	RHR HX SW OUT	ZVSW02BM	LOGI	OFF	ON
J. E11-F068A	AUTO-CLOSURE BYPASS SWITCH	IARHBYPA	LOGI	NORMAL	BYPASS
K. E11-F068B	AUTO-CLOSURE BYPASS SWITCH	IARHBYPB	LOGI	NORMAL	BYPASS

REACTOR WATER CLEANUP

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A.	HOT LINEUP PMP SUCTION V75	VHRWV75D	FRAC	SHUT	OPEN
B.	COLD LINEUP PMP SUCTION V77	VHRWV77D	FRAC	CLOSE	OPEN
C.	HOT LINEUP HX INLET V78	VHRWV78D	FRAC	SHUT	OPEN
D.	HOT LINEUP HX OUTLET V79	VHRWV79D	FRAC	SHUT	OPEN
E.	COLD LINEUP PMP DISCH V80	VHRWV80D	FRAC	CLOSE	OPEN
F.	COLD LINEUP HX INLET V83	VHRWV83D	FRAC	CLOSE	OPEN
G.	FILTER A OUTLET VLV CONTROL	IAFLTFVA	LOGI	SHUT	AUTO
H.	FILTER B OUTLET VLV CONTROL	IAFLTFVB	LOGI	SHUT	AUTO

Appendix D
Analog and Digital Instructor Overrides

STANDBY GAS TREATMENT

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A.	2SGT-V8 DW BLEED VLV	ZVSGV08T	LOGI	OFF	ON
B.	2SGT-V9 DW BLEED VLV	ZVSGV09T	LOGI	OFF	ON
C.	2D-BFV-RB A RX BLDG SUCT	ZVSG02DT	LOGI	OFF	ON
D.	2H-BFV-RB B RX BLDG SUCT	ZVSG02HT	LOGI	OFF	ON
E.	SBGT A LOCAL SW FOR 2B-BFV-RB	IASBGTA	LOGI	SHUT	OPEN
F.	SBGT B LOCAL SW FOR 2E-BFV-RB	IASBGTB	LOGI	SHUT	OPEN

STANDBY LIQUID CONTROL

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A.	INBOARD MANUAL INJ VLV F008	VHSL008D	FRAC	CLOSE	OPEN
B.	RE-ARM SQUIB VLVS AFTER FIRED	IASLARMS	LOGI	NORMAL	ARM

SERVICE WATER

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A.	U-2 SW TO 2C TBCCW HX V7	VHSWV07D	FRAC	SHUT	OPEN
B.	U-1 SW TO 2C TBCCW HX V8	VHSWV08D	FRAC	SHUT	OPEN
C.	SW INLET TO 2A RBCCW HX V109	VHSW109D	FRAC	CLOSE	OPEN
D.	SW OUT FROM 2A RBCCW HX V135	VHSW135D	FRAC	CLOSE	OPEN
E.	SW OUT FROM 2B RBCCW HX V134	VHSW134D	FRAC	CLOSE	OPEN
F.	SW OUT FROM 2C RBCCW HX V133	VHSW133D	FRAC	SHUT	OPEN
G.	CONV SW TO RBCCW HXS V146	VHSW146D	FRAC	SHUT	OPEN
H.	SW-V13 CSW TO CONV HDR	ZVSWV13T	LOGI	OFF	ON
I.	SW-V14 CSW TO NUC HDR	ZVSWV14T	LOGI	OFF	ON
J.	SW-V15 CSW TO CONV HDR	ZVSWV15T	LOGI	OFF	ON
K.	SW-V16 CSW TO NUC HDR	ZVSWV16T	LOGI	OFF	ON
L.	SW-V17 CSW TO CONV HDR	ZVSWV17T	LOGI	OFF	ON
M.	SW-V18 CSW TO NUC HDR	ZVSWV18T	LOGI	OFF	ON
N.	SW-V19 NSW 2A DISCHG	ZVSWV19T	LOGI	OFF	ON
O.	SW-V20 NSW 2B DISCHG	ZVSWV20T	LOGI	OFF	ON
P.	SW-V3 CSW TO TUR BLDG	ZVSWV03M	LOGI	OFF	ON

SERVICE WATER (CONT)

CODE	DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A.	SW-V4 CSW TO TUR BLDG	ZVSWV04T	LOGI	OFF	ON

Appendix D
Analog and Digital Instructor Overrides

EOP JUMPERS

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. CAC-V7,8,9,10 & 2683 ISOLATION	IACACJMP	LOGI	OFF	ON
B. LL-3 GROUP 1 ISOLATION	IAEOPJP1	LOGI	OFF	ON
C. RCIC LOW STEAM PRESS ISOLATION	IAEOPJP2	LOGI	OFF	ON
D. RWCU LL-2 ISOLATION	IAEOPJP3	LOGI	OFF	ON
E. HPCI HIGH TORUS LEVEL TRANSFER	IAEOPJP4	LOGI	OFF	ON
F. PURGE EXH FANS & VALVE ISOLATION	IAEOPJP5	LOGI	OFF	ON
G. CAC VENT & PURGE VALVE ISOLATION	IAEOPJP6	LOGI	OFF	ON
H. CAC-V4,5,6,58 & 15 ISOLATION	IAEOPJP7	LOGI	OFF	ON
I. DW COOLER LOCA LOCKOUT	IAEOPJP8	LOGI	OFF	ON
J. DW COOLER SCRAM AUTO START DISABLE	IAEOPJP9	LOGI	OFF	ON
K. LOW COND VACUUM BPV CLOSURE DEFEAT	IAEOPJ10	LOGI	OFF	ON

XU80/AUGMENTED OFFGAS

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. AOG-XCV-101 LOCAL	IALPB101	LOGI	CLOSE	OPEN
B. AOG-XCV-102 LOCAL	IALPB102	LOGI	CLOSE	OPEN
C. AOG-XCV-147 LOCAL	IALPB147	LOGI	CLOSE	OPEN
D. AOG-XCV-148 LOCAL	IALPB148	LOGI	CLOSE	OPEN
E. AOG-XCV-141 LOCAL	IALPB141	LOGI	CLOSE	OPEN
F. AOG-XCV-143 LOCAL	IALPB143	LOGI	CLOSE	OPEN
G. AOG-XCV-142 LOCAL	IALPB142	LOGI	CLOSE	OPEN
H. AOG REFRIG COMPRESSOR SELECTED	IASELCMP	LOGI	A	B
I. AOG H2 ANALYZER CH 1	IAH2AUT1	LOGI	OFF	AUTO
J. AOG H2 ANALYZER CH 2	IAH2AUT2	LOGI	OFF	AUTO
K. AOG H2 ANALYZER CH 3	IAH2AUT3	LOGI	OFF	AUTO
L. AOG H2 ANALYZER CH 4	IAH2AUT4	LOGI	OFF	AUTO
M. AOG H2 ANALYZER CH 1	IAH2NRM1	LOGI	RESET	NORMAL
N. AOG H2 ANALYZER CH 2	IAH2NRM2	LOGI	RESET	NORMAL
O. AOG H2 ANALYZER CH 3	IAH2NRM3	LOGI	RESET	NORMAL
P. AOG H2 ANALYZER CH 4	IAH2NRM4	LOGI	RESET	NORMAL

XU80/AUGMENTED OFFGAS (CONT)

CODE DESCRIPTION	VARIABLE	UNIT	TRUE VAL	FALSE VAL
A. 2OG-SV-2S1 DRN VLV	IAOGV01L	LOGI	OPEN	CLOSE
B. PURGE NITROGEN TO AOG NP-V80	VHNPV80D	FRAC	SHUT	OPEN
C. AOG NP-V79	VNHPV79D	FRAC	SHUT	OPEN

APPENDIX E
SUMMARY OF CERTIFICATION TEST DEFICIENCIES

Electrical

89-120 -	Too many loads were lost when malfunction activated. DC Distribution upgrade, expected correction 12/91. PTA-MA-033
91-071 -	Upgrade DC Model. DC Upgrade, expected correction 12/91. PTA-MA-033
90-137 -	Incorrect DC distribution to transmitters. DC Upgrade, expected correction 12/91. PTA-MA-033
90-261 -	APRM Power Supply not modeled correctly. To be corrected by 12/91.
89-244 -	Radiation Monitor has incorrect power supply. To be corrected by 12/91

Plant Process Computer

Numerous problems exist with the current Process Computer. Specifics identified in PTA-SS-001, PTA-SS-002, PTA-MV-601, PTA-MV-605, and PTA-MV-705. Additional problems have been identified during the training program. The plant and simulator are in the process of replacing existing systems. The simulator upgrade is scheduled to lead the plant, implementation is scheduled for 12/91. SSR 90-189

HVAC and Radiation Monitoring

89-120	Radiation Monitor does not activate when required
90-037	CB HVAC air supply is incorrectly modeled
90-254	Stack Radiation Monitor reading high
90-067	RCIC Steam Line Break does not cause temperature or radiation indication. PTA-MA-006
91-065	Upgrade HVAC Models
91-067	Upgrade Radiation Monitoring System

The HVAC and Radiation Monitoring Systems are currently being upgraded. Model integration is scheduled for the 3rd quarter of 1991. Integration into the training program will be a function of the Configuration Control Board.

Condensate Feed, Off-Gas, and SJAE

90-087 -	The 2B Feedwater Heater tube leak does not give a correct indication. To be corrected by 12/91.
91-055 -	Vacuum will not decrease on a loss of SJAE. PTA-MA-059. Correction planned by 12/92.
91-058 -	Feedwater control responds too quickly. PTA-TN-008 and PTA-MA-074. To be corrected by 12/91.
91-109 -	AOG system model becomes unreliable during LOCA's. Problem is not repeatable or consistent. To be corrected by 12/92.
91-050 -	Booster pump discharge pressure remains high when pumps are secured. PTA-MV-400. To be corrected by 12/91.
91-056 -	SJAE did not warm-up correctly. PTA-MV-300. To be corrected by 12/92.

APPENDIX E
SUMMARY OF CERTIFICATION TEST DEFICIENCIES

CRD

90-496 - CRD pump inlet filter High D/P alarm setpoint is incorrect. PTA-MA-92 To be corrected by 12/91.

91-077 - Drive water D/P, Cooling Water D/P and Cooling Water Flow all unexplained pulses in indication. PTA-MA-047 To be corrected by 6/92.

RWM

91-084 - Rod Out Block Alarm and Withdrawal Permissive did not function properly. PTA-MV-702 To be corrected by 12/92.

Core Neutronics

Plant went critical outside of ECP while performing PTA-MV-500. This problem will not impact Training. Currently this scenario is not part of the Training program. No action is planned at this time.

Thermal Hydraulics

91-102 - The accuracy of the fuel zone level instruments during a low pressure ECCS injection has been identified as a generic BWR problem and is currently being evaluated by the BWR Owners Group Emergency Procedures Committee. Specifically, General Electric is conducting an analysis of this event. Upgrades to the model will be made by the installing vendor when this analysis has been completed.

91-087 - During a rapid depressurization the reactor water level swell is less than expected. The existing simulator Thermal Hydraulic model is undergoing engineering evaluation by CP&L Fuels Group and the installing vendor. Upgrades to the model will be made by the installing vendor when this analysis has been completed.

ECCS

91-054 - RHR heat exchanger flow erratic. Trend is in proper direction and occurs over correct time frame. PTA-MA-062 To be corrected by 12/91.

91-053 - Core Spray flow oscillates during pump coast down. To be corrected by 12/91.

Plant Modifications

The following plant mods are partially operable on the simulator. They had a minor impact on the test indicated. Plant mod implementation is noted below.

89-249 - Pneumatic Nitrogen System, plant operable 3/90.

90-418 - Decommission of RSCS plant, operable 11/90.

Panel Engravings

Numerous engraving differences currently exist. Information contained on the label matches the plant but the label shape or shade of color is different. The plant has initiated a label replacement program for both operating units and the simulator. All labels on the simulator will be changed to match new labels installed on Unit 2. This program is scheduled to be completed by 6/91. SSR's; 91-124, 91-137, 91-138, 91-139, 91-140, 91-141, 91-142, 91-143, 91-144.

Scales on 12 meters/recorders differ from the Unit 2 control Board. Corrections are scheduled to be complete by 12/91.

Annunciators

90-252 - Audible alarms differ from the plant. Alarms in the Control Room have deteriorated and can not be replicated. The plant is planning to change out the alarms. The simulator has purchased the new annunciation system and ready to match the plant after installation.

APPENDIX F
SIMULATOR PERFORMANCE TEST ABSTRACTS

Due to its size, this appendix is provided under separate tab.

APPENDIX G
SIMULATOR CONFIGURATION CONTROL BOARD

The Configuration Control Board was organized to ensure the validity and sufficiency of simulator configuration. The group reviews several items to insure the scope an accuracy of simulation is maintained adequately for training and to meet the guidelines of ANSI/ANS 3.5. Specifically, the group reviews plant changes that affect the simulator but which, due to training value, may not be completely implemented in the simulator. The group also reviews hardware and software discrepancies which are outstanding in the simulator to insure that training can continue without negative effects. Minutes are kept of meetings.

The members and their qualifications for the SCCB are as follows:

Bill Geise

Manager - Brunswick Simulator. Attended the University of Alabama, SRO license at Surry Nuclear Station, SRO Certification at Shearon Harris Nuclear Station, Manager Simulator Training at Shearon Harris. Ten years Navy Nuclear experience. Member of the ANS 3.5 Working Group.

Ed Hawkins

Senior Specialist - Simulator. SRO licensed at the Brunswick Site for 12 years, RO for 18 months. Held positions as Auxiliary Operator, Reactor Operator, Senior Control Operator and Shift Foreman while assigned to operations. A member of the Brunswick Training Unit for 5 years as a Licensed Operator Trainer and the Simulator Support Subunit. Six years Navy experience as a Reactor Operator.

Bob Poulk

Manager License Training, SRO Licensed at Brunswick since 1985. Prior experience includes Regulatory Compliance for 10 years, and Operations Department for 3 years. Navy nuclear experience, 11 years.

Robert Godley

Senior Specialist-Licensed Training. B.A. in Political Science, University of North Carolina. Nine years nuclear experience, eight years in operations. SRO licensed since 1988.

Ken Horn

Operations Shift Foreman. CP&L Brunswick employee since 1976. Reactor Operator licensed in 1978, Senior Reactor Operator licensed in 1980. Shift Foreman since 1981.

APPENDIX G
SIMULATOR CONFIGURATION CONTROL BOARD

To ensure the validity and sufficiency of the certification test program, certification tests are prepared by a licensed or certified Senior Reactor Operator. The results of simulator certification tests are reviewed by a second individual and by the Manager-Brunswick Simulator. The persons who have reviewed certification tests and their qualifications are as follows:

Bill Geise

Manager - Brunswick Simulator. Attended the University of Alabama, SRO license at Surry Nuclear Station, SRO Certification at Shearon Harris Nuclear Station, Manager Simulator Training at Shearon Harris, interim Manager License Training Brunswick. Ten years Navy Nuclear experience. Member of the ANS 3.5 Working Group.

Ed Hawkins

Senior Specialist - Simulator. SRO licensed at the Brunswick Site for 12 years, RO for 18 months. Held positions of Auxiliary Operator, Reactor Operator, Senior Control Operator and Shift Foreman while assigned to operations. A member of the Brunswick Training Unit for 5 years as a Licensed Operator Trainer and the Simulator Support Subunit. Six years Navy experience as a Reactor Operator.

Frank Wenger

MS, Nuclear Engineering North Carolina State University. A member of the Nuclear Fuel Section, Transient Analysis Group at CP&L. Assisted in the review of the LOCA, vessel thermal hydraulic and drywell response.

Jim Fish

SRO License in 1985, RO license in 1983 at Browns Ferry Nuclear Plant, Shift Advisor and Project Manager of System Description writers at Clinton Nuclear Station. Mr. Fish is currently employed as an SRO contractor to support Brunswick certification since April 1988. Mr. Fish was responsible for the development and implementation of the simulator certification test program and the rewrite of the Malfunction Cause and Effect Document.

Richard Edens

BS, Nuclear Technology from the University of the State of New York. SRO licensed on a BWR 4 in 1985. Simulator Supervisor for a BWR 4 Simulator. Eleven years experience in commercial nuclear power. Eight years Nuclear Navy experience as a Reactor Operator. Mr. Edens is currently employed as an SRO contractor to support Brunswick training and certification.

Figure 1
Simulator Control Room Layout

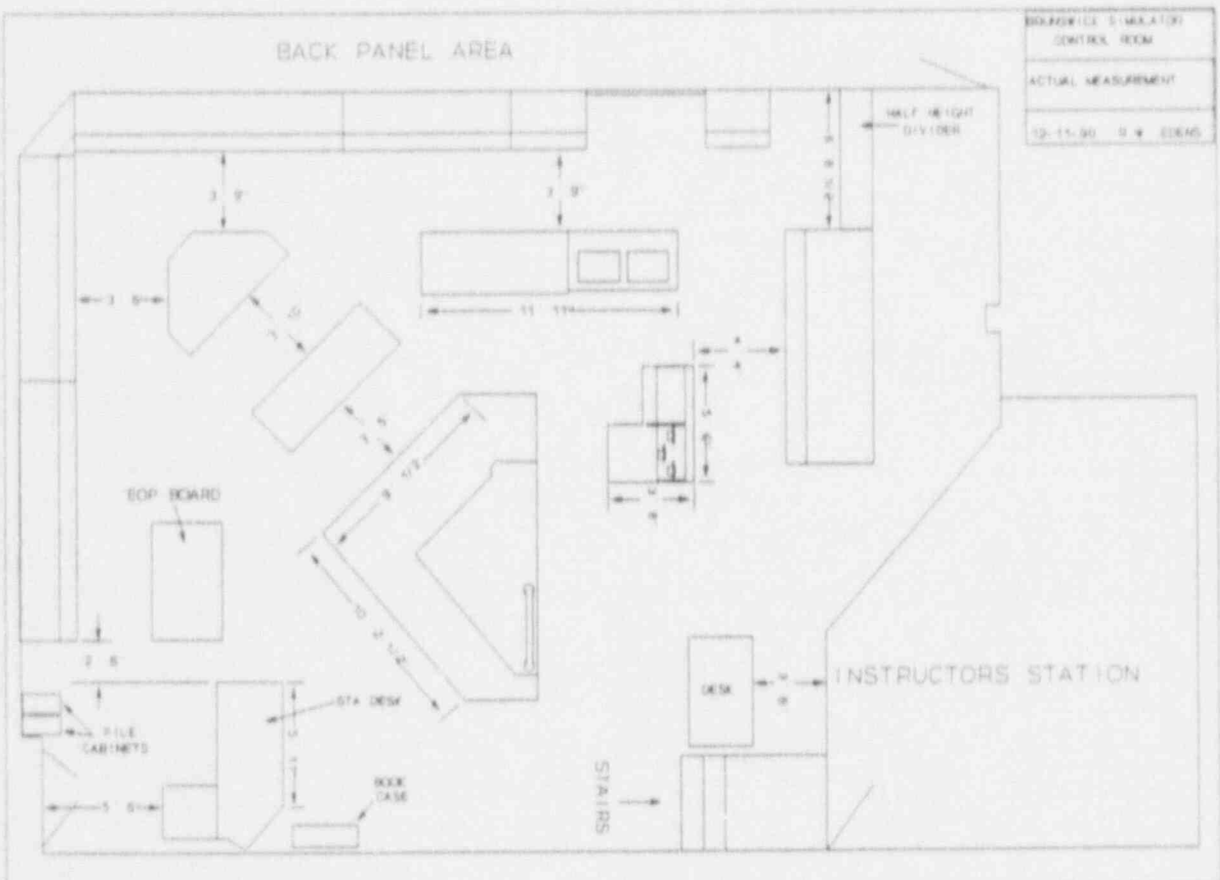


Figure 2
Control Room Layout

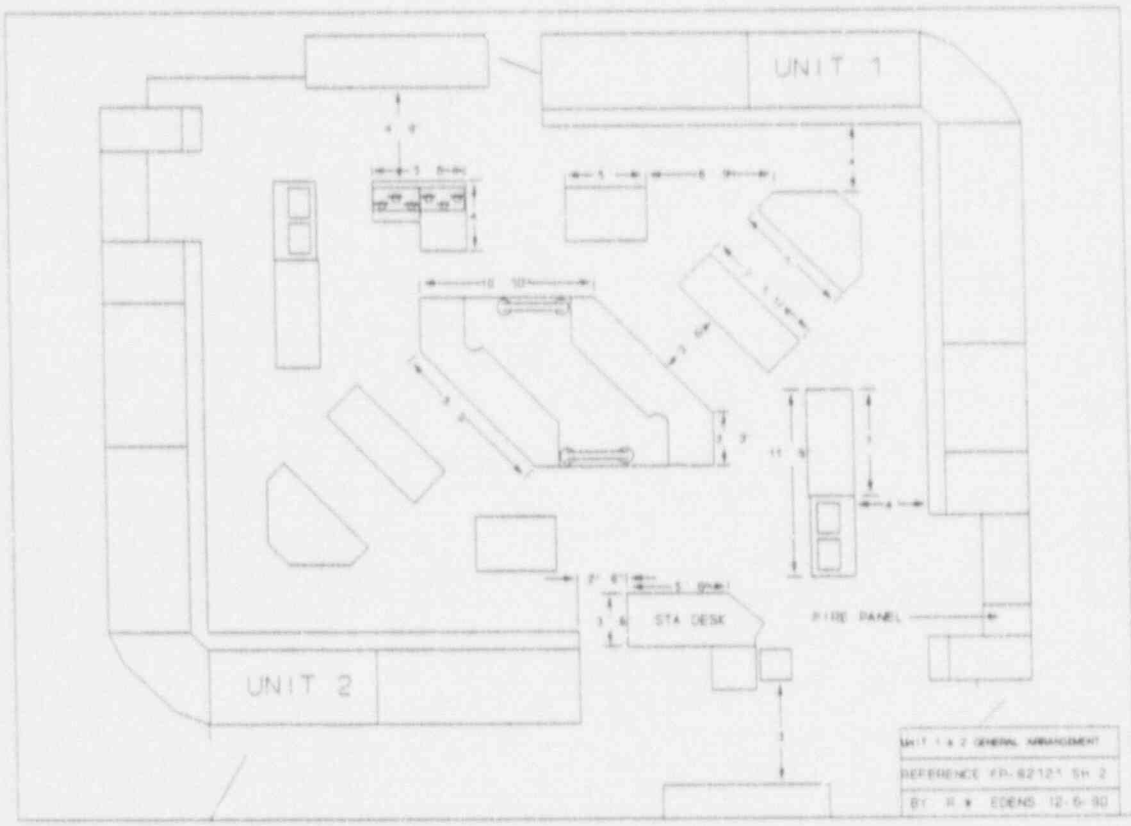


Figure 3
Current Simulator Back Panel Arrangement

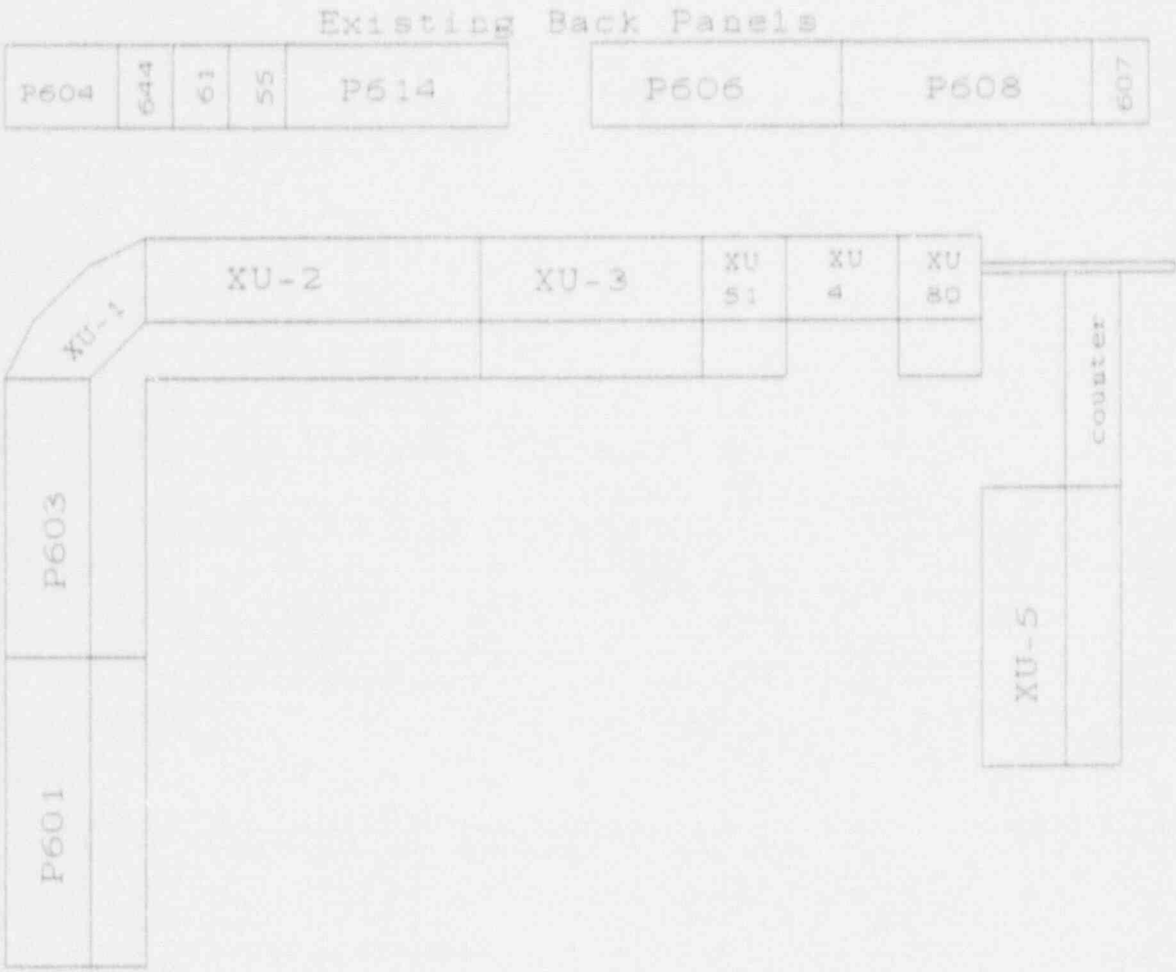
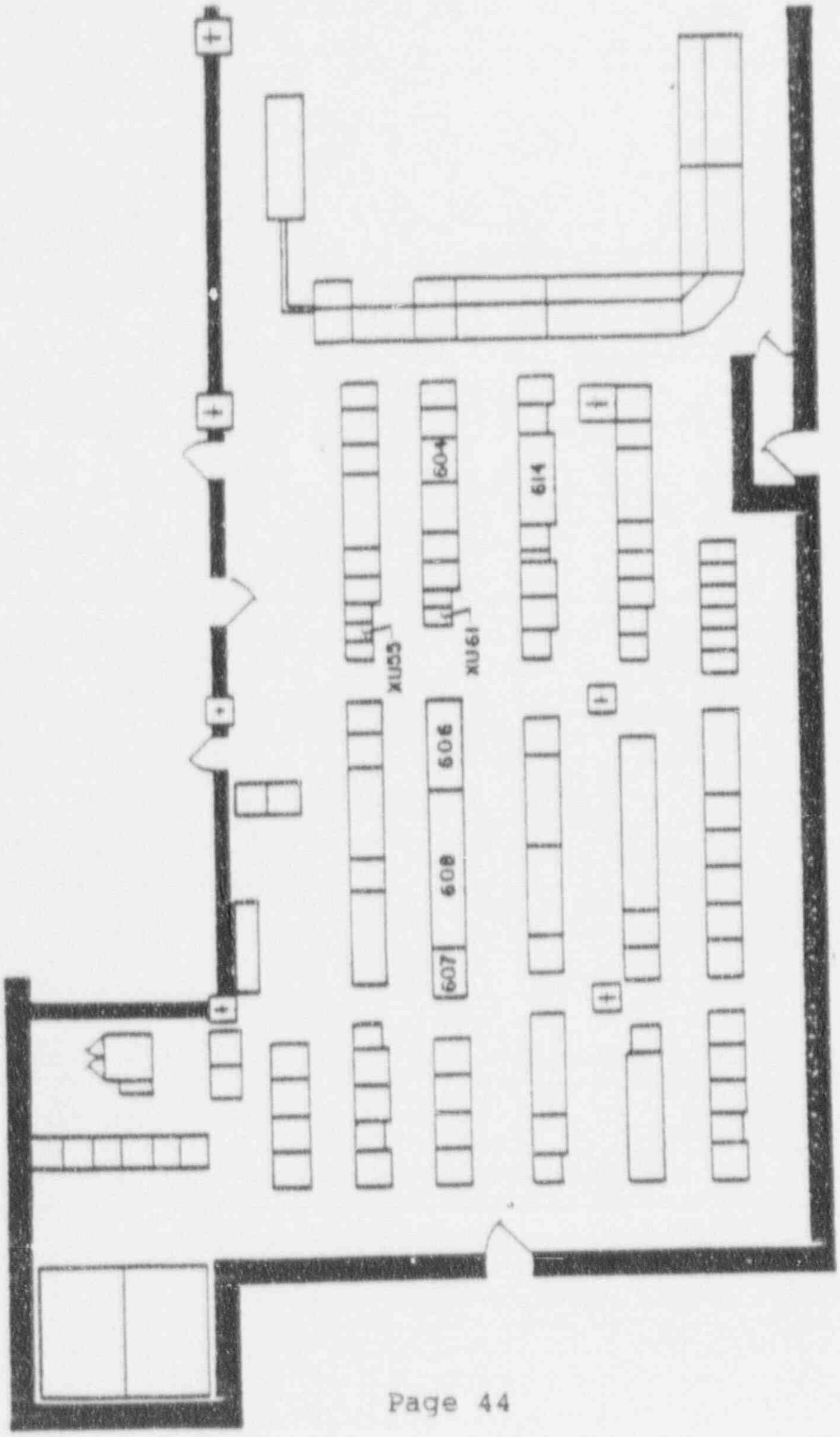


Figure 4
Plant Back Panel Arrangement



SIMULATOR TEST PROCEDURE INDEX

I. SIMULATOR OPERATING LIMITS TEST (ANSI/ANS 3.5 Section 4.3)

STP-OL-001 Simulator Operating Limits Test

II. COMPUTER REAL TIME TEST (ANSI/ANS 3.5 Appendix A A3.(1)

STP-RT-001 Simulator Real Time Test

III. STEADY STATE (ANSI/ANS 3.5 Section 4.1)

STP-SS-001 30% Power- Steady State Comparison

STP-SS-002 50% Power- Steady State Comparison

STP-SS-003 75% Power- Steady State Comparison

STP-SS-004 100% Power-Steady State Comparison

IV. NORMAL PLANT EVOLUTIONS (ANSI/ANS 3.5 Section 3.1.1)

STP-MV-100	Plant Startup-Cold Shutdown To Hot Standby	(ANSI/ANS 3.1.1 (1)&(5))	
STP-MV-200	Unit Startup And Syncronization	(ANSI/ANS 3.1.1 (2),(3)&(4))	
STP-MV-300	Increasing Turbine Load to Rated Power	(ANSI/ANS 3.1.1 (2)&(6))	
STP-MV-400	Unit Shutdown-Rated Power To Cold Shutdown	(ANSI/ANS 3.1.1 (8))	
STP-MV-500	Rx Trip Followed By Recovery To Hot Standby	(ANSI/ANS 3.1.1 (4))	
STP-MV-600	Core Performance Testing	(ANSI/ANS 3.1.1 (9))	
STP-MV-601	Thermal Power Calculation		
STP-MV-602	In Sequence Critical Shutdown Margin Calculation		
STP-MV-603	Core Performance Parameter Check		
STP-MV-604	SRM/IRM/APRM Overlap Determination		
STP-MV-605	Reactivity Anomaly Check		
STP-MV-606	Flux Response To Control Rod Movement		
STP-MV-607	Core Power Response To Voids		
STP-MV-700	Operator Conducted Surveillances (PT Guideline)	(ANSI/ANS 3.1.1 (10))	
STP-MV-701	RPS Manual Scram		OPT-01.1.6
STP-MV-702	Refuel Position Interlock Check		OPT-18.1
STP-MV-703	IRM Detector Position Rod Block Function		OPT-01.10
STP-MV-704	Equipment and Instrument Channel Check		OPT-01.14a
STP-MV-705	Equipment and Instrument Channel Check		OPT-01.14b
STP-MV-706	Suppression Chamber To Drywell Vacuum Breaker Operability		OPT-02.3.1
STP-MV-707	Reactor Building To Suppression Chamber Vacuum Breaker and Valve Operability		OPT-02.3.2
STP-MV-708	Reactor Recirculation Valves Operabilty		OPT-03.1.21
STP-MV-709	Off Gas System Automatic Isolation Operability Check		OPT-04.1.8
STP-MV-710	Core Spray Injection Check Valve Operability Test-Loop A		OPT-07.1.1a
STP-MV-711	Core Spray Injection Check Valve Operabilty Test-Loop B		OPT-07.1.1b

IV. NORMAL PLANT EVOLUTIONS (con't)

STP-MV-712	Core Spray System Operability Test-Loop A	OPT-07.2.4a
STP-MV-713	Core Spray System Operability Test-Loop B	OPT-07.2.4b
STP-MV-714	LPCI/RHR System Valve Operability Test	OPT-08.0
STP-MV-715	LPCI/RHR Loop A Check Valve Operability Test	OPT-08.0a
STP-MV-716	LPCI/RHR Loop B Check Valve Operability Test	OPT-08.0b
STP-MV-717	LPCI/RHR System Operability Test Loop B	OPT-08.2.2b
STP-MV-718	.PCI/RHR System Operability Test Loop A	OPT-08.2.2c
STP-MV-719	HPCI System Operability Test	OPT-09.2
STP-MV-720	HPCI System 165 PSIG Flow Test	OPT-09.3
STP-MV-721	RCIC System Operability Test-Flow Requirements at 1000 PSIG	OPT-10.1.1
STP-MV-722	RCIC System Operability Test-Flow Rates at 150 PSIG	OPT-10.1.3
STP-MV-723	ADS and SRV Operability Test	OPT-11.1.2
STP-MV-724	Drywell Drains System Valve Operability Test	OPT-11.3
STP-MV-725	# 3 Diesel Generator Monthly Load Test	OPT-12.2C
STP-MV-726	# 4 Diesel Generator Monthly Load Test	OPT-12.2D
STP-MV-727	Reactor Recirculation Jet Pump Operability	OPT-13.1
STP-MV-728	Control Rod Drive System Valve Operability Test	OPT-14.0
STP-MV-729	Control Rod Operability Check	OPT-14.1
STP-MV-730	Control Rod Coupling Check and CRD Test	OPT-14.1A
STP-MV-731	Reactor Water Clean-up System Operability Test	OPT-14.6
STP-MV-732	Seconuary Containment Isolation Operability	OPT-15.4A
STP-MV-733	Standby Gas Treatment System Operability Test	OPT-15.7
STP-MV-734	CAD System Component Test	OPT-16.1
STP-MV-735	CAC System Valve Operability	OPT-16.1.1
STP-MV-736	Primary Containment Volumetric Average Temperature	OPT-16.2
STP-MV-737	Reactor Building Closed Cooling Water Valve Operability Test	OPT-22.2
STP-MV-738	Service Water Valve Lineup Verification	OPT-24.0
STP-MV-739	Miscellaneous Service Water Valve Operability	OPT-24.1.2
STP-MV-740	NSSS Main Steam and Feedwater Isolation Valve Operability Test	OPT-25.1
STP-MV-741	NSSS Main Steam Drain Valve Operability	OPT-25.4
STP-MV-742	Backup N_2 Supply to Drywell Valve Operability Test	OPT-31.6
STP-MV-744	RWM Operability	OPT-01.6.2
STP-MV-745	Containment Atmosphere Monitoring System Valve Operability	2PT-16.0-2
STP-MV-746	Service Water Pump and Discharge Valve Operability	2PT-24.1-2

V. TRANSIENTS (ANSI/ANS 3.5 Appendix B B1.2)

STP-TN-001	Manual Scram	(Appendix B B1.2)
STP-TN-002	Simultaneous Trip All Feedwater Pumps	(Appendix B B1.2)
STP-TN-003	Simultaneous Closure Of All MSIV's	(Appendix B B1.2)
STP-TN-004	Simultaneous Trip Of Both Recirc. Pumps	(Appendix B B1.2)
STP-TN-005	Single Recirc Pump Trip	(Appendix B B1.2)
STP-TN-006	Turbine Trip Does not result in an immediate Rx SCRAM	(Appendix B B1.2)
STP-TN-006.1	Unit 1, Turbine Trip Does not result in an immediate Rx SCRAM	(Appendix B B1.2)
STP-TN-007	Max Rate Power Ramp-Recirc. Flow Controller in Manual.(100%-75%-100%)	(Appendix B B1.2)
STP-TN-008	DB LOCA in Conjunction with Loss OF Off-site-power	(Appendix B B1.2)
STP-TN-009	Maxium Size Unisolable MSL Rupture	(Appendix B B1.2)
STP-TN-010	MSIV Closure With 1 Stuck Open Safety/Relief Valve With High Pressure ECCS Inhibited	(Appendix B B1.2)
STP-TN-011	Inadvertant HPCI Initiation	(Appendix A A3.3)

VI. MALFUNCTIONS (ANSI/ANS 3.5 Section 3.1.2)

STP-MA-001	Recirc Pump A Suction Line Rupture	3.1.2 (1)(b)&(c)	C&E #140
STP-MA-002	Recirc Pump A Discharge Line Rupture	3.1.2 (1)(b)&(c)	C&E #141
STP-MA-004	MSL D Break Before The Flow Restrictor	3.1.2 (1)(b)&(c);(20)	C&E #153
STP-MA-005	Recirc Pump A Dual Seal Failure	3.1.2 (1)(b)&(c)	C&E #335
STP-MA-006	RCIC Turbine Steam Line Leak	3.1.2 (1)(b)&(c)	C&E #274
STP-MA-008	MSL D Break In The Steam Tunnel	3.1.2 (1)(b)&(c);(20)	C&E #154
STP-MA-009	MSL D Break In The Turbine Building	3.1.2 (1)(b)&(c);(20)	C&E #155
STP-MA-010	SRV Not Properly Seated	3.1.2 (1)(d)	C&E #159
STP-MA-011	SRV B21-F013E Setpoint Drift Low	3.1.2 (1)(d)	C&E #161
STP-MA-012	Instrument Air Rupture Downstream Of Dryers	3.1.2 (2)	C&E #349
STP-MA-013	Service Air Rupture	3.1.2 (2)	C&E #365
STP-MA-016	Loss Of Control Air To The Scram Valves	3.1.2 (2)	C&E #114
STP-MA-017	Control Air Leak In Drywell	3.1.2 (2)	C&E #368
STP-MA-018	Loss Of Off-Site Power	3.1.2 (3)a	C&E #305
STP-MA-020	Unit 2 SAT Relay Failure	3.1.2 (3)a	C&E #338
STP-MA-021	Loss Of Substation E8	3.1.2 (3)b	C&E #311
STP-MA-022	Loss Of Substation E7	3.1.2 (3)b	C&E #334
STP-MA-023	DG Output Bree' Trip	3.1.2 (3)c	C&E #326
STP-MA-024	DG #3 Governor Failure Low	3.1.2 (3)c & (22)	C&E #330
STP-MA-025	DG #4 Governor Failure High	3.1.2 (3)c	C&E #331
STP-MA-026	Main Transformer Sudden Pressure Device Actuation	3.1.2 (3)d	C&E #297
STP-MA-027	4 KV Common Bus B Trip	3.1.2 (3)d	C&E #301
STP-MA-028	Individual Bus Failures	3.1.2 (3)d	C&E #395
STP-MA-031	Loss Of 4 KV Bus	3.1.2 (3)d	C&E #345

VI. MALFUNCTIONS (con't)

STP-MA-032	UPS Failure	3.1.2 (3)e	C&E #333
STP-MA-033	Loss Of 250 VDC Bus A	3.1.2 (3)e	C&E #336
STP-MA-034	Loss Of Power To PMS	3.1.2 (3)e	C&E #344
STP-MA-035	Recirc Pump MG Set Field Breaker Trip	3.1.2 (4)	C&E #115
STP-MA-036	Recirc Pump MG Set [illegible] Trip	3.1.2 (4)	C&E #117
STP-MA-037	Recirc Pump She[illegible]	3.1.2 (4)	C&E #126
STP-MA-038	Recirc MG Set [illegible]	3.1.2 (8)	C&E #132
STP-MA-039	Total Loss Of Cw [illegible]	3.1.2 (5) & (8)	C&E #246
STP-MA-040	Conventional Service Water [illegible]er Rupt[illegible]	3.1.2 (6)	C&E #248
STP-MA-041	Nuclear Service Water Header Rupture	3.1.2 (6)	C&E #247
STP-MA-042	Loss Of RBCCW To Drywell Coolers	3.1.2 (8)	C&E #255
STP-MA-043	TBCCW Heat Exchanger Plugged	3.1.2 (6)	C&E #252
STP-MA-044	TBCCW Heat Exchanger Discharge Header Rupture	3.1.2 (6)	C&E #381
STP-MA-045	Exhaust Hood Spray Valve Fails Closed	3.1.2 (8)	C&E #173
STP-MA-046	RBCCW Pump Suction Header Rupture	3.1.2 (6)	C&E #249
STP-MA-047	CRD Drive Water Filter Plugged	3.1.2 (8) & (13)	C&E #019
STP-MA-048	RWCU Non-regen Heat Exchgr High Outlet Temp	3.1.2 (8)	C&E #151
STP-MA-049	Gen H2 Cooling Syst Temp Control Valve Fails Closed	3.1.2 (8) & (22)	C&E #314
STP-MA-050	Stator Cooling Temp Controller Failure	3.1.2 (8) & (22)	C&E #317
STP-MA-051	Turbine Lube Oil Temperature Controller Failure	3.1.2 (8) & (22)	C&E #191
STP-MA-052	Hotwell Make-up Valve Fails Closed	3.1.2 (5) & (22)	C&E #193
STP-MA-053	Hotwell Reject Valve Fails Closed	3.1.2 (5) & (22)	C&E #194
STP-MA-054	Condensate Transfer System Rupture	3.1.2 (5)	C&E #212
STP-MA-055	Loss Of Condenser Vacuum	3.1.2 (5)	C&E #190
STP-MA-057	Circ Water Pump Disch Valve Fails Closed	3.1.2 (5)	C&E #242
STP-MA-059	Loss Of SJAE	3.1.2 (5)	C&E #324
STP-MA-060	Turbine Steam Seal Regulator Fails Closed	3.1.2 (5)	C&E #189
STP-MA-061	RHRSW Pump Breaker Fault	3.1.2 (7)	C&E #286
STP-MA-062	RHR Pump Trip	3.1.2 (7)	C&E #284
STP-MA-063	Condensate Pump Sheared Shaft	3.1.2 (9)	C&E #200
STP-MA-064	Condensate Pump Locked Rotor	3.1.2 (9)	C&E #203
STP-MA-065	Condensate Booster Pump Sheared Shaft	3.1.2 (9)	C&E #206
STP-MA-068	LP Feedwater Heater 2B Tube Leak	3.1.2 (9)	C&E #216
STP-MA-070	HP Feedwater Heater 4B Tube Leak	3.1.2 (9)	C&E #218
STP-MA-071	Reactor Feedwater Pump Sheared Shaft	3.1.2 (9)	C&E #221
STP-MA-072	RFP 2A Lube Oil Leak	3.1.2 (9)	C&E #223
STP-MA-073	RFP 2B Turbine Overspeed	3.1.2 (9)	C&E #224
STP-MA-074	RFP Flow Controller Fails High	3.1.2 (9) & (22)	C&E #227

VI. MALFUNCTIONS (con't)

STP-MA-075	RFP Flow Controller Fails Low	3.1.2 (9) & (22)	C&E #228
STP-MA-076	Startup Level Control Valve Fails Closed	3.1.2 (9)	C&E #233
STP-MA-077	RFP Low Suction Pressure	3.1.2 (9)	C&E #234
STP-MA-078	Feedwater Control Steam Flow Totalizer Fails Low	3.1.2 (9) & (22)	C&E #235
STP-MA-079	Three Element Controller Fails High	3.1.2 (9) & (22)	C&E #237
STP-MA-080	RFP Minimum Flow Valve Fails Open	3.1.2 (9)	C&E #239
STP-MA-081	Loss Of All Feedwater- Normal and Emergency	3.1.2 (10)	C&E #234,261,267
STP-MA-082	RPS Channel A Failure	3.1.2 (11)	C&E #107
STP-MA-083	RPS MG Set Trip	3.1.2 (11)	C&E #108
STP-MA-084	RPS SCRAM Group Blown Fuse	3.1.2 (11)	C&E #112
STP-MA-085	Stuck Control Rod	3.1.2 (12)a	C&E #012
STP-MA-086	Control Rod Uncoupled	3.1.2 (12)b	C&E #016
STP-MA-087	Control Rod Withdrawl Drift	3.1.2 (12)c	C&E #005
STP-MA-088	Control Rod Slow Insertion Drift	3.1.2 (12)c	C&E #001
STP-MA-089	Control Rod Fast Insertion Drift	3.1.2 (12)c	C&E #031
STP-MA-090	Control Rod Drop	3.1.2 (12)d	C&E #12 & 16
STP-MA-091	CRD Flow Control Valve A Fails Closed	3.1.2 (13)	C&E #017
STP-MA-092	CRD Pump Suction Filter Plugged	3.1.2 (13)	C&E #018
STP-MA-094	RWM Loss Of Power	3.1.2 (13)	C&E #398
STP-MA-095	Rod Block Monitor (RBM) A Fails Downscale	3.1.2 (13) & (22)	C&E #042
STP-MA-097	Rod Motion Timer Failure	3.1.2 (13) & (22)	C&E #044
STP-MA-098	Fuel Cladding Leak	3.1.2 (14)	C&E #143
STP-MA-099	Main Turbine Trip	3.1.2 (15)	C&E #169
STP-MA-099.1	Unit 1, Main Turbine Trip	3.1.2 (15)	C&E #169
STP-MA-100	Main Generator Trip	3.1.2 (16)	C&E #299
STP-MA-101	Core Spray Valve F005A Fails To Open	3.1.2 (17)	C&E #259
STP-MA-102	HPCI Inverter Failure	3.1.2 (17)	C&E #263
STP-MA-103	RCIC Turbine Speed Control Failure	3.1.2 (17) & (22)	C&E #269
STP-MA-105	Spurious Reactor SCRAM	3.1.2 (19)	C&E #045
STP-MA-106	Feedwater Heater #5 Outlet Line Rupture	3.1.2 (20)	C&E #225
STP-MA-107	SRM/IRM Drive Motor Power Failure	3.1.2 (21)	C&E #103
STP-MA-108	Recirc/APRM Flow Instrument Fails Downscale	3.1.2 (21) & (22)	C&E #130
STP-MA-109	SRM Fails High	3.1.2 (21) & (22)	C&E #046
STP-MA-110	SRM Fails Low	3.1.2 (21) & (22)	C&E #047
STP-MA-111	SRM Fails As Is	3.1.2 (21)	C&E #048
STP-MA-112	IRM Fails High	3.1.2 (21) & (22)	C&E #058
STP-MA-113	IRM Fails Low	3.1.2 (21) & (22)	C&E #061
STP-MA-114	IRM Fails As Is	3.1.2 (21)	C&E #059

VI. MALFUNCTIONS (con't)

STP-MA-115	APRM Fails High	3.1.2 (21) & (22)	C&E #076
STP-MA-116	APRM Fails Low	3.1.2 (21) & (22)	C&E #077
STP-MA-117	APRM Fails As Is	3.1.2 (21)	C&E #078
STP-MA-118	LPRM Fails High	3.1.2 (21) & (22)	C&E #092
STP-MA-119	LPRM Fails Low	3.1.2 (21) & (22)	C&E #093
STP-MA-120	LPRM Fails As Is	3.1.2 (21)	C&E #094
STP-MA-121	LPRM Erratic Operation	3.1.2 (21)	C&E #098
STP-MA-122	SRM Channel A Stuck Detector	3.1.2 (21)	C&E #100
STP-MA-123	IRM Stuck Detector	3.1.2 (21)	C&E #101
STP-MA-124	SRM/IRM Overlap Incorrect	3.1.2 (21)	C&E #104
STP-MA-125	APRM C Inconsistant With Other APRM's	3.1.2 (21)	C&E #105
STP-MA-126	Reactor Level Transmitter B21-N004A Fails	3.1.2 (22)	C&E #236
STP-MA-127	DG Auto Start Failure	3.1.2 (23)	C&E #320
STP-MA-128	ADS Logic Failure	3.1.2 (23) & (22)	C&E #113
STP-MA-129	HPCI Injection Valve Fails To Auto Open	3.1.2 (23)	C&E #392
STP-MA-130	HPCI Logic Bus A - Auto Start Failure	3.1.2 (23)	C&E #261
STP-MA-131	RCIC Logic Bus B - Auto Start Failure	3.1.2 (23)	C&E #267
STP-MA-132	Defeat Of Group 2 Isolation Logic	3.1.2 (23)	C&E #393
STP-MA-133	S/D Cooling High Pressure Permissive Fails	3.1.2 (23) & (22)	C&E #296
STP-MA-134	ATWS	3.1.2 (24)	C&E #382
STP-MA-135	Auto SCRAM Defeat	3.1.2 (24)	C&E #110
STP-MA-136	EHC Pressure Regulator Fails High	3.1.2 (25) & (22)	C&E #162
STP-MA-137	EHC Pressure Regulator Fails Low	3.1.2 (25) & (22)	C&E #163
STP-MA-138	EHC Pressure Regulator Oscillation	3.1.2 (25) & (22)	C&E #168
STP-MA-139	Turbine Bypass Valve #1 Fails Open	3.1.2 (25)	C&E #180
STP-MA-140	Turbine Bypass Valve #1 Fails Closed	3.1.2 (25)	C&E #180A
STP-MA-141	All Turbine Bypass Valves Fail Open	3.1.2 (25)	C&E #181
STP-MA-142	All Turbine Bypass Valves Fail Closed	3.1.2 (25)	C&E #181A
STP-MA-143	Drywell Cooling Fan Damper Failure	3.1.2 (8)	C&E #350
STP-MA-144	Drywell Cooling Fan Failure	3.1.2 (8)	C&E #357
STP-MA-145	ADS Valve Fails Open	3.1.2 (1)(d)	C&E #156

PERFORMANCE TEST ABSTRACT
PTA-OL-001

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-OL-001, Simulator Operating Limits Test

1.2 ANSI/ANS 3.5 1985, Section 4.3, Simulator Operating Limits.

2.0. AVAILABLE OPTIONS

2.1 T,T.CPUA and T,T.IPUA for the Training load.

OR

2.2 T,T.CPUT and T,T.IPUT for the Developement load.

3.0 TESTED OPTIONS

3.1 Training Load

4.0 INITIAL CONDITIONS

The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

5.0 TEST DURATION

The simulator will be placed in the FREEZE mode after the selected operating limits are proven to provide an alarm to the simulator instructor when the predetermined setpoints are exceeded. Approximate time required is 15 minutes.

6.0 BASE LINE DATA

NONE

7.0 DATE PERFORMED: 07/15/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

PERFORMANCE TEST ABSTRACT
PTA-RT-001

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-RT-001, SIMULATOR REAL TIME TEST

1.2 ANSI/ANS 3.5 1985

2.0 AVAILABLE OPTIONS

2.1 The test is conducted during three conditions, steady state, ATWS with MSIV isolation, LOCA.

3.0 TESTED OPTIONS

ALL OPTIONS TESTED

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in the Run mode at approximately 100% power.

5.0 TEST DURATION

5.1 Each portion of the test is conducted over a five minute period.

6.0 BASE LINE DATA

NONE

7.0 DATE PERFORMED: 2/10/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

PERFORMANCE TEST ABSTRACT
PTA-OL-001

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-OL-001, Simulator Operating Limits Test

1.2 ANSI/ANS 3.5 1985, Section 4.3, Simulator Operating Limits.

2.0 AVAILABLE OPTIONS

2.1 T,T.CPUA and T,T.IPUA for the Training load.

OR

2.2 T,T.CPUT and T,T.IPUT for the Developement load.

3.0 TESTED OPTIONS

3.1 Training Load

4.0 INITIAL CONDITIONS

The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

5.0 TEST DURATION

The simulator will be placed in the FREEZE mode after the selected operating limits are proven to provide an alarm to the simulator instructor when the predetermined setpoints are exceeded. Approximate time required is 15 minutes.

6.0 BASE LINE DATA

NONE

7.0 DATE PERFORMED: 07/15/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-RT-001

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-RT-001, SIMULATOR REAL TIME TEST

1.2 ANSI/ANS 3.5 1985

2.0 AVAILABLE OPTIONS

2.1 The test is conducted during three conditions, steady state, ATWS with MSIV isolation, LOCA.

3.0 TESTED OPTIONS

ALL OPTIONS TESTED

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in the Run mode at approximately 100% power.

5.0 TEST DURATION

5.1 Each portion of the test is conducted over a five minute period.

6.0 BASE LINE DATA

NONE

7.0 DATE PERFORMED: 2/10/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-SS-001

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-SS-001, 25% POWER STEADY STATE COMPARISON

1.2 ANSI/ANS 3.5 1985, Section 4. Performance Criteria
4.1 Steady State Operation

2.0 AVAILABLE OPTIONS

2.1 NONE. This test is a 1 hour steady state stability run at 25% reactor power in conjunction with a Core Thermal Power Calculation.

3.0 TESTED OPTIONS

3.1 For the purpose of this test the Critical Parameters are:
- 3.1.1 Reactor Power (APRM's)
- 3.1.2 Individual Recirc Loop Flows
- 3.1.3 Reactor Steam Flow
- 3.1.4 Feedwater Flow
- 3.1.5 Reactor Water Level
- 3.1.6 Reactor Pressure
- 3.1.7 Gross Generator Power
- 3.1.8 Suppression Pool Bulk Water Temperature
- 3.1.9 Suppression Pool Level
- 3.1.10 Reactor Thermal Power

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in the Run mode at approximately 25% power. Maneuver the simulator to approximate the following initial conditions:

- 4.1.1 Reactor Power..........:25.3 %
- 4.1.2 Reactor Pressure.......:930 psig
- 4.1.3 Total Core Flow........:25.4 mlb/hr
- 4.1.4 Reactor Water Level....:187 inches
- 4.1.5 Total Steam Flow.......:1.91 mlb/hr
- 4.1.6 Total Feedwater Flow...:2.24 mlb/hr
- 4.1.7 Gross Generator Power..:163 MWe
- 4.1.8 Core Age...............:BOL

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the 60 minute data and the Core Thermal Power Calculation data has been obtained.

6.0 BASE LINE DATA

6.1 Computer Point Summary, Unit 2, 25.28% Power, April 10, 1990.

6.2 PT-01.8D Core Thermal Power Calculation, latest Revision.

7.0 DATE PERFORMED: 1-24-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

P-1 DATA IS INACCURATE BELOW 100%. AN OD-3 WAS USED TO VERIFY THERMAL POWER. P-1 PROGRAM IS TO BE REPLACED AS PART OF THE PLANT PROCESS COMPUTER REPLACEMENT. SCHEDULED IMPLEMENTATION 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

PLANT SUPPLIED DATA FOR STEAM FLOW/FEED FLOW IS MISMATCHED BY 20%. SIMULATOR DATA IS MATCHED TO REMAINING PARAMETERS.

PERFORMANCE TEST ABSTRACT
PTA-SS-002

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-SS-002, 50% POWER STEADY STATE COMPARISON

1.2 ANSI/ANS 3.5 1985, Section 4. Performance Criteria
4.1 Steady State Operation

2.0 AVAILABLE OPTIONS

2.1 NONE. This test is a 1 hour steady state stability run at 52% reactor power in conjunction with a Core Thermal Power Calculation.

3.0 TESTED OPTIONS

3.1 For the purpose of this test the Critical Parameters are:

3.1.1 Reactor Power (APRM's)
3.1.2 Individual Recirc Loop Flows
3.1.3 Reactor Steam Flow
3.1.4 Feedwater Flow
3.1.5 Reactor Water Level
3.1.6 Reactor Pressure
3.1.7 Gross Generator Power
3.1.8 Suppression Pool Bulk Water Temperature
3.1.9 Suppression Pool Level
3.1.10 Reactor Thermal Power

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in the Run mode at approximately 52% power. Maneuver the simulator to approximate the following initial conditions:

4.1.1 Reactor Power..........:52%
4.1.2 Reactor Pressure.......:953 psig
4.1.3 Total Core Flow........:43 mlb/hr
4.1.4 Reactor Water Level....:187 inches
4.1.5 Total Steam Flow.......:5.6 mlb/hr
4.1.6 Total Feedwater Flow...:5.0 mlb/hr
4.1.7 Gross Generator Power..:416 MWe
4.1.8 Core Age...............:BOL

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the 60 minute data and the Core Thermal Power Calculation data has been obtained.

6.0 BASE LINE DATA

6.1 Computer Point Summary, Unit 2, 52.04% Power, April 10, 1990.

6.2 PT-01.8D Core Thermal Power Calculation.

7.0 DATE PERFORMED: 1-23-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

P-1 DATA FOR CONDITIONS OTHER THAN FULL POWER ARE UNRELIABLE. OD3-1 WAS USED TO VERIFY THERMAL POWER. P-1 UPGRADE IS PART OF THE PLANT PROCESS COMPUTER UPGRADE. SCHEDULED IMPLEMENTATION 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

PLANT DATA FOR STEAM FLOW IS OUT OF LINE WITH OTHER PARAMETERS. SIMULATOR STEAM FLOW IS CONSISTENT WITH FEED FLOW AND REMAINING PARAMETERS.

PERFORMANCE TEST ABSTRACT
PTA-SS-003

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-SS-003, 75% POWER STEADY STATE COMPARISON

1.2 ANSI/ANS 3.5 1985, Section 4. Performance Criteria
4.1 Steady State Operation

2.0 AVAILABLE OPTIONS

2.1 NONE. This test is a 1 hour steady state stability run at 77% reactor power in conjunction with a Core Thermal Power Calculation.

3.0 TESTED OPTIONS

3.1 For the purpose of this test the Critical Parameters are:

3.1.1 Reactor Power (APRM's)
3.1.2 Individual Recirc Loop Flows
3.1.3 Reactor Steam Flow
3.1.4 Feedwater Flow
3.1.5 Reactor Water Level
3.1.6 Reactor Pressure
3.1.7 Gross Generator Power
3.1.8 Suppression Pool Bulk Water Temperature
3.1.9 Suppression Pool Level
3.1.10 Reactor Thermal Power

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in the Run mode at approximately 77% power. Maneuver the simulator to approximate the following initial conditions:

4.1.1 Reactor Power..........:77%
4.1.2 Reactor Pressure.......:967 psig
4.1.3 Total Core Flow........:44 mlb/hr
4.1.4 Reactor Water Level....:187 inches
4.1.5 Total Steam Flow.......:8.0 mlb/hr
4.1.6 Total Feedwater Flow...:7.8 mlb/hr
4.1.7 Gross Generator Power..:636 MWe
4.1.8 Core Age...............:BOL

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the 60 minute data and the Core Thermal Power Calculation data has been obtained.

6.0 BASE LINE DATA

6.1 Computer Point Summary, Unit 2, 77.3% Power, April 10, 1990.

6.2 PT-01.8D Core Thermal Power Calculation.

7.0 DATE PERFORMED: 1-22-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

PLANT DATA FOR FEED AND STEAM FLOW SHOW A 3.6% DELTA AND IS CONSIDERED TO BE UNRELIABLE. SIMULATOR DATA IS CONSISTENT WITH REMAINING PARAMETERS.

PERFORMANCE TEST ABSTRACT
PTA-SS-004

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-SS-004, 100% POWER STEADY STATE COMPARISON

1.2 ANSI/ANS 3.5 1985, Section 4. Performance Criteria
4.1 Steady State Operation

2.0 AVAILABLE OPTIONS

2.1 NONE. This test is a 1 hour steady state stability run at 100% reactor power in conjunction with a Core Thermal Power Calculation.

3.0 TESTED OPTIONS

3.1 For the purpose of this test the Critical Parameters are:

3.1.1 Reactor Power (APRM's)
3.1.2 Individual Recirc Loop Flows
3.1.3 Reactor Steam Flow
3.1.4 Feedwater Flow
3.1.5 Reactor Water Level
3.1.6 Reactor Pressure
3.1.7 Gross Generator Power
3.1.8 Suppression Pool Bulk Water Temperature
3.1.9 Suppression Pool Level
3.1.10 Reactor Thermal Power

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in the Run mode at approximately 100% power. Maneuver the simulator to approximate the following initial conditions:

4.1.1 Reactor Power..........:100%
4.1.2 Reactor Pressure.......:1005 psig
4.1.3 Total Core Flow........:70 mlb/hr
4.1.4 Reactor Water Level....:187 inches
4.1.5 Total Steam Flow.......:10.3 mlb/hr
4.1.6 Total Feedwater Flow...:10.3 mlb/hr
4.1.7 Gross Generator Power..:810 MWe
4.1.8 Core Age...............:BOL

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the 60 minute data and the Core Thermal Power Calculation data has been obtained.

6.0 BASE LINE DATA

6.1 Computer Point Summary, Unit 2, 99.99% Power, April 11, 1990.

6.2 PT-01.8D Core Thermal Power Calculation.

7.0 DATE PERFORMED: 1-15-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MV-100

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-100, PLANT STARTUP - COLD SHUTDOWN TO HOT STANDBY

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (1) Plant startup - cold to hot standby (4) Reactor trip followed by recovery to rated.

2.0 AVAILABLE OPTIONS

2.1 NONE. This test demonstrates that Cold Shutdown to Hot Standby simulator startup performance is comparable to BSEP Unit 2 performance.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in Cold Shutdown with all Control Rods fully inserted, moderator temperature less than 212° F and the Reactor Mode Switch is in SHUTDOWN.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the completion of GP-02, Approach to Criticality and Pressurization of the Reactor.

6.0 BASE LINE DATA

6.1 GP-01, Startup Checklist, latest revision.

6.2 GP-02, Approach to Criticality and Pressurization of the Reactor, latest revision.

7.0 DATE PERFORMED: 1-18-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

EER 90-259 (CMS 90-0418) DISABLING OF RSCS HAS NOT BEEN FULLY IMPLEMENTED ON THE SIMULATOR. MOD IMPLEMENTED 11/90. SIMULATOR UPGRADE COMPLETED BY 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-200

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-200, UNIT STARTUP AND SYNCHRONIZATION

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (2) Nuclear startup from hot standby to rated power (3) Turbine startup and generator synchronization (4) Reactor trip followed by recovery to rated.

2.0 AVAILABLE OPTIONS

2.1 NONE. This test demonstrates that unit startup and synchronization on the simulator is comparable to BSEP Unit 2 performance.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in Hot Standby. The initial conditions shall match the final conditions of GP-02, Approach to Criticality and Pressurization of the Reactor.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the completion of GP-03, Unit Startup and Synchronization

6.0 BASE LINE DATA

6.1 GP-03, Unit Startup and Synchronization, latest Revision.

7.0 DATE PERFORMED: 1-19-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

PNEUMATIC NITROGEN SYSTEM PLANT MOD IS NOT COMPLETED.

CMS 89-0249. MOD IMPLEMENTED 3/90. REMOVAL OF RSCS HAS

NOT BEEN COMPLETED. CMS 90-0418. MOD IMPLEMENTED 11/90.

SIMULATOR UPGRADE COMPLETED FOR BOTH BY 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-300

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-300, INCREASING TURBINE LOAD TO RATED

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (2) Nuclear startup from hot standby to rated power (6) Load changes

2.0 AVAILABLE OPTIONS

2.1 NONE. This test demonstrates that increasing turbine load to rated power on the simulator is comparable to BSEP Unit 2 performance.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with the Main Turbine synchronized to the grid. The initial conditions shall match the final conditions of GP-03, Unit Startup and Synchronization.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the completion of GP-04, Increasing Turbine Load to Rated Power.

6.0 BASE LINE DATA

6.1 GP-04, Increasing Turbine Load to Rated Power, latest revision.

7.0 DATE PERFORMED: 1-19-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

HYDROGEN WATER CHEMISTRY HAS NO EFFECT ON MAIN STEAM LINE

RADIATION MONITORS. SMR 91-0067

REMOVAL OF RSCS HAS NOT BEEN COMPLETED. CMS 90-0418

MOD IMPLEMENTED 11/90. SIMULATOR UPGRADE COMPLETED FOR

BOTH BY 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-400

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-400, UNIT SHUTDOWN - RATED POWER TO COLD SHUTDOWN

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (8) Plant shutdown from rated power to hot standby and cool down to cold shutdown conditions.

2.0 AVAILABLE OPTIONS

2.1 NONE. This test demonstrates that a unit shutdown from rated power on the simulator is comparable to BSEP Unit 2 performance.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% power. The initial conditions shall match the final conditions of GP-04, Increasing Turbine Load to Rated Power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the completion of GP-05, Unit Shutdown.

6.0 BASE LINE DATA

6.1 GP-05, Unit Shutdown, latest revision

7.0 DATE PERFORMED: 1-16-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

PNEUMATIC NITROGEN SYSTEM PLANT MOD HAS NOT BEEN FULLY IMPLEMENTED PM 87-170. INSTRUMENT AIR FOR D.W. DOES NOT USE NITROGEN ON THE SIMULATOR. MOD OPERABLE 3/90. HYDROGEN WATER CHEMISTRY MOD HAS NOT BEEN FULLY IMPLEMENTED PM 86-081. SYSTEM SHUTDOWN NOT PER PROCEDURE. MOD OPERABLE. EER 90-0259 DISABLING RSCS HAS NOT BEEN FULLY

IMPLEMENTED. MOD IMPLEMENT 11/90. SIMULATOR UPGRADE COMPLETED BY 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-500

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-500, REACTOR TRIP FOLLOWED BY RECOVERY TO HOT STANDBY

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (4) Reactor trip followed by recovery to rated.

2.0 AVAILABLE OPTIONS

2.1 NONE. This test demonstrates that simulator recovery to Hot Standby from a reactor scram is comparable to BSEP Unit 2 performance.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in the RUN mode at approximately 100% power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the unit is stabilized in a Hot Standby condition.

6.0 BASE LINE DATA

6.1 EOP-1, Emergency Operating Procedure.

7.0 DATE PERFORMED: 1-24-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

REACTOR WENT CRITICAL OUTSIDE OF ECP. ITEM 258 VICE. 229. PLANT RETURNED TO 3% POWER. NO ACTION TO BE TAKEN. THIS TASK IS NOT CONDUCTED DURING TRAINING, THEREFORE IT WILL HAVE NO IMPACT ON TRAINING. REMOVAL OF RSCS HAS NOT BEEN COMPLETED. CMS 90-0418 MOD IMPLEMENTED 3/90. SIMULATOR IMPLEMENTATION BY 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

THIS TEST WAS STOPPED AT 3% POWER. CONTINUATION OF THIS TEST WILL NOT SHOW ANY ADDITIONAL INFORMATION BEYOND THE COLD STARTUP TEST TO FULL POWER. THIS SCENARIO IS NOT USED FOR TRAINING.

PERFORMANCE TEST ABSTRACT
PTA-MV-601

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-601, CORE PERFORMANCE TESTING - THERMAL POWER CALCULATION

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (9) Core Performance Testing

2.0 AVAILABLE OPTIONS

2.1 NONE. This test will verify the core thermal power calculations performed by the Process Computer is comparable to BSEP Unit 2 performance.

3.0 TESTED OPTIONS

NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions. These steady state conditions must be maintained until all data has been recorded.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the required instrument and Process Computer data has been obtained.

6.0 BASE LINE DATA

6.1 PT-01.8D, Core Thermal Power Calculation, latest Revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

EXISTING PMS DOES NOT CONTAIN POINTS NECESSARY TO PERFORM THE TEST. SSR's 91-0017 AND 91-0030. UPGRADE TO THE PMS IS SCHEDULED FOR 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-602

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-603, CORE PERFORMANCE TESTING - IN SEQUENCE CRITICAL SHUTDOWN MARGIN CALCULATIONS

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (9) Core Performance Testing

2.0 AVAILABLE OPTIONS

2.1 NONE. This test calculates the actual shutdown margin of the simulator reactor core during initial start up and ensures that with the analytically strongest rod withdrawn, the reactor will remain subcritical by a specified margin.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1. The simulator is operating and has achieved criticality in accordance with GP-02, Approach to Criticality and Pressurization of the Reactor and GP-10, Rod Sequence Checkoff Sheet (utilize the expanded Group pull sheet).

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the completion of PT-14.3.1, In Sequence Critical Shutdown Margin Calculation.

6.0 BASE LINE DATA

6.1 PT-14.3.1, In Sequence Critical Shutdown Margin Calculation, latest Revision.

6.2 Brunswick Unit 2, Cycle Management Report and applicable Supplements, for current fuel cycle.

7.0 DATE PERFORMED: 11-2-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-603

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-603, CORE PERFORMANCE TESTING - CORE PERFORMANCE PARAMETER CHECK

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (9) Core Performance Testing

2.0 AVAILABLE OPTIONS

2.1 NONE. This test will obtain and verify the basic core performance parameters and calibrate the APRM channels to read ≥ actual core thermal power.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is in operation and reactor thermal power is greater than 25%.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the completion of PT-01.11, Core Performance Parameter Check.

6.0 BASE LINE DATA

6.1 PT-01.11, Core Performance Parameter Check, Rev. 24, 04/20/88.

7.0 DATE PERFORMED: 1-21-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-604

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-604, CORE PERFORMANCE TESTING -SRM/IRM/APRM OVERLAP DETERMINATION

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (9) Core Performance Testing

2.0 AVAILABLE OPTIONS

2.1 NONE. This test will demonstrate that the SRM, IRM, and APRM Systems provide adequate indication to perform a reactor startup and power increase in a safe and efficient manner.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with all Control Rods fully inserted and ready to begin a unit startup in accordance with GP-02, Approach to Criticality and Pressurization of the Reactor.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the completion of PT-50.2, SRM/IRM/APRM Overlap Determination.

6.0 BASE LINE DATA

6.1 PT-50.2, SRM/IRM/APRM Overlap Determination, Rev. 6, 06/04/86.

7.0 DATE PERFORMED: 2-21-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-605

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-605, CORE PERFORMANCE TESTING - REACTIVITY ANOMALY CHECK

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (9) Core Performance Testing

2.0 AVAILABLE OPTIONS

2.1 NONE. This test will verify that reactivity anomalies do not exist during power operation.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in the Run mode with a steady state reactor thermal power ≥ 80% and P-1 edits are available.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the reactor has been at a steady state power level for at least one hour and the necessary P-1 edit(s), Hourly Core Performance Log, has been obtained from the Process Computer.

6.0 BASE LINE DATA

6.1 PT-14.5.2, Reactivity Anomaly Check, latest Revision.

7.0 DATE PERFORMED: 11-2-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

Note: P1 data obtained from ERFIS computer.

PERFORMANCE TEST ABSTRACT
PTA-MV-606

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-606, CORE PERFORMANCE TESTING - FLUX RESPONSE TO CONTROL ROD MOVEMENT

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (9) Core Performance Testing

2.0 AVAILABLE OPTIONS

2.1 NONE. This test will verify proper core flux response to Control Rod movement.

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the selected Control Rods have been moved and the necessary Process Computer edits have been obtained.

6.0 BASE LINE DATA

6.1 86-TP, Flux Response to Rods, Rev 0, Feb 1986.

7.0 DATE PERFORMED: 2-4-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-607

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-607, CORE PERFORMANCE TESTING - CORE POWER RESPONSE TO VOIDS

1.2 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions (9) Core Performance Testing

2.0 AVAILABLE OPTIONS

2.1 NONE. This test will verify proper core power response to a pressure related change in core void content. Malfunction #163 causes EHC Pressure Regulator A to fail low (Control Valves go closed) due to a sensor failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:163
3.2 MALFUNCTION SYMBOL.:MMS004F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equillibrium xenon conditions.

4.2 A recording device is set up to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less.

4.2.1 APRM A.........................:NIJAPRM(1)
4.2.2 APRM B.........................:NIJAPRM(2)
4.2.3 Reactor Pressure (800 to 1100)..:NBPITAPT(32)
4.2.4 Reactor Water Level (150 to 210):IARXLVL
4.2.5 Total Core Flow................:NBWFLOW(7)
4.2.6 Total Feedwater Flow............:CFW1REV
4.2.7 Total Steam Flow...............:MSW4111

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 2/4/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-701

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-701 , RPS MANUAL SCRAM

1.2 PT-1.1.6

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 ALL

4.0 INITIAL CONDITIONS

4.1 IC 45 (COLD SHUTDOWN)

5.0 TEST DURATION

5.1 10 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6/22/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-702

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-702, REFUELING POSITION INTERLOCK CHECK

1.2 PT-18.1

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 N/A

3.0 TESTED OPTIONS

3.1 COMPLETED APPLICABLE CONTROL ROOM ACTIVITIES. REFUEL BRIDGE ACTIVITIES ARE NOT APPLICABLE.

4.0 INITIAL CONDITIONS

4.1 IC 1, COLD SHUTDOWN, ALL RODS INSERTED

5.0 TEST DURATION

5.1 1 HOUR

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 1-30-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

ROD OUT BLOCK ALARM AND WITHDRAWAL PERMISSIVE DID NOT FUNCTION PROPERLY. SSR 91-0084 PROBLEM TO BE RESOLVED BY 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-703

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-703, IRM DETECTOR POSITION ROD BLOCK FUNCTIONAL TEST

1.2 PT-1.10

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 ONE OR ALL EIGHT IRM DETECTORS

3.0 TESTED OPTIONS

3.1 TESTED ALL 8 DETECTORS

4.0 INITIAL CONDITIONS

4.1 IC 44

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6-22-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-704

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-704 , EQUIPMENT & INSTRUMENT CHANNEL CHECKS

1.2 PT-01.14a

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 THE SIMULATOR IS IN OPERATION AT APPROXIMATELY 25% STEADY STATE POWER.

5.0 TEST DURATION

5.1 APPROXIMATELY 30 MINUTES.

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-07-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-705

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-705 , EQUIPMENT & INSTRUMENT CHANNEL CHECKS

1.2 PT-1.14B

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 SIMULATOR IS IN OPERATION AND REACTOR POWER IS AT APPROXIMATELY 100% STEADY STATE POWER.

5.0 TEST DURATION

5.1 APPROXIMATELY 1.5 HOURS

6.0 BASE LINE DATA

6.1 PT 01.14b, EQUIPMENT AND INSTRUMENT CHANNEL CHECKS

7.0 DATE PERFORMED: 1/8/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

PMS DATA POINTS NOT IDENTIFIED CORRECTLY. CORRECTION WILL BE PART OF THE PMS REPLACEMENT.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-706

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-706, SUPPRESSION CHAMBER TO DRYWELL VACUUM BREAKER OPERABILITY

1.2 PT-2.3.1

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 ONE OR ALL VACUUM BREAKERS

3.0 TESTED OPTIONS

3.1 ALL VACUUM BREAKERS

4.0 INITIAL CONDITIONS

4.1 IC 11 HOT FULL POWER

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6/23/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-707

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-707 , RX BLDG TO SUPP CHAMBER VACUUM BREAKER VALVE OPERABILITY TEST

1.2 PT-2.3.2

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 ONE OR BOTH RX BLDG VACUUM BREAKERS

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 IC 11, FP POWER

5.0 TEST DURATION

5.1 10 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6-23-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-708

.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-708 , RCIC VALVE OP TEST

1.2 PT-3.1.21

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 EITHER RECIRC LOOPS

3.0 TESTED OPTIONS

3.1 BOTH RECIRC LOOPS

.0 INITIAL CONDITIONS

4.1 COLD SHUTDOWN

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 1-23-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-709

1.0 PROCEDURE TITLE/ANSI.3.5 REFERENCE

1.1 STP-MV-709, OFF GAS SYSTEM AUTOMATIC ISOLATION OPERABILITY TEST

1.2 PT-4.1.8

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 ALL THAT IS SIMULATED

4.0 INITIAL CONDITIONS

4.1 IC 45 COLD SHUTDOWN

5.0 TEST DURATION

5.1 25 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-2-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-710

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-710, CORE SPRAY INJECTION CHECK VALVE OPERABILITY TEST

1.2 PT-7.1.1.a

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 CORE SPRAY LOOP A ONLY

3.0 TESTED OPTIONS

3.1 CORE SPRAY LOOP A ONLY

4.0 INITIAL CONDITIONS

4.1 IC 45 COLD SHUTDOWN

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6-26-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-711

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-711, CORE SPRAY INJECTION CHECK VALVE OPERABILITY TEST

1.2 PT-7.1.1b

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 CORE SPRAY LOOP B

3.0 TESTED OPTIONS

3.1 LOOP B CORE SPRAY

4.0 INITIAL CONDITIONS

4.1 IC 45 COLD SHUTDOWN

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6-26-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-712

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-712 , CORE SPRAY LOOP A OPERABILITY TEST Loop A

1.2 PT-7.2.4a

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 LOOP A

3.0 TESTED OPTIONS

3.1 LOOP A

4.0 INITIAL CONDITIONS

4.1 The simulator is in operation at approximately 100% steady state power.

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1 PT 7.2.4A

7.0 DATE PERFORMED: 1-5-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-713

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-713 , CORE SPRAY SYSTEM OPERABILITY TEST

1.2 PT-7.2.4B

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 'B' CORE SPRAY LOOP

3.0 TESTED OPTIONS

3.1 B LOOP CORE SPRAY

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1 P.T. 7.2.4B

7.0 DATE PERFORMED: 1-5-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-714

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-714 , LPCI/RHR SYSTEM VALVE OP TEST

1.2 PT-8.0

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 BOTH RHR LOOPS

3.0 TESTED OPTIONS

3.1 BOTH RHR LOOPS

4.0 INITIAL CONDITIONS

4.1 IC 45, COLD SHUTDOWN

5.0 TEST DURATION

5.1 40 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6-27-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-715

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-715 , LPCI/RHR SYSTEM LOOP A CHECK VALVE OPERABILITY TEST

1.2 PT-8.0A

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 LOOP A CHECK VALVE

4.0 INITIAL CONDITIONS

4.1 IC 45, COLD SHUTDOWN

5.0 TEST DURATION

5.1 5 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6-28-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-716

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-716 , LPCI/RHR SYSTEM LOOP B CHECK VALVE OP TEST

1.2 PT-8.0B

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 LOOP B RHR

3.0 TESTED OPTIONS

3.1 LOOP B RHR

4.0 INITIAL CONDITIONS

4.1 IC 45 COLD SHUTDOWN

5.0 TEST DURATION

5.1 5 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6-27-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-717

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-717 , LPCI/RHR SYSTEM OPERABILITY TEST LOOP B

1.2 PT-08.2.2B

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 LOOP B RHR

3.0 TESTED OPTIONS

3.1 LOOP B RHR

4.0 INITIAL CONDITIONS

4.1 SIMULATOR IN THE RUN MODE APPROXIMATELY 100% REACTOR POWER. (IC-22)

5.0 TEST DURATION

5.1 APPROXIMATELY 1.5 HOURS

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6-29-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-718

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-718 , LPCI/RHR SYSTEM OPERABILITY TEST LOOP A

1.2 PT-8.2.2C

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 LOOP A RHR

3.0 TESTED OPTIONS

3.1 LOOP A RHR

4.0 INITIAL CONDITIONS

4.1 IC 45, COLD SHUTDOWN

5.0 TEST DURATION

5.1 1.5 HOURS

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 6-29-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-719

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-719 , HPCI System Operability Test

1.2 PT-09.2

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 None

3.0 TESTED OPTIONS

3.1 None

4.0 INITIAL CONDITIONS

4.1 IC-II 100% power

5.0 TEST DURATION

5.1 2.0 hrs.

6.0 BASE LINE DATA

6.1 P.T. 9.2 run on Unit 2 dated 6-13-90

7.0 DATE PERFORMED: 12-15-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MV-720

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-720 , HPCI System 165 PSIG Flow Test

1.2 PT- 09.3

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 None

3.0 TESTED OPTIONS

3.1 None

4.0 INITIAL CONDITIONS

4.1 IC - 21 160 psig Rx S/U in progress

5.0 TEST DURATION

5.1 1.5 hours

6.0 BASE LINE DATA

6.1 P.T. 9.3 run on Unit 2 dated 3-13-90

7.0 DATE PERFORMED: 1-6-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MV-721

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-721 , RCIC System Operability Test - Flow Requirements at 1000 psig.

1.2 PT-10.1.1

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 None

3.0 TESTED OPTIONS

3.1 None

4.0 INITIAL CONDITIONS

4.1 The simulator is in operation at approximately 100% steady state reactor power.

5.0 TEST DURATION

5.1 1.0 hour

6.0 BASE LINE DATA

6.1 PT - 10.1.1 RCIC System Operability Test - Flow rates at 1000 psig. Unit 2 data. 9-12-90

7.0 DATE PERFORMED: 1-6-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MV-722

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-722 , RCIC System Operability Test - Flow Rates at 150 psig

1.2 PT-10.1.3

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 None

3.0 TESTED OPTIONS

3.1 None

4.0 INITIAL CONDITIONS

4.1 The simulator is in operation at approximately 150 psig reactor pressure with a Bypass Valve partially open.

5.0 TEST DURATION

5.1 1.0 hour

6.0 BASE LINE DATA

6.1 PT - 10.1.3, RCIC System Operability Test Flow Rates at 150 psig, Unit 2 data, 3-13-90

7.0 DATE PERFORMED: 1-6-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MV-723

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-723 , Automatic Depressurization System and Safety Relief Valve Operability Test.

1.2 PT- 11.1.2

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 Any one of eleven SRV/ADS valves

3.0 TESTED OPTIONS

3.1 ALL SRV AND ADS VALVES

4.0 INITIAL CONDITIONS

4.1 350# with 1 bypass valve open

5.0 TEST DURATION

5.1 30 MINUTES

6.0 BASE LINE DATA

6.1 P.T. 11.1.2

7.0 DATE PERFORMED: 1-4-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-724

.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-724, DRYWELL DRAIN VALVE OPERABILITY TEST

1.2 PT-11.3

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 ALL 4 VALVES F003, F004, F019, F020

3.0 TESTED OPTIONS

3.1 ALL VALVES LISTED IN 2.1 ABOVE

.0 INITIAL CONDITIONS

4.1 IC 11 HOT FULL POWER

5.0 TEST DURATION

5.1 10 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-1-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-725

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-725 , #3 EMERGENCY DIESEL LOAD TEST

1.2 PT-12.2C

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 #3 EMERGENCY DIESEL GENERATOR

3.0 TESTED OPTIONS

3.1 #3 EMERGENCY DIESEL GENERATOR

4.0 INITIAL CONDITIONS

4.1 IC 11, HOT FULL POWER

5.0 TEST DURATION

5.1 20 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 9-11-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-726

0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-726 , #4 EMERGENCY DIESEL LOAD TEST

1.2 PT-12.2D

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 #4 EMERGENCY DIESEL

3.0 TESTED OPTIONS

3.1 #4 EMERGENCY DIESEL

0 INITIAL CONDITIONS

4.1 IC 11, HOT FULL POWER

5.0 TEST DURATION

5.1 20 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 9-11-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-727

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-727 , REACTOR RECIRCULATION JET PUMP OPERABILITY

1.2 PT-13.1

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 SIMULATED PORTIONS OF THE TEST WEPE COMPLETED. BACK PANEL FOR INDIVIDUAL JET PUMPS (P608) NOT SIMULATED.

4.0 INITIAL CONDITIONS

4.1 100% POWER STEADY STATE

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1 OP-2, REACTOR RECIRCULATION SYSTEM OPERATING PROCEDURE.

7.0 DATE PERFORMED: 2/6/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

INDIVIDUAL JET PUMP FLOWS WERE NOT RECORDED. BACK PANELS ARE NOT SIMULATED. REQUIRED ACCEPTANCE CRITERIA WAS STILL MET.

PERFORMANCE TEST ABSTRACT
PTA-MV-728

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-728 , CRD SYSTEM VALVE OPERABILITY TEST

1.2 PT-14.0

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 F010, F009, V139, V140

3.0 TESTED OPTIONS

3.1 ALL FOUR VALVES WERE TESTED

4.0 INITIAL CONDITIONS

4.1 IC 11 HOT FULL POWER

5.0 TEST DURATION

5.1 10 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-2-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-729

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-729 , Control Rod Operability Check

1.2 PT-14.1

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 All of 137 rods

3.0 TESTED OPTIONS

3.1 All of 137 rods

4.0 INITIAL CONDITIONS

4.1 The simulator is in operation at approximately 100% steady state power.

5.0 TEST DURATION

5.1 90 minutes

6.0 BASE LINE DATA

6.1 PT - 14.1

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MV-730

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-730, CONTROL ROD COUPLING CHECK AND CRD TESTING

1.2 PT-14.1A

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 SIMULATOR IS IN SERVICE WITH THE REACTOR MODE SWITCH IN THE REFUEL MODE.

5.0 TEST DURATION

5.1 APPROXIMATELY 30 MINUTES.

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-6-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-731

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-731, RWCU OPS TEST

1.2 PT-14.6

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 COMPLETE TEST

4.0 INITIAL CONDITIONS

4.1 IC 2 COLD SHUTDOWN

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-3-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-732

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-732 , SECONDARY CONTAINMENT ISOLATION OPERABILITY TEST

1.2 PT-15.4A

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 SOME OR ALL OF THE 4 RB VENT VALVES

3.0 TESTED OPTIONS

3.1 ALL RB VENT VALVES

4.0 INITIAL CONDITIONS

4.1 IC 2 COLD SHUTDOWN

5.0 TEST DURATION

5.1 10 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-3-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-733

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-733 , SBGT SYSTEM OPERABILITY TEST

1.2 PT-15.7

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 SYSTEM A, SYSTEM B

3.0 TESTED OPTIONS

3.1 BOTH SYSTEM A&B SBGT

4.0 INITIAL CONDITIONS

4.1 IC 2 COLD SHUTDOWN

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-3-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-734

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-734 , CAD SYSTEM COMPONENT TEST

1.2 PT-16.1

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 ALL OR PART OF CAD CONTROL ROOM CONTROLS

3.0 TESTED OPTIONS

3.1 ALL CONTROL ROOM CONTROLS

4.0 INITIAL CONDITIONS

4.1 IC 2 COLD SHUTDOWN

5.0 TEST DURATION

5.1 10 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-3-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-735

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-735, CAC VALVE OP TEST

1.2 PT-16.1.1

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 TEST ALL VALVES PER PT

4.0 INITIAL CONDITIONS

4.1 IC 44 HOT FULL POWER

5.0 TEST DURATION

5.1 1 HOUR 30 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8/4/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-736

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-736 , PRIMARY CONTAINMENT VOLUMETRIC AVERAGE TEMPERATURE

1.2 PT-16.2

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 RECORDERS AND COMPUTER

3.0 TESTED OPTIONS

3.1 RECORDERS AND COMPUTER

4.0 INITIAL CONDITIONS

4.1 100% POWER BOC

5.0 TEST DURATION

5.1 40 MINUTES

6.0 BASE LINE DATA

6.1 PT - 16.2 REVISION 22

7.0 DATE PERFORMED: 2-6-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-737

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-737 , RBCCW VALVE OPS TEST

1.2 PT-22.2

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 COMPLETE TEST PERFORMED

4.0 INITIAL CONDITIONS

4.1 IC 44 HOT FULL POWER

5.0 TEST DURATION

5.1 50 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8/4/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-738

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-738, SW VALVE LINEUP VERIFICATION CHECK

1.2 PT-24

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 IC 11 HOT FULL POWER

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8-4-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-739

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-739, SW MISCELLANEOUS VALVE OP TEST

1.2 PT-24.1.2

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 SW 111, 117, 118, 294, 255

3.0 TESTED OPTIONS

3.1 ALL LISTED, SIMULATED VALVES

4.0 INITIAL CONDITIONS

4.1 IC 11 HOT FULL POWER

5.0 TEST DURATION

5.1 15 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8/7/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-740

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-740, NSSSS AND FEEDWATER SYSTEM ISOLATION VALVE OPERABILITY TEST

1.2 PT-25.1

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 ALL MSIV's AND ALL F.W. STOPS VALVES

3.0 TESTED OPTIONS

3.1 ENTIRE TEST PERFORMED

4.0 INITIAL CONDITIONS

4.1 COLD SHUTDOWN, IC-1

5.0 TEST DURATION

5.1 40 MINUTES

6.0 BASE LINE DATA

6.1 NONE

7.0 DATE PERFORMED: 1-12-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-741

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-741 , MAIN STEAM DRAIN VALVE OP TEST

1.2 PT-25.4

1.3 ANSI/ANS 3.5 1985, [illegible]ion 3.1.1 Normal Plant Evolutions, ([illegible]) operat[illegible] conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 MS-16 AND/OR MS 19

3.0 TESTED OPTIONS

3.1 BOTH VALVE MS16 AND MS19

4.0 INITIAL CONDITIONS

4.1 IC 11 HOT FULL POWER

5.0 TEST DURATION

5.1 5 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8/7/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-742

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-742, BACKUP N2 SUPPLY TO DRYWELL VALVE OP TEST

1.2 PT-31.6

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 EITHER VALVE SV-5253 OR SV-5251

3.0 TESTED OPTIONS

3.1 BOTH VALVES SV-5253 AND SV-5251

4.0 INITIAL CONDITIONS

4.1 IC 11 HOT FULL POWER

5.0 TEST DURATION

5.1 5 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8/7/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-744

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-744 , RWM OPERABILITY TEST

1.2 PT-1.6.2

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 NONE

3.0 TESTED OPTIONS

3.1 NONE

4.0 INITIAL CONDITIONS

4.1 COLD SHUTDOWN

5.0 TEST DURATION

5.1 45 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 9/25/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

NOTE: SECTION 7.1 PERFORMS THE CHECKS OF THE NUMAC DRAWER. NOT ALL FUNCTIONS ARE THE SAME WITH STIMULATED RWM AS IN THE PLANT RWM. AS A RESULT, THE GEDAC I/O TEST REPLACES THE GEDAC RS232 TEST AND THE QUAD BUS AND GEDAC RS232 TESTS LAST 2 SECONDS VICE THE TIMES LISTED IN THE PROCEDURE. THIS DOES NOT AFFECT THE OPERATION OF THE RWM.

PERFORMANCE TEST ABSTRACT
PTA-MV-745

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-745 , CAM VALVE OP TEST

1.2 PT-16.0-2

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 CAM-4409 OR CAM 4410

3.0 TESTED OPTIONS

3.1 BOTH CAM 4409 AND CAM 4410 TESTED

4.0 INITIAL CONDITIONS

4.1 IC 11 HOT FULL POWER

5.0 TEST DURATION

5.1 1.5 HOURS

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8/7/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MV-746

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MV-746, SW PUMP AND DISCHARGE VALVE OP TEST

1.2 PT-24.1-2

1.3 ANSI/ANS 3.5 1985, Section 3.1.1 Normal Plant Evolutions, (10) Operator conducted surveillance testing on safety related equipment or systems.

2.0 AVAILABLE OPTIONS

2.1 CONVENTIONAL AND NUCLEAR SW PUMPS

3.0 TESTED OPTIONS

3.1 ALL CONVENTIONAL AND NUCLEAR SW PUMPS

4.0 INITIAL CONDITIONS

4.1 IC 11 HOT FULL POWER

5.0 TEST DURATION

5.1 30 MINUTES

6.0 BASE LINE DATA

6.1

7.0 DATE PERFORMED: 8/7/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-001

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-001, MANUAL SCRAM

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(1), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 NONE. This scram is initiated by the Manual Reactor Scram System A and B push buttons, the Reactor Mode Switch is placed in the Shutdown position to prevent the possibility of a Group 1 isolation due to low steam line pressure. No further operator action is allowed.

3.0 TESTED OPTIONS

NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985, the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)..........:NIJAPRM
4.2.2 Total Steam Flow..............:MSW4111
4.2.3 Total Feedwater Flow..........:CFW1REV
4.2.4 Reactor Pressure (0 to 1500)..:NBPITAPT(31)
4.2.5 Reactor Pressure (800 to 1100):NBPITAPT(32)
4.2.6 Reactor Water Level (0-210")..:NBLEVELT(5)
4.2.7 Reactor Water Level (150-210"):IARXLVL
4.2.8 Gross Generator Electric Power:EGJGMWE
4.2.9 Turbine Steam Flow............:MSW4000
4.2.10 Total Core Flow...............:NBWFLOW(7)
4.2.11 Total Recirc Loop A Flow......:NBWFLOW(10)
4.2.12 Total Recirc Loop B Flow......:NBWFLOW(11)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 OI-22, Attachment 1, BWR Posttrip Review Report, Investigation #2-88-001, Unit 2, 1-2-88.

6.2 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

6.3 Training Transient Report, Brunswick Unit 2, Manual Reactor Scram, 12/08/89.

7.0 DATE PERFORMED: 12-21-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-002

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-002, SIMULTANEOUS TRIP OF ALL FEEDWATER PUMPS

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(2), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 NONE. 2A and 2B Reactor Feedwater Pumps are tripped simultaneously.

3.0 TESTED OPTIONS

NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985,the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)..........:NIJAPRM
4.2.2 Total Steam Flow..............:MSW4111
4.2.3 Total Feedwater Flow..........:CFW1REV
4.2.4 Reactor Pressure (0 to 1500)..:NBPITAPT(31)
4.2.5 Reactor Pressure (800 to 1100):NBPITAPT(32)
4.2.6 Reactor Water Level (0-210")..:NBLEVELT(5)
4.2.7 Reactor Water Level (150-210"):IARXLVL
4.2.8 Gross Generator Electric Power:EGJGMWE
4.2.9 Turbine Steam Flow............:MSW4000
4.2.10 Total Core Flow...............:NBWFLOW(7)
4.2.11 Total Recirc Loop A Flow......:NBWFLOW(10)
4.2.12 Total Recirc Loop B Flow......:NBWFLOW(11)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Training Transient Report, Brunswick 2, Double Feedwater Pump Trip, 2/20/88.

7.0 DATE PERFORMED: 1-2-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-003

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-003, SIMULTANEOUS CLOSURE OF ALL MSIV'S

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(3), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 NONE. The MSIV's are simultaneously closed by utilizing Malfunction #166, MSIV Closure.

3.0 TESTED OPTIONS

3.1 Malfunction Number:166
3.2 Malfunction Symbol:MMS005F
3.3 Malfunction Menu..:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985,the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)..........:NIJAPRM
4.2.2 Total Steam Flow..............:MSW4111
4.2.3 Total Feedwater Flow..........:CFW1REV
4.2.4 Reactor Pressure (0 to 1500)..:NBPITAPT(31)
4.2.5 Reactor Pressure (800 to 1100):NBPITAPT(32)
4.2.6 Reactor Water Level (0-210")..:NBLEVELT(5)
4.2.7 Reactor Water Level (150-210"):IARXLVL
4.2.8 Gross Generator Electric Power:EGJGMWE
4.2.9 Turbine Steam Flow............:MSW4000
4.2.10 Total Core Flow...............:NBWFLOW(7)
4.2.11 Total Recirc Loop A Flow......:NBWFLOW(10)
4.2.12 Total Recirc Loop B Flow......:NBWFLOW(11)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Training Transient Report, Brunswick 1, MSIV Fast Closure, 2/20/88.

6.2 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 12-21-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-004

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-004, SIMULTANEOUS TRIP OF BOTH RECIRC PUMPS

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(4), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 NONE. The Recirc MG Set Drive Motor Breakers are simultaneously tripped.

3.0 TESTED OPTIONS

NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985, the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1	Reactor Power (APRM)..........	:NIJAPRM
4.2.2	Total Steam Flow..............	:MSW4111
4.2.3	Total Feedwater Flow..........	:CFW1REV
4.2.4	Reactor Pressure (800 to 1100)	:NBPITAPT(32)
4.2.5	Reactor Water Level (150-210")	:IARXLVL
4.2.6	Total Core Flow...............	:NBWFLOW(7)
4.2.7	Recirc Loop A Flow............	:NBWFLOW(10)
4.2.8	Recirc Loop B Flow............	:NBWFLOW(11)
4.2.9	Jet Pump #5 Flow..............	:NBWFLOWT(1)
4.2.10	Jet Pump #10 Flow.............	:NBWFLOWT(2)
4.2.11	Jet Pump #15 Flow.............	:NBWFLOWT(3)
4.2.12	Jet Pump #20 Flow.............	:NBWFLOWT(4)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Training Transient Report, Brunswick 1, Double Recirculation Pump Trip, 2/20/88.

7.0 DATE PERFORMED: 1-26-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-005

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-005, SINGLE RECIRCULATION PUMP TRIP

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(5), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 NONE. The 2A Recirc MG Set Drive Motor Breaker is manually tripped.

3.0 TESTED OPTIONS

NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985, the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1	Reactor Power (APRM)..........	:NIJAPRM
4.2.2	Total Steam Flow..............	:MSW4111
4.2.3	Total Feedwater Flow..........	:CFW1REV
4.2.4	Reactor Pressure (800 to 1100)	:NBPITAPT(32)
4.2.5	Reactor Water Level (150-210")	:IARXLVL
4.2.6	Total Core Flow...............	:NBWFLOW(7)
4.2.7	Recirc Loop A Flow............	:NBWFLOW(10)
4.2.8	Recirc Loop B Flow............	:NBWFLOW(11)
4.2.9	Jet Pump #5 Flow..............	:NBWFLOWT(1)
4.2.10	Jet Pump #10 Flow.............	:NBWFLOWT(2)
4.2.11	Jet Pump #15 Flow.............	:NBWFLOWT(3)
4.2.12	Jet Pump #20 Flow.............	:NBWFLOWT(4)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Training Transient Report, Brunswick 1, Single Recirculation Pump Trip, 2/20/88.

6.2 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-2-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-TN-006

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-006, TURBINE TRIP (DOES NOT RESULT IN AN IMMEDIATE REACTOR SCRAM)

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(6), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 NONE. The Main Turbine is manually tripped.

3.0 TESTED OPTIONS

NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 30% reactor power.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985, the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1	Reactor Power (APRM)..........	:NIJAPRM
4.2.2	Total Steam Flow..............	:MSW4111
4.2.3	Total Feedwater Flow..........	:CFW1REV
4.2.4	Reactor Pressure (0 to 1500)..	:NBPITAPT(31)
4.2.5	Reactor Pressure (800 to 1100)	:NBPITAPT(32)
4.2.6	Reactor Water Level (0-210")..	:NBLEVELT(5)
4.2.7	Reactor Water Level (150-210")	:IARXLVL
4.2.8	Gross Generator Electric Power	:EGJGMWE
4.2.9	Turbine Steam Flow............	:MSW4000
4.2.10	Total Core Flow...............	:NBWFLOW(7)
4.2.11	Total Recirc Loop A Flow......	:NBWFLOW(10)
4.2.12	Total Recirc Loop B Flow......	:NBWFLOW(11)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Training Transient Report, Brunswick 2, Turbine Trip With Bypass - Low Power

7.0 DATE PERFORMED: 12-23-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-006.1

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-006.1, UNIT 1, TURBINE TRIP (DOES NOT RESULT IN AN IMMEDIATE REACTOR SCRAM)

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(6), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 NONE. The Main Turbine is manually tripped.

3.0 TESTED OPTIONS

NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 30% reactor power with Unit 1 mode selected (CDIG, MI, simulation Unit 1).

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985,the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)..........:NIJAPRM
4.2.2 Total Steam Flow..............:MSW4111
4.2.3 Total Feedwater Flow..........:CFW1REV
4.2.4 Reactor Pressure (0 to 1500)..:NBPITAPT(31)
4.2.5 Reactor Pressure (800 to 1100):NBPITAPT(32)
4.2.6 Reactor Water Level (0-210")..:NBLEVELT(5)
4.2.7 Reactor Water Level (150-210"):IARXLVL
4.2.8 Gross Generator Electric Power:EGJGMWE
4.2.9 Turbine Steam Flow............:MSW4000
4.2.10 Total Core Flow..............:NBWFLOW(7)
4.2.11 Total Recirc Loop A Flow......:NBWFLOW(10)
4.2.12 Total Recirc Loop B Flow......:NBWFLOW(11)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Training Transient Report, Brunswick 1, Turbine Trip With Bypass - Low Power

7.0 DATE PERFORMED: 1-29-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

Feedwater does not respond as expected. SSR 91-0058

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-007

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-007, MAXIMUM RATE POWER RAMP - RECIRC. FLOW CONTROLLER IN MANUAL

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(7), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 NONE. The Recirc Flow Controllers are manually decreased to a speed that is approximately equal to 75% reactor power. Power is allowed to stabilize at 75% for approximately 30 seconds. Then the Recirc Flow Controllers are manually increased to a speed that is approximately equal to 100% reactor power.

3.0 TESTED OPTIONS

NONE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985, the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)..........:NIJAPRM
4.2.2 Total Steam Flow..............:MSW4111
4.2.3 Total Feedwater Flow..........:CFW1REV
4.2.4 Reactor Pressure (0 to 1500)..:NBPITAPT(31)
4.2.5 Reactor Pressure (800 to 1100):NBPITAPT(32)
4.2.6 Reactor Water Level (0-210")..:NBLEVELT(5)
4.2.7 Reactor Water Level (150-210"):IARXLVL
4.2.8 Gross Generator Electric Power:EGJGMWE
4.2.9 Turbine Steam Flow............:MSW4000
4.2.10 Total Core Flow...............:NBWFLOW(7)
4.2.11 Total Recirc Loop A Flow......:NBWFLOW(10)
4.2.12 Total Recirc Loop B Flow......:NBWFLOW(11)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Training Transient Report, Recirculation Flow Ramp for Unit 2.

7.0 DATE PERFORMED: 1-2-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-008

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-008, DESIGN BASIS LOCA IN CONJUNCTION WITH A LOSS OF OFF-SITE POWER

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(8), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 This Transient is performed by the simultaneous actuation of two Malfunctions. Malfunction #141, Severity of 0 to 100% of line rupture with a Severity Rate of 0 to 60 minutes (see STP-MA-002). Malfunction #305 - NO OPTIONS

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBERS:141 305
3.2 MALFUNCTION SYMBOLS:MNB003F MEE009F
3.3 MALFUNCTION MENUS..:NB EE
3.4 Malfunction 141 is tested with a Severity of 100% and a Severity Rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985, the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)...............:NIJAPRM
4.2.2 Reactor Pressure (0 to 1500).......:NBPITAPT(31)
4.2.3 Reactor Water Level (0 to 210")....:NBLEVELT(5)
4.2.4 Reactor Water Level (-150 to +150"):NBLEVELT(7)
4.2.5 Total Steam Flow...................:MSW4111
4.2.6 Total Feedwater Flow...............:CFW1REV
4.2.7 Secondary Cnmt Temp (VA-TI-1296)...:RMTV296S
4.2.8 Secondary Cnmt Delta Press.........:RMDV508
4.2.9 Suppression Pool Temperature.......:CAT2120
4.2.10 Suppression Pool Pressure..........:CAP0020
4.2.11 Drywell Temperature (at 40').......:CATC610
4.2.12 Drywell Pressure...................:CAP0010
4.2.13 Loop I RHR/LPCI Injection Flow.....:RHW0032(1)
4.2.14 Loop II RHR/LPCI Injection Flow....:RHW0032(2)
4.2.15 2A Core Spray Injection Flow.......:CSW0002

4.2.16 2B Core Spray Injection Flow.......:CSW0022
4.2.17 HPCI Injection Flow................:HPW0003
4.2.18 RCIC Injection Flow................:RJW0002T

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Brunswick LOCA Engineering Analysis Description Report, EAS-62-1088, 10/88.

6.2 Malfunction Cause And Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

6.3 GE NEDO-21888, Mark I Containment Program Load Definition Report, pages ii thru 4.1.3-7/4.1.3-8, 11/81.

7.0 DATE PERFORMED: 1-2-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

91-102 :

THE ACCURACY OF THE FUEL ZONE LEVEL INSTRUMENTS DURING A LOW PRESSURE ECCS INJECTION HAS BEEN IDENTIFIED AS A GENERIC BWR OWNERS GROUP EMERGENCY PROCEDURES COMMITTEE. SPECIFICALLY, GENERAL ELECTRIC IS CONDUCTING AS ANALYSIS OF THIS EVENT. UPGRADES TO THE MODEL WILL BE MADE BY THE INSTALLING VENDOR WHEN THIS ANALYSIS HAS BEEN COMPLETED.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-009

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-009, MAXIMUM SIZE UNISOLABLE MAIN STEAM LINE RUPTURE

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(9), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line rupture, located on D MSL between the reactor vessel and the flow restrictor.

2.2 Severity Rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER:153
3.2 MALFUNCTION SYMBOL:MNB006F
3.3 MALFUNCTION MENU..:NB
3.4 Malfunction 153 is tested with a Severity of 100% and a Severity Rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985, the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)...............:NIJAPRM
4.2.2 Reactor Pressure (0 to 1500).......:NBPITAPT(31)
4.2.3 Reactor Water Level (0 to 210")....:NBLEVELT(5)
4.2.4 Reactor Water Level (-150 to +150"):NBLEVELT(7)
4.2.5 Total Steam Flow...................:MSW4111
4.2.6 Total Feedwater Flow...............:CFW1REV
4.2.7 Secondary Cnmt Temp (VA-TI-1296)...:RMTV296S
4.2.8 Secondary Cnmt Delta Press.........:RMDV508
4.2.9 Suppression Pool Temperature.......:CAT2120
4.2.10 Suppression Pool Pressure..........:CAP0020
4.2.11 Drywell Temperature (at 40').......:CAT0610
4.2.12 Drywell Pressure...................:CAP0010
4.2.13 Loop I RHR/LPCI Injection Flow.....:RHW0032(1)
4.2.14 Loop II RHR/LPCI Injection Flow....:RHW0032(2)
4.2.15 2A Core Spray Injection Flow.......:CSW0002

4.2.16 2B Core Spray Injection Flow.......:CSW0022
4.2.17 HPCI Injection Flow..................:HPW0003
4.2.18 RCIC Injection Flow..................:RJW0002T

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Brunswick LOCA Engineering Analysis Description Report, EAS-62-1088, 10/88.

6.2 Malfunction Cause And Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

6.3 GE NEDO-21888, Mark I Containment Program Load Definition Report, pages ii thru 4.1.3-7/4.1.3-8, 11/81.

7.0 DATE PERFORMED: 1-2-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

91-087 :

DURING A RAPID DEPRESSURIZATION THE REACTOR WATER LEVEL SWELL IS LESS THAN EXPECTED. THE EXISTING SIMULATOR THERMAL HYDRAULIC MODEL IS UNDERGOING ENGINEERING EVALUATION BY CP&L FUELS GROUP AND THE INSTALLING VENDOR. UPGRADES TO THE MODEL WILL BE MADE BY THE INSTALLING VENDOR WHEN THIS ANALYSIS HAS BEEN COMPLETED.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-010

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-010, MSIV CLOSURE WITH ONE (1) STUCK OPEN SAFETY/RELIEF VALVE - HIGH PRESSURE ECCS INHIBITED

1.2 ANSI/ANS 3.5 1985, Appendix B, B1.2(10), Transient Performance

2.0 AVAILABLE OPTIONS

2.1 Malfunctions #261 and #267 are activated to inhibit the High Pressure ECCS, #166 causes the MSIV's to close and #156 will fail the selected ADS valve open.

2.2 Malfunction 156 allows selection of either B21-F013A, C, or H ADS valves.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBERS:	261	267	166	156
3.2 MALFUNCTION SYMBOLS:	MES013F	MES019F	MMS005F	MES002F
3.3 MALFUNCTION MENUS..:	ES	ES	MS	ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 In accordance with Appendix B of ANSI/ANS 3.5 1985, the following test parameters will be recorded simultaneously verses time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)...............:NIJAPRM
4.2.2 Reactor Pressure (0 to 1500).......:NBPITAPT(31)
4.2.3 Reactor Water Level (0 to 210")....:NBLEVELT(5)
4.2.4 Reactor Water Level (-150 to +150"):NBLEVELT(7)
4.2.5 Total Steam Flow...................:MSW4111
4.2.6 Total Feedwater Flow...............:CFW1REV
4.2.7 Secondary Cnmt Temp (VA-TI-1296)...:RMTV296S
4.2.8 Secondary Cnmt Delta Press.........:RMDV508
4.2.9 Suppression Pool Temperature.......:CAT2120
4.2.10 Suppression Pool Pressure..........:CAP0020
4.2.11 Drywell Temperature (at 40').......:CAT0610
4.2.12 Drywell Pressure...................:CAP0010
4.2.13 Loop I RHR/LPCI Injection Flow.....:RHW0032(1)
4.2.14 Loop II RHR/LPCI Injection Flow....:RHW0032(2)
4.2.15 2A Core Spray Injection Flow.......:CSW0002

4.2.16 2B Core Spray Injection Flow.......:CSW0022
4.2.17 HPCI Injection Flow.................:HPW0003
4.2.18 RCIC Injection Flow.................:RJW0002T

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Brunswick LOCA Engineering Analysis Description Report, EAS-62-1088, 10/88.

6.2 Malfunction Cause And Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

6.3 GE NEDO-21888, Mark I Containment Program Load Definition Report, pages ii thru 4.1.3-7/4.1.3-8, 11/81.

6.4 Additional Information Required for NRC Staff Generic Report on Boiling Water Reactors, Volume 2, 12/80.

7.0 DATE PERFORMED: 12-21-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-TN-011

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-TN-011, INADVERTENT HPCI INITIATION

1.2 ANSI/ANS 3.5 1985, Appendix A, A3.3, Transient Tests

2.0 AVAILABLE OPTIONS

2.1 NONE. An inadvertent HPCI start occurs by utilizing malfunction 262, Inadvertent HPCI System Initiation.

3.0 TESTED OPTIONS

3.1 Malfunction Number:262
3.2 Malfunction Symbol:MES014F
3.3 Malfunction Menu..:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions. Malfunction 262, Inadvertent HPCI System Initiation is selected and set active.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)...........:NIJAPRM
4.2.2 Total Feedwater Flow...........:CFW1REV
4.2.3 Total Core Flow................:NBWFLOW(7)
4.2.4 Reactor Pressure (800 to 1100).:NBPITAPT(32)
4.2.5 Reactor Water Level (150-210").:IARXLVL
4.2.6 Feedwater Temp to Reactor......:CFT1100
4.2.7 HPCI Pump Disch Press..........:HPP0003
4.2.8 HPCI Pump Disch Flow...........:HPW0003
4.2.9 HPCI Turbine Speed.............:TMS6660S(4)

5.0 TEST DURATION

The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Special Test 88-073, Unit 2 HPCI RPV Injection Test, 01/31/89.

6.2 Mod.Package 88-52 (Simulator 89-180) HPCI Reliability Improvement (test data from PT-09.2 Unit 1, 06/30/89).

6.3 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 12-21-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-001

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-001, Recirculation Pump A Suction Line Rupture

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (1) Loss Of Coolant (b) inside and outside Primary Containment (c)large and small reactor coolant breaks

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line break, located between the Recirc Suction Valve (B21-F023A) and the Reactor Vessel.

2.2 Severity Rate of 0 to 60 minutes

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:140
3.2 MALFUNCTION SYMBOL.:MNB002F
3.3 MALFUNCTION MENU...:NB

3.4 This Malfunction is tested with a severity of 100% and a severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Reactor Water Levels, NBLEVEL (5)and (7), are displayed in feet.

3.2.1 2A Recirculation Pump Flow........:NBWFLOW(10)
3.2.2 2B Recirculation Pump Flow........:NBWFLOW(11)
3.2.3 Drywell Pressure..................:CAP0010
3.2.4 Reactor Water Level (0 to 210")...:NBLEVELT(5)
3.2.5 Reactor Water Level (-150 to 150"):NBLEVELT(7)
3.2.6 Reactor Pressure (0 to 1500)......:NBPITAPT(31)
3.2.7 Total Core Flow...................:NBWFLOW(7)
3.2.8 Suppression Pool Temperature......:CAT2120
3.2.9 Suppression Chamber Pressure......:CAP0020

5.0 TEST DURATION

5.1 The recording device will be stopped after the low pressure ECCS has initiated and the core has been effectively flooded.

6.0 BASE LINE DATA

6.1 Brunswick LOCA Engineering Analysis Description Report, EAS-62-1088, 10/88.

6.2 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-20-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

91-102 :

THE ACCURACY OF THE FUEL ZONE LEVEL INSTRUMENTS DURING A LOW PRESSURE ECCS INJECTION HAS BEEN IDENTIFIED AS A GENERIC BWR PROBLEM AND IS CURRENTLY BEING EVALUATED BY THE BWR OWNERS GROUP EMERGENCY PROCEDURES COMMITTEE. SPECIFICALLY, GENERAL ELECTRIC IS CONDUCTING AN ANALYSIS OF THIS EVENT. UPGRADES TO THE MODEL WILL BE MADE BY THE INSTALLING VENDOR WHEN THIS ANALYSIS HAS BEEN COMPLETED.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-002

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-002, Recirculation Pump A Discharge Line Rupture

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (1) Loss Of Coolant (b) inside and outside Primary Containment (c) large and small reactor coolant breaks

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line break, located between the A Recirc Pump Discharge Valve (B32-F031A) and the reactor.

2.2 Severity Rate of 0 to 60 minutes

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:141
3.2 MALFUNCTION SYMBOL.:MNB003F
3.3 MALFUNCTION MENU...:NB

3.4 This Malfunction is tested with a severity of 100% and severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Reactor Levels, NBLEVELT(5) and (7) are displayed in feet.

4.2.1 2A Recirculation Pump Flow........:NBWFLOW(10)
4.2.2 2B Recirculation Pump Flow........:NBWFLOW(11)
4.2.3 Drywell Pressure..................:CAP0010
4.2.4 Reactor Water Level (0 to 210")...:NBLEVELT(5)
4.2.5 Reactor Water Level (-150 to 150"):NBLEVELT(7)
4.2.6 Reactor Pressure (0 TO 1500)......:NBPITAPT(31)
4.2.7 Total Core Flow...................:NBWFLOW(7)
4.2.8 Suppression Pool Temperature......:CAT2120
4.2.9 Suppression Chamber Pressure......:CAP0020

5.0 TEST DURATION

5.1 The recording device will be stopped after the low pressure ECCS has initiated and the core has been effectively flooded.

6.0 BASE LINE DATA

6.1 Brunswick LOCA Engineering Analysis Description Report, EAS-62-1088, 10/88.

6.2 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

91-102 :

THE ACCURACY OF THE FUEL ZONE LEVEL INSTRUMENTS DURING A LOW PRESSURE ECCS INJECTION HAS BEEN IDENTIFIED AS A GENERIC BWR PROBLEM AND IS CURRENTLY BEING EVALUATED BY THE BWR OWNERS GROUP EMERGENCY PROCEDURES COMMITTEE. SPECIFICALLY, GENERAL ELECTRIC IS CONDUCTING AN ANALYSIS OF THE EVENT. UPGRADES TO THE MODEL WILL BE MADE BY THE INSTALLING VENDOR WHEN THIS ANALYSIS HAS BEEN COMPLETED.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-004

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-004, MSL D BREAK BEFORE THE FLOW RESTRICTOR

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (1) Loss of Coolant (b) inside and outside Primary Containment (c) large and small reactor coolant breaks and (20) Main Steam Line as well as Main Feed Line Break

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line break, located on D MSL between the reactor vessel and the flow restrictors.

2.2 Severity rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:153
3.2 MALFUNCTION SYMBOL.:MNB006F
3.3 MALFUNCTION MENU...:NB

3.4 This Malfunction is tested with a severity of 100% and a severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Reactor Levels, NBLEVELT(5) and (7), are displayed in feet.

4.2.1 Total Steam Flow..................:MSW4111
4.2.2 Total Feedwater Flow..............:CFW1REV
4.2.3 Drywell Pressure..................:CAP0010
4.2.4 Reactor Water Level (0 to 210")...:NBLEVELT(5)
4.2.5 Reactor Water Level (-150 to 150"):NBLEVELT(7)
4.2.6 Reactor Pressure (0 TO 1500)......:NBPITAPT(31)
4.2.7 Total Core Flow...................:NBWFLOW(7)
4.2.8 Suppression Pool Temperature......:CAT2120
4.2.9 Supression Chamber Pressure.......:CAP0020

5.0 TEST DURATION

5.1 The recording device will be stopped after the low pressure ECCS has initiated and drywell pressure is decreasing.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-26-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

91-087 :

DURING A RAPID DEPRESSURIZATION THE REACTOR WATER LEVEL SWELL IS LESS THAN EXPECTED. THE EXISTING SIMULATOR THERMAL HYDRAULIC MODEL IS UNDERGOING ENGINEERING EVALUATION BY CP&L FUELS GROUP AND THE INSTALLING VENDOR. UPGRADES TO THE MODEL WILL BE MADE BY THE INSTALLING VENDOR WHEN THIS ANALYSIS HAS BEEN COMPLETED.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-005

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-005, RECIRC PUMP A DUAL SEAL FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (1) Loss of Coolant (b) inside and outside Primary Containment (c) large and small reactor coolant breaks

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an instantaneous dual seal failure on A Recirc Pump.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:335
3.2 MALFUNCTION SYMBOL.:MRC023F
3.3 MALFUNCTION MENU...:RC

4.0 INITIAL CONDITIONS

3.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

3.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

3.2.1 Drywell Floor Drain Sump Level..:CAL0100
3.2.2 Drywell Equipt. Drain Sump Level:WDL0110
3.2.3 Drywell Temperature (18').......:CAT1010
3.2.4 Drywell Pressure................:CAP0010
3.2.5 Recirc Pump A Upper Seal Press..:NBPSEALS(1)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 2/8/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-006

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-006, RCIC TURBINE STEAM LINE LEAK

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (1) Loss of Coolant (b) inside and outside Primary Containment (c) large and small reactor coolant breaks

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an instantaneous 100% steam line rupture. The rupture is located between the RCIC Turbine Control Valve (V-9) and the RCIC Turbine.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:274
3.2 MALFUNCTION SYMBOL.:MES025F
3.3 MALFUNCTION MENU...:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions. The RCIC System is operating in the full flow test mode.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Steam Flow................:MSW4111
4.2.2 RCIC Steam Line Flow............:MSW4E40
4.2.3 RCIC Pump Discharge Flow........:RJW0002T
4.2.4 RCIC Steam Line Pressure........:MSP4400T

5.0 TEST DURATION

5.1 The recording device will be stopped after the RCIC System has isolated and unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

RADIATION MONITORS AND TEMPERATURE INDICATORS DO NOT DETECT THE STEAM LINE BREAK. SSR 90-263

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-008

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-008, MSL D BREAK IN STEAM TUNNEL

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (1) Loss of Coolant (b) inside and outside Primary Containment (c) large and small reactor coolant breaks <u>and</u> (20) Main Steam Line as well as Main Feed Line Break

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line break, located in the Steam Tunnel.

2.2 Severity rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:154
3.2 MALFUNCTION SYMBOL.:MMS001F
3.3 MALFUNCTION MENU...:MS
3.4 This Malfunction is tested with a severity of 100% and a severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE:Reactor Level, NBLEVELT(5), is displayed in feet
4.2.1 Total Steam Flow................:MSW4111
4.2.2 Total Feedwater Flow............:CFW1REV
4.2.3 Reactor Water Level (0 to 210").:NBLEVELT(5)
4.2.4 Reactor Pressure (0 to 1500)....:NBPITAPT(31)
4.2.5 Total Core Flow.................:NBWFLOW(7)

5.0 TEST DURATION

5.1 The recording device will be stopped after the high pressure ECCS has initiated and the core has been effectively flooded.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1/23/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-009

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-009, MSL D BREAK IN THE TURBINE BUILDING

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (1) Loss of Coolant (b) inside and outside Primary Containment (c) large and small reactor coolant breaks and (20) Main Steam Line as well as Main Feed Line Break

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line break, located on D MSL in the Turbine Building.

2.2 Severity rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:155
3.2 MALFUNCTION SYMBOL.:MMS002F
3.3 MALFUNCTION MENU...:MS
3.4 This Malfunction is tested with a severity of 100% and a severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:
NOTE: Reactor Level, NBLEVLET(5), is displayed in feet.

4.2.1 Total Steam Flow................:MSW4111
4.2.2 Total Feedwater Flow............:CFW1REV
4.2.3 Reactor Water Level (0 to 210").:NBLEVELT(5)
4.2.4 Reactor Pressure (0 to 1500)....:NBPITAPT(31)
4.2.5 Total Core Flow.................:NBWFLOW(7)

5.0 TEST DURATION

5.1 The recording device will be stopped after the high pressure ECCS has initiated and the core has been effectively flooded.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 10/20/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-010

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-010, SRV NOT PROPERLY SEATED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (1) Loss of Coolant (d) failure of safety and relief valves

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% SRV open.

2.2 Severity Rate of 0 to 60 minutes

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:159 160
3.2 MALFUNCTION SYMBOL.:MES005F MES006F
3.3 MALFUNCTION MENU...:ES ES
3.4 TESTED MALFUNCTION NUMBER 159

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Steam Flow.................:MSW4111
4.2.2 B21-F013C Tailpipe Temp.........:NBTRVLB(1)
OR
B21-F013F Tailpipe Temp.........:NBTRVLC(1)
4.2.3 MSL B Steam Flow................:NBWFLOW(17)
OR
MSL C Steam Flow................:NBWFLOW(18)
4.2.4 Suppression Pool Temperature....:CAT2120
4.2.5 Suppression Pool Level..........:CAL012F

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

6.2 Plant Incident Report, 90-019, Leaking SRV 2-B21-F013A/C

7.0 DATE PERFORMED: 1-9-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MA-011

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-011, SRV B21-F013E SET POINT DRIFT LOW

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (1) Loss of Coolant (d) failure of safety and relief valves.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes B21-F013E to drift full open and remain open.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:161
3.3 MALFUNCTION SYMBOL.:MES007F
3.2 MALFUNCTION MENU...:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Steam Flow.................:MSW4111
4.2.2 B21-F013E Tailpipe Temp.........:NBTRVLB(3)
4.2.3 MSL B Steam Flow................:NBWFLOW(17)
4.2.4 Suppression Pool Temperature....:CAT2120
4.2.5 Suppression Pool Level..........:CAL012F

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 10/20/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-012

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-012, INSTRUMENT AIR RUPTURE DOWNSTREAM OF DRYERS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (2) Loss of Instrument Air to the extent that the whole system or individual headers can lose pressure and effect the plants static or dynamic performance.

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line break, located just downstream of 2-IAN-V64.

2.2 Severity Rate of 0 to 60 minutes

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:349
3.2 MALFUNCTION SYMBOL.:MAI001F
3.3 MALFUNCTION MENU...:AI

3.4 This Malfunction is tested with a severity of 100% and severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Control Air Pressure..........:AIP0600
4.2.2 Standby Air Comp Disch Press..:AIP0700

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/08/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-013

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-013, SERVICE AIR RUPTURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (2) Loss of Instrument Air to the extent that the whole system or individual headers can lose pressure and effect the plants static or dynamic performance.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an instantaneous 100% rupture of the Service Air line located just downstream of the Service Air Isolation Valves, PV-706-1 and 706-2.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:365
3.2 MALFUNCTION SYMBOL.:MAI005F
3.3 MALFUNCTION MENU...:AI

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Control Air Pressure..........:AIP0600
4.2.2 Service Air Header Pressure...:AIP0100

5.0 TEST DURATION

5.1 The recording device will be stopped after Service Air Isolation Valves (PV-706-1 & 2) isolate and unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/08/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-016

1.0 PROCEDURE TITLE, ANSI 3.5 REFERENCE

1.1 STP-MA-016, LOSS OF CONTROL AIR TO THE SCRAM VALVES

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (2) Loss of Instrument Air to the extent that the whole system or individual headers can lose pressure and effect the plants static or dynamic performance.

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% instantaneous supply line rupture, located just upstream of the Back-up Scram Valves.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:114
3.2 MALFUNCTION SYMBOL.:MRD041F
3.3 MALFUNCTION MENU...:RD

3.4 This Malfunction is tested with a severity of 100%.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Control Air Pressure.............AIP0600
4.2.2 Scram Pilot Air Header Pressure..AIPRPS1
4.2.3 Control Air to RD System.........AIP0400

5.0 TEST DURATION

5.1 The recording device will be stopped after a full reactor scram has occurred.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/07/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-017

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-017, CONTROL AIR LEAK IN THE DRYWELL

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (2) Loss of Instrument Air to the extent that the whole system or individual headers can lose pressure and effect the plants static or dynamic performance.

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100 scfm and the break is located on the IAN line in the Drywell.

2.2 Severity Rate of 0 to 60 minutes

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:368
3.2 MALFUNCTION SYMBOL.:MAI008F
3.3 MALFUNCTION MENU...:AI

3.4 This Malfunction is tested with a severity of 100 scfm and a severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Drywell Oxygen Content..........:CAX0122
4.2.2 Drywell Pressure................:CAP0010
4.2.3 Control Air Pressure............:AIP0600

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a high Drywell pressure scram has occurred.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/07/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-018

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 MA-018, LOSS OF OFF-SITE POWER

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station a. loss of off-site power

2.0 AVAILABLE OPTIONS

2.1 This Malfunction causes an Bus Differential fault on 230 KV Bus 2A and Bus 2B.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:205
3.2 MALFUNCTION SYMBOL.:MEE009F
3.3 MALFUNCTION MENU...:EE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 230 KV Bus 2A Voltage.........:EDV0403G
4.2.2 230 KV Bus 2B Voltage.........:EDV0610G
4.2.3 Main Generator Output Voltage.:EGVGVKV
4.2.4 4 KV Bus 2B Voltage...........:EDV0104G
4.2.5 4 KV Bus 2C Voltage ....:EDV0203G
4.2.6 4 KV Bus 2D Voltage...........:EDV0204G
4.2.7 4 KV Bus E3 Voltage...........:EDV0201G
4.2.8 4 KV Bus E4 Voltage...........:EDV0208G

5.0 TEST DURATION

5.1 The recording device will be stopped after the Diesel Generators are connected to the Emergency Buses and the reactor is in a safe condition.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/07/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-020

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-020, UNIT 2 SAT RELAY FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station a. loss of off-site power

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction is an electrical failure of the SAT Differential Relay which causes the SAT Lock-out Relay to energize.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:338
3.2 MALFUNCTION SYMBOL.:MEE020F
3.3 MALFUNCTION MENU...:EE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with the house loads being fed from their normal power supplies.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Monitor 230 KV Bus 2A if MOD-26A is closed OR 230 KV Bus 2B if MOD-26B is closed.

4.2.1 230 KV Bus 2A(2B) Voltage.....:EDV0403G(EDV0610G)
4.2.2 Cas Beach Tx 2A Primary Volts.:EDV0205G
4.2.3 4 KV Bus 2B Voltage...........:EDV0104G
4.2.4 4 KV Bus 2C Voltage ....:EDV0203G
4.2.5 4 KV Bus 2D Voltage...........:EDV0204G
4.2.6 4 KV Bus E3 Voltage...........:EDV0301G
4.2.7 4 KV Bus E4 Voltage...........:EDV0208G

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.3 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/10/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-021

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-021, LOSS OF SUBSTATION E8

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station b. loss of emergency power

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an instantaneous overcurrent that trips and locks out the normal feeder breaker (AZ5)to Substation E8.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:311
3.2 MALFUNCTION SYMBOL.:MDG001F
3.3 MALFUNCTION MENU...:DG

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with all house loads being fed from their normal power supplies.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 4 KV Bus E4 Voltage...........:EDV0208G
4.2.2 Motor Loads For Switchgear E8.:ZLSUBE8

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-022

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-022, LOSS OF SUBSTATION E7

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station b. loss of emergency power

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an instantaneous overcurrent that trips and locks out the normal feeder breaker (AZ1)to Substation E7.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:334
3.2 MALFUNCTION SYMBOL.:MDG015F
3.3 MALFUNCTION MENU...:DG

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with all house loads being fed from their normal power supplies.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 4 KV Bus E3 Voltage...........:EDV0301G
4.2.2 Motor Loads For Switchgear E7.:ZLSUBE7

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-023

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-023, DG OUTPUT BREAKER TRIP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station c. loss of emergency generators

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an instantaneous trip of the Diesel Generator output breaker.

2.2 This Malfunction allows selection of either DG #3 or #4.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:326
3.2 MALFUNCTION SYMBOL.:MDG008F
3.3 MALFUNCTION MENU...:DG

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with Diesel Generator #3 (or #4) loaded and operating in parallel with the system.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 4 KV Bus E3(E4) Voltage......:EDV0301G(EDV0208G)
4.2.2 Voltage at Switchgear 2D(2C).:EDV0204G(EDV0203G)
4.2.3 DG #3 to System Reactive Pwr.:EEJ2802G(1,1)
OR
DG #4 to System Reactive Pwr.:EEJ2802G(2,1)

5.0 TEST DURATION

The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 10/20/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-024

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-024, DG # 3 GOVERNOR FAILURE LOW

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station c. loss of emergency generators; and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the #3 DG governor to fail low at a fixed rate decrease of 1%/minute down to 5%.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:330
3.2 MALFUNCTION SYMBOL.:MDG012F
3.3 MALFUNCTION MENU...:DG

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with Diesel Generator #3 loaded and operating in parallel with the system.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 4 KV Bus E3 Voltage............:EDV0301G
4.2.2 Voltage at Switchgear 2D.......:EDV0204G
4.2.3 DG #3 to System Reactive Power.:EEJ2802G

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 10/20/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-025

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-025, DG #4 GOVERNOR FAILURE HIGH

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station c. loss of emergency generators

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the #4 DG governor to fail 5% high at a fixed rate increase of 1%/minute.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:331
3.2 MALFUNCTION SYMBOL.:MDG013F
3.3 MALFUNCTION MENU...:DG

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with Diesel Generator #4 loaded and operating in parallel with the system.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 4 KV Bus E4 Voltage..........:EDV0208G
4.2.2 Voltage at Switchgear 2C......:EDV0203G
4.2.3 DG #4 to System Reactive Power:EEJ2802G(2,1)

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 10/20/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-026

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-026, MAIN TRANSFORMER SUDDEN PRESSURE DEVICE ACTUATION

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station d. loss of power to the plants electrical distribution busses

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an internal fault in the Main Transformer which generates enough pressure to actuate the Sudden Pressure device.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:297
3.2 MALFUNCTION SYMBOL.:MEE001F
3.3 MALFUNCTION MENU...:EE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Current at Primary of UAT.....:EDI0101G
4.2.2 Voltage at Switchgear 2C......:EDV0203G
4.2.3 Voltage at Switchgear 2D......:EDV0204G
4.2.4 4 KV Bus E4 Voltage...........:EDV0208G
4.2.5 4 KV Bus E3 Voltage...........:EDV0301G

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MA-027

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-027, 4 KV COMMON BUS B TRIP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station d. loss of power to the plants electrical distribution busses

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an overcurrent condition to occur on 4 KV Common Bus B which will energize one of the Timed Overcurrent Relays (51S) to trip and lockout the SAT feeder breaker (AA2) and the Common Bus B to Common Bus A feeder breaker (AA1).

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:301
3.2 MALFUNCTION SYMBOL.:MEE005F
3.3 MALFUNCTION MENU...:EE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

4.2 A recording devic is setup to record the following test parameters s. ultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Common Bus B Voltage ....:EDC01G18
4.2.2 Common Bus B Amperage.........:EDC02G18

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MA-028

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-028, INDIVIDUAL BUS FAILURES

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station d. loss of power to the plants electrical distribution busses

2.0 AVAILABLE OPTIONS

2.1 An electrical fault causes the selected MCC supply breaker to open. This Malfunction allows selection of any one or more of the following MCCs: 2CA, 2PA, 2XA, 2XC, 2XE, 2XG, 2XL, DGC, 2CB, 2XB, 2XD, 2XF, 2XH, 2XM, DGD, 2TA, 2TB, 2TC, 2TF, 2TJ, 2TK, 2TL, 2TD, 2TE, 2TG, 2TH, 2TM, 2TN, 2XJ, 2XA-2, 2XB-2 and 2XK

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:395
3.2 MALFUNCTION SYMBOL.:MEE030F
3.3 MALFUNCTION MENU...:EE

3.4 For the purpose of annual Certification testing the MCCs should be tested as follows:
Year 1: 2CA, 2PA, 2CB, 2XB, 2TB, 2TK, 2TG, 2XJ
Year 2: 2XA, 2XC, 2XD, DGD, 2TC, 2TD, 2TH, 2XB-2
Year 3: 2XE, 2XG, 2XH, 2XM, 2TF, 2TL, 2TM, 2XA-2
Year 4: 2XL, DGC, 2XF, 2TA, 2TJ, 2TE, 2TN, 2XK

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11-27-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

1

IMAGE EVALUATION
TEST TARGET (MT-3)

150mm

6"

1

IMAGE EVALUATION TEST TARGET (MT-3)

1.0 1.1 1.25 1.4 1.6 1.8 2.0 2.2 2.5 2.8 3.2 3.6 4.0

150mm

6"

1

IMAGE EVALUATION TEST TARGET (MT-3)

150mm

6″

1

IMAGE EVALUATION
TEST TARGET (MT-3)

1.0 1.1 1.25 1.4 1.6 1.8 2.0 2.2 2.5 2.8 3.2 3.6 4.0

150mm

6"

PERFORMANCE TEST ABSTRACT
PTA-MA-031

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-031, LOSS OF 4 KV BUS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station d. loss of power to the plants electrical distribution busses

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the UAT line side AC Timed Overcurrent Relay (51U) to operate which will trip and lock out the normal and alternate feeder breakers to the selected 4 KV bus.

2.2 This Malfunction allows selection of 4 KV Bus 2B, 2C, or 2D.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:345
3.2 MALFUNCTION SYMBOL.:MEE026F
3.3 MALFUNCTION MENU...:EE
3.4 SELECTED 4KV BUS 2D

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1	4 KV Bus 2B Voltage............	:EDV0104G	OR
	4 KV Bus 2C Voltage	:EDV0203G	OR
	4 KV Bus 2D Voltage............	:EDV0204G	
4.2.2	4 KV Bus E3 Voltage............	:EDV0301G	
4.2.3	4 KV Bus E4 Voltage............	:EDV0208G	

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized and the reactor is in a safe condition.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power

Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-2-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-032

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-032, LOSS OF UNITERRUPTIBLE POWER SUPPLY (UPS) FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station e. loss of power to the individual instrumentation busses (AC and DC) that provide power to Control Room indication or plant control functions affecting the plants response.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a mechanical failure and trip of the 400 Amp 3-pole Main Switch on 120/208 VAC Uninterruptible Power Supply Distribution Panel 2A which results in a total loss of power to the UPS System.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:333
3.2 MALFUNCTION SYMBOL.:MDG014F
3.3 MALFUNCTION MENU...:DG

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/16/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-033

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-033, LOSS OF 250 VDC BUS A

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station e. loss of power to the individual instrumentation busses (AC and DC) that provide power to Control Room indication or plant control functions affecting the plants response.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a 100% ground between the positive and negative buses on 125/250 VDC Distribution Panel 2A which trips breakers GK0, GK1, GK2 and GK3.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:336
3.2 MALFUNCTION SYMBOL.:MEE018F
3.3 MALFUNCTION MENU...:EE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-20-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

Numerous deficiencies identified with this malfunction. The DC generation and distrtibution system is being upgraded. Upgraded to be completed in 1991. SSR 90-71, 90-137, and 89-120. DC upgrade to be implemented by 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MA-034

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-034, LOSS OF POWER TO PMS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (3) Loss or Degraded Electrical Power to the Station e. loss of power to the individual instrumentation busses (AC and DC) that provide power to Control Room indication or plant control functions affecting the plants response.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction results in a loss of the PMS computer when fuse FU 25A is blown.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:344
3.2 MALFUNCTION SYMBOL.:MXY011F
3.3 MALFUNCTION MENU...:XY

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-17-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-035

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-035, RECIRC MG SET FIELD BREAKER TRIP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, Loss of forced coolant flow due to single or multiple pump failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Recirc Pump generator field breaker to trip.

2.2 This Malfunction allows selection of either A or B Recirc MG Set Field Breaker.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER..115
3.2 MALFUNCTION SYMBOL.:MRC001F
3.3 MALFUNCTION MENU...:RC
3.4 2A SELECTED

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2A Recirculation Pump Flow.......:NBWFLOW(10)
4.2.2 2B Recirculation Pump Flow.......:NBWFLOW(11)
4.2.3 Total Core Flow..................:NBWFLOW(7)
4.2.4 Reactor Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Pressure (800 to 1100)...:NBPITAPT(32)
4.2.6 Reactor Power....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized and the reactor is in a safe condition.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 2-1-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-036

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-036, RECIRC MG SET BUS BREAKER TRIP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (4) Loss of forced coolant flow due to single or multiple pump failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Recirc Pump Drive Motor Breaker to trip due to a breaker fault.

2.2 This Malfunction allows selection of either A or B Recirc MG Set Drive Motor Breaker.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:117
3.2 MALFUNCTION SYMBOL.:MRC003F
3.3 MALFUNCTION MENU...:RC

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2A Recirculation Pump Flow.......:NBWFLOW(10)
4.2.2 2B Recirculation Pump Flow.......:NBWFLOW(11)
4.2.3 Total Core Flow..................:NBWFLOW(7)
4.2.4 Reactor Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Pressure (800 to 1100)...:NBPITAPT(32)
4.2.6 Reactor Power....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized and the reactor is in a safe condition.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1/27/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-037

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-037, RECIRC PUMP SHAFT SEIZURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (4) Loss of forced coolant flow due to single or multiple pump failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Recirc Pump shaft to seize in 3 seconds due to bearing failure.

2.2 This Malfunction allows selection of either A or B Recirc Pump.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:126
3.2 MALFUNCTION SYMBOL.:MRC012F
3.3 MALFUNCTION MENU...:RC
3.4 SELECTED RECIRC PUMP 2A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2A Recirculation Pump Flow.......:NBWFLOW(10)
4.2.2 2B Recirculation Pump Flow.......:NBWFLOW(11)
4.2.3 Total Core Flow..................:NBWFLOW(7)
4.2.4 Reactor Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Pressure (800 to 1100)...:NBPITAPT(32)
4.2.6 Reactor Power....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized and the reactor is in a safe condition.

6.0 BASE LINE DATA

6.3 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1/23/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-038

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-038, RECIRC MG SET COOLING WATER LOSS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of TIC-607 which closes the selected Recirc MG Set oil temperature control valve, TV-607.

2.2 This Malfunction allows selection of either A or B Recirc MG Set.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:132
3.2 MALFUNCTION SYMBOL.:MRC017F
3.3 MALFUNCTION MENU...:RC

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2A Recirculation Pump Flow....:NBWFLOW(10)
4.2.2 2B Recirculation Pump Flow....:NBWFLOW(11)
4.2.3 Total Core Flow...............:NBWFLOW(7)
4.2.4 Reactor Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Pressure (800 to 1100)...:NBPITAPT(32)
4.2.6 Reactor Power.....................:NIJAPRM
4.2.7 2A Ht Exchgr Otlt Oil Temp.......:TBT0150
or
2B Ht Exchgr Otlt Oil Temp.......:TBT0160

5.0 TEST DURATION

5.1 The recording device will be stopped after the selected Recirc Pump trips due to high oil temperature and unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/09/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-039

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-039, TOTAL LOSS OF CW PUMP SEAL WATER

1.2 ANSI/ANS 3.5 1985, Section 3.1.2, Plant Malfunctions, (5) Loss of condenser vacuum including loss of condenser level control and (8) Loss of component cooling system or cooling to individual components.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes Service Water Valve SW-V37 to fail shut which results in a complete loss of Service Water to all four (4) Circ Water intake pumps.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:246
3.2 MALFUNCTION SYMBOL.:MCN008F
3.3 MALFUNCTION MENU...:CN

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2A CW Pmp Lube and Motor Clr Flow:SWW0110(1)
4.2.2 2C CW Pmp Lube and Motor Clr Flow:SWW0110(3)
4.2.3 2A Condenser Vacuum...............:CNP2AHG
4.2.4 2B Condenser Vacuum...............:CNP2BHG

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-11-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-040

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-040, CONVENTIONAL SERVICE WATER RUPTURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (6) Loss of Service Water or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line rupture of the Conventional Service Water Pump discharge header, located between pumps 2A and 2B .

2.2 Severity rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:248
3.2 MALFUNCTION SYMBOL.:MCW002F
3.3 MALFUNCTION MENU...:CW

3.4 This Malfunction is tested with a severity of 100% and a severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with the stand-by Conventional Service Water Pump aligned to the Conv. Header and in Automatic.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Conv. Service Wtr Hdr Press......:SWP0100(5)
4.2.2 2A CW Pmp Lube and Motor Clr Flow:SWW0110(1)
4.2.3 2C CW Pmp Lube and Motor Clr Flow:SWW0110(3)

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.3 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-15-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-041

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-041, NUCLEAR SERVICE WATER RUPTURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (6) Loss of Service Water or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line rupture, located on the discharge header of 2A and 2B Nuclear Service Water Pump.

2.2 Severity rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:247
3.2 MALFUNCTION SYMBOL.:MCW001F
3.3 MALFUNCTION MENU...:CW

3.4 This Malfunction is tested with a severity of 100% and a severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with the stand-by Conventional Service Water Pump aligned to the Conv. Header.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Nuclear Service Water Hdr Press.....:SWP0100(4)
4.2.2 Nuc. Service Water Flow To RBCCW Hx.:SWW0120

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-042

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-042, LOSS OF RBCCW TO DRYWELL COOLERS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction will cause a mechanical failure that disconnects the valve stem from the valve disc and results in the closure of RBCCW to Drywell Return Isolation Valve, RCC-V28.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:255
3.2 MALFUNCTION SYMBOL.:MCA001F
3.3 MALFUNCTION MENU...:CA

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Drywell Cooler 2A Outlet RBCCW Temp:RBT0201
4.2.2 Drywell Temperature (at 40').......:CAT0610
4.2.3 Drywell Pressure..................:CAP0010
4.2.4 Recirc System RBCCW Return Temp....:RCTCCEX(1)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a high Drywell pressure scram has occurred.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 2/19/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-043

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-043, TBCCW HEAT EXCHANGER PLUGGED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (6) Loss of Service Water or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line blockage on the Service Water side of the TBCCW Heat Exchanger due to excessive debris.

2.2 Severity rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:252
3.2 MALFUNCTION SYMBOL.:MCW005F
3.3 MALFUNCTION MENU...:CW

3.4 This Malfunction is tested with a severity of 100% and a severity rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 TBCCW Heat Exchangers Outlet Temp...TBT0101
4.2.2 MTLO Oil Cooler Outlet Water Temp...TAT7025
4.2.3 Generator Hydrogen Temperature......EGT1302S
4.2.4 Stator Coolant Return Temperature...TBTEG02

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a reactor scram has occurred.

6.0 BASE LINE DATA

6.3 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-11-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-044

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-044, TBCCW HEAT EXCHANGER DISCHARGE HEADER RUPTURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (6) Loss of Service Water or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line break at the common header discharge of the TBCCW Heat Exchangers.

2.2 Severity rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:381
3.2 MALFUNCTION SYMBOL.:MCW014F
3.3 MALFUNCTION MENU...:CW

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 TBCCW Pump Discharge Header Press..:TBP0101
4.2.2 TBCCW Head Tank Level..............:TBL0100
4.2.3 MTLO Oil Cooler Outlet Water Temp..:TAT7025
4.2.4 Generator Hydrogen Temperature.....:EGT1302S
4.2.5 Stator Coolant Return Temperature..:TBTEG02

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a reactor scram has occured.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-15-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-045

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-045, EXHAUST HOOD SPRAY VALVE FAIL CLOSED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 The Exhaust Hood Spray Valve (CO-AOV-WSV) fails closed due to an air supply line rupture.

2.2 Severity rate of 5 to 50 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:173
3.2 MALFUNCTION SYMBOL.:MMSC12F
3.3 MALFUNCTION MENU...:MS

3.4 This Malfunction is tested with a severity rate of 5 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress and the Main Turbine is at 1800 RPM ready to synchronize to the grid. The Exhaust Hood Spray's are in service.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.3 seconds or less:

4.2.1 LPT Exhaust Hood Spray Flow......:CFW1EHS(1)
4.2.2 2A Exhaust Hood Temperature......:MST4260(1)
4.2.3 2B Exhaust Hood Temperature......:MST4260(2)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a Turbine trip due to high shell temperature has occurred.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 8/09/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-046

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-046, RBCCW PUMP SUCTION HEADER RUPTURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (6) Loss of Service Water or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line rupture located on the common suction header between 2A and 2B RBCCW Pumps.

2.2 Severity Rate of 0 to 60 minutes

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:249
3.2 MALFUNCTION SYMBOL.:MCW003F
3.3 MALFUNCTION MENU...:CW

3.4 This Malfunction is tested with a Severity of 100% and a Severity Rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 RBCCW Discharge Pressure.........:RBP0101(1)
4.2.2 RBCCW Head Tank Level............:RBL0100
4.2.3 RWCU Non-regen Htx Outlet Temp...:RWT0231
4.2.4 Drywell Temperature (at 40')......:CAT0610
4.2.5 Drywell Pressure..................:CAP0010

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a high Drywell pressure scram has occurred.

6.0 BASE LINE DATA

6.3 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-12-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MA-047

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-047, CRD DRIVE WATER FILTER PLUGGED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components and (13) Inability to drive Control Rods

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the in-service Drive Water Filter to plug due to excessive debris.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:019
3.2 MALFUNCTION SYMBOL.:MRD019F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 CRD Flow............................:RDWN004
4.2.2 Charging Water Header Pressure...:RDPCHHDS
4.2.3 Drive Water Differential Pressure:RDDN008
4.2.4 Cooling Water Flow...............:RDWCLHD
4.2.5 Cooling Water Differential Press.:RDDN011

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-11-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

Drive Water D/P, Cooling Water D/P and Cooling Water Flow all have unexplained pulses near the end of the test run. They should all be static. SSR 91-77

Deficiency to be resolved by 6/92.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MA-048

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-048, RWCU NON-REGENERATIVE HEAT EXCHANGER HIGH OUTLET TEMPERATURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes RBCCW flow through the RWCU Non-Regenerative Heat Exchangers to decrease due to a mechanical failure of the RBCCW outlet valve, RCC-V3.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:151
3.2 MALFUNCTION SYMBOL.:MRW009F
3.3 MALFUNCTION MENU...:RW

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Non-Regen Ht Exch Outlet Temp....:RWT0231
4.2.2 RWCU Filter Inlet Temperature....:RWT0500
4.2.3 Total RWCU Flow..................:RWF0500
4.2.4 2A RWCU Pump Flow................:RWW0300(1)
4.2.5 2B RWCU Pump Flow................:RWW0300(2)

5.0 TEST DURATION

5.1 The recording device will be stopped after the RWCU Pumps have tripped.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11-16-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-049

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-049, GENERATOR HYDROGEN COOLING TEMPERATURE CONTROLLER FAILS CLOSED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a an electronic failure of the Hydrogen Coolers Temperature Controller (TCC-TIC-609) which fully closes TCC-TV-609 and stops the flow of TBCCW through the Hydrogen Coolers.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:314
3.2 MALFUNCTION SYMBOL.:MXY006F
3.3 MALFUNCTION MENU...:XY

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Avg Hydrogen Temp Leaving Clrs...:TBT0111
4.2.2 Hydrogen Pressure................:EGW1303G
4.2.3 Hydrogen Clrs TBCCW Outlet Temp..:TBT0205

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/16/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-050

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-050, STATOR COOLING TEMPERATURE CONTROLLER FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an electronic failure of the Stator Cooling System Temperature Controller (GSC-TC-23-CS-88) which fully closes TCV-Y-07, this will bypass all TBCCW flow around the Stator Cooling Heat Exchangers. The temperature will increase at a rate of 6° C/minute.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:317
3.2 MALFUNCTION SYMBOL.:MXY009F
3.3 MALFUNCTION MENU...:XY

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Stator Coolant Outlet Temperature:EGT1402S
4.2.2 Stator Coolant Inlet Temperature.:TBTEG02
4.2.3 Stator Cooling Water Flow........:TBWEG02
4.2.4 Net Mechanical Power (MWE).......:TMJ6702

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a unit scram has occurred.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 01/08/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-051

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-051, TURBINE LUBE OIL TEMPERATURE CONTROLLER FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an electronic failure of the Main Turbine Lube Oil Temperature Controller (TIC-615) which fully closes TV-615 and stops the flow of TBCCW through the Main Turbine Oil Tank Lube Oil Coolers.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:191
3.2 MALFUNCTION SYMBOL.:MMS031F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Main Turbine Bearing Vibration...:TML6701
4.2.2 MTLO Clr Outlet Oil Temperature..:TAT7030
4.2.3 MTLO Clr Outlet Water Temperature:TAT7025
4.2.4 Main Turb Thrust Brg Metal Temp..:TMT6762S

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/17/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-052

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-052, HOTWELL MAKEUP VALVE FAILS CLOSFD

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (5) Loss of condenser vacuum including loss of condenser level control and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an electronic failure of level controller CO-LC-1-2 which fully closes the Hotwell Level Makeup Valve, CO-LV-1-2.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:193
3.2 MALFUNCTION SYMBOL.:MCF001F
3.3 MALFUNCTION MENU...:CF
3.4 The malfunction is set active with the Hotwell Makeup and Reject Level Controllers operating in Automatic. After 2 minutes has elapsed the Hotwell Reject Valve Bypass Valve (V-44) is opened utilizing Instructor Aids (CDIG menu).

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions. The Hotwell Makeup and Reject Level Controllers are operating in Automatic.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Flow From Flash Tank To Condenser:HDW1005
4.2.2 Condenser Reject Flow............:CFW1CSA
4.2.3 Condensate Pump Disch Press......:CFP1200
4.2.4 Condenser A North Level..........:CNL2HWL

5.0 TEST DURATION

5.1 The recording device will be stopped after the malfunction trnds have been clearly established.

6.0 BASE LINE DATA

6.3 Malfunction Cause and Effect for Brunswick Unit 2 Power

Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 01/08/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-053

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-053, HOTWELL REJECT VALVE FAILS CLOSED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (5) Loss of condenser vacuum including loss of condenser level control and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an electronic failure of level controller CO-LC-1-1 which fully closes the Hotwell Reject Valve, CO-LV-1-1.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:194
3.2 MALFUNCTION SYMBOL.:MCF002F
3.3 MALFUNCTION MENU...:CF
3.4 The malfunction is set active with the Hotwell Reject and Makeup Level Controllers operating in Automatic. After 2 minutes has elapsed the Hotwell Makeup Valve Bypass Valve (LV-18) is opened utilizing Instructor Aids (CDIG menu).

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions. The Hotwell Reject and Makeup Level Controllers are operating in Automatic.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Flow From Flash Tank To Condenser:HDW1005
4.2.2 Condenser Reject Flow............:CFW1CSA
4.2.3 2A Condenser Vacuum..............:CNP2AHG
4.2.4 2B Condenser Vacuum..............:CNP2BHG
4.2.5 Condenser A North Level..........:CNL2HWL

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power

Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 10/31/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-054

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-054, CONDENSATE TRANSFER SYSTEM RUPTURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (5) Loss of condenser vacuum including loss of condenser level control

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an instantaneous rupture of the Condensate Transfer Pump Discharge Header which results in a loss of Hotwell makeup.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:212
3.2 MALFUNCTION SYMBOL.:MCF01
3.3 MALFUNCTION MENU...:CF
3.4 The malfunction is set active with the Hotwell Makeup and Reject Level Controllers operating in Automatic. After 2 minutes has elapsed the Hotwell Reject Valve Bypass Valve (V-44) is opened utilizing Instructor Aids (CDIG menu).

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions. The Hotwell Makeup and Reject Level Controllers are operating in Automatic.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Cond Trans Pumps Disch Press.....:HDP1CTD
4.2.2 Flow From Flash Tank To Condenser:HDW1005
4.2.3 Condensate Pump Disch Press......:CFP1200
4.2.4 Condenser A North Level..........:CNL2HWL

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/04/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-055

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-055, LOSS OF CONDENSER VACUUM

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (5) Loss of condenser vacuum including loss of condenser level control

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 1,000,000 lbm/hr of air inleakage, due to a bellows failure on 2A LP Turbine Exhaust Hood.

2.2 Severity Rate of 0 to 60 minutes

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:190
3.2 MALFUNCTION SYMBOL.:MCN001F
3.3 MALFUNCTION MENU...:CN

3.4 This Malfunction is tested with a severity of 1,000,000 lbm/hr and a Severity Rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2A Condenser Vacuum............:CNP2AHG
4.2.2 2B Condenser Vacuum............:CNP2BHG
4.2.3 AOG Volumetric Flow Rate.......:GRFGEXH

5.0 TEST DURATION

5.1 The recording device will be stopped after condenser vacuum has decreased to atmospheric and the reactor is in a safe condition.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-18-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-057

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-057, CIRCULATING WATER PUMP DISCHARGE VALVE FAILS CLOSED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (5) Loss of condenser vacuum including loss of condenser level control

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Circ Water Pump Discharge Valve to fail closed due to an electrical circuit fault.

2.2 This malfunction allows selection of either A, B, C, or D Circ Water Pump Discharge Valve.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:242
3.2 MALFUNCTION SYMBOL.:MCN004F
3.3 MALFUNCTION MENU...:CN
3.4 SELECTED CIRC WATER PUMP DISCH VALVE A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2A Condenser Vacuum............:CNP2AHG
4.2.2 2B Condenser Vacuum............:CNP2BHG
4.2.3 2A North Tube Sheet Diff. Press:CWP8519(1)
4.2.4 2B North Tube Sheet Diff. Press:CWP8519(3)
4.2.5 2A CW Outlet Temperature.......:CWT8524(1)
4.2.6 2B CW Outlet Temperature.......:CWT8524(3)

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized and/or 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/17/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-059

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-059, LOSS OF STEAM JET AIR EJECTOR (SJAE)

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (5) Loss of condenser vacuum including loss of condenser level control

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the selected SJAE's low steam pressure trip logic.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:324
3.2 MALFUNCTION SYMBOL.:MCN009F
3.3 MALFUNCTION MENU...:CN

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2A Condenser Vacuum.............:CNP2AHG
4.2.2 2B Condenser Vacuum.............:CNP2BHG
4.2.3 AOG Volumetric Flow Rate.......:GRFGEXH

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a reactor scram has occurred.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-11-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

Vacuum decreased only 1-2 inHg. No low vacuum alarms were received. SSR 91-0055

Deficiency to be resolved by 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MA-060

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-060, TURBINE STEAM SEAL REGULATOR FAILS CLOSED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (5) Loss of condenser vacuum including loss of condenser level control

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the Steam Seal Regulator Valve to fail closed which results in a loss of condenser vacuum.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:189
3.2 MALFUNCTION SYMBOL.:MMS030F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress and the Main Turbine is less than 1800 RPM ready to roll.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Steam Seal Header Pressure.....:MSP4GSPS
4.2.2 2A Condenser Vacuum............:CNP2AHG
4.2.3 2B Condenser Vacuum............:CNP2BHG
4.2.4 AOG Volumetric Flow Rate.......:GRFGEXH

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or condenser vacuum has decreased to atmospheric.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-20-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-061

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-061, RHR SERVICE WATER PUMP BREAKER FAULT

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (7) Loss of Shutdown Cooling

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an instantaneous overcurrent to occur which trips the selected RHRSW Pump Breaker.

2.2 This malfunction allows selection of either A, B, C, or D RHRSW Pump Breaker.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:286
3.2 MALFUNCTION SYMBOL.:MCW008F
3.3 MALFUNCTION MENU...:CW
3.4 RHRSW B PUMP SELECTED

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in Cold Shutdown with the Shutdown Cooling Mode of RHR in service.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1	2A RHR Htx SW Flow.............:SWW0132(1)	
	OR	
	2B RHR Htx SW Flow.............:SWW0132(2)	
4.2.2	2A RHR Htx Flow................:RHW0032(1)	
	OR	
	2B RHR Htx Flow................:RHW0032(2)	
4.2.3	2A Recirc Pump Suction Temp....:RCTRCPF(1)	
4.2.4	2B Recirc Pump Suction Temp....:RCTRCPF(2)	

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 2-1-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-062

1.0 PROCEDURE TITLE/ANS 3.5 REFERENCE

1.1 STP-MA-062, RHR PUMP TRIP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (7) Loss of Shutdown Cooling

2.0 AVAILABLE OPTIONS

2.1 NONE This Malfunction causes the B phase time overcurrent relay to trip the selected RHR Pump motor breaker.

2.2 This malfunction allows selection of either A or B RHR Pump.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:284
3.2 MALFUNCTION SYMBOL.:MRHC09F
3.3 MALFUNCTION MENU...:RH
3.4 RHR PUMP 2B

4.0 INITIAL CONDITIONS

4.1 The simulator is operating in Cold Shutdown with the Shutdown Cooling Mode of RHR in service. Either A or B RHR Pump must be in service.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Do not monitor RHR Heat Exchanger flows on the idle RHR loop.

4.2.1 2A Recirc Pump Suction Temp.:RCTRCPF(1)
4.2.2 2B Recirc Pump Suction Temp.:RCTRCPF(2)
4.2.3 2A RHR Ht Exch Flow.........:RHW0032(1)
OR
2B RHR Ht Exch Flow.........:RHW0032(2)
4.2.4 2A RHR Htx SW Flow..........:SWW0132(1)
OR
2B RHR Htx SW Flow..........:SWW0132(2)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1/15/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

RHR heat exchange flow is erratic. Trend is in proper direction and occurs over believable time frame but is very erratic on changes in valve. SSR 91-0054 Deficiency to be corrected by 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-063

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-063, CONDENSATE PUMP SHEARED SHAFT

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Condensate Pump shaft to shear.

2.2 This malfunction allows selection of Condensate Pump 2A, 2B, or 2C.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:200
3.2 MALFUNCTION SYMBOL.:MCF004F
3.3 MALFUNCTION MENU...:CF
3.4 Pump A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Condensate Pump Discharge Press..:CFP1200
4.2.2 Cond Booster Pump Suction Press..:CFP1400
4.2.3 Reactor Water Level.(150 to 210"):IARXLVL
4.2.4 Total Feedwater Flow.............:CFW1REV

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-12-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MA-064

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-064, CONDENSATE PUMP LOCKED ROTOR

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction will cause a locked rotor condition on the selected Condensate Pump.

2.2 This malfunction allows selection of Condensate Pump 2A, 2B or 2C.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:203
3.2 MALFUNCTION SYMBOL.:MCF007F
3.3 MALFUNCTION MENU...:CF
3.4 Pump A Selected

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Condensate Pump Discharge Press..:CFP1200
4.2.2 Cond Booster Pump Suction Press..:CFP1400
4.2.3 Reactor Water Level.(150 to 210"):IARXLVL
4.2.4 Total Feedwater Flow.. ....:CFW1REV

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED:1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

None

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

None

PERFORMANCE TEST ABSTRACT
PTA-MA-065

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-065, CONDENSATE BOOSTER PUMP SHEARED SHAFT

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Condensate Booster Pump shaft to shear.

2.2 This malfunction allows selection of Condensate Booster Pump 2A, 2B or 2C.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:206
3.2 MALFUNCTION SYMBOL.:MCF010F
3.3 MALFUNCTION MENU...:CF
3.4 CONDENSATE BOOSTER PUMP 2B SELECTED

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Cond Booster Pump Disch Press....:CFP1700
4.2.2 2A RFP Suction Press.............:CFP1811
4.2.3 2B RFP Suction Press.............:CFP1821
4.2.4 Reactor Water Level..............:IARXLVL
4.2.5 Total Feedwater Flow.............:CFW1REV

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-10-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-068

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-068, LOW PRESSURE FEEDWATER HEATER 2B TUBE LEAK

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 500,000 lbm/hr leak rate through the tube rupture into the heater shell.

2.2 Severity Rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:216
3.2 MALFUNCTION SYMBOL.:MCF020F
3.3 MALFUNCTION MENU...:CF
3.4 This Malfunction is tested with a Severity of 500000 lbm/hr and a Severity Rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2B FW Heater Inlet Temperature....:HTT1031(4,2)
4.2.3 2B FW Heater Drain Outlet Temp....:HTT1021(4,2)
4.2.2 2B FW Heater Level................:HTL1021(4,2)
4.2.4 Reactor Water Level.(150 to 210").:IARXLVL

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-25-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

The effects of the tube leak are not consistent.

Feedwater temperatures do not respond as predicted.

SSR 90-87. Deficiency to be corrected by 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-070

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-070, HIGH PRESSURE FEEDWATER HEATER 4B TUBE LEAK

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 500000 lbm/hr leak rate, High Pressure Heater 4B tube leak causes shell side level to increase in accordance with severity.

2.2 Severity Rate of 0 to 60 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:218
3.2 MALFUNCTION SYMBOL.:MCF022F
3.3 MALFUNCTION MENU...:CF
3.4 This Malfunction is tested with a Severity of 500000 lbm/hr and a Severity Rate of 0 minutes.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 4B FW Heater Inlet Temperature....:HTT1031(2,2)
4.2.3 4B FW Heater Drain Outlet Temp....:HTT1021(2,2)
4.2.2 4B FW Heater Level................:HTL1021(2,2)
4.2.4 Reactor Water Level.(150 to 210").:IARXLVL
4.2.5 4A FW Heater Outlet Temperature...:HTT1032(2,1)
4.2.6 4B FW Heater Outlet Temperature...:HTT1032(2,2)
4.2.7 A Feed Pump Flow..................:CFW1RFP(1)
4.2.8 B Feed Pump Flow..................:CFW1RFP(2)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-23-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-071

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-071, REACTOR FEEDWATER PUMP SHEARED SHAFT

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Reactor Feedwater Pump shaft to shear.

2.2 This malfunction allows selection of either A or B Reactor Feedwater Pump.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:221
3.2 MALFUNCTION SYMBOL.:MCF025F
3.3 MALFUNCTION MENU...:CF
3.4 PUMP B

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Feedwater Flow........:CFW1REV
4.2.2 Total Steam Flow............:MSW4111
4.2.3 Total Core flow.............:NBWFLOW(7)
4.2.4 Rx Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Power...............:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-12-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-072

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-072, REACTOR FEEDWATER PUMP 2A LUBE OIL LEAK

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 FIXED Severity of 1000 gallons. 2A RFP turbine lube oil tank leak, located below the oil pumps suction.

2.2 FIXED Severity Rate of 30 minutes.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:223
3.2 MALFUNCTION SYMBOL.:MCF027F
3.3 MALFUNCTION MENU...:CF

4.0 INITIAL CONDITIONS

3.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

3.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

3.2.1 2A RFP Lube Oil Tank Level.......:TAL7200
3.2.2 2A RFP Lube Oil Pressure.........:TAP7220
3.2.3 2A RFP Suction Flow..............:CFW1RFP(1)
3.2.4 2B RFP Suction Flow..............:CFW1RFP(2)
3.2.5 Reactor Water Level (150 to 210"):IARXLVL
3.2.6 Reactor Power....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 12/01/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-073

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-073, REACTOR FEEDWATER PUMP 2B TURBINE OVERSPEED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the 2B RFP Turbine to overspeed to the trip setpoint, due to a governor failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:224
3.2 MALFUNCTION SYMBOL.:MCF028F
3.3 MALFUNCTION MENU...:CF

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Feedwater Flow..............:CFW1REV
4.2.2 Total Steam Flow..................:MSW4111
4.2.3 2A RFP Suction Flow...............:CFW1RFP(1)
4.2.4 2B RFP Suction Flow...............:CFW1RFP(2)
4.2.5 Reactor Water Level (150 to 210").:IARXLVL
4.2.6 Reactor Power.....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-074

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-074, RFP FLOW CONTROLLER FAILS HIGH

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Reactor Feedwater Pump Flow Controller to fail, calling for maximum output (100% speed demand).

2.2 This Malfunction allows selection of RFP 2A or 2B.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:227
3.2 MALFUNCTION SYMBOL.:MCF031F
3.3 MALFUNCTION MENU...:CF
3.4 REACTOR FEEDWATER PUMP A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Feedwater Flow..............:CFW1REV
4.2.2 Total Steam Flow..................:MSW4111
4.2.3 Total Core flow...................:NBWFLOW(7)
4.2.4 Reactor Water Level (150 to 210").:IARXLVL
4.2.5 Reactor Power.....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 01/10/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

FEEDWATER RESPONDED TOO QUICKLY SSR 91-C058; DEFICIENCY TO BE

CORRECTED BY 12/91.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-075

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-075, RFP FLOW CONTROLLER FAILS LOW

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure in the Function Generator (K603B) which will runback the selected RFP to minimum speed.

2.2 This Malfunction allows selection of RFP 2A or 2B.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:228
3.2 MALFUNCTION SYMBOL.:MCF034F
3.3 MALFUNCTION MENU...:CF
3.4 REACTOR FEEDWATER PUMP A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Feedwater Flow.............:CFW1REV
4.2.2 Total Steam Flow.................:MSW4111
4.2.3 Total Core flow..................:NBWFLOW(7)
4.2.4 Reactor Water Level (150 to 210").:IARXLVL
4.2.5 Reactor Power....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 01/28/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-076

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-076, STARTUP LEVEL CONTROL VALVE FAILS CLOSED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an electrical failure in the Startup Level Controller, LIC-3269, which will close LV-3269 and stop feedwater flow to the reactor.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:233
3.2 MALFUNCTION SYMBOL.:MCF035F
3.3 MALFUNCTION MENU...:CF

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at less than 5% reactor power. A Condensate Booster Pump is in service and reactor water level is being controlled with the Startup Level Control Valve (LV3269) in Automatic.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE:Reactor level is displayed in FEET.
4.2.1 Total Feedwater Flow......:CFW1REV
4.2.2 Rx Water Level (0 to 210"):NBLEVELT(5)
4.2.3 Reactor Power.............:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or HPCI and RCIC have tripped due to high reactor water level.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 12/01/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-077

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-077, REACTOR FEEDWATER PUMP LOW SUCTION PRESSURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 This Malfunction causes pressure switch COD-PS-3570 (COD-PS-3571) to fail downscale which causes a low suction pressure trip to occur on RFP 2A(B).

2.2 This Malfunction allows selection of either 2A or 2B RFP.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:234
3.2 MALFUNCTION SYMBOL.:MCF036F
3.3 MALFUNCTION MENU...:CF
3.4 TESTED RFP A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 2A RFP Suction Pressure..........:CFP1811
4.2.2 2B RFP Suction Pressure..........:CFP1821
4.2.3 Total Feedwater Flow.............:CFW1REV
4.2.4 Reactor Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Power....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-078

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-078, FEEDWATER CONTROL STEAM FLOW TOTALIZER FAILS LOW

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an instantaneous 100% loss of output from the steam flow network to the three element controller due to an electrical failure of CR K603.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:235
3.2 MALFUNCTION SYMBOL.:MCF037F
3.3 MALFUNCTION MENU...:CF

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1	CR-K603 Output..............:XFD0105G	
4.2.2	Total Steam Flow............:MSW4111	
4.2.3	Total Feedwater Flow........:CFW1REV	
4.2.4	Rx Water Level (150 to 210"):IARXLVL	
4.2.5	Reactor Power...............:NIJAPRM	

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-079

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-079, THREE ELEMENT CONTROLLER OUTPUT LOSS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the Three Element Controller output summer CR-K616 to fail with a constant output value due to an electrical failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:237
3.2 MALFUNCTION SYMBOL.:MCF038F
3.3 MALFUNCTION MENU...:CF
3.4 The Malfunction is set active and then Recirc Flow is utilized to decrease reactor power approximately 10%.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test paramaters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 CR-K616 Output..............:XFD0408G
4.2.2 Total Steam Flow............:MSW4111
4.2.3 Total Feedwater Flow........:CFW1REV
4.2.4 Rx Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Power...............:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-080

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-080, FEEDWATER PUMP MINIMUM FLOW FAILS OPEN

1.2 ANSI/ANS 3.5 1985, Section 3 1.2 Plant Malfunctions, (9) Loss of normal Feedwater or normal Feedwater System failure.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes RFP 2A(B) minimum flow valve, FV-47, to open due to an electrical failure of FY-47.

2.2 This Malfunction allows selection of RFP 2A or 2B.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:239
3.2 MALFUNCTION SYMBOL.:MCF040F
3.3 MALFUNCTION MENU...:CF
3.4 RFP A MIN FLOW VALVE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Steam Flow............:MSW4111
4.2.2 Total Feedwater Flow........:CFW1REV
4.2.3 2A RFP Suction Flow.........:CFW1RFP(1)
4.2.4 2B RFP Suction Flow.........:CFW1RFP(2)
4.2.5 Rx Water Level (150 to 210"):IARXLVL
4.2.6 Reactor Power...............:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-081

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-081, LOSS OF ALL FEEDWATER - NORMAL AND EMERGENCY

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (10) Loss of all Feedwater (Normal and Emergency)

2.0 AVAILABLE OPTIONS

2.1 NONE. Malfunction ES-261, HPCI Logic Bus 'A' Pump Auto Start Failure, ES-267, RCIC Logic Bus 'B' Auto Start Logic Failure, CF-234, RFP Low Suction Pressure (for 2A RFP) and CF-234, RFP Low Suction Pressure (for 2B RFP) are activated simultaneously to provide a loss of Normal and Emergency Feedwater.

2.2 Malfunction CF-234 allows selection of either 2A or 2B RFP.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:234 261 267
3.2 MALFUNCTION SYMBOL.:MCF036F MES013F MES019F
3.3 MALFUNCTION MENU...:CF ES ES
3.4 Malfunction CF-234 is tested with both 2A and 2B RFP selected.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% reactor power with steady state conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE:Reactor water level, NBLEVELT(5), is displayed in feet.

4.2.1 Reactor Power (APRM)................:NIJAPRM
4.2.2 Reactor Pressure (0 to 1500)........:NBPITAPT(31)
4.2.3 Reactor Water Level (0 to 210")....:NBLEVELT(5)
4.2.4 Total Steam Flow....................:MSW4111
4.2.5 Total Feedwater Flow................:CFW1REV
4.2.6 Loop I RHR/LPCI Injection Flow.....:RHW0032(1)
4.2.7 Loop II RHR/LPCI Injection Flow....:RHW0032(2)
4.2.8 2A Core Spray Injection Flow.......:CSW0002
4.2.9 2B Core Spray Injection Flow.......:CSW0022
4.2.10 HPCI Injection Flow................:HPW0003
4.2.11 RCIC Injection Flow................:RJW0002T

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-13-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-082

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-082, RPS CHANNEL A FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (11) Loss of protective system channel

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a total loss of power to RPS Channel A due to failure of Fuse F14A.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:107
3.2 MALFUNCTION SYMBOL.:MRP002F
3.3 MALFUNCTION MENU...:RP

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-083

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-083, RPS MG SET TRIP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (11) Loss of protective system channel

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected RPS MG Set to trip due to failure of the output breaker.

2.2 This Malfunction allows selection of RPS MG Set 2A or 2B.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:108
3.2 MALFUNCTION SYMBOL.:MRP003F
3.3 MALFUNCTION MENU....:RP

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-084

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-084, RPS SCRAM GROUP BLOWN FUSE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (11) Loss of protective system channel

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes fuse F18D to open which will deenergize the Group 3, RPS Channel B Scram Solenoid Valves. By initiating a manual 1/2 scram in Channel A all Group 3 Control Rods will receive a full scram.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:112
3.2 MALFUNCTION SYMBOL.:MRP007F
3.3 MALFUNCTION MENU...:RP

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the Group 3 Control Rods have scrammed in.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-13-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-085

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-085, STUCK CONTROL ROD

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (12) Control rod failure a. Stuck control rod

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the selected Control Rod to move with normal Drive Water pressure.

2.2 This Malfunction allows selection of any Control Rod (137).

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:012
3.2 MALFUNCTION SYMBOL.:MRD012F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 30% power with a unit startup in progress.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after attempting to move the selected Control Rod and verifying that it will not insert or withdraw.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 2/20/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-086

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-086, CONTROL ROD UNCOUPLED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (12) Control rod failure b. Uncoupled Rods

2.0 AVAILABLE OPTIONS

2.1 NONE. The Drive Mechanism was not properly coupled to the Control Rod after maintenance.

2.2 This Malfunction allows selection of any Control Rod (137).

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:016
3.2 MALFUNCTION SYMBOL.:MRD016F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with all control rods fully inserted and the Reactor Mode Switch is in the Startup position. All prerequisites are met to begin control rod withdrawal.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after withdrawing the selected Control Rod and verifying that the Rod Over Travel alarm is actuated after reaching position 48.

6.0 BASE LINE DATA

6.3 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1/28/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-087

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-087, CONTROL ROD WITHDRAWAL DRIFT

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (12) Control rod failure c. Drifting Rods

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the selected Control Rods collet fingers, the rod will drift at approximately 2.0 inches/sec (.33 notches/sec).

2.2 This Malfunction allows selection of any Control Rod (137).

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:005
3.2 MALFUNCTION SYMBOL.:MRD005F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with all control rods fully inserted and the Reactor Mode Switch is in the Startup position. All prerequisites are met to begin control rod withdrawal.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the selected Control Rod has reached position "48".

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1/28/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-088

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-088, CONTROL ROD SLOW INSERTION DRIFT

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (12) Control rod failure c. Drifting Rods

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Control Rod to drift in at a rate of approximately 10 seconds/notch, due to leaking SCRAM Outlet and Inlet Valves.

2.2 This Malfunction allows selection of any Control Rod (137).

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:0C1
3.2 MALFUNCTION SYMBOL.:MRD001F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the selected Control Rod has reached the "00" position.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-089

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-089, CONTROL ROD FAST INSERTION DRIFT

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (12) Control rod failure c. Drifting Rods

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Control Rod to drift in at a rate of approximately 4 seconds/notch, due to leaking SCRAM Outlet and Inlet Valves.

2.2 This Malfunction allows selection of any Control Rod (137).

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:031
3.2 MALFUNCTION SYMBOL.:MRD027F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the selected Control Rod has reached the "00" position.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 8/07/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-090

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-090, CONTROL ROD DROP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (12) Control Rod failure d. Rod Drop

2.0 AVAILABLE OPTIONS

2.1 NONE. Malfunction 012, Stuck Control Rod and 016, Control Rod Uncoupled are activated, utilizing a Control Rod that has not been withdrawn past position "06". The Control Rod is then given a continuous withdraw signal to position "48" and both Malfunctions are REMOVED.

2.2 Both Malfunctions allow selection of any of 137 Control Rods.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:012 016
3.2 MALFUNCTION SYMBOL.:MRD012F MRD016F
3.3 MALFUNCTION MENU...:RD RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 30% reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 APRM A...:NIJAPRM(1)
4.2.2 APRM B...:NIJAPRM(2)
4.2.3 APRM C...:NIJAPRM(3)
4.2.4 APRM D...:NIJAPRM(4)
4.2.5 APRM E...:NIJAPRM(5)
4.2.6 APRM F...:NIJAPRM(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 8/7/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-091

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-091, CRD FLOW CONTROL VALVE A FAILS CLOSED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (13) Inability to drive Control Rods

2.0 AVAILABLE OPTIONS

2.1 NONE.This Malfunction causes CRD Flow Control Valve F002A to fail closed. Then sluggish rod movement or the inability to move Control Rods is verified by selecting any control rod and applying a continuous insert signal.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:017
3.2 MALFUNCTION SYMBOL.:MRD017F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 CRD Flow..........................RDWN004
4.2.2 Charging Water Header Pressure....RDPCHHDS
4.2.3 Drive Water Differential Pressure.RDDN008
4.2.4 Cooling Water Flow................RDWCLHD
4.2.5 Cooling Water Differential Press..RDDN011

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-9-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-092

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-092, CRD Pump Suction Filter Plugged

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (13) Inability to drive Control Rods

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the CRD Pump Suction Filter to plug at a rate of 10%/min. Then sluggish rod movement or the inability to move Control Rods is verified by selecting any control rod and applying a continuous insert signal.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:018
3.2 MALFUNCTION SYMBOL.:MRD018F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Pump Suction Filter Diff Press....RDDIFLA
4.2.2 CRD Flow..........................RDWN004
4.2.3 Charging Water Header Pressure....RDPCHHDS
4.2.4 Drive Water Differential Pressure.RDDN008
4.2.5 Cooling Water Flow................RDWCLHD
4.2.6 Cooling Water Differential Press..RDDN011

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-12-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

CRD PUMP INLET FILTER HI D/P ALARM IS INCORRECTLY SET

AT 10 PSID VERSUS 3 PSID. SSR 90-0496 WRITTEN.

DEFICIENCY TO BE RESOLVED BY 12/31.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-094

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-094, RWM LOSS OF POWER

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (13) Inability to drive Control Rods

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a loss of power to the RWM which results in an inability to move Control Rods.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:398
3.2 MALFUNCTION SYMBOL.:MRD044F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating below the Low Power Set Point with a unit startup in progress.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after an inability to move Control Rods has been verified.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 12/01/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-095

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-095, ROD BLOCK MONITOR (RBM) A FAILS DOWNSCALE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (13) Inability to drive Control Rods and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the A Channel RBM to fail downscale initiating a rod withdraw block.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:042
3.2 MALFUNCTION SYMBOL.:MRD038F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 50% steady state power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after a RBM Rod Withdrawal Block has been verified.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-097

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-097, ROD MOTION TIMER FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (13) Inability to drive Control Rods and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the Control Rod Motion Timer which deselects the selected Control Rod and actuates a select block.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:044
3.2 MALFUNCTION SYMBOL.:MRD040F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at less than 20% power with a unit startup in progress.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after a Select Block has been verified.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-099

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-099, MAIN TURBINE TRIP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (15) Turbine Trip

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the Manual Master Trip Button resulting in a Turbine Trip.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:169
3.2 MALFUNCTION SYMBOL.:MMS008F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Turbine Steam Flow...............:MSW4000
4.2.2 Total Steam Flow.................:MSW4111
4.2.3 Total Feedwater Flow.............:CFW1REV
4.2.4 Reactor Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Pressure (800 to 1100)...:NBPITAPT(32)
4.2.6 Reactor Power....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-099.1

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-099.1, UNIT 1, MAIN TURBINE TRIP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (15) Turbine Trip

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the Manual Master Trip Button resulting in a Turbine Trip. (NOTE: Utilize the Training Transient Report for verification)

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:169
3.2 MALFUNCTION SYMBOL.:MMS008F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with Unit 1 mode selected (CDIG, MI ,Unit 1 Simulation).

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Turbine Steam Flow................:MSW4000
4.2.2 Total Steam Flow..................:MSW4111
4.2.3 Total Feedwater Flow..............:CFW1REV
4.2.4 Reactor Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Pressure (800 to 1100)...:NBPITAPT(32)
4.2.6 Reactor Power.....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Brunswick Training Transient Report for Unit 1, Main Turbine Trip With Bypass Valves.

7.0 DATE PERFORMED: 1-27-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-100

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-100, MAIN GENERATOR TRIP

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (16) Generator Trip

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an electrical failure of the Generator Overcurrent Auxiliary Relay (74/51V-2) which will energize the Generator Backup Relay (86GB-2) and actuate a Generator lock out.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:299
3.2 MALFUNCTION SYMBOL.:MEE003F
3.3 MALFUNCTION MENU...:EE

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Turbine Steam Flow...............:MSW4000
4.2.2 Total Steam Flow.................:MSW4111
4.2.3 Total Feedwater Flow.............:CFW1REV
4.2.4 Reactor Water Level (150 to 210"):IARXLVL
4.2.5 Reactor Pressure (800 to 1100)...:NBPITAPT(32)
4.2.6 Reactor Power....................:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 12-23-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-102

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-102, HPCI INVERTER FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (17) Failure in automatic control system(s) that affect reactivity and core heat removal.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of relay E41-K603 resulting in a loss of the HPCI Inverter.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:263
3.2 MALFUNCTION SYMBOL.:MES015F
3.3 MALFUNCTION MENU...:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with Post LOCA (small line break) conditions, and the HPCI system is in service to control Reactor water level.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Reactor Water Level, NBLEVELT(5), is in FEET.

4.2.1 HPCI Pump Disch Press...........:HPP0003
4.2.2 HPCI Pump Disch Flow............:HPW0003
4.2.3 HPCI Turbine Speed..............:TMS6660S(4)
4.2.4 HPCI Steam Supply Pressure......:MSP4300
4.2.5 Reactor Water Level (0 to 210").:NBLEVELT(5)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 12-15-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-101

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-101, CORE SPRAY VALVE F005 FAILS TO OPEN

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (17) Failure in automatic control system(s) that affect reactivity and core heat removal.

2.0 AVAILABLE OPTIONS

2.1 This Malfunction causes the Inboard Injection Valve F005A(B) to close due to a logic failure.

2.2 This Malfunction allows selection of either F005A or F005B.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:259
3.2 MALFUNCTION SYMBOL.:MES011F
3.3 MALFUNCTION MENU...:ES
3.4 F005A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power. The malfunction is selected and set active. A large line break LOCA is then activated.

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 12/11/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-103

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-103, RCIC TURBINE SPEED CONTROL FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (17) Failure in automatic control system(s) that affect reactivity and core heat removal and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure in the speed reference section of the RCIC control logic resulting in a zero flow output signal.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:269
3.2 MALFUNCTION SYMBOL.:MES020F
3.3 MALFUNCTION MENU...:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with Post LOCA (small line break) conditions, and the RCIC system is in service to control Reactor water level. The HPCI System is inoperable (INOP).

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:
NOTE: Reactor Water Level, NBLEVELT(5), is in FEET.

4.2.1 RCIC Pump Discharge Pressure....:RJP0002
4.2.2 RCIC Pump Discharge Flow........:RJW0002T
4.2.3 RCIC Turbine Speed..............:TMS6660S(3)
4.2.4 Reactor Water Level (0 to 210").:NBLEVFLT(5)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 01/16/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-105

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-105, SPURIOUS REACTOR SCRAM

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (18) Reactor Trip

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes an inadvertent reactor scram.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER..:045
3.2 MALFUNCTION SYMBOL.:MRD001F
3.3 MALFUNCTION MENU...:RD

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)..........:NIJAPRM
4.2.2 Total Steam Flow..............:MSW4111
4.2.3 Total Feedwater Flow..........:CFW1REV
4.2.4 Reactor Pressure (800 to 1100):NBPITAPT(32)
4.2.5 Rx Water Level (150 to 210")..:IARXLVL
4.2.6 Total Core Flow...............:NBWFLOW(7)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-106

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-106, FEEDWATER HEATER #5 OUTLET LINE RUPTURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (20) Main steam line as well as main feed line break (both inside and outside containment)

2.0 AVAILABLE OPTIONS

2.1 Severity of 0 to 100% line break, located at the outlet of Feedwater Heater #5 (A or B).

2.2 Severity Rate of 0 to 60 minutes.

2.3 This Malfunction allows selection of either 5A or 5B Feedwater Heater.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:225
3.2 MALFUNCTION SYMBOL.:MCF029F
3.3 MALFUNCTION MENU...:CF
3.4 This Malfunction is tested with a Severity of 100% and a Severity Rate of 0 minutes.
3.5 FW Heater #5A Tested

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% reactor power with steady state conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1	RFP 2A Suction Flow...........	:CFW1RFP(1)
4.2.2	RFP 2B Suction Flow...........	:CFW1RFP(2)
4.2.3	RFP 2A Disch Pressure..........	:CFP1812
4.2.4	RFP 2B Disch Pressure..........	:CFP1822
4.2.5	Reactor Water Level (0 to 210")	:IARXLVL
4.2.6	Reactor Power..................	:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-26-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-107

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-107, SRM/IRM DRIVE MOTOR POWER FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the SRM/IRM Drive Motor breaker located at Distribution Panel 2AB-RX-411 to trip due to an electrical fault.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:103
3.2 MALFUNCTION SYMBOL.:MNI058F
3.3 MALFUNCTION MENU...:NI

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The IRM's are on scale above range 3 and the SRM's are partially withdrawn.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after verifying the SRM and IRM detectors will not drive in or out.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-108

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-108, RECIRC/APRM FLOW INSTRUMENT FAILS DOWNSCALE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes Flow Summer FY-K607B to fail downscale due to an electrical fault which will be indicative of zero Recirc System flow input to the APRM Flow Bias circuit.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:130
3.2 MALFUNCTION SYMBOL.:MNI062F
3.3 MALFUNCTION MENU...:NI

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power..........:NIJAPRM
4.2.2 Flow Unit A Recirc Flow.:NIFLWUT(1)
4.2.3 Flow Unit B Recirc Flow.:NIFLWUT(2)
4.2.4 Total Core Flow.........:NBWFLOW(7)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 11/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-109

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-109, SRM FAILS HIGH

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected SRM circuit to fail high (full upscale).

2.2 This Malfunction allows selection of either A, B, C, or D SRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:046
3.2 MALFUNCTION SYMBOL.:MNI001F
3.3 MALFUNCTION MENU...:NI
3.4 Tested SRM(s)......: A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The IRM's are on scale above range 3 and the SRM's are partially withdrawn.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 SRM A...............:NISSLCR(1)
4.2.2 SRM B...............:NISSLCR(2)
4.2.3 SRM C...............:NISSLCR(3)
4.2.4 SRM D...............:NISSLCR(4)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 01/09/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-110

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-110, SRM FAILS LOW

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected SRM circuit to fail low (full downscale).

2.2 This Malfunction allows selection of either A, B, C, or D SRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:047
3.2 MALFUNCTION SYMBOL.:MNI002F
3.3 MALFUNCTION MENU...:NI
3.4 Tested SRM(s)......: B

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The IRM's are on scale above range 3 and the SRM's are partially withdrawn.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 SRM A.........:NISSLCR(1)
4.2.2 SRM B.........:NISSLCR(2)
4.2.3 SRM C.........:NISSLCR(3)
4.2.4 SRM D.........:NISSLCR(4)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.3 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 01/08/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-111

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-111, SRM FAILS AS IS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected SRM circuit to fail as is (no change in count rate).

2.2 This Malfunction allows selection of either A, B, C, or D SRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:048
3.2 MALFUNCTION SYMBOL.:MNI003F
3.3 MALFUNCTION MENU...:NI
3.4 Tested SRM(s)......: C

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The IRM's are on scale above range 3 and the SRM's are partially withdrawn.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 SRM A.....:NISSLCR(1)
4.2.2 SRM B.....:NISSLCR(2)
4.2.3 SRM C.....:NISSLCR(3)
4.2.4 SRM D.....:NISSLCR(4)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-112

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-112, IRM FAILS HIGH

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected IRM circuit to fail high (full upscale).

2.2 This Malfunction allows selection of either A, B, C, D, F, G, or H IRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:058
3.2 MALFUNCTION SYMBOL.:MNI013F
3.3 MALFUNCTION MENU...:NI
3.4 Tested IRM(s)......: D

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The IRM's are on scale above range 3 and the SRM's are partially withdrawn.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 IRM A Recorder..:NISIPFP(1)
4.2.2 IRM B Recorder..:NISIPFP(2)
4.2.3 IRM C Recorder..:NISIPFP(3)
4.2.4 IRM D Recorder..:NISIPFP(4)
4.2.5 IRM E Recorder..:NISIPFP(5)
4.2.6 IRM F Recorder..:NISIPFP(6)
4.2.7 IRM G Recorder..:NISIPFP(7)
4.2.8 IRM H Recorder..:NISIPFP(8)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 01/08/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-113

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-113, IRM FAILS LOW

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected IRM circuit to fail low (full downscale).

2.2 This Malfunction allows selection of either B, C, E, F, G, or H IRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:061
3.2 MALFUNCTION SYMBOL.:MNI019F
3.3 MALFUNCTION MENU...:NI
3.4 Tested IRM(s)......: B

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The IRM's are on scale above range 3 and the SRM's are partially withdrawn.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 IRM A Detector..:RIS1IRM(1)
4.2.2 IRM A Recorder..:NISIPFP(1)
4.2.3 IRM B Recorder..:NISIPFP(2)
4.2.4 IRM C Recorder..:NISIPFP(3)
4.2.5 IRM D Recorder..:NISIPFP(4)
4.2.6 IRM E Recorder..:NISIPFP(5)
4.2.7 IRM F Recorder..:NISIPFP(6)
4.2.8 IRM G Recorder..:NISIPFP(7)
4.2.9 IRM H Recorder..:NISIPFP(8)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 01/08/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-114

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-114, IRM FAILS AS IS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected IRM circuit to fail as is (no change in count rate).

2.2 This Malfunction allows selection of either A, B, C, D or F IRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:059
3.2 MALFUNCTION SYMBOL.:MNI014F
3.3 MALFUNCTION MENU...:NI
3.4 Tested IRM(s)......: B

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The IRM's are on scale above range 3 and the SRM's are partially withdrawn.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 IRM A Detector..:RIS1IRM(1)
4.2.2 IRM A Recorder..:NISIPFP(1)
4.2.3 IRM B Recorder..:NISIPFP(2)
4.2.4 IRM C Recorder..:NISIPFP(3)
4.2.5 IRM D Recorder..:NISIPFP(4)
4.2.6 IRM E Recorder..:NISIPFP(5)
4.2.7 IRM F Recorder..:NISIPFP(6)
4.2.8 IRM G Recorder..:NISIPFP(7)
4.2.9 IRM H Recorder..:NISIPFP(8)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-115

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-115, APRM FAILS HIGH

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected APRM circuit to fail high (full upscale).

2.2 This Malfunction allows selection of either A, B, C, D, E, or F APRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:076
3.2 MALFUNCTION SYMBOL.:MNI031F
3.3 MALFUNCTION MENU...:NI
3.4 Tested APRM(s).....: F and D

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 APRM A......:NISAMTR(1)
4.2.2 APRM B......:NISAMTR(2)
4.2.3 APRM C......:NISAMTR(3)
4.2.4 APRM D......:NISAMTR(4)
4.2.5 APRM E......:NISAMTR(5)
4.2.6 APRM F......:NISAMTR(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 01/08/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-116

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-116, APRM FAILS LOW

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected APRM circuit to fail low (full downscale).

2.2 This Malfunction allows selection of either A, B, C, D, E, or F APRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:077
3.2 MALFUNCTION SYMBOL.:MNI037F
3.3 MALFUNCTION MENU...:NI
3.4 Tested APRM(s).....: A, B, C, D, E and F

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 APRM A......:NISAMTR(1)
4.2.2 APRM B......:NISAMTR(2)
4.2.3 APRM C......:NISAMTR(3)
4.2.4 APRM D......:NISAMTR(4)
4.2.5 APRM E......:NISAMTR(5)
4.2.6 APRM F......:NISAMTR(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 08/07/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-117

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-117, APRM FAILS AS IS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected APRM circuit to fail as is (no indicated change in power).

2.2 This Malfunction allows selection of either A, C, E, or F APRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:078
3.2 MALFUNCTION SYMBOL.:MNI043F
3.3 MALFUNCTION MENU...:NI
3.4 Tested APRM(s).....: A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 APRM A......:NISAMTR(1)
4.2.2 APRM B......:NISAMTR(2)
4.2.3 APRM C......:NISAMTR(3)
4.2.4 APRM D......:NISAMTR(4)
4.2.5 APRM E......:NISAMTR(5)
4.2.6 APRM F......:NISAMTR(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-118

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-118, LPRM FAILS HIGH

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected LPRM circuit to fail high (full upscale).

2.2 This Malfunction allows selection of any of the 124 LPRM's.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:092
3.2 MALFUNCTION SYMBOL.:MNI047F
3.3 MALFUNCTION MENU...:NI
3.4 Tested LPRM(s).....: 20-13B and 28-29C

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Only monitor the selected LPRM output and one other unaffected LPRM. The LPRM's must be manually selected at their associated LPRM or APRM meter.

4.2.1 LPRM A Meter......:NISAMTR(7)
4.2.2 LPRM B Meter......:NISAMTR(8)
4.2.3 APRM A............:NISAMTR(1)
4.2.4 APRM B............:NISAMTR(2)
4.2.5 APRM C............:NISAMTR(3)
4.2.6 APRM D............:NISAMTR(4)
4.2.7 APRM E............:NISAMTR(5)
4.2.8 APRM F............:NISAMTR(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 09/26/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

LPRM FAILURES ARE NOT ACCURATELY REFLECTED IN PMS (PROCESS COMPUTER) SUMMARIES. THIS DOES NOT AFFECT THE PERFORMANCE OF THE MALFUNCTION. PMS UPGRADE SCHEDULED FOR FOURTH QUARTER 1991.

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-119

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-119, LPRM FAILS LOW

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 [illegible] OPTIONS

2.1 NONE. This Malfunction causes the selected LPRM circuit to fail low (full downscale).

2.2 This Malfunction allows selection of any of the 124 LPRM's.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:093
3.2 MALFUNCTION SYMBOL.:MNI048F
3.3 MALFUNCTION MENU...:NI
3.4 Tested LPRM(s).....: 44-29D and 36-45A

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Only monitor the selected LPRM output and one other unaffected LPRM. The LPRM's must be manually selected at their associated LPRM or APRM meter.

4.2.1 LPRM A Mater......:NISAMTR(7)
4.2.2 LPRM B Meter......:NISAMTR(8)
4.2.3 APRM A............:NISAMTR(1)
4.2.4 APRM B............:NISAMTR(2)
4.2.5 APRM C............:NISAMTR(3)
4.2.6 APRM D............:NISAMTR(4)
4.2.7 APRM E............:NISAMTR(5)
4.2.8 APRM F............:NISAMTR(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 09/26/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-120

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-120, LPRM FAILS AS IS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected LPRM circuit to fail as is (no indicated change in power).

2.2 This Malfunction allows selection of any of the 124 LPRM's.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:094
3.2 MALFUNCTION SYMBOL.:MNI049F
3.3 MALFUNCTION MENU...:NI
3.4 Tested LPRM(s).....:20-13A and 04-37B

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Only monitor the selected LPRM output and one other unaffected LPRM. The LPRM's must be manually selected at their associated LPRM or APRM meter.

4.2.1 LPRM A Meter......:NISAMTR(7)
4.2.2 LPRM B Meter......:NISAMTR(8)
4.2.3 APRM A............:NISAMTR(1)
4.2.4 APRM B............:NISAMTR(2)
4.2.5 APRM C............:NISAMTR(3)
4.2.6 APRM D............:NISAMTR(4)
4.2.7 APRM E............:NISAMTR(5)
4.2.8 APRM F............:NISAMTR(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Training Simulator, latest revision.

7.0 DATE PERFORMED: 2-27-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-121

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-121, LPRM ERRATIC OPERATION

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected LPRM to spike 40% upscale for 1 second every 15 seconds. If applicable, this flux spike will cause the associated APRM to spike upscale at 15 second intervals.

2.2 This Malfunction allows selection of any of the 124 LPRM's.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:098
3.2 MALFUNCTION SYMBOL.:MNI053F
3.3 MALFUNCTION MENU...:NI
3.4 Selected LPRM(s)...: B, C

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE:Only monitor the selected LPRM output and one other <u>unaffected</u> LPRM. The LPRM's must be manually selected at their associated LPRM or APRM meter.

4.2.1 LPRM A Meter......:NISAMTR(7)
4.2.2 LPRM B Meter......:NISAMTR(8)
4.2.3 APRM A............:NISAMTR(1)
4.2.4 APRM B............:NISAMTR(2)
4.2.5 APRM C............:NISAMTR(3)
4.2.6 APRM D............:NISAMTR(4)
4.2.7 APRM E............:NISAMTR(5)
4.2.8 APRM F............:NISAMTR(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after approximately 4 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 PowerPlant Training Simulator, latest revision.

7.0 DATE PERFORMED: 9/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-122

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-122, SRM CHANNEL A STUCK DETECTOR

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a mechanical binding of the SRM A Detector. The detector will drive out approximately 10 inches and then stick.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:100
3.2 MALFUNCTION SYMBOL.:MNI055F
3.3 MALFUNCTION MENU...:NI

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The IRMs are on scale above range 3 and the SRMs are partially withdrawn.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 SRM A..............:RIS1SRM(1)
4.2.2 SRM B..............:RIS1SRM(2)
4.2.3 SRM C..............:RIS1SRM(3)
4.2.4 SRM D..............:RIS1SRM(4)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have been verified.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-12-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-123

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-123, IRM STUCK DETECTOR

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a mechanical binding of the selected IRM detector. The Detector will drive out approximately 10 inches and then stick.

2.2 This Malfunction allows selection of either C or F IRM.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:101
3.2 MALFUNCTION SYMBOL.:MNI056F
3.3 MALFUNCTION MENU...:NI
3.4 Selected IRM(s)....: C

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The Reactor Mode Switch has just been placed to the RUN mode and the IRM Detectors are ready to be withdrawn.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 IRM A......:RIS1IRM(1)
4.2.2 IRM B......:RIS1IRM(2)
4.2.3 IRM C......:RIS1IRM(3)
4.2.4 IRM D......:RIS1IRM(4)
4.2.5 IRM E......:RIS1IRM(5)
4.2.6 IRM F......:RIS1IRM(6)
4.2.7 IRM G......:RIS1IRM(7)
4.2.8 IRM H......:RIS1IRM(8)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have been verified.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 10/11/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-124

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-124, SRM/IRM OVERLAP INCORRECT

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the SRM/IRM overlap to be incorrect due to a calibration error.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:104
3.2 MALFUNCTION SYMBOL.:MNI059F
3.3 MALFUNCTION MENU...:NI

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The reactor is critical and the IRM's are just coming on scale.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 SRM A......:RIS1SRM(1)
4.2.2 SRM B......:RIS1SRM(2)
4.2.3 IRM A......:RIS1IRM(1)
4.2.4 IRM B......:RIS1IRM(2)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-8-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-125

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-125, APRM C INCONSISTENT WITH OTHERS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (21) Nuclear Instrumentation failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the APRM C to indicate approximately 20% lower than the other APRM's due to an Averaging Circuit failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:105
3.2 MALFUNCTION SYMBOL.:MNI060F
3.3 MALFUNCTION MENU...:NI

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 APRM A......:NISAMTR(1)
4.2.2 APRM B......:NISAMTR(2)
4.2.3 APRM C......:NISAMTR(3)
4.2.4 APRM D......:NISAMTR(4)
4.2.5 APRM E......:NISAMTR(5)
4.2.6 APRM F......:NISAMTR(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-4-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-126

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-126, REACTOR LEVEL TRANSMITTER B21-N004A FAILS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (22) Process instrumentation, alarms, and control system failures

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the output of reactor water level transmitter N004A to fail, simulating a low reactor water level.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:236
3.2 MALFUNCTION SYMBOL.:MNB007F
3.3 MALFUNCTION MENU...:NB

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Reactor Water Level is displayed in FEET of water.
4.2.1 Reactor Water Level (R606A)....:NBLEVELT(8)
4.2.2 Reactor Water Level (R606B)....:NBLEVELT(9)
4.2.3 Reactor Water Level (R606C)....:NBLEVELT(2)
4.2.4 Reactor Water Level (R608).....:XFD0207G
4.2.5 Total Steam Flow...............:MSW4111
4.2.6 Total Feedwater Flow...........:CFW1REV
4.2.7 Reactor Power..................:NIJAPRM(1)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-4-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-127

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-127, DG AUTO START FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (23) Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the auto start relay and prevents the selected DG from auto starting.

2.2 This Malfunction allows selection of #1, #2, #3, or #4 Diesel Generator.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:320
3.2 MALFUNCTION SYMBOL.:MDG002F
3.3 MALFUNCTION MENU...:DG

3.4 To ensure the maximum effects of this Malfunction are verified during certification testing either #3 or #4 Diesel Generator should be selected.

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 4 KV Bus E3 Voltage...........:EDV0301G
OR
4 KV Bus E4 Voltage...........:EDV0208G

4.2.2 DG #3 Terminal Voltage........:EEV2601G(1,1)
OR
DG #4 Terminal Voltage........:EEV2601G(2,1)

4.2.3 Voltage at Switchgear 2D......:EDV0204G
OR
Voltage at Switchgear 2C......:EDV0203G

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 9/27/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-128

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-128, ADS LOGIC FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (23) Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the ADS logic which will prevent the ADS timers from initiating.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:113
3.2 MALFUNCTION SYMBOL.:MES001F
3.3 MALFUNCTION MENU...:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power. The HPCI and RCIC Systems are inoperative.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Steam Flow.................:MSW4111
4.2.2 Total Feedwater Flow............:CFW1REV
4.2.3 Reactor Water Level (0 to 210").:NBLEVELT(5)
4.2.4 Reactor Pressure (800 to 1100)..:NBPITAPT(32)
4.2.5 Reactor Pressure (0 to 1500)....:NBPITAPT(31)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed and the ADS initiation setpoints have been exceeded.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 01/13/91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-129

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-129, HPCI INJECTION VALVE FAILS TO AUTO OPEN

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (23) Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes failure of the HPCI Injection Valve, E41-F006, to automatically open upon receipt of an initiation signal, due to a bad relay contact.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:392
3.2 MALFUNCTION SYMBOL.:MES028F
3.3 MALFUNCTION MENU...:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Reactor Water Level, NBLEVELT(5), is in FEET.

4.2.1 HPCI Pump Disch Flow............:HPW0003
4.2.2 HPCI Turbine Speed..............:TMS6660S(4)
4.2.3 HPCI Steam Supply Pressure......:MSP4300
4.2.4 Reactor Water Level (0 to 210").:NBLEVELT(5)
4.2.5 Reactor Pressure (0 to 1500)....:NBPITAPT(31)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 12-15-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-130

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-130, HPCI LOGIC BUS A - AUTO START FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (23) Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes failure of HPCI Logic Bus A, due to a blown fuse (E41 F1), which will prevent a HPCI System auto initiation.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:261
3.2 MALFUNCTION SYMBOL.:MES013F
3.3 MALFUNCTION MENU...:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Reactor Water Level, NBLEVELT(5), is in FEET.

4.2.1 HPCI Pump Disch Flow............:HPW0003
4.2.2 HPCI Turbine Speed..............:TMS6660S(4)
4.2.3 HPCI Steam Supply Pressure......:MSP4300
4.2.4 Reactor Water Level (0 to 210").:NBLEVELT(5)
4.2.5 Reactor Pressure (0 to 1500)....:NBPITAPT(31)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 12-15-90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-131

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-131, RCIC LOGIC BUS B - AUTO START FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (23) Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes failure of RCIC Logic Bus B, due to a ground fault between E11-R79A and E11-K80A which results in a blown fuse (F1) and prevents RCIC System auto initiation.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:267
3.2 MALFUNCTION SYMBOL.:MES019F
3.3 MALFUNCTION MENU...:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

NOTE: Reactor Water Level, NBLEVELT(5), is in FEET.

4.2.2 RCIC Pump Disch Flow............:RJW0002T
4.2.3 RCIC Turbine Speed..............:TMS6660S(3)
4.2.4 Reactor Water Level 0 to 210"..:NBLEVELT(5)
4.2.5 Reactor Pressure 0 to 1500.....:NBPITAPT(31)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest Revision.

7.0 DATE PERFORMED: 1-16-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-132

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-132, DEFEAT OF GROUP 2 ISOLATION LOGIC

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (23) Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction results in Group 2 PCIS valves failing to automatically isolate upon receipt of an isolation signal.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:393
3.2 MALFUNCTION SYMBOL.:MXY013F
3.3 MALFUNCTION MENU...:XY

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

5.0 TEST DURATION

5.1 The simulator will be placed in the FREEZE mode after the effects of the Malfunction have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 9/05/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-133

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-133, RHR SHUTDOWN COOLING HIGH PRESSURE PERMISSIVE FAILS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (23) Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes pressure switch B32-PS-N018A to fail which prevents manual operation of the E11-F009, RHR System S/D Cooling Mode Suction Valve.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:296
3.2 MALFUNCTION SYMBOL.:MRH015F
3.3 MALFUNCTION MENU...:RH

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit shutdown/cool down in progress. Reactor Pressure is less than 125 psig and RHR Loop A is ready to align for shutdown cooling.

5.0 TEST DURATION

5.1 The test will be stopped after malfucntion test has been completed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 12/01/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-134

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-134, ATWS

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (24) Failure of the automatic reactor trip system

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the automatic scram signal to a selected amount of Control Rods.

2.2 This Malfunction allows selection of the following: #1 = 5 Rods, #2 = 25 Rods, #3 = 42 Rods, #4 = NO Rod Movement (100% failure). For the purpose of Certification Testing, only the maximum effects of the malfunction will be tested (#4).

3.0 TE'' 'D OPTIONS

MALFUNCTION NUMBER.:382
MALFUNCTION SYMBOL.:MRP008F
3.3 MALFUNCTION MENU...:RP

4.0 INITIAL CONDITIONS

4.1 The simulator is opera''ng at approximately 100% steady state reactor power. Select and activate Malfunction 382, ATWS, with a severity of #4 and then initiate an Automatic Reactor Scram signal.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.1 APRM A......:NIJAPRM(1)
4.2 APRM B......:NIJAPRM(2)
4.3 APRM C......:NIJAPRM(3)
4.4 APRM D......:NIJAPRM(4)
4.5 APRM E......:NIJAPRM(5)
4.6 APRM F......:NIJAPRM(6)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-4-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-135

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-135, AUTO SCRAM DEFEAT

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (24) Failure of the automatic reactor trip system

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes a failure of the automatic scram relays.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:110
3.2 MALFUNCTION SYMBOL.:MRP005F
3.3 MALFUNCTION MENU...:RP

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power. Select and activate Malfunction 110, Auto Scram Defeat and then initiate an Automatic reactor scram signal.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)..............:NIJAPRM
4.2.2 Total Steam Flow..................:MSW4111
4.2.3 Total Feedwater Flow..............:CFW1REV
4.2.4 Reactor Pressure (800 to 1100)....:NBPITAPT(32)
4.2.5 Reactor Water Level (150 to 210").:IARXLVL
4.2.6 Gross Generator Electric Power....:EGJGMWE
4.2.7 Total Core Flow...................:NBWFLOW(7)

5.0 TEST DURATION

5.1 The recording device will be stopped after the effects of the Malfunction have been verified.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-4-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-136

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-136, EHC PRESSURE REGULATOR FAILS HIGH

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (25) Reactor pressure control system failure including turbine bypass failure and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the "A" EHC Pressure Regulator to fail high (Control Valves full open and Bypass Valves partially open) due to a sensor failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:162
3.2 MALFUNCTION SYMBOL.:MMS003F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:
4.2.1 Reactor Power (APRM)............:NIJAPRM
4.2.2 Total Steam Flow................:MSW4111
4.2.3 Total Feedwater Flow............:CFW1REV
4.2.4 Reactor Pressure (800 to 1100).:NBPITAPT(32)
4.2.5 Reactor Water Level (150-210")..:IARXLVL
4.2.6 Total Core Flow.................:NBWFLOW(7)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 01/28/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-137

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-137, EHC PRESSURE REGULATOR FAILS LOW

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (25) Reactor pressure control system failure including turbine bypass failure and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes EHC Pressure Regulator A to fail low (Control Valves go closed) due to a sensor failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:163
3.2 MALFUNCTION SYMBOL.:MMS004F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM).............:NIJAPRM
4.2.2 Total Steam Flow.................:MSW4111
4.2.3 Total Feedwater Flow.............:CFW1REV
4.2.4 Reactor Pressure (800 to 1100)...:NBPITAPT(32)
4.2.5 Reactor Water Level (150 to 210"):IARXLVL
4.2.6 Total Core Flow..................:NBWFLOW(7)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 09/01/89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-138

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-138, EHC PRESSURE REGULATOR OSCILLATION

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (25) Reactor pressure control system failure including turbine bypass failure and (22) Process Instrumentation, Alarms, and Control System Failures.

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes EHC Pressure Regulator to oscillate (Control Valves cycle slightly open and closed) due to an intermittent sensor failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:168
3.2 MALFUNCTION SYMBOL.:MMS007F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Reactor Power (APRM)..............:NIJAPRM
4.2.2 Total Steam Flow.. ....:MSW4111
4.2.3 Total Feedwater Flow..............:CFW1REV
4.2.4 Reactor Pressure (800 to 1100)...:NBPITAPT(32)
4.2.5 Reactor Water Level (150 to 210").:IARXLVL
4.2.6 Total Core Flow...................:NBWFLOW(7)

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 01/28/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-139

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-139, TURBINE BYPASS VALVE #1 FAILS OPEN

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (25) Reactor pressure control system failure including turbine bypass failure

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the #1 Bypass Valve to fail open due to a Bypass Valve actuator failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:180
3.2 MALFUNCTION SYMBOL.:MMS019F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Steam Flow....................:MSW4111
4.2.2 Turbine Steam Flow..................:MSW4000
4.2.3 Total Feedwater Flow................:CFW1REV
4.2.4 Reactor Pressure (800 to 1100)....:NBPITAPT(32)
4.2.5 Reactor Water Level (150 to 210").:IARXLVL
4.2.6 Reactor Power (APRM)..............:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-4-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-140

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-140, TURBINE BYPASS VALVE #1 FAILS CLOSED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions. (25) Reactor pressure control system failure including turbine bypass failure

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the #1 Bypass Valve to fail closed due to a Bypass Valve actuator failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:180A
3.2 MALFUNCTION SYMBOL.:MMS020F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The required number of Bypass Valves are open and the Main Turbine is warmed and ready to roll.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Steam Flow..................:MSW4111
4.2.2 Turbine Steam Flow................:MSW4000
4.2.3 Total Feedwater Flow..............:CFW1REV
4.2.4 Reactor Pressure (800 to 1100)....:NBPITAPT(32)
4.2.5 Reactor Water Level (150 to 210"):IARXLVL
4.2.6 Reactor Power (APRM)..............:NIJAPRM
4.2.7 Bypass Valve #1 Position.........:G3B02G16

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-26-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-141

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-141, ALL TURBINE BYPASS VALVES FAIL OPEN

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (25) Reactor pressure control system failure including turbine bypass failure

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction will cause all Turbine Bypass Valves to open due to a Bypass Valve controller failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:181
3.2 MALFUNCTION SYMBOL.:MMS021F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state reactor power.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1	Total Steam Flow..................	:MSW4111
4.2.2	Turbine Steam Flow................	:MSW4000
4.2.3	Total Feedwater Flow..............	:CFW1REV
4.2.4	Reactor Pressure (800 to 1100)..	:NBPITAPT(32)
4.2.5	Reactor Water Level (150 to 210").	:IARXLVL
4.2.6	Reactor Power (APRM)..............	:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1/23/90

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-142

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-142, ALL TURBINE BYPASS VALVES FAIL CLOSED

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (25) Reactor pressure control system failure including turbine bypass failure

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes all Bypass Valves to fail closed due to a Bypass Valve controller failure.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:181A
3.2 MALFUNCTION SYMBOL.:MMS022F
3.3 MALFUNCTION MENU...:MS

4.0 INITIAL CONDITIONS

4.1 The simulator is operating with a unit startup in progress. The required number of Bypass Valves are open and the Main Turbine is warmed and ready to roll.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Total Steam Flow..................:MSW4111
4.2.2 Turbine Steam Flow................:MSW4000
4.2.3 Total Feedwater Flow..............:CFW1REV
4.2.4 Reactor Pressure (800 to 1100)....:NBPITAPT(32)
4.2.5 Reactor Water Level (150 to 210").:IARXLVL
4.2.6 Reactor Power (APRM)..............:NIJAPRM

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or unit conditions have stabilized.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-20-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-143

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-143, DRYWELL COOLING FAN DAMPER FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Drywell Cooling Fan Damper to close due to a mechanical failure of VA-SV-930.

2.2 This Malfunction allows selection of Drywell Cooling Fan A, B, C, or D. For the purpose of Certification Testing all four fan dampers should be failed simultaneously.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:350A
3.2 MALFUNCTION SYMBOL.:MCA003F
3.3 MALFUNCTION MENU...:CA

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Drywell Temperature (at 70'):CAT0410
4.2.2 Drywell Pressure............:CAP0010

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a high Drywell pressure scram has occurred.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-3-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-144

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-144, DRYWELL COOLING FAN FAILURE

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (8) Loss of component cooling system or cooling to individual components

2.0 AVAILABLE OPTIONS

2.1 NONE. This Malfunction causes the selected Drywell Cooling Fan shaft to break.

2.2 This Malfunction allows selection of Drywell Cooling Fan A, B, C, or D. For the purpose of Certification Testing all four cooling fans should be failed simultaneously.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:357
3.2 MALFUNCTION SYMBOL.:MCA007F
3.3 MALFUNCTION MENU...:CA

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1 Drywell Temperature (at 70').:CAT0410
4.2.2 Drywell Pressure.............:CAP0010

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed or a high Drywell pressure scram has occurred.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 1-4-91

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE

PERFORMANCE TEST ABSTRACT
PTA-MA-145

1.0 PROCEDURE TITLE/ANSI 3.5 REFERENCE

1.1 STP-MA-145, ADS VALVE FAILS OPEN

1.2 ANSI/ANS 3.5 1985, Section 3.1.2 Plant Malfunctions, (1) Loss of Coolant (d) failure of safety and relief valves

2.0 AVAILABLE OPTIONS

2.1 This Malfunction causes the selected ADS Valve to drift full open.

2.1 This Malfunction allows selection of either F013A, F013C or F013H ADS Valves.

3.0 TESTED OPTIONS

3.1 MALFUNCTION NUMBER.:156
3.2 MALFUNCTION SYMBOL.:MES002F
3.3 MALFUNCTION MENU...:ES

4.0 INITIAL CONDITIONS

4.1 The simulator is operating at approximately 100% steady state power with equilibrium xenon conditions.

4.2 A recording device is setup to record the following test parameters simultaneously versus time with a resolution of 0.5 seconds or less:

4.2.1	Total Steam Flow............	:MSW4111
4.2.2	B21-F013A Tailpipe Temp.....	:NBTRVLA(1)
	OR	
	B21-F013C Tailpipe Temp.....	:NBTRVLB(1)
	OR	
	B21-F013H Tailpipe Temp.....	:NBTRVLD(1)
4.2.3	MSL A Steam Flow............	:NBWFLOW(16)
	OR	
	MSL B Steam Flow............	:NBWFLOW(17)
	OR	
	MSL D Steam Flow............	:NBWFLOW(19)
4.2.4	Suppression Pool Temperature	:CAT2120
4.2.5	Suppression Pool Level......	:CAL012F

5.0 TEST DURATION

5.1 The recording device will be stopped after 10 minutes has elapsed.

6.0 BASE LINE DATA

6.1 Malfunction Cause and Effect for Brunswick Unit 2 Power Plant Training Simulator, latest revision.

7.0 DATE PERFORMED: 12-04-89

8.0 DEFICIENCIES FOUND DURING TESTING, CORRECTIVE ACTION TAKEN OR PLANNED, AND ASSOCIATED DATES.

NONE

9.0 EXCEPTIONS TAKEN AS A RESULT OF TEST PERFORMANCE, INCLUDING JUSTIFICATION.

NONE