FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT UNIT 3
SIMULATOR CERTIFICATION UPDATE NUMBER 1

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1.0 INTRODUCTION

In accordance with the requirements of 10 CFR 55.45 (b)(5)(ii) and (b)(5)(vi), this report is submitted for the Turkey Point Unit 3 Simulator. Turkey Point Unit 4 training will be performed using the Unit 3 Training Simulator. Changes to the test plan as described in this update do not change the basis for the Unit 4 certification. The differences between Unit 3 and Unit 4 were reviewed by the Simulator Configuration Review Board (SCRB)[1] and it was determined that none will have a negative effect on operator training or examinations.

This report presents the information required to be submitted on a four year cycle per the referenced sections of 10 CFR 55.45. Included herein are the certification tests completed during the previous four years, outstanding Simulator Discrepancy Reports (DRs), and the schedule for completion of these DRs.

Experience gained during initial certification testing and the testing during the first four year cycle, changes to the plant, and the availability of plant data have resulted in some changes to the plan. The changes made to the test plan for the next four year cycle are presented along with a discussion of the basis for the changes. The changes in the plan are organized into the following three categories: Changes, Deletions, and Additions. Eight tests have been changed, ten tests have been deleted, and eleven tests have been added. Changes to the Turkey Point Simulator test plan have been reviewed and approved by the SCRB.

The certification test plan is presented for each of the next four years and the abstracts for the tests that have been added or changed are included in Appendix A.

[1] The Turkey Point SCRB was established by administrative procedure 0-ADM-305, Simulator Configuration Management. The SCRB provides overall control and direction of changes to the Simulator. The SCRB also reviews and approves the Certification test program and test results. Membership on the SCRB is selected per the guidelines of the Institute of Nuclear Operations, "Simulator Configuration Management System," INPO 87-016, August 1987.

2.0 SIMULATOR TESTS COMPLETED (1991 - 1994)

2.1 1991 TESTS

TEST #	TEST DESCRIPTION	COMPLETION DATE
MFW-002	Loss of Normal Feedwater	06-27-91
MFW-007	Equivalent TMI-2 Scenario	11-14-91
MGG-002	Loss of 4KV Bus 3A	05-09-91
MGG-003	Loss of 4KV Bus 3B	05-09-91
MGG-004	Loss of All AC	05-24-91
MMP-001	Loss of Vital AC Bus 3P06	05-24-91
MMP-002	Loss of Vital AC Bus 3P07	05-24-91
MMP-003	Loss of Vital AC Bus 3P08	05-24-91
MMP-004	Loss of Vital AC Bus 3P09	05-30-91
MMP-005	Loss of DC Bus 3A (3D01)	05-30-91
MMP-006	Loss of DC Bus 3B (3D23)	05-30-91
MMP-007	Loss of DC Bus 4A (4D01)	05-30-91
MMP-008	Loss of DC Bus 4B (4D23)	05-24-91
MRC-006	Loss of a Single RCP With Power Below P-8	06-28-91
MRC-007	Stuck Open Spray Valve	06-28-91
MSP-001	Bus Stripping and Load Sequencing Tests	11-14-91
NPE-002	Plant Startup Cold Shutdown to Hot Standby	12-17-91
NPE-003	Plant Startup from Hot Standby to Rated Power	12-17-91
SUR-001	Initial Criticality after Refueling, OP-0204.3	11-27-91
SUR-002	Nuclear Design Check Tests During Startup Sequence after Refueling, OP-0204.5	12-17-91
SUR-026	Engineered Safeguards Integrated Test, 3-OSP-203	12-17-91
SUR-030	Full Length RCC - Periodic Exercise, OP-1604.1	06-25-91
SUR-031	Inducing Xenon Oscillations to Produce Various Incore Axial Offsets, OP-12304.8	06-25-91
SUR-032	Normal Operation of Incore Moveable Detector System and Power Distribution Surveillance, OP-12404.1	11-14-91

1991 TESTS (CONTINUED)

ANNUAL TESTS

TEST #	TEST DESCRIPTION	COMPLETION DATE
MFW-003	Loss of Normal and Emergency Feedwater	12-18-91
MRC-002	Large Break LOCA Inside Containment With Loss Of Offsite Power	06-28-91
MRC-004	PORV Failure (Open) Without High Pressure Injection	12-17-91
MRC-005	Loss of Forced Reactor Coolant Flow	07-01-91
MRX-001	Spurious Rod Position Indication Resulting in Maximum Rate Runback To 70% Power and Maximum Rate Return to Full Power	06-25-91
MRX-009	Manual Reactor Trip from 100% Power	06-25-91
MSG-001	Main Steam Line Break Inside Containment	12-18-91
MSG-003	Simultaneous Closure of All MSIV's	11-14-91
MTU-001	Turbine Trip Which Does Not Cause Automatic Reactor Trip	06-27-91
SST-001	Steady State 45% Power Heat Balance	11-27-91
SST-002	Steady State 75% Power Heat Balance	11-27-91
SST-003	Steady State 100% Power Heat Balance	12-18-91
SST-004	100% Power 60 min Null Transient	11-14-91

1991 TESTS (CONTINUED)

As a result of major plant changes that were incorporated into the Simulator in 1991, the following tests were also run. MGG-005 and MGG-006 are new. The balance of the tests were part of the original certification test plan.

TEST #	TEST DESCRIPTION	COMPLETION DATE
MFW-008 [1]	Loss of Feedwater / ATWS	12-17-91
MGG-005 [2]	Loss of 4KV Bus 3C	05-09-91
MGG-006 [2]	Loss of 4KV Bus 3D	05-09-91
MRC-001 [1]	Steam Generator Tube Rupture	12-17-91
MRC-003 [1]	Small Break LOCA Inside Containment	05-24-91
MRC-008 [1]	Loss of B and C Reactor Coolant Pumps at 100% Power	06-28-91
RTT-001 [2]	Simulator Real Time Test	05-09-91
RTT-002 [2]	Simulator Real Time Validation Test	05-09-91
SUR-003 [2]	EDG 8 Hour Load and Load Rejection Test, OP-4304.3	05-09-91
SUR-009 [2]	Reactor Protection Test, 3-OSP-049.1	11-14-91
SUR-021 [2]	Standby Steam Generator Feedwater Pumps / Cranking Diesels Test, 0-OSP-074.4	05-09-91

[1] RTD bypass loop removal / EAGLE-21 installation

[2] Emergency Power System Enhancement (EPSE) project

2.2 1992 TESTS

TEST #	TEST DESCRIPTION	COMPLETION DATE
MCV-001	Uncontrolled Maximum Rate Boron Dilution	07-16-92
MCV-002	Charging System Failures	06-10-92
MCV-004	Letdown and Volume Control Tank System Operations and Malfunctions	07-16-92
MFW-004	Feedwater Line Break Inside Containment	07-10-92
MFW-006	Failure of Steam Generator Level Channel Providing Input to the Feedwater Controller	07-16-92
MRC-003	Small Break LOCA Inside Containment	07-10-92
MSG-006	Closure of a Single MSIV At Several Different Power Levels	06-10-92
MTU-003	Turbine Lube Oil System (Bearings)	12-01-92
MTU-004	Turbine Gland Seal System	06-10-92
MTU-005	Turbine Turning Gear Operation	12-01-92
MTU-009	Turbine Lube Oil Control & Auto-Stop Oil	06-10-92
MTU-010	Turbine Lube Oil Pump & Motor	05-08-92
MTU-011	Failure of Turbine Control Valve Spring	07-16-92
NPE-005	Plant Shutdown from Rated Power to Hot Standby	06-19-92
NPE-006	Cooldown from Hot Standby to Cold Shutdown	07-10-92
SUR-004	Component Cooling Water Pumps Low Header Pressure Start Test, 3-OSP-030.5	05-08-92
SUR-007	CVCS Boric Acid Transfer Flow Test, 3-OSP-046.2	03-19-92
SUR-008	Boric Acid Transfer Pump 3B Transfer and Control Switch Test, 3-OSP-046.5	03-19-92
SUR-009	Reactor Protection System Logic Test, 3-OSP-049.1	05-08-92
SUR-012	Emergency Containment Filter Fans Operating Test, 3-OSP-056.1	03-19-92
SUR-015	Intermediate Range Nuclear Instrumentation Analog Channel Operational Test, 3-OSP-059.2	03-19-92
SUR-017	Power Range Nuclear Instrumentation Analog Channel Operational Test, 3-OSP-059.4	05-08-92
SUR-020	Main Steam Isolation Valve Closure Test	07-10-92

1992 TESTS (CONTINUED)

ANNUAL TESTS

TEST #	TEST DESCRIPTION	COMPLETION DATE
MFW-003	Loss of Normal and Emergency Feedwater	12-14-92
MRC-002	Large Break LOCA Inside Containment With Loss Of Offsite Power	07-10-92
MRC-004	PORV Failure (Open) Without High Pressure Injection	07-16-92
MRC-005	Loss of Forced Reactor Coolant Flow	06-10-92
MRX-001	Spurious Rod Position Indication Resulting in Maximum Rate Runback To 70% Power and Maximum Rate Return To Full Power	05-08-92
MRX-009	Manual Reactor Trip from 100% Power	05-08-92
MSG-001	Main Steam Line Break Inside Containment	12-14-92
MSG-003	Simultaneous Closure of All MSIV's	06-10-92
MTU-001	Turbine Trip Which Does Not Cause Automatic Reactor Trip	05-08-92
SST-001	Steady State 45% Power Heat Balance	12-15-92
SST-002	Steady State 75% Power Heat Balance	12-01-92
SST-003	Steady State 100% Power Heat Balance	07-17-92
SST-004	100% Power 60 min Null Transient	06-10-92

1992 TESTS (CONTINUED)

As a result of protection system hardware changes and major Simulator upgrades incorporated in 1992, the following tests were also run.

TEST #	TEST DESCRIPTION	COMPLETION DATE
MRX-002 [1]	Loss of Protection System Channel	12-15-92
MSS-003 [2]	Loss of RHR While in Cold Shutdown	07-10-92
MSS-004 [2]	Loss of Inventory during a Shutdown and Partial Draindown Condition	07-10-92
NPE-001 [2]	Plant Fill and Vent from a Partial Draindown to a Solid Pressurizer	07-17-92

[1] Installation of EAGLE-21 hardware in the Simulator
[2] Simulator draindown model upgrade

2.3 1993 TESTS

TEST #	TEST DESCRIPTION	COMPLETION DATE
MCS-001	Component Cooling Water Operations and Malfunctions Up To and Including Total Loss of CCW	11-18-93
MFW-001	Loss of Vacuum Tests, Including Loss of Condenser Level Control	12-06-93
MGG-001	Generator Trip	08-27-93
MRC-001	Steam Generator Tube Rupture	08-10-93
MRC-008	Loss of B and C Reactor Coolant Pumps at 100% Power	11-18-93
MRX-003	Nuclear Instrumentation Failure During Startup	11-18-93
MRX-006	Dropped Control Rod	12-06-93
MRX-007	Dropped With Inability to Drive Control Rods	11-18-93
MSG-004	Transmitter Failure Resulting In Maximum Atmospheric Dump Demand	12-06-93
MSG-005	Failure of Reference Temperature to Steam Dumps	11-18-93
MTU-002	Turbine Trip from 100% Power	11-18-93
NPE-001	Plant Fill and Vent from a Partial Drain Down to a Solid Pressurizer	11-15-93
SUR-003	EDG 8 Hour Load and Load Rejection Test, OP-4304.3	11-18-93
SUR-005	Reactor Coolant System Leak Rate Calculations, 3-OSP-041.1	08-27-93
SUR-010	RHR MOV's/System Pressure Interlock Test, 3-OSP-050.7	08-27-93
SUR-011	RHR MOV's 750, 751, 862, 863, Interlock Test, 3-OSP-050.8	08-27-93
SUR-021	Standby Steam Generator Feedwater Pumps /Cranking Diesels Test, 0-OSP-074.4	08-27-93
SUR-022	Auxiliary Feedwater Train 1 Operability Verification, 3-OSP-075.1	08-27-93
SUR-024	Main Turbine Valves Operability Test, 3-OSP-089	11-18-93

1993 TESTS (CONTINUED)

ANNUAL TESTS

TEST #	TEST DESCRIPTION	COMPLETION DATE
MFW-003	Loss of Normal and Emergency Feedwater	08-10-93
MRC-002	Large Break LOCA Inside Containment With Loss Of Offsite Power	12-06-93
MRC-004	PORV Failure (Open) Without High Pressure Injection	08-10-93
MRC-005	Loss of Forced Reactor Coolant Flow	11-18-93
MRX-001	Spurious Rod Position Indication Resulting in Maximum Rate Runback To 70% Power and Maximum Rate Return To Full Power	11-18-93
MRX-009	Manual Reactor Trip from 100% Power	08-27-93
MSG-001	Main Steam Line Break Inside Containment	08-10-93
MSG-003	Simultaneous Closure of All MSIV's	08-27-93
MTU-001	Turbine Trip Which Does Not Cause Automatic Reactor Trip	11-18-93
SST-001	Steady State 45% Power Heat Balance	11-15-93
SST-002	Steady State 75% Power Heat Balance	11-15-93
SST-003	Steady State 100% Power Heat Balance	11-15-93
SST-004	100% Power 60 min Null Transient	08-27-93

2.4 1994 TESTS

TEST #	TEST DESCRIPTION	COMPLETION DATE
MCN-001	Containment Spray System Operations and Malfunctions	08-09-94
MCS-002	Intake Cooling Water System Operations and Malfunctions	03-24-94
MCS-003	Turbine Plant Cooling Water Operation and Malfunctions	03-24-94
MCS-004	Instrument Air System Operation and Malfunctions	03-24-94
MCV-003	Charging Line Break Outside Containment	07-08-94
MCV-005	Non-Regenerative Heat Exchanger Tube Leak	03-24-94
MFW-005	Main Feedwater Line Break Outside Containment	05-17-94
MFW-008	Loss of Normal Feedwater/ATWS	08-05-94
MRX-002	Loss of Protection System Channel	06-06-94
MRX-004	Stuck Control Rod	07-08-94
MRX-005	Uncoupled Control Rod Test	07-08-94
MRX-008	Fuel Cladding Failure Resulting in High Reactor Coolant Activity	08-05-94
MSG-002	Main Steam Line Break Outside Containment	07-08-94
MSS-001	Small Leak in Safety Injection Piping Outside Containment	05-17-94
MSS-002	Accumulator Operations and Malfunctions	08-05-94
MSS-003	Loss of RHR While in Cold Shutdown	05-17-94
MSS-004	Loss of Inventory During A Shutdown and Partial Draindown Condition	05-17-94
MTU-006	Hydrogen Seal Oil	06-06-94
MTU-008	Hydrogen Cooling	06-06-94
NPE-004	Reactor Trip Followed By Recovery to Rated Power	08-09-94
RTT-001	Simulator Real Time Test	05-17-94
RTT-002	Simulator Real Time Test Validation Test	05-17-94
SUR-014	Source Range Nuclear Instrumentation Analog Channel Operational Test, 3-OSP-059.1	03-24-94
SUR-016	Intermediate Range NIS Setpoint Verification, 3-OSP-059.3	08-05-94

1994 TESTS (CONTINUED)

SUR-018	Power Range Nuclear Instrumentation Shift Checks and Daily Calibration, 3-OSP-059.5	03-24-94
SUR-019	Process Radiation Monitoring Operability Test, 3-OSP-067.1	08-05-94
SUR-029	Operational Test of MOV-535, 536, and PORV 455C,456, OP-1300.2	03-24-94

ANNUAL TESTS

TEST #	TEST DESCRIPTION	COMPLETION DATE
MFW-003	Loss of Normal and Emergency Feedwater	05-17-94
MRC-002	Large Break LOCA Inside Containment With Loss Of Offsite Power	05-17-94
MRC-004	PORV Failure (Open) Without High Pressure Injection	05-17-94
MRC-005	Loss of Forced Reactor Coolant Flow	04-29-94
MRX-001	Spurious Rod Position Indication Resulting in Maximum Rate Runback To 70% Power and Maximum Rate Return To Full Power	03-24-94
MRX-009	Manual Reactor Trip from 100% Power	03-24-94
MSG-001	Main Steam Line Break Inside Containment	05-17-94
MSG-003	Simultaneous Closure of All MSIV's	04-29-94
MTU-001	Turbine Trip Which Does Not Cause Automatic Reactor Trip	06-06-94
SST-001	Steady State 45% Power Heat Balance	08-05-94
SST-002	Steady State 75% Power Heat Balance	08-05-94
SST-003	Steady State 100% Power Heat Balance	08-05-94
SST-004	100% Power 60 min Null Transient	03-24-94

3.0 CERTIFICATION TEST CHANGES (1995 - 1998)

Experience gained during initial certification testing and during the first four year cycle has resulted in several changes to the Turkey Point Simulator Certification Test plan. Furthermore, the availability of plant data has resulted in additions to the plan. These changes in the plan are organized into the following three categories: Changes, Deletions, and Additions.

Changes have been made to eliminate duplication, eliminate test runs that provide little or no incremental information, and to modify tests to reflect changes in the plant.

Deletions have been made as a result of changes in plant configuration and to eliminate duplication. Five surveillance test procedures, not deemed sufficiently valuable to repeat for the next four year cycle, were deleted to allow substitution of more important surveillance procedures.

Additions have been made as a result of plant changes, to make use of plant transient data from the Emergency Response Data Acquisition Display System (ERDADS), and to add new surveillance procedures.

3.1 CHANGES

MCN-001, Containment Spray System Operations and Malfunctions.

This test will be generalized to include all of the containment systems that provide for mitigation of events that cause pressurization of the containment, i.e., both the spray system and the containment emergency coolers. The overall behavior of the containment pressure and temperature response is monitored in other certification tests such as the large and small break LOCAs, and the inside containment MSLB. This test will focus on the response of the individual systems to malfunctions. The test will be renamed "Containment Emergency Systems Operations and Malfunctions."

MCS-001, Component Cooling Water Operations and Malfunctions.

This test comprised two runs: Run 1, Loss of Intake Cooling Water (ICW) to the Component Cooling Water (CCW) Heat Exchangers, and Run 2, Total Loss of CCW Flow. Run 1, Loss of ICW to the CCW Heat Exchangers is performed in MCS-002, Intake Cooling Water System Operations and Malfunctions, and will be deleted from MCS-001. The Total Loss of CCW Flow will continue to be performed in MCS-001.

MCS-003, Turbine Plant Cooling Water System Operations and Malfunctions.

This test comprised two runs: Run 1, Loss of Intake Cooling Water (ICW) to the Turbine Plant Cooling Water (TPCW) Heat Exchangers, and Run 2, Total Loss of TPCW. Run 1, Loss of ICW to the TPCW Heat Exchangers is performed in MCS-002, Intake Cooling Water System Operations and Malfunctions, and will be deleted from MCS-003. The Total Loss of TPCW will continue to be performed in MCS-003.

MCV-004, Letdown and Volume Control Tank System Operations and Malfunctions.

This test comprised a total of five different malfunctions. Run 1, Loss of CCW to the Non-Regenerative Heat Exchangers is performed in MCS-001, Component Cooling Water Operations and Malfunctions and will be deleted from MCV-004. The remaining four malfunctions (PCV-145 failed open, PCV-145 failed shut, LCV-115A failed to the divert position, and CV-204 failed shut) will continue to be tested as before.

MFW-002, Loss of Normal Feedwater.

Previous certification testing examined two cases, the first with the Auxiliary Feedwater (AFW) flow controllers set at 135 gpm and the second with the controllers set at 300 gpm. The two tests were designed to examine the sensitivity of the response to the magnitude of the AFW flow rate. Experience has shown that the response of the two cases is largely the same with no additional information being gained by performing the second run. Therefore, the 300 gpm case will be

deleted. Also, the setting for the AFW flow controller demand will be changed to the current plant setting of 130 gpm.

MRX-001, Spurious Rod Position Indication Resulting in Maximum Rate Runback to 70% Power and Maximum Rate Return to Full Power.

The turbine runback due to dropped rods was removed during the Unit 3 Cycle 14 refueling outage. The test was changed to remove the dropped rod runback from the scenario and the test title was changed to "Maximum Rate Power Ramp (100% down to 75% and back up to 100%)". The power reduction and ascension will be controlled manually by the test team.

MSG-001, Main Steam Line Break Inside Containment.

The initial certification testing and annual testing included two Main Steam Line Break (MSLB) cases. In the first case the RCPs were tripped based on the RCP trip criteria from the Emergency Operating Procedures (EOP). The second case was performed with the RCPs running as a sensitivity study to provide additional information for the comparison of the Simulator with the Best Estimate RETRAN model. The case with RCPs running is atypical of the expected sequence during a MSLB and provides little additional information to justify continuing its performance as an annual test. Therefore, the "RCPs On" case will be deleted. (See Section 3.3 for an additional Hot Zero Power (HZP) MSLB test that will be included for the next four year cycle.)

MSG-003, Simultaneous Closure of All MSIV's.

The initial certification test plan called for two runs to be performed. The first examined the response with rod control in automatic, and the second with rod control in manual. Previously, these runs were significantly different because the rods in manual case would quickly trip whereas the rods in automatic case would survive for some time. During the Unit 3 Cycle 13 refueling outage a reverse power turbine trip was installed in the plant. This results in a turbine trip / reactor trip after approximately 60 seconds making both runs very similar. Therefore, the "Rods in Manual" case will be deleted.

3.2 DELETIONS

MCV-003, Charging Line Break Outside Containment.

This scenario is performed in MCV-002 Charging System Failures and therefore will be deleted.

MRC-008, Loss of B and C RCP's at 100% power.

This test was compared to a plant trip that occurred on Unit 4 on 4/9/90. Numerous plant changes have occurred since 1990 including removal of the RTD bypass loops and changes to the protection and process control systems. These changes make the comparison between the present Simulator and the 4/9/90 event inappropriate.

MSG-004, Transmitter Failure Resulting in Maximum Atmospheric Dump Demand.

One atmospheric dump valve has a capacity of only 3.3% of full steam flow. This results in a change in steam load similar to normal operating changes. The transient is relatively mild and does not provide unique information. Therefore, this test will be deleted.

MTU-004, Turbine Gland Seal System.

This test checks the normal operation of the gland sealing system. These checks are performed during NPE-003, Plant Startup from Hot Standby to Rated Power. Therefore, this test will be deleted.

MTU-010, Turbine Lube Oil Pump and Motor.

This test was mis-titled in the original certification test plan. The test is actually a test of the Steam Generator Feed Pumps (SGFP) Lube Oil system. This is a minor support system which has no indications in the control room and no role in training. Continuing to test this system provides little value in terms of training and this test will be deleted.

SUR-007, CVCS Boric Acid Transfer Flow Test, 3-OSP-046.2

This test verifies that the boric acid pumps can deliver flow through the normal and emergency flowpaths. These flowpaths are verified during other certification tests such as the Plant Shutdown from Rated Power to Hot Standby (NPE-005), the cooldown from Hot Standby to Cold Shutdown (NPE-006), and during operator training scenarios such as the ATWS event. Since initial certification testing and testing during the first four year cycle have demonstrated the ability to perform this surveillance procedure and the substantive elements of the surveillance are examined via other tests, this test will be deleted and surveillance test SUR-033 substituted. (See Section 3.3 - Additions)

SUR-008, Boric Acid Transfer Pump Transfer and Control Switch Test, 3-OSP-046.5

This test checks the operation of the boric acid pump from both the local control station and the control room. Certification testing during the first four year cycle has demonstrated the ability to perform this surveillance. Continuing to test this surveillance provides little value in terms of training and therefore this test will be deleted and surveillance test SUR-034 substituted. (See Section 3.3 - Additions)

SUR-012, Emergency Containment Filter Fan Operating Test, 3-OSP-056.1.

Since there are limited filter fan indications inside the control room and initial certification testing and additional testing during the first four year cycle have demonstrated the ability to perform this surveillance, this test will be deleted and surveillance test SUR-035 substituted. (See Section 3.3 - Additions)

SUR-018, Power Range NIS Shift Checks and Daily Calibrations, 3-OSP-059.5.

This test is performed during several other tests including the annual steady state tests (SST-001, SST-002, and SST-003). Therefore, a separate test is not necessary. This test will be deleted and surveillance test SUR-036 substituted. (See Section 3.3 - Additions)

SUR-029, Operational Test of MOV-535, 536, and PORV-455C, 456, OP-1300.2.

This test performs a stroke test on the PORV block valves and seat leakage test on the PORV's. Since initial certification testing and additional testing during the first four year cycle have demonstrated the ability to perform this surveillance, this test will be deleted and surveillance test SUR-037 substituted. (See Section 3.3 - Additions)

3.3 ADDITIONS

MGG-005, Loss of 4KV Bus 3C.

This test was added in 1991 following the Emergency Power System Enhancement project. This test verifies that the load centers, motor control centers and 480v loads powered from the 3C bus respond correctly to the loss of the 3C 4kv bus.

MGG-006, Loss of 4KV bus 3D.

This test was added in 1991 following the Emergency Power System Enhancement (EPSE) project. The 3D 4kv safety related bus was installed in 1991 during the EPSE project. This test verifies that the 3H load center, 3D motor control center and 480v loads powered from the 3D bus respond correctly to the loss of the 3D 4kv bus.

MRC-009, Fast Load Reduction, 3-ONOP-100..

This test will simulate high RCP seal leakoff requiring a fast load reduction using 3-ONOP-100. The Simulator results will be compared to plant data from the Unit 3 fast load reduction that occurred on 4-27-92.

MRX-010, Spurious High Containment Pressure Safety Injection.

This test will simulate a spurious high containment pressure SI from 28% power. The Simulator results will be compared to plant data from the Unit 4 high containment pressure SI that occurred on 3-26-92.

MRX-011, Loss of C 4KV Bus Reactor Trip.

This test will simulate a loss of the C 4kv bus from 100% power. The Simulator results will be compared to plant data from the Unit 4 loss of C 4kv bus reactor trip that occurred on 9-23-94.

MSG-007, Main Steam Line Break with Reduced Shutdown Margin.

This test will examine a hypothetical Main Steam Line Break (MSLB) from Hot Standby with a shutdown margin that will result in a return to power during the cooldown. This will examine a MSLB event scenario with slightly different characteristics than the standard test (MSG-001).

SUR-033, Accident Monitoring Instrumentation Channel Checks, 3-OSP-204.

This test covers the surveillance of the accident instrumentation including core exit thermocouples, reactor vessel level indicators, subcooled margin monitors, and containment radiation, pressure and level indicators.

SUR-034, Safeguard Relay Rack Train A,B, Periodic Test, OP-4004.2.

This test covers the operator surveillance of the safeguards logic.

SUR-035, Containment Isolation Racks QR50 and QR51 Periodic Test, OP-4004.4.

This test covers the operator surveillance of the containment pressure channels.

SUR-036, Component Cooling Water System Flow Balance, 3-OSP-030.9.

This test verifies that all safety related components cooled by CCW receive the minimum required flow with the CCW system aligned in its most limiting accident configuration.

SUR-037, Determination of Quadrant Power Tilt Ratio, 3-OSP-059.10.

This test covers the determination of the Quadrant Power Tilt Ratio (QPTR).

4.0 FOUR YEAR TEST PLAN (1995-1998)

Per the requirements of Regulatory Guide 1.149, the Simulator Certification test program will be conducted in its entirety on a four year cycle. All of the ANSI/ANS 3.5 Appendix B tests will be performed annually. Approximately 25% of the remaining tests in the Certification program will be performed each year.

Table 4-1 presents the ANSI/ANS 3.5 tests that will be performed annually. Tables 4-2 through 4-5 present the test plan for each of the next four years. The tests planned each year represent a cross section of the various types of tests. As in the previous four year cycle, tests may be added to meet new or special requirements.

The 1995-1998 Turkey Point Simulator test plan has been reviewed and approved by the Simulator Configuration Review Board (SCRB).

Table 4-1

Annual Tests

MFW-003	Loss of Normal and Emergency Feedwater
MRC-002	Large Break LOCA Inside Containment With Loss Of Offsite Power
MRC-004	PORV Failure (Open) Without High Pressure Injection
MRC-005	Loss of Forced Reactor Coolant Flow
MRX-001	Maximum Rate Power Ramp (100% To 75% and back to 100%)
MRX-009	Manual Reactor Trip from 100% Power
MSG-001	Main Steam Line Break Inside Containment
MSG-003	Simultaneous Closure of All MSIV's
MTU-001	Turbine Trip Which Does Not Cause Automatic Reactor Trip
SST-001	Steady State 50% Power Heat Balance
SST-002	Steady State 75% Power Heat Balance
SST-003	Steady State 100% Power Heat Balance
SST-004	100% Power 60 Minute Null Transient

Table 4-2

1995 Test Plan

MFW-002	Loss of Normal Feedwater
MFW-007	Equivalent TMI-2 Scenario
MGG-002	Loss of 4KV Bus 3A
MGG-003	Loss of 4KV Bus 3B
MGG-004	Loss of All AC
MGG-005	Loss of 4KV Bus 3C
MGG-006	Loss of 4KV Bus 3D
MMP-001	Loss of Vital AC Bus 3P06
MMP-002	Loss of Vital AC Bus 3P07
MMP-003	Loss of Vital AC Bus 3P08
MMP-004	Loss of Vital AC Bus 3P09
MMP-005	Loss of DC Bus 3A (3D01)
MMP-006	Loss of DC Bus 3B (3D23)
MMP-007	Loss of DC Bus 4B (4D01)
MMP-008	Loss of DC Bus 4A (4D23)
MRC-006	Loss of a Single Reactor Coolant Pump With Power Below P-8
MRC-007	Stuck Open Spray Valve
MSG-007	Main Steam Line Break from Hot Standby with Reduced Shutdown Margin.
MSP-001	Bus Stripping and Load Sequencing Tests
NPE-002	Plant Startup Cold Shutdown to Hot Standby
NPE-003	Plant Startup from Hot Standby to Rated Power
SUR-026	Engineered Safeguards Integrated Test, 3-OSP-203.1 & 3-OSP-203.2
SUR-030	Full Length RCC - Periodic Exercise, OP-1604.1
SUR-031	Inducing Xenon Oscillations to Produce Various Incore Axial Offsets, 0-OP-059.3

Table 4-3

1996 Test Plan

MCV-001	Uncontrolled Maximum Rate Boron Dilution
MCV-002	Charging System Failures
MCV-004	Chemical Volume Control System Operations and Malfunctions
MFW-004	Feedwater Line Break Inside Containment
MFW-006	Failure of Steam Generator Level Channel Providing Input to the Feedwater Controller
MRC-003	Small Break LOCA Inside Containment
MRC-009	Fast Load Reduction, 3-ONOP-100
MRX-010	Spurious High Containment Pressure SI
MSG-006	Closure of a Single MSIV At Several Different Power Levels
MTU-003	Turbine Lube Oil System (Bearings)
MTU-005	Turbine Turning Gear Operation
MTU-009	Turbine Lube Oil Control & Auto-Stop Oil
MTU-011	Failure of Turbine Control Valve Spring
NPE-005	Plant Shutdown from Rated Power to Hot Standby
NPE-006	Cooldown from Hot Standby to Cold Shutdown
SUR-004	Component Cooling Water Pumps Low Header Pressure Start Test, 3-OSP-030.5
SUR-009	Reactor Protection System Logic Test, 3-OSP-049.1
SUR-015	Intermediate Range Nuclear Instrumentation Analog Channel Operational Test, 3-OSP-059.2
SUR-017	Power Range Nuclear Instrumentation Analog Channel Operational Test, 3-OSP-059.4
SUR-020	Main Steam Isolation Valve Closure Test, 3-OSP-072
SUR-035	Containment Isolation Racks QR50 and QR51 Periodic Test, OP-4004.4
SUR-036	Component Cooling Water System Flow Balance, 3-OSP-030.9
SUR-037	Determination of Quadrant Power Tilt Ratio, 3-OSP-059.10

Table 4-4

1997 Test Plan

MCS-001	Component Cooling Water Operations and Malfunctions
MFW-001	Loss of Vacuum Tests, Including Loss of Condenser Level Control
MGG-001	Generator Trip
MRC-001	Steam Generator Tube Rupture
MRX-003	Nuclear Instrumentation Failure During Startup
MRX-006	Dropped Control Rod
MRX-007	Dropped With Inability to Drive Control Rods
MRX-011	Loss of C 4KV Bus Reactor Trip
MSG-005	Failure of Reference Temperature to Steam Dumps
MTU-002	Turbine Trip from 100% Power
NPE-001	Plant Fill and Vent from a Partial Drain Down to a Solid Pressurizer
RTT-001	Simulator Real Time Test
RTT-002	Simulator Real Time Test Validation Test
SUR-003	EDG 8 Hour Load Test and Load Rejection Test, 3-OSP-023.2
SUR-005	Reactor Coolant System Leak Rate Calculations, 3-OSP-041.1
SUR-010	RHR MOV's/System Pressure Interlock Test, 3-OSP-050.7
SUR-011	RHR MOV's 750, 751, 862, 863, Interlock Test, 3-OSP-050.8
SUR-021	Standby Steam Generator Feedwater Pumps/Cranking Diesels Test, 0-OSP-074.4
SUR-022	Auxiliary Feedwater Train 1 Operability Verification, 3-OSP-075.1
SUR-024	Main Turbine Valves Operability Test, 3-OSP-089
SUR-032	Normal Operation of Incore Moveable Detector System and Power Distribution Surveillance, OP-12404.1
SUR-033	Accident Monitoring Instrumentation Channel Checks, 3-OSP-204
SUR-034	Safeguard Relay Rack Train A,B, Periodic Test, OP-4004.2

Table 4-5

1998 Test Plan

MCN-001	Containment Emergency Systems Operation and Malfunctions
MCS-002	Intake Cooling Water System Operations and Malfunctions
MCS-003	Turbine Plant Cooling Water Operation and Malfunctions
MCS-004	Instrument Air System Operation and Malfunctions
MCV-005	Non-Regenerative Heat Exchanger Tube Leak
MFW-005	Main Feedwater Line Break Outside Containment
MFW-008	Loss of Normal Feedwater/ATWS
MRX-002	Loss of Protection System Channel
MRX-004	Stuck Control Rod
MRX-005	Uncoupled Control Rod Test
MRX-008	Fuel Cladding Failure Resulting in High Reactor Coolant Activity
MSG-002	Main Steam Line Break Outside Containment
MSS-001	Small Leak in Safety Injection Piping Outside Containment
MSS-002	Accumulator Operations and Malfunctions
MSS-003	Loss of RHR While in Cold Shutdown
MSS-004	Loss of Inventory During Partial Draindown
MTU-006	Hydrogen Seal Oil
MTU-008	Hydrogen Cooling
NPE-004	Reactor Trip Followed By Recovery to Rated Power
SUR-001	Initial Criticality after Refueling, 3-OSP-040.6
SUR-002	Nuclear Design Check Tests During Startup Sequence after Refueling, 3-OSP-040.5
SUR-014	Source Range Nuclear Instrumentation Analog Channel Operational Test, 3-OSP-059.1
SUR-016	Intermediate Range NIS Setpoint Verification, 3-OSP-059.3
SUR-019	Process Radiation Monitoring Operability Test, 3-OSP-067.1

5.0 OUTSTANDING DISCREPANCIES

In general all Simulator Discrepancy Reports (DRs) are addressed within one calendar year after they are written. The schedule may be extended beyond one year in special circumstances such as the need for certain equipment or very low priority DRs. The SCRB will review and approve the extension of the schedule for any DR that will not be completed in one year.

5.1 1991 CERTIFICATION TEST DR'S

73 Certification test DRs were written and all have been completed.

5.2 1992 CERTIFICATION TEST DR'S

69 Certification test DRs were written and all have been completed.

5.3 1993 CERTIFICATION TEST DR'S

28 Certification test DRs were written and all have been completed.

5.4 1994 CERTIFICATION TEST DR'S

26 Certification test DRs were written and all but the following DRs have been completed.

TEST	DR #	TITLE	DUE DATE
MRX005	9400069	Secondary side oscillations after rod drop	5/16/95
MRX008	9400114	Investigate R-11/R-12 response	8/05/95
NPE004	9400115	RCP current drops when transferring to the auxiliary Transformer	8/08/95
SUR019	9400075	PRMS drawers do not display exact alarm setpoint	6/10/95
N/A	9400116	Physical Fidelity	8/09/95

APPENDIX A TEST ABSTRACTS

A.1 TESTS ADDED

TU[redacted]OINT SIMULATOR CERTIFICATION TEST PROCEDURE

TITLE: LOSS OF 4KV BUS 3C

NUMBER: MGG-005

ANS 3.5 REFERENCE SECTIONS: 3.1.2(3) Loss of Electrical Power

DESCRIPTION

The purpose of this test is to verify proper simulator response to a loss of the 3C 4kV bus or to a loss of an individual load center or motor control center supplied from the 3C 4kV bus. This bus supplies load centers 3E, 3F, and 3G and these supply motor control centers 3B non-vital, 3C non-vital, 3G, 3H, 3B43, RB (which feeds motor control center RC), and F (which feeds motor control center 3E). All loads of 480 volts or greater in this train that have some impact in the control room; e.g., alarm, control, or indication, will be verified to lose power when the appropriate 4kV bus, load center, or motor control center is de-energized. This test will be performed by failing open the supply breaker to each motor control center, loads on that motor control center will be verified lost, and the power will then be restored to the motor control center. After all motor control centers have been tested, the supply breaker to each load center will be failed open, loads on that load center will be verified lost, including power to the motor control centers, and the power to the load center will then be restored. After all load centers have been tested, power to the 3C 4kV bus will be lost and loads verified, including power to the load centers. In order to make it easier to start and stop loads, this test will be conducted from hot standby.

OPTIONS

The #3 transformer feeders to the 3C 4kV feeders can be operated by a variety of mechanisms. These include operating them from the control room console, operating them from the instructor's facility, using the instructor's facility to operate them locally, and placing in a malfunction that will cause them to open or prevent their operation. The load center feeders have similar options. The motor control center feeders must be opened from the instructor's facility.

INITIAL CONDITIONS

Hot standby. The 3C 4kV bus is supplied from the #3 transformer.

FINAL CONDITIONS

Hot standby with the 3C 4kV bus de-energized. The data collection sheet for loss of 3C 4kV bus has been completed.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TU[redacted]OINT SIMULATOR CERTIFICATION TEST PROCEDURE

TITLE: LOSS OF 4KV BUS 3D

NUMBER: MGG-006

ANS 3.5 REFERENCE SECTIONS: 3.1.2(3) Loss of Electrical Power

DESCRIPTION

The purpose of this test is to verify proper simulator response to a loss of the 3D 4kV bus. The 3D 4kV bus can be supplied from either the 3A 4kV bus or the 3B 4kV bus. The 4kV supply to the 3D bus will be manually swapped from 3B to 3A and back to 3B in order to verify the proper operation of this function. Since the 3D 4kV bus is part of the station blackout (SBO) cross connection between Unit 3 and Unit 4, that function will also be tested in several situations. The interlocks that prevent paralleling trains 3A and 3B via the 3D 4kV bus and the 125 VDC transfer switch 3S75 will be tested. The transfer switch provides control power for the circuit breakers on the 3D 4kV bus. In order to make it easier to start and stop loads and swap busses, this test will be conducted from hot standby.

OPTIONS

During normal operations, the 4kV bus 3D can be supplied from the 3A or 3B 4kV bus. The breakers being tested can be opened and closed by a variety of mechanisms. These include operating them from the control room console, operating them from the instructor's facility, using the instructor's facility to operate them locally, and placing in a malfunction that will cause them to open or prevent their operation.

INITIAL CONDITIONS

Hot standby. The 3D 4kV bus is energized from the 3B 4kV bus.

FINAL CONDITIONS

Hot standby. The data collection sheet for loss of 4kV bus 3D has been completed, the manual transfer of supply busses has been completed, the interlocks that prevent paralleling the 3A and 3B trains via the 3D 4kV bus have been tested, transfer switch 3S75 has been tested, and the SBO function has been tested.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: FAST LOAD REDUCTION, 3-ONOP-100

NUMBER: MRC-009

ANS 3.5 REFERENCE SECTIONS: 3.1.1(6) Load Changes
3.1.2(22) Process Instrumentation, Alarms, and Control System Failures

DESCRIPTION

This test will simulate excessive leakoff from the Number 1 seal on the 3C RCP requiring a fast reduction in power using 3-ONOP-100, Fast Load Reduction. This scenario has been chosen to compare the simulator response to the Unit 3 fast load reduction on April 27, 1992 from the same cause. Actions will be simulated to approximate those taken during the Unit 3 load reduction.

OPTIONS

None

INITIAL CONDITIONS

87% power, Steady state

FINAL CONDITIONS

Plant stable at hot standby and the C RCP secured.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: SPURIOUS HIGH CONTAINMENT PRESSURE SAFETY INJECTION

NUMBER: MRX-010

ANS 3.5 REFERENCE SECTIONS: 3.1.2(19) Reactor Trip

DESCRIPTION

This test will simulate a reactor trip caused by a B train Safety Injection signal initiated during the performance of the containment pressure channel test. This scenario has been chosen to compare the simulator response to the Unit 4 trip on March 26, 1992 from the same cause. Actions will be simulated to approximate those taken following the Unit 4 trip.

OPTIONS

None

INITIAL CONDITIONS

28% power, Steady state

FINAL CONDITIONS

Plant stable at hot standby.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: LOSS of C 4KV BUS REACTOR TRIP

NUMBER: MRX-011

ANS 3.5 REFERENCE SECTIONS: 3.1.2(3) Loss of Electrical Power
3.1.2(12) Control Rod Failures

DESCRIPTION

This test will simulate a loss of the C 4KV bus with power at 100%, which will result in a reactor trip. This scenario has been chosen to compare the simulator response to the Unit 4 trip on September 23, 1994 from the same cause. Due to degraded power from the MG set to the 1AC control rod power cabinet and the loss of the 4C 4KV bus which supplies backup power, the 12 rods supplied from the 1AC power cabinet dropped into the core resulting in an OTΔT reactor trip. Actions will be simulated to approximate those taken following the Unit 4 trip.

OPTIONS

None

INITIAL CONDITIONS

100% power, EOL. Steady state.

FINAL CONDITIONS

Plant stable at hot standby.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: MAIN STEAM LINE BREAK WITH REDUCED SHUTDOWN MARGIN

NUMBER: MSG-007

ANS 3.5 REFERENCE SECTIONS: 3.1.2(20) Main Steam Line as well as Main Feed Line Breaks (Both inside and outside Containment)

DESCRIPTION

This steam line break transient will examine the response of the simulator to a main steam line break inside containment from hot standby conditions with a reduced shutdown margin. The shutdown margin will be reduced to a degree that will allow a return to power as a result of the moderator feedback during the cooldown transient. The test is not intended to follow in detail the emergency operating procedures covering this type of transient. However, operator actions to turn off the reactor coolant pumps on low sub-cooling margin and isolate the auxiliary feedwater to the affected steam generator have been programmed into the scenario. No other operator actions will be taken during the course of the event. All control and safety systems will be in automatic and fully functional. A steam line break equivalent to the area of the flow restrictor at the steam generator outlet is assumed to occur in the B steam line inside containment.

OPTIONS

The simulator is capable of simulating steam line breaks of any size at several locations inside and outside containment on each of the steam lines.

INITIAL CONDITIONS

Hot Standby, Subcritical, EOL

FINAL CONDITIONS

The test will run for 15 minutes.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: ACCIDENT MONITORING INSTRUMENTATION CHANNEL CHECKS, 3-OSP-204

NUMBER: SUR-033

ANS 3.5 REFERENCE SECTIONS: 3.1.1 (10) Operator Conducted Surveillance on Safety-Related Equipment or Systems

DESCRIPTION

This certification test will demonstrate the ability of the simulator to support the operator conducted surveillance procedure 3-OSP-204, Accident Monitoring Instrumentation Channel Checks. With no malfunctions present, the ability to successfully perform this surveillance will be verified.

OPTIONS

This test can be performed at any time in core life.

INITIAL CONDITIONS

100% power, steady state, MOL.

FINAL CONDITIONS

Surveillance complete.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TU[redacted]OINT SIMULATOR CERTIFICATION TEST PROCEDURE

TITLE: SAFEGUARD RELAY RACK TRAIN A,B, PERIODIC TEST, OP-4004.2

NUMBER: SUR-034

ANS 3.5 REFERENCE SECTIONS: 3.1.1 (10) Operator Conducted Surveillance on Safety-Related Equipment or Systems

DESCRIPTION

This certification test will demonstrate the ability of the simulator to support the operator conducted surveillance procedure OP-4004.2, Safeguard Relay Rack Train A,B, Periodic Test. With no malfunctions present, the ability to successfully perform this surveillance will be verified.

OPTIONS

This test can be performed at any power level and at time in core life.

INITIAL CONDITIONS

100% power, steady state, MOL.

FINAL CONDITIONS

Surveillance complete.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: CONTAINMENT ISOLATION RACKS QR50 AND QR51 PERIODIC TEST, OP-4004.4

NUMBER: SUR-035

ANS 3.5 REFERENCE SECTIONS: 3.1.1 (10) Operator Conducted Surveillance on Safety-Related Equipment or Systems

DESCRIPTION

This certification test will demonstrate the ability of the simulator to support the operator conducted surveillance procedure OP-4004.4, Containment Isolation Racks QR50 and QR51 Periodic Test. With no malfunctions present, the ability to successfully perform this surveillance will be verified.

OPTIONS

This test can be performed at any power level and at time in core life.

INITIAL CONDITIONS

100% power, steady state, MOL

FINAL CONDITIONS

Surveillance complete.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: COMPONENT COOLING WATER SYSTEM FLOW BALANCE, 3-OSP-030.9

NUMBER: SUR-036

ANS 3.5 REFERENCE SECTIONS: 3.1.1 (10) Operator Conducted Surveillance on Safety-Related Equipment or Systems

DESCRIPTION

This certification test will demonstrate the ability of the simulator to support the surveillance procedure 3-OSP-030.9, Component Cooling Water System Flow Balance. This test verifies that all safety related components cooled by CCW receive the minimum required flow with the CCW system aligned in its most limiting accident configuration. With no malfunctions present, the ability to successfully perform this surveillance will be verified.

OPTIONS

This test can be performed at time in core life.

INITIAL CONDITIONS

Cold shutdown

FINAL CONDITIONS

Surveillance complete.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: DETERMINATION OF QUADRANT POWER TILT RATIO, 3-OSP-059.10

NUMBER: SUR-037

ANS 3.5 REFERENCE SECTIONS: 3.1.1 (10) Operator Conducted Surveillance on Safety-Related Equipment or Systems

DESCRIPTION

This certification test will demonstrate the ability of the simulator to support the operator conducted surveillance procedure 3-OSP-059.10, Determination of Quadrant Power Tilt Ratio. With no malfunctions present, the ability to successfully perform this surveillance will be verified.

OPTIONS

This test can be performed at time in core life.

INITIAL CONDITIONS

MOL, 100% power, steady state

FINAL CONDITIONS

Surveillance complete.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

APPENDIX A TEST ABSTRACTS

A.2 TESTS CHANGED

TITLE: CONTAINMENT EMERGENCY SYSTEMS OPERATIONS AND MALFUNCTIONS

NUMBER: MCN-001

ANS 3.5 REFERENCE SECTIONS: 3.1.2(23) Passive Malfunctions in Engineered Safety Features Systems

DESCRIPTION

This test will exercise various malfunctions in the containment emergency systems. Proper system response to the malfunctions will be verified. The containment emergency systems include the containment spray pumps, the emergency containment cooler fans, and the emergency containment filter fans.

OPTIONS

There are a wide variety of failures available in the containment emergency systems.

INITIAL CONDITIONS

MOL, steady state at 100% power

FINAL CONDITIONS

Each run will continue until the proper response has been verified.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: COMPONENT COOLING WATER OPERATIONS AND MALFUNCTIONS

NUMBER: MCS-001

ANS 3.5 REFERENCE SECTIONS: 3.1.2 (8) Loss of Component Cooling System

DESCRIPTION

This test will verify the simulators response to a malfunction of the Component Cooling Water system. All CCW pumps will be tripped resulting in a total loss of CCW cooling.

OPTIONS

There are several different means to cause a loss of CCW.

INITIAL CONDITIONS

Steady state 100% power.

FINAL CONDITIONS

The test will run for 20 minutes after the loss of CCW.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: TURBINE PLANT COOLING WATER SYSTEM OPERATIONS AND MALFUNCTIONS

NUMBER: MCS-003

ANS 3.5 REFERENCE SECTIONS: 3.1.2(6) Loss of Service Water or Cooling to Individual Components

DESCRIPTION

This test will verify the simulators response to a malfunction of the Turbine Plant Cooling Water system. All TPCW pumps will be tripped resulting in a total loss of TPCW cooling.

OPTIONS

There are several different means to cause a loss of Turbine Plant Cooling Water.

INITIAL CONDITIONS

MOL, steady state at 100% power

FINAL CONDITIONS

The test will be stopped 30 minutes after the initiation of the event.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: LETDOWN AND VOLUME CONTROL TANK SYSTEM OPERATIONS AND MALFUNCTIONS

NUMBER: MCV-004

ANS 3.5 REFERENCE SECTIONS: 3.1.2 (18) Failure of Reactor Coolant Pressure and Volume Control Systems

DESCRIPTION

The test checks the response of the Letdown and Volume Control Tank portions of the CVCS system. Various malfunctions which affect these systems will be initiated to verify proper system response. A total of four different malfunction tests will be run: (1) The letdown control valve PCV-145 will be failed open, (2) PCV-145 will be failed closed, (3) The VCT level control valve LCV-115A will be failed to the divert position, and (4) The letdown isolation valve CV-204 will be failed closed.

OPTIONS

There are numerous malfunctions which can be run on the Letdown and Volume Control Tank systems. Representative malfunctions should be chosen to exercise as many parts of the systems as possible.

INITIAL CONDITIONS

100% power, normal letdown lineup.

FINAL CONDITIONS

Terminate each run after system parameters have stabilized or trends are clearly evident.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: LOSS OF NORMAL FEEDWATER

NUMBER: MFW-002

ANS 3.5 REFERENCE SECTIONS: 3.1.2(9) Loss of Normal Feedwater or Feedwater System Failure

DESCRIPTION

The purpose of this certification test is to examine the simulator response to a loss of normal feedwater. This loss of normal feedwater transient will be compared to a best estimate analysis using the Turkey Point RETRAN model. As such, no operator actions will be taken during the course of the event and several assumptions have been made to make the simulator and the RETRAN models consistent. Since the RETRAN model does not include charging and letdown models, these paths will be isolated in the simulator. The transient will be initiated by tripping open both feedwater pump motor breakers. The turbine runback that would normally result from the tripping of these breakers is blocked. AMSAC will also be blocked. All control systems are in automatic except the control rods.

OPTIONS

The main feedwater can be lost via a variety of mechanisms including the failing closed of the isolation or regulation valves, pump bearing failures, and motor breaker failures.

INITIAL CONDITIONS

Steady state at 100% power, BOL, Equilibrium xenon.

FINAL CONDITIONS

The test will run for 20 minutes. By that time the steam generator levels should be recovering steadily and the system approaching a stable hot standby condition.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: MAXIMUM RATE POWER RAMP (100% to 75% and back to 100%)

NUMBER: MRX-001

ANS 3.5 REFERENCE SECTIONS: B.2.2 (7) Maximum rate Power Ramp (100% down to 75% and back up to 100%)

DESCRIPTION

This certification test will evaluate the ability of the simulator to perform a rapid decrease in power from 100% power to 75% and return back to 100%. Although this is an Appendix B test, due to the nature of this test manual actions have to be taken. The off-normal operating procedure 3-ONOP-100, Fast Load Reduction will be used to rapidly reduce power to approximately 75%. After the plant has stabilized, a return to power at the maximum rate possible will occur. The test team will pull control rods and dilute the RCS while picking up load on the turbine. If required, extra letdown orifices and charging pumps will be used to dilute. During the return to power average temperature will be closely matched with the reference temperature and the ΔI limits will be observed.

OPTIONS

None

INITIAL CONDITIONS

Steady state, 100% power, MOL

FINAL CONDITIONS

100% power after recovery.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: MAIN STEAM LINE BREAK INSIDE CONTAINMENT

NUMBER: MSG-001

ANS 3.5 REFERENCE SECTIONS:

3.1.2(20)	Main Steam Line as well as Main Feed Line Breaks (Both inside and outside Containment)
B 2.2 (9)	Maximum Size Unisolable Main Steam Line Rupture

DESCRIPTION

This steam line break transient will be compared to a best estimate analysis using the Turkey Point RETRAN model. As such, the test is not intended to follow in detail the emergency operating procedures covering this type of transient. However, operator actions to turn off the reactor coolant pumps on low sub-cooling margin and isolate the auxiliary feedwater to the affected steam generator have been programmed into the scenario. No other operator actions will be taken during the course of the event. Several assumptions have been made in order to make the simulator and the RETRAN model consistent. Since the RETRAN model does not include charging and letdown models or accumulators, these paths will be isolated in the simulator by the scenario. All other control and safety systems will be in automatic and fully functional. A steam line break equivalent to the area of the flow restrictor at the steam generator outlet is assumed to occur in the B steam line inside containment. Since this an ANS 3.5 Appendix B transient no operator actions will be allowed after the transient starts. However, as mentioned above, the reactor coolant pumps will be stopped when there is an indication that SI is occurring with a low sub-cooling margin. The auxiliary feedwater will also be isolated to the affected steam generator.

OPTIONS

The simulator is capable of simulating steam line breaks of any size at several locations inside and outside containment on each of the steam lines.

INITIAL CONDITIONS

100% power steady state, EOL

FINAL CONDITIONS

The test will run for 10 minutes.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TITLE: SIMULTANEOUS CLOSURE OF ALL MSIV'S

NUMBER: MSG-003

ANS 3.5 REFERENCE SECTIONS: B2.2(3) Simultaneous Closure of All MSIV's

DESCRIPTION

This test examines the simulator response to the simultaneous closure of all of the main steam line isolation valves (MSIV's). All control and protection systems will be in automatic. Since this is an ANS 3.5 Appendix B test, no operator follow up actions will be taken.

OPTIONS

Any or all of the MSIV's can be closed by a variety of failure mechanisms. These include giving the valves a fail close signal or using an instructor override on the control board handswitches.

INITIAL CONDITIONS

100% power steady state, BOL.

FINAL CONDITIONS

The transient is analyzed for approximately 10 minutes.

SIMULATOR CONFIGURATION REVIEW BOARD APPROVAL FOR USE

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

TEST TEAM

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____