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SUBJECT: Forwards summary of simulator performance testing & description of performance tests to be conducted during next four-yr period.

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March 26, 1999

10 CFR 55.45(b)(5)(ii)&(vi)

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Simulator Performance Testing

In accordance with the requirements of 10 CFR 55.45(b)(5), attached is a summary of the simulator performance testing and a description of the performance tests to be conducted during the next four-year period.

If you have any questions or need additional information, please contact Dale Patterson at 920-388-8759.

Sincerely,

Mark L. Marchi
Vice President-Nuclear

DAP

Attach.

cc - US NRC - Region III
NRC Senior Resident Inspector

//
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ATTACHMENT 1

Letter from Mark L. Marchi (WPSC)

To

Document Control Desk (NRC)

Dated

March 26, 1999

Re: Simulator Performance Testing

Kewaunee Plant Simulator Four Year Certification Report

Introduction:

This report is a supplement to the initial certification report which was submitted with NRC Form-474 in March of 1991. It contains a brief summary of the status of the certification program as required in 10 CFR 55.45. Additional information is available upon request.

Description of testing completed:

The following are brief descriptions of the certification tests which were performed during the four year period between 3/26/95 and 3/26/99:

Steady State Tests (annual)

(Test no.)	(Description)
122	34% Steady State Performance Test
123	74% Steady State Performance Test
124	100% Steady State Performance Test
125	100% One Hour Stability Test

Computer Real Time Tests (once in four years)

121	- CPU Idle Time Measurement
	- Valve Stroke Time Test
	- Step Counter/Rod Speed Test
	- Annunciator Flash Rate Test

Transients (annual)

151	Manual Reactor Trip
152	Simultaneous Trip of All Feedwater Pumps
153	Simultaneous Closure of All Main Steam Isolation Valves
154	Simultaneous Trip of All Reactor Coolant Pumps
155	Trip of Any Single Reactor Coolant Pump
156	Main Turbine Trip Without Reactor Trip
157	Maximum Rate Power Change 100% to 75% and Back to 100%
158	Maximum Size LOCA With Loss of All Off-Site Power
159	Maximum Size Unisolable Main Steam Line Rupture

- 160 Slow Depressurization to Saturated Condition Using Pressurizer Safety Valve Stuck Open Without ECCS
- 161 Startup of an Inactive Reactor Coolant Loop
- 162 Low Pressure Feedwater Heater Bypass Valve Fails Open

Normal Operations (once in four years)

- 201 Plant Startup - Cold Shutdown to Intermediate Shutdown
- 202 Plant Startup (continued) - Intermediate Shutdown to Hot Shutdown
- 203 Plant Startup (continued) - Intermediate Shutdown to Hot Shutdown
- 204 Plant Startup (continued) - Intermediate Shutdown to Hot Standby
- 205 Plant Startup (continued) - Generator Synchronization to 20% Power
- 206 Plant Startup (continued) - 20% Power to 50% Power
- 207 Plant Startup (continued) - 50% Power to 100% Power
- 208 100% Power to Hot Standby and Cooldown to Cold Shutdown
- 209 100% Power to Hot Standby and Cooldown to Cold Shutdown (continued)
- 210 100% Power to Hot Standby and Cooldown to Cold Shutdown (continued)
- 211 100% Power to Hot Standby and Cooldown to Cold Shutdown (continued)
- 212 Load Changes - 50% Power to 70% Power to 40% Power
- 213 Reactor Trip With Recovery to 100% Power
- 214 Reactor Trip With Recovery to 100% Power (continued)
- 215 Reactor Trip With Recovery to 100% Power (continued)
- 216 Reactor Trip With Recovery to 100% Power (continued)
- 217 Core Performance Testing - Initial Criticality by Dilution
- 218 Core Performance Testing - Low Power Physics Test, Reference Bank Worth Measurement
- 219 Core Performance Testing - Reference Bank Worth Using Rod Swap
- 220 Core Performance Testing - Isothermal Temperature Coefficient Measurement
- 221 Core Performance Testing - Power Defect Measurement
- 224 Hot Standby to 100%

Surveillance Procedures (once in four years)

48-002	Nuclear Power Range Channel Daily Calibration
48-006	Intermediate Range Test at Shutdown
48-008	Source Range Channel Test at Shutdown
36-018	Pressurizer Backup Heater Groups A & B Operability Test
14-026A	Auxiliary Building Special Ventilation (ASV) Train A Operability Test
14-026B	Auxiliary Building Special Ventilation (ASV) Train B Operability Test
42-047A	Diesel Generator A Operational Test
42-047B	Diesel Generator B Operational Test
54-064	Turbine Overspeed Trip Test
49-075	Control Rod Exercise
56-078	Containment Isolation Trip Test
08-081	Fire Pump Test
36-082	Reactor Coolant System Leak Rate Check
54-086	Turbine Stop and Governor Valve Operability Test
36-087	Reactor Coolant System Integrity Test
33-098	Safety Injection Pump and Valve Test - IST
34-099	Residual Heat Removal Pump and Valve Test - IST
23-100	Containment Spray Pump and Valve Test - IST
05B-104	Motor Driven Auxiliary Feedwater Pump and Valve Test - IST
05B-105	Turbine Driven Auxiliary Feedwater Pump and Valve Test - IST
24-107A	Shield Building Ventilation (SBV) Train A Operability Test
24-107B	Shield Building Ventilation (SBV) Train B Operability Test
33-110	Diesel Generator Automatic Test
14-117	Auxiliary Building Special Vent System Test
24-121	Shield Building Vent (SBV) System Test
87-125	Shift Instrument Channel Checks - Operating
02-138	Service Water Pump and Valve Test - IST
36-139	Reactor Coolant System Vent Path Flow Verification
33-144	Accumulator Isolation and Check Valve Test
87-148	Daily Instrument Channel Checks
87-149	Shift Instrument Channel Checks - Shutdown
87-151	Weekly Instrument Channel Checks
55-167-1	Blowdown Treatment Valves Test - IST
55-167-3	MG(R) and MD(R) Valves Timing Test - IST
55-167-4	Post LOCA Valves Timing Tests
55-167-5	Miscellaneous Systems Valve Timing Tests - IST
55-167-6	Cold Shutdown Evolution Valve Timing Tests - IST
55-167-8	Hot/Intermediate Shutdown Valve Tests - IST
55-167-9	Refueling Shutdown Valve Tests - IST
31-168	Component Cooling Pump and Valve Test - IST

33-191 Safety Injection Flow Test
05A-202 Feedwater Regulating and Bypass Valves Timing Test
87-214 Monthly Instrument Channel Check - Operating
45-230 Radiation Monitors Monthly Source Check
05B-253 Full Flow Simultaneous Start of All Auxiliary Feedwater Pumps
25-263 Control Room Post Accident Recirc Monthly Test
05B-283 Motor Driven AFW Pumps Full Flow Test - IST
05B-284 Turbine Driven Auxiliary Feedwater Pump Full Flow Test - IST
34-285 Residual Heat Removal Pumps Full Flow Test - IST
42-291A Diesel Generator A Operability Test
42-291B Diesel Generator B Operability Test

Malfunctions (once in four years)

300 Component Cooling Water Pump Trip
301 Reactor Coolant Activity Increase
302 Letdown Heat Exchanger Tube Rupture to Component Cooling
303 Uncontrolled Dilution
304 Reactor Coolant Pump A Seal Failure
305 Loss of Off-Site Power - 345 KV and 138 KV
306 Loss of 125 VDC Bus
307 Loss of 118 VAC
309 Loss of 4160 VAC Bus 1-1
310 Loss of 4160 VAC Bus 1-3
311 Loss of 4160 VAC Bus 1-5
312 Loss of 480 VAC Bus 1-52
313 ESF Sequencer Fails to Complete Sequence
314 Generator Lockout
315 Loss of Emergency Diesel Generators
316 Emergency Diesel Fails to Start
318 Loss of Condenser Vacuum (1%)
319 Loss of Condenser Level Control (controller fails low)
320 Loss of Condenser Level Control (controller fails high)
321 Feedwater System Rupture Inside Containment, Upstream of Check Valve
(6E6 lbm/hr)
322 Feedwater System Rupture Inside Containment, Upstream of Check Valve
(6E5 lbm/hr)
323 Feedwater System Rupture Outside Containment (6E4 lbm/hr)
324 Feedwater System Rupture Outside Containment (6E6 lbm/hr)
325 Inadvertent Feedwater Isolation
326 Inadequate Condensate to the Auxiliary Feedwater Pump Suction
328 Loss of Instrument Air Header

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- 329 Main Steam Line Rupture Inside Containment (1.75E6 lbm/hr)
- 330 Main Steam Line Rupture Inside Containment (1.75E5 lbm/hr)
- 331 Main Steam Line Rupture Outside Containment (1E6 lbm/hr)
- 332 Main Steam Line Rupture Outside Containment (1E7 lbm/hr)
- 333 Steam Dump Valve Sticks Open
- 334 Source Range Channel Fails High
- 335 Source Range Channel Fails Low
- 336 Intermediate Range Channel Fails Low
- 337 Intermediate Range Channel Fails High
- 338 Power Range Channel Upper Detector Failure
- 341 Loss of Coolant Accident - Hot Leg (4.5E4 lbm/sec)
- 342 Loss of Coolant Accident - Hot Leg (180 lbm/sec)
- 343 Loss of Coolant Accident - Cold Leg (6.6E4 lbm/sec)
- 344 Loss of Coolant Accident - Cold Leg (165 lbm/sec)
- 345 Loss of Coolant Accident - Pressurizer Steam Space
- 346 Reactor Coolant System Leaks
- 347 Pressurizer Power Operated Relief Valve Fails Open (2E4 lbm/hr)
- 348 Pressurizer Power Operating Relief Valve Fails Open (2E5 lbm/hr)
- 349 Pressurizer Safety Valve Seat Leakage
- 351 Control Rod Urgent Failure
- 352 Continuous Rod Motion of Controlling Bank
- 353 Dropped Control Rod
- 354 Misaligned Control Rod
- 355 Stuck Control Rod
- 356 Control Rod Ejection
- 357 Reactor Trip Breakers Fail to Open on Trip Signal
- 358 Residual Heat Removal Pump Seal Failure
- 359 Residual Heat Removal Pump Trip
- 360 Radiation Process Monitor Failure
- 361 Steam Generator Level Controller Unstable
- 362 Steam Generator Tube Leak (50 gpm)
- 363 Steam Generator Tube Leak (250 gpm)
- 364 Steam Generator Tube Leak (500 gpm)
- 365 Safety Injection Pump Trip
- 366 Service Water Pump Trip
- 367 Pressurizer Pressure Controller Fails Low
- 368 Pressurizer Pressure Controller Fails High
- 369 Pressurizer Level Controller Fails Low
- 370 Pressurizer Level Controller Fails High
- 371 Feedwater Flow Channel Fails High
- 372 Feedwater Flow Channel Fails Low
- 373 Steam Generator Level Channel Fails High

374 Steam Generator Level Channel Fails Low
375 Main Steam Density Compensation Failure (main steam pressure transmitter fails high)
376 Main Steam Density Compensation Failure (main steam pressure transmitter fails low)
377 Main Steam Impulse Pressure Transmitter (PT-485) Fails High
378 Main Steam Impulse Pressure Transmitter (PT-486) Fails Low
379 Reactor Coolant System Loop B Hot Leg RTD Fails High
380 Reactor Coolant System Loop B Hot Leg RTD Fails Low
382 Letdown Line Leak Inside Containment
383 Charging Pump Discharge Header Rupture
384 Charging Line Leak Inside Containment
385 Letdown Line Break Downstream of LD-6
386 Circulating Water Pump Screen Plugging
387 Circulating Water Pump Trip
388 Auxiliary Feedwater Pump Discharge Line Rupture
389 Feedwater Pump Trip
390 Condensate Pump Trip
391 Auxiliary Feedwater Pump Suction Strainer Plugged
393 Residual Heat Removal Suction Relief Valve Leakage
394 Residual Heat Removal Suction Relief Valve Leakage
395 Residual Heat Removal Pump Suction Break
396 Residual Heat Removal Pump Discharge Break
398 Inadvertent Safety Injection
500 Loss of Emergency Diesel Generator Cooling
501 Turbine Control Valve #4 Fails Open
502 Turbine Control Valve #4 Fails Closed
503 Volume Control Tank Level Transmitter (LT-141) Failure
504 Volume Control Tank Level Transmitter (LT-112) Failure
505 Letdown Line Pressure Transmitter (PT-135) Failure
506 Letdown Line Heat Exchanger Temperature Failure
507 Reactor Coolant System Wide Range Pressure Failure
509 Dropped Rod Without a Reactor Trip

Uncorrected Test Failures:

None

Additions/Deletions Incorporated Since 1995 Certification Report:

Test No.	Description	Change	Reason for Change
327	Loss of all Feedwater Flow (Norm & Aux)	Deleted	Malfunction was deleted.
397	Inadvertent Phase A Isolation	Deleted	Same as Surveillance Procedure SP 56-078.

Test Schedule for Next Four Years:

1999/2000

Steady State Tests

(Test No.)	(Description)
122	34% Steady State Performance Test
123	74% Steady State Performance Test
124	100% Steady State Performance Test
125	100% One Hour Stability Test

Transients

151	Manual Reactor Trip
152	Simultaneous Trip of All Feedwater Pumps
153	Simultaneous Closure of All Main Steam Isolation Valves
154	Simultaneous Trip of All Reactor Coolant Pumps
155	Trip of Any Single Reactor Coolant Pump
156	Main Turbine Trip Without Reactor Trip
157	Maximum Rate Power Change 100% to 75% and Back to 100%
158	Maximum Size LOCA With Loss of All Off-site Power
159	Maximum Size Unisolable Main Steam Line Rupture
160	Slow Depressurization to Saturated Condition Using Pressurizer Safety Valve Stuck Open Without ECCS
161	Startup of an Inactive Reactor Coolant Loop
162	Low Pressure Feedwater Heater Bypass Valve Fails Open

Normal Operations

217 Core Performance Testing - Initial Criticality by Dilution

Surveillance Procedures

42-047A Diesel Generator A Operational Test
48-002 Nuclear Power Range Channel Daily Calibration
48-006 Intermediate Range Test at Shutdown
48-008 Source Range Channel Test at Shutdown
36-018 Pressurizer Backup Heater Groups A & B Operability Test
14-026A Auxiliary Building Special Ventilation (ASV) Train A Operability Test
54-064 Turbine Overspeed Trip Test
49-075 Control Rod Exercise
56-078 Containment Isolation Trip Test
08-081 Fire Pump Test
36-082 Reactor Coolant System Leak Rate Check
54-086 Turbine Stop and Governor Valve Operability Test
36-087 Reactor Coolant System Integrity Test
05B-283 Motor Driven Auxiliary Feedwater Pumps Full Flow Test - IST
42-291A Diesel Generator A Operability Test
24-107A Shield Building Ventilation Train A Operability Test

Malfunctions

300 Component Cooling Water Pump Trip
301 Reactor Coolant Activity Increase
303 Uncontrolled Dilution
304 Reactor Coolant Pump A Seal Failure
305 Loss of Off-Site Power - 345 KV and 138 KV
306 Loss of 125 VDC Bus
307 Loss of 118 VAC
309 Loss of 4160 VAC Bus 1-1
310 Loss of 4160 VAC Bus 1-3
311 Loss of 4160 VAC Bus 1-5
312 Loss of 480 VAC Bus 1-52
313 ESF Sequencer Fails to Complete Sequence
314 Generator Lockout
315 Loss of Emergency Diesel Generators
316 Emergency Diesel Fails to Start
318 Loss of Condenser Vacuum (1%)

319 Loss of Condenser Level Control (controller fails low)
320 Loss of Condenser Level Control (controller fails high)
321 Feedwater System Rupture Inside Containment, Upstream of Check Valve
(6E6 lbm/hr)
322 Feedwater System Rupture Inside Containment, Upstream of Check Valve
(6E5 lbm/hr)
385 Letdown Line Break Downstream of LD-6
389 Feedwater Pump Trip
393 Residual Heat Removal Suction Relief Valve Leakage
505 Letdown Line Pressure Transmitter (PT-135) Failure

2000/2001

Steady State Tests

(Test No.)	(Description)
122	34% Steady State Performance Test
123	74% Steady State Performance Test
124	100% Steady State Performance Test
125	100% One Hour Stability Test

Transients

151 Manual Reactor Trip
152 Simultaneous Trip of All Feedwater Pumps
153 Simultaneous Closure of All Main Steam Isolation Valves
154 Simultaneous Trip of All Reactor Coolant Pumps
155 Trip of Any Single Reactor Coolant Pump
156 Main Turbine Trip Without Reactor Trip
157 Maximum Rate Power Change 100% to 75% and Back to 100%
158 Maximum Size LOCA With Loss of All Off-Site Power
159 Maximum Size Unisolable Main Steam Line Rupture
160 Slow Depressurization to Saturated Condition Using Pressurizer Safety Valve Stuck
Open Without ECCS
161 Startup of an Inactive Reactor Coolant Loop
162 Low Pressure Feedwater Heater Bypass Valve Fails Open

Normal

- 201 Plant Startup - Cold Shutdown to Intermediate Shutdown
- 202 Plant Startup (continued) - Intermediate Shutdown to Hot Shutdown
- 203 Plant Startup (continued) - Intermediate Shutdown to Hot Shutdown
- 204 Plant Startup (continued) - Intermediate Shutdown to Hot Shutdown
- 205 Plant Startup (continued) - Generator Synchronization to 20% Power
- 206 Plant Startup (continued) - 20% Power to 50% Power
- 207 Plant Startup (continued) - 50% Power to 100% Power
- 220 Core Performance Testing - Isothermal Temperature Coefficient Measurement
- 221 Core Performance Testing - Power Defect Measurement
- 224 Plant Startup (continued) - 50% Power to 100% Power

Surveillance Procedures

- 24-107B Shield Building Ventilation Train B Operability Test
- 33-098 Safety Injection Pump and Valve Test - IST
- 34-099 Residual Heat Removal Pump and Valve Test - IST
- 23-100 Containment Spray Pump and Valve Test - IST
- 05B-104 Motor Driven Auxiliary Feedwater Pump and Valve Test - IST
- 05B-105 Turbine Driven Auxiliary Feedwater Pump and Valve Test - IST
- 33-110 Diesel Generator Automatic Test
- 14-117 Auxiliary Building Special Vent System Test
- 24-121 Shield Building Vent (SBV) System Test
- 87-125 Shift Instrument Channel Checks - Operating
- 02-138 Service Water Pump and Valve Test - IST
- 36-139 Reactor Coolant System Vent Path Flow Verification
- 05B-284 Turbine Driven Auxiliary Feedwater Pump Full Flow Test - IST
- 42-291B Diesel Generator B Operability Test

Malfunctions

- 302 Letdown Heat Exchanger Tube Rupture to Component Cooling
- 323 Feedwater System Rupture Outside Containment (6E4 lbm/hr)
- 324 Feedwater System Rupture Outside Containment (6E6 lbm/hr)
- 325 Inadvertent Feedwater Isolation
- 326 Inadequate Condensate to the Auxiliary Feedwater Pump Suction
- 328 Loss of Instrument Air Header
- 329 Main Steam Line Rupture Inside Containment (1.75E6 lbm/hr)
- 330 Main Steam Line Rupture Inside Containment (1.75E5 lbm/hr)
- 331 Main Steam Line Rupture Outside Containment (1E6 lbm/hr)

332 Main Steam Line Rupture Outside Containment (1E7 lbm/hr)
333 Steam Dump Valve Sticks Open
334 Source Range Channel Fails High
335 Source Range Channel Fails Low
336 Intermediate Range Channel Fails Low
337 Intermediate Range Channel Fails High
338 Power Range Channel Upper Detector Failure
341 Loss of Coolant Accident - Hot Leg (4.5E4 lbm/sec)
342 Loss of Coolant Accident - Hot Leg (180 lbm/sec)
345 Loss of Coolant Accident - Pressurizer Steam Space
382 Letdown Line Leak Inside Containment
386 Circulating Water Pump Screen Plugging
390 Condensate Pump Trip
394 Residual Heat Removal Suction Relief Valve Leakage
398 Inadvertent Safety Injection
501 Turbine Control Valve #4 Fails Open
502 Turbine Control Valve #4 Fails Closed
506 Letdown Line Heat Exchanger Temperature Failure
509 Dropped Rod Without A Reactor Trip

2001/2002

Steady State Tests

(Test no.)	Description
122	34% Steady State Performance Test
123	74% Steady State Performance Test
124	100% Steady State Performance Test
125	100% One Hour Stability Test

Transients

151 Manual Reactor Trip
152 Simultaneous Trip of All Feedwater Pumps
153 Simultaneous Closure of All Main Steam Isolation Valves
154 Simultaneous Trip of All Reactor Coolant Pumps
155 Trip of Any Single Reactor Coolant Pump
156 Main Turbine Trip Without Reactor Trip
157 Maximum Rate Power Change 100% to 75% and Back to 100%
158 Maximum Size LOCA With Loss of All Off-Site Power

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- 159 Maximum Size Unisolable Main Steam Line Rupture
- 160 Slow Depressurization to Saturated Condition Using Pressurizer Safety Valve Stuck Open Without ECCS
- 161 Startup of an Inactive Reactor Coolant Loop
- 162 Low Pressure Feedwater Heater Bypass Valve Fails Open

Normal Operations

- 208 100% Power to Hot Standby and Cooldown to Shutdown
- 209 100% Power to Hot Standby and Cooldown to Shutdown (continued)
- 210 100% Power to Hot Standby and Cooldown to Shutdown (continued)
- 211 100% Power to Hot Standby and Cooldown to Shutdown (continued)
- 212 Load Changes - 50% Power to 70% Power to 40% Power
- 218 Core Performance Testing - Low Power Physics Test, Reference Bank Worth Measurement
- 219 Core Performance Testing - Reference Book Worth Using Rod Swap

Surveillance Procedures

- 14-026B Auxiliary Building Special Ventilation (ASV) Train B Operability Test
- 33-144 Accumulator Isolation and Check Valve Test
- 87-148 Daily Instrument Channel Checks
- 87-149 Shift Instrument Channel Checks - Shutdown
- 87-151 Weekly Instrument Channel Checks
- 55-167-1 Blowdown Treatment Valves Test - IST
- 55-167-3 MG(R) and MD(R) Valves Timing Test - IST
- 55-167-4 Post LOCA Valves Timing Tests
- 55-167-5 Miscellaneous Systems Valve Timing Tests - IST
- 55-167-6 Cold Shutdown Evolution Valve Timing Tests - IST
- 31-167-9 Refueling Shutdown Valve Tests - IST
- 31-168 Component Cooling Pump and Valve Test - IST
- 33-19I Safety Injection Flow Test
- 34-285 Residual Heat Removal Pumps Full Flow Test - IST
- 42-047B Diesel Generator B Operational Test

Malfunctions

- 343 Loss of Coolant Accident - Cold Leg (6.6E4 lbm/sec)
- 344 Loss of Coolant Accident - Cold Leg (165 lbm/sec)
- 351 Control Rod Urgent Failure
- 352 Continuous Rod Motion of Controlling Bank

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353	Dropped Control Rod
354	Misaligned Control Rod
355	Stuck Control Rod
356	Control Rod Ejection
357	Reactor Trip Breakers Fail to Open on Trip Signal
358	Residual Heat Removal Pump Seal Failure
359	Residual Heat Removal Pump Trip
360	Radiation Process Monitor Failure
361	Steam Generator Level Controller Unstable
362	Steam Generator Tube Leak (50 gpm)
363	Steam Generator Tube Leak (250 gpm)
364	Steam Generator Tube Leak (500 gpm)
365	Safety Injection Pump Trip
366	Service Water Pump Trip
367	Pressurizer Pressure Controller Fails Low
368	Pressurizer Pressure Controller Fails High
383	Charging Pump Discharge Header Rupture
387	Circulating Water Pump Trip
391	Auxiliary Feedwater Pump Suction Strainer Plugged
395	Residual Heat Removal Pump Suction Break
503	Volume Control Tank Level Transmitter (LT-141) Failure
507	Reactor Coolant System Wide Range Pressure Failure

2002/2003

Steady State Tests

(Test no.)	(Description)
122	34% Steady State Performance Test
123	74% Steady State Performance Test
124	100% Steady State Performance Test
125	100% One Hour Stability Test

Computer Real Time Tests

121	- CPU Idle Time Measurement
	- Valve Stroke Time Test
	- Step Counter/Rod Speed Test
	- Annunciator Flash Rate Test

Transients

- 151 Manual Reactor Trip
- 152 Simultaneous Trip of All Feedwater Pumps
- 153 Simultaneous Closure of All Main Steam Isolation Valves
- 154 Simultaneous Trip of All Reactor Coolant Pumps
- 155 Trip of Any Single Reactor Coolant Pump
- 156 Main Turbine Trip Without Reactor Trip
- 157 Maximum Rate Power Change 100% to 75% and Back to 100%
- 158 Maximum Size LOCA With Loss of All Off-Site Power
- 159 Maximum Size Unisolable Main Steam Line Rupture
- 160 Slow Depressurization to Saturated Condition Using Pressurizer Safety Valve Stuck Open Without ECCS
- 161 Startup of an Inactive Reactor Coolant Loop
- 162 Low Pressure Feedwater Heater Bypass Valve Fails Open

Normal Operations

- 213 Reactor Trip With Recovery to 100% Power
- 214 Reactor Trip With Recovery to 100% Power (continued)
- 215 Reactor Trip With Recovery to 100% Power (continued)
- 216 Reactor Trip With Recovery to 100% Power (continued)

Surveillance Procedures

- 05A-202 Feedwater Regulating and Bypass Valves Timing Test
- 87-214 Monthly Instrument Channel Check - Operating
- 45-230 Radiation Monitors Monthly Source Check
- 05B-253 Full Flow Simultaneous Start of All Auxiliary Feedwater Pumps
- 25-263 Control Room Post Accident Recirc Monthly Test
- 55-167-8 Hot/Intermediate Shutdown Valve Tests - IST

Malfunctions

- 346 Reactor Coolant System Leaks
- 347 Pressurizer Power Operated Relief Valve Fails Open (2E4 lbm/hr)
- 348 Pressurizer Power Operated Relief Valve Fails Open (2E5 lbm/hr)
- 349 Pressurizer Safety Valve Seat Leakage
- 369 Pressurizer Level Controller Fails Low
- 370 Pressurizer Level Controller Fails High
- 371 Feedwater Flow Channel Fails High

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372 Feedwater Flow Channel Fails Low
373 Steam Generator Level Channel Fails High
374 Steam Generator Level Channel Fails Low
375 Main Steam Density Compensation Failure (main steam pressure transmitter fails high)
376 Main Steam Density Compensation Failure (main steam pressure transmitter fails low)
377 Main Steam Impulse Pressure Transmitter (PT-485) Fails High
378 Main Steam Impulse Pressure Transmitter (PT-486) Fails Low
379 Reactor Coolant System Loop B Hot Leg RTD Fails High
380 Reactor Coolant System Loop B Hot Leg RTD Fails Low
384 Charging Line Leak Inside Containment
388 Auxiliary Feedwater Pump Discharge Line Rupture
396 Residual Heat Removal Pump Discharge Break
500 Loss of Emergency Diesel Generator Cooling
504 Volume Control Tank Level Transmitter (LT-112) Failure