Serial No. 11-687
Docket No. 50-336

ATTACHMENT 4

Cross-References NUREG-1432 to MPS2 TS Surveillance Frequencies Removed

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

Technical Specification Section Title/ Surveillance Description*	TSTF 425	MPS2
Shutdown Margin		
Verify SDM in Modes 3, 4, and 5	SR 3.1.1.1	SR 4.1.1.1
Reactivity Balance		
Verify Core Reactivity $\pm$1%	SR 3.1.2.1	SR 4.1.1.2
CEA Alignment		
Verify Rod Position Within Alignment	SR 3.1.4.1	SR 4.1.3.1.1
Verify Rod Motion Inhibit	SR 3.1.4.2	SR 4.1.3.1.4.b
Verify CEA Deviation Circuit	SR 3.1.4.3	SR 4.1.3.1.3
Verify CEA Freedom of Movement	SR 3.1.4.4	SR 4.1.3.1.2
Perform Channel Functional Test of Reed Switch	SR 3.1.4.5	---
Position Indication Channels		
Verify Pulse Counter Within 6 Steps of Reed Switch Counters	---	*SR 4.1.3.3*
Shutdown CEA Insertion Limits		
Verify CEAs Withdrawn	SR 3.1.5.1	SR 4.1.3.5
Regulating CEA Insertion Limits		
Verify Regulating CEAs Within Limits	SR 3.1.6.1	SR 4.1.3.6.1
Verify Accumulated Time With Regulated CEA Below Limit	SR 3.1.6.2	SR 4.1.3.6.2
Verify PDIL Alarm Circuit	SR 3.1.6.3	SR 4.1.3.6.3
Control Rod Drive Mechanisms		
Verify Mechanisms are De-Energized	---	*SR 4 1.3.7*
Special Test Exceptions - SDM		
Verify Each CEA Not Inserted is Within the Acceptance Criteria for Negative Reactivity Addition	SR 3.1.7.1	SR 4.10.1.1
Special Test Exceptions – Modes 1 and 2		
Verify Thermal Power $\leq$ Test Power Plateau	SR 3.1.8.1	SR 4.10.2.1
Linear Heat Rate		
Verify ASI Alarm Setpoints Within Limits of COLR	SR 3.2.1.1	SR 4.2.1.2.b
Verify Incore Local Power Density Alarms	SR 3.2.1.2	SR 4.2.1.3.a
Verify Local Incore Power Density Setpoints are Within Limits of COLR	SR 3.2.1.3	SR 4.2.1.3.b
Verify CEAs are Withdrawn $\geq$ Long Term Steady State Insertion Limits	---	*SR 4.2.1.2.a*
F^T_{xy} Limits		
Verify the Value of F^T_{xy}	SR 3.2.2.1	---
F^T_r Limits		
Verify the Value of F^T_r	SR 3.2.3.1	SR 4.2.3.2.b
T_q Limits		
Verify T_q is Within Limits	SR 3.2.4.1	SR 4.2.4.1

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Technical Specification Section Title/ Surveillance Description*	TSTF 425	MPS2
DNB Margin		
Verify Cold Leg Temperature, Pressurizer Pressure, and RCS Flow Rate	---	*SR 4.2.6.1*
Axial Shape Index (ASI)		
Verify ASI is Within Limits	SR 3.2.5.1	SR 4.2.6.1
RPS Instrumentation - Operating		
Perform Channel Check	SR 3.3.1.1	Table 4.3-1 Functional Units (FU)s 2 through 9 and 11
Perform Calibration (Heat Balance Only)	SR 3.3.1.2	Table 4.3-1 FU 2.a
Calibrate Power Range Excore Channels Using Incore	SR 3.3.1.3	Table 4.3-1 FU 2.a
Perform Channel Functional Test of Each Channel	SR 3.3.1.4	Table 4.3-1 FUs 2. through 9
Perform Channel Calibration of Excore Channels	SR 3.3.1.5	---
Perform Channel Calibration of Each Channel Including Auto Bypass Removal Function	SR 3.3.1.8	4.3.1.1.2 and Table 4.3-1 FUs 2 through 11
Verify Response Time	SR 3.3.1.9	SR 4.3.1.1.3
RPS Instrumentation - Shutdown		
Perform Channel Check – Wide Range Power Channel	SR 3.3.2.1	Table 4.3-1 FU 11
Perform Channel Functional Test – Power Rate of Change	SR 3.3.2.2	---
Perform Channel Functional Test – Auto Bypass Removal Function	SR 3.3.2.3	---
Perform Channel Calibration, Including Bypass Removal Function	SR 3.3.2.4	---
RPS Logic and Trip Initiation		
Perform Channel Functional Test of Each RTCB Channel	SR 3.3.3.1	Table 4.3-1 Channel FU 15
Perform Channel Functional Test of Each Logic Channel	SR 3.3.3.2	Table 4.3-1 Channel FUs 13 and 14
Perform Channel Functional Test, Including Verification of UV and Shunt trips, of Each RTCB Channel	SR 3.3.3.4	Table 4.3-1 Channel FU 15
ESFAS Instrumentation		
Perform a Channel Check	SR 3.3.4.1	Table 4.3-2 Channel Check Column - FUs 1.b & c, 2.b, 3.c & d, 4.b & c, 5 c & d, 6.b, 9.b, and 10.a
Perform Channel Functional Test	SR 3.3.4.2	Table 4.3-2 Channel Functional Test Column- FUs 1.b&c, 2.b, 3.c & d, 4.b & c, 5.c & d, 6.b, 9.b, and 10.a
Perform Channel Calibration of Each Channel, including Bypass Removal Functions	SR 3.3.4.4	Table 4.3-2 Channel Calibration Column - FUs 1.b & c, 2.b, 3.c & d, 4.b & c, 5.c & d, 6.b, , 9.b, and 10.a SR 4.3.2.1.2

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Technical Specification Section Title/ Surveillance Description*	**TSTF 425**	**MPS2**
Verify Response Time	SR 3.3.4.5	SR 4.3.2.1.3
ESFAS Logic and Manual Trip		
Perform Channel Functional Test of Each Logic Channel	SR 3.3.5.1	Table 4.3-2 Channel Functional Test Column - FUs 1.d, 2.c, 3.e, 4.d, 5.e, 6.c, and 9.c
Perform Channel Functional Test on Each Manual Trip Function	SR 3.3.5.2	Table 4.3-2 Channel Functional Test Column - FUs 1.a,, 2.a , 3.a, & b, 4.a, 5.a & b, 6.a, and 9.a
DG LOVS		
Perform Channel Check	SR 3.3.6.1	Table 4.3-2 Channel Check Column – FUs 8.a & b
Perform Channel Functional Test	SR 3.3.6.2	Table 4.3-2 Channel Functional Test Column - FUs 8.a & b
Perform Channel Calibration	SR 3.3.6.3	Table 4.3-2 Channel Calibration Column – FUs 8.a & b
ESFAS Sensor Cabinet Power Supply Drawers		
Verify the Power Supply are Energized by Visual Inspection of Indication Lamps	---	*SR 4.3.2.2.1*
Verify the Sensor Cabinet Power Supply Auctioneering Circuit	---	*SR 4.3.2.2.2*
Containment Purge Isolation Signal (CPIS)		
Perform Channel Check	SR 3.3.7.1	---
Perform Channel Functional Test Each Rad Monitor	SR 3.3.7.2	---
Perform Channel Functional Test CPIS Actuation Logic Channel	SR 3.3.7.3	---
Perform Channel Calibration	SR 3.3.7.4	---
Perform Channel Functional Test	SR 3.3.7.5	---
Verify CPIS Response Time Each Rad Monitor Channel	SR 3.3.7.6	---
Control Room Isolation System (CRIS)		
Perform Channel Check on Control Room Radiation Monitor	SR 3.3.8.1	SR 4.3.3.1.1
Perform Channel Functional Test - Radiation Monitor Channels	SR 3.3.8.2	SR 4.3.3.1.1
Perform Channel Functional Test - Actuation Logic	SR 3.3.8.3	---
Perform Channel Calibration - Rad Monitor Channels	SR 3.3.8.4	SR 4.3.3.1.1
Perform Channel Functional Test - Manual Trip Channel	SR 3.3.8.5	---
Verify Response Time	SR 3.3.8.6	SR 4.3.3.1.3

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CVSC Isolation Signal		
Perform Channel Check	SR 3.3.9.1	Note1
Perform Channel Functional Test – CVCS Isolation Channel	SR 3.3.9.2	Note1
Perform Channel Calibration – CVCS Isolation Pressure Indicating Channel	SR 3.3.9.3	Note1
Shield Building Filtration Actuation Signal		
Perform Channel Functional Test - Auto Actuation Channel	SR 3.3.10.1	Table 4.3-2 Channel Functional Test Column FUs 5.c & d & e
Perform Channel Functional Test – SBFAS Manual Trip Channel	SR 3.3.10.2	Table 4.3-2 Channel Functional Test Column FUs 5.a & b
PAM Instrumentation		
Perform Channel Check - Normalized Energized Inst.	SR 3.3.11.1	SR 4.3.3.8
Perform Channel Calibration	SR 3.3.11.2	SR 4.3.3.8
Remote Shutdown System		
Perform Channel Check	SR 3.3.12.1	SR 4.3.3.5
Verify Each Control Circuit and Transfer Switch Can Perform its Intended function	SR 3.3.12.2	---
Perform Channel Calibration Each Instrument Channel	SR 3.3.12.3	SR 4.3.3.5
Perform Channel Functional Test Rx Trip Circuit Breaker Open/Close Indication	SR 3.3.12.4	---
Power Monitor Channels		
Perform Channel Check	SR 3.3.13.1	---
Perform Channel Functional Test	SR 3.3.13.2	---
Perform Channel Calibration	SR 3.3.13.3	---
RCS Pressure, Temperature, and Flow (DNB) Limits		
Verify Pressurizer Pressure	SR 3.4.1.1	---
Verify RCS Cold Leg Temperature	SR 3.4.1.2	---
Verify RCS Total Flow Rate	SR 3.4.1.3	---
Verify by Precision Heat Balance – RCS Total Flow	SR 3.4.1.4	---
RCS Minimum Temperature for Criticality		
Verify RCS T_{avg} in Each Loop	SR 3.4.2.1	SR 4.1.1.5
RCS P/T Limits		
Verify RCS Pressure, Temperature, and H/U and C/D Rates	SR 3.4.3.1	4.4.9.1a
RCS Loops Modes 1 and 2		
Verify Each Loop in Operation	SR 3.4.4.1	SR 4.4.1.1
RCS Loops Mode 3		
Verify One Loop in Operation	SR 3.4.5.1	SR 4.4.1.2.2

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Technical Specification Section Title/ Surveillance Description*	TSTF 425	MPS2
Verify Secondary Side Water Level in Each S/G	SR 3.4.5.2	SR 4.4.1.2.3
Verify Correct Breaker Alignment and Indicated Power Available to Each Required Pump	SR 3.4.5.3	SR 4.4.1.2.1
RCS Loops Mode 4		
Verify One Loop in Operation	SR 3.4.6.1	SR 4.4.1.3.3
Verify Secondary Side Water Level in Each S/G	SR 3.4.6.2	SR 4.4.1.3.2
Verify Correct Breaker Alignment and Indicated Power Available to Each Required Pump	SR 3.4.6.3	SR 4.4.1.3.1
RCS Loops Mode 5, Loops Filled		
Verify Required SDC Train in Operation	SR 3.4.7.1	SR 4.4.1.4.3
Verify Secondary Side Water Level in Each S/G	SR 3.4.7.2	SR 4.4.1.4.2
Verify Correct Breaker alignment and Indicated Power Available to Each Required SDC Pump	SR 3.4.7.3	SR 4.4.1.4.1
RCS Loops Mode 5, Loops Not Filled		
Verify Required SDC Train in Operation	SR 3.4.8.1	SR 4.4.1.5.2
Verify Correct Breaker Alignment and Indicated Power Available to Each Required SDC Pump	SR 3.4.8.2	SR 4.4.1.5.1
Reactor Coolant Pumps		
Verify Two RCPs Motor Circuit Breaker are Disconnected from Their Power Supply	---	SR 4.4.1.6
Pressurizer		
Verify Water Level	SR 3.4.9.1	SR 4.4.4.1
Verify Capacity of Required Pressurizer Heaters	SR 3.4.9.2	SR 4.4.4.2
Verify Required Pressurizer Heaters Capable of Being Powered from Emergency Bus.	SR 3.4.9.3	---
Pressurizer PORV		
Perform a Complete Cycle of Each Block valve	SR 3.4.11.1	SR 4.4.3.2
Perform a Complete Cycle of Each PORV	SR 3.4.11.2	SR 4.4.3.1.c
Perform a Complete Cycle of Each Solenoid Air Control Valve and Check Valve on the Accumulators	SR 3.4.11.3	---
Verify PORVs and Block Valves are Capable of Being Powered from Emergency Power	SR 3.4.11.4	---
Perform a Channel Functional Test	---	SR 4.4.3.1.a
Perform a Channel Calibration	---	SR 4.4.3.1.b
LTOP System		
Verify a Maximum of One HPSI Pump is Capable of Injecting into the RCS	SR 3.4.12.1	SR 4.4.9.3.3
Verify a Maximum of One Charging Pump is Capable of Injecting into the RCS	SR 3.4.12.2	SR 4.4.9.3.2
Verify Each SIT is Isolated	SR 3.4.12.3	---
Verify Required RCS Vent ≥[1.3] Square Inches Open	SR 3.4.12.4	SR 4.4.9.3.4

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Verify PORV Block Valve is Open for Each Required PORV	SR 3.4.12.5	SR 4.4.9.3.1.c
Perform Channel Functional Test on PORV	SR 3.4.12.6	SR 4.4.9.3.1.a
Perform Channel Calibration on Each Required PORV Actuation Channel	SR 3.4.12.7	SR 4.4.9.3.1.b
RCS Operational Leakage		
Verify RCS Operational Leakage	SR 3.4.13.1	SR 4.4.6.2.1
Verify ≤150 GPD Through Any One SG Leakage	SR 3.4.13.2	SR 4.4.6.2.2
RCS PIV Leakage		
Verify Leakage from Each is ≤ 0.5 gpm	SR 3.4.14.1	---
Verify SDC Autoclosure Interlock Prevents Opening	SR 3.4.14.2	---
Verify SDC Autoclosure Interlock Auto Close	SR 3.4.14.3	---
RCS Leakage Detection Instrumentation		
Perform Channel Check Containment Atmosphere Radiation Monitor	SR 3.4.15.1	SR 4.3.3.1.1/SR 4.4.6.1.a
Perform Channel Functional Test Containment Atmosphere Rad Monitor	SR 3.4.15.2	SR 4.3.3.1.1/ SR 4.4.6.1.a
Perform Channel Calibration Containment Sump Monitor	SR 3.4.15.3	SR 4.4.6.1.b
Perform Channel Calibration Containment Atmosphere Radioactivity Monitor	SR 3.4.15.4	SR 4.3.3.1.1/ SR 4.4.6.1.a
Perform Channel Calibration Containment Air Cooler	SR 3.4.15.5	---
RCS Specific Activity		
Verify RCS Gross Specific Activity	SR 3.4.16.1	---
Verify RCS Dose Equivalent 1-131	SR 3.4.16.2	SR 4.4.8.2
Determine E Bar	SR 3.4.16.3	---
Verify Xe-133 ≤ 1100μCi/gm	---	SR 4.4.8.1
RCS Loops Test Exceptions		
Verify Thermal Power < 5%	SR 3.4.17.1	---
Safety Injection Tanks		
Verify SIT Isolation Valve Open	SR 3.5.1.1	SR 4.5.1.a
Verify Borated Water Volume	SR 3.5.1.2	SR 4.5.1.b
Verify N^2 Pressure	SR 3.5.1.3	SR 4.5.1.c
Verify Boron Concentration	SR 3.5.1.4	SR 4.5.1.d
Verify Power Removed from Isolation Valve	SR 3.5.1.5	SR 4.5.1.e
ECCS – Operating		
Verify Valve are in Position and Power Removed	SR 3.5.2.1	SR 4.5.2.b
Verify Valve Position	SR 3.5.2.2	SR 4.5.2.a
Verify Piping Full of Water	SR 3.5.2.3	---
Verify Automatic Valve Actuation	SR 3.5.2.6	SR 4.5.2.f

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Technical Specification Section Title/ Surveillance Description*	TSTF 425	MPS2
Verify ECCS Pump Starts Automatically	SR 3.5.2.7	SR 4.5.2.g
Verify LPSI Pump Stops on Actuation Signal	SR 3.5.2.8	SR 4.5.2.h
Verify Throttle Valve Position	SR 3.5.2.9	SR 4.5.2.i.2
Verify by Inspection, Each ECCS Train Sump Suction is Not Restricted	SR 3.5.2.10	SR 4.5.2.j
Verify SDC Open Permissive Interlocks Prevent SDC Inlet Isolation Valves From Being Opened on RCS pressures ≥ 300	---	SR 4.5.2.k
RWT		
Verify Water Temperature	SR 3.5.4.1	SR 4.5.4.b & c
Verify Water Volume	SR 3.5.4.2	SR 4.5.4.a.1
Verify Boron Concentration	SR 3.5.4.3	SR 4.5.4.a.2
Trisodium Phosphate		
Verify TSP Baskets Contain > 291 ft^3	SR 3.5.5.1	SR 4.5.5.1
Verify Sample of TSP Baskets Provide Adequate pH	SR 3.5.5.2	SR 4.5.5.2
Containment Air Locks		
Verify Only One Door Can be Opened at a Time	SR 3.6.2.2	SR 4.6.1.3.2
Verify the Equipment Hatch is Closed and Sealed	---	SR 4.6.1.1.b
Containment Isolation Valves		
Verify 42" Purge Valves Sealed Closed	SR 3.6.3.1	SR 4.6.3.2
Verify 8" Purge Valves Closed	SR 3.6.3.2	---
Verify Valves Outside Containment in Correct Position	SR 3.6.3.3	SR 4.6.1.1.a
Verify Isolation Time of Automatic Power Operated Valves	SR 3.6.3.5	---
Perform Leak Rate Test of Purge Valves	SR 3.6.3.6	---
Verify Automatic Valves Actuate to Correct Position	SR 3.6.3.7	SR 4.6.3.1.b
Verify Purge Valves Blocked Closed	SR 3.6.3.8	---
Containment Pressure		
Verify Pressure	SR 3.6.4.1	SR 4.6.1.4
Containment Air Temperature		
Verify Average Air Temperature	SR 3.6.5.1	SR 4.6.1.5
Containment Spray and Cooling Systems		
Verify Valve Position	SR 3.6.6A.1	SR 4.6.2.1.1.a
Operate Each Cooling Train Fan	SR 3.6.6A.2	SR 4.6.2.1.2.a
Verify Each Cooling Train Cooling Water Flow Rate ≥ [2000] GPM to Each Fan	SR 3.6.6A.3	SR 4.6.2.1.2.b
Verify Spray Piping Full of Water	SR 3.6.6A.4	---

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Technical Specification Section Title/ Surveillance Description*	TSTF 425	MPS2
Verify Automatic Valves Actuate on Signal	SR 3.6.6A.6	SR 4.6.2.1.1.c
Verify Pump Start on Actuation Signal	SR 3.6.6A.7	SR 4.6.2.1.1.d
Verify Cooling Train Start on Actuation Signal	SR 3.6.6A.8	SR 4.6.2.1.2.c
Verify Spray Nozzle is Unobstructed	SR 3.6.6A.9	SR 4.6.2.1.1.e
Spray Additive System		
Verify Valve Position	SR 3.6.7.1	Note 1
Verify Tank Solution Volume	SR 3.6.7.2	Note 1
Verify Tank Solution Concentration	SR 3.6.7.3	Note 1
Verify Actuation - Each Flow Path Valve	SR 3.6.7.5	Note 1
Verify Spray Additive Flow Rate	SR 3.6.7.6	Note 1
Shield Building Exhaust Air Cleanup System (SBEACS)		
Operate Each Train with Heaters on for ≥ 15 minutes	SR 3.6.8.1	SR 4.6.5.1
Verify Actuation on Signal	SR 3.6.8.3	SR 4.6.5.1.d.2
Verify Filter Bypass can be Opened	SR 3.6.8.4	---
Verify System Flow Rate	SR 3.6.8.5	SR 4.6.5.1.b.3
Verify Pressure Drop Across Filter Banks	---	SR 4.6.5.1.d.1
Hydrogen Mixing System (HMS)		
Operate Each Train for ≥ 15 minutes	SR 3.6.9.1	SR 4.6.4.4.b
Verify Each Train's Flow Rate on Slow Speed	SR 3.6.9.2	---
Verify Each Train Starts Automatically	SR 3.6.9.3	---
Verify Each Train Starts Manually from the Control Room	---	SR 4.6.4.4.a
Iodine Cleanup System		
Operate Each Train with Heaters on for ≥ 15 minutes	SR 3.6.10.1	Note 1
Verify Train Actuation	SR 3.6.10.3	Note 1
Verify Filter Bypass Operation	SR 3.6.10.4	Note 1
Shield Building		
Verify Annulus Negative Pressure	SR 3.6.11.1	---
Verify One Access Door in Each Access is Closed	SR 3.6.11.2	SR 4.6.5.2.1
Verify Building can be Maintained at a Negative Pressure > -0.25 inch Water Gauge with One Train	SR 3.6.11.4	SR 4.6.5.2.2
Main Steam Isolation Valves		
Verify Valves Actuate on Signal	SR 3.7.2.2	Table 4.3-2 FU 4d
MFIVs and MFRVs		
Verify Valves Actuate	SR 3.7.3.2	SR 4.7.1.6.a & b
Verify Feedwater Pump Trip on MS Isolation Signal	---	SR 4.7.1.6.c & d

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Atmospheric Dump Valves –		
Verify Dump Valves Cycle	SR 3.7.4.1	SR 4.7.1.7
Verify Block Valves Cycle	SR 3.7.4.2	---
Steam Generator Blowdown Isolation Valves		
Verify Valve Closure Time	---	SR 4.7.1.8
AFW		
Verify Valve Position	SR 3.7.5.1	SR 4.7.1.2.a
Verify Automatic Valve Actuation	SR 3.7.5.3	SR 4.7.1.2.c
Verify Automatic Pump Actuation	SR 3.7.5.4	SR 4.7.1.2.d
Condensate Storage Tank		
Verify Level of CST	SR 3.7.6.1	SR 4.7.1.3
Component Cooling		
Verify Valve Position	SR 3.7.7.1	SR 4.7.3.1.a
Verify Automatic Valve Actuation	SR 3.7.7.2	SR 4.7.3.1.b
Verify Automatic Pump Actuation	SR 3.7.7.3	SR 4.7.3.1.c
Service Water		
Verify Valve Position	SR 3.7.8.1	SR 4.7.4.1.a
Verify Automatic Valve Actuation	SR 3.7.8.2	SR 4.7.4.1.b
Verify Automatic Pump Actuation	SR 3.7.8.3	SR 4.7.4.1.c
Ultimate Heat Sink		
Verify Water Level	SR 3.7.9.1	---
Verify Water Temperature	SR 3.7.9.2	SR 4.7.11.a
Operate Each Cooling Tower	SR 3.7.9.3	---
Essential Chilled Water		
Verify Valve Position	SR 3.7.10.1	Note 1
Verify Automatic Actuation of Components	SR 3.7.10.2	Note 1
CR Emergency Air Cleanup System		
Operate Train with Heaters on for $\geq$ 15 minutes	SR 3.7.11.1	SR 4.7.6.1.b
Verify Train Actuation Actual or Simulated Signal	SR 3.7.11.3	---
Verify Manual Train Actuation	---	SR 4.7.6.1.b
Verify Envelope Pressurization	SR 3.7.11.4	--
Verify Pressure Drop Across Filter Assembly	---	SR 4.7.6.1.e.1
Verify Actuation to Recirculation Mode	---	SR 4.7.6.1.e.2
CREATCS		
Verify Train Capacity	SR 3.7.12.1	----
Verify Control Room Temperature is Within Limit	---	SR 4.7.6.1.a
ECCS PREACS		
Operate Heaters	SR 3.7.13.1	Note 1

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Verify Train Actuation Actual or Simulated Signal	SR 3.13.3	Note 1
Verify Envelope Negative Pressure	SR 3.13.4	Note 1
Verify Bypass Damper can be Opened	SR 3.13.5	Note 1
Fuel Building Air Cleanup		
Operate Heaters	SR 3.7.14.1	Note 1
Verify Automatic Train Actuation	SR 3.7.14.3	Note 1
Verify Envelope Negative Pressure	SR 3.7.14.4	Note 1
Verify Bypass Damper Can be Opened	SR 3.7.14.5	Note 1
Penetration Room Air Cleanup System –		
Operate Heaters	SR 3.7.15.1	Note 1
Verify Automatic Train Actuation	SR 3.7.15.3	Note 1
Verify Envelope Pressurization	SR 3.7.15.4	Note 1
Verify Bypass Damper Closure	SR 3.7.15.5	Note 1
Fuel Storage Pool Water Level		
Verify Water Level	SR 3.7.16.1	SR 4.9.12
Fuel Storage Pool Boron		
Verify Boron Concentration	SR 3.7.17.1	SR 4.9.17
Secondary Specific Activity		
Verify Secondary Activity	SR 3.7.19.1	SR 4.7.1.4
AC Sources –Operating		
Verify Breaker Alignment Offsite Circuits	SR 3.8.1.1	SR 4.8.1.1.1
Verify EDG Starts - Achieves Voltage & Frequency	SR 3.8.1.2	SR 4.8.1.1.2.a.2
Synchronize and Load for > 60 Minutes Every 31 days	SR 3.8.1.3	SR 4.8.1.1.2.a.3
Verify Day Tank Level	SR 3.8.1.4	SR 4.8.1.1.2.a.1
Remove Accumulate Water from Day Tank	SR 3.8.1.5	SR 4.8.1.1.2.b.1
Verify Operation of Transfer Pump	SR 3.8.1.6	---
Verify EDG Starts – Achieves Voltage & Frequency in 10 Seconds -184 days	SR 3.8.1.7	SR 4.8.1.1.2.d.1, 2 & 3
Verify Manual Transfer of AC power Sources – Offsite Sources	SR 3.8.1.8	---
Verify Largest Load Rejection	SR 3.8.1.9	SR 4.8.1.1.2.c.3
Verify EDG Does Not Trip with Load Rejection	SR 3.8.1.10	SR 4.8.1.1.2.c.4
Verify De-energize, Load Shed and Re-energize Emergency Bus with Loss of Offsite Power	SR 3.8.1.11	SR 4.8.1.1.2.c.7
Verify EDG Start on ESF Signal	SR 3.8.1.12	SR 4.8.1.1.2.c.8
Verify EDG Noncritical Trips are Bypassed	SR 3.8.1.13	SR 4.8.1.1.2.c.6
Run EDG for 24 Hours	SR 3.8.1.14	---
Verify EDG Starts Post Operation – Achieves Voltage & Frequency	SR 3.8.1.15	SR 4.8.1.1.2.c.9

Note 1 – This system is not included in the MPS2 design or TS.
--- Surveillance not included in ITS or MPS2 TSs
*Italicized text denotes MPS2-specific surveillances

Technical Specification Section Title/ Surveillance Description*	TSTF 425	MPS2
Verify EDG Synchronizes w/ Offsite Power and Transfers Load	SR 3.8.1.16	---
Verify Test Mode is Overrode on ESF Signal	SR 3.8.1.17	---
Verify Load Sequencers are within Design Tolerance	SR 3.8.1.18	SR 4.8.1.1.2.c.2
Verify EDG Start on Loss of Offsite Power with ESF	SR 3.8.1.19	SR 4.8.1.1.2.c.5
Verify When Started Simultaneously Each EDGs Reach Rated Voltage and Frequency	SR 3.8.1.20	---
Diesel FO and Starting Air		
Verify FO Storage Tank Volume	SR 3.8.3.1	SR 4.8.1.1.2.a.1
Verify Lube Oil Inventory	SR 3.8.3.2	---
Verify EDG Start Air Receive Pressure	SR 3.8.3.4	---
Check and Remove Accumulate Water from FO Tank	SR 3.8.3.5	SR 4.8.1.1.2.b.1
DC Sources Operating		
Verify Battery Terminal Voltage	SR 3.8.4.1	---
Verify Station Battery Chargers Capable of Supplying [x]Amp for [y]Hours	SR 3.8.4.2	SR 4.8.2.3.2.c.3
Perform Battery Service Test	SR 3.8.4.3	SR 4.8.2.3.2.d
Battery Parameters		
Verify Each Battery Float Current is ≤ [2] amps.	SR 3.8.6.1	---
Verify Each Battery Pilot Cell Voltage is ≥[2.07] V	SR 3.8.6.2	SR 4.8.2.3.2.a
Verify Each Battery Cell Electrolyte Level is ≥ to Minimum Design Limits	SR 3.8.6.3	SR 4.8.2.3.2.a
Verify Each Battery Pilot Cell Temperature ≥ to Minimum Design Limits	SR 3.8.6.4	---
Verify Each Battery Connected Cell Voltage is≥[2.07] V.	SR 3.8.6.5	SR 4.8.2.3.2.b
Verify Station and EDG Battery Capacity - >80% After Performance Test	SR 3.8.6.6	SR 4.8.2.3.2.e
Physical Inspection of Cell Plates and Battery Racks	---	SR 4.8.2.3.2.c.1
Physical Inspection of Terminal Connections	---	SR 4.8.2.3.2.c.2
Verify the Battery Charger Supply ≥ 400 amps for 12 hrs	---	SR 4.8.2.3.2.c.3
Inverters - Operating		
Verify Correct Inverter Voltage & Alignment to Required AC Vital Buses	SR 3.8.7.1	SR 4.8.2.1A.a
Verify Busses Auto Transfer to Alternate Power Supply	---	SR 4.8.2.1A.b
Inverters - Shutdown		
Verify Correct Inverter Voltage & Alignment to Required AC Vital Buses	SR 3.8.8.1	---
Distribution System – Operating		
Verify Correct Breaker Alignments and Voltage to AC, DC, and AC Vital Bus Electrical Power Distribution Subsystems	SR 3.8.9.1	SR 4.8.2.1/SR 4.8.2.3.1

Note 1 – This system is not included in the MPS2 design or TS.
--- Surveillance not included in ITS or MPS2 TSs
*Italicized text denotes MPS2-specific surveillances

Technical Specification Section Title/ Surveillance Description*	TSTF 425	MPS2
Distribution System – Shutdown		
Verify Correct Breaker Alignments and Voltage to AC, DC, and AC Vital Bus Electrical Power Distribution Subsystems	SR 3.8.10.1	SR 4.8.2.2/SR 4.8.2.4.1
DC Distribution System (Turbine Battery) - Operating		
Verify the 125-volt DC Bus is Operable	---	SR 4.8.2.5.1
Verify 125-V DC Battery Bank Meet Cat A Cell Parameters	---	SR 4.8.2.5.2.a
Verify 125-V DC Battery Bank Meet Cat B Cell Parameters	---	SR 4.8.2.5.2.b
Verify Cells, Cell Plates, Racks, Terminal Connections are not Damaged and Free of Corrosion	---	SR 4.8.2.5.2.c
Perform a Battery Service Test	---	SR 4.8.2.5.2.d
Perform a Performance Discharge Test	---	SR 4.8.2.5.2.e
Boron Concentration		
Verify Boron Concentration is Within the Limit Specified in COLR	SR 3.9.1.1	SR 4.9.1.2
Nuclear Instrumentation		
Perform Channel Check	SR 3.9.2.1	SR 4.9.2.c
Perform Channel Calibration	SR 3.9.2.2	SR 4.9.2.b
Containment Penetrations		
Verify Each Required Containment Penetration is in the Required Status	SR 3.9.3.1	SR 4.9.4.1
Verify Each Required Containment Purge and Exhaust Valve Actuates to the Isolation Position on an Actuated or Simulated Actuation Signal	SR 3.9.3.2	---
SDC and Coolant Circulation - High Water Level		
Verify One Loop is in Operation and Circulating Reactor Coolant at a Flow Rate of > [2200] gpm	SR 3.9.4.1	SR 4.9.8.1
SDC and Coolant Circulation - Low Water Level		
Verify One Loop is in Operation and Circulating Reactor Coolant at a flow rate of > [2800] gpm	SR 3.9.5.1	SR 4.9.8.2.1
Verify Correct Breaker Alignment and Indicated Power Available to the Required SDC Pump that is Not in Operation	SR 3.9.5.2	SR 4.9.8.2.2
Refueling Cavity Water Level		
Verify Refueling Cavity Water Level is ≥23 ft Above the Top of Reactor Vessel Flange	SR 3.9.6.1	SR 4.9.11
Shielded Cask		
Verify the Decay Time of Fuel in the Vicinity of the Cask Lay Down Area	---	SR 4.9.16.1

Note 1 – This system is not included in the MPS2 design or TS.
--- Surveillance not included in ITS or MPS2 TSs
*Italicized text denotes MPS2-specific surveillances

ATTACHMENT 5

Significant Hazards Consideration Determination

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATION

Description of Amendment Request:

This amendment request involves the adoption of approved changes to the standard technical specifications (STS) for Combustion Engineering Pressurized Water Reactors (NUREG-1432), to allow relocation of specific technical specification (TS) surveillance frequencies to a licensee-controlled program. The proposed changes are described in Technical Specification Task Force (TSTF) Traveler, TSTF-425, Revision 3 (ADAMS Accession No. ML090850642), "Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b" and are described in the Notice of Availability published in the Federal Register on July 6, 2009 (74 FR 31996).

The proposed changes are consistent with NRC-approved Industry/TSTF Traveler, TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control-RITSTF Initiative 5b." For Millstone Power Station Unit 2 plant-specific surveillances not included in the NUREG-1432 mark-ups provided in TSTF-425 (identified in Attachment 4), Dominion Nuclear Connecticut, Inc. (DNC) has determined that since these surveillances involve fixed periodic frequencies, relocation of these frequencies is consistent with TSTF-425, Rev. 3, and with the NRC's model safety evaluation dated July 6, 2009 (74 FR 31996), including the scope exclusions identified in Section 1.0, "Introduction," of the model safety evaluation.

The proposed changes relocate surveillance frequencies to a licensee-controlled program, the Surveillance Frequency Control Program (SFCP). The changes are applicable to licensees using probabilistic risk guidelines contained in NRC-approved NEI 04-10, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies," (ADAMS Accession No. 071360456). In addition, administrative/editorial deviations of the TSTF-425 inserts and the existing TS wording are being proposed to fit the custom TS format.

Basis for proposed no significant hazards consideration: As required by 10 CFR 50.91 (a), DNC's analysis of the issue of no significant hazards consideration is presented below:

1. Do the proposed changes involve a significant increase in the probability or consequences of any accident previously evaluated?

Response: No.

The proposed changes relocate the specified frequencies for periodic surveillance requirements to licensee control under a new Surveillance Frequency Control Program. Surveillance frequencies are not an initiator to any accident previously evaluated. As a result, the probability of any accident previously evaluated is not significantly increased. The systems and components required by the technical specifications for which the

surveillance frequencies are relocated are still required to be operable, meet the acceptance criteria for the surveillance requirements, and be capable of performing any mitigation function assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly increased.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any previously evaluated?

Response: No.

No new or different accidents result from utilizing the proposed changes. The changes do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. In addition, the changes do not impose any new or different requirements. The changes do not alter assumptions made in the safety analysis. The proposed changes are consistent with the safety analysis assumptions and current plant operating practice.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Do the proposed changes involve a significant reduction in the margin of safety?

Response: No.

The design, operation, testing methods, and acceptance criteria for systems, structures, and components, specified in applicable codes and standards (or alternatives approved for use by the NRC) will continue to be met as described in the plant licensing basis (including the final safety analysis report and bases to TS), since these are not affected by changes to the surveillance frequencies. Similarly, there is no impact to safety analysis acceptance criteria as described in the plant licensing basis. To evaluate a change in the relocated surveillance frequency, DNC will perform a probabilistic risk evaluation using the guidance contained in NRC approved NEI 04-10, Rev. 1, in accordance with the TS SFCP. NEI 04-10, Rev. 1, methodology provides reasonable acceptance guidelines and methods for evaluating the risk increase of proposed changes to surveillance frequencies consistent with Regulatory Guide 1.177.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above, DNC concludes that the requested changes do not involve a significant hazards consideration as set forth in 10 CFR 50.92(c), Issuance of Amendment.

ATTACHMENT 6

Marked-Up Technical Specifications Bases Changes

(For Information Only)

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

Insert 2a

The surveillance frequency is controlled under the Surveillance Frequency Control Program.

Insert 2b

These surveillance frequencies are controlled under the Surveillance Frequency Control Program.

3/4.1.3 MOVEABLE CONTROL ASSEMBLIES (Continued)

The CEA motion inhibit permits CEA motion within the requirements of LCO 3.1.3.6, "Regulating Control Element Assembly (CEA) Insertion Limits," and the CEA deviation circuit prevents regulating CEAs from being misaligned from other CEAs in the group. With the CEA motion inhibit inoperable, a time of 6 hours is allowed for restoring the CEA motion inhibit to OPERABLE status, or placing and maintaining the CEA drive switch in either the "off" or "manual" position, fully withdrawing all CEAs in group 7 to < 5% insertion. Placing the CEA drive switch in the "off" or "manual" position ensures the CEAs will not move in response to Reactor Regulating System automatic motion commands. Withdrawal of the CEAs to the positions required in the Required ACTION B.2 ensures that core perturbations in local burnup, perking factors, and SHUTDOWN MARGIN will not be more adverse than the Conditions assumed in the safety analyses and LCO setpoint determination. Required ACTION B.2 is modified by a Note indicating that performing this Required ACTION is not required when in conflict with Required ACTIONS A.1 or C.1.

Continued operation is not allowed in the case of more than one CEA misaligned from any other CEA in its group by ≥ 20 steps, or one or more CEAs untrippable. This is because these cases are indicative of a loss of SHUTDOWN MARGIN and power distribution changes, and a loss of safety function, respectively.

OPERABILITY of the CEA position indicators (Specification 3.1.3.3) is required to determine CEA positions and thereby ensure compliance with the CEA alignment and insertion limits and ensures proper operation of the CEA Motion Inhibit and CEA deviation block circuit. The CEA "Full In" and "Full Out" limit Position Indicator channels provide an additional independent means for determining the CEA positions when the CEAs are at either their fully inserted or fully withdrawn positions. Therefore, the ACTION statements applicable to inoperable CEA position indicators permit continued operations when the positions of CEAs with inoperable position indicators can be verified by the "Full In" or "Full Out" limit Position Indicator channels.

at the frequency specified in the Surveillance Frequency Control Program

CEA positions and OPERABILITY of the CEA position indicators are required to be verified ~~on a nominal basis of once per 12 hours~~ with more frequent verifications required if an automatic monitoring channel is inoperable. ~~These verification frequencies are adequate for assuring that the applicable LCO's are satisfied.~~

Insert 2a

The maximum CEA drop time permitted by Specification 3.1.3.4 is the assumed CEA drop time used in the accident analyses. Measurement with T_{avg} ≥ 515°F and with all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a reactor trip at operating conditions.

by the ACTION statements since these additional restrictions provide adequate provisions to assure that the assumptions used in establishing the Linear Heat Rate, Thermal Margin/Low Pressure and Local Power Density - High LCOs and LSSS setpoints remain valid. An AZIMUTHAL POWER TILT > 0.10 is not expected and if it should occur, subsequent operation would be restricted to only those operations required to identify the cause of this unexpected tilt.

Core power distribution is a concern any time the reactor is critical. The Total Integrated Radial Peaking Factor - F^T_r LCO, however, is only applicable in MODE 1 above 20% of RATED THERMAL POWER. The reasons that this LCO is not applicable below 20% of RATED THERMAL POWER are:

a. Data from the incore detectors are used for determining the measured radial peaking factors. Technical Specification 3.2.3 is not applicable below 20% of RATED THERMAL POWER because the accuracy of the neutron flux information from the incore detectors is not reliable at THERMAL POWER < 20% RATED THERMAL POWER.

b. When core power is below 20% of RATED THERMAL POWER, the core is operating well below its thermal limits, and the Local Power Density (fuel pellet melting) and Thermal Margin/Low Pressure (DNB) trips are highly conservative.

The surveillance requirements for verifying that F^T_r and T_q are within their limits provide assurance that the actual values of F^T_r and T_q do not exceed the assumed values. Verifying F^T_r after each fuel loading prior to exceeding 70% of RATED THERMAL POWER provides additional assurance that the core was properly loaded.

Insert 2b

3/4.2.6 DNB MARGIN

The limitations provided in this specification ensure that the assumed margins to DNB are maintained. The limiting values of the parameters in this specification are those assumed as the initial conditions in the accident and transient analyses; therefore, operation must be maintained within the specified limits for the accident and transient analyses to remain valid.

3/4.3 INSTRUMENTATION

BASES

3/4.3.1 AND 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and bypasses ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundance and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

ACTION Statement 2 of Tables 3.3-1 and 3.3-3 requires an inoperable Reactor Protection System (RPS) or Engineered Safety Feature Actuation System (ESFAS) channel to be placed in the bypassed or tripped condition within 1 hour. The inoperable channel may remain in the bypassed condition for a maximum of 48 hours. While in the bypassed condition, the affected functional unit trip coincidence will be 2 out of 3. After 48 hours, the channel must either be declared OPERABLE, or placed in the tripped condition. If the channel is placed in the tripped condition, the affected functional unit trip coincidence will become 1 out of 3. One additional channel may be removed from service for up to 48 hours, provided one of the inoperable channels is placed in the tripped condition.

Plant operation with an inoperable pressurizer high pressure reactor protection channel in the tripped condition is restricted because of the potential inadvertent opening of both pressurizer power operated relief valves (PORVs) if a second pressurizer high pressure reactor protection channel failed while the first channel was in the tripped condition. This plant operating restriction is contained in the Technical Requirements Manual.

The reactor trip switchgear consists of eight reactor trip circuit breakers, which are operated in four sets of two breakers (four channels). Each of the four trip legs consists of two reactor trip circuit breakers in series. The two reactor trip circuit breakers within a trip leg are actuated by separate initiation circuits. For example, if a breaker receives an open signal in trip leg A, an identical breaker in trip leg B will also receive an open signal. This arrangement ensures that power is interrupted to both Control Element Drive Mechanism buses, thus preventing a trip of only half of the control element assemblies (a half trip). Any one inoperable breaker in a channel will make the entire channel inoperable.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. ~~The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.~~ Insert 2b

The surveillance testing verifies OPERABILITY of the RPS by overlap testing of the four interconnected modules: measurement channels, bistable trip units, RPS logic, and reactor trip circuit breakers. When testing the measurement channels or bistable trip units that provide an automatic reactor trip function, the associated RPS channel will be removed from service,

3/4.3.1 AND 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION (continued)

ACTION Statement 8 applies to two inoperable automatic bypass removal channels. If the bypass removal channels cannot be restored to OPERABLE status, the associated RPS channel may be considered OPERABLE only if the bypass is not in effect. Otherwise, the affected RPS channels must be declared inoperable, and the bypass either removed or the bypass removal channel repaired. Also, ACTION Statement 8 provides for the restoration of the one affected automatic trip channel to OPERABLE status within the allowed outage time specified under ACTION Statement 2.

ACTION Statements 7 and 8 contain the term "disable the bypass channel." Compliance with ACTION Statements 7 or 8 is met by placing or verifying the Zero Mode Bypass Switch(es) in "Off." No further action (i.e., key removal, periodic verification, etc.) is required. These switches are administratively controlled via station procedures; therefore the requirements of ACTION Statements 7 and 8 are continuously met.

periodically

Insert 2a

SR 4.3.1.1.2 and SR 4.3.2.1.2 specify a CHANNEL FUNCTIONAL TEST of the bypass function and automatic bypass removal once within 92 days prior to each reactor startup. The total bypass function shall be demonstrated OPERABLE ~~at least once per 18 months~~ during CHANNEL CALIBRATION testing of each channel affected by bypass operation. The CHANNEL FUNCTIONAL TEST is similar to the CHANNEL FUNCTIONAL TESTS already required by SR 4.3.1.1.1 and SR 4.3.2.1.1, except the CHANNEL FUNCTIONAL TEST is applicable only to bypass functions and is performed once within 92 days prior to each startup. The MPS2 RPS is an analog system while the design of the MPS2 ESFAS includes both an analog portion and a digital portion. With respect to the analog portion of the systems, a successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other TS tests at least once per refueling interval with applicable extensions. Proper operation of bypass permissives is critical during plant startup because the bypasses must be in place to allow startup operation and must be removed at the appropriate points during power ascent to enable certain reactor trips. Consequently, the appropriate time to verify bypass removal function OPERABILITY is just prior to startup. The allowance to conduct this test within 92 days of startup is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation," which is referenced in NUREG-1432 and is applicable to MPS2. Once the operating bypasses are removed, the bypasses must not fail in such a way that the associated trip function gets inadvertently bypassed. This feature is verified by the trip function CHANNEL FUNCTIONAL TESTS SR 4.3.1.1.1 and SR 4.3.2.1.1. Therefore, further testing of the bypass function after startup is unnecessary.

3/4.3.1 AND 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION (continued)

The ESFAS includes four sensor subsystems and two actuation subsystems for each of the functional units identified in Table 3.3-3. Each sensor subsystem includes measurement channels and bistable trip units. Each of the four sensor subsystem channels monitors redundant and independent process measurement channels. Each sensor is monitored by at least one bistable. The bistable associated with each ESFAS Function will trip when the monitored variable exceeds the trip setpoint. When tripped, the sensor subsystems provide outputs to the two actuation subsystems.

The two independent actuation subsystems each compare the four associated sensor subsystem outputs. If a trip occurs in two or more sensor subsystem channels, the two-out-of-four automatic actuation logic will initiate one train of ESFAS. An Automatic Test Inserter (ATI), for which the automatic actuation logic OPERABILITY requirements of this specification do not apply, provides automatic test capability for both the sensor subsystems and the actuation subsystems.

The provisions of Specification 4.0.4 are not applicable for the CHANNEL FUNCTIONAL TEST of the Engineered Safety Feature Actuation System automatic actuation logic associated with Pressurizer Pressure Safety Injection, Pressurizer Pressure Containment Isolation, Steam Generator Pressure Main Steam Line Isolation, and Pressurizer Pressure Enclosure Building Filtration for entry into MODE 3 or other specified conditions. After entering MODE 3, pressurizer pressure and steam generator pressure will be increased and the blocks of the ESF actuations on low pressurizer pressure and low steam generator pressure will be automatically removed. After the blocks have been removed, the CHANNEL FUNCTIONAL TEST of the ESF automatic actuation logic can be performed. The CHANNEL FUNCTIONAL TEST of the ESF automatic actuation logic must be performed within 12 hours after establishing the appropriate plant conditions, and prior to entry into MODE 2.

periodic

The measurement of response time ~~at the specified frequencies~~ provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable. The Reactor Protective and Engineered Safety Feature response times are contained in the Millstone Unit No. 2 Technical Requirements Manual. Changes to the Technical Requirements Manual require a 10CFR50.59 review as well as a review by the Site Operations Review Committee.

Insert 2b

3/4.4 REACTOR COOLANT SYSTEM

BASES

stuck open PORV at a time that the block valve is inoperable. This may be accomplished by various methods. These methods include, but are not limited to, placing the NORMAL/ISOLATE switch at the associated Bottle Up Panel in the "ISOLATE" position or pulling the control power fuses for the associated PORV control circuit.

Although the block valve may be designated inoperable, it may be able to be manually opened and closed and in this manner can be used to perform its function. Block valve inoperability may be due to seat leakage, instrumentation problems, or other causes that do not prevent manual use and do not create a possibility for a small break LOCA. This condition is only intended to permit operation of the plant for a limited period of time. The block valve should normally be available to allow PORV operation for automatic mitigation of overpressure events. The block valves must be returned to OPERABLE status prior to entering MODE 3 after a refueling outage.

If more than one PORV is inoperable and not capable of being manually cycled, it is necessary to either restore at least one valve within the completion time of 1 hour or isolate the flow path by closing and removing the power to the associated block valve and cooldown the RCS to MODE 4.

SURVEILLANCE REQUIREMENT 4.4.3.1.c requires operating each PORV through one complete cycle of full travel at conditions representative of MODES 3 or 4. This is normally performed in MODE 3 or 4 as the unit is descending in power to commence a refueling outage. This test will normally be a static test, whereby a PORV will be exposed to MODE 3 or 4 temperatures, the block valve closed, and the PORV tested to verify it strokes through one complete cycle of full travel. PORV cycling demonstrates its function. ~~The Frequency of 18 months is based on a typical refueling cycle and industry accepted practice.~~ SURVEILLANCE REQUIREMENT 4.4.3.1.c is consistent with the NRC staff position outlined in Generic Letter 90-06, which requires that the ~~18 month~~ PORV stroke test be performed at conditions representative of MODE 3 or 4. Testing in the manner described is also consistent with the guidance in NUREG 1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 4.2.10, that describes the PORVs function during reactor startup and shutdown to protect the reactor vessel and coolant system from low-temperature overpressurization conditions, and indicates they should be exercised before system conditions warrant vessel protection. If post maintenance retest is warranted, the affected valve(s) will be stroked under ambient conditions while in Mode 5, 6, or defueled. The actual stroke time in the open and close direction will be measured, recorded and compared to the test results obtained during pre-installation testing to assess acceptability of the affected valve(s).

Insert 2a

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

3/4.4.6.2 REACTOR COOLANT SYSTEM OPERATIONAL LEAKAGE

SURVEILLANCE REQUIREMENTS (Continued)

The ~~Surveillance Frequency of 72 hours~~ frequency specified in the Surveillance Frequency Control Program is a reasonable interval to trend primary to secondary LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents. The primary to secondary LEAKAGE is determined using continuous process radiation monitors or radiochemical grab sampling in accordance with the EPRI guidelines (Reference 5).

BACKGROUND

Components that contain or transport the coolant to or from the reactor core make up the reactor coolant system (RCS). Component joints are made by welding, bolting, rolling, or pressure loading, and valves isolate connecting systems from the RCS.

During plant life, the joint and valve interfaces can produce varying amounts of reactor coolant LEAKAGE, through either normal operational wear or mechanical deterioration. The purpose of the RCS Operational LEAKAGE LCO is to limit system operation in the presence of LEAKAGE from these sources to amounts that do not compromise safety. This LCO specifies the types and amounts of LEAKAGE.

10 CFR 50, Appendix A, GDC 30 (Reference 1), requires means for detecting and, to the extent practical, identifying the source of reactor coolant LEAKAGE. Regulatory Guide 1.45 (Reference 2) describes acceptable methods for selecting leakage detection systems.

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring reactor coolant LEAKAGE into the containment area is necessary. Quickly separating the IDENTIFIED LEAKAGE from the UNIDENTIFIED LEAKAGE is necessary to provide quantitative information to the operators, allowing them to take corrective action should a leak occur detrimental to the safety of the facility and the public.

A limited amount of leakage inside containment is expected from auxiliary systems that cannot be made 100% leaktight. Leakage from these systems should be detected, located, and isolated from the containment atmosphere, if possible, to not interfere with RCS LEAKAGE detection.

This LCO deals with protection of the reactor coolant pressure boundary (RCPB) from degradation and the core from inadequate cooling, in addition to preventing the accident analysis radiation release assumptions from being exceeded. The consequences of violating this LCO include the possibility of a loss of coolant accident (LOCA).

3/4.4.8 SPECIFIC ACTIVITY (continued)

ACTIONS (continued)

d.

With the RCS DOSE EQUIVALENT XE-133 greater than the LCO limit, DOSE EQUIVALENT XE-133 must be restored to within limit within 48 hours. The allowed completion time of 48 hours is acceptable since it is expected that, if there were a noble gas spike, the normal coolant noble gas concentration would be restored within this time period. Also, there is a low probability of a SLB or SGTR occurring during this time period.

A statement in ACTION d. indicates the provisions of LCO 3.0.4 are not applicable. This exception to LCO 3.0.4 permits entry into the applicable MODE(S), relying on ACTION d. while the DOSE EQUIVALENT XE-133 LCO is not met. This exception is acceptable due to the significant conservatism incorporated into the RCS specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient-specific activity excursions while the plant remains at, or proceeds to, POWER OPERATION.

e.

If the required action and completion time of ACTION d. is not met, the reactor must be brought to HOT STANDBY (MODE 3) within 6 hours and COLD SHUTDOWN (MODE 5) within 36 hours. The allowed completion times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

4.4.8.1

Surveillance Requirement 4.4.8.1 requires performing a gamma isotopic analysis as a measure of the noble gas specific activity of the reactor coolant ~~at least once every 7 days~~. This measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance Requirement provides an indication of any increase in the noble gas specific activity. ← Insert 2a

Trending the results of this Surveillance Requirement allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. ~~The surveillance 7 day frequency considers the low probability of a gross fuel failure during this time.~~

3/4.4.8 SPECIFIC ACTIVITY (continued)

SURVEILLANCE REQUIREMENTS (continued)

4.4.8.1 (continued)

Due to the inherent difficulty in detecting Kr-85 in a reactor coolant sample due to masking from radioisotopes with similar decay energies, such as F-18 and I-134, it is acceptable to include the minimum detectable activity for Kr-85 in the Surveillance Requirement 4.4.8.1 calculation. If a specific noble gas nuclide listed in the definition of DOSE EQUIVALENT XE-133 is not detected, it should be assumed to be present at the minimum detectable activity.

A Note modifies the Surveillance Requirement to allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the Surveillance Requirement. This allows the Surveillance Requirement to be performed in those MODES, prior to entering MODE 1.

4.4.8.2 frequency specified in the Surveillance Frequency Control Program

This Surveillance Requirement is performed to ensure iodine specific activity remains within the LCO limit during normal operation and following fast power changes when iodine spiking is more apt to occur. The ~~14 day frequency~~ is adequate to trend changes in the iodine activity level~~, considering noble gas activity is monitored every 7 days~~. The frequency of between 2 and 6 hours after a power change ≥ 15% RTP within a 1 hour period is established because the iodine levels peak during this time following iodine spike initiation; samples at other times would provide inaccurate results.

The Note modifies this Surveillance Requirement to allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the Surveillance Requirement. This allows the Surveillance Requirement to be performed in those MODES, prior to entering MODE 1.

REFERENCES

1. 10 CFR 50.67.

2. Standard Review Plan (SRP) Section 15.0.1 "Radiological Consequence Analyses Using Alternate Source Terms."

3. FSAR, Section 14.1.5.

4. FSAR, Section 14.6.3.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (continued)

Surveillance Requirement 4.5.2.a verifies the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths to provide assurance that the proper flow paths will exist for ECCS operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.~~

Surveillance Requirement 4.5.2.b verifies proper valve position to ensure that the flow path from the ECCS pumps to the RCS is maintained. Misalignment of these valves could render both ECCS trains inoperable. Securing these valves in position by removing power to the valve operator ensures that the valves cannot be inadvertently misaligned or change position as the result of an active failure. ~~A 31 day frequency is considered reasonable in view of other administrative controls ensuring that a mispositioned valve is an unlikely possibility.~~ Insert 2a

Surveillance Requirements 4.5.2.c and 4.5.2.d, which address periodic surveillance testing of the ECCS pumps (high pressure and low pressure safety injection pumps) to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by the ASME Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code). This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program. The ASME OM Code provides the activities and frequencies necessary to satisfy the requirements.

Surveillance Requirement 4.5.2.e, which addresses periodic surveillance testing of the charging pumps to detect gross degradation caused by hydraulic component problems, is required by the ASME OM Code. For positive displacement pumps, this type of testing may be accomplished by comparing the measured pump flow, discharge pressure and vibration to their respective acceptance criteria. Acceptance criteria are verified to bound the assumptions utilized in accident analyses. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test point is greater than or equal to the performance assumed for mitigation of the beyond design basis events. The surveillance requirements are specified in the Inservice Testing Program. The ASME OM Code provides the activities and frequencies necessary to satisfy the requirements.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (continued)

Surveillance Requirements 4.5.2.f, 4.5.2.g, and 4.5.2.h demonstrate that each automatic ECCS flow path valve actuates to the required position on an actual or simulated actuation signal (SIAS or SRAS), that each ECCS pump starts on receipt of an actual or simulated actuation signal (SIAS), and that the LPSI pumps stop on receipt of an actual or simulated actuation signal (SRAS). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage, and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~ The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

Insert 2a

Surveillance Requirement 4.5.2.i verifies the high and low pressure safety injection valves listed in Table 4.5-1 will align to the required positions on an SIAS for proper ECCS performance. The safety injection valves have stops to position them properly so that flow is restricted to a ruptured cold leg, ensuring that the other cold legs receive at least the required minimum flow. ~~The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~

Surveillance Requirement 4.5.2.j addresses periodic inspection of the containment sump to ensure that it is unrestricted and stays in proper operating condition. ~~The 18 month frequency is based on the need to perform this surveillance under the conditions that apply during an outage, and the need to have access to the location. This frequency is sufficient to detect abnormal degradation and is confirmed by operating experience.~~

Surveillance Requirement 4.5.2.k verifies that the Shutdown Cooling (SDC) System open permissive interlock is OPERABLE to ensure the SDC suction isolation valves are prevented from being remotely opened when RCS pressure is at or above the SDC suction design pressure of 300 psia. The suction piping of the SDC pumps (low pressure safety injection pumps) is the SDC component with the limiting design pressure rating. The interlock provides assurance that double isolation of the SDC System from the RCS is preserved whenever RCS pressure is at or above the design pressure. ~~The 18 month frequency is based on the need to perform this surveillance under the conditions that apply during an outage. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~

3/4.5.5 TRISODIUM PHOSPHATE (TSP) (continued)

APPLICABILITY

In MODES 1, 2, and 3, the RCS is at elevated temperature and pressure, providing an energy potential for a LOCA. The potential for a LOCA results in a need for the ability to control the pH of the recirculated coolant.

In MODES 4, 5, and 6, the potential for a LOCA is reduced or nonexistent, and TSP is not required.

ACTIONS

If it is discovered that the TSP in the containment building sump is not within limits, action must be taken to restore the TSP to within limits. During plant operation the containment sump is not accessible and corrections may not be possible.

The completion time of 72 hours is allowed for restoring the TSP within limits because 72 hours is the same time allowed for restoration of other ECCS components.

If the TSP cannot be restored within limits within the 72 hour completion time, the plant must be brought to a MODE in which the LCO does not apply. The specified completion times for reaching MODES 3 and 4 were chosen to allow reaching the specified conditions from full power in an orderly manner without challenging plant systems.

SURVEILLANCE REQUIREMENTS

Surveillance Requirement 4.5.5.1

This periodic surveillance

Periodic determination of the volume of TSP in containment must be performed due to the possibility of leaking valves and components in the containment building that could cause dissolution of the TSP during normal operation. ~~A frequency of 18 months~~ is required to determine visually that a minimum of 282 cubic feet is contained in the TSP baskets. This requirement ensures that there is an adequate volume of TSP to adjust the pH of the post LOCA sump solution to a value ≥ 7.0.

Insert 2a

~~The periodic verification is required every 18 months, since access to the TSP baskets is only feasible during outages, and normal fuel cycles are scheduled for 18 months. Operating experience has shown this surveillance frequency acceptable due to the margin in the volume of TSP placed in the containment building.~~

3/4.5.5 TRISODIUM PHOSPHATE (TSP) (continued)

Surveillance Requirement 4.5.5.2

Testing must be performed to ensure the solubility and buffering ability of the TSP after exposure to the containment environment. Passing this test verifies the TSP is active and provides assurance that the stored TSP will dissolve in borated water at postulated post-LOCA temperatures. This test is performed by submerging a sample of 0.6662 ± 0.0266 grams of TSP from one of the baskets in containment in 250 ± 10 milliliters of water at a boron concentration of 2482 ± 20 ppm, and a temperature of 77 ± 5°F. Without agitation, the solution is allowed to stand for four hours. The liquid is then decanted, mixed, and the pH measured. The pH must be ≥ 7.0. The TSP sample weight is based on the minimum required TSP mass of 12,042 pounds, which at the manufactured density corresponds to the minimum volume of 223 ft^3 (The minimum Technical Specification requirement of 282 ft^3 is based on 223 ft^3 of TSP for boric acid neutralization and 59 ft^3 of TSP for neutralization of hydrochloric and nitric acids.), and the maximum sump water volume (at 77°F) following a LOCA of 2,046,441 liters, normalized to buffer a 250 ± 10 milliliter sample. The boron concentration of the test water is representative of the maximum possible concentration in the sump following a LOCA. Agitation of the test solution is prohibited during TSP dissolution since an adequate standard for the agitation intensity cannot be specified. The dissolution time of four hours is necessary to allow time for the dissolved TSP to naturally diffuse through the sample solution. In the containment sump following a LOCA, rapid mixing will occur, significantly decreasing the actual amount of time before the required pH is achieved. The solution is decanted after the four hour period to remove any undissolved TSP prior to mixing and pH measurement. Mixing is necessary for proper operation of the pH instrument.

Insert 2a

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS

The OPERABILITY of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the accident analyses.

The OPERABILITY of the containment cooling system ensures that 1) the containment air temperature will be maintained within limits during normal operation, and 2) adequate heat removal capacity is available when operated in conjunction with the containment spray system during post-LOCA conditions.

To be OPERABLE, the two trains of the containment spray system shall be capable of taking a suction from the refueling water storage tank on a containment spray actuation signal and automatically transferring suction to the containment sump on a sump recirculation actuation signal. Each containment spray train flow path from the containment sump shall be via an OPERABLE shutdown cooling heat exchanger.

The containment cooling system consists of two containment cooling trains. Each containment cooling train has two containment air recirculation and cooling units. For the purpose of applying the appropriate ACTION statement, the loss of a single containment air recirculation and cooling unit will make the respective containment cooling train inoperable.

Either the containment spray system or the containment cooling system is sufficient to mitigate a loss of coolant accident. The containment spray system is more effective than the containment cooling system in reducing the temperature of superheated steam inside containment following a main steam line break. Because of this, the containment spray system is required to mitigate a main steam line break accident inside containment. In addition, the containment spray system provides a mechanism for removing iodine from the containment atmosphere. Therefore, at least one train of containment spray is required to be OPERABLE when pressurizer pressure is ≥ 1750 psia, and the allowed outage time for one train of containment spray reflects the dual function of containment spray for heat removal and iodine removal.

Surveillance Requirement 4.6.2.1.1.a verifies the correct alignment for manual, power operated, and automatic valves in the Containment Spray System flow paths to provide assurance that the proper flow paths will exist for containment spray operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.~~

Insert 2a

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS (Continued)

Surveillance Requirement 4.6.2.1.1.b, which addresses periodic surveillance testing of the containment spray pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by the ASME OM Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program. The ASME OM Code provides the activities and frequencies necessary to satisfy the requirements.

Insert 2b

Surveillance Requirements 4.6.2.1.1.c and 4.6.2.1.1.d demonstrate that each automatic containment spray valve actuates to the required position on an actual or simulated actuation signal (CSAS or SRAS), and that each containment spray pump starts on receipt of an actual or simulated actuation signal (CSAS). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~ The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

Surveillance Requirement 4.6.2.1.1.e requires verification that each spray nozzle is unobstructed following maintenance that could cause nozzle blockage. Normal plant operation and maintenance activities are not expected to trigger performance of this surveillance requirement. However, activities, such as an inadvertent spray actuation that causes fluid flow through the nozzles, a major configuration change, or a loss of foreign material control when working within the respective system boundary may require surveillance performance. An evaluation, based on the specific situation, will determine the appropriate method (e.g., visual inspection, air or smoke flow test) to verify no nozzle obstruction.

Surveillance Requirement 4.6.2.1.2.a demonstrates that each containment air recirculation and cooling unit can be operated in slow speed for $\geq$ 15 minutes to ensure OPERABILITY and that all associated controls are functioning properly. It also ensures fan or motor failure can be detected and corrective action taken. ~~The 31 day frequency considers the known reliability of the fan units and controls, the two train redundancy available, and the low probability of a significant degradation of the containment air recirculation and cooling unit occurring between surveillances. This frequency has been shown to be acceptable through operating experience.~~

Insert 2a

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS (Continued)

Surveillance Requirement 4.6.2.1.2.b demonstrates a cooling water flow rate of ≥ 500 gpm to each containment air recirculation and cooling unit to provide assurance a cooling water flow path through the cooling unit is available. ~~The 31 day frequency considers the known reliability of the cooling water system, the two train redundancy available, and the low probability of a significant degradation of flow occurring between surveillances. This frequency has been shown to be acceptable through operating experience.~~ Insert 2a

Surveillance Requirement 4.6.2.1.2.c demonstrates that each containment air recirculation and cooling unit starts on receipt of an actual or simulated actuation signal (SIAS). ~~The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~ The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The Technical Requirements Manual contains the list of containment isolation valves (except the containment air lock and equipment hatch). Any changes to this list will be reviewed under 10CFR50.59 and approved by the committee(s) as described in the QAP Topical Report.

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

The containment isolation valves are used to close all fluid (liquid and gas) penetrations not required for operation of the engineered safety feature systems, to prevent the leakage of radioactive materials to the environment. The fluid penetrations which may require isolation after an accident are categorized as Type P, O, or N. The penetration types for each containment isolation valve are listed in FSAR Table 5.2-11, Containment Structure Isolation Valve Information.

Type P penetrations are lines that connect to the reactor coolant pressure boundary (Criterion 55 of 10CFR50, Appendix A). These lines are provided with two containment isolation valves, one inside containment, and one outside containment.

Type O penetrations are lines that are open to the containment internal atmosphere (Criterion 56 of 10CFR50, Appendix A). These lines are provided with two containment isolation valves, one inside containment, and one outside containment.

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

Type N penetrations are lines that neither connect to the reactor coolant pressure boundary nor are open to the containment internal atmosphere, but do form a closed system within the containment structure (Criterion 57 of 10CFR50, Appendix A). These lines are provided with single containment isolation valves outside containment. These valves are either remotely operated or locked closed manual valves.

With one or more penetration flow paths with one containment isolation valve inoperable, the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration.

If the containment isolation valve on a closed system becomes inoperable, the remaining barrier is a closed system since a closed system is an acceptable alternative to an automatic valve. However, ACTIONS must still be taken to meet Technical Specification ACTION 3.6.3.1.d and the valve, not normally considered as a containment isolation valve, and closest to the containment wall should be put into the closed position. No leak testing of the alternate valve is necessary to satisfy the ACTION statement. Placing the manual valve in the closed position sufficiently deactivates the penetration for Technical Specification compliance. Closed system isolation valves applicable to Technical Specification ACTION 3.6.3.1.d are included in FSAR Table 5.2-11, and are the isolation valves for those penetrations credited as General Design Criteria 57, (Type N penetrations). The specified time (i.e., 72 hours) of Technical Specification ACTION 3.6.3.1.d is reasonable, considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4. In the event the affected penetration is isolated in accordance with 3.6.3.1.d, the affected penetration flow path must be verified to be isolated on a periodic basis, (Surveillance Requirement 4.6.1.1.a). This is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. ~~The frequency of once per 31 days in this surveillance for verifying that each affected penetration flow path is isolated is appropriate considering the valves are operated under administrative controls and the probability of their misalignment is low.~~

Insert 2a

For the purposes of meeting this LCO, neither the containment isolation valve, nor any alternate valve on a closed system have a leakage limit associated with valve OPERABILITY.

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

The nitrogen header drain valve, 2-SI-045, is opened to depressurize the containment side of the nitrogen supply header stop valve, 2-SI-312. When 2-SI-045 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of this valve is only expected after using the high pressure nitrogen system to raise SIT nitrogen pressure.

The containment waste gas header test connection isolation valve, 2-GR-63, is opened to sample the primary drain tank for oxygen and nitrogen. When 2-GR-63 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of this valve is expected during plant startup and shutdown.

The upstream vent valves for the steam generator atmospheric dump valves, 2-MS-369 and 2-MS-371, are opened during steam generator safety valve set point testing to allow steam header pressure instrumentation to be placed in service. When either 2-MS-369 or 2-MS-371 is opened, a dedicated operator in continuous communication with the control room is required.

The determination of the appropriate administrative controls for these containment isolation valves included an evaluation of the expected environmental conditions. This evaluation has concluded environmental conditions will not preclude access to close the valve, and this action will prevent the release of radioactivity outside of containment through the respective penetration.

The containment purge supply and exhaust isolation valves are required to be sealed closed during plant operation since these valves have not been demonstrated capable of closing during a LOCA or steam line break accident. Such a demonstration would require justification of the mechanical OPERABILITY of the purge valves and consideration of the appropriateness of the electrical override circuits. Maintaining these valves closed during plant operations ensures that excessive quantities of radioactive materials will not be released via the containment purge system. The containment purge supply and exhaust isolation valves are sealed closed by removing power from the valves. This is accomplished by pulling the control power fuses for each of the valves. The associated fuse blocks are then locked. This is consistent with the guidance contained in NUREG-0737 Item II.E.4.2 and Standard Review Plan 6.2.4, "Containment Isolation System," Item II.f.

Surveillance Requirement 4.6.3.1.a verifies the isolation time of each power operated automatic containment isolation valve is within limits to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analysis. The isolation time and surveillance frequency are in accordance with the Inservice Testing Program.

Insert 2a

Surveillance Requirement 4.6.3.1.b demonstrate that each automatic containment isolation valve actuates to the isolation position on an actual or simulated containment isolation signal [containment isolation actuation signal (CIAS) or containment high radiation actuation signal (containment purge valves only)]. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillance was performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~ The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

3/4.6.5 SECONDARY CONTAINMENT

3/4.6.5.1 ENCLOSURE BUILDING FILTRATION SYSTEM

The OPERABILITY of the Enclosure Building Filtration System ensures that containment leakage occurring during LOCA conditions into the annulus will be filtered through the HEPA filters and charcoal adsorber trains prior to discharge to the atmosphere. This requirement is necessary to meet the assumptions used in the accident analyses and limit the SITE BOUNDARY radiation doses to within the limits of 10 CFR 50.67 during LOCA conditions.

The laboratory testing requirement for the charcoal sample to have a removal efficiency of ≥ 95% is more conservative than the elemental and organic iodine removal efficiencies of 90% and 70%, respectively, assumed in the DBA analyses for the EBFS charcoal adsorbers in the Millstone Unit 2 Final Safety Analysis Report. A removal efficiency acceptance criteria of ≥ 95% will ensure the charcoal has the capability to perform its intended safety function throughout the length of an operating cycle.

Surveillance Requirement 4.6.5.1.b.l dictates the test frequency, method and acceptance criteria for the EBFS trains (cleanup trains). These criteria all originate in the Regulatory Position sections of Regulatory Guide 1.52, Rev. 2, March 1978 as discussed below:

Section C.5.a requires a visual inspection of the cleanup system be made before the following tests, in accordance with the provisions of section 5 of ANSI N510-1975:

- in-place air flow distribution test
- DOP test
- activated carbon adsorber section leak test

the frequency specified in the Surveillance Frequency Control Program

Section C.5.c requires the in-place Dioctyl phthalate (DOP) test for HEPA filters to ~~conform~~ to section 10 of ANSI N510-1975. The HEPA filters should be tested in place (1) initially, (2) at ~~least once per 18 months thereafter~~, and (3) following painting, fire, or chemical release in any ventilation zone communicating with the system. The testing is to confirm a penetration of less than or equal to 1%* at rated flow.

Section C.5.d requires the charcoal adsorber section to be leak tested with a gaseous halogenated hydrocarbon refrigerant, in accordance with section 12 of ANSI N510-1975 to ensure that bypass leakage through the adsorber section is less than or equal to 1%.** Adsorber leak testing should be conducted (1) initially, (2) at ~~least once per 18 months thereafter~~, (3) following removal of an adsorber sample for laboratory testing if the integrity of the adsorber

* Means that the HEPA filter will allow passage of less than or equal to 1% of the test concentration injected at the filter inlet from a standard DOP concentration injection.

** Means that the charcoal adsorber sections will allow passage of less than or equal to 1% of the injected test concentration around the charcoal adsorber sections.

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS (Continued)

A Note limits the applicability of the inoperable equipment condition b. to when the unit has not entered MODE 2 following a REFUELING. Required ACTION b. allows one auxiliary feedwater pump to be inoperable for 7 days vice the 72 hour allowed outage time in required ACTION c. This longer allowed outage time is based on the reduced decay heat following REFUELING and prior to the reactor being critical.

With one of the auxiliary feedwater pumps inoperable in MODE 1, 2, or 3 for reasons other than ACTION a. or b., ACTION must be taken to restore the inoperable equipment to OPERABLE status within 72 hours. This includes the loss of both steam supply lines to the turbine-driven auxiliary feedwater pump. The 72 hour allowed outage time is reasonable, based on redundant capabilities afforded by the auxiliary feedwater system, time needed for repairs, and the low probability of a DBA occurring during this time period. Two auxiliary feedwater pumps and flow paths remain to supply feedwater to the steam generators.

If all three AFW pumps are inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with non-safety related equipment. In such a condition, the unit should not be perturbed by any action, including a power change that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW pump to OPERABLE status. Required ACTION e. is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW pump is restored to OPERABLE status. In this case, LCO 3.0.3 is not applicable because it could force the unit into a less safe condition.

During ~~quarterly~~ periodic surveillance testing of the turbine driven AFW pump, valve 2-CN-27A is closed and valve 2-CN-28 is opened to prevent overheating the water being circulated. In this configuration, the suction of the turbine driven AFW pump is aligned to the Condensate Storage Tank via the motor driven AFW pump suction flow path, and the pump minimum flow is directed to the Condensate Storage Tank by the turbine driven AFW pump suction path upstream of 2-CN-27A in the reverse direction. During this surveillance, the suction path to the motor driven AFW pump suction path remains OPERABLE, and the turbine driven AFW suction path is inoperable. In this situation, the ACTION requirements of Technical Specification 3.7.1.2 for one AFW pump are applicable.

Insert 2a

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS (Continued)

Surveillance Requirement 4.7.1.2.a verifies the correct alignment for manual, power operated, and automatic valves in the Auxiliary Feedwater (AFW) System flow paths (water and steam) to provide assurance that the proper flow paths will exist for AFW operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.~~

Insert 2a

Surveillance Requirement 4.7.1.2.b, which addresses periodic surveillance testing of the AFW pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by the ASME Code for Operations and Maintenance of Nuclear Power Plants (ASME OM Code). This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program. The ASME OM Code provides the activities and frequencies necessary to satisfy the requirements. This surveillance is modified to indicate that the test can be deferred for the steam driven AFW pump until suitable plant conditions are established. This deferral is required because steam pressure is not sufficient to perform the test until after MODE 3 is entered. Once the unit reaches 800 psig, 24 hours would be allowed for completing the surveillance. However, the test, if required, must be performed prior to entering MODE 2.

Surveillance Requirements 4.7.1.2.c and 4.7.1.2.d demonstrate that each automatic AFW valve actuates to the required position on an actual or simulated actuation signal (AFWAS) and that each AFW pump starts on receipt of an actual or simulated actuation signal (AFWAS). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~ The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program. These surveillances do not apply to the steam driven AFW pump and associated valves which are not automatically actuated.

Insert 2a

3/4.7.3 REACTOR BUILDING CLOSED COOLING WATER SYSTEM (Continued)

It is acceptable to operate with the RBCCW pump minimum flow valves (2-RB-107A, 2-RB-107B, 2-RB-107C), RBCCW pump sample valves (2-RB-56A, 2-RB-56B, and 2-RB-56C), and the RBCCW pump radiation monitor stop valves (2-RB-39, 2-RB-41,and 2-RB-43) open. An active single failure will not adversely impact both RBCCW loops with these valves open. In addition, protection against a passive single failure after the initiation of post-loss of coolant accident long term cooling is achieved by manually closing these accessible valves, as directed by the emergency operating procedures. In addition, operation with RBCCW chemical addition valves (2-RB-50A and 2-RB-50B) open during chemical addition evolutions is acceptable since these normally closed valves are opened to add chemicals to the RBCCW and then closed as directed by normal operating procedures. Therefore, operation with these valves open does not affect OPERABILITY of the RBCCW loops.

Surveillance Requirement 4.7.3.1.a verifies the correct alignment for manual, power operated, and automatic valves in the RBCCW System flow paths to provide assurance that the proper flow paths exist for RBCCW operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.~~ Insert 2a

Surveillance Requirements 4.7.3.1.b and 4.7.3.1.c demonstrate that each automatic RBCCW valve actuates to the required position on an actual or simulated actuation signal and that each RBCCW pump starts on receipt of an actual or simulated actuation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment~~. The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

Insert 2b

3/4.7.4 SERVICE WATER SYSTEM

The OPERABILITY of the Service Water (SW) System ensures that sufficient cooling capacity is available for continued operation of vital components and Engineered Safety Feature equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

3/4.7.4 SERVICE WATER SYSTEM (Continued)

determined to be inoperable should be the loop that results in the most adverse plant configuration with respect to the availability of accident mitigation equipment. Restoration of loop independence within the time constraints of the allowed outage time is required, or a plant shutdown is necessary.

It is acceptable to operate with the SW header supply valves to sodium hypochlorite (2-SW-84A and 2-SW-84B) and the SW header supply valves to the north and south filters(2-SW-298 and 2-SW-299) open.The flow restricting orifices in these lines ensure that safety related loads continue to receive minimum required flow during a LOCA (in which the lines remain intact) or during a seismic event (when the lines break). Therefore, operation with these valves open does not affect OPERABILITY of the SW loops.

Surveillance Requirement 4.7.4.1.a verifies the correct alignment for manual, power operated, and automatic valves in the Service Water (SW) System flow paths to provide assurance that the proper flow paths exist for SW operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience~~. Insert 2a

Surveillance Requirements 4.7.4.1.b and 4.7.4.1.c demonstrate that each automatic SW valve actuates to the required position on an actual or simulated actuation signal and that each SW pump starts on receipt of an actual or simulated actuation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment~~. Insert 2b The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

3/4.7.5 DELETED

the frequency specified in the Surveillance Frequency Control Program

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM (Continued)

Section C.5.c requires the in-place Dioctyl phthalate (DOP) test for HEPA filters to conform to section 10 of ANSI N510-1975. The HEPA filters should be tested in place (1) initially, (2) at least once per 18 months thereafter, and (3) following painting, fire, or chemical release in any ventilation zone communicating with the system. The testing is to confirm a penetration of less than or equal to 1%* at rated flow.

Section C.5.d requires the charcoal adsorber section to be leak tested with a gaseous halogenated hydrocarbon refrigerant, in accordance with section 12 of ANSI N510-1975 to ensure that bypass leakage through the adsorber section is less than or equal to 1%.** Adsorber leak testing should be conducted (1) initially, (2) at least once per 18 months thereafter, (3) following removal of an adsorber sample for laboratory testing if the integrity of the adsorber section is affected, and (4) following painting, fire, or chemical release in any ventilation zone communicating with the system.

The ACTION requirements to immediately suspend various activities (CORE ALTERATIONS, irradiated fuel movement, etc.) do not preclude completion of the movement of a component to a safe position.

Technical Specification 3.7.6.1 provides the OPERABILITY requirements for the Control Room Emergency Ventilation Trains. If a Control Room Emergency Ventilation Train emergency power source or normal power source becomes inoperable in MODES 1, 2, 3, or 4 the requirements of Technical Specification 3.0.5 apply in determining the OPERABILITY of the affected Control Room Emergency Ventilation Train. If a Control Room Emergency Ventilation Train emergency power source or normal power source becomes inoperable in MODES 5 or 6 the guidance provided by Note "**" of this specification applies in determining the OPERABILITY of the affected Control Room Emergency Ventilation Train. If a Control Room Emergency Ventilation Train emergency power source or normal power source becomes inoperable while not in MODES 1, 2, 3, 4, 5, or 6 the requirements of Technical Specification 3.0.5 apply in determining the OPERABILITY of the affected Control Room Emergency Ventilation Train.

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* Means that the HEPA filter will allow passage of less than or equal to 1% of the test concentration injection at the filter inlet from a standard DOP concentration injection.

** Means that the charcoal adsorber sections will allow passage of less than or equal to 1% of the injected test concentration around the charcoal adsorber section.

3/4.7.10 DELETED

3/4.7.11 ULTIMATE HEAT SINK

The limitations on the ultimate heat sink temperature ensure that sufficient cooling capacity is available to either,

1) provide normal cooldown of the facility, or 2) to mitigate the effects of accident conditions within acceptable limits.

The limitations on maximum temperature are based on a 30-day cooling water supply to safety related equipment without exceeding their design basis temperature.

Various indications are available to monitor the temperature of the ultimate heat sink (UHS). The following guidelines apply to ensure the UHS Technical Specification limit is not exceeded.

The control room indications are normally used to ensure compliance with this specification. Control room indications are acceptable because of the close correlation between control room indications and local Service Water System (SWS) header indications (historically within approximately 2°F). The highest reading valid temperature obtained from the Unit 2 intake structure and the inlets to the Circulating Water System water boxes shall be used to verify the UHS temperature is ≤ 70°F.

When the highest reading valid control room indication indicates the temperature of the UHS is > 70°F, local SWS header indications must be used. The highest reading valid local SWS header temperature shall be used to verify the UHS temperature limit of 75°F is not exceeded. Normally, local SWS header temperature will be taken at the inlet to the vital AC switchgear room cooling coils. If the local SWS header temperature cannot be taken at the inlet to the vital AC switchgear room cooling coils, the inlet to the Reactor Building Closed Cooling Water heater exchangers, or other acceptable instrumentation should be used to determine SWS header temperature.

If the UHS temperature exceeds 75°F, plant operations may continue provided the LCO recorded water temperatures averaged over the previous 24 hour period, are at or below 75°F. This verification is required to be performed ~~once per hour~~ at the frequency specified in the Surveillance Frequency Control Program when the water temperature exceeds 75°F. If the UHS temperature, averaged over the previous 24 hour period, exceeds the 75°F Technical Specification limit, or if the UHS temperature exceeds 77°F, a plant shutdown in accordance with the ACTION requirements will be necessary.

The 31 day frequency for SR 4.8.1.1.2.a.2 is consistent with standard industry guidelines.

SR 4.8.1.1.2.a.3

This surveillance verifies that the diesel generators are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the diesel generator is connected to the offsite source. Although no power factor requirements are established by this surveillance, the diesel generator is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 value is the design rating of the machine, while 1.0 is an operational limitation.

This surveillance is modified by five Notes. Note 1 indicates that diesel engine runs for this surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients because of changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the limit will not invalidate the test. Note 3 indicates that this surveillance should be conducted on only one diesel generator at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this surveillance. A successful diesel generator start must precede this test to credit satisfactory performance. Note 5 states that SR 4.8.1.1.2.d, a more rigorous test, may be performed in lieu of 4.8.1.1.2.a.

The 31 day frequency for SR 4.8.1.1.2.a.3 is consistent with standard industry guidelines.

Insert 2a

SR 4.8.1.1.2.b.1

at the frequency specified in the Surveillance Frequency Control Program

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the three fuel storage tanks once every 92 days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during EDG operation. Water may come from any of several sources, including condensation, rain water, contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. This surveillance is for preventative maintenance. The presence of water does not necessarily represent failure of this surveillance provided the accumulated water is removed during performance of the surveillance.

determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

The frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between surveillance intervals.

SR 4.8.1.1.2.c.2

Under accident and loss of offsite power conditions, loads are sequentially connected to the bus by the automatic load sequencer. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the diesel generators due to high motor starting currents. The load sequence time interval tolerances ensure that sufficient time exists for the diesel generator to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding Engineered Safety Features (ESF) equipment time delays are not violated.

~~The 18 month frequency is based on engineering judgment, taking into consideration unit conditions required to perform the surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

This surveillance is modified by a Note. The reason for the Note is that performing the surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the surveillance in MODE 1, 2, 3, or 4 is further amplified to allow the surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed surveillance, a successful surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and start up to determine that plant safety is maintained or enhanced when the surveillance is performed in MODE 1, 2, 3, or 4. Risk insights or deterministic methods may be used for this assessment.

SR 4.8.1.3.2.c.3

Each diesel generator is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This surveillance demonstrates the diesel generator load response characteristics and capability to reject the largest single load without exceeding a predetermined frequency limit. The single largest load for each diesel generator is identified in the FSAR (Tables 8.3-2 and 8.3-3).

This surveillance may be accomplished by either:

a. Tripping the diesel generator output breaker with the diesel generator carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power or while solely supplying the bus; or

b. Tripping the equivalent of the single largest post-accident load with the diesel generator solely supplying the bus.

The time, voltage, and frequency tolerances specified in this surveillance are based on the response during load sequence intervals. The 2.2 seconds specified is equal to 40% of the 5.5 second load sequence interval associated with sequencing of the largest load (Safety Guide 9). The voltage and frequency specified are consistent with the design range of the equipment powered by the diesel generator. SR 4.8.1.1.2.c.3.a corresponds to the maximum frequency excursion, while SR 4.8.1.1.2.c.3.b and SR 4.8.1.1.2.c.3.c are steady state voltage and frequency values to which the system must recover following load rejection.

~~The 18 month frequency is based on engineering judgment, taking into consideration unit conditions required to perform the surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

This surveillance is modified by a Note to ensure that the diesel generator is tested under load conditions that are as close to design basis conditions as practical. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.9 lagging. This power factor is representative of the inductive loading a diesel generator would see based on the motor rating of the single largest load. It is within the adjustment capability of the Control Room Operator based on the use of reactive load indication to establish the desired power factor. Under certain conditions, however, the note allows the surveillance to be conducted at a power factor other than ≤ 0.9. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.9 results in voltages on the emergency buses that are too

high. Under these conditions, the power factor should be maintained as close as practicable to 0.9 while still maintaining acceptable voltage limits on the emergency buses. In other circumstances, the grid voltage may be such that the diesel generator excitation levels needed to obtain a power factor of 0.9 may not cause unacceptable voltages on the emergency buses, but the excitation levels are in excess of those recommended for the diesel generator. In such cases, the power factor shall be maintained as close as practicable to 0.9 lagging without exceeding the diesel generator excitation limits.

SR 4.8.1.1.2.c.4

This surveillance demonstrates the diesel generator capability to reject a rated load without overspeed tripping. A diesel generator rated load rejection may occur because of a system fault or inadvertent breaker tripping. This surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the diesel generator experiences following a rated load rejection and verifies that the diesel generator will not trip upon loss of the load. While the diesel generator is not expected to experience this transient during an event, this response ensures that the diesel generator is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

This surveillance is performed by tripping the diesel generator output breaker with the diesel generator carrying the required load while paralleled to offsite power.

~~The 18 month frequency is based on engineering judgment, taking into consideration unit conditions required to perform the surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ ← Insert 2a

This surveillance is modified by a Note to ensure that the diesel generator is tested under load conditions that are as close to design basis conditions as practical. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.83 lagging. This power factor is representative of the inductive loading a diesel generator would see under design basis accident conditions. Under certain conditions, however, the note allows the surveillance to be conducted at a power factor other than ≤ 0.83. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.83 results in voltages on the emergency buses that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.83 while still maintaining acceptable voltage limits on the emergency buses. In other circumstances, the grid voltage may be such that the diesel generator excitation levels needed to obtain a power factor of 0.83 may not cause unacceptable voltages on the emergency buses, but the excitation levels are in excess of those recommended for the diesel

generator. In such cases, the power factor shall be maintained as close as practicable to 0.83 lagging without exceeding the diesel generator excitation limits.

SR 4.8.1.1.2.c.5

In the event of a design basis accident coincident with a loss of offsite power, the diesel generators are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded. This surveillance demonstrates the diesel generator operation during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the diesel generator. It further demonstrates the capability of the diesel generator to automatically achieve the required voltage and speed (frequency) within the specified time. The diesel generator auto-start time of 15 seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability has been achieved. The requirement to verify the connection of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the diesel generator loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the diesel generator system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~The 18 month frequency is based on engineering judgment, taking into consideration unit conditions required to perform the surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

For the purpose of this testing, the diesel generators must be started from a standby condition. Standby condition for a diesel generator means the diesel engine coolant and oil are being circulated and temperature is being maintained consistent with manufacturer recommendations.

This surveillance is modified by a Note. The reason for the Note is that performing the surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the surveillance in MODE 1 2, 3, or 4 is further amplified to allow portions of the surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and

other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial surveillance, a successful partial surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and start up to determine that plant safety is maintained or enhanced when portions of the surveillance are performed in MODE 1, 2, 3, or 4. Risk insights or deterministic methods may be used for the assessment.

SR 4.8.1.1.2.c.6

This surveillance demonstrates that diesel generator noncritical protective functions (e.g., high jacket water temperature) are bypassed on a loss of voltage signal concurrent with an ESF actuation test signal. During this time, the critical protective functions (engine overspeed, generator differential current, low lube oil pressure [2 out of 3 logic], and voltage restraint overcurrent) remain available to trip the diesel generator and/or output breaker to avert substantial damage to the diesel generator unit. An EDG Emergency Start Signal (Loss of Power signal or SIAS) bypasses the EDG mechanical trips in the EDG control circuit, except engine overspeed, and switches the low lube oil trip to a 2 of 3 coincidence. The loss of power to the emergency bus, based on supply breaker position (A302, A304, and A505 for Bus 24C; A410, A411, and A505 for Bus 24D), bypasses the EDG electrical trips in the breaker control circuit except generator differential current and voltage restraint over current. The noncritical trips are bypassed during design basis accidents and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The diesel generator availability to mitigate the design basis accident is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the diesel generator.

~~The 18 month frequency is based on engineering judgment, taking into consideration unit conditions required to perform the surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint~~. ← Insert 2a

This surveillance is modified by a Note. The reason for the Note is that performing the surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the surveillance in MODE 1, 2, 3, or 4 is further amplified to allow portions of the surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is

maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial surveillance, a successful partial surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the surveillance are performed in MODE 1, 2, 3, or 4. Risk insights or deterministic methods may be used for the assessment.

SR 4.8.1.1.2.c.7

This surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the diesel generator. It further demonstrates the capability of the diesel generator to automatically achieve the required voltage and speed (frequency) within the specified time. The diesel generator auto-start time of 15 seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability has been achieved. The requirement to verify the connection and power supply of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the diesel generator loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the diesel generator system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~The 18 month frequency is based on engineering judgment, taking into consideration unit conditions required to perform the surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

This surveillance is modified by two Notes. The reason for Note 1 is that performing the surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the surveillance in MODE 1, 2, 3, or 4 is further amplified to allow portions of the surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is

maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial surveillance, a successful partial surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and start up to determine that plant safety is maintained or enhanced when portions of the surveillance are performed in MODE 1, 2, 3, or 4. Risk insights or deterministic methods may be used for the assessment.

Surveillance Note 2 specifies that the start of the diesel generator from a standby condition is not required if this surveillance is performed in conjunction with SR 4.8.1.1.2.c.5. Since this test is normally performed in conjunction with SR 4.8.1.1.2.c.5, the proposed note will exclude the requirement to start from a standby condition to minimize the time to perform this test. This will reduce shutdown risk since plant restoration, and subsequent equipment availability will occur sooner. In addition, it is not necessary to test the ability of the EDG to auto start from a standby condition for this test since that ability will have already been verified by SR 4.8.1.1.2.c.5, which will have just been performed if the note's exclusion is to be utilized. If this test is to be performed by itself, the EDG is required to start from a standby condition.

SR 4.8.1.1.2.c.8

This surveillance demonstrates that the diesel generator automatically starts and achieves the required voltage and speed (frequency) within the specified time (15 seconds) from the design basis actuation signal (Safety Injection Actuation Signal) and operates for ≥ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability. Since the specified actuation signal (ESF signal without loss of offsite power) will not cause the emergency bus loads to be shed, and will not cause the diesel generator to load, the surveillance ensures that permanently connected loads and autoconnected loads remain energized from the offsite electrical power system (Unit 2 RSST or NSST, or Unit 3 RSST or NSST). In certain circumstances, many of these loads cannot actually be connected without undue hardship or potential for undesired operation. It is not necessary to verify all autoconnected loads remain connected. A representative sample is acceptable.

~~The 18 month frequency is based on engineering judgment, taking into consideration unit conditions required to perform the surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint~~.

Insert 2a

For the purpose of this testing, the diesel generators must be started from a standby condition. Standby condition for a diesel generator means the diesel engine coolant and oil are being circulated and temperature is being maintained consistent with manufacturer recommendations.

SR 4.8.1.1.2.c.9

This surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from a normal surveillance, and achieve the required voltage and speed within 15 seconds. The 15 second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA.

~~The 18 month frequency is based on engineering judgment, taking into consideration unit conditions required to perform the surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

This surveillance is modified by a Note. The Note ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the diesel generator. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain diesel generator OPERABILITY. The requirement that the diesel has operated for at least 1 hour at rated load conditions prior to performance of this surveillance is based on manufacturer recommendations for achieving hot conditions. Momentary transients due to changing bus loads do not invalidate this test.

SRs 4.8.1.1.2.d.1 and 4.8.1.1.2.d.2

SR 4.3.1.1.2.d.1 verifies that, at ~~a 184 day frequency~~ the frequency specified in the Surveillance Frequency Control Program, the diesel generator starts from standby conditions and achieves required voltage and speed (frequency) within 15 seconds. The 15 second start requirement supports the assumptions of the design basis LOCA analysis in the FSAR. Diesel generator voltage and speed will continue to increase to rated values, and then should stabilize. SR 4.8.1.1.2.d.2 verifies the ability of the diesel generator to achieve steady state voltage and frequency conditions. The time for voltage and speed (frequency) to stabilize is periodically monitored and the trend evaluated to identify degradation of governor or voltage regulator performance when besting in accordance with the requirements of this surveillance.

~~The 184 day frequency for this surveillance is a reduction in cold testing consistent with Generic Letter 84-15. This frequency provides adequate assurance of diesel generator OPERABILITY, while minimizing degradation resulting from testing.~~ Insert 2b In addition, SR 4.8.1.1.2.d may be performed in lieu of 4.8.1.1.2.a.

For the purpose of this testing, the diesel generators must be started from a standby condition. Standby condition for a diesel generator means the diesel engine coolant and oil are being circulated and temperature is being maintained consistent with manufacturer recommendations.

During performance of SR 4.8.1.1.2.d.1, the diesel generators shall be started by using one of the following signals:

1. Manual;

2. Simulated loss of offsite power in conjunction with a safety injection actuation signal;

3. Simulated safety injection actuation signal alone; or

4. Simulated loss of power alone.

SR 4.8.1.1.2.d.3

This surveillance verifies that the diesel generators are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the diesel generator is connected to the offsite source. Although no power factor requirements are established by this surveillance, the diesel generator is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 value is the design rating of the machine, while 1.0 is an operational limitation.

~~The 184 day frequency for this surveillance is a reduction in cold testing consistent with Generic Letter 84-15. This frequency provides adequate assurance of diesel generator OPERABILITY, while minimizing degradation resulting from testing.~~ Insert 2a

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients because of changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the limit will not invalidate the test. Note 3 indicates that this surveillance should be conducted on only one diesel generator at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this surveillance. A successful diesel generator start must precede this test to credit satisfactory performance.

3/4.9.16 SHIELDED CASK

The limitations of this specification ensure that in the event of a shielded cask drop accident the doses from ruptured fuel assemblies will be within the assumptions of the safety analyses.

3/4.9.17 SPENT FUEL POOL BORON CONCENTRATION

The limitations of this specification ensures that sufficient boron is present to maintain spent fuel pool $K_{eff} \leq 0.95$ under accident conditions.

Postulated accident conditions which could cause an increase in spent fuel pool reactivity are: a single dropped or mis-loaded fuel assembly, a single dropped or mis-loaded Consolidated Fuel Storage Box, or a shielded cask drop onto the storage racks. A spent fuel pool soluble boron concentration of 1400 ppm is sufficient to ensure $K_{eff} \leq 0.95$ under these postulated accident conditions. The required spent fuel pool soluble boron concentration of ≥ 1720 ppm conservatively bounds the required 1400 ppm. The ACTION statement ensure that if the soluble boron concentration falls below the required amount, that fuel movement or shielded cask movement is stopped, until the boron concentration is restored to within limits.

An additional basis of this LCO is to establish 1720 ppm as the minimum spent fuel pool soluble boron concentration which is sufficient to ensure that the design basis value of 600 ppm soluble boron is not reached due to a postulated spent fuel pool boron dilution event. As part of the spent fuel pool criticality design, a spent fuel soluble boron concentration of 600 ppm is sufficient to ensure $K_{eff} \leq 0.95$, provided all fuel is stored consistent with LCO requirements. By maintaining the spent fuel pool soluble boron concentration ≥ 1720 ppm, sufficient time is provided to allow the operators to detect a boron dilution event, and terminate the event, prior to the spent fuel pool being diluted below 600 ppm. In the unlikely event that the spent fuel pool soluble boron concentration is decreased to 0 ppm, K_{eff} will be maintained <1.00, provided all fuel is stored consistent with LCO requirements. The ACTION statement ensures that if the soluble boron concentration falls below the required amount, that immediate action is taken to restore the soluble boron concentration to within limits, and that fuel movement or shielded cask movement is stopped. Fuel movement and shielded cask movement is stopped to prevent the possibility of creating an accident condition at the same time that the minimum soluble boron is below limits for a potential boron dilution event.

periodic

The surveillance of the spent fuel pool boron concentration within 24 hours of fuel movement, consolidated fuel movement, or cask movement over the cask layout area, verifies that the boron concentration is within limits just prior to the movement. The 7 day surveillance interval frequency is sufficient since no deliberate major replenishment of pool water is expected to take place over this short period of time.

is controlled under the Surveillance Frequency Control Program