October 15, 2001

Mr. J. Alan Price, Vice-President
Nuclear Technical Services/Millstone
c/o Mr. D. A. Smith, Process Owner -
Regulatory Affairs
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

SUBJECT: MILLSTONE UNIT 3 - NRC INSPECTION REPORT 50-423/01-11

Dear Mr. Price:

On August 31, 2001, the NRC completed a Safety System Design and Performance Capability Inspection at your Millstone Unit 3 reactor facility. The inspection also reviewed your program for evaluating changes, tests, and experiments performed under 10CFR50.59. The enclosed report presents the results of that inspection. The results of this inspection were discussed on August 31, 2001, with Mr. Stephen Scace and other members of your staff.

The inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

No findings of significance were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publically Available Records (PARS) component of the NRC's document management system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Lawrence T. Doerflein, Chief
Systems Branch
Division of Reactor Safety

Docket Nos.: 50-423
License Nos.: NPF- 49

Enclosure: Inspection Report 50-423/01-011

cc w/encl:
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DATE	09/28/2001		10/11/01		10/12/01					

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-423
License No:	NPF-49
Report No:	50-423/01-11
Licensee:	Dominion Nuclear Connecticut, Inc.
Facility:	Millstone Nuclear Generating Station Unit 3
Location:	Rope Ferry Road Waterford, CT 06385
Dates:	August 13 - 17 and 26 - 31, 2001
Inspectors:	R. Fuhrmeister, Sr. Reactor Engineer, Division of Reactor Safety (DRS) R. Bhatia, Reactor Engineer, DRS S. Pindale, Reactor Engineer, DRS J. Carrasco, Reactor Engineer, DRS F. Jaxheimer, Reactor Engineer, DRS D. Prevatte, Contract Engineer
Approved By:	Lawrence T. Doerflein, Chief Systems Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000423/2001011, on 8/13 thru 8/31/2001, Dominion Nuclear Connecticut, Inc., Millstone Nuclear Generating Station Unit 3, Engineering Team Inspection.

The inspection was conducted by region-based inspectors and a contractor engineer. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 “Significance Determination Process” (SDP). Findings for which the SDP does not apply are indicated by “No Color” or the severity level of the applicable violation. The NRC’s program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

A. Inspector Identified Findings

None.

B. Licensee Identified Findings

None.

Report Details

3. REACTOR SAFETY

Cornerstone: Mitigating Systems

1R02 Evaluation of Changes, Tests, or Experiments (IP 71111.02)

a. Inspection Scope

The team reviewed Millstone Station procedures RAC 12, Revision 3, “50.59 Screens and Evaluations,” and WC 10, Revision 004, “Temporary Modifications,” which describe the process for conducting and documenting safety evaluations (SE’s) for changes to facility systems, structures, and components or procedures as described in the Millstone Unit 3 Updated Final Safety Analysis Report (UFSAR).

The team reviewed several risk significant safety evaluations. The review was conducted to verify that changes made to the facility or procedures as described in the Updated Final Safety Analysis Report were reviewed and evaluated, and the conclusions documented, by the licensee in accordance with 10 CFR 50.59.

The team also reviewed several temporary and permanent modifications performed during the last 18 months for which the licensee concluded that no formal safety evaluation was required (screen out). This review was performed to verify that the licensee’s threshold for performing safety evaluations was consistent with the requirements of 10 CFR 50.59. The team interviewed engineering personnel engaged in the preparation and the review of the selected SEs and SE screen outs to discuss the process and bases for the conclusions. Lastly, the team verified that any problems identified with the implementation of the safety evaluation program were properly evaluated and resolved.

b. Findings

No findings of significance were identified

1R21 Safety System Design and Performance Capability (IP 71111.21)

a. Inspection Scope

The team reviewed the design and performance capability of the service water (SW) and the 125 volt direct current (125 Vdc) power systems. The SW and 125 Vdc systems were selected because they are critical support systems for the mitigating systems used to respond to accidents and events at the facility.

The team reviewed the design and licensing bases of the SW and 125 Vdc systems to determine the design requirements and identify their intended safety functions. Included in this review were the UFSAR, the Technical Specifications, other design and licensing basis documents, and the applicable regulatory requirements including Generic Letter 89-13, “Service Water System Problems Affecting Safety-Related Equipment”, and 10CFR50, Appendix A, Criterion 44, “Cooling Water”, Criterion 45, “Inspection of

Cooling Water System", and Criterion 46, "Testing of Cooling Water System." The team also conducted interviews with plant personnel, and plant walkdowns to verify the SW and 125 Vdc systems original design was adequate and subsequent modifications did not degrade the ability of the systems to perform their safety functions. The team also reviewed the design and the functional capability of the equipment and systems required to support these systems.

During the review of the SW system, the team focused on the ability of the system to supply the required service water flows to all safety-related heat exchangers, its ability to serve as the backup emergency cooling water supply for the auxiliary feedwater system and the control room chilled water system, the ability of selected heat exchangers to transfer the required heat, and the ability of the system control logic and control devices to respond appropriately for the various design basis event scenarios.

Specific areas of review related to these SW system functions included pump net positive suction head (NPSH) and vortexing, system flow calculations, including the ability to supply all safety-related heat loads and the spent fuel pool heat load with only one division of service water, ultimate heat sink temperatures (high and low extremes), system accident temperatures and their effects on piping and support loads and stresses, verification of heat exchanger heat transfer capabilities through review of calculations, testing procedures, and discussions with the system engineer on testing and inspection procedures and practices, fouling factor appropriateness, tube plugging limits and monitoring, protection against water hammer, ability of the system to support safety grade cold shutdown (SGCS), adequacy of pump performance surveillance testing acceptance criteria, effects on pump performance of electrical system degraded frequency, isolation of non-safety-related loads under accident conditions, protection against marine growth and other system fouling/plugging potential, including review of system dead legs for plugging potential, adequacy of system strainers, and protection against system degradation due to corrosion and other marine environment degradation effects.

During the review of the 125 Vdc system, the team focused on the appropriateness of design assumptions, the adequacy of analytical models and methods, engineering calculations, and acceptance criteria for in-service tests. To support those activities, the team performed walkdowns of the following system components including: Main Control Room, Remote Shutdown Panels; electrical power supplies including the emergency diesel generators (EDGs), the 4.16 kV switchgear, 480 V load centers and motor control centers (MCCs); the 125 Volt dc batteries; battery chargers; DC switchgear and power panels; and the safety-related inverters.

The team also conducted design reviews of the risk-significant components of the 125 Vdc system. This review included instrumentation and control, including local and Main Control Room control, monitoring significant variables, initiating signals, interlocks, shutdown, and isolation signals and Post Accident Monitoring instrumentation; electrical overcurrent and ground protection relays setpoint, including motor overcurrent protection, and MOV thermal overload selection; cable sizing and routing including pump cable ampacity, cable separation; sizing of the station batteries; sizing of the battery chargers and inverters; DC system voltage and current studies; DC system surveillance procedures; DC system component maintenance procedures; DC system operating procedures; DC system alarm response procedures; and the as-built condition of the system.

The team also reviewed normal, abnormal, and emergency procedures for the SW and 125 Vdc systems to determine whether they were consistent with system design and licensing bases and operating assumptions. The team also reviewed the system interfaces (instrumentation, controls and alarms) available to operators to ensure that appropriate information was available to operators to support operator decision making. Operator actions associated with initiating, monitoring, controlling and shutting down the selected systems, including associated support systems were reviewed. In particular, the team verified that the required manual operator actions for transient and accident conditions could be accomplished as assumed by analysis and in accordance with approved station procedures.

To verify that the physical installation and system alignments were consistent with design and licensing basis assumptions, the team reviewed the operational readiness of the service water and 125 Vdc systems by conducting system walkdowns and reviewing associated operations procedures. During the walkdowns, the team examined the design, equipment material condition and physical line-up of major components, including pumps, motors, valves, piping, heat exchangers, and electrical panels and buses. The team also interviewed operators to assist in determining whether the service water and 125 Vdc systems were maintained and operated within the design and licensing bases. Condition Reports, operability determinations, operations work-arounds, and system health reports were reviewed to assess historical and current performance of the SW and 125 Vdc systems.

The team also verified, on a sampling basis, that the actual system configuration conformed with the applicable design documents and the licensing basis commitments and to verify that the design intents had been correctly translated into plant procedures and practices, including periodic testing procedures to verify the continuing capability of the systems to perform their design bases functions.

Finally, the team reviewed activities associated with the identification and resolution of problems associated with the service water (SW) and the direct current (DC) systems. The team reviewed a sample of condition reports associated with the selected systems to evaluate the adequacy of the corrective actions that were identified and also assessed the timeliness of the completion of the corrective actions. For the selected corrective actions the team also reviewed associated operability evaluations and/or verified the completion of corrective actions.

b. Findings

Service Water System Water Hammer Potential

Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions", identified the potential for water hammer in containment fan coolers during a LOCA as a result of loss of cooling water flow through the coolers and subsequent resumption of flow. The loss of flow would create the potential for the cooling water temperature exiting the coolers and in the coolers to be raised above its maximum design operating temperature, and for the pressure to be lowered. The loss in pressure would be particularly prevalent for coolers cooled by open service water systems with large elevation differences between the coolers and the water sources (lakes, cooling towers, etc.). Under loss-of-flow conditions, at the point where the cooling water temperature would rise to the saturation temperature corresponding to the system pressure in the coolers, flashing would begin, creating column separation (a large steam filled void separating two or more saturated water volumes in the system). Subsequent flow resumption would cause the upstream water volume to be accelerated toward the downstream water volume, which would be stationary or moving slowly, collapsing the steam void. At the point where the upstream water volume's front would rejoin the slower moving downstream volume, the resulting impact would generate a pressure wave (water hammer) that would propagate through the system with an intensity dependant upon factors such as the rate and magnitude of the momentum transfer at the time of impact.

Although the GL was aimed specifically at containment fan coolers, the potential for water hammer existed in any system with similar system design, flow, and heating characteristics, and the potential for loss and subsequent resumption of flow. The team determined the Millstone Unit 3 service water system contained these characteristics; it had numerous heat exchangers located well above the Long Island Sound water source elevation, and it was subject to loss-of-flow and subsequent resumption as a result of either single service water pump failure, which would cause its standby pump to automatically start when header pressure decreased to 25 psig, or loss of off-site power (LOOP), which would cause all service water pumps to stop, and their subsequent automatic restart on emergency power.

The team noted the licensee had also identified this potential; calculation NP(B)-271-FA, Rev 4, "Waterhammer Analysis for Service Water System Due to Pump Re-Start Following LOOP/LOCA and LOOP Events", had been generated to determine the resultant loads for input to the system's piping and support stress analyses. As a result of this calculation's initial findings that water hammer loads in several areas were unacceptable, several modifications were made in the system design to add check valves and continuously open vents at appropriate locations to limit drain down and to admit air at system high points upon loss of flow in order to reduce column separation, and to cushion rejoining forces upon pump restarts. However, this calculation failed to analyze the recirculation spray system (RSS) heat exchanger service water return piping even though it also had a potential for water hammer on a loss of service water flow. Specifically, the service water outlet elevation was approximately 46 feet above sea level, and loss-of-flow during a LOCA could produce service water outlet temperatures 200 degrees Fahrenheit (°F) or higher, depending on the event. Although the licensee maintained that the analysis had addressed this piping for column separation and rejoining, albeit only for 75°F service water, no documentation could be provided of such analyses at the time of the inspection. Also, the team determined that analyzed temperature would not have enveloped the probable worst case conditions at the higher LOCA-associated service water temperatures.

The team noted that the potential consequences of water hammer in this piping could include loss of the long-term containment heat removal ability for the affected division, and failure of the RSS heat exchanger tubes, which could compromise the containment leakage integrity. The team determined that the ability of the service water system to withstand the stresses associated with a column separation water hammer on the RSS HX outlet piping remains unresolved pending the completion of analysis/calculations by the licensee and subsequent review by the NRC. **(URI 50-423/01-011-01)**

The team determined that for the case of water hammer caused by a post-LOCA LOOP and subsequent service water pump restart, both service water divisions could potentially experience water hammer (common mode failure), with the resultant failures noted above, and a total loss of long-term containment heat removal capability. The licensee's response to the team's concerns was that LOCA with subsequent LOOP was outside their licensing basis, that they only had to consider LOCA and simultaneous LOOP, which would pose no threat to the RSS heat exchanger piping, since the RSS system would only be placed into service subsequent to the LOCA. The team determined that the question of whether the individual system design basis needs to consider the most severe transient to which the system could be exposed, as well as the Chapter 15 accidents, remains unresolved pending clarification of the licensing basis by NRR. **(URI 50-423/01-011-02)**

<u>Safety Grade Cold Shutdown, Potential Unreviewed Safety Question</u>

FSAR Section 5.4.7.2.3.5, "Safety Grade Cold Shutdown [SGCS]", required that the plant be capable of achieving SGCS for events initiated from normal operating conditions. It defined SGCS as "...the ability to take the plant from normal operating conditions to cold shutdown, with or without offsite power, with the most limiting single failure, using only safety-related equipment and limited action outside the control room, and within a reasonable period of time [66 hours] following shutdown."

The team's review of the service water system included its role in supporting SGCS. Proto-Power Calculation 95-052, Rev 1, Change 2, "Safety Grade Cold Shutdown Design Basis Analysis" was included in that review. No discrepancies were discovered in this calculation with respect to the service water system.

However, the team did identify a concern with the Boration Phase SGCS event. Section 2.2 of the calculation indicated that make-up/boration would be accomplished with the charging system pumps to bring the reactor coolant system (RCS) to the required cold shutdown margin before cooldown. Letdown flow would be via the only safety-related letdown pathway, the reactor vessel head vent system, to the pressurizer relief tank (PRT). However, the PRT, with a design pressure of 100 psig and limited volume, was not originally designed or intended as a holdup tank for the six-hour continual letdown required for SGCS. At some point in the letdown, the actuation pressure of its rupture disk (the ASME Code over pressure protection device) would be exceeded, and some portion of its contents and the subsequent continuing letdown flow would be released to the containment as steam and/or water. (100,344 lb of reactor coolant at approximately 550°F would be released at a rate of 19,524 lb/hr during the letdown.)

The team noted that this release of reactor coolant, that was potentially contaminated by failed fuel, into the containment had been evaluated by Westinghouse in WCAP-10141, “Developments Regarding Advanced Cold Shutdown Design Capability for Pressurized Water Reactor Nuclear Power Plants”, dated September 1982. The document deemed this release to be acceptable because, “considering the possibility of fuel failure following SGCS, contaminated coolant is better left in containment”, and because “considering the low probability of SGCS, the contamination consequences, in conjunction with the severity of the event, are justifiable.” Additional evaluation by the licensee in Engineering Evaluation M3-EV-970233, Rev 0, “Containment Heat Removal During Safety Grade Cold Shutdown”, determined that “Due to the high energy content, this letdown stream would represent a large heat load in containment and would challenge containment integrity without mitigation.” Containment spray would be the only available safety-related system for such mitigation. The team determined that, pending review by NRR for the acceptability of the consequences using the safety grade cold shutdown methodology, this issue is unresolved. **(URI 50-423/01-011-03)**

4. OTHER ACTIVITIES

4OA3 Event Followup

.1 Air Binding of Charging Pump Cooling System Heat Exchanger

Background: On June 13, 2001, the charging pump lubricating oil cooler for the “A” charging pump experienced a loss of cooling when the “B” train heat exchanger was removed from service for maintenance. Operators determined that the bearing temperatures on the “A” charging pump were rising steadily, and restored the “B” train cooling pump and heat exchanger to service. Subsequent troubleshooting by Dominion personnel determined that the “A” HX was air bound. The most likely cause of the condition was improper restoration of the system after maintenance performed in February, 2001. The air was vented from the HX and system parameters returned to normal. Dominion contracted Westinghouse to evaluate the condition, and determine if the charging pumps were capable of performing their intended functions without the cooling system in operation.

a. Inspection Scope

The team reviewed condition reports documenting the event, root cause determination, and operability determination for the air bound heat exchanger. The inspector also reviewed the Westinghouse evaluation of the event, which modeled the charging pump bearings, gear box, lubricating oil system, cooling water system, and the room ventilation to determine if temperatures of the bearings would have remained within acceptable limits. The team reviewed the validation and verification of the model which was based on the data from the June 13, 2001, event.

b. Findings

No findings of significance were identified.

4OA5 Management Meetings

.1 Exit Meetings

On August 31, 2001, at the conclusion of the inspection, the team presented the results of the inspection to Mr. Stephen Scace and other members of licensee management. During the exit meeting, the team asked whether any of the materials examined during the inspection should be considered proprietary. All identified proprietary information was returned to the licensee at the end of the inspection.

PARTIAL LIST OF PERSONS CONTACTED

Dominion Nuclear Connecticut, Inc.

A. Price, Vice President of Technical Services
S. Scace, Master Process Owner, Manage the Asset
C. Dempsey, Process Owner, Asset Production
W. Hoffner, Process Owner, Unit 3 Operations
C. Schwartz, Master Process Owner, Operations
C. Maxson, Process Owner, Design Engineering
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D. MacDonald, System Engineer
R. Debernardo, System Engineer
R. Georato, Senior Electrical Engineer, Duke Engineering and Services

NRC

L. Doerflein, Chief, Systems Branch
A. Cerne, Senior Resident Inspector
B. Seinel, Resident Inspector
V. Nerses, Project Manager, NRR

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-423/01-011-01	URI	Service Water system may not withstand column separation water hammer at RSS HX outlet
50-423/01-011-02	URI	Service Water System design may not account for most severe transient to which the system could be exposed
50-423/01-011-03	URI	Acceptability of Safety Grade Cold Shutdown methodology consequences

Closed

None

LIST OF ACRONYMS USED

ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
DC	Direct Current
EDG	Emergency Diesel Generator
HX	Heat Exchanger
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
LOOP	Loss of Off-site Power
MCC	Motor Control Center
MOV	Motor Operated Valve
NPSH	Net Positive Suction Head
NRR	Office of Nuclear Reactor Regulation
PRT	Pressurizer Relief Tank
RCS	Reactor Coolant System
RSS	Recirculation Spray System
SGCS	Safety Grade Cold Shutdown
SW	Service Water
UFSAR	Updated Final Safety Analysis Report
Vdc	Volts Direct Current

LIST OF DOCUMENTS REVIEWED

Condition Reports

M3-98-1418	M3-00-0312	M3-00-2396	01-07519	*01-08655	*01-08138
M3-98-1773	M3-00-0811	01-00403	01-00427	*01-08397	*01-08140
M3-00-0200	M3-00-0854	01-00406	01-02565	*01-08559	*01-08651
M3-00-1675	M3-00-0904	01-00926	01-05518	*01-08560	*01-08173
M3-00-3588	M3-00-1102	01-05844	01-05759	*01-08573	*01-08237
M3-00-3782	M3-00-2010	01-06364	01-06658	*01-08666	*01-08363
M3-01-0127	M3-01-005	01-06835	01-06186	*01-08677	*01-08718
M3-00-0057	M3-00-2591	01-02156	01-06586	*01-08668	*01-08094
M3-00-0180	M3-00-0181	01-04205	01-01768	*01-08700	*01-07742
M3-00-0200	M3-00-0247	01-06247	01-01697	*01-08145	
M3-00-0237	M3-00-2887	01-06659	*01-08200.	*01-08136	

Condition Reports noted with an * were generated by Dominion in response to questions raised by the team during the inspection

Safety Evaluations

S3-EV-97-0303 - Relocation of Sodium Hypochlorite (NaOCL) injection for the Service Water Piping (SWP)
S3-EV-99-0083 - Throttle Position of Service Water Control Building Booster Pump Discharge Valves
S3-EV-00-0007 - Turbine Exhaust Hood High Temperature Trip Logic Changed/Installed of Temperature Indicators
S3-EV-00-0077 - Fan Pressure Test for Cable Spreading Room
S3-EV-00-0022 - Freeze Seal for Repair of 3SWP*V49
S3-EV-00-0047 - Revise Reactor Coolant System (RCS) Low Flow Reactor Trip Set point
S3-EV-99-0086 - Spent Fuel Pool Gates Supplemental Rigging
S3-E3-EV-00-0007 - AOP 3555, Reactor Coolant Leak, Rev. 11
S3-EV-99-0113 - Installation of Polypropylene (Class 133 Material)
S3-EV-97-0583, Rev 1, Installation of Screens in the Service Water Inlet of the RSS Heat Exchangers.
S3-EV-97-0388, Rev 24, Application of ARCOR Coatings in the Millstone Unit 3 Service Water System.

Procedures

MP 3781AC, Rev. 000-03, Elgar Inverter Calibration Checks
RAC 12, Revision 3, 50.59 Screens and Evaluations
WC 10, Revision 004, Temporary Modifications
AOP 3551, Rev. 4, DC Bus Ground
AOP 3560, Rev. 6, Loss of Service Water
AOP 3562, Rev. 4, Loss of Instrument Air
AOP 3563, Rev. 5, Loss of DC Bus Power
AOP 3569, Rev 014, Severe Weather Conditions.
EOP 3505A, Rev. 005, Loss of Spent Fuel Pool Cooling
EOP 35 E-0, Rev. 20, Reactor Trip or Safety Injection
EOP 35 E-1, Rev. 17, Loss of Reactor or Secondary Coolant
EOP 35 ECA-0.0, Rev. 015, Loss of All AC Power

EOP 35 ES-0.1, Rev. 018, Reactor Trip Response
EOP 35 ES-0.2, Rev. 013, Natural Circulation Cooldown
EOP 35 FR-H.1, Rev. 13, Response to Loss of Secondary Heat Sink
MP-20-WM-FAP02.1, Rev 004-01, Conduct of On-Line Maintenance.
OP 3208, Rev. 020-02, Plant Cooldown
OP 3304, Rev. 028-01, Charging and Letdown
OP 3314G, Rev. 9, Intake Structure Ventilation
OP 3345C, Rev. 015-02, 125 Volt DC
OP 3353.MB1C, Rev. 004-01, Main Board 1C Annunciator Response
OP 3353.MB8A, Rev. 001-04, Main Board 8A Annunciator Response
OP 3353.MB8C, Rev. 2, Main Board 8C Annunciator Response
OP 3353.VP1B, Rev. 002-01, Main Ventilation and Air Conditioning Panel VP1B Annunciator Response
OP 3326, Rev. 021-02, Service Water System
OP 3335B, Rev 009-02, Reactor Plant Aerated Drains.
SP 3626.13, Rev. 019, Service Water Heat Exchangers Fouling Determination
SP 3670.5, Rev. 000-05, Cold Weather Protection
SP 3626.4, Rev 011-02, Service Water Pump 3SWP*P1A Operational Readiness Test.
SP 3626.5, Rev 011-01, Service Water Pump 3SWP*P1B Operational Readiness Test.
SP 3626.6, Rev 011-02, Service Water Pump 3SWP*P1C Operational Readiness Test.
SP 3626.7, Rev 013-01, Service Water Pump 3SWP*P1D Operational Readiness Test.
SP 3626.13, Rev 019, Service Water Heat Exchangers Fouling Determination.
SP 3670.4, Rev 018-04, Routine PMs.
SP 3665.2, Rev. 007, Intake Structure Condition Determination

Calculations
BAT-SYST-1240 E3, Rev.1, 125 VDC System Analysis, Methodology & Scenario Development
BAT1-96-1241E3, Rev.2, Battery 1 & Charger Sizing, associated Cable & Device Electrical Verification Calculation
BAT2-96-1243E3, Rev.2, Battery 2 & Charger Sizing, associated Cable & Device Electrical Verification Calculation
BAT3-96-1245E3, Rev.0, Battery 3 & Charger Sizing, associated Cable & Device Electrical Verification Calculation
BAT4-96-1246E3, Rev.0, Battery 4 & Charger Sizing, associated Cable & Device Electrical Verification Calculation
W3-517-1105-RE, Rev 3, Change 1, MP3 Service Water.
US(B)-348, Rev 0, Containment Recirculation System Heat Exchanger Outlet Temperature Transient.
91-BOP-789 ES, Rev 2, Change 4, MP3 - RPCCW Hx Required SW Flow During Safety Injection.
Proto-Power 95-052, Rev 1, Change 2, Safety Grade Cold Shutdown Design Basis Analysis.
Proto-Power 96-001, Rev 1, , Empirical Adjustment of the MP3 SW Model to 1995 Flow Test Data and Incorporation of the Latest SW System Design Change Notices.
12179-SP-3SWP-29, 6/28/84, 3SWS*PV 112A1, 2, B!, 2/PV 113A1, 2, B1, 2 Setpoint Calc.
P(T)-1124, 7/10/85, Service Water Pump Packing Leakoff Accumulation.
SWP-01515M3, Rev 1, Intake Structure Ventilation.
T-01613-S3, Rev 0, Intake Structure Ventilation.
00-059, Rev 0, MP2 SW System NPSH Evaluation.
925P(B), Rev 0, Service Water Pumphouse Ventilation Requirements.

901P(B), Rev 0, 3HVY*FN2A/2B Cycling Frequency.
96-01, Rev 1, Empirical Adjustment of the MP3 SW Model to 1995 Flow Test Data and Incorporation of the Latest SW System Design Change Notices.
SDP-SWP-01370M3, Rev 10, Change 3, SWP Stress Data Package.
90-069-1065M3, Rev 0, Change 11, Service Water System - NRC Generic Letter 89-13, Item No. VI, Design Basis Summary Report.
SDP-SWP-01370M3, Rev 10, SWP Stress Data Package.
NP(B)-271-FA, Rev 4, Waterhammer Analysis for Service Water System Due to Pump Re-Start Following LOP/LOCA and LOP Events.
CN-SEE-01-91, Rev. 0, Millstone Unit 3 CCP Lube Oil Temperature following loss of CCE cooling

Technical Evaluations
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EWR M2-99053 - Material Procurement for SBO Fuel Oil Tank 3BGF-TK2
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