December 6, 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 TRIENNIAL FIRE PROTECTION INSPECTION REPORT NO. 05000423/2001-012

Dear Mr. Price:

On November 2, 2001, the NRC completed a triennial fire protection team inspection at your Millstone Nuclear Power Station, Unit 3. The enclosed report documents the inspection findings which were discussed at an exit meeting on November 2, 2001, with Mr. Matthews, you and other members of the Dominion Nuclear staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's regulations and with the conditions of your license. The purpose of the inspection was to evaluate your post-fire safe shutdown capability and fire protection program. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the team identified one issue of very low safety significance (Green).

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 Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/ADAMS.html (the Public Electronic Reading Room).

Sincerely,

/RA/

James C. Linville, Chief
Electrical Branch
Division of Reactor Safety

Docket No. 50-423
License No. NPF-49

Enclosure: NRC Inspection Report 50-423/01-012
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-423
License No:	NPF-49
Report No:	50-423/01-012
Licensee:	Dominion Nuclear Connecticut, Inc.
Facility:	Millstone Nuclear Power Station, Unit 3
Location:	P. O. Box 128 Waterford, Connecticut 06385
Dates:	October 15 - November 2, 2001
Inspectors:	T. Walker, Sr. Reactor Inspector, Division of Reactor Safety R. Fuhrmeister, Sr. Reactor Inspector, DRS L. Cheung, Sr. Reactor Inspector, DRS R. Bhatia, Reactor Inspector, DRS G. Smith, Reactor Inspector (in training), DRS
Approved By:	James C. Linville, Chief Electrical Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000423-01-12, on 10/15- 11/02/01, Dominion Nuclear Connecticut, Inc., Millstone Unit 3. Fire Protection.

The inspection was conducted by a team composed of regional specialists. The inspection identified one green finding. 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 by the severity level of the applicable violation.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- **Green**. The team concluded that the measures implemented to compensate for locking out the cable spreading room fixed suppression system were not fully effective, which could result in delays in suppressing a fire in the area. Deficiencies related to selection and use of fire suppression equipment, fire fighting strategy content and usage, command and control, and communications delayed the application of a hose stream to a simulated fire during a fire brigade drill in the cable spreading room. This delay could have resulted in increased fire damage because the gaseous fixed suppression system was unavailable. This finding was of very low safety significance (Green) because the likelihood of occurrence of a fire that could damage safety-related equipment in this area is small, and equipment and procedures were available for alternate shutdown outside of the control room. (Section 1R05.5)

Report Details

Background

This report presents the results of a triennial fire protection team inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05, "Fire Protection." The objective of the inspection was to assess whether Dominion Nuclear has implemented an adequate fire protection program and that post-fire safe shut down capabilities have been established and are being properly maintained. The following fire areas were selected for detailed review based on risk insights from the Millstone Unit 3 Individual Plant Examination for Severe Accident Vulnerabilities, Rev. 0:

- Cable Spreading Room (CB-8)
- West Switchgear Area (CB-1)
- East Switchgear Area (CB-2)
- Auxiliary Building West Floor Area, El - 24'6" (AB-1, Zone D)

This inspection was a reduced scope inspection in accordance with the March 23, 2001, revision to IP 71111.05, "Fire Protection." Issues regarding equipment malfunction due to fire-induced failures of associated circuits were not inspected. Criteria for review of fire-induced circuit failures are currently the subject of a voluntary industry initiative. The definition of associated circuits of concern used was that contained in the March 22, 1982, memorandum from Mattson to Eisenhut, which clarified the requests for information made in Generic Letter 81-12.

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems

1R05 Fire Protection (71111.05)

.1 Programmatic Controls

a. Inspection Scope

During tours of the facility, the team observed the material condition of fire protection systems and equipment, the storage of permanent and transient combustible materials, control of ignition sources, and established fire watches. The team also reviewed the procedures that controlled hot-work activities and combustibles at the site. This was accomplished to ensure that the licensee was maintaining the fire protection systems, controlling hot-work activities, and controlling combustible materials in accordance with WC-7, "Fire Protection Program," and other fire protection program procedures.

b. Findings

No findings of significance were identified.

.2 Passive Fire Barriers

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe material condition and the adequacy of design of fire area boundaries, fire doors, and fire dampers. The team reviewed engineering evaluations, as well as surveillance and functional test procedures for selected items. The team also reviewed the licensee submittals and NRC safety evaluation reports (SERs) associated with fire protection features for Millstone 3. The design and qualification testing for raceway fire barriers were also reviewed and a walk-down of installed barriers was performed for the selected areas. These reviews were performed to ensure that the fire barrier systems met the licensing and design bases as described in the licensee submittals, NRC SERs, the Fire Protection Evaluation Report (FPER), and BTP 9.5-1 Compliance Report.

The team randomly selected three fire barrier penetration seals for detailed inspection to verify proper installation and qualification. The team reviewed associated design drawings, a Transco Product Incorporated test report, a fire barrier and penetration seal inspection procedure, and selected penetration seal evaluations. The team compared the observed in-situ seal configurations to the design drawings and tested configurations. The team also compared the penetration seal ratings with the ratings of the barriers in which they were installed. This was accomplished to ensure that the licensee had installed and maintained fire barrier penetration seals in accordance with the design and licensing bases as described in the licensee submittals, NRC SERs, and the FPER.

b. Findings

No findings of significance were identified.

.3 Fire Detection Systems

a. Inspection Scope

The team reviewed the adequacy of the fire detection systems in the selected plant fire areas. This included a walk-down of the systems and review of the type of installed detectors as shown per location drawings. The team also reviewed licensee submittals and NRC SERs associated with the selected fire areas. These reviews were performed to ensure that the fire detection systems for the selected fire areas were installed and maintained in accordance with the design and licensing bases as described in the licensee submittals, NRC SERs, and the FPER. The team also reviewed fire detection surveillance procedures to determine the adequacy of fire detection component testing.

b. Findings

No findings of significance were identified.

.4 Fixed Fire Suppression Systems and Equipment

a. Inspection Scope

The team reviewed the adequacy of the carbon dioxide (CO2) suppression systems in the East and West emergency switchgear rooms and the fixed fast-acting sprinkler systems in the auxiliary building by performing walk-downs of the systems. The team verified suppression system functionality and the adequacy of surveillance procedure testing by reviewing completed surveillance procedures and hydraulic calculations for the fast-acting sprinklers. The team reviewed initial discharge testing, design specifications, modifications, and engineering evaluations for the emergency switchgear room CO2 suppression systems. The team also reviewed and walked down fire fighting strategies and CO2 system operating procedures. These reviews were performed to ensure that the fixed suppression systems in the selected risk significant fire areas met the design and licensing bases as described in the licensee submittals, NRC SERs, and the FPER, and that the systems could perform their intended functions in the event of a fire.

The CO2 suppression system for the cable spreading room has been locked out since January 1999 due to CO2 migration concerns. CO2 migrated to the control room, the emergency switchgear rooms, and other adjacent areas following an inadvertent discharge of the CSR CO2 system in January 1999. Actions were taken to tighten penetration seals and modify dampers to reduce CO2 leakage to adjacent areas. The CSR CO2 system was retested in February 2001, but the test was aborted when a door failed open during the discharge. Following the test, CO2 levels were lower than levels observed in 1999, but still exceeded occupancy limits in adjacent areas. CO2 levels in the emergency switchgear rooms exceeded occupancy levels within 30 minutes after the start of the test and levels in the control room exceeded occupancy levels after the Control Building Purge System (CBPS) was placed in service to purge the CSR. Subsequently, the licensee prohibited use of the CBPS for purge of the CSR (in addition to continuing the lock out of the CSR CO2 system) due to CO2 and toxic gas migration concerns.

The team reviewed CBPS configuration, system operating procedures, and licensee evaluations to determine whether use of the CBPS to purge smoke or CO2 from the emergency switchgear rooms in the event of a fire had the potential to spread contaminants to adjacent areas which could impact operator actions or safe shutdown equipment performance. In addition, the team assessed the configuration of the CBPS to ensure that products of combustion (POC) would not be transferred to adjacent areas via the system in the event of a fire in the CSR. The team also evaluated the capability of portable smoke removal equipment and procedures to purge the CSR in the event of a fire.

b. Findings

No findings of significance were identified.

.5 Manual Fire Suppression Capability

a. Inspection Scope

The team walked down selected standpipe systems and portable extinguishers to determine the material condition of manual fire fighting systems and verify locations as specified in the fire fighting strategies (pre-fire plans) and fire protection program documents. Electric fire pump and diesel fire pump flow and pressure tests were also reviewed by the team to ensure that the pumps were meeting design requirements. The team inspected the fire brigade's protective ensembles, self-contained breathing apparatus (SCBA), and various fire brigade equipment to determine operational readiness for fire fighting.

The team reviewed fire fighting strategies for the selected areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation, and to facilitate suppression of a fire that could impact safe shutdown. The team also walked-down the fire fighting strategy for the auxiliary building with fire brigade members, and reviewed fire fighting lesson plans and fire brigade advisor qualifications to assure that fire fighting personnel were properly trained and qualified.

In order to assess the adequacy of the compensatory measures for removal of the fixed suppression system in the CSR, the team observed a fire drill conducted in the cable spreading room during the inspection. The team also reviewed the results of recent fire brigade drills and previous drills conducted in the CSR to assess fire brigade performance and manual suppression capability for the CSR. Additionally, the team performed in-plant walk-downs to evaluate the physical configuration of electrical raceways in the CSR and emergency switchgear rooms to determine whether water from manual fire suppression activities in the CSR could damage alternate safe shutdown equipment in the switchgear rooms.

b. Findings

The team concluded that the measures implemented to compensate for locking out the cable spreading room fixed suppression system were not fully effective, which could result in delays in suppressing a fire in the area. This finding was of very low safety significance (Green) because the likelihood of occurrence of a fire that could damage safety-related equipment in this area is small, and equipment and procedures were available for alternate shutdown outside of the control room.

During the fire drill conducted in the cable spreading area on October 16, 2001, a number of deficiencies were noted by both the Dominion evaluators and the NRC team. These deficiencies related to the selection and use of fire suppression equipment, fire fighting strategy content and usage, command and control problems, and communications difficulties.

Some of the problems observed by the team included:

- The fire brigade connected a fire hose to an outside hydrant, ran the hose into the CSR, and connected an additional 100' length of fire hose. This hose length was not sufficient to reach the location of the simulated fire and resulted in a substantial delay while additional hose was obtained. The fire fighting strategy indicated that additional hose lengths would be required; however, the guidance did not specify how much hose would be required. Although the hose may have been able to be pulled further into the room allowing the hose stream to reach the simulated fire, the inspectors concluded that the available hose length would not have been sufficient to reach the furthest locations in the CSR.

- The fire brigade failed to open the valves to pressurize the normally isolated fire main and standpipes in the control building as called for in the fire fighting strategy. One of the standpipes was located in close proximity to the simulated fire and could have been used as a backup water supply while the fire fighters were waiting for additional hose length. The fire brigade captain referred to the fire fighting strategy initially upon arrival at the command post, but did not review the guidance again during the drill.

- The additional fire hose brought in to suppress the fire was not equipped with an electric safe nozzle. Although the nozzle may have been acceptable because it was set to provide a fog rather than a stream, the confusion among the brigade members regarding the acceptability of the nozzle contributed to the delay in applying a hose stream to the simulated fire.

- The fire fighters had difficulty deploying the 100 pound carbon dioxide cart staged in the cable spreading area. They had difficulty getting kinks out of the CO2 line and were not close enough to the fire location when they applied CO2.

- Specific information provided by the fire watch regarding the location of the fire was not relayed to the reconnaissance team. This information would have allowed the fire fighters to locate the fire sooner.

The team noted that similar problems with command and control, communications and use of fire fighting strategies occurred in earlier drills. For example, a drill failure occurred in July 2001 due, in part, to lack of command and control and ineffective communications. In a drill in the CSR (prior to January 1999), the fire brigade failed to effectively utilize the fire fighting strategy resulting in failure to open the control building fire header isolation valves.

The team concluded that the measures implemented to compensate for locking out the fixed suppression system would not have been fully effective in promptly suppressing a fire in the CSR. Although the licensee met the requirements of the Technical Requirements Manual (TRM) to post a continuous fire watch in the CSR, provided additional manual fire fighting equipment in the area, and revised the fire fighting strategy, these measures were not sufficient to make up for the lack of the fixed gaseous suppression system. The fire fighting guidance, training, and staging of equipment would not have ensured prompt suppression of a fire as indicated by the

deficiencies observed during the drill in the cable spreading room. The team concluded that the licensee's corrective actions to address the degraded fire suppression capability of the CSR were not fully effective. **(FIN 50-423/01-012-01)**

The combination of deficiencies observed during the fire brigade drill resulted in a delay in applying a simulated hose stream to the postulated fire. Given that the fixed suppression system is removed from service, and manual suppression is the only remaining means of suppression, this delay could have resulted in the spread of fire damage in an actual fire. The additional cable damage could have resulted in increased difficulty controlling the plant, and challenges to achieving safe shutdown conditions.

The guidance in Inspection Manual Chapter 0609, Appendix F, "Determining Potential Risk Significance of Fire Protection and Post-Fire Safe Shutdown Inspection Findings" was used to evaluate the significance of this issue.

The CSR does not contain any substantial fixed ignition sources; therefore, the only possible source of ignition would be transient combustibles or self-ignition of cables. Phase 2 of the fire protection risk significance screening methodology requires development of a postulated fire damage scenario with the potential to impact equipment important to safety. The NRC concluded that the probability of occurrence of a fire in the CSR that could cause substantive damage to safety-related equipment was negligible based on the following considerations:

- During the period that the CO2 system was locked out, the licensee placed stringent controls on ignition sources and transient combustibles in the area. In addition to normal controls, the licensee removed unnecessary combustible materials such as trash containers from the area, and instituted routine fire brigade tours of the area. No ignition source or fire prevention permits were issued for the CSR during this period. Maintenance activities were planned and conducted to minimize fire potential in the area. For example, all materials were unpacked and prefabricated outside of the area for the damper replacement that was performed in the area. If a fire were to occur due to transient combustibles, the continuous fire watch would have provided early detection.

- All of the cable in the Millstone Unit 3 CSR is either enclosed in conduit or qualified in accordance with IEEE-383, "IEEE Standard for Type Test of Class 1E Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations," which requires specific flammability tests. Operational experience within the United States indicates that the probability of a self-ignited cable fire that would propagate beyond the initiating cable is very low, particularly for newer plants such as Millstone 3 which have IEEE-383 qualified cables.

In the remote chance that fire damage were to impact redundant trains of safe shutdown equipment, one train of equipment would remain available for safe shutdown with operator action to electrically isolate and align the required equipment. Millstone 3 utilizes dedicated transfer switch panels and a single alternate shutdown panel which improves the probability of a successful shutdown from outside of the control room. The team concluded that the available procedures were clear and complete, and that

operators were well trained on implementation of alternate shutdown methods. Additionally, the use of emergency operating procedures (EOPs) for post-fire accident mitigation allows the operators multiple options to use equipment unaffected by the fire.

Considering that the low frequency of a fire in the cable spreading area which could cause a loss of safe shutdown equipment leading to a shutdown outside of the control room and the capability of alternate shutdown equipment, the significance of the ineffective compensatory measures was determined to be very low (Green).

.6 Safe Shutdown Capability

a. Inspection Scope

The team reviewed the Millstone Unit 3 BTP 9-5.1 Compliance Report to evaluate the methods and equipment used to achieve hot standby and cold shutdown, and to minimize the release of radioactivity following postulated fires in the selected risk significant fire areas. The team further reviewed piping and instrumentation drawings (P&IDs) for post-fire safe shutdown systems to determine required components for establishing flow paths, identify equipment required to isolate flow diversion paths, and verify appropriate components were on the safe shutdown equipment list. The team also performed field walk-downs to validate the equipment locations considered in the analysis and to evaluate the protection of the equipment from the effects of fires.

The team verified that the applicable license condition requirements, as described in licensee submittals and NRC SERs, for achieving and maintaining safe shutdown were properly addressed. The team verified that systems necessary to assure the safe shutdown functions of reactivity control, reactor coolant makeup, reactor heat removal, and process monitoring were protected or independent from the selected areas. Where deviations from Branch Technical Position (BTP) CMEB 9-5.1, “Guidelines for Fire Protection for Nuclear Power Plants,” were identified, the team verified that the deviations had been approved and that conditions required by the deviations were implemented and being maintained.

b. Findings

No findings of significance were identified.

.7 Safe Shutdown Circuit Analyses

a. Inspection Scope

The team reviewed the Millstone Unit 3 BTP 9.5-1 Compliance Report to assess the adequacy of the methodology applied in the analysis for assuring that circuits required for safe shutdown were identified and protected. The team also reviewed the power and control cable routing and analyses documented in Appendix B, “Request and Deviation Analyses,” and Appendix C, “Cable Routing Matrices,” of the BTP 9.5-1 Compliance Report, for selected risk-significant post-fire safe shutdown components to determine if the cables were properly routed outside the fire areas of concern or protected against the effects of the postulated fires. For example, the pumps and valves along the safe

shutdown flow path using Charging Pump 3CHS*P3B were reviewed for a postulated fire in Fire Area AB-1D, north of the fire curtain, and the pumps and valves along the safe shutdown flow paths using any one of the three component cooling pumps (3CCP*P1A,B,C) were reviewed for a postulated fire in Fire Area AB-1D, south of the fire curtain. The team also walked down portions of cable routing to confirm that the cables required for safe shutdown would not be impacted by postulated fires in the selected areas.

The team reviewed selected plant electrical modifications and technical evaluations that had been implemented to address control circuit fire vulnerabilities. The team also reviewed Attachment 4.2, "Appendix R Breaker Coordination Study," to SP-M3-EE-269, "Electrical Design Criteria," to ensure that equipment needed for post-fire safe shutdown would not be impacted due to a lack of coordination.

The team reviewed electrical drawings for the components controlled from the auxiliary shutdown panel (ASP), transfer switch panels, and other remote control circuits to ensure that proper isolation was provided for alternate shutdown capability for fires in the CSR which would require shutdown from outside of the control room. The team also reviewed completed ASP and transfer switch panel operability test procedures to determine if the licensee was appropriately testing the isolation, remote indication, and control functions.

Due to the issuance of Change Notice 00-020 against Inspection Procedure 71111.05, "Fire Protection," the team did not review associated circuit issues during this inspection. This change notice has suspended this review pending completion of an industry initiative in this area.

b. Findings

No findings of significance were identified.

.8 Operational Implementation of Safe Shutdown Capability

a. Inspection Scope

The team reviewed post-fire shutdown procedures (EOPs and system operating procedures) for the selected areas to determine if appropriate information is provided to plant staff to perform required actions to achieve and maintain safe shutdown. The team also reviewed training lesson plans, a scenario guide, and a job performance measure (JPM) for post-fire activities.

The team walked down a postulated fire scenario which required operators to shutdown the plant from outside of the control room. The postulated fire was in the cable spreading area (CB-8) and was assumed to cause control room indications and controls to be unreliable, requiring plant shutdown from outside of the control room. Manual reactor trip was accomplished from the control room for the purposes of the scenario. All other actions were implemented from outside of the control room. A licensed senior reactor operator (SRO) and another plant operator simulated the actions required to establish hot standby conditions from outside of the control room using EOP 3509.1,

"Control Room, Cable Spreading Area or Instrument Rack Room Fire." The team evaluated whether minimum shift staffing was sufficient to implement EOP 3509.1 and other procedures required to achieve safe shutdown from outside of the control room. The team assessed the accessibility of the alternative shutdown operating stations and the accessibility of required manual action locations. The team also evaluated fire hazards in the vicinity of equipment requiring operator actions, and along the access and egress paths.

The team also conducted in-plant reviews of portions of the post-fire safe shutdown procedures for the selected fire areas in the auxiliary building with operators and fire brigade members to verify procedure adequacy, equipment accessibility, and tool and equipment availability.

b. Findings

No findings of significance were identified.

.9 Post-Fire Safe Shutdown Emergency Lighting and Communications

a. Inspection Scope

The team observed the placement and aim of emergency light units throughout the plant to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation for post-fire safe shutdown. The team also evaluated installed and portable communication systems, and observed equipment operation during procedure walk-downs to determine if communications could be maintained in the event of a fire in the selected areas and during a shutdown from outside of the control room.

The team reviewed preventive maintenance procedures and surveillance procedures to determine if adequate surveillance testing was being accomplished to ensure operation of the emergency lights.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

.1 Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team reviewed self-assessment reports, Nuclear Oversight audit reports, and field observation reports for activities conducted during the past two years. Selected condition reports (CRs) for fire protection and post-fire safe shutdown equipment were also reviewed. This review included the CRs initiated to address issues identified during this inspection. The team also reviewed a recent fire protection system health report, as well as selected outstanding and completed fire protection equipment work items. These reviews were conducted to determine if Dominion Nuclear was identifying fire protection program deficiencies and implementing appropriate corrective actions.

The team focused specifically on corrective actions taken to address the problems associated with the CSR CO2 system identified during the inadvertent discharge event in January 1999 and following the aborted discharge test in February 2001. The team reviewed the special procedure which controlled the system discharge test and the maintenance rule functional failure evaluation for the carbon dioxide discharge valve. The team also reviewed the condition reports related to the failed test, as well as corrective actions taken to address the CO2 migration concerns and compensatory measures for the lack of a fixed suppression system in the CSR. The team assessed whether appropriate actions had been taken to identify the causes of the CO2 migration and system performance problems, as well as evaluation of the extent of condition for other CO2 suppression systems.

b. Findings

A finding related to the corrective actions for the degraded fire suppression capability of the cable spreading room is discussed in Section 1R05.5.

4OA3 Event Followup

.1 Licensee Event Report 99-002-01: Inadvertent Carbon Dioxide Fire Suppression System Activation in the Cable Spreading Room. The unit experienced an unintended discharge of carbon dioxide into the cable spreading room on January 15, 1999, and subsequent migration of the carbon dioxide gas into surrounding areas required for operation of the plant.

Dominion Nuclear submitted a supplement to the event report on June 27, 2001, upon completion of analysis of the results of a special test conducted in February, 2001. The evaluation concluded that CO2 migration from the CSR to adjoining safe shutdown equipment areas was outside of the design basis for Millstone Unit 3. The licensee also concluded that historical operation of the CBPS at power for non-fire conditions was not consistent with assumptions in the control room habitability analysis, and that Technical

Specification requirements did not place time restraints on operation of CBPS to minimize safety risk.

This event was discussed in Inspection Report Nos. 50-423/99-02, 50-423/2000-001, and 50-423/2000-008, and is discussed in sections 1RO5.4, 1RO5.5, and 4OA2.1 of this inspection report. These conditions were reported by the licensee, short-term corrective actions have been taken, and permanent corrective actions are being evaluated. No additional violations were identified. This LER supplement is closed.

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

The inspectors presented their preliminary inspection results to Mr. Matthews and other members of the Dominion Nuclear staff at an exit meeting on November 2, 2001.

The inspectors asked whether any materials examined during the inspection should be considered proprietary. Materials identified as proprietary were returned to the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Dominion Energy Company

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D. Dodson, Team Lead, Regulatory Affairs
S. Garvin, Team Lead - Fire Operations, Protective Services
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ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-423/01-012-01	FIN	Insufficient compensatory measures for removal of cable spreading room CO_2 suppression system (section 1RO5.5)

Closed

50-423/99-002-01	LER	Inadvertent Carbon Dioxide Fire Suppression System Activation in the Cable Spreading Room (section 4OA3.1)

LIST OF DOCUMENTS REVIEWED

Piping and Instrumentation and Design Drawings

12179-EM-102, “P&ID Reactor Coolant System”
12179-EM-103, “P&ID Reactor Coolant Pump Seals”
12179-EM-104, “P&ID Chemical Volume Control”
12179-EM-113, “P&ID High Pressure Safety Injection”
12179-EM-121, “P&ID Component Cooling System”
12179-EM-123, “P&ID Main Steam and Reheat”
12179-EM-130, “P&ID Feedwater System”
12179-EM-133, “P&ID Service Water”
12179-EM-146, “P&ID Fire Protection”
12179-EM-148, P&ID Reactor Plant Ventilation”
12179-EM-151, “P&ID Control Building HVAC”
25212-24261, “Fire Hazards Analysis - Plan El 24' 6"”
25212-24263, “Fire Hazards Analysis - Plan El 52' 6"”
25212-24273, “Auxiliary Building EL 24'-6"”
25212-25012, “Fire Protection Arrangement”
25212-29363, “East and West Switchgear Rooms CO2 and Smoke Detectors”
25212-34063, “Conduit Plan - FPA System - Aux Building - El 24'6"”
25212-34410, “Conduit Plan - FPA System - Control Building - El 4'6"”
25212-34411, “Conduit Plan - FPA System - Control Building - El 24'6"”

Control Circuit Schematics and Elementary Diagrams

25212-32001:
- Sheet 3 AB, “Control Switch Contact Development Diagram”
- Sheets 6 AKL, AKM, AKN, AKP, “Main Steam Pressure Relief Valves 3MSS*MOV74A, B, C, D”
- Sheet 6 AJJ, “Boric Acid Gravity Feed Valve 3CHS*MV8507A”
- Sheets 6 AJQ, AJR, AKC, AJS, “Charging Header Isolation Valves 3CHS*MV8438A, B, MV8116, MV8438C”
- Sheet 6 GH, “Charging Pump Cooling Pumps 3CCE*P1A, B”
- Sheets 6 PE, PF, “Charging Pump Mini-Flow Isolation Valve 3CHS*8110, 8111A”
- Sheet 6 PG, “Charging Pump to RCS Isolation Valve 3CHS*MV8103"
- Sheet 6 PK, “Volume Control Tank Outlet Isolation Valve 3CHS*LCV112B”
- Sheet 6 PM, “Refueling Water Storage Tank to Charging Pump Valve 3CHS*LCV112D”
- Sheet 6 SM, “MCC and Rod Control Cable Vault Area ACU 3HVR*ACU1A, ACU1B”
- Sheets 6 TD, TE, “Pressurizer Relief Isolation Valves 3RCS*MV8000A, B”
- Sheets 6 VY, VZ, WA, WB, “Main Steam Pressure Relief Isolation Valves 3MSS*MOV18A, B, C, D”
- Sheets 7 MX, MY, MZ, “Turbine Driven Auxiliary Feed-water Pump Steam Supply Valves 3MSS*AOV31A, B, D”
- Sheet 7 VC, “Charging Header Flow Control Valves 3CHS*HCV190A, B”

Engineering Evaluations/Modifications/Safety Evaluations/Change Requests

Evaluation 062, dated 10/14/89, “Threaded Metal Cap as a Penetration Seal in the East MCC and Rod Control Area on the 24'6" EL of the Auxiliary Building”
Evaluation 071, dated 8/24/90, “Modified One-sided M0301 Seal Design”
Evaluation 097, dated 4/9/92, “Modified M0109 Seal Design to Allow Installation in 12"

Block Walls"
M3-EV-970313, "Appendix R Safe Shutdown Cable in Duct Run Manholes," Revision 0
M3-EV-00-0041, dated 11/1/00, "Fire Damper in CO2 Pressure Relief and Purge Systems"
M3-EV-01-0019, Rev. 1, "Use of Control Building Purge System for the Purpose of Smoke and CO2 Removal in the Unit 3 Control Building"
M3-EV-01-0022, Rev. 0, "Evaluation of Data, CSA CO2 Discharge Test"
25212-ER-97-0293, "Review of Appendix R Cable Routing Analysis in Fire Area AB-1"
25212-ER-98-0046, "Appendix R Review of Cables Associated with Valves 3CCP*FV66A/B, 3CCP*SOV66A/B to Determine If Any of These Cables Are Routed Through the Auxiliary Building," Revision 0
25212-ER-98-0049, "Supplemental Information to AB-1 Evaluation in Appendix B of the BTP 9.5-1 Compliance Report," dated 2/9/98
25212-ERC-01-0087, "Review of Appendix R Cable Routing in AB-1," dated 6/29/01
NEU-97-313E, "Fire Hazards Recovery Analysis, TREAT Simulation for the Loss of Charging Event," dated 12/11/97 (Proprietary)
Operability Determination MP3-020-00, "Cable Routing for 3CHS*P3B Not the Same as Described in BTP 9.5-1 Compliance Report," Revision 0
SP-M3-EE-269, "Electrical Design Criteria," Attachment 4.2, "Appendix R Breaker Coordination Study," Revision 2
Memorandum MP3-TS-98-040, "CCP Single Train Alignment for Appendix R Operation," dated 2/3/98
E&DCR N-ME-00473, dated 9/20/1985 (design change for water curtain)
PDCR MP3-95-052, Rev. 0, "CO2 Changed to Manual Actuation (Seven Areas)"
DCN M3-96562, "Door Modification A-24-9 SF-21-2"
DCN M3-97036, "Install Emergency Lighting for Appendix R"
DCN M3-97058, "Charging Pump Area Ventilation Requirement for Appendix R Fire"
DCN M3-97101, "Wall Floor Penetration Stop and Seal Modification"
DCN M3-99030, "Cable Spreading Room CO2 Discharge Change to Manual Actuation"
DCN M3-00012, "Millstone 3 Re-powering of MP1 Fire Pump, Stack and Auxiliaries "
DCN DM3-00–352-00, "Automatic Pressure Relief Damper 3FPL-DMPR4 Replacement with Manual Damper"
DCN DM3-00-0353-00, "Automatic Pressure Relief Damper 3FPL-DMPR5 Replacement With Manual Damper"
DCN DM3-00-0385-00, "Re-route Conduit 3CH200PA to Comply With MP3 Fire Protection Program Configuration," dated 10/6/2000
DCN DM3-00-0813-97, "Hot Short Modification (IN 92-18) - BTP Compliance Report Revision"
DCN DM3-00-0903-97, "Hot Short Modification (IN 92-18) - BTP Compliance Report Revision"
DCN DM3-00-1278-97, "Update of Compliance Report for PDCR MP3-94-099"

Calculations

Auxiliary Building Filters 3HVR-FLT1A & 1B Hydraulic Calculation, dated May 29, 1985
Calculation T–01657-53, "MP3 Auxiliary Building Loss of Ventilation Analysis - CCP, CHS and CCE Equipment Area," Rev. 0, dated 3/9/99

Procedures

CSP 600.6, "Electric Fire Pump M7-8 Monthly Operability Demonstration"
CSP 600.7, "Electric Fire Pump M7-8 Annual Operability Demonstration"
CSP 600.8, "Diesel Fire Pump M7-7 Monthly Operability Demonstration"
CSP 600.9, "Diesel Fire Pump M7-7 Annual Operability Demonstration"
CSP 600.13, "P-82 Electric Fire Pump Monthly Operability Demonstration"

CSP 600.14, “P-82 Electric Fire Pump Annual Operability Demonstration”
CSP 788A, “Fire Pump Diesel Engine Battery Quarterly Surveillance”
EOP 3506, “Loss of All Charging Pumps”
EOP 3509, “Fire Emergency”
EOP 3509.1, “Control Room, Cable Spreading Area or Instrument Rack Room Fire”
EOP 3509.2, “Aux Building El. 24' 6", South Floor Area, 43' 6", 66' 6"”
EOP 3509.3, “Aux Building El 4' 6" Area and 24' 6" North Area Fire”
EOP 3509.8, “Control Building El 4' 6" West Switchgear Area Fire”
EOP 3509.9, “Control Building El 4' 6" East Switchgear Area Fire”
MP-24-FPP-PRG, “Fire Protection Program”, Rev. 002
MP-24-FPP-FAP1.1, “Performing Detailed Fire Protection Reviews, and Developing and Maintaining the Unit Fire Hazards Analysis”
MP-24-FPP-FAP1.2, “Performing Detailed Fire Safe Shutdown Reviews and Developing And Maintaining Fire Safe Shutdown Analyses”
MP-24-FPP-FAP1.3, “Fire Protection and Appendix R/BTP CMEB 9.5-1 GL 86-10 Technical Evaluations”
MP-24-FPP-FAP1.4, “Guidance for Fire Fighting Strategies (Pre-Fire Plans)”
MP-24-FPP-GDL01, “Fire Protection Reportability/ Operability Evaluation Guidance”
MP 3783EA, “Component Cooling Pump Motor Replacement for Fire Protection”
OP 3314F, “Control Building Heating, Ventilation, Air Conditioning and Chill Water”
OP 3314J, “Auxiliary Building Emergency Ventilation and Exhaust”
OP 3341C, “Carbon Dioxide Fire Protection System”
SFP 5, Rev. 002-02, “Fire Doors Inspections”
SFP 5-003, “Unit 3 Fire Doors Inspections”
SP 608.1, “Safety Injection Pump A Operational Readiness Test”
SP 680A, “Monthly Fire Protection System Valve Lineup Check”
SP 2618K, “Fire Protection Alignment Verification”
SP 3641A.1, “Valve Lineup Check of the Fire Protection Water System”
SP 3641A.2, “Fire Protection Water System Valve Cycle”
SP 3641.D3, “Fire Detection and Control System Operability Check”
SP 3641D.4, “Fire Penetration Seal Inspection”
SP 3641D.5, “Fire Damper Operability Verification”
SP 3641D.6, “Fire Rated Assemblies”
SP 3673.2, “Fire Transfer Switch Panel Operational Test”
SP 3673.4, “Auxiliary Shutdown Panel Operability Test”
SP 3712WA, “Fire Related Safe Shutdown Emergency DC Lighting Discharge Test”
SPROC ENG01-3-001, Rev. 00, “O2 Discharge Test for Cable Spreading CO2 System”
T3341CP, Rev. 0, “CO2 Fire Protection System”
WC-7, Rev. 003-02, “Fire Protection Program”

Training Documents

FB-00016, “Fire Behavior”
FB-00034, “Personal Protective Clothing and Equipment”
FB-00140, “Fire Brigade Advisor Orientation”
FB-00141, “Fire Brigade Advisor Practice Scenarios”
FB-00142, “Fire Brigade Advisor Site Fire Protection Tour”
Fire Brigade Drill Report, dated 3/13/97
Fire Brigade Drill Report, dated 9/11/00
Job Performance Measure 187, “Operation of West Switchgear Room Manual Pressure Relief Damper 3FPL-DMPR5"
Lesson Plan E09809C, “Fire Emergency”
Lesson Plan E098091C, “EOP 3509.1, Control Room, Cable Spreading Area or

Instrument Rack Room Fire"
Lesson Plan E098092C, "EOP 3509.2, Aux Bldg El 24' 6", South Floor Area, 43' 6" & 66' 6" Fire"
Simulator Exercise Guide S98205L, "Response to Loss of Charging Due to Fire"
TPD-7.205, "Emergency Services Training Program Description"

Audits, Assessments, and Corrective Action Program Documents

MP-99-A17, Nuclear Oversight Audit Report, "Fire Protection Program, Millstone Station" Dated October 6, 1999
MP-00-A11, Nuclear Oversight Audit Report, "Fire Protection Program, Millstone Station" Dated November 29, 2000
MP-01-A11, Nuclear Oversight Audit Report, "Fire Protection Program, Millstone Station" Dated August 22, 2001
Field Observation MPS-SP-01-001-01, "FP: SFB Drill - January 8, 2001; MP3 Turbine Building"
Field Observation MPS-SP-01-001-08, "Observation of Site Fire Brigade Back Shift - Unannounced Drill at 1900 on 4/10/01"
MPSA 01-089, Self Assessment, "Fire Brigade Member Structural Fire Fighting PPE", dated September 19, 2001
ES-SA-00-004, Self Assessment, "Effectiveness Review for CR M3-98-0994, and Self Assessment of the Fire Protection Program" dated September 1, 2000
U2-DE-99-06, 3DE-SA-99-07, Assessment Report, "Appendix R and Fire Protection Programs Implementation," dated December 20, 1999
Effectiveness Review - Fire Watch Reduction Initiative
System 3341 System Engineer Health Report

Condition Reports:

M1-98-0626	M1-99-0134	M2-00-0542	M3-98-2697
M3-98-4316	M3-98-5199	M3-98-5256	M3-99-0215
M3-99-0856	M3-99-2393	M3-99-2862	M3-99-2863
M3-99-3635	M3-99-3636	M3-99-3828	M3-00-0150
M3-00-0354	M3-00-0407	M3-00-0458	M3-00-0601
M3-00-0628	M3-00-1575	M3-00-1800	M3-00-2626
M3-00-2723	M3-00-2746	M3-00-2748	M3-00-2777
M3-00-2896	M3-00-2897	M3-00-3722	M3-01-0056
CR-01-00221	CR-01-00317	CR-01-00524	CR-01-00535
CR-01-00574	CR-01-00973	CR-01-01834	CR-01-01907
CR-01-02186	CR-01-04188	CR-01-04888	CR-01-05109
CR-01-05277	CR-01-07010	CR-01-07239	CR-01-07722
CR-01-07812	CR-01-07816	CR-01-08478	*CR-01-10202
*CR-01-10320	* CR-01-10327	* CR-01-10342	*CR-01-10524
*CR-01-10375	* CR-01-10381	*CR-01-10559	*CR-01-10585
* CR-01-10591	* CR-01-10757	* CR-01-10826	* CR-01-10837

* Denotes condition reports initiated during inspection

Miscellaneous Documents

Armstrong AP Armaflex Catalog page
BTP 9.5-1 Compliance Report
Basis Information for EOP 3509, Rev. 016
Basis Information for EOP 3509.1, Rev. 005
Basis Information for EOP 3509.2, Rev. 002

Basis Information for EOP 3509.8, Rev. 001
Fire Brigade Captain Briefing Sheet, dated 3/5/2001
Fire Protection Evaluation Report
LER 99-002-01, "Inadvertent Carbon Dioxide Fire Suppression System Actuation in the Cable Spreading Room"
Letter B11494, "Millstone Nuclear Power Station, Unit No. 3, SER Open Item 14.10, Cable Spreading Room Protection," dated 4/30/85
Letter B11759, "Millstone Nuclear Power Station, Unit No. 3, Response to SER Open Item 14.4," dated 10/1/85
Letter B11658, "Millstone Nuclear Power Station, Unit No. 3, Request for Deviations From BTP CMEB9.5-1," dated 8/16/85
Letter B11669, "Millstone Nuclear Power Station, Unit No. 3, Request for Deviations From BTP CMEB9.5-1," dated 8/29/85
Letter B11761, "Millstone Nuclear Power Station, Unit No. 3, Response to SER Open Item 14.3, Request for Deviations from BTP CMEB9.5-1," dated 10/1/85
Letter B11814, "Millstone Nuclear Power Station, Unit No. 3, Response to SER Open Item 14.3, Request for Deviations from BTP CMEB9.5-1," dated 10/21/85
Letter B11852, "Millstone Nuclear Power Station, Unit No. 3, Revised Responses to the Fire Protection Audit Open Items and Additional Information to the Request for Deviation from BTP CMEB 9.5-1," dated 11/4/85
Letter B11090, "Millstone Nuclear Power Station, Unit No. 3, NRC Chemical Engineering Branch (Fire Protection) Review Meeting," dated 3/23/84
Letter A04615, "Millstone Nuclear Power Station, Unit No. 3, Response to NRC Question 410.32, Isolation Transfer Switches and Post Fire Shutdown Capability," dated 7/1/85
Letter B18359, "Millstone Nuclear Power Station , Unit No. 3, Control Building Purge System," dated 3/21/01
Millstone Nuclear Power Station - Unit 3 Fire Fighting Strategies:
Fire Area CB-1 - West Switchgear Room
Fire Area CB-2 - East Switchgear Room
Fire Area CB-8 - Cable Spreading Area
Fire Area AB-1, Zone D - Auxiliary Building, West Floor Area, El 24'6" (Charging Pump Area)
Fire Area AB-1, Zone D - Auxiliary Building, West Floor Area, El 24'6" (RPCCW Pump Area)
Millstone Unit 3 Individual Plant Examination for Severe Accident Vulnerabilities
NUREG 1031, "Safety Evaluation Report related to the operation of Millstone Nuclear Power Station, Unit No. 3, dated July 1984
Supplement 1, dated March 1985
Supplement 2, dated September 1985
Supplement 4, dated November 1985
Supplement 5, dated January 1986
Technical Requirements Manual