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Dominion

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Docket No. 50-423
B18868

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

Millstone Power Station, Unit No. 3
Proposed Revision to the Previously Approved Deviation From Branch Technical Position (BTP) CMEB 9.5-1, Section C.7.c

Dominion Nuclear Connecticut, Inc. (DNC) hereby requests review and approval of a revision to a previously approved deviation from Branch Technical Position (BTP) CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants."

During original plant licensing of Unit No. 3 (MP3), a deviation from the requirements of BTP CMEB 9.5-1 was requested to allow an automatic carbon dioxide (CO_2) system to be installed in the Cable Spreading Area (CSA) and used as primary fire suppression in lieu of the recommended fixed water suppression system.

DNC is proposing to rely on manual fire fighting as the primary means of fire suppression in the CSA and to fully convert the existing CO_2 system to a manual only actuation system to be used as a backup to manual fire fighting. The CO_2 system would be available to suppress complex fires such as hard to reach cable tray fires or fires requiring large quantities of hose stream water to extinguish. The installed incipient fire detection (IFD) system and photoelectric and ionization smoke detection system will be relied on to provide early warning of potential CSA fires to fire fighting personnel. As a result of this proposed change, the current NRC approved deviation documented in the MP3 Fire Protection Evaluation Report will be revised. This change is being requested to improve personnel safety by providing manual control of CO_2 discharge in the CSA. DNC requests that the NRC review the changes to the fire protection and suppression methodology in the CSA and approve this revision to the previously approved deviation.

Attachment 1 provides details and justification for the proposed change.

A001

Schedule

We request review and approval of this change prior to September 1, 2003, to align with the schedule for completion of CO_2 system modifications.

There are no regulatory commitments contained within this letter.

Should you have any questions regarding this submittal, please contact Mr. David W. Dodson at (860) 447-1791, extension 2346.

Very truly yours,

DOMINION NUCLEAR CONNECTICUT, INC.

J. Alan Price
Site Vice President - Millstone

Attachment (1)

cc: H. J. Miller, Region I Administrator
V. Nerses, NRC Senior Project Manager, Millstone Unit No. 3
Millstone Senior Resident Inspector

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Attachment 1

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REQUEST FOR A DEVIATION

Dominion Nuclear Connecticut, Inc. (DNC) hereby requests review and approval of a deviation from Branch Technical Position (BTP) CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants."

The NRC guidelines for a fire suppression system in the Unit No. 3 (MP3) Cable Spreading Area (CSA) are described in Branch Technical Position (BTP) CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," Section C.7.c., "Cable Spreading Room," which states in part:

"The primary fire suppression in the cable spreading room should be an automatic water system such as closed-head sprinklers, open-head deluge system, or open directional water spray system."

During original plant licensing of MP3, a deviation from the requirements of BTP CMEB 9.5-1 was requested to allow an automatic carbon dioxide (CO_2) system to be installed and used as primary fire suppression in the CSA in lieu of the recommended fixed water suppression system.[1,2] The deviation was approved in an NRC Safety Evaluation Report as follows:

"The staff finds that the CO_2 extinguishing system with good access for manual fire fighting with hose streams will provide an adequate level of protection for the cable spreading room and is, therefore, an acceptable deviation from staff guidelines.

On the basis of its evaluation, the staff concludes that the protection provided for the cable spreading room with the approved deviation meets the guidelines of BTP CMEB 9.5-1, Section C.7.c, and is, therefore, acceptable." [3]

DNC is proposing to rely on manual fire fighting as the primary means of fire suppression in the CSA and to fully convert the existing CO_2 system to a manual only actuation system to be used as a backup to manual fire fighting. The CO_2 system would be available to suppress complex fires such as hard to reach cable tray fires or fires requiring large quantities of hose stream water to extinguish. The installed incipient fire detection (IFD) system and photoelectric and ionization smoke detection system will be relied on to provide early warning of potential CSA fires to fire fighting personnel. As a result of this proposed change, the current NRC approved deviation

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[1] "Millstone Nuclear Power Station, Unit No. 3 NRC – Chemical Engineering Branch (CMEB) (Fire Protection) Review Meeting, May 10, 1984," dated October 9, 1984

documented in the MP3 Fire Protection Evaluation Report will be revised. This change is being requested to improve personnel safety by providing manual control of CO_2 discharge in the CSA. DNC requests that the NRC review the changes to the fire protection and suppression methodology in the CSA and approve this revision to the previously approved deviation.

BACKGROUND

Carbon dioxide transport from the CSA to adjacent areas was first recognized as a problem during an inadvertent CO_2 discharge event on January 15, 1999.[(4)] By letters dated January 22, 2002,[(5)] and May 7, 2002,[(6)] DNC forwarded a description of planned changes to the MP3 Fire Protection Program intended to address final resolution of the degraded and non-conforming condition associated with the CO_2 fire suppression system. These plans included abandoning the existing automatic CO_2 system as the primary fire suppression for the CSA and relying instead on an early warning IFD system with improved manual fire fighting capability for the area. However, based on further discussion with the staff and an NRC response dated March 7, 2002,[(7)] DNC revised these plans for the CSA to include provisions for a fixed fire suppression system and committed to install this system prior to startup from the next refueling outage.[(8)]

Engineering evaluations were performed to determine which fixed fire suppression system could feasibly be installed in the CSA without adversely impacting personnel or environmental safety when actuated, and still meet NRC requirements. Options included various water suppression systems and reactivation of the existing CO_2 system. Based on these evaluations, DNC concluded that the existing CO_2 system, converted to a manual only actuation system, and used as a backup to manual fire fighting, would offer the greatest measure of defense-in-depth for the CSA. In addition, the previously approved design basis parameters and performance requirements for the CO_2 system (50% concentration level for 20 minutes) would continue to be met.
After the 1999 inadvertent discharge event, changes to the system were made for preventive measures to ensure personnel safety. The CO_2 system was locked out of

[(4)] Northeast Nuclear Energy Company, Millstone Unit No. 3, LER 99-002-00, "Inadvertent Carbon Dioxide Fire Suppression System Actuation in the Cable Spreading Room," dated February 16, 1999. Supplement LER 99-002-01, dated June 27, 2001.

[(5)] J. Alan Price letter to the U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3, Information Regarding Change to the Fire Protection Program," dated January 22, 2002.

[(6)] J. Alan Price letter to the U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3, Update to Information Regarding Change to the Fire Protection Program," dated May 7, 2002.

[(7)] E. G. Adensam, U.S. Nuclear Regulatory Commission letter to Mr. J. A. Price, "Millstone Nuclear Power Station, Unit No. 3 (MP3) - Information Regarding Change To The Fire Protection Program," dated March 7, 2002.

[(8)] J. Alan Price letter to the U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3, Update to Information Regarding Change to the Fire Protection Program," dated July 3, 2002.

service as a temporary modification until resolution of the non-conforming condition (CO_2 migration into the alternate shutdown location) was developed. A continuous fire watch has been maintained throughout this period. The continuous fire watch in conjunction with two detection systems (IFD and ionization and photoelectric smoke detection) and manual fire fighting provides the current fire protection strategy for the CSA. The deviation discussed in this submittal will allow the CO_2 system to be operational as a manual only actuation system, used as a backup to manual fire fighting, and the fire watch will be removed.

JUSTIFICATION FOR DEVIATION

To achieve and maintain a high level of confidence for the MP3 Fire Protection Program, it is organized and administered using the defense-in-depth concept. The defense-in-depth concept assures that if any level of fire protection fails, another level is available to provide the required defense. In accordance with the NRC guidelines of BTP CMEB 9.5-1, this defense-in-depth principle is aimed at achieving an adequate balance in:

A. Preventing fires from starting;

B. Detecting fires quickly, suppressing those fires that occur, putting them out quickly, and limiting their damage; and

C. Designing the plant safety systems so that if a fire should start in spite of the fire prevention program, and if it should burn for a considerable period of time in spite of fire suppression activities, it will not prevent the safe shutdown of the plant.

The following paragraphs describe how the defense-in-depth principle is preserved with the requested deviation from the BTP.

A. Preventing fires from starting

The features that limit the probability of a fire from occurring in the CSA are described below.

I. <u>Cable Spreading Area (CSA) Physical Features</u>

- The CSA is located at ground elevation 24' 6" of the control building. The CSA has a gross volume of approximately 245,605 cubic feet. The room measurements are approximately 116 feet by 100 feet with a ceiling height of approximately 21 feet. All area boundaries are 3-hour fire-rated fire barriers, with the exception of outside walls, which are not fire rated. The boundaries consist of reinforced concrete walls, ceiling and floor. The north boundary is exposed to the outside. The east boundary is adjacent to the service building. The south wall is adjacent to the turbine building. The west wall is adjacent to the technical support center. The

CSA floor is adjacent to the east and west switchgear rooms below. The CSA ceiling is adjacent to the control room, instrument rack room, and computer room above.

- The CSA has two doors at ground elevation allowing easy access and egress (northwest and northeast corners).
- A ground level courtyard area is directly outside of the CSA and is well suited as a staging area for additional fire fighting equipment, trucks and personnel.
- The CSA has relatively large internal areas that are open and well suited for brigade members to maneuver hoses, ladders, and equipment during fire fighting activities.
- The CSA is a single large open area with no subdivision walls.
- There are no radiological hazards in this area or adjacent areas that could impede fire fighting operations, fire fighting strategies or response (i.e. not a radiological control area).
- There are no floor drains installed in the CSA.

II. <u>Combustible Material and Locations in the CSA</u>

- The principal in-situ combustible in this area is cable. All the cables meet the requirements of IEEE-383 or are jacketed with flame retardant material and fillers.[9] The criteria for the IEEE-383 flame test demonstrates that these cables do not propagate fire even if the outer covering and insulation have been destroyed in the area of the flame impingement. Per IEEE-383 standard, the cables that self-extinguish when the flame source is removed or burn out pass the test. The exposed cables are low voltage (120 volts alternating current or 125 volts direct current or less) control and instrument cables. The higher voltage cables that pass through the CSA are inside metal conduit or concrete ductbanks that provide passive protection and will limit flame spread.
- Redundant class 1E cables, conduit and trays are separated by a minimum of three feet vertically and one foot horizontally with alternative arrangements and deviations documented.
- All cables are provided with circuit fault protection devices (power supplies are coordinated) to remove any overcurrent or faulted condition. This essentially eliminates the presence of in-situ ignition sources.
- The CSA is not normally occupied and transient ignition sources, such as welding or grinding, and transient fire loads are administratively controlled during all modes of plant operation and evolutions.

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[9] ANSI/IEEE STD 383-1974, "IEEE Standard for Type Test of Class 1E Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations," dated April 30, 1975.

III. Administrative Controls

The fire protection program has administrative controls for the storage or use of transient combustibles in the plant. A fire protection permit is required for storage of transient combustibles in the CSA. In addition, the CSA is designated as a Combustible Free Zone, which helps to ensure enhanced sensitivity and proper controls are in place in the event additional transient combustibles are brought into the CSA. Access to the CSA is restricted and therefore there is a low probability of introducing uncontrolled transient combustibles. Also, fire protection procedures require prior documented concurrence from the fire protection program engineer or site fire marshal before transient combustibles or ignition source permits are allowed in the CSA. To assist in insuring proper use of administrative controls, fire prevention walkdowns controlled by the site fire marshal are conducted on a routine basis.

All of these characteristics serve to decrease the probability of a fire occurring in the CSA.

B. Detecting fires quickly, suppressing those fires that occur, putting them out quickly, and limiting their damage

I. Ionization and Photoelectric Smoke Detection System

Cross-zoned ionization and photoelectric spot-type smoke detectors are installed area-wide in the CSA and are capable of detecting products of combustion. All fire alarms, detection and trouble signals from the detectors are monitored by the central control console (central processing unit, display screen, keyboard and printer) which is located in the control room. The main fire alarm panel is powered by a reliable electrical supply and has an independent standby battery supply.

II. Incipient Fire Detection (IFD) System

A critical factor in the protection of the CSA is the ability to quickly detect a fire in the room. The earlier a fire is detected, the higher the probability that damage will be limited. The IFD system is expected to detect a fire very early in its incipient stage (pre-combustion) such that the relative fire size (if any) is much smaller at the time of intervention. The IFD system is an air sampling-type detection system and it complies with the requirements of NFPA 72.

The CSA IFD system rapidly detects sub-micron particles which are generated at the incipient stage of a fire. The incipient stage of a fire is the earliest stage of a fire when sub-micrometer pre-combustion particles are formed. Visible/smoldering smoke is produced in the second stage. The visible stage is followed by the flame stage and the final stage of a fire is the heat stage, at which point the combustion is expanding.

The IFD system consists of two independent detection panels, each having four zones (two upper and two lower CSA quadrants) of coverage. Each zone consists of four air sampling heads connected by small diameter tubing, which joins to form one tube run from the heads down to the zone (filter) manifold and into the detection panel. Each multiple detector head tube run is considered to be one zone. Through the use of soleniod valves, each IFD detection panel's internal blower draws and samples air from each zone, alternating zones approximately every 15 seconds. Data readings at each panel indicate the order in which zones are alarmed. A sign depicting the detection zone locations is near the IFD detection panels, providing fire brigade members the ability to quickly identify which zones (quadrants) alarmed first and where to concentrate their response.

A 24-hour battery backup instantly transfers power to the battery upon the loss of 120 volts alternating current (vac) normal power and when power is restored, it automatically transfers back to 120 vac power without any operator action. System trouble is indicated at the panel and in the control room.

As with the existing ionization and photoelectric detection system, the IFD system provides a system trouble alarm and a fire alarm in the control room.

III. <u>Manual Fire Fighting</u>

To build the level of defense needed to quickly suppress CSA fires and limit potential damage, MP3 relies on manual fire fighting capabilities of a site fire brigade as the primary method of fire suppression. The fire brigade is expected to initiate manual fire fighting activities and quickly control and suppress any fire encountered. Brigade response capabilities are ensured through hands-on training, drills, and appropriate fire fighting equipment. The Millstone Station Fire Fighting Strategies are controlled in accordance with administrative procedures and provide instructions to the fire brigade relative to potential hazards, safety related equipment in the area, special hazards and precautions, fire suppression equipment availability, assembly area(s), response strategy, spill or leak potential and ventilation strategies. The strategy for the CSA has been assembled to provide the fire brigade the best fire fighting response strategy for the area.

As discussed below, there is ample fire fighting equipment on hand in the CSA to effectively deal with fires of various magnitudes. Supplemental assistance and equipment is also provided by local fire departments.

Fire Fighting Equipment

- Dry hose stations and continuous flow hose reels of sufficient numbers and locations within the CSA are available such that all trays can be reached.

- A through-wall 2-½ inch dry fire department style connection with 1-½ inch gated wyes inside the CSA is located on the north outside wall of the CSA. This facilitates the use of fire water from outside fire hydrants without running hose through doorways to provide water to the CSA dry booster hose reels. Interior valves control water to the dry hose stations.

- Portable fire extinguishers within the CSA, consisting of portable 20 pound CO_2 extinguishers, 2-½ gallon water-mist extinguishers, and wheeled CO_2 extinguishers are available. An exterior wheeled dry chemical extinguisher is also available just outside of the CSA and east of the diesel generator building.

- A thermal imaging camera is available in the CSA to the fire brigade to enhance the fire brigade response to a fire alarm.

- Hydraulically or electrically powered portable fans are available in the CSA to eject smoke from the area.

- Ability to access cable trays has been verified by the site fire marshal by conducting ladder training to simulate conditions that fire brigade members might encounter in an actual fire response to an upper elevation tray fire.

- A water vacuum is available in the CSA to permit rapid removal of water from the CSA floor.

Manual fire fighting efforts in the CSA are further assisted by easy access and egress routes and the fact that the CSA is a large open area. The area is accessible for activities such as hose or ladder movement and positioning.

IV. Carbon Dioxide (CO_2) Fire Suppression

The CO_2 system is a low pressure CO_2 total flooding system designed to obtain 50% CO_2 concentration in the CSA for greater than 20 minutes. The CSA is classified as an *alternate plant shutdown required* area since it contains cables from redundant trains of safety related systems.

Currently, the CSA CO_2 system is disabled and locked out to preclude discharge and is not available for use. This action became necessary due to CO_2 migration from the CSA to several vital areas such as the control room, the auxiliary shutdown panel in the west switchgear room and the fire transfer switch panel in the east switchgear room. Carbon dioxide transport was first recognized as a problem during an inadvertent CO_2 discharge event on January 15, 1999.[10] Boundary repairs were undertaken to arrest CO_2 migration, however subsequent testing in February 2001 determined unacceptable CO_2 transport results. A continuous fire watch has been maintained throughout this period.

The CSA CO_2 fire suppression system will be modified from automatic to manual only actuation. Under the automatic configuration of the CO_2 system, the ball valve local to the Chemetron panel for the cable spreading room is aligned in the open position and initiation of CO_2 discharge is automatic (subject to electrical and pneumatic timers), upon receipt of an alarm condition from both cross-zones of smoke detection (ion and photoelectric detectors) for the area. In manual only actuation configuration, the ball valve is re-aligned, such that it will be CLOSED under the system's normal configuration. After system circuit modifications, when the ball valve is placed in an off-normal position (i.e., NOT FULL CLOSED) a trouble signal will be generated. Indication of this trouble condition will be the same as for the automatic CO_2 system configuration (Chemetron panel, Simplex zone panel, Simplex main fire protection console, and the control room color graphics monitor). Identification of the differences in operating mode and indication for the CSA is to be accomplished by means of new descriptive labels at the Chemetron panel and manual station, new description on the point information screens associated with the color graphics (software database changes), training of operators and fire brigade personnel and revisions to the applicable operating and surveillance procedures. Initiation of the CO_2 system will require both the alarm signal, similar to the automatic configuration, and manual actuation of the valve to begin the discharge.

Aside from the physical modifications, the manual only actuation CO_2 system will be used as a backup to manual fire fighting. The CO_2 system will be available to suppress complex fires such as hard to reach cable tray fires or fires requiring large quantities of hose stream water to extinguish. DNC has concluded that this modification and change in fire fighting strategy will not adversely impact the ability to safely shut down the plant in the event of a fire. Responding to CSA fires with manual fire fighting is considered to be effective based on the physical parameters of the CSA, the availability of fire suppression equipment in the area, and the training received by the fire fighting personnel. In the unlikely event of a fire scenario that would require large quantities of water for suppression, the CO_2 system is designed and available to extinguish this type of fire.

Physical changes that have been made or are planned for those CSA features that may have contributed to CO_2 leakage to surrounding areas include repairing

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[10] Northeast Nuclear Energy Company, Millstone Unit No. 3, LER 99-002-00, "Inadvertent Carbon Dioxide Fire Suppression System Actuation in the Cable Spreading Room," dated February 16, 1999. Supplement LER 99-002-01, dated June 27, 2001.

penetration seals, caulking ductwork, resealing doors, installation of bubble tight dampers and modifications to various ventilation systems.

V. CO_2 Discharge Testing

An evaluation was performed to determine if additional CO_2 concentration testing would be required for the manual only actuation CO_2 system. The CO_2 delivery system, CSA ventilation, CO_2 relief path, and boundary modifications were considered, and it was determined that these design features have not been changed in such a way that would adversely alter CO_2 concentrations achieved following a discharge. Specifically, the CO_2 delivery system remains unchanged except for manual only actuation, which does not affect the amount or rate of CO_2 discharged to the CSA. There is no ventilation system serving the CSA other than the Control Building Purge System for which the supply and exhaust dampers are planned to be blocked off. The CO_2 relief path remains unaltered. In addition, several improvements or repairs to the CSA CO_2 boundary were made, or are planned, to control leakage to adjacent areas and were reviewed as part of this evaluation. It was concluded that the effect of any remaining leakage, following boundary repairs or modifications will have a negligible effect on CSA CO_2 concentrations and does not drive a requirement for a new qualification test.

VI. Control Room Evacuation

In the event a control room evacuation becomes necessary due to a fire in the CSA, the operators will need to proceed to areas adjacent to the CSA to perform an alternate plant shutdown. Due to the potential for CO_2 migration into the safe shutdown areas, the operators will be directed to don self-contained breathing apparatus (SCBA) while in the control room before proceeding to the shutdown areas. Using portable or fixed CO_2 and oxygen monitoring equipment in the areas adjacent to the CSA, operators will determine if use of SCBA is necessary while performing the plant shutdown. Continued use of SCBA will be supported by a fixed bottled breathing system including tethers for easy movement within the safe shutdown areas. The modifications associated with the fixed breathing air system and the monitoring system are in the design phase. However, operations personnel have performed a walkdown of a mock control room evacuation after a simulated discharge of CO_2 in accordance with emergency operating procedures, and validated that time critical design assumptions could be met under these circumstances (wearing SCBA). Additional details of the proposed design are discussed in the following two paragraphs.

VII. Breathing Air System and SCBA

Breathing air systems will be installed in the east and west switchgear rooms. Each system will provide operators breathing air to supplement their SCBA bottle air while performing safe shutdown procedures in the east and west switchgear rooms following a control room evacuation and CSA CO_2 discharge. Each system will consist of manifold(s), regulator pressure gauge(s), air bottles, air-lines and low pressure alarm. The breathing air systems will be self-contained, will not require electric power, and will be permanently mounted plant equipment. Each system is being designed to provide operators sufficient breathing air to complete CSA fire suppression and ventilation activities based in part on the time required to purge the alternate shutdown locations during the 1999 inadvertent discharge event. The combination of SCBA packs and the breathing air system should provide approximately three hours of breathing air for each operator. The east and west switchgear rooms are separated from the balance of the plant and each other by 3-hour fire-rated barriers.

VIII. Carbon Dioxide and Oxygen (O_2) Monitoring

CO_2 and O_2 monitoring equipment will be installed in the control room, instrument rack room, service building west stairway (control room evacuation path), and east and west switchgear rooms. The air monitoring / indicating components will be permanently mounted and powered by a non-safety-related source with battery backup. Operators will monitor CO_2 and O_2 concentration and don SCBAs if levels are unsafe and be able remove SCBAs when concentrations return to safe levels. The CO_2 and O_2 monitors will be strategically placed so that personnel will be aware of air quality while controlling the plant or performing safe shutdown procedures in the control room, instrument rack room or east and west switchgear rooms, or while transiting from the control room to the switchgear rooms via the service building west stairway.

IX. Removal of CO_2, Smoke and Products of Combustion

When the CO_2 system is converted to manual only actuation, the fire fighting strategies will direct portable fans be set up to purge the CSA of smoke, hot gasses or CO_2. In order to address the potential leakage of CO_2 through the control room pressurization boundary or into the east or west switchgear rooms, the CSA portion of the Control Building Purge System (CBPS) will be blocked off and retired in-place. During the inadvertent discharge event in 1999, the shared ductwork of the CBPS was determined to be a contributing factor in the migration of CO_2 from the CSA during discharge due to the high differential pressure created between the control room and the CSA. Blocking off the CSA supply and exhaust purge system reduces the positive pressure differential of the carbon dioxide during a CSA discharge. The use of portable fans to purge the CSA provides an acceptable means for purging CO_2, smoke and products of combustion from the CSA and has been successfully demonstrated during CO_2 discharge testing.

X. Removal of Water

A water vacuum is provided at the fire brigade storage locker located in the CSA, to facilitate removal of fire suppression water from the floor. Rapid removal of standing water decreases the probability that water will find a floor seam or penetration seal and traverse to the switchgear rooms below. It should be noted that foam cable tray seals located at floor level have been enhanced with elastomer caps to reduce the likelihood of CO_2 leakage, and these double as water seals. The Millstone Station Fire Fighting Strategies will direct the fire brigade to minimize to the extent possible the use of water for manual fire fighting, and emphasize the use of fire extinguishers. In addition, the strategy and fire brigade training will indicate the importance of using the minimum amount of hose stream water necessary and direct water removal as soon as the fire is declared out.

C. Designing the plant safety systems so that if a fire should start in spite of the fire prevention program, and if it should burn for a considerable period of time in spite of fire suppression activities, it will not prevent the safe shutdown of the plant

The MP3 fire safe shutdown analysis demonstrates that loss of the CSA will not prevent the safe shutdown of the plant. The CSA contains redundant trains of fire safe shutdown cables, in addition to other safety related cables. Alternate shutdown capabilities are provided for a fire in the CSA using the fire transfer switch panel (east switchgear room) and the auxiliary shutdown panel (west switchgear room) in separate fire areas, as well as additional manual actions which will be performed in areas outside of the control room and CSA. Both alternate shutdown areas are located directly below the CSA. There are no required alternate shutdown cables routed inside the CSA.

SUMMARY

Regulation 10 CFR 50.48(a)(1) requires (in part) that a fire protection program be in place that will meet 10 CFR 50, Appendix A, General Design Criterion 3, "Fire Protection." BTP CMEB 9.5-1, the NRC guideline for fire protection programs, requires that licensees use the concept of defense-in-depth to achieve the required high degree of fire safety and discusses the three echelons of prevention, detection and suppression, and safety system design. The BTP further asserts that each echelon should meet certain minimum requirements; however, strengthening any one can compensate in some measure for weaknesses in others. The BTP then provides specific guidelines for various areas of the plant and recommends that an automatic water suppression system be used for primary fire suppression in cable spreading areas. During original licensing of MP3, a deviation was requested from this recommendation that would allow use of an automatic CO_2 system in the CSA, and the NRC granted this deviation based in part on the physical design of the CSA; the access and egress routes are well-defined, cable tray arrangement and separation in the CSA is adequate to effectively fight anticipated fires. In addition, the design of the CO_2 system for concentration, thermal shock, and other design parameters are within the guidelines of the BTP. The physical dimensions of the CSA have not changed and the design parameters for the CO_2 system (with the exception of automatic operation) have not changed, and the original bases for the existing deviation is not affected. DNC's conversion of the automatic CO_2 system to a manual only actuation, backup suppression system has been determined to maintain an adequate level of defense-in-depth in the CSA as discussed earlier. Although the automatic feature of the CO_2 system is being eliminated, new and existing fire protection features in the area of detection and manual fire fighting capability adequately compensate for this change.

CONCLUSION

The fire protection strategy for the CSA is strengthened by the use of two detection systems. The early warning IFD and the ionization and photoelectric smoke detectors, ensure an early response of brigade personnel, with a high probability of detection before the fire has reached the combustion stage. Carbon dioxide is still available for actuation in the CSA in the event of a hard to reach cable tray fire or a large fire requiring the use of high capacity hose streams. This revision to the previously approved deviation from the BTP will provide manual control over CO_2 discharge. Removing the automatic feature of the CO_2 system, and introducing an element of human decision-making before system actuation, does not adversely impact the effectiveness of the overall system operating parameters (CO_2 design concentration and discharge time). The ability of the CO_2 system, once actuated, to fight cable fires is not diminished by any changes being proposed by this modification. The underlying purpose of the substantive requirement of 10 CFR 50.48(a)(1) to ensure that fire detection and fighting systems are designed to minimize the adverse effects of fires on safety related equipment will continue to be met with this proposed deviation. Therefore, it is concluded that the three levels of fire protection features provided offer an acceptable level of protection and thus ensures the plant's ability to achieve safe shutdown.