NMC
Committed to Nuclear Excellence

Monticello Nuclear Generating Plant
Operated by Nuclear Management Company, LLC

July 16, 2004

L-MT-04-034
10 CFR 50.12

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

Monticello Nuclear Generating Plant
Docket 50-263
License No. DPR-22

Response to Request for Additional Information Regarding Intake Structure Pump Room Exemption Request (TAC No. MC1803)

Reference 1) NMC letter to NRC, "Exemption Request from the Requirements of 10 CFR 50, Appendix R Section III.G.2 for Fire Area IX/Fire Zone 23A – Intake Structure Pump Room," dated November 17, 2003

Reference 2) NRC letter to NMC, "Monticello Nuclear Generating Plant – Request for Additional Information Related to Intake Structure Appendix R Exemption Request (TAC No. MC1803)," dated June 15, 2004

In Reference 1, Nuclear Management Company, LLC (NMC) requested Nuclear Regulatory Commission (NRC) grant a permanent exemption from the requirements of 10 CFR 50, Appendix R, Section III.G.2.b as it applies to the Intake Structure Pump Room at MNGP (Fire Area IX/Fire Zone 23A). In particular, NMC requested an exemption from the requirement for separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards.

In Reference 2, the NRC requested that additional information be provided to support the exemption requested in Reference 1.

Enclosure 1 contains NMC's response to the requested information by the NRC and contains supplemental information.

Enclosure 2 contains a revised Figure 1 that supercedes the original Figure 1 provided in Reference 1.

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Summary of Commitments

This letter makes the following new commitment:

> The Division I cables associated with the Residual Heat Removal Service Water (RHR SW) pump motor cooling water valves (SV-4937A and SV-4937C) will be re-routed within the Intake Structure Pump room to provide adequate separation from Division II RHR SW components and cables consistent with the exemption request. This commitment will be completed by the end of the next refueling outage after approval of the exemption request.

If you have any questions please contact John Fields, Senior Regulatory Affairs Engineer (763-295-1663).

Thomas J. Palmisano
Site Vice President, Monticello Nuclear Power Plant
Nuclear Management Company, LLC

Enclosures (2)

cc: Administrator, Region III, USNRC
Project Manager, Monticello, USNRC
Resident Inspector, Monticello, USNRC

ENCLOSURE 1

NUCLEAR MANAGEMENT COMPANY, LLC (NMC) RESPONSES TO NRC REQUEST FOR ADDITIONAL INFORMATION

NRC Request #1:

Provide the design water density of the pre-action sprinkler system in the intake structure.

NMC Response:

The pre-action sprinkler system in the intake structure is designed to provide a water density of 0.30-gpm/sq. ft.

NRC Request #2:

The Fire Hazards Analysis does not discuss sodium hypochlorite and other hazards that it may present at ambient conditions or when heated and decomposing. What effects would this chemical or its residue present when mixed with the combustibles (lubricating oil, non-Institute of Electrical and Electronics Engineers standard -383 cable, and transients) in the room? Hazardous materials are discussed in the NRC's Branch Technical Position (BTP) Auxiliary and Power Conversion Systems Branch (APCSB) 9.5.1, "Fire Protection System," Section G.3.

NMC Response:

Two chemicals may be present in the area: Sodium Hypochlorite and Sodium Bromide. Due to their diluted state, chemical properties, limited quantities and fire protection features provided, sodium hypochlorite and sodium bromide do not present a significant risk to the ability to contain and extinguish a potential fire in the Intake Structure Pump Room.

Sodium Hypochlorite

Sodium hypochlorite is provided in a 10% solution. The other ingredients comprising the solution are sodium chloride (7-8%), sodium hydroxide (0.5-2%) and the remainder is water. The sodium hypochlorite solution has a zero rating for flammability, which indicates that the material will not burn. The sodium hypochlorite solution has a reactivity rating of one, which indicates that the solution will be normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently. The MSDS also rates sodium hypochlorite with a special symbol "OX," which indicates that sodium hypochlorite is an oxidizer. Oxidizers increase the burning rate of other materials and most if not all oxidizers can be rendered harmless by dilution with water.

Sodium hypochlorite is known to decompose into a chlorine gas with temperatures above 85°F. Since the sodium hypochlorite is provided in a water-based solution, it is reasonable to conclude that it will not react further with water. The MSDS does not indicate any adverse effects when mixed with lubricating oil or introduced to cable insulation/jacket materials.

Sodium Bromide

Sodium bromide is used to supplement the sodium hypochlorite addition in the summer. Sodium bromide is stable under normal conditions of use and storage. Sodium bromide is used in a 40% solution. The ingredients comprising the solution are sodium bromide (40%) and the remainder is water. The sodium bromide solution is rated a zero for flammability, which indicates that the material will not burn. The sodium bromide solution is rated a zero for reactivity, which indicates that the solution is normally stable, even under fire exposure conditions, and is not reactive with water. The MSDS does not indicate any adverse effects when mixed with lubricating oil or introduced to cable insulation/jacket materials. The sodium bromide solution is not considered an oxidizer.

Chemical product is contained and limited to the covered drum and discharge piping in the room. The purpose of the drum is to collect spillage that may occur during chemical injection, maintenance or cleaning activities. The drum does not provide bulk storage. A manually-operated, normally closed valve isolates the drum to preclude discharge to the drum, absent the activities discussed above. Therefore, typically, there is no liquid draining to the drum. Sodium hypochlorite and/or sodium bromide injection is only permitted for two hours per day, at most. Given that the drum containing the chemical(s) is located on the floor of the Intake Structure Pump Room near a floor drain, and that the cables in the area are in tray and conduit near the ceiling, the chemicals are not considered a hazard to the cables.

Transient combustibles are controlled as described in the response to NRC Request #3. It is highly unlikely that transient combustibles would be brought into direct contact with the chemical solution. Therefore, the potential exposure of the chemicals to transient combustibles is very limited. In addition, evaluations are performed to ensure that the chemicals present in the Intake Structure Pump Room do not cause an adverse reaction with portable fire extinguishers. These evaluations consider the guidance of National Fire Protection Association (NFPA) 10, Standard for the Installation of Portable Fire Extinguishers for the hazards in the area.

NRC Request #3:

Define and quantify the transient combustibles in the fire area allowed by procedure(s).

NMC Response:

The Fire Protection Program permits the introduction of the equivalent of two gallons of general-purpose solvent into any area of the plant, including the Intake Structure Pump Room. One cubic foot of wood (or 4' X 4' X ¾" sheet of plywood) is equivalent to two gallons of general-purpose solvent, both of which have a heat of combustion of 0.28M BTU. If additional quantities of transient combustibles are introduced, the Fire Protection Engineer performs an analysis of the significance of the additional combustible load.

Three ladders are stored in the Intake Structure Pump Room (locations identified on Figure 1) and are classified as transient combustibles due to their portable nature. The combustible loading of the ladders results in an estimated loading of 250 BTU/sq. ft. (1M BTU total), or an equivalent fire severity of less than 1 minute.

NRC Request #4:

Do the equipment shrouds around the residual heat removal service water and emergency service water pumps provide containment for leaking oil at the floor level? Are there dikes around other pumps to limit the spread of leaking oil? If not, what other features (such as floor drains) would limit the size of an oil spill?

NMC Response:

As noted in Reference 1, Enclosure 1, Section C.4.b, the Emergency Service Water (ESW) pumps do not contain lubricating oil. Containment features are not provided for the oil lubricated pump motors (three Service Water Pump motors, Electric Fire Pump motor, Screen Wash/Fire Pump motor, two Make-Up Pump motors and four RHR SW Pump motors) installed on the main floor (Elevation 919') of the Intake Structure Pump Room. The main floor of the Intake Structure Pump Room is equipped with four - 4" floor drains. Figure 1 has been updated to add the locations of the drains (see Enclosure 2). In addition, operator rounds are performed four times daily in the Intake Structure Pump Room. During these rounds operators are expected to identify and cleanup any areas with leaking oil. The design feature and administrative control together limit the size of a potential oil spill in the Intake Structure Pump Room.

As noted in Reference 1, Enclosure 1, Section D.2, the circulating water pump pit at Elevation 899' would serve to contain any oil spill from the circulating water pumps. The pit is provided with detection and suppression features as reflected on Reference 1, Enclosure 1, Figure 1.

ENCLOSURE 1

SUPPLEMENTAL INFORMATION

Topic 1 – Portable Fire Extinguishers

In November 2003, NMC requested that NRC grant a permanent exemption from the requirements of 10 CFR 50, Appendix R, Section III.G.2.b as it applies to the Intake Structure Pump Room at MNGP (Fire Area IX/Fire Zone 23A) (Reference 1). In particular, NMC requested an exemption from the requirement for: *"Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards."*

In Reference 1, Enclosure 1, Section C.5.c and Figure 1, NMC identified the type and location of portable fire extinguishers within the Intake Structure Pump Room. After further evaluation, NMC has determined that the current portable fire extinguishers required replacement. Therefore, the information contained in the applicable portion of Reference 1, Enclosure 1, Section C.5.c should be eliminated and the following information should replace it.

- Extinguishers

  Portable fire extinguishers in the Intake Structure are provided in accordance with the requirements of National Fire Protection Association (NFPA) 10, Standard for the Installation of Portable Fire Extinguishers. Extinguisher selection considers the type and size of fire hazards, as well as any chemicals, in the area.

Figure 1 (provided in Enclosure 2) has also been modified to indicate only the location of portable fire extinguishers in the Intake Structure Pump Room. This revised Figure 1 supercedes the Figure 1 provided in Reference 1.

Topic 2 - Residual Heat Removal Service Water Pump Motor Cooling Water Valves

In November 2003, NMC requested that NRC grant a permanent exemption from the requirements of 10 CFR 50, Appendix R, Section III.G.2.b as it applies to the Intake Structure Pump Room at MNGP (Fire Area IX/Fire Zone 23A) (Reference 1). In particular, NMC requested an exemption from the requirement for: *"Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards."*

Subsequently, in March 2004, the NRC transmitted a Regulatory Issue Summary (RIS) to all licensees of operating plants providing information pertinent to the risk-informed approach to be employed at post-fire safe-shutdown associated circuit inspections (Reference 2). Although the NRC's current plans do not call for implementation of the criteria specified within the summary until December 2004, NMC has taken the approach of using the criteria as a guideline in its ongoing safe shutdown cable validation effort.

As a result, NMC has determined that a potential cable-to-cable short circuit of select wires within a common conduit routed in the Intake Structure Pump Room is feasible when considering the NRC cable failure modes described within the RIS. The potential fire-induced short within the subject conduit without grounding was heretofore not considered as part of the associated circuit analysis.

The cables involved are associated with the Division I Residual Heat Removal Service Water (RHR SW) pump motor cooling water valves (SV-4937A and SV-4937C) that fail open on loss of power. The two Division I cables are contained in a common conduit that transits the main pump room floor in close proximity to the Division II RHR SW pump motors and other Division II components and cables. The postulated short circuit within the conduit results in spurious closure of one valve to one pump motor. To alleviate this concern, the cables will be re-routed consistent with existing divisional wiring separation criteria (greater than 20 feet of separation between redundant safe shutdown components and cables) identified in the exemption request (Reference 1).

Short Circuit Scenario

When one of the Division I RHR SW pump motors is started, an auxiliary contact in the pump motor circuit breaker opens to de-energize the cooling water solenoid causing the valve to fail open and supply water to cool the RHR SW pump motor. If a fire occurs in the Division II zone of the pump room and only one Division I RHR SW pump is operated in support of post-fire shutdown, then the specific short circuit could occur. The short circuit would maintain the cooling water valve for the operating pump motor closed by imposing power from the other cable into the circuit leading to a lack of cooling water to the RHR SW pump motor. The same fire could potentially damage both Division II pump motors.

If both Division I pump motors are started, the above scenario is not possible because both circuits would be de-energized at the remote location of the switchgear room resulting in no energized cables within the conduit. Both pump motor cooling water valves would open and remain open regardless of fire damage to the cables. However, the Safe Shutdown Analysis identifies that only one RHR SW pump is required to support shutdown.

Although this short circuit scenario is also applicable to the Division II RHR SW pump motor cooling water valves, it is not a concern due to physical separation from Division I components and cables.

Topic 3 – Reclassification of Emergency Exit Door

A recent modification to the plant has removed the Intake Structure from consideration as a Radiological Protected Area for ALARA purposes. This has resulted in the reclassification of the Emergency Exit door at the Northwest corner of the Intake

Structure Pump Room. This door is now considered an Access Door. Figure 1 and Reference 1, Enclosure 1, section C.2 described this door as an emergency exit. These are hereby revised.

In Reference 1, Enclosure 1, section F, it is stated that, "The area is not normally occupied nor is it a thoroughfare," the basis for this statement has not changed. Although, the Intake Structure Pump Room can now be accessed through Access Tunnel 23-B and the Exterior Traveling Screen Area, the pump room itself is not considered a thoroughfare subject to regular traffic.

Commitment

Based on the discussion in Topic 2 above, NMC makes the following new commitment:

The Division I cables associated with the RHR SW pump motor cooling water valves (SV-4937A and SV-4937C) will be re-routed within the Intake Structure Pump Room to provide adequate separation from Division II RHR SW components and cables consistent with the exemption request.

References

1. NMC letter to NRC, "Exemption Request from the Requirements of 10 CFR 50, Appendix R Section III.G.2 for Fire Area IX/Fire Zone 23A - Intake Structure Pump Room," dated November 17, 2003.

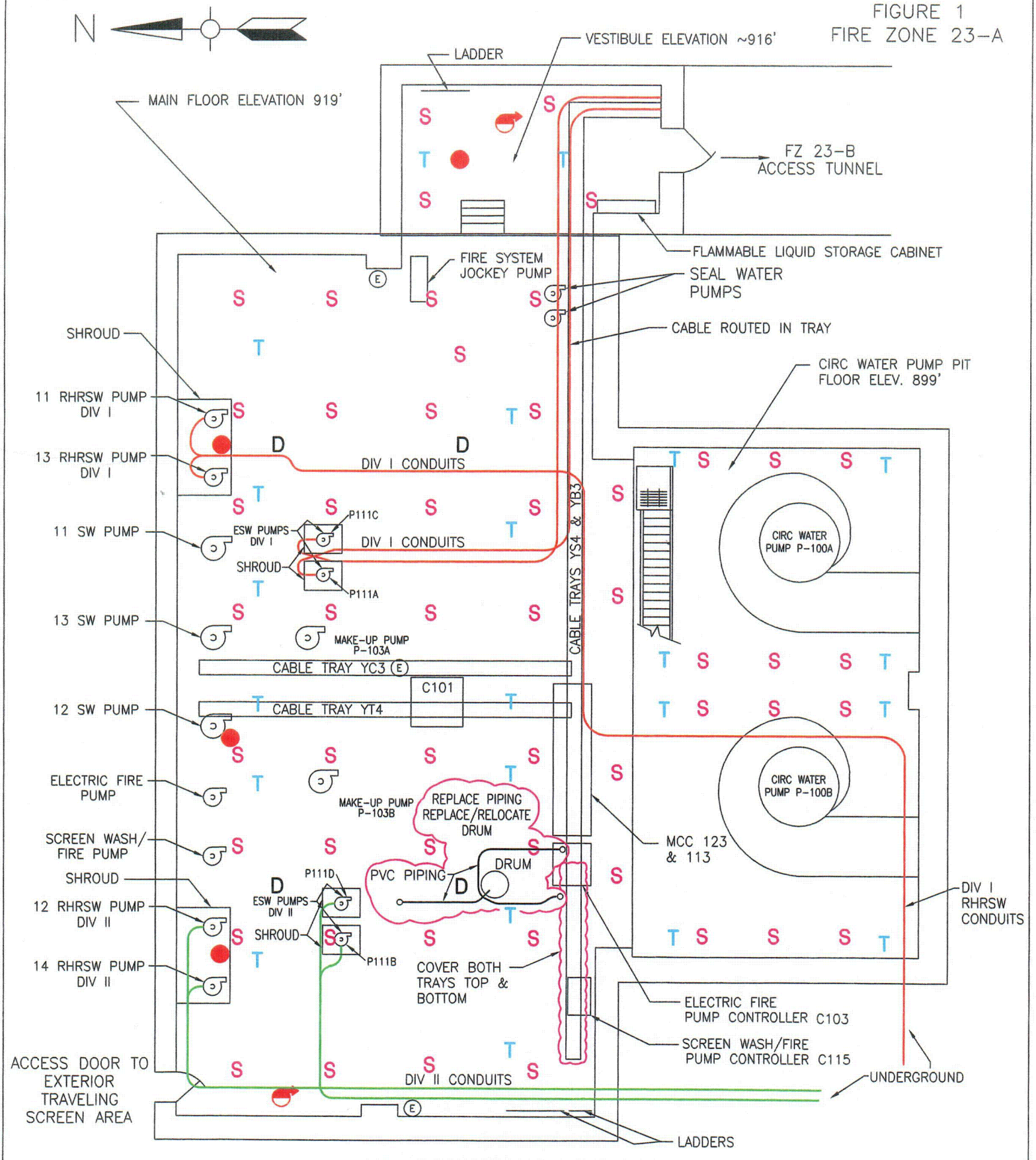
2. NRC Regulatory Issue Summary 2004-03: Risk-Informed Approach for Post-Fire Safe-Shutdown Associated Circuit Inspections, March 2, 2004.

ENCLOSURE 2

Revised Figure 1

1 page follows

FIGURE 1
FIRE ZONE 23-A



INTAKE STRUCTURE PUMP ROOM

- HOSE STATION
- (E) – EXTINGUISHER
- D – FLOOR DRAIN
- IONIZATION (SMOKE) DETECTOR
- T – THERMAL DETECTOR
- S – SPRINKLER

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