NMC
Committed to Nuclear Excellence

Monticello Nuclear Generating Plant
Operated by Nuclear Management Company, LLC

August 5, 2003

L-MT-03-057
10 CFR Part 50
Appendix A, GDC 19

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

MONTICELLO NUCLEAR GENERATING PLANT
DOCKET 50-263
LICENSE No. DPR-22
GENERIC LETTER 2003-01: CONTROL ROOM HABITABILITY 60-DAY RESPONSE

The Nuclear Regulatory Commission (NRC) issued the subject generic letter (GL) on June 12, 2003. The GL contains a 180 day requested response for specific information. Addressees that cannot provide the information or cannot meet the requested completion date are requested to submit a written response within 60 days to address any proposed alternative course of action, including the basis for acceptability and the schedule for completion of the alternative course of action. Nuclear Management Company, LLC (NMC) is unable to meet the completion date for all the requested information for the Monticello Nuclear Generating Plant (MNGP). Accordingly, NMC is providing the requested proposed alternative course of action in Attachment 1.

This letter makes the following new commitments:

1. NMC will provide the schedule to perform ASTM E741 testing and the schedule for the requested response to GL 2003-01 item 1(a) for MNGP by December 5, 2003.

2. NMC will provide the schedule for verifying by ASTM E741 testing that the most limiting inleakage has been incorporated into the hazardous chemical assessments (GL 2003-01 item 1(b) part 1) for MNGP by December 5, 2003.

3. NMC will provide the results of a smoke assessment (GL 2003-01 item 1(b) part 2) for MNGP by February 23, 2004.

4. NMC will provide the schedule for the development of technical specification changes (and any associated plant modifications) to support requested information GL 2003-01 item 1(c) for MNGP by December 5, 2003.

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As a separate issue, MNGP is performing a design and licensing basis (DB/LB) review in preparation for development of an Alternative Source Term (AST) submittal. The purpose of this review is confirm design and licensing assumptions and regulatory requirements in relation to AST and refine areas for where identified margin should be applied. Portions of this review directly pertain to the Control Room (CR) envelope and the CR habitability systems, covering areas discussed in item 1 of the GL. A summary of the results of this AST DB/LB review, as they pertain to the GL, will be submitted in conjunction with the resolution of items 1(a), 1(b) and 1(c), as committed above.

If you have any questions regarding this submittal, please contact Richard A. Loeffler, Senior Regulatory Services Engineer at (763) 295-1247.

David L. Wilson
Site Vice-President, Monticello Nuclear Generating Plant

cc: Regional Administrator, USNRC, Region III
Senior Project Manager, Monticello Nuclear Generating Plant, USNRC, NRR
NRC Senior Resident Inspector – Monticello Nuclear Generating Plant

Attachment 1: Generic Letter 2003-01: Control Room Habitability, Monticello Nuclear Generating Plant 60-Day Response

ATTACHMENT 1

NUCLEAR MANAGEMENT COMPANY, LLC
MONTICELLO NUCLEAR GENERATING PLANT
DOCKET 50-263

August 5, 2003

GENERIC LETTER 2003-01: CONTROL ROOM HABITABILITY

MONTICELLO NUCLEAR GENERATING PLANT 60-DAY RESPONSE

6 pages follow

GENERIC LETTER 2003-01: CONTROL ROOM HABITABILITY

MONTICELLO NUCLEAR GENERATING PLANT 60-DAY RESPONSE

Requested Information

Addressees are requested to provide the following information within 180 days of the date of this letter.

If an addressee cannot provide the information or cannot meet the requested completion date, the addressee should submit a written response indicating this within 60 days of the date of this generic letter. The response should address any proposed alternative course of action the addressee proposes to take, including the basis for acceptability of the proposed alternative course of action and the schedule for completion of the alternative course of action.

1. *Provide confirmation that your facility's control room meets the applicable habitability regulatory requirements (e.g., GDC 1, 3, 4, 5, and 19) and that the CRHSs [Control Room Habitability System's] are designed, constructed, configured, operated, and maintained in accordance with the facility's design and licensing bases. Emphasis should be placed on confirming:*

   (a) *That the most limiting unfiltered inleakage into your CRE [Control Room Envelope] (and the filtered inleakage if applicable) is no more than the value assumed in your design basis radiological analyses for control room habitability. Describe how and when you performed the analyses, test, and measurements for this confirmation.*

Response

System Design, Maintenance and Testing Considerations

The Monticello Nuclear Generating Plant (MNGP) Control Room Envelope (CRE) consists of the Control Room (CR) and the first and second floors of the Emergency Filtration Treatment (EFT) Building. The function of the Control Room Heating and Ventilation and Emergency Filtration Train (CRV-EFT) System is to maintain a habitable environment in the CR during normal and accident conditions. The system is housed in the EFT Building and communicates to the CR via ducting through a corner of the Turbine Building. Major components of the CRV-EFT System are contained within the CRE, primarily in the EFT Building. Both trains are located on the second floor of the EFT Building and are separated by a 3-hour fire barrier. The CRV-EFT System is designed to operate under emergency conditions to maintain the CRE at a positive pressure for radiological events and at a neutral pressure for events involving the release of toxic or hazardous chemicals.

The CRV-EFT System consists of two redundant heating, ventilation and air conditioning (HVAC) trains. The CRV-EFT System is composed of the Control Room Ventilation (CRV) and the Emergency Filtration Treatment (EFT) subsystems. The CRV

subsystem provides HVAC to the CR and the first and second floors of the EFT Building during normal operation. The EFT subsystem is manually actuated and operates in a recirculation mode to isolate the CR and the EFT Building (first and second floors) from outside air during a toxic or hazardous chemical release. The GE "Principle Design Criteria" are the design and licensing basis of the plant (Reference 1). The EFT subsystem satisfies Section III.D.3.4 of NUREG-0737 (Reference 2), which imposes General Design Criteria (GDC) 19. On detection of high radiation the EFT automatically pressurizes the CR with filtered air to minimize the activity, and therefore the radiological dose. This permits occupancy of the CR under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident.

Major components of the CRV subsystem are a full capacity air conditioning unit, recirculation/exhaust fan and associated instrumentation and controls. Major components of the EFT subsystem are a radiation monitor, a low efficiency filter, an electric heating element, a high efficiency particulate air (HEPA) filter, charcoal adsorber beds, another HEPA filter, and a centrifugal fan. The charcoal adsorber removes gaseous iodine, and the HEPA filters remove particulate matter.

MNGP is performing a design and licensing basis (DB/LB) review in preparation for development of an Alternative Source Term (AST) submittal. The purpose of this review is confirm design and licensing assumptions and regulatory requirements in relation to AST and refine areas for where identified margin should be applied. Portions of this review directly pertain to the CR envelope and the CR habitability systems, covering areas discussed in item 1 of the GL. This review is expected to be completed early next year. A summary of the results of this AST DB/LB review, as they pertain to the GL, will be submitted in conjunction with the resolution of GL 2003-01 items 1(a), 1(b) and 1(c).

Most Limiting Unfiltered Inleakage

The design and operation of the CRE and the CRV-EFT System at MNGP present few vulnerabilities with respect to unfiltered inleakage. The major components of the CRV-EFT System are contained within the CRE with the exception of the Seismic Class I ducts between the EFT Building and the CR. Normal pathways (i.e., unfiltered supply ventilation pathways), have been sealed with blank flanges to eliminate potential sources of inleakage. Required Technical Specification (TS) surveillance testing of the CRV-EFT verifies the capability of the system to maintain a positive relative pressure. Test results confirm the ability to pressurize the CRE to greater than 0.25 inch water-column (WC), which provides significant margin with respect to the TS limit of greater than 0.0 inch WC.

The limiting value from a radiological perspective assumed for unfiltered inleakage for the bounding accident for control room habitability, i.e., a large break Loss-of-Coolant Accident (LOCA), is 250 cubic feet per minute (cfm) for the first 8 hours and 10 cfm thereafter (Reference 3). In light of the results from the ASTM E741 (Reference 4) tests that have been conducted at various nuclear plants, as discussed in the GL, NMC has concluded that correlating ΔP measurements from surveillance testing to an unfiltered inleakage value is not a sound approach to ensure radiological habitability.

The LOCA analysis results (Reference 5) demonstrate significant margin between the resultant doses and the GDC-19 regulatory limits for CR habitability. The thyroid dose of 13.5 rem is less than half the 30.0 rem GDC-19 limit. (Note: the thyroid dose can be reduced, or effectively blocked, by the intake of Potassium Iodide during an accident.) The whole body dose of 0.095 rem (not including Reactor Building or cloud shine) is less than one-fiftieth the 5.0 rem GDC-19 limit. Therefore, NMC has concluded that pending completion of CRE integrity testing, the available margin to the associated regulatory limit for the postulated worst-case accident analysis provides reasonable assurance of control room habitability in the event of an accident. The margin demonstrated in the dose results for the bounding accident, together with the integrity of the system and readily available compensatory measures, are considered adequate to provide reasonable assurance of control room habitability in the event of an accident. Until testing can be performed at MNGP utilizing an acceptable test methodology (i.e., conforming to ASTM E741 as modified by the applicable regulatory guidance), the validity of the inleakage values assumed in the analyses cannot be ascertained.

NMC is evaluating vendors to perform ASTM E741 testing for all plants within the NMC fleet. The evaluation, along with the supporting activities to prepare for the testing (such as CRE walkdowns, pre-testing maintenance, and safety analysis reassessment to establish testing acceptance criteria), is planned for the fourth quarter of 2003. Upon completion of the evaluation and activities described, CRE inleakage testing will be scheduled as soon as practical for the MNGP. NMC will provide the schedule to perform ASTM E741 testing and the schedule for the requested response to GL 2003-01 item 1(a) for MNGP by December 5, 2003.

(b) *That the most limiting inleakage into your CRE is incorporated into your hazardous chemical assessments. This inleakage may differ from the value assumed in your design basis radiological analyses. Also, confirm that the reactor control capability is maintained from either the control room or the alternate shutdown panel in the event of smoke.*

Response

The limiting value assumed for unfiltered control room inleakage in the hazardous chemical evaluations is 1800 cfm. NMC has concluded that based on a comparison between this relatively large assumed inleakage value and results of industry inleakage testing, in-part described in the GL, this accident analysis assumption provides reasonable assurance for MNGP that the existing CRE integrity with respect to hazardous chemicals is maintained. A toxic gas analysis was performed in 1993, updated in 1998, and most recently updated in 2001-2002. These analyses were performed in accordance with Regulatory Guide 1.78 (Reference 6) and included onsite, offsite and transportation sources of hazardous chemicals. No impacts were identified to the existing hazardous chemical evaluations and CR habitability. Based on this, NMC believes that a five-year updating of the hazardous chemical evaluation as recommended in NEI 99-03 (Reference 7) is adequate. The next update is scheduled for 2006-2007.

NMC cannot verify that the most limiting inleakage has been incorporated into the hazardous chemical assessments until testing in accordance with ASTM E741 and GL 2003-01 guidance has been performed. As indicated previously, NMC is evaluating vendors and developing a schedule for performance of ASTM E741 testing to establish the measured inleakage for the CRE. NMC will provide the schedule for verifying by ASTM E741 testing that the most limiting inleakage has been incorporated into the hazardous chemical assessments (GL 2003-01 item 1(b) part 1) for MNGP by December 5, 2003.

The current hazardous chemical evaluations and fire protection program guidance and associated plant fire protection and operating procedures provide reasonable assurance that the ability to safely shut down the reactor from either the CR or the Alternate Shutdown Panel (ASDS) is maintained. The physical separation, the design of the structures, the independent ventilation systems, and site fire fighting capabilities ensure that a single fire will not render both the ASDS Panel area and the CR uninhabitable. Also, the CR is served by a breathing air system and self-contained breathing apparatus that are available for use by CR personnel as an acceptable means of maintaining CRH in the unlikely event of a chemical release or fire.

NMC – MNGP has selected a vendor to perform an independent qualitative smoke assessment of the CRE, the CRV-EFT System, and the ASDS areas. Confirmation of the assumed inleakage value utilized in the qualitative smoke assessment (aside from the validation by ASTM E741 test performance) is part of this assessment. This assessment is expected to be completed by the end of the year. NMC will provide the results of a smoke assessment (GL 2003-01 item 1(b) part 2) for MNGP by February 23, 2004.

(c) *That your technical specifications verify the integrity of the CRE, and the assumed inleakage rates of potentially contaminated air. If you currently have a ΔP surveillance requirement to demonstrate CRE integrity, provide the basis for your conclusion that it remains adequate to demonstrate CRE integrity in light of the ASTM E741 testing results. If you conclude that your ΔP surveillance requirement is no longer adequate, provide a schedule for: 1) revising the surveillance requirement in your technical specification to reference an acceptable surveillance methodology (e.g., ASTM E741), and 2) making any necessary modifications to your CRE so that compliance with your new surveillance requirement can be demonstrated.*

If your facility does not currently have a technical specification surveillance requirement for your CRE integrity, explain how and at what frequency you confirm your CRE integrity and why this is adequate to demonstrate CRE integrity.

Response

Surveillance requirements within MNGP TS 3.17, "Control Room Habitability," provide reasonable assurance that the CRV-EFT System will maintain the CRE habitable in the event of an accident, such that operators can safely remain in the CR to control the plant. In light of the results from the ASTM E741 tests that have been conducted at

various nuclear plants, as discussed in the GL, NMC has concluded that correlating ΔP measurements from surveillance testing to an unfiltered inleakage value is not a sound approach to ensure radiological habitability. The margin demonstrated in the dose results for the bounding accident, together with the integrity of the system, and readily available compensatory measures (see discussion associated with response 1(a), are considered adequate to provide reasonable assurance of control room habitability in the event of an accident. NMC will replace the TS ΔP surveillance requirement following determination of an acceptable surveillance methodology and complete any necessary modifications for implementation. As indicated previously, NMC is evaluating vendors and developing a schedule for performance of ASTM E741 testing to establish the measured inleakage for the CRE. Development of the needed TS changes depends, in part, on the results of ASTM E741 testing, impact on and adjustments made to the radiological and toxic gas analyses, and any additional modifications to the CRE that are necessary. NMC will provide the schedule for the development of technical specification changes (and any associated plant modifications) to support requested information GL 2003-01 item 1(c) for MNGP by December 5, 2003.

2. *If you currently use compensatory measures to demonstrate control room habitability, describe the compensatory measures at your facility and the corrective actions needed to retire these compensatory measures.*

Response

No compensatory measures are used for Control Room habitability at MNGP.

3. *If you believe that your facility is not required to meet either the GDC, the draft GDC, or the "Principle Design Criteria" regarding control room habitability, in addition to responding to 1 and 2 above, provide documentation (e.g., Preliminary Safety Analysis Report, Final Safety Analysis Report sections, or correspondence) of the basis for this conclusion and identify your actual requirements.*

Response

This request does not apply to MNGP.

References

1. MNGP Updated Safety Analysis Report (USAR), Subsection 1.2, "Principal Design Criteria," and Appendix E, "Plant Comparative Evaluation With The Proposed AEC 70 Design Criteria."

2. US NRC, NUREG-0737, "Clarification of TMI Action Plan Requirements."

3. MNGP USAR, Section 14.7.2, "Loss-of-Coolant Accident," Subsection 14.7.2.4.3, "Control Room Dose Evaluations."

4. American Society for Testing and Materials (ASTM) E741, "Standard Test Method for Determining Air Change in a Single Zone By Means of a Tracer Gas Dilution."

5. MNGP USAR, Section 14.7.2, "Loss-of-Coolant Accident," Table 14.7-15, "Monticello LOCA Dose (REM) – 1880 MWt."

6. US NRC Regulatory Guide 1.78, "Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release."

7. Nuclear Energy Institute (NEI) 99-03, Revision 0, "Control Room Habitability Guidance," June 2001.