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SUBJECT: Forwards response to NRC 931214 ltr re violations noted in
 Insp Rept 50-263/93-18. Corrective actions: procedure to be
 prepared to address recovery of recirculation loop
 exhibiting temp stratification.

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January 11, 1994

10 CFR Part 50
Section 2.201

US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Reply to a Notice of Violation Contained in
NRC Inspection Report No. 50-263/93018 Concerning Actions Taken
During Single Loop Operations and Corrective Action Weaknesses

Pursuant to the provisions of 10 CFR Part 2, Section 2.201, our reply to the notice of violation contained in your letter of December 14, 1993 is provided as Attachment A.

This letter contains the following new commitments to the NRC:

1. A procedure requiring shutting down the reactor prior to recovery of a stratified loop with reference to the concern that a reactivity addition could come from the colder water in the loop is to be prepared. Shift seminar training on the procedure will be conducted following procedure approval. This action is to be completed by March 15, 1994.
2. Plant procedures governing integrated plant operation are to be revised to provide enhanced direction concerning plant operation in a hot standby condition. This action is to be completed by March 31, 1994.
3. The Administrative Work Instruction governing procedure implementation is to be revised to enhance the section on infrequent tests or evolutions concerning guidance for the identification and preparation for infrequent evolutions and to emphasize management expectations on the conservatism required during off-normal conditions. This action is to be completed by February 28, 1994.
4. The Administrative Work Instruction governing general work controls is to be revised to emphasize the need to consider possible adverse consequences of evolutions and the planning required for these consequences. This action is to be completed by March 31, 1994.

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5. The Administrative Work Instruction governing general plant operating activities is to be revised to emphasize management expectations for conservative operation of the plant, particularly in off-normal conditions. This action is to be completed by February 28, 1994.
6. Training for site personnel on the improved guidance concerning conservatism during off-normal conditions is to be provided. This action is to be completed by June 30, 1994.
7. Nuclear Radiological Services procedures governing review of the REMP report are to be revised such that separate procedure signoffs are provided for review of the report for inclusion of a) a description of reasons for not conducting the REMP as required, and b) a description of plans to prevent recurrence of not conducting the REMP as required. Personnel responsible for review of the REMP report are to be trained on the procedure revision. This action is to be completed by February 11, 1994.

This letter reiterates the following commitments made to the NRC in licensee event report 93-010 which are restated here for completeness:

1. The lessons learned from the Emergency Filtration Train inlet damper in-leakage event will be presented in Engineering Technical Staff Continuing Training. This action is to be completed by June 30, 1994.
2. The Operating Experience Assessment process will be revised to enhance requirements for establishing and monitoring appropriate follow-up action priorities. This action is to be completed by June 30, 1994.

Please contact Marv Engen, Sr Licensing Engineer, at (612) 295-1291 if you require further information.



Roger O Anderson
Director
Licensing and Management Issues

c: Regional Administrator - III, NRC
NRR Project Manager, NRC
Sr Resident Inspector, NRC

Attachment: (A) Reply to Notice of Violation.

REPLY TO NOTICE OF VIOLATION

Violation

"10 CFR Part 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Technical Specification 6.5.A.1 requires detailed written procedures (including checkoff lists) to be followed during such plant operations as normal startup, operation and shutdown of the reactor and all systems and components involving nuclear safety of the facility.

- a. Contrary to the above, on October 17, 1993, the facility was operated in Hot Standby for an extended period using the bypass valves for reactor pressure regulation, a mode of operation which had specifically been deleted from the Operations Manual Volume C.3 Manual, "Shutdown Procedures."
- b. Contrary to the above, as of October 17, 1993, Volume C.3 of the Operations Manual, "Shutdown Procedures," was of a type not appropriate to the circumstances in that it failed to provide directions to ensure that prior to depressurizing the reactor, adequate subcriticality was maintained during plant cooldown to avoid a power increase resulting from a positive reactivity insertion. As a result, on October 17, 1993, the nuclear engineer directed reactor depressurization while maintaining the reactor critical and with the potential for a significant positive reactivity addition being present.

This is a Severity Level IV Violation (Supplement I)."

Reason for the Violation:

The cause of this violation was inadequate procedures in that existing plant procedures did not contain specific information concerning recovery of a recirculation loop exhibiting temperature stratification, and procedures addressing integrated plant operation lacked sufficient detail to direct extended plant operation in the hot standby condition.

A contributing cause for this violation was ineffective pre-job planning. Recirculation loop temperature stratification was not identified as a concern during the pre-job planning process and contingency plans to address such a concern were not in place. During the special evolution briefing conducted

prior to entry into single loop operation, the operating crew discussed a prior single loop evolution in 1991 of a 3 hour duration, during which temperature stratification did not occur. An evolution involving single loop operation in 1985, where there was unacceptable temperature stratification after about an hour, had not been identified and was not reviewed.

Corrective Action Taken and Results Achieved:

Immediately following the evolution of October 17th and 18th, a recirculation loop stratification task force was formed to investigate the recirculation loop temperature stratification which occurred during single loop operation. A thorough investigation of the evolution was performed which identified lessons learned regarding planning, maintenance, and operations. The investigation concluded that there were no adverse safety consequences with the actions taken during the single loop evolution; however, more conservative actions would have been appropriate. The task force report contained twelve recommendations to be implemented to preclude repetition of recirculation loop temperature stratification. Some of these recommendations will also be effective in precluding recurrence of the violation cited above. The specific task force recommendations pertaining to the above cited violation are provided below in the "Corrective Action To Be Taken To Avoid Further Violation" section. The results of the task force's investigation were reviewed by the plant's Operations Committee.

The General Superintendent Operations issued an Operations Policy providing interim guidance pending implementation of the task force recommendations. The interim guidance specifies the actions to take if recirculation loop stratification should occur following a recirculation pump trip, and actions to take during a reactor shutdown if the reactor pressure can not be maintained greater than 900 psig while rods are withdrawn.

Corrective Action To Be Taken To Avoid Further Violation:

1. A procedure is to be prepared to address recovery of a recirculation loop exhibiting temperature stratification. This procedure will require shutting down the reactor prior to recovery of a stratified loop. The procedure will contain a bases section referencing the evolution of October 17th and 18th and discussing the concern with the reactivity addition that could come from the colder water in the loop. Shift seminar training on the procedure will be conducted following procedure approval. This action is to be completed by March 15, 1994.
2. Plant procedures governing integrated plant operation are to be revised to provide enhanced direction concerning plant operation in a hot standby condition. This action is to be completed by March 31, 1994.
3. The Administrative Work Instruction governing procedure implementation, which includes a section on infrequent tests or evolutions, is to be

revised to enhance the guidance for the identification and preparation for infrequent evolutions. This action is to be completed by February 28, 1994.

4. The Administrative Work Instruction governing general work controls is to be revised to emphasize the need to consider possible adverse consequences of evolutions and the planning required for these consequences. This action is to be completed by March 31, 1994.

Date When Full Compliance Will Be Achieved:

Full Compliance has been achieved.

Violation

"10 CFR Part 50, Appendix B, Criterion II, requires, in part, that indoctrination and training of personnel performing activities affecting quality shall be provided as necessary to assure that suitable proficiency is achieved and maintained.

"Contrary to the above, on October 17, 1993, the operators, under the direction of the nuclear engineer, performed activities in an attempt to transfer cold water into a critical reactor. Neither the operators nor the nuclear engineer knew, in magnitude, the effect on the reactor power that would have been caused by the reactivity insertion. The individuals had not received adequate indoctrination and training to address the possible consequences of such an event.

"This is a Severity Level IV Violation (Supplement I)."

Reason for the Violation:

The cause of this violation, as it pertains to inadequate indoctrination and training of plant personnel performing activities to recover a recirculation loop exhibiting temperature stratification, is that the need to have specific procedures on this infrequent evolution, and thus conducting the associated training, was not considered to be required. Recirculation loop temperature stratification had been experienced during previous infrequent evolutions similar to the evolution of October 17th and 18th. Our analysis of the previous temperature stratification occurrences identified operating practices to preclude or minimize recurrence. We had concluded that these operating practices would negate the necessity to recover a recirculation loop with temperature stratification. These operating practices were implemented during the single loop evolution of October 17th and 18th and were proved to be ineffective.

We have reviewed the above violation as it pertains to inadequate indoctrination and training of plant personnel to identify the consequences of off-normal core reactivity changes. We have concluded that plant personnel who are directly responsible for core reactivity management have been adequately trained and have demonstrated the requisite knowledge to identify and assess the consequences of core reactivity changes. Personnel responsible for reactivity control during the single loop evolution of October 17th and 18th understood the potential reactivity effects of the cold water in the idle loop.

Although an adequate level of nuclear safety was maintained throughout this evolution, later consideration of the actions taken concluded that a more conservative course of action would have been appropriate. The decision on the part of the operators to recover the stratified recirculation loop with the reactor critical above the point of adding heat was based on the understanding that the magnitude of any positive reactivity insertion, although not quantified, would be small and thus the risk of a low power reactor protection system scram was also small. It was decided that proceeding in this manner was acceptable, even with a small increase in the risk of a scram, since there was a high probability a plant shutdown could be avoided. It has since been determined that a preferable course of action once the 50°F delta-T limit was exceeded would have been to insert all control rods before attempting to restore circulation in the idle loop to absolutely eliminate the possibility of a reactor scram due to a cold water injection.

Corrective Action Taken and Results Achieved:

Immediately following the evolution of October 17th and 18th, a recirculation loop stratification task force was formed to investigate the recirculation loop temperature stratification which occurred during single loop operation. A thorough investigation of the evolution was performed which identified lessons learned regarding planning, maintenance, and operations. The investigation concluded that there were no adverse safety consequences with the actions taken during the single loop evolution; however, more conservative actions would have been appropriate. The task force report contained twelve recommendations to be implemented to preclude repetition of recirculation loop temperature stratification. Some of these recommendations will also be effective in precluding recurrence of the violation cited above. The specific task force recommendations pertaining to the above cited violation are provided below in the "Corrective Action To Be Taken To Avoid Further Violation" section. The results of the task force's investigation were reviewed by the plant's Operations Committee.

Corrective Action To Be Taken To Avoid Further Violation:

1. A procedure is to be prepared to address recovery of a recirculation loop exhibiting temperature stratification. This procedure will require shutting down the reactor prior to recovery of a stratified loop. The

procedure will contain a bases section referencing the evolution of October 17th and 18th and discussing the concern with the reactivity addition that could come from the colder water in the loop. Shift seminar training on the procedure will be conducted following procedure approval. This action is to be completed by March 15, 1994.

2. The Administrative Work Instruction governing procedure implementation is to be revised such that the section on infrequent tests or evolutions emphasizes management expectations on the conservatism required during off-normal conditions. This action is to be completed by February 28, 1994.
3. The Administrative Work Instruction governing general work controls is to be revised to emphasize the need to consider possible adverse consequences of evolutions and the planning required for these consequences. This action is to be completed by March 31, 1994.
4. The Administrative Work Instruction governing general plant operating activities is to be revised to emphasize management expectations for conservative operation of the plant, particularly in off-normal conditions. This action is to be completed by February 28, 1994.
5. Training for site personnel on the improved guidance concerning conservatism during off-normal conditions is to be provided. This action is to be completed by June 30, 1994.

Date When Full Compliance Will Be Achieved:

Full compliance has been achieved.

Violation

"10 CFR Part 50, Appendix B, Criterion XVI, requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition...."

"This is a Severity Level IV Violation (Supplement I)."

Three examples were cited in paragraph 3 of the Notice of Violation. Each example is quoted and addressed below.

Example a:

"Contrary to the above, on March 10, 1987, the licensee documented its assessment of NRC Information Notice 86-76 which included a finding that the outside air isolation dampers in the EFT system had degraded during about a three year period of operation. This was a condition adverse to quality in that it resulted in unfiltered air inleakage greater than that assumed in design calculations. This would also result in an increased dose to operators in the case of a radiation release accident and decreased reaction time for operator protective measures in the case of a toxic gas release. Although corrective action was specified to develop procedures and acceptance criteria to measure air inleakage and monitor the performance of the dampers, prompt corrective action was not taken in that the air inleakage was not remeasured until October 27, 1993, a period of over 5 1/2 years, at which time the isolation dampers were found to again be degraded."

Reason for the Violation:

The cause for example "a" of this violation was inadequate review of outstanding assignment priorities. The need for preventive maintenance and periodic leakage measurement of the dampers was identified during assessment of NRC Information Notice 86-076, "Problems Noted in Control Room Emergency Ventilation Systems". The actions assigned were given a low priority (based on control room calculations performed at that time which indicated a significant margin for leakage) and were therefore superseded by higher priority issues. Periodic reviews of the assigned actions did not result in upgrading the priorities for the same reasons.

Corrective Action Taken and Results Achieved:

1. An independent review of all Operating Event Tracking System (OETS) assignments which are safety related and had a low priority was completed and appropriate changes were made.
2. A safety evaluation was completed to assess the installation of the blank flanges on the inlet of the Main Control Room Emergency Filtration Systems. The safety evaluation determined that there was no unreviewed safety question concerning operation of the system with the blank flanges installed. Both Main Control Room Emergency Filtration trains have been modified to eliminate the outside air in-leakage.
3. Main Control Room dose calculations for radiation and toxic chemicals were performed using the in-leakage data. The analysis demonstrated that control room operator doses were within the limits 10 CFR 50, Appendix A, Criterion 19. The analysis demonstrated that the time to potential control room incapacitation from a specific spill of chlorine could have the potential to exceed the design limits; however, analyses had also shown that the potential for the chlorine spill is below the accepted threshold of regulatory concern for external events.

Corrective Action To Be Taken To Avoid Further Violation:

1. The lessons learned from this event will be presented in Engineering Technical Staff Continuing Training. This action is to be completed by June 30, 1994.
2. The Operating Experience Assessment process will be revised to enhance requirements for establishing and monitoring appropriate follow-up action priorities. This action is to be completed by June 30, 1994.

Date When Full Compliance Will Be Achieved:

Full compliance has been achieved

Example b:

"Contrary to the above, corrective actions taken on April 6, 1991, to prevent a single failure of a service water valve from disabling both EFT subsystems were not effectively implemented in that adequate administrative controls were not established to ensure that the corrective action was maintained. As a result, the service water valve was returned to its previous configuration, vulnerable to a single failure, between January 28, 1993, and November 11, 1993."

Reason for the Violation:

The cause for example "b" of the violation was a personnel error. The work control documents required valve AO-1542 to be returned to the proper status (open) and tagged out at the completion of the work, but did not specifically mention securing closed AI-69, the air supply to AO-1542, in that step. As a result, AO-1542 was returned to the open position and some work control documents were signed to indicate that the system was returned to the proper status, even though AI-69 had not been secured closed as intended. Although the procedure could have been more clear in this regard, this is considered primarily a cognitive error in that the individual who signed for system restoration did not fully understand the intent of the tagout step in the procedure and should have sought clarification before proceeding. The only unusual condition present at the time of the event was the high volume of work control documents being processed due to the refueling outage in progress.

Corrective Action Taken and Results Achieved:

1. Plant management has instructed all operations personnel on the importance of ensuring systems are properly restored at the completion of maintenance activities and has emphasized the importance of maintaining a questioning attitude and seeking clarification when procedure requirements are not clearly understood.

2. Procedures have been revised to state that AO-1542 is secured open with the air supply isolated, AI-69 secured closed.
3. AO-1542 was secured in the open position on November 11, 1993.

Corrective Action To Be Taken To Avoid Further Violation:

No further action needs to be taken. We feel that the above corrective actions will avoid further violations of this type.

Date When Full Compliance Will Be Achieved:

Full compliance has been achieved.

Example c:

"Contrary to the above, effective corrective actions were not taken for Technical Specification violations identified by licensee quality assurance auditors in 1988, 1989, and 1992. The violations involved missing information from the annual Radiation Environmental Monitoring Program reports. As a result, a Technical Specification violation reoccurred in 1992."

Reason for the Violation:

The cause for example "c" of this violation was an inadequate procedure and a lack of attention to detail. Nuclear Radiological Services procedures governing review of the Radiation Environmental Monitoring Program (REMP) report had been revised in response to previously identified REMP report deficiencies to ensure inclusion of the required information; however the procedure could have provided better guidance regarding the required content of the report. The personnel responsible for reviewing and preparing the REMP report considered the information provided in the report concerning the reason for the program noncompliance as also satisfying the Technical Specification requirement to provide information regarding plans to prevent recurrence, due to the nature of the program noncompliance.

Corrective Action Taken and Results Achieved:

A supplement to the 1992 annual REMP report has been submitted by the Manager Radiological Services. The supplemental report provides the Technical Specification required information which had previously been omitted.

Responsibility for conducting the Radiation Environmental Monitoring Program has recently been transferred from our corporate Radiological Services Group to the Monticello Plant staff. With this transfer of responsibility, plant procedures have been put in place governing the content of the annual REMP report. Plant procedures require the REMP report content to include when

necessary: a) a description of reasons for not conducting the REMP as required, and b) a description of plans to prevent recurrence of not conducting the REMP as required. The report produced by plant personnel is to be independently reviewed by corporate Nuclear Radiological Services.

Corrective Action To Be Taken To Avoid Further Violation:

1. Nuclear Radiological Services procedures governing review of the REMP report are to be revised such that separate procedure signoffs are provided for review of the report for inclusion of: a) a description of reasons for not conducting the REMP as required, and b) a description of plans to prevent recurrence of not conducting the REMP as required. Personnel responsible for review of the REMP report are to be trained on the procedure revision. This action is to be completed by February 11, 1994.

Date When Full Compliance Will Be Achieved:

Full compliance has been achieved.