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Supplement to 60-Day Response to Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors"

On June 9, 2003, the Nuclear Regulatory Commission (NRC) transmitted Bulletin (BL) 2003-01. By letter dated August 5, 2003, Nuclear Management Company, LLC (NMC) provided the 60-day response for the Palisades Nuclear Plant. In that response, the following commitment was made:

3. NMC will submit an implementation schedule for revising plant emergency operating procedures, where appropriate, to stop or throttle redundant pumps that are not necessary to provide required flows to cool containment and the reactor core within 30 days of the issuance of the generic guidance by the Westinghouse Owners Group, currently expected by March 31, 2004.

On April 16, 2004, the Westinghouse Owners Group (WOG) formally transmitted WCAP-16204, "Evaluation of Potential ERG and EPG Changes to Address NRC Bulletin 2003-01 Recommendations," Revision 1. The WCAP evaluated 11 Candidate Operator Actions (COAs). Enclosure 1 provides the NMC response to each of the COAs and the implementation schedule for the Palisades Nuclear Plant.

NMC plans to implement seven of the COAs as interim measures while NMC conducts evaluations to verify compliance with applicable regulatory requirements. These interim measures, as well as the compensatory measures addressed in the response to BL 2003-01, will be re-evaluated during NMC's review of the upcoming Generic Letter on this issue.

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Summary of Commitments

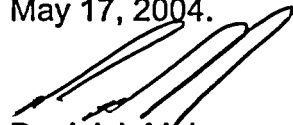
This letter contains two new commitments and no revisions to existing commitments:

1. NMC will implement the following candidate operator actions by March 31, 2005, at the Palisades Nuclear Plant.
 - COA #5 Refill refueling water storage tank (Palisades equivalent to the refueling water storage tank is the safety injection refueling water tank (SIRWT))
 - COA #6 Inject more than one SIRWT volume from refilled/diluted SIRWT or by bypassing SIRWT
 - COA #7 Provide more aggressive cooldown and depressurization following a small break loss-of-coolant accident
 - COA #8 Provide guidance on symptoms and identification of containment sump blockage
 - COA #9 Develop contingency actions in response to: containment sump blockage, loss of suction, and cavitation

2. NMC will implement the following candidate operator actions by December 15, 2005, at the Palisades Nuclear Plant.
 - COA #1 Secure one containment spray pump before recirculation alignment
 - COA #3 Terminate one train of high pressure safety injection/high-head injection after recirculation alignment

The implementation date of December 15, 2005, is contingent upon the need for prior NRC approval for any design or licensing basis changes. If prior NRC approval is required, the implementation date will be revised accordingly.

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 17, 2004.



Daniel J. Malone
Site Vice President, Palisades Nuclear Plant
Nuclear Management Company, LLC

Enclosure (1)

CC Administrator, Region III, USNRC
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ENCLOSURE 1
SUPPLEMENT TO 60-DAY RESPONSE TO BULLETIN 2003-01,
“POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY SUMP
RECIRCULATION AT PRESSURIZED-WATER REACTORS”

Introduction

On April 16, 2004, the Westinghouse Owners Group (WOG) formally transmitted WCAP-16204, “Evaluation of Potential ERG and EPG Changes to Address NRC Bulletin 2003-01 Recommendations,” Revision 1. The WCAP provides an evaluation of potential changes to the Emergency Response Guidelines (ERGs) and the Emergency Procedure Guidelines (EPGs) as required by the Nuclear Regulatory Commission (NRC) Bulletin (BL) 2003-01, “Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors.” On April 13, 2004, the WOG formally transmitted CEN-152, “Combustion Engineering Emergency Procedure Guidelines,” Revision 5.3., based on WCAP-16204. CEN-152 provides guidelines on implementing Emergency Operating Procedure (EOP) changes. Palisades EOPs are based on CEN-152.

The WCAP evaluated 11 Candidate Operator Actions (COAs). This enclosure addresses each of the 11 COAs presented in WCAP-16204, as they are implemented by CEN-152, Rev. 5.3. Information provided for each COA includes: the intent and strategy of the COA, whether the COA will or will not be implemented at Palisades Nuclear Plant, the bases for implementing or not implementing the COA, and the appropriate implementation schedule for the COA.

WOG Recommended Candidate Operator Actions

COA #1 Secure one containment spray pump before recirculation alignment

The intent of this COA is to secure unneeded containment spray pumps as early as possible after it has been confirmed that they have performed their safety function. The overall objective is to reduce the demand on the safety injection refueling water tank (SIRWT), delay the time to the start of containment recirculation during small breaks, reduce the flow rate to the sump when containment recirculation begins, and reduce the pressure differential across the sump screens if there is a build up of debris.

The overall strategy of this COA is to secure one or more containment spray pumps during the injection phase of the accident mitigation, based on containment pressure and other considerations such as radiation levels.

Nuclear Management Company, LLC (NMC) will implement COA #1 at the Palisades Nuclear Plant. However, the Palisades design differs from the reference Combustion Engineering (CE) plant design used in the evaluation of COA #1 in WCAP-16204. Palisades containment cooling trains are asymmetrical. The left train consists of two containment spray

(CS) pumps and the right train consists of one CS pump and three containment air coolers (CACs). Therefore, COA #1 will be implemented at the Palisades Nuclear Plant as follows.

Current EOP guidance allows stopping CS pumps when the following criteria are met:

- Containment pressure less than 3 psig
- CS not required for containment ambient cooling
- CS not required for high pressure safety injection (HPSI) subcooling
- CS not required for iodine removal

NMC will implement an EOP revision that will incorporate stopping one CS pump early, in accordance with the guidance provided in CEN-152, Rev 5.3. The guidance involves securing one CS pump during the injection phase of the accident mitigation, based on containment pressure and other considerations such as radiation levels. Additional containment spray pumps will be stopped in accordance with existing guidance.

A review of engineering analyses is required to determine the effect on the current design and licensing basis if a CS pump is secured when it is determined that the containment building design pressure is not exceeded. Revisions of engineering analyses may be necessary. Once the analyses work is complete, COA #1 will be implemented. The implementation date is contingent upon the need for prior NRC approval for any design or licensing basis changes. If prior NRC approval is required, the implementation date will be revised accordingly.

Implementation Date: December 15, 2005

COA #2 Manually initiate one train of containment sump recirculation earlier

The intent of this COA is to start containment sump recirculation while usable inventory remains available in the SIRWT, to stop suction from the SIRWT to preserve this volume of water, and to maintain one train of safety injection and CS pumps as a backup source.

The overall strategy of this COA is to manually transfer the suction of one safety injection train to the containment sump prior to automatic transfer to recirculation, based on acceptable conditions.

NMC will not implement COA # 2 at the Palisades Nuclear Plant. This COA was not incorporated into CEN-152, Revision 5.3, due to the lack of a clear benefit and the complexity of the required operator actions and will not be further evaluated by NMC.

Implementation Date: NA

COA #3**Terminate one train of HPSI/high-head injection after recirculation alignment**

The intent of this COA is to permit securing one HPSI pump following recirculation actuation if two HPSI trains are not needed for core heat removal. This action reduces the total emergency core cooling system (ECCS) flow through the containment sump screens in order to reduce debris buildup on the screens. It also establishes a protected train for use at a later time if needed. This instruction is applicable only after recirculation actuation. It does not replace or alter the standard HPSI stop/throttle criteria that are available before and after recirculation actuation.

The overall strategy of this COA is to secure one train of ECCS after both trains have been aligned for recirculation, based on acceptable conditions.

NMC will implement COA #3 at the Palisades Nuclear Plant using the alternative method described in CEN-152, Rev. 5.3. This alternative method involves a strategy of throttling HPSI flow to meet decay heat removal requirements. This strategy will potentially lower recirculation flow through the sump by several thousand gallons per minute while leaving both operating HPSI pumps in service.

Palisades has one HPSI pump for each train. Each unthrottled operating HPSI pump requires subcooling flow to the suction of the pump to achieve adequate net positive suction head (NPSH) during recirculation operation. A CS pump provides this subcooling flow. With two HPSI pumps in service during recirculation, at least two CS pumps are required to meet the subcooling flow requirements of the HPSI pumps. Each operating CS pump also requires a containment spray header to be in operation. The strategy of stopping one HPSI pump would allow stopping one CS pump and would result in one CS pump supplying one HPSI pump as well as one spray header in service. This single train operation would result in significant flow through this train and its associated containment sump screen.

Implementation of COA #3 at the Palisades Nuclear Plant involves throttling both operating HPSI pumps such that each pump provides approximately half of the flow rate required for decay heat removal. At these low flow rates, the HPSI pumps no longer require suction subcooling from the CS pumps. If containment atmosphere conditions are being controlled, the two CS pumps can be stopped. Stopping the CS pumps will result in a significant flow reduction through each of the containment sump screens. This alternative strategy of throttling HPSI flow on both trains will result in significantly lowering total flow through the sump.

A review of engineering analyses is required to determine the effect on the current design and licensing basis if HPSI flow is throttled after switchover to the containment building sump. Revisions of engineering analyses may

be necessary. Once the analyses work is complete, COA #3 will be implemented. The implementation date is contingent upon the need for prior NRC approval for any design or licensing basis changes. If prior NRC approval is required, the implementation date will be revised accordingly.

Implementation Date: December 15, 2005

COA #4 Terminate LPSI/[residual heat removal] RHR pump prior to recirculation alignment

The intent of this COA is to delay ECCS suction switchover from the SIRWT to containment sump suction mode.

The overall strategy of this COA is to delay switchover to containment sump recirculation by securing one low pressure safety injection (LPSI) pump prior to recirculation.

NMC will not implement COA # 4 at the Palisades Nuclear Plant. WCAP-16204 concludes that securing one LPSI pump prior to recirculation may result in core damage, if the other operating LPSI pump were to fail. This COA was not incorporated into CEN-152, Revision 5.3, and will not be further evaluated by NMC.

Implementation Date: NA

COA #5 Refill refueling water storage tank [RWST]

Palisades Nuclear Plant uses the term safety injection refueling water tank (SIRWT) as an equivalent to the RWST.

The intent of this COA is to initiate early action to line up to refill the SIRWT or lineup alternate sources for primary coolant system (PCS) injection bypassing the SIRWT.

The overall strategy of this COA is to provide a preemptive/precautionary move to take reasonable prerequisite actions that would better position the plant to initiate SIRWT refill after recirculation actuation or alternate PCS injection if sump recirculation capability should subsequently be lost.

NMC will implement COA #5 at the Palisades Nuclear Plant. NMC will incorporate guidance into EOPs to begin preparations to align an alternate injection source. The implementation date is based on the time needed to make the procedure changes and train the operators.

Implementation Date: March 31, 2005

COA #6 Inject more than one RWST volume from refilled/diluted RWST or by bypassing RWST

The intent of this COA is to provide procedural guidance for re-establishing injection to the PCS from either the refilled SIRWT or an alternate makeup source. The intent of reinitiating PCS injection from a refilled SIRWT is to regain a more reliable means of PCS inventory control for the near term.

The overall strategy of this COA is to secure recirculation and align equipment to re-establish injection from a refilled SIRWT or from an alternate source, bypassing the SIRWT.

NMC will implement COA #6 at the Palisades Nuclear Plant. NMC will provide instructions in EOPs to inject additional water from the spent fuel pool. The implementation date is based on the time needed to make the necessary modification, change procedures, and train the operators.

Implementation Date: March 31, 2005

COA #7 Provide more aggressive cooldown and depressurization following a small break LOCA

The intent of this COA is to initiate a rapid cooldown of the primary coolant system (PCS) at the maximum allowed rate in order to reduce the pressure and temperature of the PCS.

The overall strategy of this COA is to cooldown of the plant as aggressively as possible, within Technical Specification limits, and, if possible, establish shutdown cooling (SDC), thereby delaying or precluding the onset of sump recirculation. Reducing the energy in the PCS helps minimize the loss of inventory associated with a loss-of-coolant accident (LOCA)..

NMC will implement COA #7 at the Palisades Nuclear Plant. NMC currently emphasizes the importance of aggressive cooldowns in operator training. In accordance with CEN-152, Rev 5.3, additional emphasis for performing aggressive cooldowns using the steam generators will be added to the EOPs. The implementation date is based on the time needed to make the procedure changes and train the operators.

Implementation Date: March 31, 2005

COA #8 Provide guidance on symptoms and identification of containment sump blockage

The intent of this COA is to provide procedural guidance on recognition of sump clogging.

The overall strategy of this COA is to continuously monitor system parameters for early detection of sump blockage.

NMC will implement COA #8 at the Palisades Nuclear Plant. NMC previously provided training to operating crews on the available instrumentation and symptoms of sump screen clogging. In accordance with CEN-152, Rev 5.3, available instrumentation and symptoms of sump screen clogging will be added to the EOPs. The implementation date is based on the time needed to make the procedure changes and train the operators.

Implementation Date: March 31, 2005

COA #9 Develop contingency actions in response to containment sump blockage, loss of suction, and cavitation

The intent of this COA is to provide guidance to respond to indications of sump blockage, loss of pump suction and pump cavitation.

The overall strategy of this COA is to reduce recirculation flow, as allowed, to minimize head loss across the clogged screen and re-establish injection if recirculation is lost.

NMC will implement COA #9 at the Palisades Nuclear Plant. Contingency responses to sump screen blockage, loss of suction, and cavitation will be added to Palisades EOPs in accordance with CEN-152, Rev 5.3. The implementation date is based on the time needed to make the procedure changes and train the operators.

Implementation Date: March 31, 2005

COA #10 Terminate HPSI/high-head injection prior to recirculation alignment

The intent of this COA is to delay ECCS suction switchover from the SIRWT to containment sump suction mode.

The strategy to accomplish this COA includes securing one HPSI pump prior to recirculation by revising the HPSI stop/throttle criteria.

NMC will not implement COA #10 at the Palisades Nuclear Plant. WCAP-16204 concludes that securing HPSI/high-head injection prior to recirculation may result in core damage, if the remaining operating HPSI pump were to fail. This COA was not incorporated into CEN-152, Revision 5.3, and will not be further evaluated by NMC.

Implementation Date: NA

COA #11 Delay containment spray actuation for small break LOCA in ice condenser plants

WCAP-16204 indicates COA #11 was evaluated for ice condenser plants. The intent of this action is prevent or delay containment spray for small break LOCA less than one-inch diameter.

This COA is not applicable because Palisades Nuclear Plant is not an ice condenser plant.

Implementation Date: NA

Conclusion

NMC has addressed each of the 11 COAs from WCAP-16204, as they are implemented by CEN-152, Rev. 5.3, for the Palisades Nuclear Plant. These COAs are interim measures while NMC conducts evaluations to verify compliance with applicable regulatory requirements. These interim measures, as well as the compensatory measures addressed in the response to Bulletin 2003-01, will be re-evaluated during NMC's review of the upcoming Generic Letter on this issue.