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August 8, 2003
L-03-117

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Subject: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
60-Day Response to NRC Bulletin 2003-01

Reference:

1. NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors," dated June 9, 2003.

NRC Bulletin 2003-01 (Reference 1) was issued to inform licensees of the potential for additional adverse effects due to debris blockage of flowpaths necessary for Emergency Core Cooling System (ECCS) and Containment Spray System (CSS) recirculation and containment drainage. These additional adverse effects were based on NRC-sponsored research that identified the potential susceptibility of pressurized-water reactor (PWR) recirculation sump screens to debris blockage in the event of a high energy line break (HELB) that would require ECCS and CSS operation in the recirculation mode.

All licensees were requested to provide a response within 60 days of the date of the Bulletin to either: 1) State that the ECCS and CSS recirculation functions have been analyzed with respect to the potentially adverse post-accident debris blockage effects identified in the Bulletin are in compliance with 10 CFR 50.46(b)(5) and all existing applicable regulatory requirements (Option 1); or 2) Describe any interim compensatory measures that have been or will be implemented to reduce the risk which may be associated with the potentially degraded or nonconforming ECCS and CSS recirculation functions until an evaluation to determine compliance has been completed (Option 2).

The attachment to this letter contains the FirstEnergy Nuclear Operating Company (FENOC) response for Beaver Valley Power Station (BVPS) Units 1 and 2 to Option 2 of the Requested Information in NRC Bulletin 2003-01.

IE11

Attachment 2 lists a new regulatory commitment identified in this document. If there are any questions concerning this matter, please contact Mr. Larry R. Freeland, Manager, Regulatory Affairs/Performance Improvement at 724-682-5284.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 8, 2003.

Sincerely,

L. William Pearce

Attachments

c: Mr. T. G. Colburn, NRR Senior Project Manager
Mr. D. M. Kern, NRC Sr. Resident Inspector
Mr. H. J. Miller, NRC Region I Administrator

Attachment 1

60-Day Response to NRC Bulletin 2003-01
Beaver Valley Power Station Unit 1 (BV-1) and Unit 2 (BV-2)

This response addresses Option 2 of the Requested Information in NRC Bulletin 2003-01. This response discusses: 1) the interim compensatory measures that have been implemented as of the submittal date of the response, 2) plant specific measures implemented that are not discussed in the Bulletin, 3) plant specific measures not implemented as of the submittal date and a schedule for implementation, 4) plant specific measures that cannot be implemented until the next refueling outage and the reason that they cannot be implemented, and 5) measures discussed in the Bulletin that will not be implemented and the justification for not implementing them.

The following interim compensatory measures have been implemented as of the submittal date of the response:

1. Operator and staff training on indications of and responses to sump clogging

Licensed operators receive Emergency Operating Procedure (EOP) response classroom and simulator training, which includes training on BV-1 and BV-2 EOPs E-1, "Loss of Reactor or Secondary Coolant", and ECA-1.1, "Loss of Emergency Cooling Recirculation". These EOPs contain steps for monitoring operating Recirculation Spray Pumps to ensure that they are not cavitating (i.e., discharge pressure and motor amps are STEADY) and manually stopping and restarting the cavitating pump(s), if necessary.

Licensed Operators receive training information on the Containment Depressurization System, Safety Injection System and related EOPs in accordance with the following lesson plans and their associated Outline of Instructions:

Lesson Plan No. 1SQS-13.1, "Containment Depressurization System"
Lesson Plan No. 2SQS-13.1, "Containment Depressurization System"
Lesson Plan No. 1SQS-11.1, "Safety Injection System"
Lesson Plan No. 2SQS-11.1, "Safety Injection System"
Lesson Plan No. 1LOT-M5D11, "Przr LOCAs; Loss of RW; & DBA LOCA With Loss of Recirc"
Lesson Plan No. 2LOT-M5D11, "Przr LOCAs; Loss of SWS & DBA LOCA With Loss of Recirc"
Lesson Plan No. 3SQS-53.3, "Emergency Operating Procedures"

These lessons include, in part, the following subjects relevant to clogged sump screens:

- Given specific plant conditions, prediction of the response of Containment Depressurization System control room indication and control loops, including all automatic functions and changes in equipment status, for either a change in plant condition or for an off-normal condition.

- Review and discussion of how degraded condition of the sump screens can render both safety injection and containment sprays ineffective and what we do to prevent this type of deficiency (i.e., Maintenance inspection of sumps debris and screen status and Operations inspection of containment for debris during plant startup prior to entering Mode 4)
- Given a DBA LOCA with a loss of Cold Leg Recirculation, response in accordance with ECA-1.1, "Loss of Emergency Coolant Recirculation."

2. Procedure actions that delay the switchover to containment sump recirculation

Changes to the EOPs that take pre-emptive operator actions to shut off one train of ECCS and/or CSS will be considered after Owners Group programs to evaluate the impact of the changes have been completed.

3. Procedure actions that delay Refueling Water Storage Tank (RWST) inventory depletion

The background documents for BV-1 and BV-2 EOP ECA-1.1, "Loss of Emergency Coolant Recirculation," contain a high level summary of actions that are performed. This procedure is entered once it has been determined that a loss of sump recirculation capability exists. One of the actions is to "Increase/Conserve RWST Level". Steps are taken to minimize RWST outflow by stopping any unnecessary containment spray pumps and decreasing SI pump flow. Guidance to refill the RWST is also contained in the EOP.

4. Alternate sources to refill the RWST

In accordance with the guidance of the Westinghouse Owners Group (WOG) Emergency Response Guideline (ERG), BV-1 and BV-2 has incorporated steps to refill the RWST from borated sources in EOP ECA-1.1. This guidance is contained in the EOP supporting procedures to refill the RWST. These procedures refill the RWST through the normal makeup path and other sources. The other sources for refilling the RWST include makeup when normal blending functions are out of service, makeup from the Coolant Recovery Tanks (BV-1 only), and makeup from the Spent Fuel Pool.

Alternate sources of makeup to the RWST (either directly, or indirectly (i.e. via the spent fuel pool)) that are currently specified in the BV-1 and BV-2 Severe Accident Management Guidelines (SAMGs) include the following: River (Service) Water; Primary Grade Water Supply; Fire Protection System; and the Domestic Water System from the local public water supply. These sources supply unborated or non-primary grade water suitable only for use in situations requiring use of SAMGs.

5. Alternate sources to inject into the Reactor Coolant System

In accordance with WOG ERG guidance, BV-1 and BV-2 have incorporated steps to inject into the Reactor Coolant System. This guidance contains Reactor Coolant System injection from the Charging/HHSI Pumps, LHSI Pumps, and Recirc Spray Pumps.

Reactor Coolant System injection from the Charging/HHSI Pumps, LHSI Pumps, and Recirculation Spray Pumps is already considered in the BV-1 and BV-2 EOPs. Other injection flowpaths such as utilizing a gravity drain from the RWST are suitable only for situations requiring SAMGs because the Reactor Coolant System would have to be significantly depressurized for this injection.

6. Foreign material exclusion (FME)

1OST-47.2, "Containment Integrity Verification," and 2OST-47.2, "Containment Integrity Verification," are performed at least once per 18 months and following any major maintenance outage. This procedure verifies that all debris and unauthorized, non-permanently mounted equipment or material has been removed from containment. The procedure specifically verifies that the containment sump screens are installed, all hoses have been removed and the sump is free of all debris.

1MSP-9.04-M, "Containment Sump Inspection," and 2MSP-9.04-M, "Containment Sump (2DAS-TK204) Inspection," verifies at least once per 18 months that the containment sump is free of debris. This inspection includes the sump grating, the rough panel screens, the fine panel screens, the circular screens (BV-1 only), the intermediate screens, and the sump floor.

7. Containment cleaning

BVPS initiated the Integrated Containment Management (ICM) Program in 2001. The ICM Controllers (coordinators inside the containment building) focus on containment issues such as housekeeping, sump cleanliness, along with other containment issues. The ICM Program is implemented in accordance with OMS-0006 "Integrated Containment Management (ICM) Desktop Guide". Containment Housekeeping is addressed in Section III of OMS-0006 and provides instructions for the restoration of containment for the purposes of plant start-up.

Although not specifically performed for the purpose of containment cleaning, 1BVT 1.47.1 "Containment Structural Integrity Test" and 2BVT 1.47.1 "Containment Structural Integrity Test" focus on containment liner issues, such as checking for blistered or peeling paint type conditions, along with other potentially abnormal containment liner issues. The procedure is performed on a 40-month frequency (every other refueling outage) and discrepancies are identified and resolved per the corrective action program.

A final containment walkdown is performed prior to closure of the containment building in accordance with 1OST-47.2 "Containment Integrity Verification" and 2OST-47.2 "Containment Integrity Verification". Containment deficiencies identified during this walkdown are evaluated and appropriate actions are taken prior to entering Mode 4.

8. Ensuring containment drainage paths are unblocked

The BVPS Containment Buildings consists of four elevations (692', 718', 738', & 767') separated mainly by grating floors. With the exception of the doors in stairwells at BV-2, doorways located in the containment buildings contain gates constructed of fence-like material to allow for air circulation and free flow of fluids during a LOCA event. The reactor coolant pump cubicles located on elevation 718' are constructed with concrete floors and are protected from flooding by floor drains. If debris is noted on the floor drain covers, water is poured down the drain to confirm that the drainage path is not obstructed. This was performed during the most recent refueling outages (1R15 and 2R09.)

9. Ensuring sump screens are free of adverse gaps and breaches

1MSP-9.04-M, "Containment Sump Inspection," and 2MSP-9.04-M, "Containment Sump (2DAS-TK204) Inspection," verify at least once per 18 months that the containment sump is free of debris and the sump screens are not damaged or corroded in accordance with surveillance requirements of Technical Specification 4.5.2.e.1. This inspection includes the sump grating, the rough panel screens, the fine panel screens, the circular screens (BV-1 only), the intermediate screens, and the sump floor.

The following plant specific measures not discussed in the Bulletin have been implemented:

10. Containment Walkdown

Procedures 1BVT 1.13.5 and 2BVT 1.13.5 use the inside recirculation spray pumps (BV-1) and the recirculation spray pumps (BV-2) to circulate water through the sump after installing a temporary dike around the sump. Although this test is intended to confirm pump performance, it also provides confidence of sump function. The test is performed on a 2 year frequency and normally is followed up by a sump inspection (Refer to Item 9 above and MSP-9.04-M).

Procedure 1BVT 2.47.11, "Containment Walkdown for Potential Sump Screen Debris Sources," was recently developed in response to NEI 02-01, "Condition Assessment Guidelines: Debris Sources Inside PWR Containments." Unlike other inspections and walkdowns, this procedure focuses on sources, types and locations of items or conditions having potential to become debris following a LOCA. The procedure was initially performed at BV-1 during 1R15 and specifically identifies examples of items to

look for such as items that could become dislodged due to impingement, peeling paint, loose or deteriorated insulation, and loose caulking or sealant. Noted discrepancies were addressed via the corrective action program. Information and samples gathered during the inspection are intended as a baseline and could possibly be useful as input to a sump blockage analysis, if necessary.

A similar procedure (2BVT 2.47.11) will be issued and performed at BV-2 during 2R10 this fall. This action is being tracked via the corrective action program.

The following measures will not be implemented until the next refueling outage:

11. Plant specific measures not discussed in the Bulletin

The BV-2 containment walkdown procedure, 2BVT 2.47.11, "Containment Walkdown for Potential Sump Screen Debris Sources," (identified in Item 10 above) will be issued and performed at BV-2 during 2R10 this fall. The 2R10 outage would be the first practical time to implement this procedure.

The following measures will not be implemented:

12. Interim compensatory measures identified in the Discussion section of the Bulletin that will not be implemented.

As noted in Item 2, changes to the EOPs that take pre-emptive operator actions to shut off one train of ECCS and/or CSS, or throttle flow solely for the purpose of delaying switchover to containment sump recirculation, will not be implemented. Such changes will only be considered after the Owners Group evaluates their impact for the following reasons:

- Operator actions to stop ECCS or CSS pumps or throttle flow may result in conditions that are either outside of the design basis safety analyses assumptions or violate the design basis safety analyses assumptions (single failure). This would result in the potential for creating conditions that would make the optimal recovery more challenging (e.g., stopping containment spray impacts containment fission product removal, containment sump pH and equipment environment qualification design basis requirements).

- These actions would be inconsistent with the overall WOG ERG philosophy. The WOG ERGs are symptom-based procedures that provide for the monitoring of plant parameters and prescribe actions based on the response of those parameters. To avoid the risk of taking an incorrect action for an actual event, the WOG ERGs do not prescribe contingency actions until symptoms that warrant those contingency actions are identified.

- These actions would be inconsistent with the current operator response using the WOG ERGs that has been established through extensive operator training. The expected operator response is based on the optimal set of actions considering both design basis accidents and accidents outside the design basis. The WOG ERG operator response is not limited to a specific accident progression in order to provide optimal guidance for a wide range of possible accidents.

- To be effective in delaying the switchover to containment sump recirculation, operator actions to stop ECCS or CSS pumps must be taken in the first few minutes of an accident. This introduces a significant opportunity for operator errors based on other actions that may be required during this time frame. Any new operator actions to stop ECCS or CSS pumps, when modeled in the PRA, are likely to result in increased risk due to operator error.

Based on the philosophy adopted in the current WOG ERGs to take actions based on plant symptoms, it is more appropriate to address actions to "delay RWST inventory depletion" once the loss of recirculation capability is diagnosed. Any generic changes to the WOG ERGs will be evaluated as part of an Owners Group program. As summarized in Item 3, these procedures currently exist and the licensed operators are trained on their use.

For small to medium LOCAs guidance to delay depletion of the RWST before switchover to sump recirculation currently exists in WOG ERG ES-1.2, "Post LOCA Cooldown and Depressurization." This guideline provides actions to cooldown and depressurize the RCS to reduce the break flow, thereby reducing the injection flow necessary to maintain RCS subcooling and inventory. The operating SI pumps are sequentially stopped to reduce injection flow, based on pre-established criteria that maintain core cooling, resulting in less outflow from the RWST. For smaller LOCAs, it is possible to cooldown and depressurize the RCS to cold shutdown conditions before the RWST is drained to the switchover level. Therefore cold leg recirculation is not required to be established, and sump blockage is not an issue.

ATTACHMENT 2

Commitment List

The following list identifies those actions committed to by FirstEnergy Nuclear Operating Company (FENOC) for Beaver Valley Power Station (BVPS) Unit Nos. 1 and 2 in this document. Any other actions discussed in the submittal represent intended or planned actions by Beaver Valley. These other actions are described only as information and are not regulatory commitments. Please notify Mr. Larry R. Freeland, Manager, Regulatory Affairs/Performance Improvement, at Beaver Valley on (724) 682-5284 of any questions regarding this document or associated regulatory commitments.

Commitment	Due Date
Procedure 2BVT 2.47.11 "Containment Walkdown for Potential Sump Screen Debris Sources" will be implemented at BV-2.	10th Refueling Outage (Fall 2003)