

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Britt T. McKinney  
Site Vice President

AUG 08 2003

WO 03-0049

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

Subject: Docket No. 50-482: Response to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors"

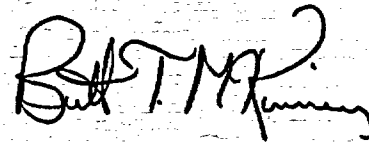
Gentlemen:

Attachment I to this letter provides the Wolf Creek Nuclear Operating Corporation (WCNOC) response to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors" dated June 9, 2003. This response addresses Option 2 of NRC Bulletin 2003-01, which requires a description of any interim compensatory measures that have been or will be implemented until an evaluation of the Emergency Core Cooling and Containment Spray Systems recirculation functions has been completed.

Attachment II lists WCNOC's commitments contained in this correspondence.

If you have any questions concerning this matter, please contact me at (620) 364-4112, or Mr. Kevin Moles at (620) 364-4126.

Sincerely,



Britt T. McKinney

BTM/rlr

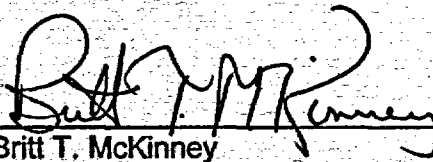
Attachments: I - Response to NRC Bulletin 2003-01  
II - List of Commitments

cc: J. N. Donohew (NRC), w/a  
D. N. Graves (NRC), w/a  
T. P. Gwynn (NRC), w/a  
Senior Resident Inspector (NRC), w/a

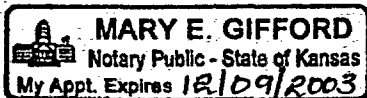
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*A102*

STATE OF KANSAS     )  
                                      ) SS  
COUNTY OF COFFEY    )

Britt T. McKinney, of lawful age, being first duly sworn upon oath says that he is Site Vice President of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the contents thereof; that he has executed the same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By   
Britt T. McKinney  
Site Vice President

SUBSCRIBED and sworn to before me this 8<sup>th</sup> day of Aug, 2003.



Mary E. Gifford.  
Notary Public

Expiration Date 12/09/2003

**Attachment I**  
**Response to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on  
Emergency Sump Recirculation at Pressurized-Water Reactors"**

This response addresses Option 2 of the Requested Information in NRC Bulletin 2003-01. This response discusses: 1) interim compensatory measures that have been implemented, 2) interim compensatory measures that will be implemented, 3) measures discussed in the bulletin that will not be implemented and the justification for not implementing them, and 4) implementation schedule for planned interim measures and basis for concluding that their implementation is not practical until a later date.

**1) Interim compensatory measures that have been implemented**

No interim compensatory measures have been implemented at this time. However, a number of controls in existing Wolf Creek Nuclear Operating Corporation (WCNOC) procedures address issues associated with this bulletin. These are described below as they pertain to the actions recommended in the bulletin.

- **Ensuring that alternative water sources are available to refill the Refueling Water Storage Tank (RWST) or to otherwise provide inventory to inject into the reactor core and spray into the containment atmosphere**

Wolf Creek Generating Station (WCGS) emergency procedure EMG C-11, "Loss of Emergency Coolant Recirculation," contains actions for operators to add makeup water to the RWST from the reactor water makeup system or from the fire protection system, depending on observed conditions.

Additionally, an alarm response procedure is in place to keep RWST near its maximum level. Alarm response procedure ALR 00-047E, "RWST LEV HILO," directs the Control Room Operators to keep the RWST level between 96.9% (406,930 gallons) and 99.8% (418,662 gallons). The Technical Specification Surveillance Requirement (SR) limit is greater than 394,000 gallons (SR 3.5.4.2).

- **More aggressive containment cleaning and increased foreign material controls**

The containment cleaning and foreign material controls for the WCGS containment building are included in the procedure STN EJ-002, "Containment Inspection," and procedure AP 12-004, "Containment Entry and Material Control." Both procedures include a definition of loose debris. Procedure STN EJ-002 is performed after maintenance activities in containment and provides an acceptance criterion of "no loose debris" for satisfactory containment cleanliness. The current procedural controls provide reasonable assurance that loose debris or foreign materials in containment will not impact Emergency Core Cooling System (ECCS) or Containment Spray System (CSS) recirculation functions. However, to further reduce the risk of the potential impact of debris or foreign materials in containment, both of these procedures will be enhanced as interim compensatory measures as described in item 2 below.

**2) Interim compensatory measures that will be implemented**

- **Operator training on indications of and responses to sump clogging**

Classroom training to increase licensed operator awareness of Bulletin 2003-01 issues will be conducted during pre-outage training classes. The training will include discussions on the importance of containment cleanliness, indications of potential screen blockage, and the interim compensatory actions. This classroom training will be completed by October 17, 2003.

A specific simulator Loss of Coolant Accident (LOCA) scenario modeling recirculation sump screen blockage will be developed and included in a regular licensed operator training cycle. Classroom and simulator training sessions for potential recirculation sump screen blockage will be completed by February 27, 2004.

- **More aggressive containment cleaning and increased foreign material controls**

As described in item 1 above, to further reduce the risk of the potential impact of debris or foreign materials in containment, procedures STN EJ-002, "Containment Inspection," and AP 12-004, "Containment Entry and Material Control," will be revised to enhance containment cleaning administrative controls. Procedure STN EJ-002 will be revised to require the completion of procedure AP 12-004 as an integral step in the containment cleanliness verification process. Procedure AP 12-004 will be revised to provide more specific requirements for both general area and target area cleaning. The new controls will include an expanded list of debris items to be removed as well as provisions for removing general area dust and dirt. These procedure revisions will be completed by October 17, 2003 for use during the fall, 2003, refueling outage.

- **Ensuring containment drainage paths are unblocked**

Containment cleanliness inspection procedure STN EJ-002 is performed following maintenance activities as discussed above. The purpose of this inspection is to control the quantity of loose debris in containment due to maintenance activities in order to prevent transport of the loose debris to the containment recirculation sumps in the event of a LOCA. The performance of this procedure during the specified times ensures that the containment drainage paths to the containment recirculation sumps are not currently blocked.

A review of Wolf Creek plant drawings and calculations revealed that no significant chokepoints or accumulation areas exist beyond those that have been previously considered and evaluated in plant containment flooding calculations.

Screens of a rectangular box type of configuration are installed over the two 10-inch refueling pool drains during Modes 1 through 4. The refueling pool drain screens are removed during Modes 5 and 6 during refueling outages to allow installation of blind flanges to accommodate refueling pool flooding for fuel handling activities. Cleanup activities following re-installation of the screens at the end of the previous outage provide assurance that the screens are clear of debris at the present time. Due to the separation of the screens and the configuration of the refueling pool area, these screens are not subjected to significant blockage from any credible source during accident conditions.

To further reduce the risk of blockage of the refueling pool drain pathway, procedure STN EJ-002 will be revised by October 17, 2003, to verify that the refueling pool drain screens are not blocked with debris following maintenance activities in the refueling pool area.

The Wolf Creek containment building contains wire mesh doors at the four entrances into the secondary shield walls. These doors are constructed of woven wire in a 1 5/8 inches diamond mesh pattern and have a bottom clearance of 6 inches to the floor as well as side clearances. Although these doors are not utilized as radiation barrier doors, they have been normally locked during power operation to limit personnel access to high radiation areas. The 6 inch clearance at the bottom of these doors is adequate to allow the expected flow of water to the recirculation sumps and would not be a credible blockage restriction. However, to increase the assurance that the containment draining paths would not become blocked, all four radiation barrier doors will be removed prior to plant restart following the next refueling outage, scheduled for the fall of 2003. This drainage path will be included in the WCNOE evaluation of the Emergency Core Cooling and Containment Spray Systems recirculation functions.

- **Ensuring sump screens are free of adverse gaps and breaches**

Wolf Creek Procedure STS EJ-002, "Containment Sump Inspection," is performed when restoring the containment recirculation sumps to operation following a plant outage. This procedure inspects the containment recirculation sumps to verify the suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or abnormal corrosion as required by Technical Specifications SR 3.5.2.8 and SR 3.5.3.1. This inspection is sufficient to identify any existing sump screen damage, gaps or breaches. The plant work controls program provides the mechanism to report and repair any subsequent damage to the screens during maintenance or other containment activities.

Current inspection requirements confirm the adequacy of the physical configuration of the sumps. However, an additional detailed inspection will be performed to confirm that there are no gaps around the sump screens or no breaches in the sump screens larger than 1/8 inch for the inner screen or larger than 1/2 inch for the middle screen. To ensure the inspection occurs at the first opportunity that the screens are not required to be operable, the inspection will be performed during any Mode 5 outage of sufficient duration prior to the fall, 2003 refueling outage, or prior to plant restart following the fall, 2003 refueling outage, whichever comes first.

- **Additional plant specific measures:**

Briefings with outage contractors performing work in containment will be conducted prior to the fall, 2003 refueling outage to increase their understanding of the issues related to containment sump screen blockage and the importance of containment cleanliness. These discussions will be completed prior to granting plant access to the outage contractors working in containment.

NRC Bulletin 2003-01 information will be included in third quarter-2003 Engineering Support Program classroom training. This training will raise awareness of containment cleanliness requirements, the potential for recirculation sump blockage, and actions being taken to address the Bulletin 2003-01 concerns. This training will be completed by September 12, 2003.

A tabletop training plan will be developed for the applicable Emergency Response Organization staff to provide guidance on the parameters which would indicate that recirculation sump screen blockage may be developing and what recommended compensatory actions should be considered. This tabletop training will be completed by April 1, 2004.

**3) Measures discussed in the bulletin that will not be implemented and the justification for not implementing them**

- **Procedural modifications, if appropriate, that would delay the switchover to containment sump recirculation (e.g., shutting down redundant pumps that are not necessary to provide required flows to cool the containment and reactor core, and operating the CSS Intermittently)**

WCNOC will not make modifications to emergency procedures at this time. Plant specific changes to the Wolf Creek emergency procedures that take pre-emptive operator actions to shut off one train of ECCS and/or CSS will be considered after the Westinghouse Owners Group (WOG) evaluates the generic impact of the changes. A schedule for Wolf Creek implementation of required changes will be established based on WOG recommended changes, if any.

For larger LOCAs that require ECCS injection flow and CSS spray, WOG does not recommend pre-emptive operator actions to stop pumps or throttle flow solely for the purpose of delaying switchover to containment sump recirculation until the impact of the changes can be evaluated on a generic basis 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 (e.g., 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).
- These actions would be inconsistent with the overall WOG Emergency Response Guidelines (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.

**4) Implementation schedule for planned interim measures and basis for concluding that their implementation is not practical until a later date**

- Licensed operator training on Bulletin 2003-01 issues will be completed by October 17, 2003. The licensed operator training cycle including the simulator scenario will be completed by February 27, 2004. Rearranging the licensed operator training classes to complete the simulator scenario earlier is not practical due to just-in-time training and other required pre-outage training already scheduled. The February 27, 2004, date is acceptable because the licensed operators will have completed pre-outage training on Bulletin 2003-01 issues and interim compensatory measures already implemented will reduce the risk of containment recirculation sump blockage during accident conditions.
- The procedures for containment cleanliness will be revised by October 17, 2003, which will be consistent with the opportunity for the more aggressive cleanliness requirements, prior to plant restart following the next refueling outage, scheduled for the fall of 2003.
- The procedure revisions to ensure that the containment drainage paths are unblocked will be completed by October 17, 2003, which will be consistent with the opportunity for the more aggressive cleanliness requirements, prior to plant restart following the next refueling outage, scheduled for the fall of 2003.
- The detailed inspections to ensure the recirculation sump screens are free of adverse gaps and breaches will be performed during a Mode 5 outage of sufficient duration, or prior to plant restart following the next refueling outage, scheduled for the fall of 2003, whichever comes first. Conducting inspections earlier is not practical since the detailed inspections would require the sumps, and associated ECCS systems, to be declared inoperable for the duration of the inspection.
- Outage worker training, for contract outage workers will be conducted prior to granting plant access to the outage contract workers.
- The Engineering Support Program training for NRC Bulletin 2003-01 will be performed during the next training cycle scheduled to be completed by September 12, 2003.
- The tabletop training for the applicable Emergency Response Organization staff will be included into the next available tabletop training schedule. Even though this training will begin early in 2004, the tabletop training cycle to include each ERO team is scheduled to be completed by April 1, 2004.

**Attachment II  
LIST OF COMMITMENTS**

The following table identifies those actions committed to by Wolf Creek Nuclear Operating Corporation in Attachment I to this letter. Other statements in Attachment I to this letter are not considered to be regulatory commitments. Please direct questions regarding these commitments to Mr. Kevin Moles, Manager Regulatory Affairs at Wolf Creek Generating Station, (620) 364-4126.

<b>COMMITMENT</b>	<b>Due Date/Event</b>
WCNOC will complete classroom training for licensed operators on the issues of NRC Bulletin 2003-01, including discussions on the importance of containment cleanliness, indications of potential containment recirculation sump screen blockage, and the WCNOC interim compensatory actions.	October 17, 2003
WCNOC will develop a simulator LOCA scenario modeling recirculation sump screen blockage and provide simulator training to the licensed operators.	February 27, 2004
Procedure STN EJ-002, "Containment Inspection", will be revised as follows: <ul style="list-style-type: none"><li>• require the completion of procedure AP 12-004 as an integral step in the containment cleanliness verification process.</li><li>• verify that the refuel pool drain screens are not blocked with debris.</li></ul>	October 17, 2003
Procedure AP 12-004, "Containment Entry and Material Control" will be revised to provide more specific requirements for both general area and target area cleaning, including a list of debris items to be removed and provisions for removing general area dust and dirt.	October 17, 2003
WCNOC will remove all four wire mesh doors at the entrances into the secondary shield walls.	Prior to plant restart following the fall, 2003 refueling outage
WCNOC will perform an inspection to confirm that there are no gaps around the sump screens or no breaches in the sump screens larger than 1/8 inch for the inner screen or larger than 1/2 inch for the middle screen.	During any Mode 5 outage of sufficient duration prior to the fall, 2003 refueling outage or prior to plant restart following the fall, 2003 refueling outage, whichever comes first.



**Attachment II**  
**LIST OF COMMITMENTS (Con't)**

WCNOC will brief outage contractors working in containment on Bulletin 2003-01 issues to increase their understanding of the issues related to containment sump screen blockage and the importance of containment cleanliness.	Prior to granting plant access to the outage contractors working in containment during the fall, 2003 refueling outage.
WCNOC will conduct training for the Engineering Support Program staff to raise awareness of more aggressive containment cleanliness requirements, the potential for recirculation sump blockage, and actions being taken to address Bulletin 2003-01 concerns.	September 12, 2003
WCNOC will develop and implement tabletop training for the applicable Emergency Response Organization staff to provide guidance on the parameters which would indicate that recirculation sump screen blockage may be developing and what recommended compensatory actions should be considered.	April 1, 2004