

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Richard A. Muench  
President and Chief Executive Officer

SEP 19 2003

WM 03-0044

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

Subject: Docket No. 50-482: Response to NRC Bulletin 2003-02, "Leakage From Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity"

Gentlemen:

Attachment I to this letter provides the Wolf Creek Nuclear Operating Corporation (WCNOC) response to NRC Bulletin 2003-02, "Leakage From Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity" dated August 21, 2003. WCNOC plans to complete a bare-metal visual inspection of each reactor pressure vessel lower head penetration during the Fall 2003 Outage. Therefore this response addresses Requested Information items (1)(a), (1)(b), and (2) which require a description of the Reactor Pressure Vessel (RPV) lower head penetration inspection program that has been implemented, the inspection program that will be implemented during the next and subsequent refueling outages, and a summary report following performance of the inspections.

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

If you have any questions concerning this matter, please contact me at (620) 364-4000, or Mr. Kevin Moles at (620) 364-4126.

Very truly yours,



Richard A. Muench

RAM/rlg

Attachments: I - Response to NRC Bulletin 2003-02  
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

A109

STATE OF KANSAS    )  
                                  ) SS  
COUNTY OF COFFEY )

Richard A. Muench, of lawful age, being first duly sworn upon oath says that he is President and Chief Executive Officer 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 *Richard A. Muench*  
Richard A. Muench  
President and Chief Executive Officer

SUBSCRIBED and sworn to before me this 19<sup>th</sup> day of Sept., 2003.



*Cindy Novinger*  
Notary Public

Expiration Date July 8, 2006

**Attachment I**  
**Response to NRC Bulletin 2003-02, "Leakage From Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity"**

Below is the Wolf Creek Nuclear Operating Corporation (WCNOC) response to the U.S. Nuclear Regulatory Commission (NRC) letter dated August 21, 2003 and entitled *Bulletin 2003-02, "Leakage From Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity."* This response addresses the Requested Information items (1)(a), (1)(b), and (2).

**Requested Information Item**

**(1)(a) A description of the RPV lower head penetration inspection program that has been implemented at your plant. The description should include when the inspections were performed, the extent of the inspections with respect to the areas and penetrations inspected, inspection methods used, the process used to resolve the source of findings of any boric acid deposits, the quality of the documentation of the inspections (e.g., written report, video record, photographs), and the basis for concluding that your plant satisfies applicable regulatory requirements related to the integrity of the RPV lower head penetrations.**

**WCNOC Response**

The reactor coolant pressure boundary (RCPB), including the lower Reactor Pressure Vessel (RPV) head, is examined each refueling outage for pressure boundary leakage in accordance with 10 CFR 50.55(a) and ASME Section XI. Visual examinations (VT-2) of the lower RPV head bare metal surface were performed on 4/26/2002, 11/5/2000, 5/7/1999, 11/27/1997, 4/4/1996, 10/30/1994, 1/10/1992, 5/11/1990, 12/30/1988, 2/10/1988, 12/28/1987, and 12/16/1986

Due to the configuration of the insulation around the Wolf Creek RPV, there is a minimum gap of three and one half feet between the exterior of the lower RPV head and the inside of the lower head mirror insulation package. An access port in the insulation allows visual examination of all 58 lower RPV head penetrations as well as the entire lower head bare metal surface.

Other than specifying the 58 penetrations to be examined, the inspection procedures for previous inspections did not include detailed instructions for how to conduct the VT-2 examination of the lower RPV head. During past inspections, the examiner may have conducted the entire VT-2 examination from the access port without completely entering the area between the insulation and the lower head. At other times the examiner may have walked on the interior surface of the insulation to conduct the examination. At a minimum, nearly 100% of the lower head surface and approximately 180 degrees of the circumference of each penetration was examined.

Administrative controls in place during previous inspections of the lower RPV head required that any evidence of leakage identified during the examination process be documented and evaluated in a work documentation package (Work Request). Following issuance of Generic

Letter 88-05, these controls included specific evaluation by the boric acid inspection program engineer. No instances of leakage from the lower RPV head penetrations were documented.

The majority of past inspection documentation is a signature and date designating the examination results for each procedure step and completion of the VT-2 examination procedure. In addition, an inspection and evaluation of a cavity seal ring leak by the NSSS vendor included a written report of the condition of the lower RPV head. Photographs of selected areas of the lower RPV head general surface are also available in Quality Control.

Relative to the inspections discussed above, the basis for concluding that applicable regulatory requirements related to the integrity of the RPV lower head penetrations are satisfied is the same basis as that identified in References 1 and 2 below.

### **Requested Information Item**

- (1)(b) A description of the RPV lower head penetration inspection program that will be implemented at your plant during the next and subsequent refueling outages. The description should include the extent of the inspections which will be conducted with respect to the areas and penetrations to be inspected, inspection methods to be used, qualification standards for the inspection methods, the process used to resolve the source of findings of boric acid deposits or corrosion, the inspection documentation to be generated, and the basis for concluding that your plant will satisfy applicable regulatory requirements related to the structural and leakage integrity of the RPV lower head penetrations.**

### **WCNOC Response**

A surveillance procedure being developed for inspection of the lower RPV head will be complete by October 19, 2003. This procedure will be performed during the Fall 2003 refueling outage and is also expected to be performed during subsequent refueling outages. The surveillance procedure will require VT-2 examination techniques and will include the following elements:

- 100% circumferential examination of the all penetration tubing below the lower RPV head (58 total penetrations)
- 100% circumferential examination of the annulus region between the lower RPV head and the penetration tubing
- 100% examination of the lower head surface
- Requirements for pictorial documentation as well as written descriptions of all relevant indications

All examinations of RPV pressure boundary are performed by VT-2 qualified examiners. Requirements for VT-2 qualification are in accordance with ANSI/ASNT CP-1890, 1995 Edition, as amended in ASME Section XI, paragraph IWA-2310, 1995 Edition with 1996 addenda.

The method of inspection during the Fall 2003 refueling outage is currently planned to be direct visual, rather than remote visual. All evaluations of potential RCPB leakage are documented in the work documentation package associated with the leaking component.

All relevant indications of RCPB leakage, including potential leakage from the lower RPV head, are evaluated and repaired in accordance with procedures implementing ASME Section XI code

requirements. If potential boric acid leakage from the lower RPV head region is identified, WCNOC's corrective action processes include considerations for taking necessary actions to resolve the identified issues. These considerations include taking actions based on recent industry experience such as obtaining samples of residue for chemical and/or radioisotopic analysis to determine age and source of residue, and performing non-destructive examinations, as necessary, to resolve the source of relevant indications.

The basis for concluding that applicable regulatory requirements related to the structural and leakage integrity of the RPV lower head penetrations will be satisfied is the same as the basis identified in References 1 and 2 below. In addition, consistent with a regulatory commitment in Reference 2 below, administrative controls implemented in accordance with 10 CFR 50, Appendix B requirements have been enhanced for boric acid leakage evaluations.

### **Requested Information Item**

- (2) Within 60 days of plant restart following the next inspection of the RPV lower head penetrations, the subject PWR addressees should submit to the NRC a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the lower head, any findings of relevant indications of through-wall leakage, and a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found.**

### **WCNOC Response**

Within 60 days of plant restart following the Fall 2003 Outage WCNOC will submit to the NRC a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the lower head, any findings of relevant indications of through-wall leakage, and a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found.

### **References**

- 1. Letter ET 02-0018, dated April 3, 2002, from Richard A. Muench, WCNOC, to USNRC, Response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity"**
- 2. Letter WM 03-0007, dated January 31, 2003, from Richard A. Muench, WCNOC, to USNRC, Response to Request for Additional Information for NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity"**

**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>
<p>A surveillance procedure for inspection of the lower RPV head will be developed and will include the following elements:</p> <ul style="list-style-type: none"> <li>• Use of VT-2 examination techniques</li> <li>• 100% circumferential examination of the all penetration tubing below the lower RPV head (58 total penetrations)</li> <li>• 100% circumferential examination of the annulus region between the lower RPV head and the penetration tubing</li> <li>• 100% examination of the lower head surface</li> <li>• Requirements for pictorial documentation as well as written descriptions of all relevant indications</li> </ul>	<p>October 19, 2003</p>
<p>A bare-metal visual inspection of the lower RPV head will be performed.</p>	<p>Prior to plant restart following the Fall 2003 Outage.</p>
<p>WCNOC will submit to the NRC:</p> <ul style="list-style-type: none"> <li>• a summary of the inspections performed,</li> <li>• the extent of the inspections,</li> <li>• the methods used,</li> <li>• a description of the as-found condition of the lower head,</li> <li>• any findings of relevant indications of through-wall leakage, and</li> <li>• a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found.</li> </ul>	<p>Within 60 days of plant restart following the Fall 2003 Outage.</p>