

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report No. 50-482/92-03

Operating License No. NPF-42

Licensee: Wolf Creek Nuclear Operating Corporation (WCNOC)  
P.O. Box 411  
Burlington, Kansas 66839

Facility Name: Wolf Creek Generating Station (WCGS)

Inspection At: WCGS, Burlington, Kansas

Inspection Conducted: January 27-31, 1992

Inspector: R. C. Stewart, Reactor Inspector, Materials and Quality Programs  
Section, Division of Reactor Safety

Approved:

*I. Barnes*

I. Barnes, Chief, Materials and Quality Programs  
Section, Division of Reactor Safety

2-19-92

Date

Inspection Summary

Inspection Conducted January 27-31, 1992 (Report 50-482/92-03)

Areas Inspected: Routine, unannounced inspection of the licensee's boric acid corrosion prevention program procedures and implementation.

Results: Within the area inspected, no violations or deviations were identified. The licensee's program for boric acid corrosion prevention was found to generally meet the intent of Generic Letter 88-05, with an extensive list of components inside containment being checked for boric acid leakage. The plant personnel were noted to be maintaining a conscientious attitude regarding leak detection and prompt identification via the maintenance work request program. An inspection followup item was identified (paragraph 2.2) pertaining to the absence of any components in the program that are part of the reactor coolant pressure boundary as defined by 10 CFR Part 50.2, but are located outside containment. The program requirements for performing engineering evaluations were noted to be limited to identified wastage, rework that did not correct leakage, and those items that could not be reworked. It was additionally ascertained that no boric acid leakage conditions had been submitted to engineering for evaluation since the inception of the boric acid monitoring program.

DETAILS

1. PERSONS CONTACTED

WCNOC

- \*J. Bailey, Vice President, Operations
- \*R. Benedict, Manager, Quality Control
- \*R. Flannigan, Manager, Nuclear Safety Engineering
- \*T. Garrett, Manager, Nuclear Safety Analysis
- \*R. Holloway, Manager, Maintenance and Modification
- \*R. Lewis, Supervisor, Results Engineering
- \*W. Lindsay, Manager, Quality Assurance (QA)
- \*R. Logsdon, Manager, Chemistry
- \*O. Maynard, Deputy Director, Plant Operations
- \*D. Mosebey, Supervisor, Operations
- \*T. Morrill, Manager, Radiation Protection
- \*A. Payne, Manager, Supplier Material Quality
- \*C. Parry, Director, Quality and Safety
- \*J. Pippin, Director, Nuclear Plant Engineering
- \*B. Smith, Manager, Modifications
- \*J. Weeks, Manager, Operations
- \*M. Williams, Manager, Plant Support
- \*S. Wideman, Senior Engineering Specialist
- \*W. Norton, Manager, Technical Support
- \*J. Stamm, Manager, Plant Design Engineering
- \*W. Muilenburg, Licensing Engineer
- \*K. Hughes, Supervisor, Training Development
- \*B. McKinney, Manager, Training
- \*E. Peterson, Supervisor QA Audits
- \*N. Hoadley, Manager Equipment Engineering
- \*K. Clair, Maintenance Engineer
- \*D. Jacobs, Supervisor Engineer
- \*T. Deddens, Jr., Outage Manager
- \*C. Rich, Jr., Electrical Maintenance Engineer
- R. Bleacha, Maintenance Engineer
- K. Bud, Senior Reactor Operator

NRC

- \*L. Gundrum, Resident Inspector

The inspector also interviewed other employees during this inspection.

\*Indicates those persons who attended the exit meeting conducted on January 31, 1992.

## 2. BORIC ACID CORROSION PREVENTION PROGRAM (62001)

The objectives of this inspection were to verify that the licensee had a documented program for prevention of corrosion caused by boric acid solution leaking out from boric acid containing systems, as required by Generic Letter 88-05. Additional objectives were to verify that the licensee had prepared procedures which provide clear guidance for performing the activities required by the program and verify that the licensee had implemented the program in accordance with its written procedures.

### 2.1 Generic Letter 88-05 Recommendations

In summary, Generic Letter 88-05 recommends that: (1) the licensee determine the principal locations where leaks, smaller than the allowable Technical Specification limit, can cause degradation of the primary pressure boundary by boric acid corrosion. Particular consideration should be given to identifying those locations where conditions exist that could cause high concentrations of boric acid on pressure boundary surfaces; (2) include procedures for locating small coolant leaks (i.e., leakage rates at less than Technical Specification limits) that establish the potential path of the leaking coolant and the reactor pressure boundary components that it is likely to contact; (3) establish methods for conducting examinations and performing engineering evaluations to establish the impact on the reactor coolant pressure boundary when leakage is located; and (4) establish corrective actions to prevent recurrences of this type of corrosion.

### 2.2 Wolf Creek Boric Acid Monitoring Program

The licensee utilized Administrative Procedure ADM-08-215, Revision 2, "Boric Acid Corrosion Monitoring Program," as the principal vehicle to implement the requirements delineated in Generic Letter 88-05. The procedure addresses the monitoring of selected components and related areas within the reactor pressure boundary, inspection guidelines, and the initiation and closeout of corrective actions.

During the program review, the inspector noted that the monitoring program was based on visual examinations conducted at each refueling outage and augmented examinations as directed by management. Current augmented visual examinations include a special entry into containment every other Tuesday by the cognizant maintenance engineer. Personnel performing the examinations were certified Level II, VT-2 examiners in accordance with Quality Assurance QP-14.2. Inspection and examination requirements were found to be well detailed, identifying 12 attributes to be observed by the examiner with any leakage considered rejectable. During the review of the "inspection and evaluation" section of the procedure, the inspector noted that the requirements for engineering evaluations were limited to those conditions where wastage was found, rework that did not correct the leakage, and those items that could not be reworked. The inspector expressed concern that engineering evaluations did not involve evaluations of locations where conditions exist that could cause high concentrations of boric acid on pressure boundary surfaces, and/or other observed component/areas of degradation. This issue was further emphasized during the exit meeting as a result of information provided by the licensee

that no boric acid leakage conditions had been submitted to engineering for evaluation since the inception of the boric acid monitoring program. This matter was identified by the inspector as a weakness in the ADM-08-215 program. In addition, although the procedure contains an extensive listing of components to be examined during walkdowns for boric acid leakage within the reactor pressure boundary and in the reactor containment building, the program does not include those valves and components outside containment that are within the reactor coolant pressure boundary (RCPB) as defined by the licensee's Updated Safety Analysis Report, Section 5.2, and 10 CFR 50.2. In discussing this omission with the cognizant licensee representatives, the inspector was informed that the issue will be evaluated by engineering and a Plant Incident Report (PIR) 92-0112 was initiated by the licensee on January 30, 1992. Review of the engineering evaluation of valves and components outside of containment is considered an inspection followup item (482/9203-01).

### 2.3 Program Implementation

The results of the visual examinations conducted during the refueling outage commencing August 1991, was reviewed by the inspector. Work Request No. 60540-90, initiated on August 20, 1991, documented 546 components within the RCPB visually examined by certified VT-2 QC inspectors at normal operating pressure and temperature. Based on the criterion that any evidence of leakage shall be considered rejectable, 54 leaks were identified with corresponding work requests initiated. The inspector made a random selection of 8 completed work requests (see Attachment). The inspector observed that the majority of boric acid leaks were minor in nature (slight boric acid crystal formation), involving valve stem packing, valve to bonnet gasket flanged components, etc. All 54 leaks were repaired during the outage and reinspected during the subsequent startup. During discussions with the responsible maintenance engineer, the inspector was informed that a special containment entry is made every other Tuesday by him to perform RCPB inspection walkdowns supplementing the boric acid corrosion monitoring program.

### 2.4 Plant Walkdown - Auxiliary Building

During the inspection, the inspector and the NRC resident inspector conducted a walkdown of various areas of the auxiliary building to observe general conditions regarding boric acid leakage control, including observation of components with previously identified leaks. The inspector observed that all leaks were clearly identified with appropriate work order numbers. Plastic catch bags and drainage tubes were adequately attached. There were no observed leaks or boric acid crystal formations that were not identified. Furthermore, all areas were observed to be maintained in an exceptional clean condition.

During the walkdown in the area of RCPB containment penetrations, the inspectors observed identified leaks on Valves EJHV8809A, EJ47, and EJ48. These valves are components of the residual heat removal system and within the RCPB, but not identified in the ADM-08-215 program. This observation was brought to the attention of the licensee.

In discussions with operations, maintenance, and engineering personnel, the inspectors observed that the prevention of boric acid leakage and boric acid crystal buildup is stressed to all personnel and appears to provide a leak conscious attitude among all plant personnel.

### 3. EXIT INTERVIEW

An exit interview was conducted on January 31, 1992, with those personnel denoted in paragraph 1 in which the inspection findings were summarized. No information was presented to the inspector that was identified by the licensee as proprietary.

ATTACHMENT

LETTERS

- ° U.S. NRC From Mr. B. Withers (WM 88-0142) dated May 31, 1988  
SUBJECT: Response to Generic Letter 88-05
- ° Mr. B. Withers from U.S. NRC, dated August 19, 1988  
SUBJECT: Response to Generic Letter 88-05

WORK REQUESTS

WR 04353-91, dated August 21, 1991  
WR 04358-91, dated August 21, 1991  
WR 04344-91, dated August 21, 1991  
WR 05593-90, dated October 17, 1991  
WR 4727-90, dated October 14, 1991  
WR 3471-90, dated October 17, 1991  
WR 4726-90, dated October 14, 1991  
WR 00548-91, dated October 18, 1991

Wolf Creek Nuclear Operating  
Corporation

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Kansas Department of Health  
and Environment  
Bureau of Air Quality & Radiation  
Control  
ATTN: Gerald Allen, Public  
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Division of Environment  
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Kansas Department of Health and Environment  
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Resident Inspector  
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Lisa Shea, RM/ALF  
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