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WOLF CREEK
NUCLEAR OPERATING CORPORATION

Bart D. Withers
President and
Chief Executive Officer

January 6, 1993
WM 93-0002

J. Lieberman, Director
Office of Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Docket No. 50-482: Reply to Notice of Violation (EA 92-191)

Dear Mr. Lieberman:

The attachment to this letter provides Wolf Creek Nuclear Operating Corporation's reply to the Notice of Violation (EA 92-191) concerning the circumstances surrounding the discovery on August 27, 1992, of a mispositioned locked, throttle valve in the essential service water system.

The amount of $50,000 was electronically transferred on December 30, 1992, to the U. S. Nuclear Regulatory Commission, payable to the Treasurer of the United States.

If you have any questions concerning this matter, please contact me at (316) 364-8831, extension 4000 or Mr. Kevin J. Moles of my staff at extension 4565.

Very truly yours,

BDWithers

Bart D. Withers
President and
Chief Executive Officer

BDW/jad

Attachment

cc: A. T. Howell (NRC), w/a
J. L. Milhoan (NRC), w/a
G. A. Pick (NRC), w/a
W. D. Reckley (NRC), w/a
Document Control Desk (NRC), w/a

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COUNTY OF COFFEY)

Bart D. Withers, 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 content thereof; that he has executed that 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 B D Withers
Bart D. Withers
President and
Chief Executive Officer

SUBSCRIBED and sworn to before me this 5 day of Jan. , 199~~2~~3.

Marlin Heacharman
Notary Public

Expiration Date 8-4-94

MARLIN HEACHARMAN
NOTARY PUBLIC
STATE OF KANSAS

Violation 9230-I: Failure To Revise Work Request

Finding:

I. Technical Specification (TS) 6.8.1.a states that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Regulatory Guide 1.33, Revision 2 (February 1978), Appendix A, Item 9.a states that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions or drawings appropriate to the circumstances.

Step 3.C of Attachment 8 to Procedure ADM 01-057, states that post-maintenance tests shall be performed according to instructions provided in the planning and authorization process and that if the scope of the work changes or expands from the original plans, the work request shall be revised providing further directions. Step 4 of Attachment 8 to ADM 01-057 states that since corrective maintenance is performed to correct a deficient condition, most corrective maintenance should have post-maintenance testing associated with it to verify the equipment functions properly.

Contrary to the above, on July 22, 1992, while implementing WR 51543-92, licensee personnel expanded the scope of the work being performed under WR 51543-92 and did not revise WR 51543-92 in order to provide further directions for the post-maintenance test of valve EF V058. The mechanic who was implementing WR 51543-92 did not revise the work request to indicate a change of work scope to perform corrective work (i.e., a valve position indication adjustment) on valve EF V058. In addition, although corrective work was done, the work request was not revised to require post-maintenance testing to verify that valve EF V058 had been returned to its required locked and throttled position. On August 27, 1992, the licensee determined that valve EF-V058 had not been returned to its required position, thereby causing a degraded ESW flow condition.

Admission Or Denial Of The Alleged Violation:

Wolf Creek Nuclear Operating Corporation (WCNOC) acknowledges this violation of failure to revise a work request to indicate a change of work scope and to require post-maintenance testing to verify that valve EFV058 had been returned to its required locked and throttled position.

Reason For The Violation:

On July 22, 1992, biennial preventive maintenance activities were implemented for five Essential Service Water Train "A" throttle valves

in accordance with Work Request 51543-92. The work request instructions required an inspection of the actuator and verification that operations personnel returned the valve to the proper position. Also, the work request specified an inservice post-maintenance test that required stroking each valve. During the performance of the preventive maintenance, it was identified that valve EFV058 had three broken worm sector gear teeth. A corrective work request was initiated to document the broken gear teeth in valve EFV058. Following completion of the preventive maintenance, the five valves were stroked. Valve EFV058 was only partially stroked because of the broken gear teeth and was believed to have been fully opened and returned to its required throttled position.

A detailed investigation into the circumstances surrounding the event was conducted. Two possibilities exist for this event to occur: the valve itself is mispositioned, or the reference point for the valve position is changed, thereby causing the valve to be mispositioned. Several scenarios for these possibilities were explored and various supporting and refuting evidence considered. These scenarios included: the reference point being inadvertently changed by accumulated tolerance and wear of the cover plate and pointer, the dial indicator being adjusted during the preventive maintenance activities, the valve was incorrectly positioned to the reference point, the valve was manipulated after setting in order to be locked with a chain, the valve was damaged internally by previous operational events, or the valve was damaged internally from an accumulation of tolerance slippage caused by the same over-torque event which caused the broken sector gear teeth.

On the basis of the facts obtained, the most likely cause of the mispositioning of valve EFV058 was a combination of accumulated tolerance and wear of the cover plate and pointer, and the accuracy of the dial and pointer is not adequate for the required accuracy of the valve setting. Potential contributing factors are: parallax induced error, potential damage from previous operational events, and ambiguous work instructions.

Corrective Steps That Have Been Taken And The Results Achieved:

Information tags have been installed on valves similar in design and which are used in a throttled position as valve EFV058 to require flow measurements before and after valve manipulations to ensure flow is restored to target values. These flow measurements will be accomplished as an interim measure until precise indicator dials can be installed on the valves. WCNOC is in the process of conducting a review of Preventive Maintenance work instructions for any potential ambiguities. A preliminary assessment of this review for ambiguous work instructions associated with all safety related preventive maintenance activities indicates that work instructions provide clear instructions appropriate for the complexity of the task being performed.

Corrective Steps That Will Be Taken To Avoid Further Violations:

Changes to make the indicator dials more precise will be made for the appropriate valves that are in the throttled position to ensure readability of the position of the valve. This will help the operators to restore the valves to their exact position following valve manipulations. A work request has been initiated to inspect the internals of valve EFV058 during the sixth refueling outage for any potential damage associated with previous operational events. Also, the total cumulative tolerance of the cover plate and pointer will be measured to determine if the total possible accumulation is greater than or equal to the equivalent of one degree on the indicator dial.

Date When Full Compliance Will Be Achieved:

Installation of the indicator dials will be completed prior to startup from the sixth refueling outage. The inspection of valve EFV058 for internal damage and the total cumulative tolerance of the cover plate and pointer will be completed prior to startup from the sixth refueling outage. The final evaluation of the results of the review for ambiguous work instructions will be completed by January 15, 1993. The corrective actions developed based on the results of the final evaluation will be completed by June 30, 1993.

Violation 9230-II.A.1: Failure To Incorporate Procedure Change

Finding:

II.A. 10 CFR 50, Appendix B, Criterion V requires that activities affecting quality shall be accomplished in accordance with instructions, procedures, or drawings of a type appropriate to the circumstances. Three examples of failing to meet this requirement are listed below:

1. Procedure ADM 07-100, Revision 50, "Preparation, Review, Approval, and Distribution of WCGS Procedures," provides guidance for modifying procedures.

   Step 5.3 of ADM 07-100 states that, "It is the responsibility of all Station Personnel to ensure that procedures are properly written and modified."

   Contrary to the above, on October 3, 1992, the inspector determined that the licensee failed to ensure that Procedure Change Form MI 92-644, initiated on August 31, 1992, was promptly incorporated into Procedure CKL EF-120, Revision 17, "Essential Service Water Valve, Breaker, and Switch Lineup." Consequently, Procedure CKL EF-120, did not reflect the proper locked throttled position (i.e., 47 degrees open) for valve EF V058.

Admission Or Denial Of The Alleged Violation:

WCNOC acknowledges this violation of failure to incorporate a procedure change into Procedure CKL EF-120, Revision 17.

Reason For The Violation:

On August 28, 1992, the Shift Supervisor initiated a Procedure Change Form (PCF) to revise Procedure CKL EF-120, "Essential Service Water Valve, Breaker, and Switch Lineup," Revision 17, to list the correct locked valve position for valve EFV058. The position of the valve was changed from 50 degrees open to 47 degrees open following the performance of temporary procedure TP-TS-115, "ESW Train A Flow Verification to CCW Heat Exchanger," subsequent to the repair of the actuator for valve EFV058 on August 28, 1992. The PCF was routed to the Manager Operations to be signed so that a tracking number could be assigned. Concurrently, revision 18 of procedure CKL EF-120 was also with the Manager Operations for signature to finalize the procedure. The PCF was signed on August 31, 1992 by the Manager Operations and was assigned a tracking number (MI 92-644). An interoffice correspondence memorandum was sent to the personnel involved with revising procedure CKL EF-120 to notify them of PCF MI 92-644 so that it could be incorporated into revision 18 of the procedure before it was finalized. However, the interoffice correspondence memorandum was not received by the personnel. An investigation into this event could not determine

what had happened to the memorandum. Because the memorandum was not received by the appropriate personnel, the changes noted on PCF MI 92-644 were not incorporated into the procedure prior to revision 18 of CKL EF-120 being signed by the Manager Operations on September 12, 1992.

Although the interoffice correspondence memorandum was not received by the appropriate personnel, the Operations Procedure Tracking Clerk also verifies that the PCFs outstanding towards a procedure are incorporated into the procedure prior to giving it to the Manager Operations for signature. However, since revision 18 of procedure CKL EF-120 was already with the Manger Operations for signature when PCF MI 92-644 was initiated on August 28, 1992, verification by the Operations Procedure Tracking Clerk did not reveal the new PCF.

Corrective Steps That Have Been Taken And Results Achieved:

Upon discovery of this situation, a PCF was immediately initiated to revise procedure CKL EF-120, revision 18 to list the correct locked valve position for valve EFV058 as 47 degrees open. Also, the Operations Procedure Tracking Clerk was instructed to send all interoffice correspondence memos concerning the initiation of a PCF to the affected personnel responsible for the revising of a procedure rather then the person that initiated the PCF. The Operations Procedure Tracking Clerk has been instructed to ensure that the PCFs outstanding towards a procedure are incorporated into the procedure after the Manager Operations has signed the procedure. This will ensure that all PCFs which are outstanding to an Operations procedure are incorporated before the procedure is issued. Operations shift clerks have been instructed to review newly issued procedures received in the Control Room against all of the PCFs for the previous revision to ensure that all PCFs have been incorporated into the new revision of the procedure.

Corrective Steps That Will Be Taken To Avoid Further Violations:

Procedure ADM 02-011, "Shift Clerk Qualifications and Responsibilities," has been revised to require Operations shift clerks to ensure that all PCFs outstanding for a procedure have been incorporated into the new revision of the procedure when it is received in the Control Room. Procedure ADM 02-106, "Procedure Update and Two-Year Review," has been revised to require the Operations Procedure Tracking Clerk to send the interoffice correspondence memorandum to the personnel responsible for revising a procedure when a new PCF is initiated and when a procedure is currently in the process of being revised. This will ensure that all PCFs will be incorporated into the appropriate procedure. Also, procedure ADM 02-106 has been revised to require the Operations Procedure Tracking Clerk to verify that all outstanding PCFs have been incorporated into a procedure after the procedure has been signed by the Manager Operations. A letter has been issued to all Shift Supervisors and Operations shift clerks which notifies them that a log has been established to track interoffice correspondence memorandums which have been issued to inform personnel of the initiation of a PCF to a procedure in the revision process. This logging system will allow for tracking of the interoffice correspondence memorandums to ensure that in the future the memorandums are received by the appropriate personnel.

Date When Full Compliance Will Be Achieved:

Full compliance has been achieved.

Violation 9230-II.A.2: Failure To Provide Adequate Procedural Guidance

Finding:

II.A. 10 CFR 50, Appendix B, Criterion V requires that activities affecting quality shall be accomplished in accordance with instructions, procedures, or drawings of a type appropriate to the circumstances. Three examples of failing to meet this requirement are listed below:

2. Temporary Procedure TP-TS-115, Revision 0, "A Train ESW Flow Verification to CCW Heat Exchanger," provides instructions to measure the essential service water flow through Component Cooling Water Heat Exchanger A.

Step 2.3.1 of Temporary Procedure TP-TS-115 provided an expected flow value and acceptable range of flow, and required that if the flow variance was greater than ± 200 gallons per minute, a work request should be sent to system engineer for evaluation.

Contrary to the above, the inspector determined that Step 2.3.1 provided instructions that were inappropriate to the circumstances. Although the procedure provided acceptance criteria in Step 2.3.1, there was no guidance that indicated that the system would be inoperable if the measured flow was greater than the acceptance criteria. On August 28, 1992, the test results did exceed the acceptance criteria, but the test engineer informed the shift supervisor that the test had been completed satisfactorily. As a result, the licensee prematurely exited Technical Specification Limiting Condition for Operation (LCO) 3.7.3 (Component Cooling Water System).

Admission Or Denial Of The Alleged Violation:

WCNOC acknowledges this violation of failure to provide adequate procedural guidance in Temporary Procedure TP-TS-115 which caused Technical Specification 3.7.3 to be prematurely exited.

Reason For The Violation:

On August 27, 1992, during the performance of Temporary Procedure TP-TS-115, "A Train Essential Service Water Flow Verification to Component Cooling Water Heat Exchanger," which was accomplished in order to simulate post-Loss of Coolant Accident flow rates for Essential Service Water (ESW) Component Cooling Water Heat Exchanger "A", it was discovered that ESW flow was below the required design flowrate. Temporary Procedure TP-TS-115 was conducted to verify that design basis flow could be achieved because engineers had previously identified a lower normal service water flowrate than that established during the fifth refueling outage. It was subsequently determined that the ESW system from Component Cooling Water Heat Exchanger "A" Bypass Valve

EFV058 was mispositioned. Following discovery of the mispositioned valve, the valve was stroked closed to verify its position. When the valve was stroked closed, the valve's gear mechanism failed, which caused the valve to be stuck in the closed position. At 1630 CST, the Shift Supervisor declared Train "A" of the Emergency Core Cooling System (ECCS) and Component Cooling Water System (CCWS) inoperable and entered Technical Specifications 3.5.2 and 3.7.3.

Following the discovery of the low flow condition the System Engineer, Test Engineer, and the Supervising Engineer held discussions concerning the design flow acceptance criteria of 7293 gallons per minute (gpm) required to make Train "A" of the ECCS and CCWS operable. From these discussions, the Test Engineer believed that any flowrate above 7293 gpm would be acceptable. The Supervising Engineer assumed that it was understood that an engineering evaluation would have to be performed for any flowrate obtained other than the acceptance criteria of 8055 ±200 gpm specified in Temporary Procedure TP-TS-115 before declaring the systems operable and exiting Technical Specifications 3.5.2 and 3.7.3. This criteria was also discussed during a pre-job briefing held on August 25, 1992 prior to the original performance of the temporary procedure.

On August 28, 1992, following the repair of the gear mechanism for valve EFV058, Temporary Procedure TP-TS-115 was reperformed to verify the flowrate through Component Cooling Water Heat Exchanger "A". Although plant conditions had changed since the original performance of the temporary procedure, a pre-job briefing was not conducted prior to the reperformance of the temporary procedure. During reperformance of the temporary procedure, the measured flowrate through the heat exchanger was 8536 gpm. Believing that 7293 gpm was the minimum criteria, the Test Engineer informed the Control Room that an acceptable flowrate was obtained through Component Cooling Water Heat Exchanger "A". The temporary procedure did not clearly specify that a flowrate greater than 8255 gpm would cause the system to be inoperable, nor was the acceptance criteria emphasized in the body of the procedure. At 1707 CST, the Control Room declared Train "A" of the ECCS and CCWS operable and exited Technical Specifications 3.5.2 and 3.7.3 based on the information provided by the Test Engineer.

During a review of the results of the temporary procedure by the Test Engineer and the Supervising Engineer, the Supervising Engineer discovered that the flowrate through the heat exchanger was 8536 gpm. This flowrate was not within the acceptance criteria of the temporary procedure. The Supervising Engineer informed the Control Room, Train "A" of the ECCS and CCWS were declared inoperable and Technical Specifications 3.5.2 and 3.7.3 were reentered, referencing back to the original entry time. On August 28, 1992, at 2134 CST, Technical Specifications 3.5.2 and 3.7.3 were exited and Train "A" of the ECCS and CCWS were declared operable after a flowrate of 7933 gpm was obtained through the heat exchanger by correctly repositioning valve EFV058.

Corrective Steps That Have Been Taken And The Results Achieved:

When the Supervising Engineer discovered that the flowrate through Component Cooling Water Heat Exchanger "A" was outside the acceptance criteria of Temporary Procedure TP-TS-115, the Control Room was immediately contacted and Train "A" of the ECCS and CCWS were declared inoperable. The temporary procedure was reperformed and Train "A" of the ECCS and CCWS were declared operable after an acceptable flowrate was obtained through the heat exchanger.

Corrective Steps That Will Be Taken To Avoid Further Violations:

Procedure ENG 09-506, "Results Engineering Pre-Job Check List," has been revised to require a new pre-job briefing for any job which undergoes a change in plant status, delay in work, or as directed by the Supervisor Results Engineering. Also, a Procedure Writer's Guide Check List has been developed for the Results Engineering Administrative Document and is required to be used during the approval process by the initiator, reviewer, and supervisor for all revision 0 testing procedures and as directed by the Supervisor Results Engineering. This check list requires, in part, that the acceptance criteria and the steps taken when the acceptance criteria is not met be clearly emphasized in the procedure.

Date When Full Compliance Will Be Achieved:

Full compliance has been achieved.

Violation 9230-II.A.3: Failure To Perform Operability Determination

Finding:

II.A. 10 CFR 50, Appendix B, Criterion V requires that activities affecting quality shall be accomplished in accordance with instructions, procedures, or drawings of a type appropriate to the circumstances. Three examples of failing to meet this requirement are listed below:

3. Procedure ADM 02-024, Revision 0, "Technical Specification Operability," provides guidance for determining operability of systems needed to comply with TS.

Step 5.9.1 of Procedure ADM 02-024 states that, "Once a degraded or nonconforming condition is identified for a safety system or component, an operability determination shall be made as soon as possible. The timeliness of the operability determination should be commensurate with the safety significance of the issue. The allowed outage time contained in Technical Specification LCOs provide reasonable guidelines for determining safety significance."

Contrary to the above, the licensee did not perform an operability determination for the component cooling water system within the Technical Specification allowed outage time of 72 hours after a potentially non-conforming condition was identified on August 17, 1992.

Admission Or Denial Of The Alleged Violation:

WCNOC denies the alleged violation.

Reason For Denial Of The Violation:

Procedure STN PE-037, "ESW Heat Exchanger Flow and Differential Pressure Trending," was performed on August 17, 1992, as part of the quarterly heat exchanger performance testing to meet the requirements of Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment." During the performance of STN PE-037, the normal service water flowrate through Component Cooling Water Heat Exchanger "A" was determined to be 836 gallons per minute (gpm) below the expected value of 7200 gpm. However, there were precautions in the procedure which stated that flowrates through the heat exchangers will vary dependent on the weather conditions. Normal service water flow through the heat exchangers is reduced during cold weather to prevent overcooling of the Component Cooling Water System components. The test engineers verified various aspects of the test to determine if the data taken was valid. It was concluded that there was not an operability concern with Component Cooling Water Heat Exchanger "A". Work Request 4174-92 was written on August 17, 1992, to document the nonconformance and to

discuss the situation with the Shift Supervisor. The Shift Supervisor concurred with the conclusions of the test engineers and determined that the heat exchanger was operable per Technical Specification 3.7.3. This is so documented on Work Request 4174-92. Therefore, an operability determination was made within the Technical Specification 3.7.3 allowed outage time of 72 hours after the potentially non-conforming condition was identified on August 17, 1992.

Violation 9230-II.B: Failure To Properly Translate Vendor Information Into Appropriate Administrative Controls

Finding:

II.B. 10 CFR 50, Appendix B, Criterion XVI specifies, in part, that measures shall be established to assure that conditions adverse to quality, such as deficiencies and nonconformances are promptly identified and corrected. Procedure KGP-1311, Revision 0, "Industry Technical Information Program," (dated July 2, 1986) is intended to ensure, in part, that industry experience is translated into corrective actions, if required, to improve plant safety and reliability.

Step 6.4.4 of Procedure KGP-1311 specifies that the evaluation of industry technical information shall identify any corrective actions that are required to be implemented.

Contrary to the above, in September 1992, the licensee determined that they failed to properly translate vendor information into appropriate administrative controls. While evaluating the facts surrounding the failure of the worm sector gear of valve EF V058, the licensee determined that Operator Aide 86-004 failed to prevent the adverse condition (i.e., broken worm sector gear) because the information provided was ambiguous.

Admission Or Denial Of The Alleged Violation:

WCNOC acknowledges this violation of failure to properly translate vendor information into appropriate administrative controls.

Reason For The Violation:

Fisher Anomaly Notice (FAN) 86-2 was issued on December 15, 1986 to address operational limitations that must be placed on certain Fisher Size 2, Type 1073-1076, manual valve actuators in order to prevent potential failure of the actuator. Specifically, the failure of 3/4 inch wide cast iron sector gear teeth in the actuators. Industry Technical Information Program (ITIP) 0221 was issued to evaluate whether FAN 86-2 was applicable to WCNOC.

An initial review was conducted in which it was identified that six valves were installed at Wolf Creek Generating Station that had Fisher Size 2, Type 1073 manual valve actuators. However, it was indeterminate whether 3/4 inch or 1 3/8 inch wide cast iron sector gear teeth were installed in the actuators. As a conservative measure the actions required by the FAN were implemented for the six valves until it could be verified what size sector gear teeth were actually installed in the actuators. The FAN required, in part, that operational procedures be established to ensure that the applied torque limitation of 8000 inch-pounds is not exceeded. Therefore, operator aids were installed on the subject valves which stated that the use of torque in excess of 8000 inch-pounds (666 foot-pounds) may damage the valve operator. However,

because of the ambiguity of the FAN, the information provided on the operator aids did not provide adequate or correct guidance for valve operation limitations. The 8000 inch-pounds (666 foot-pounds) limitation stated actually applied to the output torque of the actuator, not the handwheel input. The maximum handwheel input force and corresponding output torque, which is required to prevent breakage of the 3/4 inch wide sector gear teeth, is considerably less than the value stated on the operator aids.

Inspections were conducted in January 1987 to determine what size sector gear teeth were actually installed in the actuators. These inspections discovered that 1 3/8 inch sector gear teeth were installed in all six of the subject valves. Therefore, the FAN did not apply to WCNOC and the operator aids should have been removed following the inspection. However, the operator aids, which provided incorrect operator guidance, were not removed from the valves until the investigation was conducted following the discovery of the mispositioning of valve EFV058 on August 27, 1992.

Corrective Steps That Have Been Taken And The Results Achieved:

Following the discovery of the mispositioning of valve EFV058 on August 27, 1992, a Hardware Failure Analysis Request (HFAR) was initiated to evaluate the failure of the worm sector gear teeth. The broken worm sector gear teeth was previously identified during preventive maintenance on July 22, 1992. During the investigation of the HFAR the incorrect operator aids were discovered and removed from the applicable valves.

Corrective Steps That Will Be Taken To Avoid Further Violations:

The HFAR has been placed in Operations Required Reading to ensure Operations personnel are better informed of the operational characteristics of valve EFV058 and similar valves. New operator aids are being prepared to be installed on the appropriate valves to ensure that the operators are aware of the maximum force that can be applied to the valve's handwheel without damaging the sector gear teeth. Also, precise indicator dials are being prepared for the appropriated valves that are in the throttled position to ensure readability of the position of the valve. This will help the operators to restore the valves to their exact position following valve manipulations.

Date When Full Compliance Will Be Achieved:

Full compliance will be achieved prior to startup from the sixth refueling outage, upon installation of the operator aids and indicator dials.