

WOLF CREEK

NUCLEAR OPERATING CORPORATION

Neil S. "Buzz" Carns
Chairman, President and
Chief Executive Officer

February 2, 1996
WM 96-0014

L. J. Callan, Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Subject: Docket No. 50-482: Wolf Creek Icing Event Shutdown

Dear Mr. Callan:

This letter documents the actions being taken by Wolf Creek Nuclear Operating Corporation (WCNOC) prior to restart of the plant from the forced outage that began on January 30, 1996. This letter is being submitted as discussed on February 2, 1996 between Mr. L. J. Callan and Mr. N. S. Carns. WCNOC has initiated twenty-four hour on-site forced outage management until causes of the equipment conditions are identified and repairs completed. WCNOC will brief the NRC on the status of the equipment conditions and repairs prior to initiating any planned MODE changes. It is not anticipated that this would occur until Monday, February 5, 1996.

On January 30, 1996, at 0337 CST, operators in the Control Room manually tripped the reactor due to ice build up on the circulating water screens inhibiting flow to the circulating water pumps and into the plant. All engineered safety features actuated and performed as expected except five control rods did not indicate position on the bottom of the reactor. As part of the initial actions taken when the ice was noticed on the circulating water screens, the "A" and "B" Essential Service Water (ESW) pumps were started at 0211 and 0223 respectively. At 0747 the "A" ESW pump was placed in "Pull-to-Lock" due to bay level fluctuations. The "B" ESW train did not experience the same conditions and remained operable. At 0750 the Turbine Driven Auxiliary Feedwater Pump (TDAFWP) was declared inoperable due to a packing leak. Based on the inoperability of the TDAFWP and the "A" ESW train a Notification of Unusual Event (NUE) was declared at 0846 as an administrative decision to put plant personnel on heightened awareness. The plant was cooled down to MODE 5 to investigate and correct various equipment conditions which are discussed below.

ESW System

The icing conditions which resulted in the inoperability of the "A" ESW Pump were eliminated during the evening of January 31, 1996. Portable equipment was used to inject a mixture of warm water and compressed air into the water near the frozen trash racks. A temporary plant modification to provide "air bubblers" upstream of the trash racks was installed. The purpose of this modification is to prevent ice formation on the trash racks by providing agitation and mixing.

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The following contingency actions have been implemented and will be taken whenever lake temperature is 40°F or lower until long term actions are implemented:

- Air bubblers will be maintained in each outer bay. As a minimum, two air compressors are located at the ESW pumphouse. A minimum of one air compressor is aligned for bubbling the outer bays with an additional compressor as a backup.
- Tents will be maintained over the grating of the outer bay to provide additional freeze protection.
- A dedicated cognizant individual will be stationed at the ESW pumphouse 24 hours a day. This individual will: 1) monitor the air compressors 2) monitor the tents and 3) watch for formation of ice in the outer bays. The Control Room will be notified immediately upon compressor failure, tent degradation or ice formation in the outer bays.

The "A" ESW Pump was started at 0248 on February 1, 1996 and continued to operate without further icing problems. The "A" ESW Pump was declared operable at 1005 on February 2, 1996. Operability of the "A" ESW train is based on verification of satisfactory pump performance and implementation of the above actions. The Notification of Unusual Event (NUE) was terminated at 1005 on February 2, 1996, after returning the "A" ESW Pump to service and assuring that the icing problems did not recur during the night when temperatures dropped.

Wolf Creek Nuclear Operating Corporation (WCNOC) is taking the following additional actions to assure continued operability of the ESW System:

- Cold weather preparations and equipment lineups in place prior to and during this event will be reviewed and evaluated. Appropriate procedures will be revised if necessary.
- The lessons learned from the icing problems encountered at the Circulating Water Screenhouse will be captured and incorporated into the appropriate operational procedures and training.
- Design adequacy of the ESW System for cold weather operations will be reviewed and actions taken as appropriate.
- Design adequacy of the Service Water and Circulating Water System for cold weather operations will be reviewed and actions taken as appropriate.

Control Rods

After the reactor trip, Control Room personnel identified that five control rod assemblies at core locations H-2, F-6, K-6, K-10 and H-8 failed to fully insert into the core. Approximately 45 minutes after the trip, the Digital Rod Position Indication System indicated that all rod assemblies were on the bottom. Four of the rod assemblies were silver-indium-cadmium filled and one was hafnium filled. All five control rod assemblies are clad with stainless steel tubing and are Region 8 assemblies.

WCNOC is taking the following actions to assure the proper functioning of the rod assemblies:

- Perform rod drop testing in MODE 5 on those rod assemblies that failed to fully insert for repeatability.
- Perform rod drop testing in MODE 5 on all rod assemblies. If an assembly exhibits problems in the dashpot region, additional testing will be performed on that assembly for repeatability.
- The rod traces from this testing will be evaluated to determine rod performance prior to entry and following entry into the dashpot region. Based on these evaluations, additional testing at the appropriate plant conditions may be performed.

Reactor Vessel Conoseal

Following the plant shutdown, a walkdown of portions of the Reactor Coolant System (RCS) for boric acid buildup was performed per AP 16F-001, "Boric Acid Corrosion Monitoring Program." This walkdown identified a very small deposit of boric acid and a small active leak ("wisp" of steam) on the "A" conoseal marman clamp (reactor vessel penetration #77). The small amount of boric acid is indicative of the current low RCS boric acid concentration and the probability that the duration of the leak has been short. The leak is characterized as being less than 60 drops per minute (dpm) (~3 cc/min). The amount of leakage is not significant and is acceptable for continued operation. During the eighth refueling outage (scheduled to begin March 2, 1996), this clamp will be removed, inspected and reworked as appropriate.

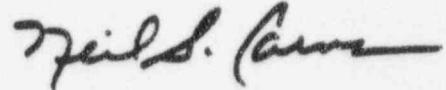
Turbine Driven Auxiliary Feedwater Pump

While stabilizing the plant in MODE 3, the Turbine Driven Auxiliary Feedwater Pump (TDAFWP) inboard (low pressure end) seal packing failed and the pump was declared inoperable due to shaft leakage. Further review determined that the TDAFWP would have performed its intended safety function with the failed packing. The inboard seal packing was replaced. The TDAFWP will be operated for one hour after entry into MODE 3 to verify seal packing operation. Operability of the TDAFWP will be verified in MODE 3 in accordance with Surveillance Requirement 4.7.1.2.1.

A WCNOC Incident Investigation Team is being initiated to investigate the cause of this event and associated equipment conditions. Should WCNOC's ongoing investigation of this event identify any concerns that could affect the operability of the ESW system or proper control rod functioning, appropriate action will be implemented to maintain the plant in a safe condition and the NRC will be notified.

If you have any questions concerning this matter, please contact me at 316-364-8831, extension 4000 or Mr. William M. Lindsay at extension 8760.

Very truly yours,



Neil S. Carns

NSC/jra

cc: W. D. Johnson (NRC)
J. F. Ringwald (NRC)
J. C. Stone (NRC)
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