

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

John A. Bailey  
Vice President  
Operations

February 22, 1991

NO 91-0065

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Station P1-137  
Washington, D. C. 20555

Reference: 1) Letter NO 91-0027 dated January 23, 1991 from J. A. Bailey, WCNOG to R. D. Martin, NRC  
2) Letter dated January 24, 1991 from S. J. Collins, NRC to B. D. Withers, WCNOG  
Subject: Docket No. 50-482: Request for Temporary Waiver of Compliance - Technical Specification 3.3.2, Table 3.3-1, ESFAS Containment Pressure Channels

Gentlemen:

The purpose of this letter is to request a temporary waiver of compliance from Technical Specification requirements governing the testing of Engineered Safety Features Actuation System (ESFAS) containment pressure inputs for the initiation of Safety Injection (SI) and Steam Line Isolation (SLI). Wolf Creek Nuclear Operating Company (WCNOG) requests approval of this waiver request by February 28, 1991.

Wolf Creek Generating Station has experienced spurious spiking on one of three channels of containment pressure that provide input to ESFAS for actuation of SI and SLI. While performing the monthly Analog Channel Operational Tests (ACOTs) these containment pressure channels are placed in "test" mode, generating a trip input to the ESFAS logic. The receipt of a spike, such as those recently observed, during testing of another containment pressure channel would complete the two-of-three ESFAS logic and result in a full SI and SLI actuation and a reactor trip.

Reference 1 previously requested a temporary waiver of compliance because of spurious spiking on the containment pressure channel. Reference 2 approved the requested temporary waiver of compliance. Efforts to eliminate the spiking on channel 934 have been unsuccessful to date resulting in a condition which could recur. WCNOG is continuing to apply the necessary resources to repair the pressure channel in an expeditious manner.

9102260307 910222  
PDR ADDOC 05000482  
F PDR

86 114

ADD 1

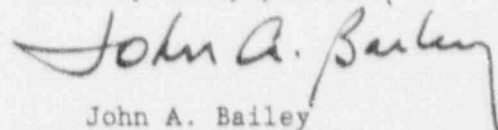
WCNOC will submit Technical Specifications changes by March 8, 1991 to increase the surveillance testing interval from monthly to quarterly for these channels and to revise the associated action statements. A temporary waiver of compliance is requested as time does not allow for use of existing NRC procedures for processing an exigent or emergency license amendment. The increase in the surveillance testing interval is expected to provide sufficient time to complete repairs of the spiking containment pressure channel.

Because of the increased vulnerability to such an unnecessary plant transient, WCNOC requests a temporary waiver of compliance to allow the spiking containment pressure channel to be removed from service for up to two hours during performance of the next scheduled ACOTs. The first of these tests is required to be completed by 2:32 a.m. on March 1, 1991.

The Attachment provides WCNOC's evaluation of the potential safety implications of this temporary waiver and concludes that there will be no significant decrease in plant safety or the level of protection afforded the health and safety of the public. This proposed temporary waiver of compliance has been reviewed and approved by the Plant Safety Review Committee.

If you have any questions concerning this matter, please contact me or Mr. H. K. Chernoff of my staff.

Very truly yours,



John A. Bailey  
Vice President  
Operations

JAB/sgw

Attachment

cc: A. T. Howell (NRC), w/a  
D. V. Pickett (NRC), w/a  
R. D. Martin (NRC), w/a  
M. E. Skow (NRC), w/a

## REQUEST FOR TEMPORARY WAIVER OF COMPLIANCE

## SPECIFIC REQUIREMENTS FOR WHICH A TEMPORARY WAIVER IS REQUESTED

Technical Specification 3.3.2, Table 3.3-3, Items 1.c and 4.c require that three (3) channels of the containment pressure input to Engineered Safety Features Actuation System (ESFAS) be OPERABLE. Technical Specification 4.3.2.1, Table 4.3-2, Items 1.c and 4.c require that an Analog Channel Operational Test (ACOT) be performed monthly on these channels. A channel is normally placed in "test" to perform the ACOT. In the "test" mode the channel gives a tripped indication to the ESFAS 2/3 logic circuitry. This results in a situation where the actuation of either of the remaining channels will initiate a Safety Injection (SI) and Steam Line Isolation (SLI) signals with an associated reactor trip.

One of the three containment pressure channels (934) is subject to intermittent spiking (a false indication of high pressure of very short duration). Therefore, while performing the ACOT on the other two channels, the plant would be vulnerable to a spurious SI/SLI actuation and reactor trip should a spike occur. It is desired, only on a limited basis, to remove the spiking channel from service during testing of the remaining two channels. This would place the ESFAS containment pressure in a configuration with two OPERABLE channels (two OPERABLE channels is the minimum required by Table 3.3-3). These two remaining OPERABLE channels would then be placed (one at a time) into "test" for performance of the ACOT. With one of these two channels in "test," actuation of the remaining channel would result in an actuation of the system and the completion of the safety functions. The total amount of time required for the testing of the two channels is expected to be less than two hours. Action 15 of Table 3.3-3 currently allows a channel to be out of service for only one hour prior to placing the channel in trip.

The Technical Specification completion dates for the ACOTs on the containment pressure channels are:

Channel	Due Date
934	March 4 2:16 a.m.
935	March 2 2:13 a.m.
936	March 1 2:32 a.m.

(Channel 937 does not input to the 2/3 logic for the SI or SLI trips.)

If the ACOTs are performed on the containment pressure channels in accordance with the current requirements there will be an increased probability of a spurious SI/SLI actuation with resulting reactor trip and plant transient. Such unnecessary challenges to safety equipment and plant operators are undesirable since they can result in unforeseen complications and can actually decrease the level of protection normally afforded to the health and safety of the public.

#### CIRCUMSTANCES LEADING TO NEED FOR TEMPORARY WAIVER

Spiking on channel 934 was initially observed on December 25, 1990. Troubleshooting and repair efforts were initiated at that time. These initial efforts included installation of monitoring instruments on the affected channel. Spiking was again observed on January 4, 1991 and the loop power supply was subsequently replaced. On January 20, 1991, spiking was again observed on this channel. Troubleshooting has indicated that these spikes originated in the field portion of the circuit. Efforts to repair this instrument loop are continuing but are not expected to be completed prior to the surveillance due date.

On January 23, 1991, WCNOG requested a temporary waiver of compliance from Technical Specification Table 3.3-1. The temporary waiver of compliance was approved by NRC Region IV on January 24, 1991. The performance of the monthly ACOTs on the containment pressure channels was completed satisfactorily. WCNOG has continued to monitor channel 934 and spiking was again observed on February 18, 1991. Only one of the observed spikes was of sufficient amplitude to cause the trip bistable to change states.

Review of the feasibility of replacing the pressure transmitter was performed. Although the transmitter is located outside of containment, replacement could necessitate a plant shutdown due to the location of the sensing lines and their potential impact on containment integrity.

A review of the containment pressure channel transmitter circuitry and the troubleshooting activities has indicated that the preferred repair process is the replacement of the transmitter electronic circuit board. A spare identical range transmitter was obtained from the warehouse and bench testing conducted with a generic commercial circuit board to determine if the circuit board was compatible for use in channel 934. The results of this testing were inconclusive. A second identical range transmitter was obtained from the warehouse. The circuit board was removed from this transmitter and installed in the first spare transmitter and bench testing was conducted. From this testing and discussions with the vendor WCNOG concluded that the circuit boards are not compatible with other similar transmitters. The parameter values of the components on the circuit board are adjusted and the values documented during the manufacturing process for the specific transmitter. On February 11, 1991, a Purchase Request was initiated to procure a replacement circuit board. In the procurement process it was identified that no spare circuit boards for a specific transmitter are available and a new board would have to be manufactured with the specific parameter values for the channel 934 pressure transmitter. Delivery and installation of the new circuit board is expected to be completed by March 4, 1991. It is expected that replacement of the circuit board will correct the spiking problem.

### COMPENSATORY ACTIONS

No compensatory actions have been identified as appropriate for this condition. The removal of channel 934 from service and subsequent testing of the other channels will be accomplished in accordance with specific procedures which will be reviewed and approved in accordance with applicable administrative controls.

### SAFETY SIGNIFICANCE AND POTENTIAL CONSEQUENCES

The requested deviation would not result in any significant decrease in safety. As discussed below, removing a single channel from service for a short period of time has been shown by analysis to result in negligible increases in the probability of an ESFAS failure resulting in core damage.

In the proposed configuration, the containment pressure input to ESFAS would remain operable with one channel out of service and one channel in a tripped condition ("test" mode). For this short period of time the system would rely on a single input channel to function in the event of a high containment pressure condition. Other plant parameters also provide ESFAS initiation for postulated LOCA and Steam Line Breaks (e.g., low pressurizer pressure and low steam line pressure). These inputs would be unaffected by this proposed temporary waiver and would serve as redundant initiating signals to the ESFAS.

Probabilistic analysis indicates that the proposed change would have a very small impact on overall reliability of the ESFAS and the calculated core melt frequency. The Westinghouse Owners Group (WOG) has conducted extensive reviews of the affect of allowable outage times and test frequencies on both the Reactor Protection System (RPS) and ESFAS. For the ESFAS, this analysis is documented in WCAP-10272, "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System." The analysis in WCAP-10272 supports several relaxations in the current technical specifications on ESFAS. Relative to analog channels such as containment pressure for SI and SLI, the analysis justifies an increase in the testing interval from monthly to quarterly and an increase in the time allowed for an inoperable channel during testing to four hours. The four hours allowed for testing assumes that the testing is done with the channel in bypass.

The aggregate of the proposed changes contained in the WCAP was calculated to increase the core melt frequency by only 2.4%. This calculated increase is due primarily to less frequent surveillance requirements. This analysis has been reviewed by the NRC and such increase found to be acceptable. The WCAP analysis (supplemented by an evaluation conducted for the NRC by Brookhaven National Laboratory) has been accepted by the NRC as a basis for proposed changes to the Technical Specifications (Reference: Letter dated February 22, 1989, from Charles E. Rossi (NRC) to Roger A. Newton (WOG)).

WCNOC will submit Technical Specifications changes by March 8, 1991 to increase the surveillance testing interval from monthly to quarterly and to revise the associated action statements. The conclusions reached by the WOG and approved by the NRC remain valid relative to the very small impact on core melt frequency due to this temporary waiver.

Efforts to eliminate the spiking on channel 934 have been unsuccessful to date resulting in a condition which could recur. Therefore, a temporary waiver of compliance is requested as time does not allow for use of existing NRC procedures for processing an exigent or emergency license amendment. Increasing the surveillance testing interval will provide additional time to complete repairs of the spiking containment pressure channel.

#### SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

This proposed temporary waiver is bounded by analysis of broader changes to the ESFAS Technical Specifications documented in WCAP-10272 and its supplements. This proposed temporary waiver would allow the removal of one ESFAS channel of containment pressure from service for up to two hours. Analysis of bypassing for up to four hours was evaluated by the WOG in combination with longer testing intervals and longer allowable outage times than currently contained in the Wolf Creek Generating Station (WCGS) Technical Specifications. These changes were reviewed and approved by the NRC based on the very small increase in core melt frequency involved. The change proposed by this temporary waiver would involve an even smaller increase since 1) it is proposed only on a limited basis; 2) other Technical Specification relaxations analyzed in the WCAP are not yet in place at WCGS; and 3) any increase in the core melt probability due to a failure of the ESFAS is partially offset by the reduced contribution of a possible transient due to an spurious ESFAS initiation caused by the spiking channel.

This proposed temporary waiver would not result in an increase in the severity or consequences of accidents as analyzed in the USAR since only the probability of ESFAS failure is involved and not the manner in which protection is afforded by the ESFAS nor the manner in which limiting criteria for ESFAS performance have been established.

The change proposed in this temporary waiver involves only the methodology used to test one input to the ESFAS system. There are no changes to the function of the ESFAS or other plant systems. Rather only the probability of a failure of the ESFAS is affected as discussed above. Therefore, this waiver does not create the possibility of a new or different kind of accident than those previously evaluated in the USAR.

The proposed temporary waiver does not alter the manner in which safety limits, limiting safety system setpoints or limiting conditions for operation have been determined. Potential increases in the probability of a failure of the ESFAS have been shown to be very small and are bounded by similar changes previously reviewed and approved by the NRC. Therefore, this proposed temporary waiver would not involve a significant reduction in any margin of safety.

#### ENVIRONMENTAL CONSEQUENCES

The effect of this change is limited to the methods used to test two channels of containment pressure input to the ESFAS. Operation of the plant is otherwise unaffected. Therefore there will be no impact on any effluents released by the plant during normal operations and no increased possibility of unplanned releases.

#### DURATION

As mentioned above, WCNOG has attempted to repair the spiking containment pressure channel with spare circuit boards available on-site. These attempts determined that replacement with existing boards was not possible and efforts have been initiated to manufacture and procure a specific board for the installed configuration. The requested waiver is needed only during the performance of the ACOTs on containment pressure channels 935 and 936. The completion of this testing is expected to require a total of less than two hours. This testing will be performed as soon as practical following receipt of NRC approval of this waiver request and in any case before the required completion dates noted above.

Efforts to eliminate the spiking on channel 934 have been unsuccessful to date resulting in a condition which could recur. Therefore, a temporary waiver of compliance is required as time does not allow for use of existing NRC procedures for processing an exigent or emergency license amendment. The increase in the surveillance testing interval which will be included in the proposed Technical Specification is expected to provide sufficient time to complete repairs of the spiking containment pressure channel.