May 8, 2003

Mr. Rick A. Muench
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
P.O. Box 411
Burlington, KS 66839

SUBJECT: WOLF CREEK GENERATING STATION - CORRECTION LETTER RE: ISSUANCE OF AMENDMENT NO. 151 ON PHYSICS TESTS EXCEPTIONS - MODE 2 (TAC NO. MB6474)

Dear Mr. Muench:

By letter dated April 22, 2003, the Commission issued Amendment No. 151 to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station. The amendment revised Limiting Condition for Operation 3.1.8, "Physics Tests Exceptions - Mode 2," of the Technical Specifications to reduce the required number of channels from four to three channels for certain functions in Table 3.3.1-1, "Reactor Trip System Instrumentation." The amendment was in response to your application dated October 1, 2002 (ET 02-0033).

It has been determined that certain pages in the safety evaluation supporting the amendment incorrectly (1) describe the P-10 interlock, (2) describe Conditions D and E of Limiting Condition for Operation (LCO) 3.3.1, and (2) state an acronym. Enclosed are the corrected pages with the corrections identified by vertical lines on the right hand side of the pages. They replace the pages in the safety evaluation issued in the letter dated April 22, 2003. The errors do not change the conclusions in the safety evaluation. We regret any inconvenience caused by these errors.

Sincerely,

/RA by Stephen Dembek for/

Jack Donohew, Senior Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure: Corrected Pages to Safety Evaluation

cc w/encl: See next page

May 8, 2003

Mr. Otto L. Maynard
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
P.O. Box 411
Burlington, KA 66839

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None of the above is changed by the proposed amendment.

In its application, the licensee proposed to add the phrase "and the number of required channels for LCO 3.3.1, "RTS Instrumentation," Functions 2, 3, 6, and 18.e may be reduced to 3 required channels" to the following phrase currently in LCO 3.1.8: "may be suspended, provided." Therefore, the proposed amendment reduces the number of required operable channels for the following RTS instrumentation that is listed in TS Table 3.3.1-1:

- Power range neutron flux-high (Function 2.a)
- Power range neutron flux-low (Function 2.b)
- Power range neutron flux rate-high positive rate (Function 3.a)
- Power range neutron flux rate-high negative rate (Function 3.b)
- Overtemperature deltaT (Function 6)
- Power range neutron flux P-10 interlock (Function 18.e)

where Functions 2.a and 2.b and Functions 3.a and 3.b comprise Functions 2 and 3 of TS Table 3.3.1-1.

Currently, TS Table 3.3.1-1 requires for Mode 2 that the above six functions have four operable channels. The proposed amendment would reduce the number of operable channels for the above six functions from four to three channels, but only for Mode 2 during physics tests. No other changes are being made to the RTS instrumentation for the six functions and none of the instrumentation for other functions in the table is being changed.

The above six functions involve the four power range neutron flux channels. Their purpose is to initiate (1) a reactor trip on high or low flux, high positive or negative rate of flux change, or overtemperature delta T, or (2) the P-10 interlock, at the allowable values specified in TS Table 3.3.1-1. The P-10 interlock (1) allows control room operators to manually block the intermediate power range and power range neutron flux - low trips, and automatically blocks the source range neutron flux trip, on increasing power, when two of the four power range neutron flux channels go above the upper P-10 allowable value in TS Table 3.3.1-1, and (2) automatically re-activates these trips, during power reduction, when three of the four channels go below the lower P-10 allowable value in the table. In addition, the power range neutron flux channels provide input to plant control functions. The effect of the proposed amendment on reactor trip, reactor trip interlock P-10, and plant control functions are discussed below.

3.1 Reactor Trip Function

To support its application, the licensee provided the following example as to how the amendment would be applied during physics testing. For the example of performance of bank reactivity worth measurements using the dynamic rod worth measurement (DRWM) process, the licensee stated that one power range neutron flux channel is used to provide input to the advanced digital reactivity computer (ADRC). The DRWM process is used to measure the integral reactivity worth of the control and shutdown banks by a method of dynamic insertion of the banks, in which the selected bank is fully inserted into and withdrawn from the core while reactivity changes in the core are measured by the ADRC. The insertion/withdrawal sequence would be repeated for each bank that is selected to determine its reactivity worth.

The licensee stated that when the DRWM process is currently used, the instrument power fuses associated with the power range neutron flux channel to be connected to the ADRC are removed, which results in that channel being bypassed for the RTS Functions 2, 3, and 6. In other words, when the instrument power fuses are removed for that power range neutron channel, the RTS functions of power range neutron flux-high (Function 2.a), power range neutron flux-low (Function 2.b), power range neutron flux rate-high positive rate (Function 3.a), power range neutron flux rate-high negative rate (Function 3.b), and overtemperature delta T (Function 6) are being bypassed. Because that channel cannot perform these RTS functions, the channel is inoperable and, in accordance with Conditions D and E of LCO 3.3.1, which are specified in TS Table 3.3.1-1, the channel would have to be placed in trip (i.e., the control power fuses are removed) within 6 hours and, since the plant is not above 5 percent rated thermal power in Mode 2 during physics testing, there would be no need to either reduce power below 75% RTP or perform Surveillance Requirement 3.2.4.2.

The licensee states further that once Conditions D and E for LCO 3.3.1 are entered they can not be exited until that power range neutron flux channel is disconnected from the ADRC and reconnected to the RTS functions (i.e., the normal system configuration is restored). This would not occur until the DRWM process for all the selected control rod banks is over. During this process, with one channel tripped, the trip logic for the power range nuclear instrumentation system (NIS) would be placed in a one-out-of-three coincidence status such that a spurious high signal on any of the other three power range neutron flux channels would result in a reactor trip. With the proposed amendment, the power range neutron flux channel connected to the ADRC during physics testing in Mode 2 would be bypassed, but not tripped, and the power range NIS trip logic would be in a two-out-of-three coincidence status, not one-out-of-three, which would preclude spurious signals from causing a reactor trip because signals in two channels would be needed for the reactor trip.

Therefore, to preclude spurious reactor trips during physics testing, the proposed amendment would reduce the number of required channels for the above six functions in TS Table 3.3.1-1 from four to three channels. This reduction in the number of channels would allow only three power range neutron flux channels to be required for reactor trips during physics testing and the coincidence trip logic for the three channels to be a two-out-of-three configuration. Thus, two channels would have to have signals for a reactor trip to occur and spurious signals should not cause a reactor trip unless they occur in two channels at the same time. Without the amendment, four channels would be required and, with one channel being used for other than reactor trip, the fourth channel would have to be put in a tripped condition. The coincidence trip logic for the other three channels would be a one-out-of-three configuration and, therefore, a spurious signal in any of the three channels would cause a reactor trip.

Therefore, the proposed amendment would allow the three power range neutron flux channels, which would be used for sensing reactor flux conditions needing a reactor trip during physics testing, to have a two-out-of-three coincidence trip logic configuration to initiate the reactor trip instead of the currently required (by Conditions D and E of LCO 3.3.1) one-out-of-three coincidence trip logic configuration.

- LCO 3.1.8 requires that the following three conditions are met: (1) RCS lowest operating loop average temperature is greater than or equal to 541°F, (2) the shutdown margin is within the limits specified in the COLR, and (3) the thermal power is less than or equal to 5 percent RTP.

- The intermediate range neutron flux trip is active and also provides reactor trip protection at these low power levels.

- During physics testing, the plant is held in a stable state with minimal changes in steam or feed flow.

- Physics testing is normally performed at the beginning of the operating fuel cycle with the minimum fuel burnup and decay heat.

- The shutdown margin is maintained above the required limits in the COLR and procedural controls are in place for monitoring plant parameters.

Based on this, the staff concludes that there is backup protection for the reduction in the number of required channels of power range neutron flux for Functions 2, 3, and 6.

3.3 Reactor Trip Interlock P-10

The P-10 interlock (1) allows control room operators to manually block the intermediate power range and power range neutron flux - low trips, and automatically blocks the source range neutron flux trip, on increasing power, when two of the four power range neutron flux channels go above the upper P-10 allowable value in TS Table 3.3.1-1, and (2) automatically re-activates these trips, during power reduction, when three of the four channels go below the lower P-10 allowable value in the table.

The P-10 interlock is also affected by the proposed amendment in that if only three power range neutron flux channels are required for Functions 2, 3, and 6, then only three channels can be required for the P-10 interlock. The justification for Functions 2, 3, and 6 to reduce the chance of a spurious signal causing a reactor trip during physics testing does not apply to the P-10 interlock; however, the same power range neutron flux channels used for Functions 2, 3, and 6 are the ones used for the P10 interlock. Therefore, if the proposed amendment is approved for Functions 2, 3, and 6, the change also needs to be approved for the P-10 interlock. Reducing the number of required power range neutron flux channels to three in LCO 3.1.8 for Function 18.e will, however, prevent the licensee from having to enter Condition S for LCO 3.3.1 during physics testing when one power range neutron flux channel is used for other than Functions 2, 3, 6, and 18.e. However, LCO 3.1.8 during reactor startup requires that the P-10 interlock is operable and has enabled the low power range and intermediate power range trips before entry into Mode 2 for the low power physics testing with power below the higher P-10 allowable values. Therefore, the low power range and intermediate power range trips are already enabled before the low power testing begins, and bypassing the NIS channel will not affect these low power reactor trips.

Based on the above, the staff concludes that the reduction in required power range neutron flux channels for the reactor trip interlock P-10 will not affect the P-10 safety function of having the low power trips enabled below the higher P-10 allowable value in TS Table 3.3.1-1.

3.4 Plant Control Functions

The licensee stated that the control functions which use input from the power range neutron flux channels are the following: (1) rod control from power mismatch, and (2) steam generator water level control.

For rod control, the licensee stated that rod control at the physics testing power levels (i.e., less than or equal to 5 percent RTP) is in manual mode and is not affected by the testing configuration of the channels. Manual rod control uses an auctioneered power range neutron flux input and the bypass of one channel does not eliminate the auctioneered input from the other three channels for this portion of the control signal.

For steam generator water level control, the licensee stated that, at power levels below 25 percent RTP, the water level control system modulates the position of the feedwater control bypass valves using an auctioneered power range neutron flux input. As for manual rod control, the bypass of one channel does not eliminate the auctioneered input from the other three channels for this portion of the control signal.

Based on this, the staff concludes that the proposed amendment will not adversely affect the control systems using input from the power range neutron flux channels.

3.5 Conclusions

Based on the above and its review of the proposed amendment, the staff concludes the following:

- The proposed amendment does not change the design of any NIS channels or its conformance with the regulatory requirements stated in Section 2.0 of this safety evaluation.

- The functionality of the power range neutron flux channels, the only NIS channels affected by the proposed amendment, is retained in the new coincidence logic configuration.

- The functionality of the channels will continue to be demonstrated by the SRs of TS Table 3.3.1-1.

- The minimum degree of redundancy for reactor trip during physics tests is met in that there are at least two redundant channels of power range neutron flux (i.e., three channels will be used for reactor trip).

Wolf Creek Generating Station

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