

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Terry J. Garrett  
Vice President Engineering

March 4, 2010  
ET 10-0011

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Reference: Letter ET 10-0010, dated March 3, 2010, from T. J. Garrett, WCNOC, to USNRC

Subject: Docket No. 50-482: Supplemental Information for Revision to Technical Specification 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," Auxiliary Feedwater – Trip of All Main Feedwater Pumps

Gentlemen:

The Reference provided Wolf Creek Nuclear Operating Corporation's (WCNOC) application to revise Technical Specification (TS) 3.3.2, ESFAS Instrumentation, Condition J, for the start of the motor driven auxiliary feedwater (AFW) pumps on the trip of both main feedwater (MFW) pumps. Supplemental information and a revision to the proposed TS changes are being provided based on discussions with the Nuclear Regulatory Commission (NRC) staff on March 3 and March 4, 2010.

The supplement to the amendment request will remove the proposed Note 2 to Required Actions J.1 and J.2. With the proposed changes to Condition J, WCNOC will place the channels into a tripped condition for the two channels on one main feedwater (MFW) pump when placing the pump into service or removing the pump from service. Therefore, in MODE 1 with one MFW pump in service and the second MFW pump in the process of being placed into service, a start of the motor driven AFW pumps would occur if the in service pump were to fail.

Attachment I provides the supplemental information and a revised significant hazards consideration. Attachment II provides the revised markup of TS. Attachment III provides revised TS Bases changes in support of this amendment request and are provided for information only. Final TS Bases changes will be implemented pursuant to TS 5.5.14, "Technical Specification (TS) Bases Control Program," at the time the amendment is implemented. Attachment IV provides a list of regulatory commitments.

ADD  
NRR

It has been determined that this amendment application does not involve a significant hazard consideration as determined per 10 CFR 50.92. In accordance with 10 CFR 50.91, a copy of this supplemental information, with attachments, is being provided to the designated Kansas State official.

Upon approval of the proposed changes to the TSs, the amendment will be implemented within 10 days.

If you have any questions concerning this matter, please contact me at (620) 364-4084, or Mr. Richard D. Flannigan, Manager Regulatory Affairs, at (620) 364-4117.

Sincerely,



Terry J. Garrett

TJG/rlt

Attachments: I Supplemental Information  
II Revised Technical Specification Changes (Mark-up)  
III Revised TS Bases Changes (for information only)  
IV List of Regulatory Commitments

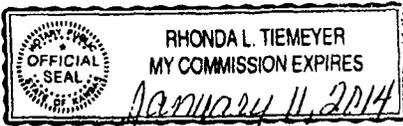
cc: E. E. Collins (NRC), w/a  
T. A. Conley (KDHE), w/a  
G. B. Miller (NRC), w/a  
B. K. Singal (NRC), w/a  
Senior Resident Inspector (NRC), w/a

STATE OF KANSAS     )  
                                  ) SS  
COUNTY OF COFFEY )

Terry J. Garrett, of lawful age, being first duly sworn upon oath says that he is Vice President Engineering of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the contents thereof; that he has executed the 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   
Terry J. Garrett  
Vice President Engineering

SUBSCRIBED and sworn to before me this 4<sup>th</sup> day of March, 2010.



Rhonda L. Tiemeier  
Notary Public

Expiration Date January 11, 2014

## SUPPLEMENTAL INFORMATION

Reference 1 provided Wolf Creek Nuclear Operating Corporation's (WCNOC) application to revise Technical Specification (TS) 3.3.2, ESFAS Instrumentation, Condition J, for the start of the motor driven auxiliary feedwater (AFW) pumps on the trip of both main feedwater (MFW) pumps. Supplemental information and a revision to the proposed TS changes are being provided based on discussions with the Nuclear Regulatory Commission (NRC) staff on March 3 and March 4, 2010.

The supplement to the amendment request will remove the proposed Note 2 to Required Actions J.1 and J.2.

Proposed changes to the TSs are as follows:

- Modify TS 3.3.2, Condition J to read:  
"One or more Main Feedwater Pump trip channel(s) inoperable."
- Modify the Note to TS 3.3.2, Required Actions J.1 and J.2:
  1. One inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels

With the proposed changes to Condition J, this would allow placing the channels into a tripped condition for the two channels on one MFW pump when placing the pump into service or removing the pump from service prior to resetting the MFW pump. The taking of a MFW pump out of service takes significantly less time than placing a MFW pump in service. With the revision to the Condition, placing both channels on one MFW pump into a tripped condition would not require an entry into LCO 3.0.3.

Therefore, in MODE 1 with one MFW pump in service and the second MFW pump in the process of being placed into service, a start of the motor driven AFW pumps would occur if the in service pump were to fail.

As discussed in the Reference, the anticipatory auto-start of the motor driven AFW pumps on a loss of both MFW pumps is not credited in any Updated Safety Analysis Report (USAR) Chapter 15 accident analysis. This anticipatory auto-start is a defense in depth function that would result in an early initiation of AFW in the event that both MFW pumps tripped.

The TS 3.3.2, Function 6.g, Trip of all Main Feedwater Pumps, was part of the TSs when the plant was licensed. The Wolf Creek Generating Station (WCGS) TSs were based on NUREG-0452, Revision 5, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors." It appears that this anticipatory trip was included in the SNUPPS design work by our Architect-Engineer (Bechtel) as far back as 1975 as discussed in the SNUPPS Preliminary Safety Analysis Report.

### MFW Pump Trip/Reset

The MFW pumps are equipped with mechanical drive turbine MDT-20 hydraulic trip systems. The MFW pumps are powered from separate control power supplies with the control power to the "A" MFW pump being supplied from PN09 and the "B" MFW being supplied from PN10. They are also both equipped with separate/independent control oil systems.

Resetting the "A" MFW pump (FCHIS0018 in the "Reset" position) allows the control header hydraulic pressure to increase to approximately 200 psig. This resets the pressure switches FCPSL0025 (PS15 on drawing 10466-M012-042-05) and FCPSL0026 (PS26 on drawing 10466-M012-042-05) to that nominal operating hydraulic fluid pressure and these are the "A" MFW pump pressure switches that feed the anticipatory auto-start signal to the motor driven AFW pumps. This also supplies hydraulic pressure to the stop and control valves, which enables the control valves to be manually adjusted to the desired MFW pump speed.

When the "A" MFW pump is tripped from an automatic or manual trip function (FCHIS0018 in the "Trip" position) the control header hydraulic oil is ported to the hydraulic oil reservoir reducing the header pressure back to 0 psig. With no hydraulic oil pressure in the control header, the high and low stop valves and control valves close. This also eliminates oil pressure to the pressure switches FCPSL0025 and FCPSL0026, which results in the "A" MFW pump tripped inputs (one out of two) to the auxiliary feedwater actuation signal input being provided to start the motor driven AFW pumps.

Resetting the "B" MFW pump (FCHIS0118 in the "Reset" position) allows the control header hydraulic pressure to increase to approximately 200 psig. This resets pressure switches FCPSL0125 and FCPSL0126 to that nominal operating hydraulic fluid pressure and these are the "B" MFW pump pressure switches that feeds anticipatory auto-start signal to the motor driven AFW pumps. This also supplies hydraulic pressure to the stop and control valves which enables the control valve to be manually adjusted to the desired MFW pump speed.

When "B" MFW pump is tripped from an automatic or manual trip function (FCHIS0118 in the "Trip" position) the control header hydraulic oil is ported to the hydraulic oil reservoir reducing the header pressure back to 0 psig. With no hydraulic oil pressure in the control header the stop valve and control valve both close. This also eliminates oil pressure to the pressure switches FCPSL0125 and FCPSL0126, which results in the "B" MFW pump tripped inputs (one out of two) auxiliary feedwater actuation signal input being provided to start the motor driven AFW pumps.

### Significant Hazards Consideration

The amendment application proposes changes to the Wolf Creek Generating Station (WCGS) Technical Specifications Limiting Condition for Operation (LCO) of Technical Specification (TS) 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation." Wolf Creek Nuclear Operating Corporation (WCNOC) is proposing to modify Technical Specification (TS) 3.3.2, ESFAS Instrumentation, Condition J, for the start of the motor driven auxiliary feedwater (AFW) pumps on the trip of all main feedwater (MFW) pumps. The proposed TS changes will provide a TS Condition that addresses more than one inoperable channel.

WCNOC has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, Issuance of Amendment:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

**Response:** No

The design basis events which impose initiation of the AFW System requirements are loss of normal main feedwater, main feed line or main steam line break, loss of offsite power, and small break loss of coolant accident. These design bases event evaluations assume actuation of the AFW System due to loss of offsite power signal, steam generator water level - low-low or a safety injection signal. The anticipatory motor driven AFW pump auto-start signals from the MFW pumps are not credited in any design basis accidents and are, therefore, not part of the primary success path for postulated accident mitigation as defined by 10 CFR 50.36(c)(2)(ii), Criterion 3. Modifying the Condition and Required Actions for more than one inoperable channel for this function will not impact any previously evaluated design basis accidents.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any previously evaluated?

**Response:** No

The proposed changes to the TSs would allow two anticipatory motor driven AFW pump start channels to be placed in a tripped condition during the process of removing a MFW pump from service or placing a MFW pump in service. This change involves an anticipatory motor driven AFW pump auto-start function that is not credited in the accident analysis. The proposed change only affects the number of auto-start of motor driven AFW channels that may be inoperable while placing a MFW pump in service or removing a MFW pump from service in MODE 1. The proposed change does not affect the ESFAS functions that actuates AFW due to loss of offsite power, steam generator water level - low-low or a safety injection signal.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

**Response:** No

The proposed changes to the TSs involves the automatic start of the AFW pumps due to trip of both MFW pumps which is not an assumed start signal for design basis events. This change does not modify any values or limits involved in a safety related function or accident analysis.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

### Conclusion

Based on the considerations discussed above, 1) there is a reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, 2) such activities will be conducted in compliance with the Commission's regulations, and 3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

### References

1. Letter ET 10-0010, Revision to Technical Specification 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," Auxiliary Feedwater – Trip of All Main Feedwater Pumps" T. J. Garrett, WCNOC, to USNRC, March 3, 2010.

**Revised Technical Specification Changes (Mark-up)**

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p><i>or more</i> → J. One Main Feedwater Pump trip channel inoperable. <i>(S)</i></p>	<p><i>One</i> <del>One</del> NOTE                      inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels.</p> <hr/> <p>J.1 Place channel in trip. <i>(S)</i></p> <p><u>OR</u></p> <p>J.2 Be in MODE 3.</p>	<p>1 hour</p> <p>7 hours</p>
<p>K. One channel inoperable.</p>	<p>NOTE                      One additional channel may be tripped for up to 12 hours for surveillance testing.</p> <hr/> <p>K.1 Place channel in bypass.</p> <p><u>OR</u></p> <p>K.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>K.2.2 Be in MODE 5.</p>	<p>72 hours</p> <p>78 hours</p> <p>108 hours</p>

(continued)

**Revised TS Bases Changes (for information only)**

**BASES**

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**ACTIONS**

I.1 and I.2 (continued)

The allowed Completion Time of Required Action I.2 is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, these Functions are no longer required OPERABLE.

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to 12 hours for surveillance testing of other channels. The 72 hours allowed to place the inoperable channel in the tripped condition, and the 12 hours allowed for a second channel to be in the bypassed condition for testing, are justified in Reference 12.

J.1 and J.2

If one or more channel(s) are inoperable,

Condition J applies to the AFW pump start on trip of all MFW pumps.

This action addresses the train orientation of the BOP ESFAS for the auto start function of the AFW System on loss of all MFW pumps. The OPERABILITY of the AFW System must be assured by allowing automatic start of the AFW System pumps. If a channel is inoperable, 1 hour is allowed to place the channel in the tripped condition. If the channel cannot be tripped in 1 hour, 6 additional hours are allowed to place the unit in MODE 3. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above. The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to 2 hours for surveillance testing of other channels.

one

INSERT B 3.3.2-42

K.1, K.2.1, and K.2.2

Condition K applies to the RWST Level - Low Low Coincident with Safety Injection Function.

RWST Level - Low Low Coincident with SI provides actuation of switchover to the containment recirculation sumps. Note that this Function requires the bistables to energize to perform their required

**INSERT B 3.3.2-42**

A MFW pump is in service when the pump's stop valves are open, the governor control valves are either in manual or automatic control, and feedwater is being supplied to the steam generators (i.e., the MFW pump is at the required operating speed). One MFW pump may be in service in MODE 1 at reduced power levels if the other MFW pump has been removed from service for maintenance or has not yet been placed into service during power ascension. During the process of removing a MFW pump from service and prior to placing a MFW pump into service, its control circuitry is placed in a reset condition such that the two oil pressure switch channels on that pump continue to experience oil pressures indicative of an operating pump and, therefore, would not satisfy the AFW start function actuation logic (one tripped channel on each MFW pump in the same separation group will initiate an auxiliary feedwater actuation). This ESFAS actuation function is an anticipatory start signal for which no credit is taken in any safety analysis. The safety analyses credit actuation of the motor driven AFW pumps upon a low-low steam generator water level signal in any steam generator and after a safety injection signal.

### LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by WCNOC in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Mr. Richard Flannigan at (620) 364-4117.

REGULATORY COMMITMENT	DUE DATE/EVENT
Upon approval of the proposed changes to the TSs, the amendment will be implemented within 10 days.	Within 10 days of approval