

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Matthew W. Sunseri  
Vice President Operations and Plant Manager

August 18, 2008

WO 08-0019

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

Subject: Docket No. 50-482: Application To Revise Technical Specification  
3.5.2, "ECCS – Operating," In Accordance With TSTF-325-A

Gentlemen:

Pursuant to 10 CFR 50.90, Wolf Creek Nuclear Operating Corporation (WCNOC) hereby requests an amendment to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station (WCGS).

The proposed amendment would modify Technical Specification (TS) 3.5.2, "ECCS – Operating," requirements in accordance with Technical Specification Task Force (TSTF) TSTF-325-A, Revision 0, "ECCS Conditions and Required Actions <100% Equivalent ECCS Flow." This TS improvement was approved June 29, 1999 in a letter from William D. Beckner, Chief, Technical Specifications Branch, NRR, to James Davis, Director, Operations Department, NEI.

Attachment I provides a description of the proposed change and supporting technical evaluation. Attachment II provides the existing TS pages marked up to show the proposed changes. Attachment III provides revised (clean) TS pages. Attachment IV provides a summary of the regulatory commitments made in this submittal. Attachment V provides the existing TS Bases pages marked up to show proposed changes and is 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.

It has been determined that this amendment application does not involve a significant hazard consideration as determined per 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of this amendment.

This amendment application was reviewed by the Plant Safety Review Committee. In accordance with 10 CFR 50.91, a copy of this amendment application, with attachments, is being provided to the designated Kansas State official.

A001  
NRR

WCNOC requests approval of the proposed amendment by July 1, 2009. The changes proposed are not required to address an immediate safety concern. It is anticipated that the license amendment, as approved, will be effective upon issuance and will be implemented within 90 days from the date of issuance. Please contact me at (620) 364-4008 or Mr. Richard Flannigan at (620) 364-4117 for any questions you may have regarding this application.

Sincerely,



Matthew W. Sunseri

MWS/rlt

Attachments: I Evaluation  
II Proposed Technical Specification Changes (Mark-up)  
III Revised Technical Specification Pages  
IV Regulatory Commitments  
V Proposed Technical Specification Bases Changes (For Information Only)

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

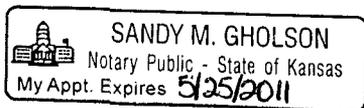
STATE OF KANSAS    )  
                                  ) SS  
COUNTY OF COFFEY )

Matthew W. Sunseri, of lawful age, being first duly sworn upon oath says that he is Vice President Operations and Plant Manager 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 Matthew W. Sunseri  
Matthew W. Sunseri  
Vice President Operations and Plant Manager

SUBSCRIBED and sworn to before me this 18<sup>th</sup> day of August, 2008.

Sandy M. Gholson  
Notary Public



Expiration Date 5/25/2011

## EVALUATION

1. SUMMARY DESCRIPTION
2. DETAILED DESCRIPTION
3. TECHNICAL EVALUATION
4. REGULATORY EVALUATION
  - 4.1 Applicable Regulatory Requirements/Criteria
  - 4.2 Precedent
  - 4.3 Significant Hazards Consideration
  - 4.4 Conclusion
5. ENVIRONMENTAL CONSIDERATION
6. REFERENCES

## EVALUATION

### 1. SUMMARY DESCRIPTION

The proposed amendment would modify technical specification (TS) requirements related to Emergency Core Cooling Systems (ECCS) in TS 3.5.2, "ECCS – Operating."

The changes are consistent with Nuclear Regulatory Commission (NRC) Industry Technical Specification Task Force (TSTF) Standard Technical Specification change TSTF-325-A, Revision 0, "ECCS Conditions and Required Actions with <100% Equivalent ECCS Flow," (Reference 6.1). This TS improvement was approved in a June 29, 1999 (Reference 6.2) letter from William D. Beckner, Chief, Technical Specifications Branch, NRR, to James Davis, Director, Operations Department, NEI.

### 2. DETAILED DESCRIPTION

Consistent with Revision 0 of TSTF-325-A, the proposed TS changes include:

1. "AND at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available" has been deleted from Condition A.
2. Create a new condition, Condition C that states, "Less than 100% of the ECCS flow equivalent to a single OPERABLE train available." Required Action C.1, "Enter LCO 3.0.3" and its Completion Time of "Immediately."

The wording in the new Condition C is the same as that deleted from the existing Condition A.

### 3. TECHNICAL EVALUATION

#### 3.1 System Description

The primary function of the ECCS is to provide emergency core cooling in the event of a loss of coolant accident (LOCA) resulting from a break in the primary reactor coolant system (RCS) or to provide emergency boration in the event of a steam and/or feedwater break accident. The ECCS components are designed so that a minimum of three accumulators, one centrifugal charging pump, one safety injection pump, and one residual heat removal (RHR) pump, together with their associated valves and piping, ensure adequate core cooling and provide emergency boration. The onsite emergency diesels assure adequate emergency power to at least one train of electrically operated components in the event that a loss of offsite power occurs simultaneously with a LOCA.

There are three modes of ECCS operation: injection mode, cold leg recirculation mode, and hot leg recirculation mode. In the injection mode, water is taken from the refueling water storage tank (RWST) and injected into the RCS cold legs. When sufficient water is removed from the RWST to ensure that enough boron has been added to keep the reactor subcritical and the containment recirculation sump has enough water to supply the RHR pump with its required net positive suction head, the suctions of the RHR pumps are shifted to the containment recirculation sumps. The RHR pumps in turn supply the RCS and the other ECCS pumps. Water is now being taken from the containment recirculation sumps, cooled by component

cooling water in the RHR heat exchangers, and returned to the RCS cold legs. Approximately 10 hours after the initiation of safety injection, the ECCS is shifted to hot leg recirculation. This is done because the top of the core could potentially be in a boiling condition where boron could plate out on the core. Hot leg recirculation provides a backflush where water will enter the top of the core and reduce the boiling and the resulting boron precipitation. The flow path in hot leg recirculation is from the containment recirculation sump, through RHR heat exchangers, and into the RCS hot legs.

### 3.2 Justification for Change

In January 2008, control room personnel declared both trains of ECCS inoperable and determined that LCO 3.5.2 was not met. LCO 3.5.2 requires two ECCS trains be OPERABLE. LCO 3.0.3 was subsequently entered when it was determined that an associated ACTION in LCO 3.5.2 did not exist. Condition A of LCO 3.5.2 is applicable when one or more trains is inoperable AND at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train is available. Condition A was not entered since 100% ECCS flow equivalent was not available. Therefore, LCO 3.0.3 was entered and the plant subsequently proceeded to MODE 3. When the "B" RHR train was restored to OPERABLE status, LCO 3.0.3 was exited and Condition A of LCO 3.5.2 was entered with 72 hours to restore the opposite train to OPERABLE status. It was subsequently determined that the LCO 3.5.2 Condition A entry time should have commenced at the time that LCO 3.0.3 was entered. This determination is based on the wording in the LCO 3.0.3 TS Bases that specify that LCO 3.0.3 may be exited if ACTIONS exist that do not have expired Completion Times and these Completion Times are applicable from the point in time that the Condition is initially entered and not from the time LCO 3.0.3 is exited. During the investigation into this event, the existence of TSTF-325-A was identified and determined to be applicable to this event. If TSTF-325-A had been incorporated into the WCGS TSs, both Condition A and Condition C would have been entered and the confusion regarding the entry time into Condition A would not have existed.

Condition A of LCO 3.5.2 states, "One or more trains of ECCS inoperable AND at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available." Per TSTF-325-A, this allows inoperabilities to be present in both trains, as long as 100% equivalent flow is available. If a situation were to occur which resulted in less than 100% ECCS flow, then LCO 3.0.3 would be entered. However, the stated conditions for Condition A would no longer be applicable, as there was less than the 100% equivalent flow. It could be interpreted from the "AND" that Condition A is exited when LCO 3.0.3 is entered. This is in conflict with Section 1.3 on Completion Times, specifically Example 1.3-2. The intent is that even though LCO 3.0.3 is entered, the applicable Condition of the affected LCO (in this case, Condition A of LCO 3.5.2) should not be exited. Condition A should still be applicable, and the time tracked while in LCO 3.0.3. This will allow a smooth transition should a pump/train be restored and LCO 3.0.3 exited. The transition can be accomplished by splitting Condition A into 2 separate Conditions, such that with any pump/train inoperable, Condition A will still be applicable.

Technical Specification 3.5.2 and associated Bases was written for the Improved Standard Technical Specifications and incorporated into the WCGS TSs with a flawed logic, making it difficult to determine the intent for entry/exit conditions in the LCO. The structure of LCO 3.5.2 has been rearranged to maintain Condition A in effect if failures should occur that reduce available flow to <100% of the required flow. In the case where inoperable ECCS train components reduce available flow below that required, and a subsequent partial restoration is made to provide 100% of the required flow, the proposed change makes the Completion Time

for Condition A start when the initial inoperability occurred rather than (with literal interpretation of the existing arrangement) when Condition A was entered after the partial restoration. Therefore, there is no change in the intent or application of the LCO.

#### 4. REGULATORY EVALUATION

##### 4.1 Applicable Regulatory Requirements/Criteria

The regulatory basis for an LCO is to describe the lowest functional capability or performance level of equipment required for safe operation of the facility, to specify the minimum amount of equipment that must be OPERABLE to operate in a MODE, and to identify process parameters and specify Allowable Values to preserve Safety Analyses initial condition assumptions.

GDC 35, "Emergency core cooling," requires a system to provide abundant emergency core cooling. Suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities shall be provided.

GDC 36, "Inspection of emergency core cooling," requires the ECCS to be designed to permit appropriate periodic inspection of important components to assure the integrity and capability of the system.

GDC 37, "Testing of emergency core cooling system," requires the ECCS to be designed to permit appropriate periodic pressure and functional testing to assure the structural and leaktight integrity, the OPERABILITY and performance of the active components, and the OPERABILITY of the system as a whole.

The requirements of GDC 35, 36 and 37 continue to be met because the change being proposed will not affect the design capability, function, operation or methods of testing.

##### 4.2 Precedent

Amendment No. 198 (Reference 6.3), was issued on May 3, 2001 for the Palisades Plant. This amendment changes the structure of the ACTIONS table consistent with TSTF-325-A. The wording of the new Condition is different than the wording in TSTF-325-A. The WCNOG proposed amendment changes the structure of the ACTIONS table and uses the same words in the new Condition per TSTF-325-A. (ADAMS Accession Number ML 011280347)

##### 4.3 Significant Hazards Consideration

WCNOG 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 proposed change corrects the structure of the ACTIONS table to assure its correct application. There is no change or intent in the way the Conditions are actually applied.

The literal interpretation of the existing Conditions structure could, under some circumstances, provide longer than intended Completion Times for restoration of OPERABILITY. Since the proposed change affects neither the Conditions intent nor its application, the proposed change will 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 change corrects the structure of the ACTIONS table to assure its correct application. The proposed change does not result in any physical alterations to the plant configuration, no new equipment additions, no equipment interface modifications, and no changes to any equipment function or the method of operating the equipment are being made. As the proposed change would not change the design, configuration or operation of the plant, no new or different kinds of accident modes are created. 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 change corrects the structure of the LCO to assure its correct application. The proposed change is consistent with the requirements of the Technical Specifications. There is no change in intent or in the way the LCO is applied. Therefore, the proposed change does not involve a significant reduction in the margin of safety.

#### 4.4 Conclusion

The change to TS 3.5.2 is being made based on TSTF-325-A, "ECCS Conditions and Required Actions with <100% Equivalent ECCS Flow." The proposed change to the format of the existing Condition requirements is an administrative change because it does not alter the existing restriction on plant operation, but only clarifies the intent of the existing Condition requirements, making them consistent with the Completion Time rule of TS 1.3, "Completion Times." 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.

## 5. ENVIRONMENTAL CONSIDERATION

WCNOC has evaluated the proposed change and has determined that the change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amount of effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

**6. REFERENCES**

- 6.1 Technical Specification Task Force (TSTF) Improved Standard Technical Specifications Change Traveler, TSTF-325-A, Revision 0, "ECCS Conditions and Required Actions with <100% Equivalent ECCS Flow."
- 6.2 NRC Letter dated June 29, 1999, from William D. Beckner, Chief, Technical Specifications Branch, NRR, to James Davis, Director, Operations Department, NEI.
- 6.3 NRC Letter dated May 3, 2001, Amendment No. 198 to Facility Operational License No. DPR-20 for the Palisades Plant.

**ATTACHMENT II**  
**PROPOSED TECHNICAL SPECIFICATION CHANGES (MARK-UP)**

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

-----NOTES-----

1. In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.
  2. Operation in MODE 3 with ECCS pumps made incapable of injecting pursuant to LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," is allowed for up to 4 hours or until the temperature of all RCS cold legs exceeds 375°F, whichever comes first.
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APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable.  AND At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	A.1 Restore train(s) to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.  AND  B.2 Be in MODE 4.	6 hours    12 hours

Insert  
3.5-3

Insert 3.5-3

C. Less than 100% of the ECCS flow equivalent to a single OPERABLE train available.	C.1 Enter LCO 3.0.3.	Immediately
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**ATTACHMENT III  
REVISED TECHNICAL SPECIFICATION PAGES**

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS -Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

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1. In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.
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APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable.	A.1 Restore train(s) to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours
C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	C.1 Enter LCO 3.0.3.	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify the following valves are in the listed position with power to the valve operator removed.	12 hours
<u>Number</u>	<u>Position</u>	<u>Function</u>
BN HV-8813	Open	Safety Injection to RWST Isolation Valve
EM HV-8802A	Closed	SI Hot Legs 2 & 3 Isolation Valve
EM HV-8802B	Closed	SI Hot Legs 1 & 4 Isolation Valve
EM HV-8835	Open	Safety Injection Cold Leg Isolation Valve
EJ HV-8840	Closed	RHR/SI Hot Leg Recirc Isolation Valve
EJ HV-8809A	Open	RHR to Accum Inject Loops 1 & 2 Isolation Valve
EJ HV-8809B	Open	RHR to Accum Inject Loops 3 & 4 Isolation Valve
SR 3.5.2.2	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.5.2.3	Verify ECCS piping is full of water.	31 days
SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program

(continued)

**ATTACHMENT IV**  
**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 Commitments	Due Date / Event
The proposed changes to the WCGS Technical Specifications will be implemented within 90 days of NRC approval.	Within 90 days of NRC approval.

**ATTACHMENT V**  
**PROPOSED TECHNICAL SPECIFICATION BASES CHANGES**  
**(For Information Only)**

BASES

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APPLICABILITY

In MODES 1, 2, and 3, the ECCS OPERABILITY requirements for the limiting Design Basis Accident, a large break LOCA, are based on full power operation. Although reduced power would not require the same level of performance, the accident analysis does not provide for reduced cooling requirements in the lower MODES. The centrifugal charging pump performance is based on a small break LOCA, which establishes the pump performance curve and has less dependence on power. The SI pump performance requirements are based on a small break LOCA. MODE 2 and MODE 3 requirements are bounded by the MODE 1 analysis.

This LCO is only applicable in MODE 3 and above. Below MODE 3, the system functional requirements are relaxed as described in LCO 3.5.3, "ECCS - Shutdown."

In MODES 5 and 6, plant conditions are such that the probability of an event requiring ECCS injection is extremely low. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level."

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ACTIONS

A.1

~~With one or more trains inoperable and at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, the inoperable components must be returned to OPERABLE status within 72 hours. The 72 hour Completion Time is based on an NRC reliability evaluation (Ref. 5) and is a reasonable time for repair of many ECCS components.~~

An ECCS train is inoperable if it is not capable of delivering design flow to the RCS. Individual components are inoperable if they are not capable of performing their design function or supporting systems are not available.

The LCO requires the OPERABILITY of a number of independent subsystems. Due to the redundancy of trains and the diversity of subsystems, the inoperability of one component in a train does not render the ECCS incapable of performing its function. Neither does the inoperability of two different components, each in a different train, necessarily result in a loss of function for the ECCS. ~~The intent of this Condition is to maintain a combination of equipment such that 100% of~~

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BASES

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ACTIONS

A.1 (continued)

~~the ECCS flow equivalent to a single OPERABLE ECCS train remains available.~~ This allows increased flexibility in plant operations under circumstances when components in opposite trains are inoperable.

An event accompanied by a loss of offsite power and the failure of an EDG can disable one ECCS train until power is restored. A reliability analysis (Ref. 5) has shown that the impact of having one full ECCS train inoperable is sufficiently small to justify continued operation for 72 hours.

Reference 6 describes situations in which one component, such as an RHR crossover valve, can disable both ECCS trains. With one or more component(s) inoperable such that 100% of the flow equivalent to a single OPERABLE ECCS train is not available, the facility is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be immediately entered.

B.1 and B.2

If the inoperable trains cannot be returned to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Insert  
B 3.5.2-7

SURVEILLANCE  
REQUIREMENTS

SR 3.5.2.1

Verification of proper valve position ensures that the flow path from the ECCS pumps to the RCS is maintained. Misalignment of these valves could render both ECCS trains inoperable. Securing these valves in position by removal of power or by key locking the control in the correct position ensures that they cannot change position as a result of an active failure or be inadvertently misaligned. These valves are of the type, described in References 6 and 7, that can disable the function of both ECCS trains and invalidate the accident analyses. A 12 hour Frequency is considered reasonable in view of other administrative controls that will ensure a mispositioned valve is unlikely.

Insert B 3.5.2-7

C.1

Condition A is applicable with one or more trains inoperable. The allowed Completion Time is based on the assumption that at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train is available. With less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, the facility is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.