

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Terry J. Garrett  
Vice President, Engineering

March 29, 2008

ET 08-0021

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

Reference: Letter ET 06-0038, dated September 27, 2006, from T.J. Garrett,  
WCNOC, to USNRC

Subject: Docket No. 50-482: Wolf Creek Generating Station License Renewal  
Application, Amendment 6

Gentlemen:

The Reference provided Wolf Creek Nuclear Operating Corporation's (WCNOC) License Renewal Application (LRA) for the Wolf Creek Generating Station (WCGS). The enclosure provides Amendment 6 to the WCGS LRA. Amendment 6 includes: 1) a change to address Open items 2.5-1 and 3.0.3.1.10-1 of the draft Safety Evaluation Report (SER) with open items, 2) a change to address a question raised during the March 5, 2008 Advisory Committee of Reactor Safeguards (ACRS) meeting, and 3) a change identified as part of the current licensing basis changes review three months prior to SER issuance.

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

Sincerely,



Terry J. Garrett

TJG/rtt

Enclosure: License Renewal Application (LRA) Amendment 6


cc: E. E. Collins (NRC), w/e  
V. G. Gaddy (NRC), w/e  
B. K. Singal (NRC), w/e  
T. M. Tran (NRC), w/e  
Senior Resident Inspector (NRC), w/e

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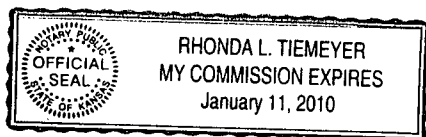
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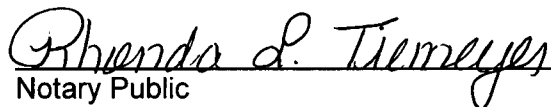
STATE OF KANSAS    )  
                              ) SS  
COUNTY OF COFFEY )

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 29<sup>th</sup> day of March, 2008.



  
Notary Public

Expiration Date January 11, 2010

**Wolf Creek Generating Station (WCGS)  
License Renewal Application (LRA)  
Amendment 6**

(7 pages)

Amended LRA Section	Reason
<b>2.1.2.3.5</b>	<b>Response to Open Items 2.5-1 and 3.0.3.1.10-1<sup>(1)</sup></b>
<b>Table 3.3.2-16</b>	<b>LRA Update<sup>(2)</sup></b>
<b>B2.1.31</b>	<b>ACRS Subcommittee Meeting Question<sup>(3)</sup></b>

- (1) In response to Safety Evaluation Report (SER) open items 2.5-1 and 3.0.3.1.10-1, Wolf Creek Nuclear Operating Corporation is including additional switchyard equipment in the scope of license renewal.
- (2) The emergency diesel generator intercooler heat exchangers have been replaced. The intercooler heat exchanger replacement changes the tube and tube sheet material from copper alloy to stainless steel.
- (3) During the March 5, 2008 Advisory Committee of Reactor Safeguards (ACRS) meeting for the WCGS LRA, a question was raised on some operating experience listed in Section 3.0.3.2.20 "Masonry Wall Program" of the WCGS SER. The operating experience discussed a crack in the north wall of the southeast turbine building truck bay. A phone conference on March 12, 2008 between WCGS and NRC Staff clarified that the wall discussed in this operating experience is not within the scope of license renewal. The wall is a fire barrier for commercial protection, not for fire barrier protection of safety related equipment. The Masonry Wall Program (LRA Section B2.1.32) monitors masonry walls within the scope of license renewal and additional walls outside the scope of license renewal. During the review of operating experience for the Masonry Wall Program (LRA Section B2.1.31), an audit question (AMPA039) was asked about this operating experience for the turbine building wall and the question and response was reflected in the SER. To clarify that the turbine building wall in question is not within the scope of license renewal, the operating experience discussion on this wall in the LRA is being removed.

#### 2.1.2.3.4 Anticipated Transients Without Scram

Criterion 10 CFR 54.4(a)(3) requires that plant SSCs within the scope of license renewal include all SSCs relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with the regulations for anticipated transients without scram (10 CFR 50.62). An anticipated transient without scram (ATWS) is a postulated operational transient that generates an automatic scram signal accompanied by a failure of the reactor protection system to shutdown the reactor.

The ATWS rule required changes in the design to reduce the probability of failure to shutdown the reactor following anticipated transients and to mitigate the consequences of an ATWS event. Each pressurized water reactor must have equipment from sensor output to final actuation device, which is diverse from the reactor trip system, to automatically initiate the auxiliary feedwater system and initiate a turbine trip.

The following equipment is required by the ATWS Rule for reduction of risk from an ATWS Event at WCGS:

- The ATWS Mitigation System Actuation Circuitry (AMSAC) cabinet.
- Four Reactor Protection System narrow range steam generator level loops and two turbine impulse pressure loops.
- The Balance of Plant (BOP) Engineered Safety Features Actuation System (ESFAS) and Turbine Generator Electrohydraulic Control (EHC) cabinets.
- The steam generator blowdown isolation valves and the steam generator sample isolation valves.

ATWS equipment is described in WCGS USAR Section 7.7.1.11, ATWS Mitigation System Actuation Circuitry (AMSAC) and the accident analysis for ATWS is discussed in Section 15.8.

All ATWS SSCs are within the scope of license renewal.

#### 2.1.2.3.5 Station Blackout

Criterion 10 CFR 54.4(a)(3) requires that plant SSCs within the scope of license renewal include all SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the regulations for station blackout (10 CFR 50.63).

The SBO rule (10 CFR 50.63) requires that nuclear power plants have the capability to withstand and recover from the loss of offsite and onsite AC power of a specified duration (the coping duration). Regulatory Guide 1.155 provides guidance on selecting the time period for which a licensee must cope with the SBO. WCGS used RG 1.155 to calculate a plant-specific coping time period. A "four hour" coping duration was determined for WCGS based on expected frequency of loss of offsite power and the probable time needed for its restoration. Redundancy and reliability in onsite emergency AC power source (emergency diesel generators) was also factored in the evaluation.

Equipment needed to cope with and recover from an SBO is identified in the WCGS Coping Assessment and is included in USAR Appendix 8.3A. The plant system portion of the offsite power system is within the scope of license renewal. The WCGS offsite power for SBO recovery is provided via two paths. The primary offsite power feeds the WCGS startup transformer No 1 XMR01 through disconnect 345-163 which is connected to the switchyard West 345 kV bus. Startup transformer No 1 XMR01, the overhead transmission lines, disconnect 345-163, the overhead line from disconnect 345-163 to and including breaker 345-70 are within the scope of license renewal.

A second offsite power feeds WCGS ESF transformer No 1 XNB01 through disconnect 13-23. Disconnect 13-23 is connected to the secondary side of switchyard transformer No 7 through switchyard circuit breaker 13-48. The primary side of switchyard transformer No 7 connects to the switchyard East 345 kV bus through disconnect 345-167. ESF transformer No 1 XNB01, transformer No 7, switchyard circuit breaker 13-48, underground cables, disconnect 13-23, disconnect 345-167 and the overhead line from disconnect 345-167 to and including breaker 345-120 are within the scope of license renewal. Westar Energy is the owner of the Wolf Creek substation and is responsible for grid equipment operations and maintenance.

A technical position paper was created to summarize the results of a detailed review of the SBO documentation for WCGS. The WCGS position paper identifies the SSCs credited with coping and recovering from a station blackout. The SSCs identified in the SBO technical position paper were used in scoping evaluations to identify SSCs that demonstrate compliance with 10 CFR 50.63.

All SSCs classified as satisfying criterion 10 CFR 54.4(a)(3) related to station blackout were identified as within the scope of license renewal.

**Section 3.3**  
**AGING MANAGEMENT OF AUXILIARY SYSTEMS**

*Table 3.3.2-16 Auxiliary Systems – Summary of Aging Management Evaluation – Emergency Diesel Engine System (Continued)*

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG-1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Heat Exchanger Tube Side (HX # 142, 145, 148)	PB	Carbon Steel	Plant Indoor Air (Ext)	Loss of material	External Surfaces Monitoring Program (B2.1.20)	VII.I-8	3.3.1.58	A
Heat Exchanger Tube Side (HX # 142, 145, 148)	PB	Carbon Steel	Raw Water (Int)	Loss of material	Open-Cycle Cooling Water System (B2.1.9)	VII.C1-5	3.3.1.77	A
Heat Exchanger Tube Side (HX # 144)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Ext)	Reduction of heat transfer	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-3	3.3.1.52	B
Heat Exchanger Tube Side (HX # 147)	HT, PB	Copper Alloy (Brass Copper < 85%)	Closed Cycle Cooling Water (Ext)	Reduction of heat transfer	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-2	3.3.1.52	B
Heat Exchanger Tube Side (HX # 143, 144)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Ext)	Loss of material	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-10	3.3.1.50	D
Heat Exchanger Tube Side (HX # 146, 147)	HT, PB	Copper Alloy (Brass Copper < 85%)	Closed Cycle Cooling Water (Ext)	Loss of material	Closed-Cycle Cooling Water System (B2.1.10)	VII.H2-8	3.3.1.51	D

**Section 3.3**  
**AGING MANAGEMENT OF AUXILIARY SYSTEMS**

*Table 3.3.2-16 Auxiliary Systems – Summary of Aging Management Evaluation – Emergency Diesel Engine System (Continued)*

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG-1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Heat Exchanger Tube Side (HX # 146, 147)	HT, PB	Copper Alloy (Brass Copper < 85%)	Closed Cycle Cooling Water (Ext)	Loss of material	Selective Leaching of Materials (B2.1.17)	VII.H2-12	3.3.1.84	D
Heat Exchanger Tube Side (HX # 150)	HT, PB	Copper Alloy (Brass Copper < 85%)	Lubricating Oil (Ext)	Reduction of heat transfer	Lubricating Oil Analysis (B2.1.23) and One-Time Inspection (B2.1.16)	None	None	H 4
Heat Exchanger Tube Side (HX # 149, 150)	HT, PB	Copper Alloy (Brass Copper < 85%)	Lubricating Oil (Ext)	Loss of material	Lubricating Oil Analysis (B2.1.23) and One-Time Inspection (B2.1.16)	VII.H2-10	3.3.1.26	D
Heat Exchanger Tube Side (HX # 144)	HT, PB	Stainless Steel	Raw Water (Int)	Reduction of heat transfer	Open-Cycle Cooling Water System (B2.1.9)	VII.H2-6	3.3.1.83	A
Heat Exchanger Tube Side (HX # 147, 150)	HT, PB	Copper Alloy (Brass Copper < 85%)	Raw Water (Int)	Reduction of heat transfer	Open-Cycle Cooling Water System (B2.1.9)	VII.C1-6	3.3.1.83	A

**Section 3.3**  
**AGING MANAGEMENT OF AUXILIARY SYSTEMS**

*Table 3.3.2-16 Auxiliary Systems – Summary of Aging Management Evaluation – Emergency Diesel Engine System (Continued)*

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG-1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Heat Exchanger Tube Side (HX # 143, 144)	HT, PB	Stainless Steel	Raw Water (Int)	Loss of material	Open-Cycle Cooling Water System (B2.1.9)	VII.H2-8	3.3.1.80	C
Heat Exchanger Tube Side (HX # 146, 147, 149, 150)	HT, PB	Copper Alloy (Brass Copper < 85%)	Raw Water (Int)	Loss of material	Open-Cycle Cooling Water System (B2.1.9)	VII.H2-11	3.3.1.80	C
Heat Exchanger Tube Side (HX # 146, 147, 149, 150)	HT, PB	Copper Alloy (Brass Copper < 85%)	Raw Water (Int)	Loss of material	Selective Leaching of Materials (B2.1.17)	VII.H2-13	3.3.1.84	D



### **B2.1.31 Masonry Wall Program**

#### **Program Description**

The Masonry Wall Program is part of the WCGS Structures Monitoring Program that implements structures monitoring requirements as specified by 10 CFR 50.65. The Masonry Wall Program manages aging of masonry walls, and structural steel restraint systems of the masonry walls, within scope of license renewal based on guidance provided in IE Bulletin 80-11, "Masonry Wall Design" and NRC Information Notice 87-67, "Lessons Learned from Regional Inspections of Licensee Actions in Response to NRC IE Bulletin 80-11."

The Masonry Wall Program contains inspection guidelines and lists attributes that cause aging of masonry walls, which are to be monitored during structural monitoring inspections, as well as establishes examination criteria, evaluation requirements, and acceptance criteria.

#### **NUREG-1801 Consistency**

The Masonry Wall Program is an existing program that, following enhancement, will be consistent with NUREG-1801, Section XI.S.5, "Masonry Wall Program."

#### **Exceptions to NUREG-1801**

None

#### **Enhancements**

Prior to the period of extended operation, the following enhancement will be implemented in the following program element:

##### *Scope of Program – Element 1*

Procedures will be enhanced to identify unreinforced masonry in the radwaste building within the scope of license renewal that requires aging management.

#### **Operating Experience**

The baseline Evaluation of Maintenance Rule Observations was completed in 1998. Aging effects were observed on masonry walls in the auxiliary building, communication corridor, control building, and turbine building. Cracking was the most frequently observed aging effect to masonry walls. Other types of deterioration that could lead to increased aging effects to masonry walls were support angles missing bolts, pop outs due to installation of steel components, and the presence of water.

During this baseline inspection in 1998, several masonry walls that are within the scope of license renewal were found to have aging effects significant enough to be classified as "Acceptable with Degradation." These walls are located in the control building and the turbine building. Subsequent inspections were performed in 2002 and 2003. These areas with degradation, on in-scope masonry walls, were found to have stabilized, and down

grading to a classification of "Acceptable with Minor Degradation" was recommended for each one.

**Conclusion**

The continued implementation of the Masonry Wall Program provides reasonable assurance that aging effects will be managed such that the systems and components within the scope of this program will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.