UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 2, 2007

Mr. Rick A. Muench
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
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SUBJECT: WOLF CREEK GENERATING STATION - CONFORMING LICENSE AMENDMENT TO INCORPORATE THE MITIGATION STRATEGIES REQUIRED BY SECTION B.5.b. OF COMMISSION ORDER EA-02-026 (TAC NO. MD4641)

Dear Mr. Muench:

This letter documents the results of the U.S. Nuclear Regulatory Commission (NRC) staff's regulatory assessment of the adequacy of the actions taken by the Wolf Creek Nuclear Operating Corporation for the Wolf Creek Generating Station in response to Section B.5.b. of the February 25, 2002, Interim Compensatory Measures (ICM) Order (EA-02-026) and related NRC guidance.

The ICM Order was issued following the events of September 11, 2001, as part of a comprehensive effort by the NRC, in coordination with other government agencies, to improve the capabilities of commercial nuclear reactor facilities to respond to terrorist threats. Section B.5.b. of the Order required licensees to develop specific guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities using existing or readily available resources (equipment and personnel) that could be effectively implemented under the circumstances associated with loss of large areas of the plant due to explosions or fire, including those that an aircraft impact might create. Although it was recognized prior to September 11, 2001, that nuclear reactors already had significant capabilities to withstand a broad range of attacks, implementing these mitigation strategies would significantly enhance the plants' capabilities to withstand a broad range of threats. It should be noted that portions of the ICM Order, as well as other documents referenced in this letter, contain security-related or safeguards information, and are not publicly available.

Licensee actions to implement Section B.5.b mitigation strategies have been ongoing since the issuance of the 2002 ICM Order. In 2005, the NRC issued guidance to more fully describe the NRC staff's expectations for implementing Section B.5.b of the ICM Order. The NRC guidance relied upon lessons learned from detailed NRC engineering studies and industry best practices. Additionally, the NRC conducted two on-site team assessments at each reactor facility that identified additional mitigating strategies for preservation of core cooling, containment integrity, and spent fuel pool cooling. In total, these efforts have added defense in depth through the use of additional equipment and strategies. Moreover, these enhancements that have strengthened the interface between plant safety and security operations now include fire-fighting response strategies; plant operations to mitigate fuel damage; and actions to minimize releases.

NOTICE: The attachments to the Safety Evaluation contain Security-Related Information. Upon separation from these attachments, this letter and Enclosures 1 and 2 are DECONTROLLED.

The enclosed Safety Evaluation (SE) details the interactions between the NRC staff and the Wolf Creek Nuclear Operating Corporation, as well as the rest of the nuclear industry, related to the final resolution of Section B.5.b. of the ICM Order.

The NRC is incorporating requirements for the B.5.b mitigating strategies into the Facility Operating License. This letter, therefore, also transmits the license condition that captures the ICM Order Section B.5.b mitigation strategy requirements and incorporates them into the licensing basis.

This proposed license condition was transmitted by the NRC to the Wolf Creek Nuclear Operating Corporation in a letter dated October 12, 2006. By letter dated February 23, 2007, the Wolf Creek Nuclear Operating Corporation informed the NRC staff that it would accept the proposed license condition, with a minor change that the NRC staff finds acceptable. The effectiveness of the licensee's actions to implement the mitigative strategies contained in this license condition will be subject to future NRC review and inspection.

Consistent with the Order, an administrative license change to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station is being made to incorporate the agreed upon license condition. This change complies with the standards and requirements of the Atomic Energy Act of 1954, as amended, and the Commission's rules and regulations set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Chapter I. Please replace the affected pages of the Facility Operating License with the enclosed pages (Enclosure 1).

The attachments to the SE are designated exempt from public disclosure under 10 CFR 2.390(d)(1) since they contain security-related information and are Official Use Only.

If you have any questions, please contact me at (301) 415-1307.

Sincerely,

Jack Donohew

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Docket No. 50-482

Enclosures:
1. Revised Pages of Facility Operating License No. NPF-42
2. Safety Evaluation

cc w/o atts to Encl. 2: See next page

Wolf Creek Generating Station

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY

THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO ORDER NO. EA-02-026

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Safety Evaluation (SE) is to document the U.S. Nuclear Regulatory Commission (NRC) staff's regulatory assessment of the adequacy of the actions taken by the Wolf Creek Nuclear Operating Corporation (the licensee) in response to the February 25, 2002, Interim Compensatory Measures (ICM) Order and the subsequent NRC letter to licensees dated February 25, 2005, transmitting NRC guidance (Phase 1 guidance document). This SE describes the basis for finding licensee strategies adequate to satisfy the requirements of the ICM Order. This SE also discusses the license condition that satisfactorily captures the mitigation strategy requirements. If the licensee makes future changes to its strategies within its commitment management program, this SE will be useful to the NRC staff in determining if the changed strategies are adequate to meet the license condition. It should be noted that portions of the ICM Order, as well as other documents referenced in this SE, contain security-related or safeguards information, and are not publicly available.

1.2 Background

The February 25, 2002, ICM Order that imposed interim compensatory measures on power reactor licensees required in Section B.5.b, Mitigative Measures, the development of "specific guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities using existing or readily available resources (equipment and personnel) that can be effectively implemented under the circumstances associated with loss of large areas of the plant due to explosions or fire." These actions were to be implemented by the end of August 2002. Inspections of the implementation of the Section B.5.b requirements were conducted in 2002 and 2003 (Temporary Instruction (TI) 2515/148). The inspections identified large variabilities in scope and depth of the enhancements made by licensees. As a result, the NRC determined that additional guidance and clarification was needed for nuclear power plant licensees.

NOTICE: The attachments to the Safety Evaluation contain Security-Related Information. Upon separation from these attachments, this Safety Evaluation is DECONTROLLED.

Subsequent to the conduct of the TI 2515/148 inspections, engineering studies conducted by the NRC Office of Regulatory Research (RES) provided insights into the implementation of mitigation strategies to address the loss of large areas of a plant due to explosions or fire, including those that an aircraft impact might create. The NRC actions resulting from these studies included: (1) inspections of licensee actions that address plant-specific consequences, (2) issuance of advisories that involve processes and protocols for licensee notification of an imminent aircraft threat, and (3) identification of mitigative measures to enhance plant response to explosions or fire.

On November 24, 2004, the NRC issued a letter to licensees providing information on the Commission's phased approach for enhancing reactor mitigative measures and strategies for responding to Section B.5.b of the ICM Order. On February 25, 2005, the NRC issued guidance (Phase 1 guidance document) to describe more fully the NRC staff's expectations for implementing Section B.5.b of the ICM Order. Determination of the specific strategies required to satisfy the Order, elaborated on by the Phase 1 guidance document, was termed Phase 1. Further information on the Commission's phased approach and its reliance on the Phase 1 guidance document and related workshop was described in an NRC letter to licensees dated January 14, 2005.

The NRC Phase 1 guidance document relied upon lessons learned from recent NRC engineering studies involving plant assessments, as well as industry best practices. This guidance also included the spent fuel pool mitigative measures described in a NRC letter to licensees dated July 29, 2004, "Issuance of Spent Fuel Pool Mitigative Measures." These best practices were identified during the inspections conducted in 2002 and 2003. The Phase 1 guidance document also incorporated industry comments made at two B.5.b-related workshops held on January 14, 2005, and February 2, 2005.

2.0 REGULATORY EVALUATION

Section B.5.b of the ICM Order required licensees to develop specific guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities using existing or readily-available resources (equipment and personnel) that can be effectively implemented under the circumstances associated with loss of large areas of the plant due to explosions or fire. Determination of the specific strategies required to satisfy the Order, elaborated on in the Phase 1 guidance document, was termed Phase 1.

In order to assure adequate protection of public health and safety and common defense and security, the NRC determined that differences in plant design and configuration warranted independent assessments to verify that the likelihood of damage to the reactor core, containment, and spent fuel pools and the release of radioactivity is low at each nuclear power plant. The Commission directed the NRC staff to conduct site-specific security and safety assessments to further identify enhanced mitigation capabilities. Site-specific assessments of spent fuel pools were deemed Phase 2 and site-specific assessments of reactor core and containments were deemed Phase 3.

The goal of the Phase 2 and 3 mitigation strategy assessments was for the NRC and the licensees to achieve a new level of cognition of safety and security through a comprehensive understanding of the capabilities and limitations of the plants under normal, abnormal, and

severe circumstances (from whatever cause). Based on this improved understanding, licensees could take reasonable steps to strengthen their capabilities and reduce their limitations. The NRC expected that safety and security would be well served by further enhancing the licensee's severe accident management strategies for mitigating a wide spectrum of events through the use of readily-available resources and by identifying potential practicable areas for the use of beyond-readily-available resources.

During 2005, the NRC staff performed inspections (TI 2515/164) to determine licensees' compliance with Section B.5.b of the ICM Order (Phase 1). Subsequent meetings were held with licensees to resolve identified open issues. Confirmatory B.5.b Phase 1 inspections (TI 2515/168) were conducted during the period of June to December 2006. The NRC staff conducted site visits as part of the Phase 2 assessments during 2005. In 2006, the NRC staff observed licensee Phase 3 studies and conducted independent Phase 3 assessments.

On January 24, 2006, the Nuclear Energy Institute (NEI) submitted a letter (M. Fertel to L. Reyes) describing an industry proposal for resolving ("closing") Phase 2 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML060260220). The industry proposed high level functional mitigating strategies for a spectrum of potential scenarios involving spent fuel pools. In a letter to all Holders of Licenses for Operating Power Reactors dated June 21, 2006 (ADAMS Accession No. ML061670146), the NRC accepted the Phase 2 proposal pending review of site-specific details of its application and implementation. In arriving at this conclusion, the NRC staff placed significant weight on portions of the proposal that rely on industry commitments to provide beyond-readily-available resources not previously available. These additions will significantly enhance licensees' mitigating strategies capabilities.

On June 27, 2006, the NEI submitted two letters (M. Fertel to W. Kane). In one of the letters, the NEI proposed a license condition to capture the Section B.5.b requirements and addressed items deferred from Phase 1 to Phase 2 (ADAMS Accession No. ML061790400). The license condition includes 14 items in the same broad categories as the February 25, 2005, Phase 1 guidance document; fire fighting response strategy, plant operations to mitigate fuel damage, and actions to minimize releases. The proposal suggested that the implementing details found to be an acceptable means of meeting the license condition would be treated as commitments, and managed in accordance with NEI 99-04, "Guidelines for Managing NRC Commitment Changes." In the second letter, the NEI proposed generic strategies for closure of Phase 3 (ADAMS Accession No. ML061860753). The required strategies for all three phases would be covered by the license condition and all implementing details would be managed by NEI 99-04.

The February 25, 2005, Phase 1 guidance document included 34 expectations. Two of these items were deferred to Phase 2 and seven items (i.e., six expectations and one element of a seventh expectation) were deferred to Phase 3. The NRC staff reached agreement with licensees on the non-deferred items under Phase 1.

Table 1 provides a cross reference of how the 34 elements of the February 25, 2005, Phase 1 guidance document and Phases 2 and 3 mitigating strategies correspond to the sections of the license condition.

On June 29, 2006, the NRC staff issued a letter to the NEI conditionally accepting its proposed license condition and strategies (ADAMS Accession No. ML061790306). The letter reiterated

that mitigation strategies in NEI's proposals that were identified during the Phase 2 and 3 assessments, which utilize reasonable, evident, readily-available resources (as identified in the February 25, 2005, Phase 1 guidance document) are required pursuant to Section B.5.b of the ICM Order. The implementing details of the required strategies will be implemented by commitment and managed in accordance with the NEI commitment management guideline, NEI 99-04. The NRC staff believes the NEI proposal reasonably justifies excluding from formal regulatory controls those additional strategies identified during the site-specific Phases 2 and 3 assessments that the NRC previously deemed required under Section B.5.b of the ICM Order, but not identified in NEI's proposals. Inherent in this conclusion is recognition of the addition of beyond-readily-available resources included in the proposals. The implementing details of mitigation strategies included in the proposal, including those that utilize beyond-readily-available resources, will be treated as commitments, which will become part of the licensing basis of the plant. Additional strategies identified during site-specific assessments which licensees deem acceptable and valuable to promote diversification and survivability, will be incorporated into licensees' Severe Accident Management Guidelines, Extreme Damage Mitigation Guidelines, or appended to other site implementation guidance. To verify compliance, the NRC staff evaluated the site-specific implementation and documentation of the proposed Phases 2 and 3 mitigating strategies for each U.S. nuclear power plant.

3.0 TECHNICAL EVALUATION

The NRC staff's technical evaluation for strategies identified in Phase 1 of Section B.5.b is found in Appendix A. The NRC staff's technical evaluation for strategies identified in Phases 2 and 3 of Section B.5.b is found in Appendix B.

The Mitigating Strategies Table (MST) is included as Appendix C. The purpose of the MST is to capture, at the functional level, a summary of licensee strategies for compliance with the 34 measures presented in the February 25, 2005, Phase 1 guidance document and to indicate how the 34 items correlate to the 14 items in the license condition.

4.0 REGULATORY COMMITMENTS

The implementing details of the mitigating strategies required by the license condition are identified in licensee submittals dated February 23, 2007 (ADAMS Accession No. ML070600147), and May 2, 2007 (ADAMS Accession No. ML071310386). These details will be implemented by commitment and managed in accordance with the NEI commitment management guideline, NEI 99-04. The NRC staff concludes this provides reasonable controls for mitigating strategy implementation and for subsequent evaluation of licensee-identified changes.

Because the 14 items required by the license condition correlate to the 34 items presented in the February 25, 2005, Phase 1 guidance document and the mitigating strategies within NEI's Phase 2 and 3 proposals, and because the implementing details will be managed under NEI 99-04, the NRC staff is satisfied that there will be sufficient controls to ensure that the strategies are adequately maintained.

5.0 CONCLUSION

Based on the NRC staff's review described in Appendices A, B, and C of this SE, the licensee's responses to the February 25, 2005, Phase 1 guidance document and the spent fuel pool and reactor core and containment mitigating strategy assessments meet the requirements of Section B.5.b, Mitigative Measures, of the February 25, 2002, ICM Order that imposed interim compensatory measures on power reactor licensees. The NRC staff concludes that full implementation of the licensee's enhancements in the submittals identified in Section 4.0, above, constitutes satisfactory compliance with Section B.5.b and the license condition, and represents reasonable measures to enhance the licensee's effectiveness in maintaining reactor core and spent fuel pool cooling and containment integrity under circumstances involving the loss of large areas of the plant due to fires or explosions.

The Commission has concluded, based on the considerations discussed above, that: (1) there is 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Attachments (Official Use Only - Security-Related Information - ADAMS Accession No. ML072110265):

1. Phase 1 Assessment (Appendix A)
2. Phases 2 and 3 Assessment (Appendix B)
3. Mitigating Strategies Table (Appendix C)

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Date: August 2, 2007

Table 1

CROSS REFERENCE BETWEEN LICENSE CONDITION AND

GUIDANCE DOCUMENT ELEMENTS

License Condition section	Guidance Document Elements
A. Fire fighting response strategy with the following elements:	
1. Pre-defined coordinated fire response strategy and guidance	B.1.b Staging of personnel B.1.e Outside organization Support B.1.j Treatment of casualties B.1.k Site assembly areas (mass casualties) B.1.m Industry best practice - feeding fire protection ring header
2. Assessment of mutual aid fire fighting assets	B.1.c Airlifted resources B.1.f Mobilization of fire fighting resources - existing or new MOUs B.1.g Mobilization of fire fighting resources - coordination with other than local mutual aid fire fighting resources (i.e, Industrial facilities, large municipal fire departments, airports, and military bases)
3. Designated staging areas for equipment and materials	B.1.a Staging of equipment B.1.h Controlling emergency response vehicles (includes rad monitoring)
4. Command and Control	B.1.d Command and control B.1.i Communications enhancements
5. Training of response personnel	B.1.l Training considerations

B. Operations to mitigate fuel damage considering the following:	
1. Protection and use of personnel assets	B.2.a Personnel considerations
2. Communications	B.2.b Communications measures
3. Minimizing fire spread	B.2.h Compartmentalization of plant areas
4. Procedures for implementing integrated fire response strategy	B.2.c Procedures (Included in Phase 3 strategies) B.2.d Evaluation of vulnerable buildings and equipment (Included in Phase 3 strategies) B.2.e Industry best practice - Containment venting and vessel flooding B.2.f Industry best practice for compensatory function (Included in Phase 3 strategies) B.2.g Best practice for use of plant equipment B.2.i Best practice involving plant areas potentially affected by fire or explosions (Included in Phase 3 strategies) B.2.k Best practice for establishing supplemental response capabilities B.2.l Best practice for establishing supplemental response capabilities
5. Identification of readily-available, pre-staged equipment	B.2.g Best practice for use of plant equipment - portable generator and transformer (Included in Phase 3 strategies) B.2.j Best practice involving reliance on portable and offsite equipment (Included in Phase 3 strategies)

6. Training on integrated fire response strategy	B.2.n Training considerations
7. Spent fuel pool mitigation measures	B.2.m.1 Dispersal of Fuel B.2.m.2 Hot fuel over rack feet B.2.m.3 Downcomer area B.2.m.4 Enhanced air circulation (Included in Phase 2 strategies) B.2.m.5 Emergency pool makeup, leak reduction/repair (Included in Phase 2 strategies)
C. Actions to minimize release to include considerations of:	
1. Water spray scrubbing	B.3.a Water spray scrubbing B.3.b Prestaging of equipment
2. Dose to onsite responders	B.3.c Dose projection models (Included in Phase 3 strategies)