

# **WOLF CREEK**

NUCLEAR OPERATING CORPORATION

Britt T. McKinney  
Site Vice President

**MAR 03 2004**

WO 04-0002

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

Subject: Docket No. 50-482: Defense-in-Depth and Diversity Assessment  
for Digital Upgrade of the Wolf Creek Generating Station's  
Instrumentation and Control Systems

Gentlemen:

Wolf Creek Nuclear Operating Corporation (WCNOC) is implementing plans to replace the Wolf Creek Generating Station (WCGS) current analog-based instrumentation and control systems, including the Reactor Trip System (RTS) and Engineered Safety Features Actuation System (ESFAS), with the Framatome Advanced Nuclear Power (FANP) TELEPERM XS (TXS) system. The planned modifications are being developed in conjunction with AmerenUE (Union Electric Company) since AmerenUE is planning similar modifications for the Callaway Plant.

The TXS design was generically described in Topical Report EMF-2110(NP), Revision 1, "TELEPERM XS: A Digital Reactor Protection System." By letter dated May 5, 2000, the Nuclear Regulatory Commission (NRC) documented its acceptance of the TXS system and found Topical Report EMF-2110(NP), Revision 1, acceptable for referencing in license applications to the extent specified in the topical report and in the NRC safety evaluation that was attached to the NRC's May 5, 2000 letter.

On November 12, 2003, WCNOC, AmerenUE, and FANP met with the NRC staff to discuss the planned TXS modifications including submittal of the defense-in depth and diversity assessment required to support NRC plant-specific review of forthcoming license amendment applications for the new TXS systems. As described in that meeting, the design, qualification, and testing of the FANP TXS system minimizes the probability of software common-mode failures.

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Enclosed is the requisite defense-in-depth and diversity assessment for the TXS systems to be employed at WCGS and the Callaway Plant. The assessment identifies ten techniques used in the design of the TXS system. These techniques employ concepts that, when combined, result in the capability to tolerate software common-mode failures without defeating safety functions. The design techniques use concepts of defense-in-depth and diversity that are applied to both the hardware and software architectural design of individual TXS systems. The TXS system will thus operate with diverse software to ensure that redundancy among protection set channels is preserved even in the presence of common-mode failures. The enclosed report describes the features of the TXS system that result in the system's inherent capability to tolerate common-mode failures.

WCNOC, AmerenUE, and FANP utilized the guidance in NUREG 0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Branch Technical Position (BTP) HICB-19, "Guidance for Evaluation of Defense-in-Depth and Diversity in Digital Computer-Based Instrumentation and Control Systems," for performing the defense-in-depth and diversity assessment. In utilizing this methodology, an approach was undertaken for evaluating each of the design basis events identified in the accident analysis. This approach led to finalizing a TXS system design that effectively utilizes defense-in-depth and diversity to minimize or cope with any potential software common-mode failure within the TXS system.

In order to support the implementation schedule for replacement of the instrumentation and control systems at the Callaway Plant, WCNOC requests NRC approval of the TXS system defense-in-depth and diversity assessment for the Callaway Plant and WCGS by December 1, 2004. As described in the November 12, 2003 meeting, implementation is to proceed in phases, beginning with the first phase during Refueling Outage 14 in September 2005 for the Callaway Plant and Refueling Outage 15 for WCGS. The enclosed assessment (for both plants) is intended to support future license amendment requests (LARs) that will be submitted separately by WCNOC for WCGS and AmerenUE for the Callaway Plant. WCNOC and AmerenUE are submitting this assessment in advance of the LARS to allow sufficient time for NRC review of this defense-in-depth and diversity assessment in advance of the anticipated LARs.

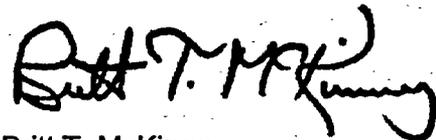
FANP has determined that certain information contained in the defense-in-depth and diversity assessment is proprietary. Therefore, this letter transmits both a proprietary copy (Enclosure I) and non-proprietary copy (Enclosure II) of the assessment. Enclosed is an affidavit executed by FANP (owner of the proprietary information). Accordingly, it is respectfully requested that the proprietary information be withheld from public disclosure in accordance with 10 CFR 2.390.

Communications concerning the proprietary aspects of the information being submitted or the supporting FANP affidavit should be addressed to James F. Mallay, Director, Regulatory Affairs, Framatome ANP, 3315 Old Forest Road, Lynchburg, VA 24501.

This application was reviewed by the Plant Safety Review Committee and the Nuclear Safety Review Committee.

Please contact me at (620) 364-4112 or Mr. Kevin Moles at (620) 364-4126 for any questions you may have regarding this application.

Sincerely,



Britt T. McKinney

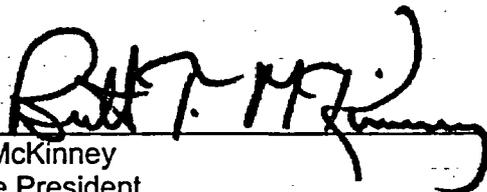
BTM/rlg

Enclosures: I - Defense-in-Depth and Diversity Assessment (Proprietary)  
II - Defense-in-Depth and Diversity Assessment (Non-Proprietary)

cc: V. L. Cooper (KDHE), w/Enclosure II  
J. N. Donohew (NRC), w/e  
D. N. Graves (NRC), w/e  
B. S. Mallett (NRC), w/e  
Senior Resident Inspector (NRC), w/e

STATE OF KANSAS )  
 ) SS  
COUNTY OF COFFEY )

Britt T. McKinney, of lawful age, being first duly sworn upon oath says that he is Site Vice President 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   
Britt T. McKinney  
Site Vice President

SUBSCRIBED and sworn to before me this 3<sup>RD</sup> day of MAR, 2004.

  
MARY E. GIFFORD  
Notary Public - State of Kansas  
My Appt. Expires 12/09/2007

Mary E. Gifford.  
Notary Public

Expiration Date 12/09/2007



6. The following criteria are customarily applied by FANP to determine whether information should be classified as proprietary:

- (a) The information reveals details of FANP's research and development plans and programs or their results.
- (b) Use of the information by a competitor would permit the competitor to significantly reduce its expenditures, in time or resources, to design, produce, or market a similar product or service.
- (c) The information includes test data or analytical techniques concerning a process, methodology, or component, the application of which results in a competitive advantage for FANP.
- (d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for FANP in product optimization or marketability.
- (e) The information is vital to a competitive advantage held by FANP, would be helpful to competitors to FANP, and would likely cause substantial harm to the competitive position of FANP.

7. In accordance with FANP's policies governing the protection and control of information, proprietary information contained in this Document have been made available, on a limited basis, to others outside FANP only as required and under suitable agreement providing for nondisclosure and limited use of the information.

8. FANP policy requires that proprietary information be kept in a secured file or area and distributed on a need-to-know basis.

9. The foregoing statements are true and correct to the best of my knowledge,  
information, and belief.

  
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SUBSCRIBED before me this 25<sup>th</sup>  
day of February, 2004.

  
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Ella F. Carr-Payne  
NOTARY PUBLIC, STATE OF VIRGINIA  
MY COMMISSION EXPIRES: 8/31/05

