

March 4, 2004

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop P1-137
Washington, DC 20555-0001

Ladies and Gentlemen:

ULNRC-04945



**CALLAWAY PLANT
UNION ELECTRIC CO.
DOCKET NUMBER 50-483
DEFENSE-IN-DEPTH AND DIVERSITY
ASSESSMENT FOR DIGITAL UPGRADE OF
CALLAWAY'S INSTRUMENTATION AND CONTROL SYSTEMS
(LICENSE AMENDMENT REQUEST OL-1249)**

AmerenUE (Union Electric Company) is implementing plans to replace Callaway's current analog-based instrumentation and controls 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. These planned modifications are being developed in conjunction with Wolf Creek Nuclear Operation Corporation (WCNOC) since WCNOC is planning similar modifications for the Wolf Creek Generating Station (WCGS).

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, AmerenUE, WCNOC 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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Attached is the requisite defense-in-depth and diversity assessment for the TXS systems to be employed at Callaway and WCGS. 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 overall system's inherent capability to tolerate common-mode failures.

AmerenUE, WCNOG, 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 Callaway, AmerenUE 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 in September 2006 for WCGS. The enclosed assessment (for both plants) is intended to support future license amendment requests (LARs) that will be separately submitted by AmerenUE for Callaway and by WCNOG for WCGS. AmerenUE and WCNOG are submitting this assessment in advance of those license amendment requests (LARs) to allow sufficient time for NRC review of this defense-in-depth and diversity assessment prior to the 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 1) and non-proprietary copy (Enclosure 2) of the assessment. Enclosed is an affidavit executed by FANP (the 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.

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Communications concerning the proprietary aspects of the information being submitted or the supporting FANP affidavit should be addressed to James F. Mally, Director, Regulatory Affairs, Framatome ANP, 3315 Old Forest Road, Lynchburg, VA 24501. Please contact me at (573) 676-8659 or Dave Shafer at (314) 554-3104 for any other questions you may have regarding this application.

Very truly yours,



Keith D. Young
Manager, Regulatory Affairs

TBE/mlo

Enclosures: 1 – Defense-in-Depth and Diversity Assessment (Proprietary)
2 – Defense-in-Depth and Diversity Assessment (Non-Proprietary)

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)
COUNTY OF CALLAWAY)

SS

Keith D. Young, of lawful age, being first duly sworn upon oath says that he is Manager, Regulatory Affairs, for Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company 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 Keith D. Young
Keith D. Young
Manager, Regulatory Affairs

SUBSCRIBED and sworn to before me this 4th day of March, 2004.



Cathy J. Crisp
Notary Public
State of Missouri
Expiration 1-29-06

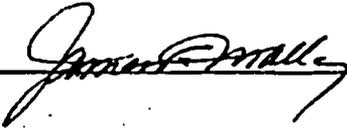
6. The following criteria are customarily applied by FANP to determine whether information should be classified as proprietary:

- (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.

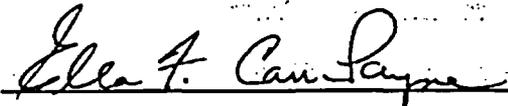
7. In accordance with FANP's policies governing the protection and control of information, proprietary information contained in this Document have been made available, on a limited basis, to others outside FANP only as required and under suitable agreement providing for nondisclosure and limited use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



SUBSCRIBED before me this 25th
day of February, 2004.



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

