



UNION ELECTRIC COMPANY

1901 Gratiot Street, St. Louis

Donald F. Schnell
Vice President

February 12, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ULNRC- 1037

Dear Mr. Denton:

DOCKET NUMBER 50-483
CALLAWAY PLANT, UNIT 1
REVISION TO TECHNICAL SPECIFICATION 4.6.1.6.1,
SURVEILLANCE OF CONTAINMENT VESSEL TENDONS

Union Electric Company herewith transmits three (e) original and forty (40) conformed copies of an application for amendment to Facility Operating License No. NPF-30 for Callaway Plant, Unit 1.

This application requests that the Callaway Technical Specifications, Appendix A to the Operating License, be revised to extend the period for completion of the containment vessel tendon surveillances required by Specification 4.6.1.6.1. Deferral of the Callaway surveillance is required to allow Union Electric's inspection contractor, INRYCO, Inc., to assist Alabama Power Company in evaluating anomalies recently found in the containment post tensioning system of the Farley-Unit 2 plant. Without INRYCO's services, the outage at Farley would be unnecessarily extended. The enclosures to this letter include a safety evaluation of the requested change, consideration of significant hazards, and a proposed revision to Page 3/4 6-8 of the Technical Specifications. These enclosures document Union Electric's position that the requested amendment does not present a significant hazard.

The requested change involves an additional 6 months in the due date of the initial one year tendon surveillance and a resultant step change of 6 months in the subsequent surveillance dates. Our need date for approval of this amendment request is April 5, 1985, based on the current date scheduled for completion of the subject surveillance. Enclosed is a check for the \$150.00 application fee required by 10CFR170.21.

Very truly yours,

Donald F. Schnell
Donald F. Schnell

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DFS/DS/bjp

- Enclosures: 1-Safety Evaluation
2-Significant Hazard Consideration
3-Marked Specification Page 3/4 6-8

Mailing Address: P.O. Box 149, St. Louis, MO 63166

Rec'd! w/ check \$150.00
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Acc'd
3/40

STATE OF MISSOURI)
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CITY OF ST. LOUIS)

Donald F. Schnell, of lawful age, being first duly sworn upon oath says that he is Vice President-Nuclear and an officer of 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 Donald F. Schnell
Donald F. Schnell
Vice President
Nuclear

SUBSCRIBED and sworn to before me this 12th day of February, 1985.

Barbara J. Pfaff
BARBARA J. PFAFF
NOTARY PUBLIC, STATE OF MISSOURI
MY COMMISSION EXPIRES APRIL 22, 1985
ST. LOUIS COUNTY

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SAFETY EVALUATION

This amendment request revises the timing associated with Technical Specification Surveillance 4.6.1.6.1, by extending each of the three containment vessel tendon surveillances six (6) months. This extension is requested because the services of INRYCO, the inspection contractor for Union Electric and Alabama Power Co., are needed to evaluate anomalies recently found at the Farley - Unit 2 plant. We have released INRYCO to Alabama Power Company so that the outage associated with the Farley problem is not unnecessarily extended. In support of this request, the following sections address the Callaway post tensioning system design conservatism, inspections of installation activities, field anchor head materials, recent field inspection results, and expected results of the initial tendon surveillance based on Bechtel experience.

Design Conservatism

The containment vessel post tensioning system is designed to provide a minimum level of prestress of 1.2 times the design accident pressure at the end of the 40-year design life of the plant. The prestressing tendons are initially stressed to provide an even higher level of prestress to allow for time-dependent stress losses which occur during the life of the plant. As such, there is a significantly higher level of prestress provided at the beginning of the design life over that remaining after 40 years.

The Callaway post tensioning system was designed for an internal containment pressure of 72 psig, which is 1.2 times the design accident pressure of 60 psig. The containment was subjected to a test pressure of 69 psig during the Containment Structural Integrity Test (SIT) in January, 1984. In the event of a main steam line break (the accident which yields the maximum containment pressure), pressure is calculated to peak at 48.1 psig. This provides a margin of 1.50, 25% higher than the required value of 1.2. Taking prestressing levels predicted to occur in six months into account, the margin becomes approximately 1.65.

It should be noted that the 1.2 prestress factor is provided only to maintain compression in the concrete shell during the SIT. This level of prestress is not required, however, to maintain structural integrity. The containment is designed to remain elastic at internal pressures of approximately 90 psig and it can be shown that the ultimate capacity is at least 120 psig.

Inspections of Installation Activities

During the period of February 1981 through October 1981, the following audits, surveillances and inspections were completed while overseeing installation of the Callaway containment post tensioning system:

One Bechtel/UEQA Audit,
Six UEQA Surveillances,
One DIC/UEQA Audit,
Three DIC/QA Surveillances, and
Seven NRC Inspection Reports

These reports document the performance of tendon button heading, tendon stressing, greasing, material storage, equipment calibration/qualification, QC inspection, and personnel qualification. All reports indicate satisfactory performance by INRYCO during installation of the Callaway post tensioning system.

Field Anchor Head Plate Materials

Some of the problems encountered with containment post tensioning systems at other plants appear to be related to anchor head material manufactured and heat treated in the early 1970's. A review of records provided for Callaway anchor heads by the material suppliers and heat treatment vendors showed the following:

<u>Material Supplier</u>	<u>Dates</u>
Copperweld	1980, 81
Tech. Steel & Alloy	1979, 80
Timken	1979, 80

<u>Heat Treatment Vendors</u>	<u>Specification</u>
Varco Heat Division	MIL-H-6875-F
Accurate Steel Treating	PT 5.2.1 INRYCO
FPM Heating Division	PT 5.2.1 INRYCO

It was determined that a different INRYCO heat treatment procedure was used for Callaway anchor heads (HT-101 had been used previously). The material suppliers and heat treatment vendors employed for Callaway anchor heads are different than those involved with anchor heads which failed at other sites. This reinforces our conclusion that tendons installed at Callaway continue to satisfy design requirements.

Recent Field Inspection Results

On February 5, 1985 a visual inspection of the Callaway containment post tensioning system was conducted by personnel from Union Electric engineering and operations departments and Bechtel site engineering. The inspection involved looking for tendon grease cap deformation or abnormal grease leakage and excessive cracking around the tendon bearing plates. Further visual inspection cannot be performed without removing the grease cap, which requires the services of INRYCO.

A close inspection was made of all 172 (86 tendons) inverted U and 100 (50 tendons) reasonably accessible hoop anchorages. No deformation, abnormal grease leakage or cracking was found.

An inspection of the remaining 170 (85 tendons) hoop and 60 (30 tendons) horizontal dome anchorages was made with the aid of field glasses. No deformation or abnormal grease leakage was found.

Based on this inspection of all Callaway tendon anchorages, no evidence was found to indicate a tendon failure or excessive stress in the concrete.

Bechtel Initial Tendon Surveillance Experience

Bechtel has designed 14 containment buildings which employ post tensioning systems and for which the first year inspections have been completed. Four of these units involved INRYCO, the same supplier as was used at Callaway. All surveillances in the first year were acceptable.

Conclusion

Based on the information above, the proposed revision to Technical Specification 4.6.1.6.1 does not affect or endanger the health and safety of the general public and does not involve an unreviewed safety question.

SIGNIFICANT HAZARDS CONSIDERATIONS

This amendment request revises the timing associated with Technical Specification Surveillance 4.6.1.6.1, by extending each of the three containment vessel tendon surveillances six (6) months. The Safety Evaluation, included as Enclosure 1 to this letter, provides Union Electric's bases for concluding that the Callaway Plant can be safely operated consistent with the revised surveillance schedule.

The Safety Evaluation addressed the design conservatism, inspections of installation activities, field anchor head materials, recent field inspection results, and expected results from the initial inservice tendon surveillance for the Callaway post tensioning system. Based on this, a six month extension in the time for the detailed tendon surveillance will not significantly increase the probability of tendon failure and will, therefore, not increase the probability or consequences of any previously analyzed accident.

Because the proposed extension of the time for detailed tendon surveillance will not impact tendon integrity, will not affect the method and manner of plant operation and will not affect components and equipment important to safe operation, the proposed amendment does not create the possibility of a new and different accident from any previously evaluated.

Because recent field inspections showed no evidence of tendon failure and because containment prestress levels are not expected to decrease by any significant degree in the proposed six month period of surveillance extension, this revision to the Technical Specifications will not significantly reduce any margins of safety.

Based on the foregoing analysis, the requested license amendment does not present a significant hazard.