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August 19, 1996

Donald F. Schnell  
Senior Vice President  
Nuclear

U. S. Nuclear Regulatory Commission  
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Gentlemen:

ULNRC-3420  
TAC No. M95203

CALLAWAY PLANT  
DOCKET NUMBER 50-483  
REVISION TO TECHNICAL SPECIFICATION  
3/4.4 - REACTOR COOLANT SYSTEM

- References: 1) ULNRC-3357 dated April 12, 1996  
2) K. M. Thomas ltr to D. F. Schnell  
dated July 23, 1996  
3) ULNRC-3410 dated August 2, 1996

This letter provides a summary of the results of the confirmatory testing that was performed for 11/16 inch steam generator tube sleeves. Reference 3 committed to provide this information by August 15, 1996. However, in a telecon on August 15, 1996 with the NRC Project Manager for Callaway Plant, Union Electric indicated that the results would be provided the week of August 19, 1996.

If you have any questions concerning this information, please contact us.

Very truly yours,

A handwritten signature in cursive script that reads "Donald F. Schnell".

Donald F. Schnell

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DFS/WEK  
Attachment

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STATE OF MISSOURI     )  
                              )     S S  
COUNTY OF CALLAWAY   )

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

SUBSCRIBED and sworn to before me this 17<sup>th</sup> day  
of AUGUST, 1996.

JA Clark

JA CLARK  
NOTARY PUBLIC STATE OF MISSOURI  
COLE COUNTY  
MY COMMISSION EXP. OCT 20 1996

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RESPONSES TO NRC REQUEST FOR ADDITIONAL  
INFORMATION - CALLAWAY LASER WELDED SLEEVING

By letter dated August 2, 1996 (ULNRC-3410), Union Electric committed to provide a summary of the tests performed to validate the formal laser welded tube sleeve weld process.

Summary of Weld Process

The formal ASME Code qualification of the laser weld process has been completed. The qualification data package which includes the Weld Process Specification and the Process Qualification Records are available for review.

Two-pass and three-pass processes have been formally qualified. The qualification testing included the preparation of six samples for the following welding power ranges for each process:

324W to 336W  
337W to 349W  
350W to 361W

A total of 36 weld samples on sleeved tube mockups were made. These samples were visually inspected using a Welsh Allyn probe and UT inspected. Following the heat treatment process, the samples were sectioned for metallographical examinations and PT.

The results for all 36 samples were acceptable in that the welds had adequate widths at the sleeve/tube interface and had no hot cracks. The weld surfaces were found to be acceptable for UT inspection.

Summary of Lower Joint Qualification Testing

Three types of tests were performed to qualify the elevated tube sleeve lower joint, 1) primary-to-secondary leak resistance testing, 2) secondary-to-primary "onset of significant leakage testing" and 3) sleeve pullout testing.

A nominal roll expansion torque of 120  $\pm$ 10 inch-lbs. was identified during the scoping test and verified during the qualification test. The roll expansion torque is applied to a three-pin roll expander having an effective rolling height of 2 inches. A nominal rolled height of 1.75 inches is specified. Eighteen primary-to-secondary side "process qualification" leak test samples were fabricated and tested. All of the samples met the leakage acceptance criteria from Page 4-20 of WCAP 14596.

Onset of Significant Leakage (contact pressure) testing is performed to determine the interfacial radial contact pressure between the rolled sleeve and the tube. The contact pressure is then used to calculate sleeve rolled joint pullout resistance. All of the samples tested (nominal and maximum diameters) withstood a differential pressure of 5500 psi without exhibiting indications of onset of significant leakage. Therefore, adequate pullout resistance, with margin, is provided by the rolled joint at a nominal torque of 120 inch-lbs. with a torque range of 110 to 130 inch-lbs.

Three pullout test samples were fabricated. All the pullout test results exceeded the criterion of three times the maximum endcap load during normal operation with adequate margin.