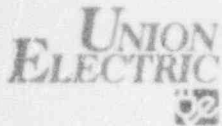


1301 Chouteau Avenue  
Post Office Box 149  
St. Louis, Missouri 63166  
314-554-2650



Donald F. Schnell  
Senior Vice President  
Nuclear

June 16, 1992

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

Gentlemen:

ULNRC- 2649

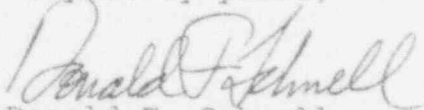
CALLAWAY PLANT  
DOCKET NUMBER 50-483  
REACTOR VESSEL STRUCTURAL  
INTEGRITY, 10 CFR 50.54(f)

Reference: NRC Generic Letter 92-01,  
Revision 1, dated March 6, 1992

Attached please find Union Electric's response to NRC Generic Letter 92-01. This response provides information which will enable NRC to verify that Union Electric is complying with the current licensing basis regarding reactor vessel fracture toughness and material surveillance for the reactor coolant pressure boundary.

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

Very truly yours,

  
Donald F. Schnell

WEK/kea

Attachment

9206240249 920616  
PDR ADDOCK 05000483  
P PDR

ADD: D. McDonald  
K. Wickman  
B. Elliot

4tr. Encl.

ADD

STATE OF MISSOURI )  
 ) S S  
CITY OF ST. LOUIS )

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 16th day  
of June, 1992.

Barbara J. Pfaff  
BARBARA J. PFAFF  
NOTARY PUBLIC, STATE OF MISSOURI  
MY COMMISSION EXPIRES APRIL 22, 1993  
ST. LOUIS COUNTY

cc: T. A. Baxter, Esq.  
Shaw, Pittman, Potts & Trowbridge  
2300 N. Street, N.W.  
Washington, D.C. 20037

Dr. J. O. Cermak  
CFA, Inc.  
18225-A Flower Hill Way  
Gaithersburg, MD 20879-5334

R. C. Knop  
Chief, Reactor Project Branch 1  
U.S. Nuclear Regulatory Commission  
Region III  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Bruce Bartlett  
Callaway Resident Office  
U.S. Nuclear Regulatory Commission  
RR#1  
Steedman, Missouri 65077

L. R. Wharton (2)  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
1 White Flint, North, Mail Stop 13E21  
11555 Rockville Pike  
Rockville, MD 20852

Manager, Electrical Department  
Missouri Public Service Commission  
P.O. Box 360  
Jefferson City, MO 65102

NUMARC  
Attn: Kurt Cozens  
1776 Eye Street, N.W.  
Suite 300  
Washington, D.C.  
20006-2496

UNION ELECTRIC RESPONSE TO GENERIC LETTER 92-01

Question 1.

Certain addressees are requested to provide the following information regarding Appendix H to CFR Part 50:

Addressees who do not have a surveillance program meeting ASTM E 185-73, -79, or -82 and who do not have an integrated surveillance program approved by the NRC are requested to describe actions taken or to be taken to ensure compliance with Appendix H to 10 CFR Part 50. Addressees who plan to revise the surveillance program to meet Appendix H to 10 CFR Part 50 are requested to indicate when the revised program will be submitted to the NRC staff for review. If the surveillance program is not to be revised to meet Appendix H to 10 CFR Part 50, addressees are requested to indicate when they plan to request an exemption from Appendix H to 10 CFR Part 50 under 10 CFR 50.60(b).

Response:

The radiation surveillance program for the Callaway reactor pressure vessel covers the 40-year vessel design life and was based on ASTM E185-73, "Standard Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels." This program complies with Appendix H to 10 CFR Part 50 as described in NUREG-0830 and NUREG-0830, Supplement 4 (Callaway Safety Evaluation Report and Supplement). Refer to ULNRC-2537 (dated December 18, 1991) for additional discussion concerning the Callaway reactor vessel radiation surveillance program.

Question 2.

Certain addressees are requested to provide the following information regarding Appendix G to 10 CFR Part 50:

- a. Addressees of plants for which the Charpy upper shelf energy is predicted to be less than 50 foot-pounds at the end of their licenses using the guidance in Paragraphs C.1.2 or C.2.2 in Regulatory Guide 1.99, Revision 2, are requested to provide to the NRC the Charpy upper shelf energy predicted for December 16, 1991, and for the end of their current license for the limiting beltline weld and the plate or forging and are requested to describe the actions taken pursuant to Paragraphs IV.A.1 or V.C of Appendix G to 10 CFR Part 50.

- b. Addressees whose reactor vessels were constructed to an ASME Code earlier than the Summer 1972 Addenda of the 1971 Edition are requested to describe the consideration given to the following material properties in their evaluations performed pursuant to 10 CFR 50.61 and Paragraph III.A of 10 CFR Part 50, Appendix G:

- (1) the results from all Charpy and drop weight tests for all unirradiated beltline materials, the unirradiated reference temperature for each beltline material, and the method of determining the unirradiated reference temperature from the Charpy and drop weight test;
- (2) the heat treatment received by all beltline and surveillance materials;
- (3) the heat number for each beltline plate or forging and the heat number of wire and flux lot number used to fabricate each beltline weld;
- (4) the heat number for each surveillance plate or forging and the heat number of wire and flux lot number used to fabricate the surveillance weld;
- (5) the chemical composition, in particular the weight in percent of copper, nickel, phosphorous, and sulfur for each beltline and surveillance material; and
- (6) the heat number of the wire used for determining the weld metal chemical composition if different than Item (3) above.

Response:

- 2.a. The Charpy upper shelf energy is predicted to be greater than 50 foot-pounds for the Callaway reactor pressure vessel at the end of the plant license using the guidance in Regulatory Guide 1.99, Rev. 2, Paragraphs C.1.2 and C.2.2.

For the Callaway reactor vessel, the upper shelf energy (USE) of the weld metal and Heat-Affected-Zone (HAZ) metal has decreased the greatest amount (from 112 to 97 ft-lb and from 106 to 91 ft-lb, respectively). The materials which have the lowest USE are Plate R2708-1 and the HAZ metal (both are 91 ft-lb). Refer to ULNRC-2537 for additional results from the Callaway reactor vessel surveillance program.

- 2.b. The Callaway reactor vessel was constructed to ASME III, 1971 Edition through Winter 1972 Addenda; therefore, Question 2.b is not applicable to Callaway Plant.

Question 3:

Addressees are requested to provide the following information regarding commitments made to respond to GL 88-11:

- a. How the embrittlement effects of operating at an irradiation temperature (cold leg or recirculation suction temperature) below 525 °F were considered. In particular licensees are requested to describe consideration given to determining the effect of lower irradiation temperature on the reference temperature and on the Charpy upper shelf energy.
- b. How their surveillance results on the predicted amount of embrittlement were considered.
- c. If a measured increase in reference temperature exceeds the mean-plus-two standard deviations predicted by Regulatory Guide 1.99, Revision 2, or if a measured decrease in Charpy upper shelf energy exceeds the value predicted using the guidance in Paragraph C.1.2 in Regulatory Guide 1.99, Revision 2, the licensee is requested to report the information and describe the effect of the surveillance results on the adjusted reference temperature and Charpy upper shelf energy for each beltline material as predicted for December 16, 1991, and for the end of its current license.

Response:

- 3.a. Callaway Plant Technical Specification 3/4.1.1.4 prohibits criticality below an average temperature of 551°F except for brief periods to perform core physics testing. Extended plant operation below an average temperature of 551°F would constitute a violation of Technical Specifications and would be a reportable event. In addition, plant average temperature is routinely maintained in the programmed band, which by design, limits cold leg temperature to a value greater than 525°F.

- 3.b. Callaway Plant utilized the criteria defined in Regulatory Guide 1.99, Revision 2 to determine the credibility of surveillance data, in those cases where surveillance data was used. Refer to ULNRC-2537 for additional discussion concerning the Callaway reactor vessel radiation surveillance program.
- 3.c. No data from the Callaway Plant reactor vessel radiation surveillance program have exceeded the mean-plus-two standard deviation bound predicted by Regulatory Guide 1.99, Revision 2.