

1901 Gratiot Street
Post Office Box 149
St. Louis, Missouri 63166
314-554-2650



Donald F. Schnell

July 28, 1989

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

Gentlemen:

ULNRC-2049

DOCKET NO. 50-483
CALLAWAY PLANT
THIMBLE TUBE THINNING IN
WESTINGHOUSE REACTORS

- References: 1) USNRC Bulletin No. 88-09, dated
July 26, 1988
2) ULNRC-1837, dated September 30, 1988

NRC Bulletin 88-09 required licensees to establish and implement an inspection program to monitor thimble tube performance. Reference 2 confirmed that an inspection program had been established. The attachment to this letter provides additional information concerning the Callaway Thimble Tube Monitoring Program.

If you have additional questions, please contact me.

Very truly yours,

Donald F. Schnell

WEK/pkn

Attachment

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Report on the Results of
Incore Thimble Tube Testing

Union Electric established an incore thimble tube inspection program as a result of industry concern. This program was implemented during the Callaway Refuel 2 outage when all of the thimble tubes were inspected September 15 and 16, 1987 using eddy current testing. Analysis of results indicates only one thimble with wall loss. The phase angles indicate wall loss in the range of 44 to 48 percent. However, this may be a very conservative estimate as the signal amplitudes correspond to wall loss in the range of only 12 to 15 percent. These characteristics suggest the signal may not be a typical vibrational wear condition, but a smaller, more concentrated type of damage such as a deep scratch, scoring, or combination of tube deformation and external damage. The tube was plugged to be conservative. The tube will be eddy current tested again during the next inspection and placed back in service if results do not indicate a progression of growth. Five thimbles indicate distorted signals at either the lower core plate or at the lower core forging. The distorted signals have wall losses too small to define or quantify.

Eddy current inspection of the incore thimbles has been incorporated into the Callaway surveillance program. The minimum frequency of inspection is every other refueling with established guidelines which must be met to allow deferral from inspecting the thimble tubes during every refueling. The thimble tube inspection program requires that any tube with wall loss of 59% or more be removed from service. No tubes at Callaway exceeded this acceptance criteria. Thimble tubes with greater than 50% wall loss require engineering review to determine actions to prevent through wall wear (i.e., cap thimbles, shorten thimbles to allow wear on new surface, etc.). Additional administrative controls provide guidelines to ensure no thimble wear in excess of 59% between inspections by use of extrapolating the wear rates multiplied by a conservatism factor over the interval between inspections.

Eddy current reinspection of the thimble tubes will again be performed during Refuel 4 in the fall of 1990.

The records generated during the development of the inspection program relative to the establishment of acceptance criteria, inspection frequency and inspection methodology, as well as the result of the inspections, are being documented and maintained in accordance with plant procedures. These items are available for staff review upon request.

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 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 28th day of July, 1989.

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

cc: Gerald Charnoff, Esq.
Shaw, Pittman, Potts & Trowbridge
2300 N. Street, N.W.
Washington, D.C. 20037

Dr. J. O. Cermak
CFA, Inc.
4 Professional Drive (Suite 110)
Gaithersburg, MD 20879

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

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

Tom Alexion (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, Electric Department
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

bcc: D. Shafer/A160.761
/QA Record (CA-758)

Nuclear Date

E210.01

DFS/Chrono

D. F. Schnell

J. E. Birk

J. V. Laux

M. A. Stiller

G. L. Randolph

R. J. Irwin

H. Wuertenbaecher

W. R. Campbell

A. C. Passwater

R. P. Wendling

D. E. Shafer

D. J. Walker

O. Maynard (WCNOC)

N. P. Goel (Bechtel)

T. P. Sharkey

NSRB (Sandra Auston)

W. E. KAHL

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