



1901 Gratiot Street, St. Louis

Donald F. Schnell
Vice President

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

Gentlemen:

ULNRC-1441

CALLAWAY PLANT
DOCKET NUMBER 50-483
LICENSE NUMBER NPF-30
CONTAINMENT HIGH RANGE RADIATION MONITOR
DETECTOR CALIBRATION CERTIFICATION

During our NUREG-0737 post-implementation compliance review, we have identified an issue which requires clarification by Union Electric and your concurrence.

The issue involves the certified calibration of each General Atomic containment high range area radiation monitor (CHARM) for at least one point per decade of range between 1 R/hr and 10^3 R/hr. This requirement is referenced in NUREG-0737, Section II.F.1, Attachment 3, Clarification 1, (Table II.F.1-3).

The Callaway Plant CHARMs use a specially designed ionization chamber. Radiation, interacting within the ionization chamber, produces ion pairs in proportion to the energy deposited within the chamber. In the process of recombination, the ion pairs produce a current within the chamber which is linearly proportional to the energy deposited, up to dose rates exceeding 10^8 R/hr.

A prototype detector was calibrated by General Atomic over the range of 1 R/hr to 10^6 R/hr. Following calibration, two transfer sources of approximately 1 R/hr and 10 R/hr, contained in a RT-11 calibrator, were used to establish detector response for each source based on the ionization chamber gamma sensitivity (Amps/R/hr). The RT-11 calibrator allowed General Atomic to use the transfer sources for calibration of their production models based on a standard repeatable geometry traceable to the primary calibration of the prototype detector.

The Callaway Plant CHARMs ionization chamber assemblies were manufactured to the same specifications as the prototype assemblies for which primary calibration and testing was performed. The Callaway Plant CHARMs were calibrated at the factory using the transfer sources. The transfer sources were

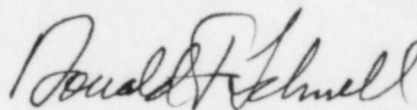
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placed on the Callaway Plant CHARMS and the detector response, based on the ionization chamber gamma sensitivity in Amps/R/hr, was noted. General Atomic compared the Callaway Plant CHARMS detector response with the prototype detector response to the same transfer sources, to insure that the Callaway Plant CHARMS were within the established calibration tolerance. Based on the fact that the detector response is linearly proportional to the energy deposited and is within established calibration tolerances for the transfer sources, detector response will also be within calibration tolerance for all other ranges. The CHARMS calibration is therefore traceable to the primary calibration of the prototype, which was directly calibrated over the required range.

Based on the above discussion, we do not believe the additional radiation exposure required to calibrate each detector over the range of 1 R/hr to 10^3 R/hr could be considered ALARA. Therefore, Union Electric requests your concurrence in the use of the transfer sources for calibration of the Callaway Plant CHARMS to meet the requirements as referenced in NUREG-0737, Section II.F.1, Attachment 3, Clarification 1, (Table II.F.1-3).

If you have any questions regarding this request or if additional information is required, please let me know.

Very truly yours,



Donald F. Schnell

BFH/mat

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 29th day of January, 1987.

Barbara J. Pfaff
BARBARA J. PFAFF
NOTARY PUBLIC, STATE OF MISSOURI
MY COMMISSION EXPIRES APRIL 22, 1989
ST. LOUIS COUNTY

cc: Gerald Charnoff, Esq.
Shaw, Pittman, Potts & Trowbridge
1800 M. Street, N.W.
Washington, D.C. 20036

Nicholas A. Petrick
Executive Director
SNUPPS
5 Choke Cherry Road
Rockville, Maryland 20850

W. L. Forney
Division of Projects and
Resident Programs, Chief, Section 1A
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

Paul O'Connor (2)
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop 316
7920 Norfolk Avenue
Bethesda, MD 20014

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