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**UNION  
ELECTRIC**

 June 28, 1991

Donald F. Schnell  
Senior Vice President  
Nuclear

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Gentlemen:

ULNRC- 2429

DOCKET NUMBER 50-483  
CALLAWAY PLANT  
UNION ELECTRIC REPORT  
CONTROL BANK REACTIVITY WORTH DETERMINATION  
USING THE ROD SWAP TECHNIQUE

The enclosed report describes Union Electric Company's proposed methodology and techniques for determining control and shutdown bank reactivity worths using the rod swap method. The methods presented are applicable to the Callaway Nuclear Plant. Data collected at the Callaway Plant and used to benchmark the proposed methods are also presented.

Use of the rod swap method will result in an enhancement in safety over the boron dilution method currently employed. Measurements of rod worth using the rod swap method have less uncertainty than measurements using the boron dilution method. Also, whereas only control bank worths are measured using the boron dilution method, both shutdown and control bank worths will be measured using the rod swap method. Use of the rod swap method represents an increase in the number and diversity of reactor physics measurements taken during startup physics testing which provides a more complete picture of core behavior.

Use of the rod swap method also represents a substantial cost savings. Rod swap testing requires approximately half the time of boron dilution testing which enhances plant availability and reduces replacement power costs. Rod swap testing also results in a substantial decrease in water processing over the boron dilution method with a resultant reduction in the amount of low level waste generated.

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Union Electric's proposed rod swap methodology is equivalent to methods previously licensed for such companies as Virginia Power Co. and Public Service Electric and Gas Co.

Union Electric requests that your review of this report be completed by January 1, 1992 to support implementation of rod swap during our next refueling outage scheduled for Spring 1992.

Very truly yours,

  
for Donald F. Schnell

GAC/dls

Enclosure

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

Alan C. Passwater, of lawful age, being first duly sworn upon oath says that he is Manager, Licensing and Fuels (Nuclear) for 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 Alan C. Passwater  
Alan C. Passwater  
Manager, Licensing and Fuels  
Nuclear

SUBSCRIBED and sworn to before me this 28th day  
of June, 1991.

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

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