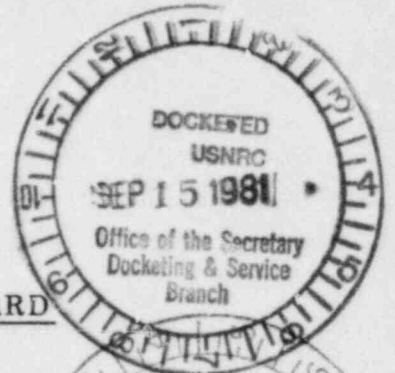


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RELATED CORRESPONDENCE

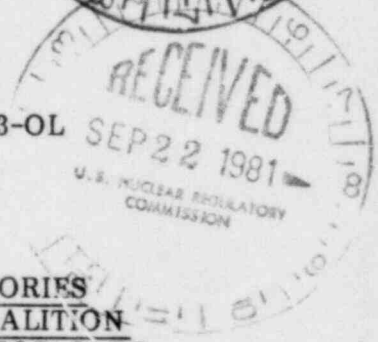
UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD



In the Matter of )  
UNION ELECTRIC COMPANY )  
(Callaway Plant, Unit 1) )

Docket No. STN 50-483-OL



SUPPLEMENTAL RESPONSE TO NRC STAFF INTERROGATORIES  
AND REQUEST FOR PRODUCTION OF DOCUMENTS TO COALITION  
FOR THE ENVIRONMENT, ST. LOUIS REGION; MISSOURIANS FOR SAFE  
ENERGY; AND CRAWDAD ALLIANCE

Joint Intervenor submit the following Supplemental Response to NRC Staff Interrogatories and Requests for Production of Documents to Coalition for the Environment, St. Louis Region; Missourians for Safe Energy; and Crawdad Alliance. All documents identified, unless otherwise indicated, are in the possession and/or control of Kenneth M. Chackes, Attorney for Joint Intervenor and will be made available for inspection and/or copying upon reasonable request.

Q-3. (a) A study involving the specific use of a model for radionuclide transport in a simulated river environment was reported in Gloyna, E.F., et. al., "Radionuclide Transport and Responses to Organic Stress in a Research Flume," proceedings of 5th International Water Pollution Research Conference, July - August 1970, Pergamon Press, Ltd. Additional reference is made to Shih, C.S. and Gloyna, E.F., "Radioactivity Transport in Water - Mathematical Model for the Transport of Radionuclides," EHE-04-6702, CRWR-18, Technical Report No. 12, U.S., Atomic Energy Commission, June, 1967. Use of water and sediment routing model was proposed to Oak Ridge National Laboratory to track the migration of radionuclides in stream channels tributary to the

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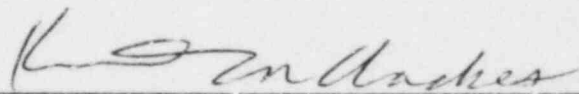
Clinch River, Simons, Daryl B. and Li, Ruh-Ming, "Preliminary Proposal on Modeling of Radionuclide Transport from Disposal Areas at Oak Ridge National Laboratory," proposal submitted to ORNL, Colorado State University, Hydraulics Program, Engineering Research Center, Fort Collins, Colorado, 1978. This paper recognized the need for further investigation into sediment transport and the chemical interaction between sediment, organic matter, and the various types of radionuclides. Field studies of radionuclide transport in channel and river sediments carried downstream from nuclear generating stations include Simpson, H.J. et. al., "Man-made Radionuclides and Sedimentation in the Hudson River Estuary," *Science*, Vol. 194, October 8, 1976, pp. 179-183, and studies made on two operating reactors, one in Connecticut, Radiological Surveillance Study, EPA, Haddam Neck EPA-520/3-74-007 (1974), and one in Massachusetts, Radiological Surveillance Study, EPA, Yankee Row RD77-1 (1971).

Sorption of heavy metals, pesticides, and radionuclides onto sediments is recognized by several authors (Gloyna, E.F., et. al., "Radionuclide Transport and Responses to Organic Stress in a Research Flume," proceedings of 5th International Water Pollution Research Conference, July - August 1970, Pergamon Press, Ltd.; Shen, Hsieh Wen, ed., Modeling of Rivers, John Wiley and Sons, New York, 1979; Simons, Daryl B. and Li, Ruh-Ming, "Preliminary Proposal on Modeling of Radionuclide Transport from Disposal Areas at Oak Ridge National Laboratory," proposal submitted to ORNL, Colorado State University, Hydraulics Program, Engineering Research Center, Fort Collins, Colorado, 1978) and

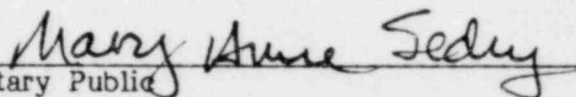
- penetration of radionuclides to deeper depths in bed sediments is reported and modeled by Gloyna, E.F., et. al., "Radionuclide Transport and Responses to Organic Stress in a Research Flume," proceedings of 5th International Water Pollution Research Conference, July - August 1970, Pergamon Press, Ltd.
- (b) Buildup or deposition of sediment on shallow banks and in protected shoals is of concern due to higher rates of sedimentation. field studies, Simpson, I.J., et. al., "Man-made Radionuclides and Sedimentation in the Hudson River Estuary," Science, v. 194, October 8, 1976, pp. 179-183, have found higher levels of activity ( $^{137}\text{Cs}$ ) in shallow environment where sediment accumulates more rapidly.
- (c)  $^{134}\text{Cs}$ ,  $^{137}\text{Cs}$ ,  $^{60}\text{Co}$ ,  $^{239}\text{Pu}$ ,  $^{240}\text{Pu}$ .
- (d) The transport of bed-load sediment material is functionally related to several hydraulic variables, Richardson, Everett V., "Rainfall-Runoff and Sedimentation," Lecture 13, unpublished lecture notes, Water Resources Planning and Management Program, Colorado State University, Engineering Research Center, Fort Collins, Colorado, 1980; Shen, Hsieh Wen, ed., Modeling of Rivers, John Wiley and Sons, New York, 1976. One of these variables is velocity of flow, which increases with flooding. Dredging also, by definition, involves the resuspension of sediment and its likely deposition elsewhere as dredge spoil.
- (e) "High levels of contamination" refers to dangerous levels of radioactivity that could cause contamination of aquatic life and thereby potentially of the human food chain.
- (f) (a) Objected to.

- (b) Objected to.
- (c) None.
- (d) No answer required.
- (e) No answer required.
- (f) See documents identified above.

Kenneth M. Chackes, attorney for Joint Intervenors Coalition for the Environment, St. Louis Region; Missourians for Safe Energy; and Crawdad Alliance, and authorized as their agent for the purpose of answering the above interrogatories, hereby states to the best of his knowledge, information and belief that the responses provided above are true and contain such information as is presently available to Joint Intervenors.

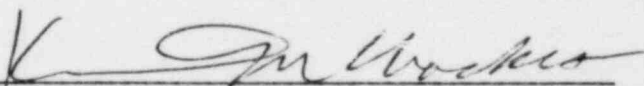
  
Kenneth M. Chackes

Subscribed and sworn to before me this 10 day of September, 1981.

  
Notary Public

My Commission Expires: 5/18/82

CHACKES AND HOARE

  
Kenneth M. Chackes  
Attorneys for Joint Intervenors  
314 North Broadway  
St. Louis, MO 63102  
314/241-7961

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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CERTIFICATE OF SERVICE

I hereby certify that copies of the Supplemental Response to NRC Staff Interrogatories and Request for Production of Documents to Coalition for the Environment, St. Louis Region; Missourians for Safe Energy; and Crawdad Alliance have been served on the following by deposit in the United States mail this 11th day of September, 1981.

James P. Gleason, Esq., Chairman  
Atomic Safety and Licensing Board  
513 Gilmoure Drive  
Silver Spring, MD 20901

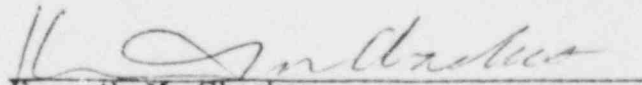
Mr. Glenn O. Bright  
Atomic Safety and Licensing Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dr. Jerry R. Kline  
Atomic Safety and Licensing Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Thomas A. Baxter, Esq.  
Shaw, Pittman, Potts & Trowbridge  
1800 M Street, N.W.  
Washington, D.C. 20036

Docketing and Service Section  
Office of the Secretary  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Roy P. Lessy, Jr., Esq.  
Office of the Executive Legal Director  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

  
Kenneth M. Chackes  
CHACKES AND HOARE