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 AUTH. NAME AUTHOR AFFILIATION  
 FITZPATRICK, E. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele I  
 RECIP. NAME RECIPIENT AFFILIATION  
 MURLEY, T.E. Office of Nuclear Reactor Regulation, Director (Post 870411 D

SUBJECT: Responds to question raised by member of staff relative to  
 submittal AEP:NRC:1154, application for alternative disposal  
 re turbine room sump absorption pond sludge. S

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AEP:NRC:1154C

Donald C. Cook Nuclear Plant Units 1 and 2  
Docket Nos. 50-315 and 50-316  
License Nos. DPR-58 and DPR-74  
APPLICATION FOR ALTERNATIVE DISPOSAL;  
TURBINE ROOM SUMP ABSORPTION POND SLUDGE;  
ADDITIONAL INFORMATION

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

ATTN: T. E. Murley

September 29, 1993

Dear Dr. Murley:

This letter is in response to a question raised by a member of your staff relative to our submittal AEP:NRC:1154, Application for Alternative Disposal; Turbine Room Sump Absorption Pond Sludge. The question posed is, "Why wasn't cesium 137 identified in the samples obtained from the application site in 1991 since it was identified in the 1982 sample."

The following factors explain the difference in sample results:

First, the lower limit of detection (LLD) for radionuclides is affected by length of count time. Sludge samples analyzed in 1982 were counted for 4000 seconds, twice as long as the samples analyzed in 1991. It has been determined that we are capable of meeting the cesium environmental LLD for dry sediment by counting a one liter sample for 2000 seconds (the cesium 137 environmental LLD for dry sediment is 180 pCi/kg or 1.8E-7 uCi/g). Cesium 137 activity below this value would not be identified.

Second, cesium is not retained in a sandy soil environment and tends to migrate through, being assimilated by aquatic systems and plants. The sludge that was dredged from the pond was a sand/soil mixture and the entire Donald C. Cook Nuclear Plant site is proximate to sand dunes and is built on a sand/soil mixture (reference: Radioecology: Nuclear Energy and the Environment, F. Ward Whicker and Vincent Schultzy, CRC Press, Inc., 1982).

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Dr. T. E. Murley

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AEP:NRC:1154C

Finally, the samples analyzed in 1982 were obtained from the sludge mixture itself. This sludge was spread over 4.7 acres and covered with soil. Therefore, the samples obtained in 1991 were diluted by area spreading and noncontaminated soil.

Sincerely,



E. E. Fitzpatrick  
Vice President

eg

cc: A. A. Blind - Bridgman  
G. Charnoff  
J. B. Martin - Region III  
J. R. Padgett  
NFEM Section Chief  
NRC Resident Inspector - Bridgman



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