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 HERING, R.F. Indiana & Michigan Electric Co.  
 RECIP. NAME RECIPIENT AFFILIATION  
 DENTON, H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards Alden Research Lab 800205 ltr re containment sump  
 model jet impingement tests, in response to NRC 820317  
 request. Tests indicate that no mods are required for  
 containment recirculation sumps.

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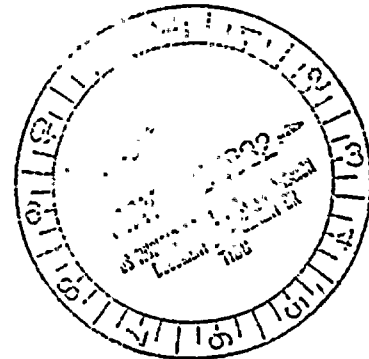
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April 28, 1982  
AEP:NRC:0355A



Donald C. Cook Nuclear Plant Unit Nos. 1 and 2  
Docket Nos. 50-315 and 50-316  
License Nos. DPR-58 and DPR-74  
CONTAINMENT RECIRCULATION SUMP TEST

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Denton:

This letter and its attachment respond to Mr. Steven Varga's letter of March 17, 1982 and supplements our letter to you of January 28, 1980 (AEP:NRC:0355) which responded to the request for additional information enclosed in Mr. A. Schwencer's letter of August 1, 1979.

Please find attached a copy of the Alden Research Laboratory (ARL) letter, from Mr. Padmanabhan (ARL) to Mr. Marrocco (AEPSC) dated February 5, 1980. The letter indicates that the results of the test performed with water in the sump corresponding to an elevation of 607.0 feet were satisfactory in that there was no noticeable withdrawal of air bubbles through the suction pipe in operation. Based on the results of the test we conclude that no modifications are required to the Donald C. Cook Plant containment recirculation sumps.

This document has been prepared following Corporate Procedures which incorporate a reasonable set of controls to insure its accuracy and completeness prior to signature by the undersigned.

Very truly yours,

*R. F. Hering*  
R. F. Hering  
Vice President

*Acc 1*  
*5*  
*1/1*

/md

cc: (attached)

Mr. Harold R. Denton

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AEP:NRC:0355A

cc: John E. Dolan - Columbus  
R. W. Jurgensen  
W. G. Smith, Jr. - Bridgman  
R. C. Callen  
G. Charnoff  
Joe Williams, Jr.  
NRC Resident Inspector at Cook Plant - Bridgman



ALDEN RESEARCH LABORATORY  
WORCESTER POLYTECHNIC INSTITUTE

ATTACHMENT TO  
AEP:NRC:0355A

Mr. M. Marrocco  
Mechanical Engineering Division  
American Electric Power Service Corporation  
2 Broadway  
New York, NY 10004

February 5, 1980

D.C. COOK NUCLEAR POWER STATION  
CONTAINMENT SUMP MODEL  
JET IMPINGEMENT TESTS  
DCC/JET-ARL-178P

Dear Mr. Marrocco:

As per your recent telephone request, we have conducted additional tests simulating the condenser drain flow jet impingement, with water elevation in the sump corresponding to El. 607'0". This condition presumably describes the switchover of first ECCS train to recirculation mode taking into account the volume of water due to ice condenser melt and assuming a break inside the biological boundary (not included in model).

Tests were conducted with and without screen blockages (up to 50%) and with both drain flow jet and suction pipe velocities increased to prototype velocities. Tests indicated no noticeable withdrawal of air bubbles through the suction pipe in operation. Even though large surface air-entrainment due to drain flow jet impingement was observed, most of the bubbles did not penetrate the water surface deep enough to enter into the sump area. The few bubbles that entered the sump area were large enough to rise up and were not drawn down under the crane wall extension to the downstream portion of the sump. Also, no significant vortices were observed during the testing. Hence, we feel that based on the model test results, the sump performed satisfactorily at the above flow condition tested.

If you have any questions, please feel free to call me.

Sincerely,

M. Padmanabhan  
Lead Research Engineer  
Fluid Machinery

MP/vmb

