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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60137

JUN 24 1980

State of Illinois  
Department of Public Health  
ATTN: Mr. Gary N. Wright, Chief  
Division of Nuclear Safety  
535 West Jefferson Street  
Springfield, IL 62761

Gentlemen:

The attached IE Circular No. 80-15 titled "Loss of Reactor Coolant Pump Cooling and Natural Circulation Cooldown" was sent to the licensees listed below for information on June 20, 1980:

American Electric Power Service Corporation  
Indiana and Michigan Power Company  
D. C. Cook 1, 2 (50-315, 50-316)

Cincinnati Gas & Electric Company  
Zimmer (50-358)

Cleveland Electric Illuminating Company  
Perry 1, 2 (50-440, 50-441)

Commonwealth Edison Company  
Braidwood 1, 2 (50-456, 50-457)  
Byron 1, 2 (50-454, 50-455)  
LaSalle 1, 2 (50-373, 50-374)  
Dresden 1, 2 (50-10, 50-237, 50-249)  
Quad-Cities 1, 2 (50-254, 50-265)  
Zion 1, 2 (50-295, 50-304)

Consumers Power Company  
Big Rock Point (50-155)  
Midland 1, 2 (50-329, 50-330)  
Palisades (50-255)

Dairyland Power Cooperative  
LACBWR (50-409)

Detroit Edison Company  
Fermi 2 (50-341)

Illinois Power Company  
Clinton 1, 2 (50-461, 50-462)

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Iowa Electric Light & Power Company  
Duane Arnold (50-331)

Northern Indiana Public Service Company  
Bailly (50-367)

Northern States Power Company  
Monticello (50-263)  
Prairie Island 1, 2 (50-282, 50-306)

Public Service of Indiana  
Marble Hill 1, 2 (50-546, 50-547)

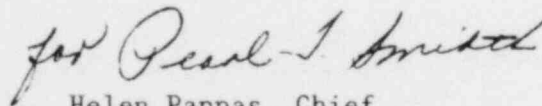
Toledo Edison Company  
Davis-Besse 1 (50-346)

Union Electric Company  
Callaway 1, 2 (50-483, 50-486)

Wisconsin Electric Power Company  
Point Beach 1, 2 (50-266, 50-301)

Wisconsin Public Service Corporation  
Kewaunee (50-305)

Sincerely,



Helen Pappas, Chief  
Administrative Branch

Enclosure: IE Circular  
No. 80-15

cc w/encl:  
Mr. D. W. Kane,  
Sargent & Lundy  
Central Files  
Reproduction Unit NRC 20b  
Local PDR  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D. C. 20555

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Date: June 20, 1980  
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LOSS OF REACTOR COOLANT PUMP COOLING AND NATURAL CIRCULATION COOLDOWN

Description of Circumstances:

This Circular contains information on the St. Lucie Unit 1 response to a total loss of component cooling water (CCW) flow to reactor coolant pumps. Pressurizer level and primary system pressure response indicate that voids were formed in the reactor vessel during the ensuing natural circulation cooldown. The void was believed to have been steam in the area located directly under the reactor vessel head.

At time 0226 on June 11, 1980 with St. Lucie Unit 1 at full power, an electrical short across a solenoid valve terminal board caused one of two series containment isolation valves in the CCW return from all reactor coolant pumps (RCP) to fail shut. The terminal short resulted from environmental effects of a minor steam leak in the immediate vicinity of the solenoid valve. After unsuccessful attempts to restore CCW flow, the reactor was tripped manually at time 0233. Within two minutes, all four RCPs were also manually tripped. A natural circulation cooldown was initiated at approximately 0300.

Component cooling water flow to RCPs was restored at 0400. The solenoid operated air valve whose terminal board had shorted was bypassed with a temporary air line to reopen the CCW valve (HCV-14-6). Although variations in seal leakoff flowrates were observed, the seals on the four idle RCPs did not fail. St. Lucie has Byron Jackson reactor coolant pumps with three stage mechanical seals plus a vapor seal. Controlled reactor coolant bleedoff flow is used for seal cooling and lubrication. The pumps do not have a seal water injection system.

The natural circulation cooldown continued uneventfully until after time 0600. The highest cooldown rate achieved was approximately 65° to 70° F per hour. Between 0600 and 0630 RCS pressure was reduced from 1140 to 690 psi by charging water through the pressurizer auxiliary spray line. Pressurizer level increased rapidly around 0700 while charging via the auxiliary spray line. Pressurizer level continued variations the cooldown and depressurization continued. RCS loops, pressurizer level decreased increase in level when charging through two minute interval while charging into at 88 gpm, pressurizer level rose at a than the charging flowrate.

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