UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

MAY 9 1980

In Reply Refer To:
RII:JPO
50-404, 50-405
50-339

Virginia Electric and Power Company
Attn: J. H. Ferguson
Executive Vice President-Power
P. O. Box 26666
Richmond, Virginia 23261

Gentlemen:

The enclosed Bulletin 80-12 is forwarded to you for information. No written response is required. If you desire additional information regarding this matter, please contact this office.

Sincerely,

James P. O'Reilly
Director

Enclosures:
1. IE Bulletin No. 80-12
2. List of Recently Issued IE Bulletins

cc w/encl:
W. R. Cartwright, Station Manager
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

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8005050053

May 9, 1980

IE Bulletin No. 80-12

DECAY HEAT REMOVAL SYSTEM OPERABILITY

Introduction:

The intent of this Bulletin is to improve nuclear power plant safety by reducing the likelihood of losing decay heat removal (DHR) capability in operating pressurized water reactors (PWRs). PWRs are most susceptible to losing DHR capability when their steam generators or other diverse means of removing decay heat are not readily available. Such conditions often occur when the plants are in a refueling or cold shutdown mode, and during which time concurrent maintenance activities are being performed.

There is a need to assure that all reasonable means have been taken to provide redundant or diverse means of DHR during all modes of operation. (Note: A redundant means could be provided by having DHR Train A AND Train B operable; a diverse means could be provided by having either DHR Train A OR Train B operable AND a steam generator available for DHR purposes.) There is also need to assure that all reasonable means have been taken to preclude the loss of DHR capability due to common mode failures during all modes of operation.

Background:

On several occasions, operating PWRs have experienced losses of DHR capability. In each instance, except that of the Davis-Besse Unit 1 incident of April 19, 1980, DHR capability was restored prior to exceeding the specified RCS temperature limit for the specific mode of operation. Nonetheless, the risk and frequency associated with such events dictate that positive actions be taken to preclude their occurrence or at least ameliorate their effects.

The most noteworthy example of total loss of DHR capability occurred at Davis-Besse Unit 1 on April 19, 1980. (See IE Information Notice No. 80-20, attached hereto as Enclosure 1). Two factors identified as major contributors to the Davis-Besse event in the Information Notice are: (1) extensive maintenance activities which led to a loss of redundancy in the DHR capability, and (2) inadequate procedures and/or administrative controls which, if corrected, could have precluded the event or at least ameliorated its effects.

ACTIONS TO BE TAKEN BY LICENSEES OF PWR FACILITIES:

1. Review the circumstances and seq
cribed in Enclosure 1.

2. Review your facility(ies) for al
especially for events similar to

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Accession No.:
8002280671

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D. C. 20555

May 8, 1980

IE Information Notice 80-20

LOSS OF DECAY HEAT REMOVAL CAPABILITY AT DAVIS-BESSE UNIT 1 WHILE IN A REFUELING MODE

Description of Circumstances:

On April 19, 1980, decay heat removal capability was lost at Davis-Besse Unit 1 for approximately two and one-half hours. At the time of the event, the unit was in a refueling mode (e.g., RCS temperature was 90F; decay heat was being removed by Decay Heat Loop No. 2; the vessel head was detensioned with bolts in place; the reactor coolant level was slightly below the vessel head flanges; and the manway covers on top of the once through steam generators were removed). (See Enclosure A, Status of Davis-Besse 1 Prior to Loss of Power to Busses E-2 and F-2 for additional details regarding this event.)

Since the plant was in a refueling mode, many systems or components were out of service for maintenance or testing purposes. In addition, other systems and components were deactivated to preclude their inadvertent actuation while in a refueling mode. Systems and components that were not in service or deactivated included:

Containment Spray System;
High Pressure Injection System;
Source Range Channel 2;
Decay Heat Loop No. 1;
Station Battery 1P and 1N;
Emergency Diesel-Generator No. 1;
4.16 KV Essential Switchgear Bus C1; and
13.8 KV Switchgear Bus A (this bus was energized but not aligned).

In brief, the event was due to the tripping of a non-safeguards feeder breaker in 13.8 KV Switchgear Bus B. Because of the extensive maintenance and testing activities being conducted at the time, Channels 1 and 3 of the Reactor Protection System (RPS) and Safety Features Actuation System (SFAS) were being energized from only one source, the source emanating from the tripped breaker. Since the SFAS logic used at Davis-Besse is a two-out-of-four input scheme in which the loss (or actuation) of any two input signals results in the actuation of all four output channels (i.e., Channels 1 and 3, and Channels 2 and 4), the loss of power to Channels 1 and 3 bistables also resulted in actuation of SFAS Channels 2 and 4. The actuation of SFAS Channels 2 and 4, in turn, affected Decay Heat Loop No. 2, the operating

Since the initiating event was a loss
were actuated (i.e., Level 1 - High R
tion; Level 3 - Low Pressure Injectio