UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

May 9, 1980

Docket Nos. 50-443
50-444

Public Service Company of New Hampshire
ATTN: Mr. W. C. Tallman
President
1000 Elm Street
Manchester, New Hampshire 03105

Gentlemen:

The enclosed IE Bulletin No. 80-12, "Decay Heat Removal System Operability," is forwarded to you for information. No written response is required. If you desire additional information regarding this matter, please contact this office.

Sincerely,

for Boyce H. Grier
Director

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

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(215-337-5253)

cc w/encls:
John DeVincentis, Project Manager

ENCLOSURE 1

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

SSINS No.: 6820
Accession No.:
8005050053

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IE Bulletin No. 80-12
Date: May 9, 1980

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 Attachment 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 sequence of events at Davis-Besse as described in Attachment 1.

2. Review your facility(ies) for all DHR degradation events experienced, especially for events similar to the Davis-Besse incident.

3. Review the hardware capability of your facility(ies) to prevent DHR loss events, including equipment redundancy, diversity, power source reliability, instrumentation and control reliability, and overall reliability during the refueling and cold shutdown modes of operation.

4. Analyze your procedures for adequacy of safeguarding against loss of redundancy and diversity of DHR capability.

5. Analyze your procedures for adequacy of responding to DHR loss events. Special emphasis should be placed upon responses when maintenance or refueling activities degrade the DHR capability.

6. Until further notice or until Technical Specifications are revised to resolve the issues of this Bulletin, you should:

   a. Implement as soon as practicable administrative controls to assure that redundant or diverse DHR methods are available during all modes of plant operation. (Note: When in a refueling mode with water in the refueling cavity and the head removed, an acceptable means could include one DHR train and a readily accessible source of borated water to replenish any loss of inventory that might occur subsequent to the loss of the available DHR train.)

   b. Implement administrative controls as soon as practicable, for those cases where single failures or other actions can result in only one DHR train being available, requiring an alternate means of DHR or expediting the restoration of the lost train or method.

7. Report to the NRC within 30 days of the date of this Bulletin the results of the above reviews and analyses, describing:

   a. Changes to procedures (e.g., emergency, operational, administrative, maintenance, refueling) made or initiated as a result of your reviews and analyses, including the scheduled or actual dates of accomplishment; (Note: NRC suggests that you consider the following: (1) limiting maintenance activities to assure redundancy or diversity and integrity of DHR capability, and (2) bypassing or disabling, where applicable, automatic actuation of ECCS recirculation in addition to disabling High Pressure Injection and Containment Spray preparatory to the cold shutdown or refueling mode.)

   b. The safeguards at your facility(ies) against DHR degradation, including your assessment of their adequacy.

The above information is requested pursuant to 10 CFR 50.54(f). Accordingly, written statements addressing the above items shall be signed under oath or affirmation and submitted within the time specified above. Reports shall be submitted to the director of the appropriate NRC regional office, and a copy forwarded to the Director, Division of Reactor Operations Inspection, NRC Office of Inspection and Enforcement, Washington, D. C. 20555.

Approved by GAO, B180225 (R0072); clearance expires 7-31-80. Approval was given under a blanket clearance specifically for identified generic problems.

Attachment:
IE Information Notice
No. 80-20

Attachment to IE Bulletin No. 80-12

ENCLOSURE 1

SSINS No.: 6870
Accession No.:
8002280671

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

IE Information Notice 80-20
Date: May 8, 1980

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 Attachment 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 [illegible] Channels 2 and 4. The actuation [illegible] Decay Heat Loop No. 2, the operati[illegible]

Since the initiating event was a l[illegible] were actuated (i.e., Level 1 - Hig[illegible] tion; Level 3 - Low Pressure Injec[illegible]