Central File

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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June 11, 1980

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

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Docket Nos. 50-280
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License Nos. DPR-32
DPR-37
NPF-4
NPF-7

SUBJECT: I. E. BULLETIN 80-12

Dear Mr. O'Reilly:

This letter is in response to IE Bulletin 80-12, "Decay Heat Removal System Operability." Our response for Surry Power Station Unit Nos. 1 and 2 and North Anna Power Station Unit Nos. 1 and 2 is attached.

If you have any questions or require additional information, please contact this office.

Very truly yours,

B R Sylvia

B. R. Sylvia
Manager-Nuclear Operations
and Maintenance

Attachment

cc: Director, Division of Reactor Operations Inspection
NRC Office of Inspection and Enforcement
Washington, D. C. 20555

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RESPONSE TO IE BULLETIN 80-12
NORTH ANNA POWER STATION UNITS 1 AND 2
SURRY POWER STATION UNITS 1 AND 2

1. The circumstances and sequence of events described in Enclosure 1 of the IEB 80-12 for the Davis-Besse Unit 1 Power Station were reviewed for applicability to the operation of North Anna Units 1 and 2 and Surry Units 1 and 2. The review revealed the North Anna and Surry core decay heat removal systems, referred to as the Residual Heat Removal Systems (RHR), to be fundamentally different from the Davis-Besse Unit 1 design. Contrary to the Davis-Besse design, the North Anna and Surry RHR systems are separate fluid systems from the Low Head Safety Injection Systems. RHR is utilized as a control system to allow normal regulated cooldown of the Reactor Coolant system below 350°F. The Safety Injection (SI) System is independent and provides emergency protection to the core to prevent overheating in the event reactor coolant is lost. The functional separation of the RHR System and SI System in the North Anna and Surry designs guards against the loss of RHR suction resulting from a spurious SI system failure similar to the Davis-Besse event.

2. A review of past degradation events from North Anna and Surry reveals no event similar to the Davis-Besse incident. However, as described below, there have been reported occurrences where the RHR System was temporarily inoperable.

3. The RHR System is designed to be a highly reliable fluid system. The system contains two RHR pumps which are normallypowered from separate emergency power supplies. Each pump has capability of being manually tied to the redundant emergency power supply. Additionally, two heat exchangers are available with cooling supplied from emergency powered component cooling water pumps. Past performance of pumps and heat exchangers has been reliable. In other parts of the RHR System, valve packing leaks have caused interruptions; however, these failures have been few and random in nature. In general, mechanical and electrical reliability of the system has been satisfactory.

   With one exception, the RHR System instruments and controls function with adequate reliability to position valves, warm up the system, and regulate core decay heat removal. Controls for the series-connected inlet valves are interlocked with reactor coolant pressure channels to close or prevent opening of the system, thereby protecting it from overpressurization. This feature can and has resulted in undesirable spurious isolation of the RHR System. It is, however, the design objective of the control system to isolate or to maintain isolation of the RHR System. Therefore, a failure such as a blown fuse results in conservative protective action.

4. Current operating procedures provide adequate safeguards for redundancy while operating or in a hot, shutdown condition by requiring two RHR Subsystems to be operable. In an intermediate or cold shutdown condition, Technical Specifications and operating procedures require only one RHR subsystem to be operable and therefore are inadequate for safeguarding against loss of redundancy required by the Bulletin. During a refueling, Technical Specifications and operating procedures require one RHR Subsystem in operation with permission to remove it from service for up to one hour per eight hours during the performance of core alterations. Consequently, during refueling, procedures and Technical Specifications are inadequate to safeguard against loss of redundancy required by the Bulletin. Technical Specifications do, however, require a boron injection flow path to be operable. The additional source of borated water meets diversity requirements of the Bulletin in lieu of maintaining two operable RHR Subsystems during refueling. Normally, it is during refueling that the Reactor Coolant System is opened; however, maintenance may be performed other than removing the head in cold shutdown, which requires draining reactor coolant to the centerline of the vessel nozzles. This makes the steam generators unavailable to remove heat as a diverse source. For this condition, diversity requirements are met by the operability of the boron injection flow path. Other means of backup are also available during cold shutdown by RWST recirculation utilizing the low head safety injection pumps and during refueling by use of the refueling purification system and the spent fuel pit cooling system.

   In summary, operating procedures and Technical Specifications for all modes are adequate for redundancy or diversity requirements of the Bulletin except for RHR operation in an intermediate or cold shutdown condition. In these conditions, meeting redundancy requirements is impractical if RHR maintenance activities are to be performed. Therefore, procedures require revision to ensure a diverse method of residual heat removal if one RHR Subsystem is inoperable. Operating procedures will be changed to require at least one operable steam generator capable of removing heat while operating in an intermediate or cold shutdown condition with one RHR subsystem inoperable or at least one Low Head SI pump (and the RWST) in the train opposite the RHR subsystem removed from service. Current Technical Specifications require an operable boron injection flow path in an intermediate or cold shutdown condition.

5. The abnormal operating procedures are adequate for responding to loss of the RHR System. There is, however, a need for an additional improvement to the procedures which will emphasize operator response to loss of the RHR inlet valves. Since spurious actuation of the valve pressure interlock has occurred in the past, identification of specific actions required in response to this event will aid the operator in recovering the system as rapidly as possible.

6a. As a temporary measure, a Standing Order will be issued to implement the second paragraph of Item 4.

6b. Additionally, the same Standing Order will indicate the operator action in the event the RHR inlet pressure interlock is spuriously actuated.

7a. Necessary changes to RHR operating and abnormal operating procedures will be made by July 30, 1980.

7b. Changes required by this Bulletin along with North Anna's and Surry's fundamentally different RHR design from that of Davis-Besse, will adequately safeguard the core from loss of residual heat removal capability.

COMMONWEALTH OF VIRGINIA)
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CITY OF RICHMOND)

Before me, a Notary Public, in and for the City and Commonwealth aforesaid, today personally appeared B. R. Sylvia, who being duly sworn, made oath and said (1) that he is Manager-Nuclear Operations and Maintenance, of the Virginia Electric and Power Company, (2) that he is duly authorized to execute and file the foregoing response in behalf of that Company, and (3) that the statements in the response are true to the best of his knowledge and belief.

Given under my hand and notarial seal this 11 th day of June, 1980.

My Commission expires January 20, 1981.

Robert M. Neil
Notary Public

(SEAL)