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RUSSELL,W.T. Region 1, Ofc of the Director

SUBJECT: Forwards final response to NRC Bulletin 88-004,per 880711 request to delay final response.

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OCT 31 1988

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SUSQUEHANNA STEAM ELECTRIC STATION
FINAL RESPONSE TO BULLETIN 88-04
PLA-3106 FILES R41-2/R41-1A

Docket Nos. 50-387
and 50-388

Dear Mr. Russell:

Attached is the Pennsylvania Power & Light Company's final response to Bulletin 88-04. Our initial response submitted on July 11, 1988, (PLA-3052) requested an extension for a final response until September 1, 1988. However, as discussed with Dr. Walter R. Butler and Mr. M. C. Thadani of NRR on August 25, 1988, PP&L has been authorized to delay the response until October 31, 1988. We trust that the Commission will find the response acceptable.

If you have any questions, please contact R. D. Kichline at 215-770-4181.

Very truly yours,

H. W. Keiser

Attachment

cc: NRC Document Control Desk (original)
NRC Region I
Mr. F. I. Young, Sr. Resident Inspector
Mr. M. C. Thadani, NRC Project Manager

IE11
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PLA-3052 (dated July 11, 1988) identified Core Spray as the only safety related system with the potential for pump-to-pump interaction. Based on recently completed system modeling we have found that the minimum flow piping system design will preclude pump-to-pump interaction. The existing configuration does not create the possibility of deadheading a "weak" pump unless that pump is in a severely degraded condition.

PP&L concluded that deadheading can only occur in this system if the weak pump is severely degraded (100 psi less head than the strong pump). At performance differentials up to 12 psi, both pumps will have flowrates greater than the specified min-flow of 320 gpm (10%). At about 84 psi performance differential, the weak pump flow is at the thermal protection limit of 80 gpm. This amount of minimum flow will prevent immediate damage. At this condition the pump discharge pressure of the weak pump would be about 72 psi below that of the strong pump. This discharge pressure is so abnormal, the pump would not be allowed to remain in service. Existing testing procedures would expose the degraded pump.

The core spray pumps receive quarterly flow verification tests at rated conditions. The combined instrumentation error and allowable variation in performance would cause pumps with about one-half the degradation described above to be rejected during this testing. In addition, pump failures generally show larger pressure shortfall at rated flow than at minimum flow. There is also a flow verification test which checks pump performance at varying flowrates. This test is performed with temporary pressure gauges with higher accuracy than the installed gauges. The 72 psi pump discharge pressure shortfall is many times greater than the instrument inaccuracy for this test.

In response to Action 3, the vendors of safety related centrifugal pumps were contacted for additional confirmation of minimum flow requirements. Our vendor for the RHR and Core Spray pumps stated that flows of 10% of rated (1000 and 320 gallons per minute, respectively) are adequate to prevent short-term damage. They are continuing to evaluate long term effects. The vendor for the HPCI pumps, after considering our specific operating practices, stated that the specified 500 gpm minimum flow is adequate. The RCIC pump vendor has also stated that the 75 gpm is adequate for these pumps under the limited operating exposure in the minimum flow mode.

Based on the above, PP&L has concluded that there are no immediate threats to safety related pumps due to either inadequate minimum flow or pump-to-pump interaction and no additional action is required. Additionally, current testing practices will detect pump degradation before any additional damage due to pump-to-pump interaction occurs. This concludes the response to Bulletin 88-04.