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 FACIL: 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylvania      05000388  
 AUTH. NAME      AUTHOR AFFILIATION  
 KEISER, H.W.      Pennsylvania Power & Light Co.  
 RECIPIENT AFFILIATION  
 BUTLER, W.R.      Project Directorate I-2

SUBJECT: Forwards response to request for addl info re pump seizure analysis.

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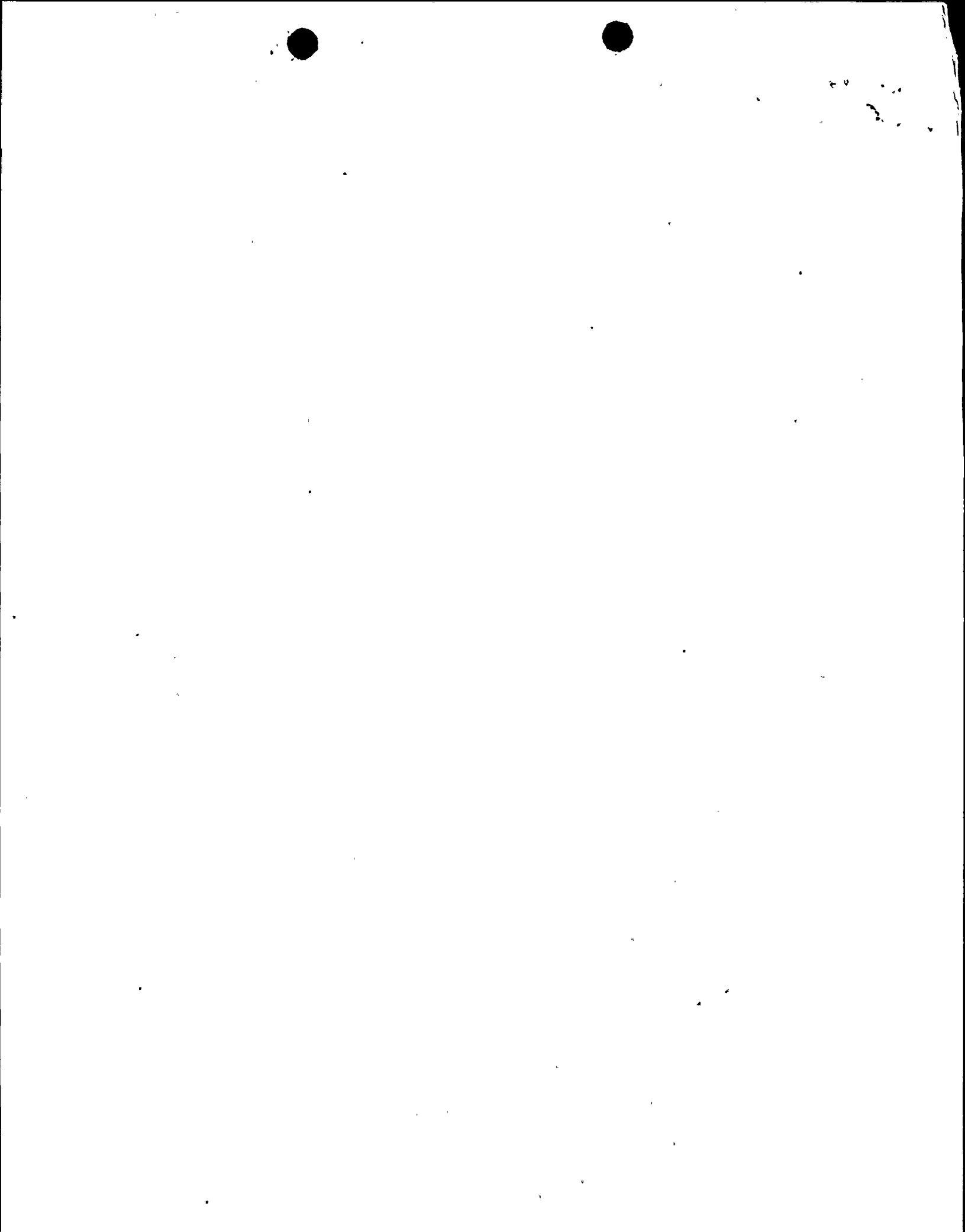
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# Pennsylvania Power & Light Company

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215/770-4194

OCT 06 1989

Director of Nuclear Reactor Regulation  
Attention: Dr. W. R. Butler, Project Director  
Project Directorate I-2  
Division of Reactor Projects  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION  
RESPONSE TO REQUEST FOR ADDITIONAL  
INFORMATION: U2C4 SINGLE LOOP  
PUMP SEIZURE ANALYSIS  
PLA-3271 FILES A7-8C/A17-2/R41-2

Docket Nos. 50-388

- References: 1. PLA-3209, H.W. Keiser to W.R. Butler, "Proposed Amendment 74 to License No. NPF-22: Unit 2 Cycle 4 Reload", dated June 16, 1989.
2. XN-NF-86-146, "Susquehanna Unit 2 Cycle 2 Single Loop Operation Analysis," November, 1986.

Dear Dr. Butler:

The following information is provided in response to a request by Mr. H. Richings of the NRC staff for PP&L to provide further justification that the radiological consequences of a recirculation pump seizure accident during single loop operation are a small fraction of 10CFR100 guidelines. This information is intended to support the staff's review of Reference 1.

A pump seizure accident was analyzed for Susquehanna Unit 2 Cycle 4 to confirm the insignificance of this event relative to the 10CFR100 guidelines. As in the Single Loop Pump Seizure (SLPS) analysis reported in Reference 2, this analysis demonstrated that the radiological consequences of a pump seizure accident during single loop operation (less than 80% power) are a small fraction of the 10CFR100 guidelines. Furthermore, during Cycle 4, the delta CPR of a pump seizure accident during single loop operation was determined to be 0.29 and to be less severe than the delta CPR of 0.31 of a feedwater controller failure transient initiated from 80% power during two loop operation. The reduced power feedwater controller failure transient delta CPR, which sets the Technical Specification MCPR Operating Limit for power levels less than 80%, increases as power decreases. Therefore, the Cycle 4 power dependent MCPR operating limits would protect the MCPR safety limit during a SLPS.

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1. The following information was obtained from a source who has provided reliable information in the past.

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Protection of the MCPR safety limit means that less than 0.1% of the fuel rods in the core would be expected to experience Boiling Transition (BT). The core remains covered during the SLPS accident and any fuel rods which experience BT would be expected to be in the film boiling mode for a short period. Because of the short duration of the accident, the number of fuel rods that would fail would be significantly less than the number of fuel rods calculated to experience BT. However, even if all of the rods which are calculated to experience BT were assumed to fail, the number of rods failing will be less than 0.1% of the rods in the core. The radiological consequences of 0.1% fuel failure resulting from a SLPS accident are only a small fraction of the 10CFR100 guidelines, especially since no uncontrolled release path to the environment is created during the SLPS accident.

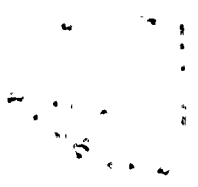
Any questions on this response should be directed to Mr. R. Sgarro at 215-770-7916.

Very truly yours,



H. W. Keiser

cc: NRC Document Control Desk (original)  
NRC Region I  
Mr. M. C. Thadani, NRC Project Manager-Rockville  
Mr. G. S. Barber, NRC Sr. Resident Inspector-SSES  
Mr. T. M. Gerusky, Pennsylvania DER



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