

CATEGORY 1

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ACCESSION NBR: 9803230444 DOC.DATE: 98/03/13 NOTARIZED: NO DOCKET #
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv 05000387
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SUBJECT: Provides initial response to unresolved item re standby liquid control sys accumulator pressure as requested in NRC 980204 ltr. Util plans to bring issue to resolution as soon as possible after relief valve setpoint data is obtained.

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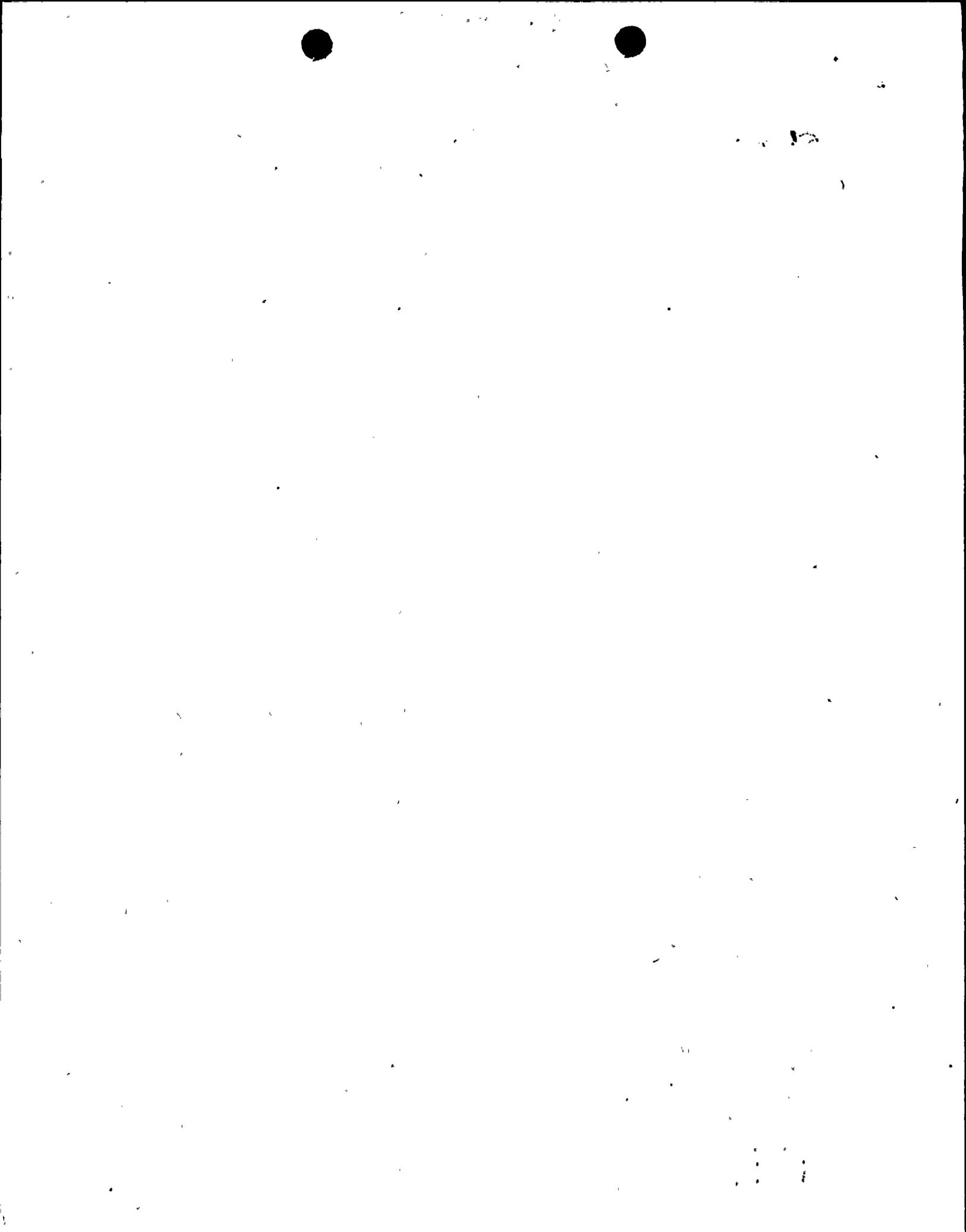
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MAR 13 1998

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**SUSQUEHANNA STEAM ELECTRIC STATION
STANDBY LIQUID CONTROL SYSTEM ACCUMULATOR
PRESSURE ISSUE**

PLA-4870

FILE R41-2

Docket No. 50-387

- References: 1) PLA-0004830, "License Event Report 50-387/97-25-00," January 2, 1998.
2) Letter from C. J. Anderson (NRC) to R. G. Byram (PPL), "NRC Integrated Inspection Report 50-387/97-10, 50-388/97-10," dated February 4, 1998.

This letter provides an initial response to an unresolved item related to the Standby Liquid Control System Accumulator pressure as requested in Reference 2.

On November 25, 1997, during performance of a Unit 1 maintenance activity which involved the monthly Standby Liquid Control System (SLCS) accumulator precharge check, the 'A' accumulator precharge pressure was found to be 220 psig (acceptable range was specified to be 1020 to 1085 psig per procedure). The accumulator was re-pressurized and subsequently leak tested. No leaks were found. The 'B' accumulator precharge pressure was checked and found to be 70 psig, but no leaks could be detected. The accumulator was re-pressurized and no leaks were found. Over the next few weeks, the accumulator pressure was closely monitored to ensure it remained within the acceptable pressure range. Thus, the SLCS was restored to its known operable condition within a few hours of initial identification of a problem, and the condition report program was entered for further evaluation of the event.

Subsequent evaluations, as a result of the condition report root cause analysis, determined that the likely cause of the November 25, 1997 depressurization event was a maintenance practice which overtightened the schrader valve caps which could result in distorted O-ring seals. Also in response to this event, a study was performed to redefine the acceptable accumulator pressure range to be 875 to 1085 psig, which was based on a conservative assumption that the accumulators are needed to dampen the system pressure pulsations for the SLCS to perform its safety function. Due to the potential common cause mechanism, PP&L conservatively determined the condition to be reportable pending further review and issued LER 50-387/97-25-00 (Reference 1).

PP&L has given priority to the condition report and made substantial progress thus far in resolving issues. An action plan has been developed which includes: 1) revised procedure guidance to ensure the schrader valve caps are not overtightened, 2) replacement of all damaged valve caps, 3)

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re-evaluation of the design basis of the accumulator, 4) installation of permanent pressure indication on each SLCS accumulator, and 5) elimination of the schrader valve and replacement with positive shutoff valves.

The implementation of the first two items was a short term action and is complete. Implementation of the last two items is in progress and is scheduled to be completed by March 20, 1998. The remaining item was originally planned to be performed within the first quarter of 1998. The re-evaluation of the standby liquid control system's ability to perform its safety function with the accumulators discharged involves significant modeling and analysis and requires an accurate knowledge of the discharge relief valve setting to evaluate the expected system pressure and flow response. The setpoint information will not be available until the Susquehanna Unit 1 Spring 1998 outage, and hence, the analysis is now scheduled for completion in June 1998.

A sensitivity study of the effect of potentially reduced SLCS flow during postulated ATWS scenarios was performed. Our on-going investigations indicate that even if the accumulators were not pressurized, one SLCS pump is expected to be capable of injecting full flow and the other pump may be capable of injecting partial flow. Conservatively assuming only one pump operation, the ATWS analysis shows that the suppression pool temperature would reach 189°F which is below the containment failure threshold and is not expected to impact emergency core cooling system operation (including HPCI).

To summarize, PP&L (1) discovered a condition where a SLCS parameter was outside its acceptable range, (2) restored the SLCS system parameter back to the known operable range within a few hours, (3) performed a root cause analysis, (4) took short term actions to monitor the parameter closely and to prevent repeated occurrences, (5) conservatively evaluated, without detailed analysis, the expected SLCS response for the conditions when the accumulators were depressurized, (6) performed a sensitivity study of the impact of the potential SLCS response on the ATWS results, (7) identified and is in the process of modifying the system to mitigate the potential for leakage, and (8) developed a longer term plan to further study/analyze to determine the SLCS system accumulator design requirements.

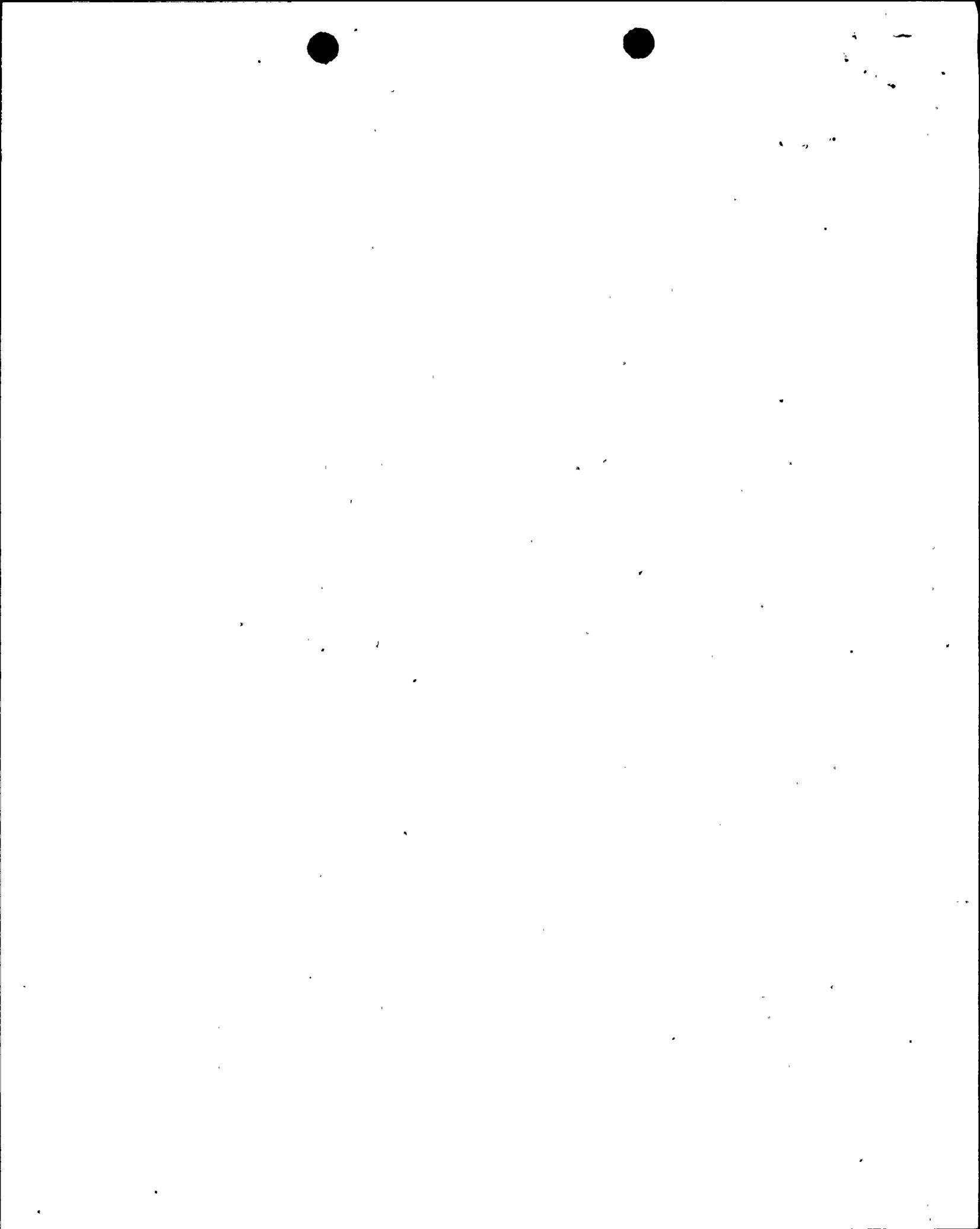
As a result of the NRC review of this issue, Inspection Report 97-10 (Reference 2) provided a detailed discussion of the issue. An unresolved item (URI 50-387/97-10-04) was opened to track the issue pending additional information from PP&L. The information requested involved the evaluation of the ability of the SLCS to perform its safety related function with depressurized accumulators and was requested within 20 days.

On February 24, 1998, PP&L held a meeting with the Susquehanna Senior Resident Inspector to review our progress on the issue and to present our plan to postpone completion of our reanalysis of the SLCS system flow and pressure responses until after the SLCS pump discharge pressure relief valve setpoint can be determined. As we reviewed the historical records for the time when the SLCS was being designed and licensed (i.e., 1960s to 1980s), a clear basis for the need for the accumulator to support SLCS operability was not found. It was stated that the accumulator was provided to reduce the system discharge pressure pulsations, but it was not identified that the accumulator was required for SLCS to achieve its safety function. However, PP&L made the decision that, for the interim, the accumulator pressure must be maintained between 875 and 1085 psig for the SLCS system to be considered operable. Therefore, considering that the physical plant system was restored to the known operable range and changes were made to prevent recurrence, PP&L believes it is prudent to carefully analyze the system response to determine the dampening effect on the pressure pulsations with the accumulator at varying levels of precharge. This work involves significant modeling and analysis and requires an accurate knowledge of the discharge relief valve setting to evaluate the expected system pressure and flow response. For the interim, PP&L has restored the SLCS system to known operable status and performed an initial evaluation which shows acceptable results for the ATWS scenario with a conservative assumption of one SLCS pump flow.

PP&L was recently informed that the NRC has decided to track the resolution of this item as an Escalated Enforcement Item (EEI), as opposed to updating the Unresolved Item. The NRC cited Enforcement Policy, NUREG-1600, Supplement I, Item C.2(b) which reads:

- "2. A system designed to prevent or mitigate a serious safety event:
- (a) ...
 - (b) Being degraded to the extent that a detailed evaluation would be required to determine its operability (e.g., component parameters outside approved limits such as pump flow rates, heat exchanger transfer characteristics, safety valve lift setpoints, or valve stroke times)"

As discussed above, PP&L has restored the plant system such that the degraded condition was eliminated within a few hours of its discovery and taken actions to prevent repeat occurrences. The longer term evaluations are being performed to determine whether the system was actually degraded when the accumulator pressure was outside the currently known acceptable range and to support future SLCS operation. This event did not result in the degraded condition existing for an extended period of time while the detailed operability evaluations were being performed. It should also be noted that during the time that the SLCS accumulator pressure could have been below the known acceptable range, the Control Rod Drive System was fully operable, and multiple component failures would have had to occur before the SLCS system would have been needed to mitigate an ATWS event.

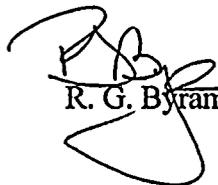


PP&L suggests that as the NRC evaluates the need for enforcement actions, consideration should be given to the fact that PP&L found the potentially degraded condition, took prompt action to restore the system to known operable conditions, implemented short term changes to prevent recurrence, performed sensitivity studies to conservatively evaluate the potential impact on ATWS, identified and initiated installation of system modifications to mitigate the potential for leakage, and developed a long term analysis/action plan to determine the system design requirements.

PP&L plans to complete the analyses identified above and will keep the NRC informed of our progress and significant results as they are obtained. We plan to bring this issue to resolution as quickly as possible after the relief valve setpoint data is obtained in the Unit 1 outage.

Any questions regarding this request should be directed to Mr. A. J. Roscioli at (610) 774-4019.

Sincerely,



R. G. Byram

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