

CATEGORY 1

REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9706100395 DOC. DATE: 97/06/06 NOTARIZED: NO DOCKET #

FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylva 05000387

 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylva 05000388

AUTH. NAME AUTHOR AFFILIATION

BYRAM, R.G. Pennsylvania Power & Light Co.

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SUBJECT: Responds to NRC staff request for addl info re plant App R safe shutdown analysis.

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TITLE: OR/Licensing Submittal: Fire Protection - App R - GL-88-12

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JUN - 6 1997

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**SUSQUEHANNA STEAM ELECTRIC STATION
RESPONSE TO STAFF REQUEST FOR INFORMATION
REGARDING THE SSES APPENDIX R SAFE
SHUTDOWN ANALYSIS**
PLA-4626 FILE R41-2

Docket Nos. 50-387
and 50-388

This letter responds to requests for additional information regarding the SSES Appendix R safe shutdown analysis made by your staff during a telephone conference held on May 13, 1997. Participants in the conference were Mr. C Poslusny and Mr. P. Madden of the NRC and Mr. J Kenny and Mr. W. Williams of PP&L.

Inadvertent Condensate Injection:

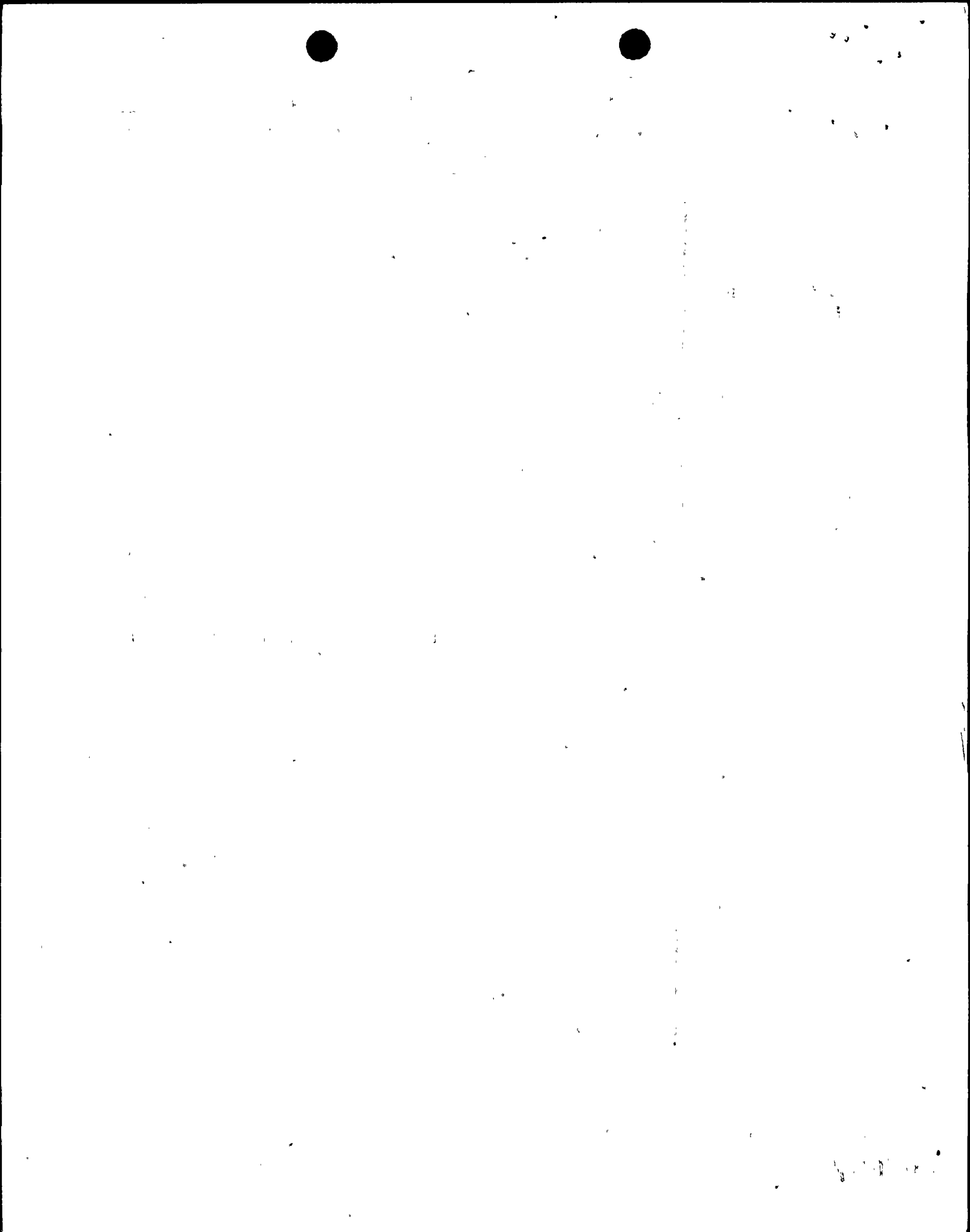
PP&L's analysis of a fire in the Control Room postulated a condition where fire damage to Control Room circuits could result in an uncontrolled injection by the Condensate System. Uncontrolled injection by the Condensate System would result in the inadvertent flooding of the reactor pressure vessel to a level above the top of the main steam lines. Under this scenario, it would be necessary to reduce vessel pressure using the safety relief valves off of the main steam lines inside of primary containment. The discharge piping between the safety relief valves and the quenchers in the suppression pool is designed to handle the loads associated with the condition of high pressure steam blowdown. An analysis was necessary to determine if the system would remain functional for the loads associated with a liquid blowdown at the pressures associated with this postulated condition (i.e. will the SRV discharge piping remain intact if liquid is discharged through the SRVs).

A calculation was performed to determine the loads imposed on the SRV discharge piping under the conditions associated with the uncontrolled Condensate injection event. The magnitude of the axial forces on the SRV discharge piping was determined and compared against the forces calculated for the current design basis condition of a high pressure steam blowdown.

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F PDR





The calculation concluded that the loading condition associated with the postulated event of an uncontrolled injection by Condensate produced loads at each point in the piping system that were lower than the current design basis loads associated with the condition of a high pressure steam blowdown provided an SRV is kept open during the transient. Off Normal Procedures ON-100/200-009, Control Room Evacuation, have been revised to provide this information to the operators.

Compensatory Measures taken for Unit 1 Control Room Hot Shorts:

Unit 2 at SSES has been modified to eliminate concerns over Control Room hot shorts during the most recent refueling and inspection outage.

Unit 1 modifications are scheduled for the upcoming refueling and inspection outage scheduled to begin in the spring of 1998.

Our primary focus until Unit 1 is modified is on preventing the fire of concern from occurring. Secondly, we have procedurally addressed actions to be taken in the event the fire does occur and have identified a number of independent paths that are available for mitigating the effects of multiple damaging hot shorts resulting from a Control Room fire.

With respect to fire prevention and fire spread mitigation, the control room is continuously manned by highly trained individuals. Control room personnel, generally sensitive to the consequences of fire in the control room, have been specifically briefed on concerns regarding a control room fire's potential for leading to damaging "hot short" conditions in circuitry for valves needed for operation from the RSP. Further, there is a qualified fire brigade leader on every shift.

Combustible materials are administratively controlled within the control room fire area.

The control room has detection located throughout. A manual spurt CO₂ system is installed under the control room floor. Portable fire fighting equipment is available for use by operations personnel in the immediate area of the control room. Self contained breathing apparatus are available in the control room fire area for use by operations personnel.

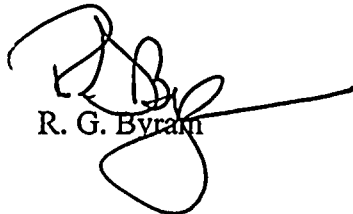
With respect to fire damage mitigation, redundant safe shutdown capabilities exist at the SSES Remote Shutdown Panel (RSP) so that multiple failures of certain valves(see discussion below) can be accommodated without defeating the ability to achieve and maintain safe shutdown in the event of a Control Room fire. The failure of any valves in the RCIC System will not impact the ability to safely shutdown. Under this scenario, the Residual Heat Removal (RHR) system operated in the alternate shutdown cooling mode in conjunction with the SRV's available at the RSP can be used in accordance with Off Normal Procedure ON-149-001 to achieve and

maintain safe shutdown. Similarly, should selected valves in the flow path for both the high and low pressure make-up systems installed on the RSP be damaged by the fire, the non-RSP loop of RHR could be manually placed into service in the alternate shutdown cooling mode in accordance with Plant Operating Procedure OP-149-002. Under this scenario, the Residual Heat Removal (RHR) system operated in the alternate shutdown cooling mode in conjunction with the SRV's available at the RSP can be used to achieve and maintain safe shutdown.

Finally, for a failure of any single valve in the low pressure system, safe shutdown is not impacted. For this condition, Reactor Core Injection Cooling (RCIC) can be used to maintain level in the reactor vessel while the RHR loop not installed on the RSP is manually put into service in the Suppression Pool Cooling mode of operation using OP-149-005. This also would place the plant into a safe condition.

Based on the above, we believe we have taken significant steps to prevent a fire from occurring in the SSES control room. Continuous manning and the presence of fire detection equipment within the fire area make early detection of a fire highly probable. The presence of suppression equipment and personnel trained in its use and sensitive to the consequences of a fire provides a high degree of assurance that any fires would be reacted to quickly and effectively. Finally, procedural actions exist to mitigate the consequences of a fire should one progress to the point of affecting the valve circuitry of concern for multiple Control Room valves.

Very truly yours,



R. G. Byram

copy: Regional Administrator - Region I
Mr. K. M. Jenison, NRC Sr. Resident Inspector
Mr. C Poslusny, NRC Sr. Project Manager

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ADOCK/c

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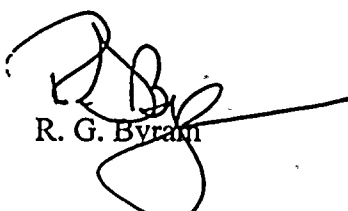
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