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ACCESSION NBR: 9709230132 DOC. DATE: 97/09/15 NOTARIZED: YES DOCKET #
FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylvania 05000387
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SUBJECT: Forwards application for proposed Amend 212 to License
NPF-14, changing TS in order to allow continued operation w/
inoperable SRV acoustic monitor.

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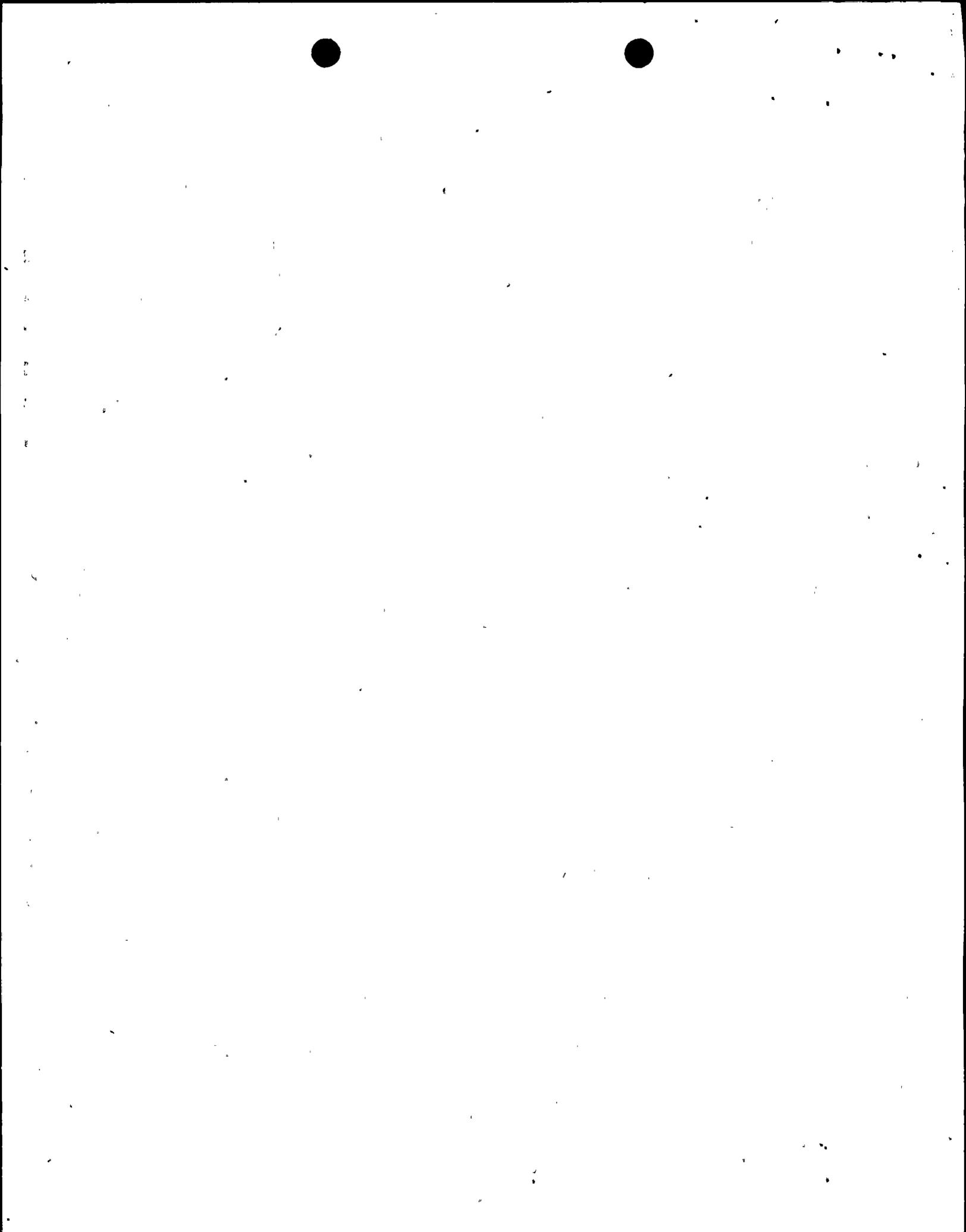
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**SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT NO. 212 TO LICENSE NPF-14:
INOPERABLE ACOUSTIC MONITOR
PLA-4672**

FILE A17-2

Docket Nos. 50-387

*References: 1 PLA-4669, R. G. Byram to US NRC, "Request for Enforcement Discretion: Inoperable Acoustic Monitor," dated September 11, 1997.
2 PLA-4670, G. T. Jones to US NRC, "Supplement to Request for Enforcement Discretion on Inoperable Acoustic Monitor," dated September 12, 1997.*

The purpose of this letter is to propose changes to the Susquehanna SES Unit 1 Technical Specifications in order to allow continued operation with an inoperable safety relief valve (SRV) acoustic monitor. This proposal is being submitted consistent with the referenced letters which formed the basis for enforcement discretion being granted by the NRC on September 12, 1997.

BACKGROUND

On September 10, 1997, at 1750 hours, SSES Unit 1 control room received the "Main Steam Division 2 SRV Open" alarm. The appropriate Alarm Response procedure (AR-110-001) was entered. The "S" SRV acoustic monitor display indicated that the SRV was potentially open. Although the SRV was not confirmed to be open, which is the requirement for entry into Off Normal procedure ON-183-001, "Stuck Open Safety Relief Valve," the "S" SRV was conservatively evaluated against ON-183-001 and verified closed based on numerous other indications as described below. PP&L's investigation has determined the problem to involve the acoustic monitor system components located inside containment. Repair therefore requires shutdown and containment entry. Since the acoustic monitor cannot be relied upon to provide accurate indication, it was declared inoperable as of 1750 hours and the appropriate actions under Limiting Conditions for Operation (LCOs) 3.3.7.5 and 3.4.2 were entered. All other Unit 1 SRV acoustic monitors were confirmed to be operable.

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In January 1994, PP&L requested and received enforcement discretion due to a failure of an SRV acoustic monitor on Unit 2. Since that time there have been other acoustic monitor failures, in October, 1995 (Unit 2) and October 1996 (Unit 1). In each of these prior events, the monitors either failed to respond, or failed high, indicating an open SRV. Neither condition would clear nor reset automatically. The causes of these events were due to failed accelerometer cable connectors and/ or charge convertors.

The recent event on Unit 1 is different than the previous events. This event resulted in a monitor that was erratic and would frequently produce erroneous open SRV alarms. The alarm condition would clear automatically. A root cause for the current failure cannot be positively established until a containment entry is made for repairs.

In all of the above cases, it was determined that there were no SRVs that opened. Since the first event in 1994, we have improved our maintenance practices, installed improved accelerometer cable connectors, and procedurally controlled outage work such that the acoustic monitors are functionally checked just prior to closure of the drywell. This minimizes the potential for inadvertent damage to the acoustic monitor components.

On September 12, 1997 at approximately 1430 hours, NRC granted a request for enforcement discretion. Their approval requires submittal of this change to the Technical Specifications by September 15, 1997.

DESCRIPTION OF PROPOSED CHANGE

A markup is attached. Specifications 3.3.7.5 and 3.4.2 are proposed to be conditioned with the following footnote: "Compliance with these requirements for the "S" SRV acoustic monitor is not required for the period beginning September 12, 1997, until the next unit shutdown of sufficient duration to allow for containment entry, not to exceed the 10th refueling and inspection outage."

SAFETY ASSESSMENT

Technical Specifications 3.3.7.5 Action 80 and 3.4.2 Action c require that the inoperable acoustic monitor be restored to operable status within 48 hours and 7 days respectively, or the unit must be placed in Hot Shutdown within the next 12 hours. The purpose of the safety relief valve position indication system is to provide indication of flow through the valve, providing positive indication of a potentially stuck open safety relief valve.

The requirement for the safety/relief valve position indication system originated in TMI Item II.D.3, "Direct Indication of Relief and Safety Valve Position." The Susquehanna SES NRC Safety Evaluation Report (NUREG-0776) documents the NRC acceptance of the Susquehanna design. As described in the SSES Final Safety Analysis Report (Subsection 18.1.24.3), the safety/relief valve position indication system is a safety grade acoustic monitoring system, indicated and alarmed on a control room panel, and powered from a Class 1E vital instrument bus. Also, backup methods of determining valve position are available and are discussed in the off-normal procedures.

Specifically, off-normal procedure ON-183-001, "Stuck Open Safety Relief Valve," revision 15, dated February 27, 1997 is included as part of the current operator training program, and provides a list of symptoms and observations for determining safety relief valve position. They are:

- Indicated feedwater flow greater than indicated steam flow
- Loss of generator MWe
- Feedwater temperature decrease due to SRV steam bypassing feedwater heating
- RPV pressure decreasing
- RPV level swell
- Suppression pool temperature increasing
- Suppression pool level increasing
- Suppression pool pressure increasing

None of the above symptoms have been observed, providing verification that the "S" SRV is currently closed.

For the "S" SRV, three Suppression Pool Temperature (SPOTMOS) elements are in proximity to the SRV discharge line quencher and would see an elevated temperature if the SRV were open. In addition, SRV tail pipe temperature also provides indication of SRV position, and has its own alarm response procedure that requires entry into ON-183-001 upon reaching a temperature indicative of an open SRV (250 degrees F). Over the current Unit 1 operating cycle neither the SPOTMOS nor the tail pipe indications (nor the acoustic monitor, when operable) have indicated any leakage from the "S" SRV.

NUREG-0783 requires that a postulated stuck open relief valve (SORV) transient be analyzed to verify that the maximum pool temperature remains below the quencher instability temperature. The SORV analysis assumes that the operator will take actions to trip the reactor, initiate RHR pool cooling, and initiate reactor depressurization in accordance with Technical Specification 3.6.2.1. The suppression pool temperature monitoring system (SPOTMOS) provides the operator with safety grade, redundant pool temperature information from which to take actions in accordance with TS 3.6.2.1. The plant computer system is also used to derive bulk pool temperature. The operator has sufficient pool temperature information in the event of a SORV for the "S" SRV with the inoperable acoustic monitor. The SPOTMOS and plant computer system provide the necessary

information to take actions that are consistent with NUREG-0783 pool temperature analysis. This analysis indicates that the maximum pool temperature complies with the NUREG-0783 requirements. It does not credit any response to the acoustic monitors. Therefore, this proposed change has no adverse impact on the containment SRV analysis.

The emergency operating procedure for reactor pressure control (EO-100-102) provides a control step alerting the operator to the consequences of SRV cycling and outlining steps to control it. In addition to the potential damage to the valve itself, there are reactor water level fluctuations and significant dynamic loads imposed on the RPV, on the SRV tail pipes and on the primary containment structures when a SRV cycles. The operator is directed to lower the pressure to below the relief pressure setpoint. This lowering of pressure would stop any SRV from cycling, and does not require identification of the operating valve.

The primary means available to detect SRV cycling is the acoustic monitor. In its absence, tail pipe temperature rise is a true early indication of initial SRV actuation; SPOTMOS temperature elements in proximity to the discharge quencher also provide indication. Indication from reactor pressure would distinctly indicate a cycling SRV, as would the level fluctuations. Switch setpoint hysteresis would create pressure fluctuations with a relatively long period, on the order of one minute open (depressurizing), five minutes closed (repressurizing).

Based on the above, operation of Unit 1 until the 10th refueling and inspection outage with the "S" SRV acoustic monitor inoperable does not represent a significant adverse impact on the safe operation of the unit.

COMPENSATORY ACTIONS

The SRV tail pipe alarm procedure currently in place requires operator action in response to a potential stuck open SRV.

In addition, a procedure change has been issued to procedure ON-183-001 identifying the condition of the acoustic monitor for the "S" SRV and identifying the Suppression Pool Temperature Monitoring channels that are located most closely to its discharge line. Plant operators are being trained (hot box) during their shifts. High temperature at the Suppression Pool Temperature Monitoring channels will provide specific indication of a discharge of steam through the "S" SRV.

ENVIRONMENTAL CONSEQUENCES

This request is consistent with the Susquehanna design basis, in that adequate controls exist to ensure proper valve position indication during all Operational Conditions. Therefore, no environmental consequences that have not been previously considered are anticipated.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

- 1. This proposal does not involve a significant increase in the probability or consequences of an accident previously evaluated.*

The acoustic monitors do not affect the operation of the safety/relief valves. The SRV safety-valve function (TS 3.4.2), safety-related ADS function (six selected valves-TS 3.5.1) and non-safety related automatic and manual relief functions are independent of the acoustic monitoring function. No failure or misoperation of the acoustic monitoring system can affect the ability of these valves to perform their design functions.

Failure of the acoustic monitoring system to actuate in the event of an actual valve actuation does not affect the consequences of that action. The consequences of an undetected SRV failure to close or to remain closed when desired or required is unacceptable; the purpose of the monitoring system is to increase the probability that a failure of the valve actuation mechanism is detected.

Operation without this detection system will not significantly increase the plant vulnerability to the event. Operation without this detection system would also not create any condition where the reliability of the valve is reduced.

The SSES IPE assigns a conservative 1% probability to the stuck open safety relief valve event. Susquehanna utilizes Crosby SRVs. This valve is specifically designed and specified for the intended function, and is operated and maintained in accordance with the requirements of the design. It has not experienced the reliability problems that have occurred with other SRV designs. The lack of position monitoring will not affect the valve's ability to perform its intended operational and safety function.

Operation without the SRV acoustic monitor will not affect the plant response to the stuck open relief valve at power or hot shutdown conditions. The stuck open SRV transient as analyzed in the Design Assessment Report (DAR) indicates that the maximum pool transient temperature (185°F) does not approach the NUREG 0783 accepted limit (208°F bulk pool temperature). This is assured by using SPOTMOS in accordance with off normal procedure ON-183-001.

SRV tail pipe temperature rise is a true early indication of initial SRV actuation, and is recognized as an acceptable backup method in the NRC SER (NUREG 0776). Alarms generated by this sensor will alert the operator to the open SRV and start the two minute period mandated by Tech Spec 3.4.2. The Suppression Pool Temperature Elements located closest to the "S" SRV discharge quencher will also indicate heat input to the pool from that line initially. Other indications can be used to infer an open relief valve.

The probability of a Stuck Open SRV Event is not affected by the lack of position indication for the SRV. The ability to detect the stuck open SRV condition is adequately covered by secondary reactor vessel and steam cycle parameter indications, and will not result in an increase in the probability or consequences of an accident previously evaluated.

2. This proposal does not create the possibility of a new or different type of accident from any previously evaluated.

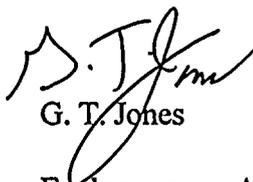
The SRV Acoustic Monitor performs no control or active protective function other than indication. Failure or misoperation of this device will not cause an unanalyzed failure or misoperation of an engineered safety feature. Because of the diverse and redundant indication system described above, misoperation of this system will not cause the operator to take unanalyzed actions, nor will it cause the operator to commit errors of commission or omission, and as such will not create the possibility of a new or different type of accident.

3. This change does not involve a significant reduction in a margin of safety.

Operating without the "S" SRV position indication does not reduce the design or operating basis margin to safety. Primary Containment controls are in place that can effectively deal with the operating condition. In the unlikely event that the "S" SRV should cycle, sufficient indication would be available to identify and mitigate the occurrence. Thus, the proposed change does not involve a significant reduction in a margin of safety.

This proposed enforcement discretion has been reviewed by both the onsite and offsite safety review committees. Questions regarding this proposal should be directed to Mr. J. M. Kenny at (610) 774-7535.

Very truly yours,


G. T. Jones

Enclosures: Affidavit
Marked Up Technical Specifications

copy: NRC Region I
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