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SUBJECT: Documents request for enforcement discretion from Unit 2 Tech Specs re post-accident monitoring instrumentation & safety relief valve requirement for acoustic monitoring.

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SUSQUEHANNA STEAM ELECTRIC STATION
REQUEST FOR ENFORCEMENT DISCRETION:
INOPERABLE UNIT 2 ACOUSTIC MONITOR
PLA-4926 **Docket No. 50-388**

The purpose of this letter is to document a request for enforcement discretion from the Susquehanna SES (SSES) Unit 2 Technical Specifications regarding Post Accident Monitoring Instrumentation and Safety Relief Valve requirement for acoustic monitoring. This enforcement discretion will allow Unit 2 to operate until a proposed emergency amendment from SSES Unit 2 Technical Specifications can be processed and approved by the NRC. Our proposed emergency amendment will allow Unit 2 to operate until the next outage of sufficient length to allow for containment entry, not to exceed the ninth refueling and inspection outage (Spring 1999), with the "J" Safety Relief Valve's (SRV) Acoustic Monitor inoperable.

BACKGROUND

On June 13, 1998, at 1239 hours, SSES Unit 2 control room personnel received the "Main Steam Division 2 SRV Open" alarm. The appropriate Alarm Response procedure was entered. The "J" SRV acoustic monitor display showed all the lights lit, indicating that the SRV was potentially fully open. The status of the "J" SRV was then evaluated using Off Normal procedure ON-283-001, "Stuck Open Safety Relief Valve," and verified closed based on numerous other indications. PP&L's investigation has determined the problem to be with the acoustic monitor system components located inside containment. Repair requires shutdown and containment entry. Since the acoustic monitor cannot be relied upon to provide accurate indication, it was declared inoperable as of 1239 hours and the appropriate actions under Limiting Conditions for Operation (LCOs) 3.3.7.5 and 3.4.2 were taken. The Unit 2 acoustic monitors were functionally tested prior to the recent startup from a forced outage on Wednesday, June 10, 1998, per NDAP-QA-0309, Attachment A (Containment Closeout Checklist), Item 5.a.

THE REQUIREMENTS FROM WHICH ENFORCEMENT DISCRETION IS REQUESTED

PP&L is requesting enforcement discretion from Unit 2 Technical Specification (TS) 3.3.7.5 Action 80, and 3.4.2 Action c, so that Unit 2 can continue to operate in Operational Condition 1 with the "J" SRV acoustic monitor inoperable while a proposal to amend the Technical Specifications is processed. A markup of the proposed Tech Spec change is attached.

CIRCUMSTANCES REQUIRING PROMPT ACTION, ROOT CAUSE, RELEVANT HISTORICAL INFORMATION

Susquehanna SES Unit 2 is currently operating in Operational Condition 1 at 60% power. Repair of the inoperable acoustic monitor requires taking Unit 2 to cold shutdown, de-inerting the containment, making a containment entry to repair/replace the acoustic monitor failed component. Based on the justification provided below, PP&L believes that this shutdown would represent an unwarranted transient on Unit 2.

PP&L has established that the failure of the acoustic monitor is associated with components located within the containment, which is inaccessible during reactor operation. As such, a definitive root cause cannot be established at this time.

In January 1994, PP&L requested and received enforcement discretion due to a failed acoustic monitor on SSES Unit 2. Since that time there have been other similar failures: October 1995 on Unit 2, October 1996 on Unit 1 and September 1997 on Unit 1. In all of these events, the acoustic monitors either failed to respond or failed high indicating an open SRV which resulted in a condition that would not clear or reset automatically. The causes of these events have been due to failed accelerometer cable connectors and/or charge converters.

In the most recent event during September 1997, PP&L requested and received enforcement discretion due to a failed acoustic monitor on SSES Unit 1. This event resulted in an acoustic monitor that was erratic and would frequently produce erroneous open SRV alarms. The alarm condition would clear automatically. The cause of this event was determined to be a shorted shield wire at a sensor cable connector.

In all of the above cases, it was determined that no SRV's opened. Since the first event in 1994, we have improved our maintenance practices, installed improved accelerometer cable connectors, procedurally controlled access to SRV areas of the drywell during outage work, and ensured that work in the drywell was completed prior to functionally checking the acoustic monitors.

SAFETY BASIS OF PROPOSED REQUEST

Technical Specifications 3.3.7.5 Action 80 and 3.4.2 Action c, require that the inoperable acoustic monitor be restored to its operable status within 48 hours and 7 days respectively or be in Hot Shutdown within the next 12 hours. The purpose of the safety/relief valve position indication system (acoustic monitor) is to provide indication of a stuck open safety/relief valve.

The requirement for the safety/relief valve position indication system (acoustic monitor) 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-283-001, "Stuck Open Safety Relief Valve," revision 14, dated February 26, 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 chamber pressure increasing

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

For the "J" SRV, Suppression Pool Temperature Elements TE 25757 thru 25761 are in proximity to the SRV discharge line quencher and would see an elevated temperature if the SRV were open. In addition, tail pipe temperature also provides indication that the SRV is open. Over the current Unit 2 operating cycle neither of these indications (nor the acoustic monitor, when operable) indicated any leakage from the "J" 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 inoperable acoustic monitor for the "J" SRV does not affect the ability of the operator to obtain pool temperature information. The SPOTMOS and plant computer system provides 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. Therefore, this requested TS enforcement discretion has no adverse impact on the containment SORV analysis.

We have reviewed our ability to detect and control SRV cycling with an acoustic monitor out of service. The primary means available of detecting SRV cycling is the acoustic monitor. Secondary indication from reactor pressure would distinctly indicate a cycling SRV, as would reactor water 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).

The Emergency Operating procedure for Reactor Pressure Control (EO-200-102) provides a control step alerting the operator to the consequences and outlining steps to control SRV cycling. During SRV operation, 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. The operator is directed to lower reactor pressure to below the relief pressure setpoint. Lowering pressure would stop any SRV from cycling, and does not require identification of the operating valve. Hence the ability to respond to this situation is not impaired.

Review of the Improved Technical Specifications (ITS), NUREG 1433, for the acoustic monitors (Accident Monitoring Instrumentation) reveals that these instruments did not satisfy the NRC Interim Policy Statement technical specification screening criteria and are no longer governed by Tech Spec requirements under ITS.

Based on the above, Unit 2 can be operated safely until the 9th refueling inspection and outage with the "J" SRV acoustic monitor inoperable.

QUALITATIVE RISK ASSESSMENT OF OPERATION WITHOUT THE INOPERABLE ACOUSTIC MONITOR

As stated above, the "J" SRV is operable and verified in the closed position based on alternate indications. The associated acoustic monitor is inoperable. This has no impact on the probability of SRV malfunction. It is the primary means of detecting SRV position, and as such the risk to be considered is the operator's ability to quickly detect a stuck open SRV. PP&L does not believe that this represents a significant degradation in risk based on the following items which are described in this submittal:

- The proceduralized alternate indications that exist; a number of these indications (eg., suppression pool temperature, and reactor vessel level and pressure) would provide prompt indication consistent with the expectations in Tech Spec 3.4.2;
- Existing operator training on the indications; and
- Compensatory actions, including procedure changes and training, that focus the operator on the alternate indications for the "J"SRV acoustic monitor.

BASIS FOR CONCLUSION THAT THE ENFORCEMENT DISCRETION WILL NOT BE OF POTENTIAL DETRIMENT TO THE PUBLIC HEALTH AND SAFETY AND THAT A SIGNIFICANT SAFETY HAZARD IS NOT INVOLVED.

The "J" SRV is currently operable. Its associated acoustic monitor is inoperable. As discussed above, a procedure to provide several different indications of valve position is in place. Review of all pertinent alternate indications in accordance with the procedure has verified that the "J" SRV is currently closed. This procedure will be updated to reflect the current status of the "J" SRV acoustic monitor and to provide specific direction for alternate means of position indication for this valve. Specific training on the Unit 2 "J" SRV acoustic monitor condition and Hotbox training will be provided to control room operators on applicable procedures and procedure changes.

The acoustic monitor does not meet any of the following criteria for inclusion in the Improved Technical Specifications, supporting its lack of significant safety impact:

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Based on the above, the enforcement discretion will not be of potential detriment to the public health and safety, and does not involve a significant safety hazard.

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 mis-operation 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 are 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 vulnerability to an undetected, open SRV 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 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 temperature data from SPOTMOS in accordance with off normal procedure ON-283-001.

   SRV tail pipe temperature rise above the alarm setpoint is a true indication of SRV actuation and a reliable indication of closure. Alarms generated by this sensor will alert the operator to the open SRV. The Suppression Pool Temperature Elements located closest to the "J" SRV discharge quencher will also indicate heat input to the pool from

that line. Other indications can be used to infer an open relief valve and to confirm a closed valve (i.e. by demonstrating pressure integrity).

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 the tail pipe temperature indication and 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 engineering 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 "J" 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 "J" SRV should cycle open and fail to fully close, 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.

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.

COMPENSATORY ACTIONS

A Procedure Change will be issued to procedure ON-283-001 identifying the condition of the acoustic monitor for the "J" SRV and identifying alternate means of determining if the "J" SRV is open. Specifically, it will identify the Suppression Pool Temperature Monitoring channels that are located most closely to its discharge line. High temperature at the Suppression Pool Temperature Monitoring channels will provide specific indication of a discharge of steam through the "J" SRV. Control room operators will receive Hotbox training on the procedure changes to ON-283-001.

This event will be evaluated per the Maintenance Rule and its impact on the performance of Unit 2 position indication function will be determined. This Maintenance Rule function is presently (a)(1) status with an action plan and performance goals established..

JUSTIFICATION FOR DURATION OF PROPOSED REQUEST

PP&L is proposing an amendment to the Unit 2 Technical Specifications under separate cover (to be submitted by June 17, 1998) and is therefore requesting that this enforcement discretion remain in effect until the NRC acts on that submittal. The proposed amendment submittal will request permission to operate until the Unit 2 9th refueling and inspection outage (currently scheduled to begin on March 13, 1999) or until the next forced outage of sufficient duration to allow for containment entry.

PORC REVIEW

This proposed enforcement discretion has been reviewed and approved by the Susquehanna Plant Operations Review Committee.

NOED CRITERIA

This request meets Criterion 1 of the NRC Inspection Manual Part 9900 Guidance on Enforcement Discretion.

MARKED UP TECH SPECS

A markup of the Tech Specs associated with the formal amendment PP&L will request by June 17, 1998 is attached.

REVIEW AGAINST THE IMPROVED TECH SPECS

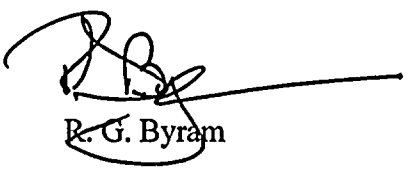
PP&L submitted an application for the ITS on August 1, 1996, and it is nearing final approval. The ITS would relocate the subject requirements to PP&L's Technical Requirements Manual, under which changes can be controlled by 10CFR50.59.

In October of 1997, PP&L submitted to the NRC a request for accelerated review of Improved Technical Specification relocation of SRV Acoustic Monitors (PLA-4684). This was performed as a follow up action to the Unit 1, September 1997 event. This letter documents the proposed changes to be made in ITS and the follow-up evaluation actions to be taken to address this issue.

The question as to whether or not the ITS would have obviated the need for enforcement discretion is a function of whether or not a 10CFR50.59 safety evaluation would have determined that PP&L could have altered the current shutdown action requirements without requiring NRC prior review and approval. Such an evaluation has not been performed to date.

Questions regarding this information should be directed to Mr. J. M. Kenny at (610) 774-7535.

Sincerely,



R. G. Byram

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