

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of

:

Docket No. 50-388

PP&L, INC.

:

PROPOSED AMENDMENT NO. 183
FACILITY OPERATING LICENSE NO. NPF-22
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 2

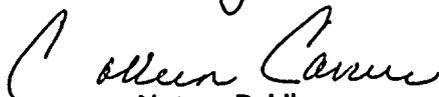
Licensee, PP&L, Inc., hereby files proposed Amendment No. 183 to its Facility Operating License No. NPF-22 dated March 23, 1984.

This amendment contains a revision to the Susquehanna SES Unit 2 Technical Specifications.

PP&L, INC.
BY:

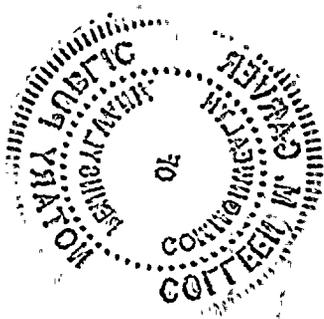

R. G. Byram
Sr. Vice President - Generation and Chief Nuclear Officer

Sworn to and subscribed before me
this 17th day of June, 1998.


Colleen Carver
Notary Public

Notarial Seal
Colleen M. Carver, Notary Public
Salem Twp., Luzerne County
My Commission Expires Aug. 30, 1999
Member, Pennsylvania Association of Notaries

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SAFETY ASSESSMENT

INOPERABLE "J" ACOUSTIC MONITOR

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 maintenance outage on Wednesday, June 10, 1998, per NDAP-QA-0309, Attachment A (Containment Close-out Checklist), Item 5.a.

DESCRIPTION OF PROPOSED CHANGE

A markup is attached. Technical Specifications 3.3.7.5 Action 80a/80b require that the inoperable acoustic monitor be restored to operable status within 7 days and 48 hours respectively, while Specification 3.4.2 Action c requires that the inoperable acoustic monitor be restored to operable status within 7 days. Failure to restore the inoperable monitor within the allotted time requires the Unit to be placed in Hot Shutdown within the next 12 hours.

The proposed change will add a footnote to Table 3.3.7.5-1, 4.3.7.5-1, LCO 3.4.2 action c, and SR 4.4.2 stating that:

"Compliance with these requirements for the "J" SRV acoustic monitor is not required for the period beginning 6/15/98, until the next unit shutdown of sufficient duration to allow for containment entry, not to exceed the ninth refueling and inspection outage".

This will allow Unit 2 to continue operating with the inoperable "J" SRV acoustic monitor.

The footnote is also proposed to be added to Table 4.3.7.5-1 and Surveillance Requirement 4.4.2 to clarify that the surveillance requirements for the "J" SRV acoustic monitor do not apply, as the channel is inoperable. The footnote as regards the surveillance requirements is for clarification only, as Technical Specification 4.0.3 states that "Surveillance Requirements do not have to be performed on inoperable equipment."

SAFETY ANALYSIS

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. The system serves to provide initial indication of an open SRV under power operating conditions, and provides post-accident indication of the valve actuation for its safety-related Safety and ADS functions. The system is not required to be tolerant of single active component failures.

The acoustic monitors do not affect the operation of the SRVs. The SRV safety-valve function (TS 3.4.2), safety-related ADS function (TS 3.5.1) and non-safety related automatic and manual relief functions are independent of the acoustic monitoring function. The acoustic monitor system serves an indication function only. No failure or misoperation of the acoustic monitoring system can affect the ability of these valves to perform their design functions. Additionally operating without acoustic monitoring does not create any condition where the reliability of the associated SRV is reduced.

Although the SRV acoustic monitors are the primary method of determining SRV position, backup methods of determining valve position are available and discussed in 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

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, providing verification that the "J" SRV is currently closed.

Operation without the SRV acoustic monitor will not affect the plant response to the stuck open relief valve (SORV) at power or hot shutdown conditions. The SSES IPE assigns a conservative 1% failure probability to the SORV event. Susquehanna utilizes Crosby SRVs, which have been specifically designed and specified for the intended function. The valves are operated and maintained in accordance with design requirements. The Crosby design 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 functions.

The acoustic monitor provides a secondary indication of the primary adverse condition that results from a SORV transient: suppression pool temperature. While the acoustic monitor informs the operator that heat is being added to the suppression pool, it is the suppression pool temperature monitoring system that provides the primary indication that is directly relevant to primary containment integrity.

NUREG-0783 requires that a postulated SORV transient be analyzed to verify that the maximum pool temperature remains below the quencher instability temperature. The SORV transient as analyzed in the Design Assessment Report indicates that the maximum pool transient temperature (185 ° F) does not approach the NUREG 0783 accepted limit (208 ° F bulk pool 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. SRV tail pipe temperature rise above the alarm setpoint is a true indication of SRV actuation. Alarms generated by this sensor will alert the operator to the open SRV.

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.

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 less than one minute open (depressurizing), and approximately 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.

Post-accident indication is provided for system status and plant performance monitoring only. Because of the diverse and redundant indications 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.

SRV position indication is classified as a Regulatory Guide 1.97 Category 2 variable (not required to have redundant position indication for each valve). This means that it is not considered a key variable, but one which provides information on operation of safety systems and other systems important to safety. As previously stated, there are other indications available to operators which will allow them to determine SRV position. Therefore, there are no significant safety impacts associated with the loss of this channel under design basis accident conditions.

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.

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 (e.g., 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.

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

COMPENSATORY ACTIONS

A procedure change has been 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..

NO SIGNIFICANT HAZARDS CONSIDERATIONS AND ENVIRONMENTAL ANALYSIS

INOPERABLE "J" ACOUSTIC MONITOR

PP&L has evaluated the proposed Technical Specification change in accordance with the criteria specified by 10 CFR 50.92 and has determined that the proposed change does not involve a significant hazards consideration. The criteria and conclusions of our evaluation are presented below.

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

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 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.*

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.*

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 of 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.