

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of

:

Docket No. 50-388

PP&L, INC.

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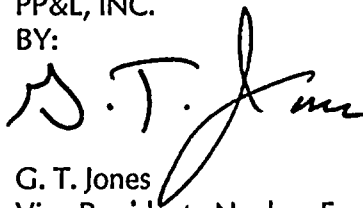
REVISED PROPOSED AMENDMENT NO. 185
FACILITY OPERATING LICENSE NO. NPF-22
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 2

Licensee, PP&L, Inc., hereby files a revised proposed Amendment No. 185 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:



G. T. Jones

Vice President - Nuclear Engineering & Support

Sworn to and subscribed before me
this 23rd day of November, 1998.


Notary Public

NOTARIAL SEAL
JANICE M. REESE, Notary Public
City of Allentown, Lehigh County, PA
My Commission Expires June 11, 2001



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ATTACHMENT 1 TO PLA-4992

RESPONSES TO REQUEST FOR ADDITIONAL INFORMATION

QUESTION 1:

Your submittal stated that the current installed reactor pressure instruments need replacement in order to better control for a more restrictive allowable value range. Please discuss the instruments (that) will be installed during next refueling outage. What are the major differences between the existing instruments and the new instruments?

RESPONSE 1:

The existing instruments used to sense Reactor Steam Dome Pressure for the Division 1 Core Spray RHR/LPCI injection permissive are Barksdale pressure switches. Because of the magnitude of the Barksdale's inaccuracies and drift, they may not actuate within the required range of operation bounded by the upper and lower analytical limits for the permissive function. Therefore, the Barksdale's will be replaced with Barton pressure switches. The Barton's have improved accuracy and drift specifications that allow them to trip within the new lower and upper allowable values. It should be noted that the replacement Barton switches are the same models as are currently used for the Division 2 switches.

QUESTION 2:

Please provide setpoint calculation documents for the "Reactor Steam Dome Pressure-Low" trip setpoint and allowable values (AV). Is the Susquehanna setpoint calculation using the GE NEDC-31336, "General Electric Instrument Setpoint Methodology?" If the answer is yes, please include NEDC-31336 as reference in your submittal.

RESPONSE 2:

The setpoint and Allowable Values are determined based on guidance in GE NEDC-31336 "General Electric Instrument Setpoint Methodology" and documented in PP&L calculation. The calculation results are as follows:

Parameter	Value	Remarks
Upper Analytical Limit	440	FSAR Section 6.3.2 and NEDC-31336, page 3-107 (piping design limit minus head of water in piping)
Upper Allowable Value	433	UAL - (Instrument Accuracy + Calibration Accuracy)
Upper NTSP ¹	427	UAL - (Instrument Accuracy + Calibration Accuracy + Drift)
Setpoint	420	Setting that is farthest from both the UAV and LAV
Lower NTSP ¹	413	LAL + (Instrument Accuracy + Calibration Accuracy + Drift)
Lower Allowable Value	407	LAL + (Instrument Accuracy + Calibration Accuracy)
Lower Analytical Limit	400	FSAR Table 6.3-2 (based on peak cladding temperature limit)

¹Nominal Trip Setpoint

- NOTE:** The Upper and Lower Allowable Values previously submitted in reference 1 were 437 psig (upper) and 403 psig (lower). It has since been determined that the new values of 433 psig (upper) and 407 psig (lower) should be used since they provide additional margin to the analytical limits.

QUESTION 3:

For the proposed AV's that gives the appearance of a range, please confirm that the upper and lower limits are unique AV's with each AV associated with one unique analytical limit per function. Provide reference to the FSAR accident analysis sections for these analytical limits. Indicate the actual setpoint chosen for these functions.

RESPONSE 3:

The SSES Technical Specifications only specify a lower allowable value. This value is based on the analytical limit in FSAR Table 6.3-2 (400 psig) that protects against exceeding the peak cladding temperature. SSES Technical Specifications do not specify an upper allowable value. However, there are piping overpressurization protection design limits specified in FSAR Section 6.3.2 for the Core Spray and RHR Systems. These piping design limits form the basis for the upper analytical limit (440 psig). Currently the upper allowable value is controlled procedurally by surveillance procedures.

Establishing the new setpoint for the Barton pressure switches at 420 psig ensures that the required switch actuation occurs within the lower analytical limit (400 psig) and upper analytical limit (440 psig).

QUESTION 4:

Please verify that the trip setpoint associated with each proposed upper AV and Lower AV have been analyzed for potential interactions between the setpoint and each AV. Describe the method to verify the instrument operability during the instrument surveillance test to demonstrate that all the setpoint calculation uncertainty assumptions are being satisfied.

RESPONSE 4:

I&C Surveillance procedures verify that the switch actuates on decreasing test pressure within the required tolerance bands specified by the setpoint calculation. These tolerance bands are specified in the procedure as part of the acceptance criteria for the operation of the switches and the relay logic. Control room annunciation and actuation of the appropriate relays in the relay room are also monitored as part of the surveillance. The surveillance procedures will be updated appropriately to incorporate the new setpoint and allowable values provided by the setpoint calculation.

QUESTION 5:

Referring to Table 3.3.5.1-1, will 1c alone initiate core spray, or is 1b concurrent with 1c needed for core spray initiation? Since initiation (1c) and injection permissive (1d) are the same value, why are they two separate functions? Most reactors and the ISTS have a single injection permissive value. How did the conversion to the ISTS lead to the conclusion that the functions should be separated into initiation and injection permissive and the allowable values changed?

RESPONSE 5:

Function 1c alone cannot initiate Core Spray. Core Spray function 1c concurrent with function 1d can (among other ways) initiate Core Spray. SSES FSAR Section 7.3.1.1a.1.5.3 and FSAR Figure 7.3-5-1 explains in detail the how the initiation logic initiates the Core Spray system.

Function's 1c and 1d are two separate functions because there are two different Functions being performed and required in the Technical Specifications; an ECCS initiation Function (SSES ITS Table 3.3.5.1-1 Function 1.d and 2.d) and a discharge valve injection permissive Function (SSES ITS 3.3.5.1-1 Function 1.e and 2.e). The separate Function's ensure that the proper Actions are taken for each Function.

For the ECCS initiation Function (1c and 2c), the Technical Specification applicable Condition is Condition B, which allows the channel to be placed in trip within 24 hours. This is appropriate for function 1c and 2c because placing this channel in trip will ensure the safety function is still available. For the injection valve permissive Functions 1d and 2d, the proper Technical Specification Condition is Condition C which does not require the channel to be placed in trip. It is not appropriate to place the channel in trip because placing the channel in trip with occurrence of a single failure would result in opening of the injection valve. This is an unsafe condition since not all of the piping downstream of the injection valve is designed for operating reactor pressures.

The designation of these as two separate functions in the SSES Technical Specifications was approved as part of the SSES conversion to the Improved Technical Specifications approved in Amendment 151 to the SSES Unit 2 Operating License.

SAFETY ASSESSMENT

REACTOR STEAM DOME PRESSURE-LOW ALLOWABLE VALUE

BACKGROUND:

The Core Spray and LPCI initiation logic has a low pressure permissive function which prevents the Core Spray System injection valves HV-252-F005A/B and the LPCI System injection valves HV-251-F017A/B from opening until reactor pressure has decreased to the systems' design pressure. The purpose of this permissive is to prevent Core Spray and LPCI system overpressurization and prevent fuel clad temperature limits from being exceeded. The permissive signals are initiated from four pressure instruments that sense reactor steam dome pressure.

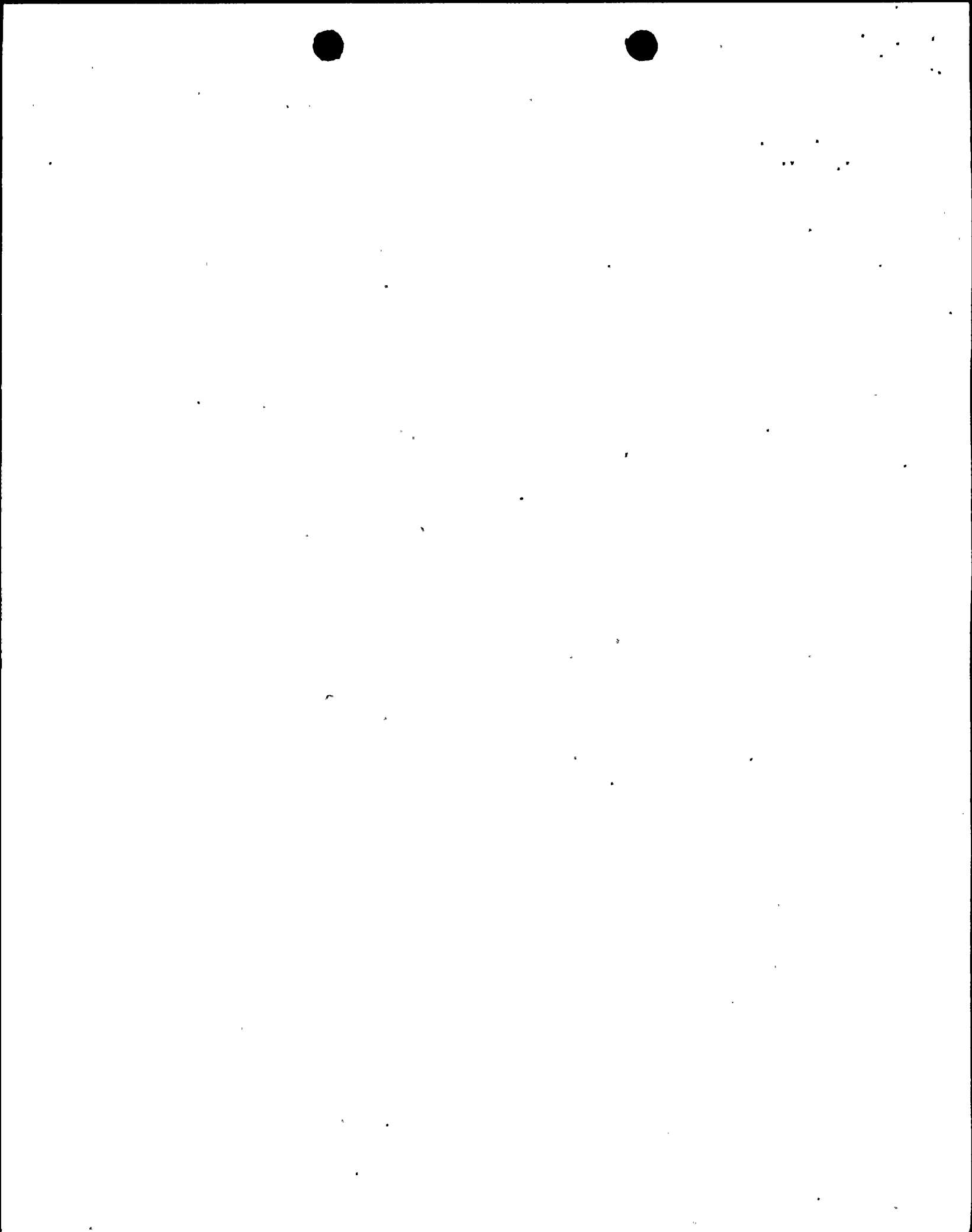
Analysis has determined an Allowable Value range for "Reactor Steam Dome Pressure - Low" based on analytical limits taken from the RHR piping maximum design pressure (RHR pressure is lower than the Core Spray; therefore, it is more conservative to use the RHR pressure) and the limit provided in the SSES FSAR. The Upper Allowable Value ensures that the pressure instruments are set so that they actuate at a pressure that prevents Core Spray and LPCI system overpressurization. The Lower Allowable Value ensures that the pressure indicating switches are set so that they actuate at a pressure which allows Core Spray and LPCI injection to occur in time to prevent fuel clad temperature limits from being exceeded.

DESCRIPTION OF PROPOSED CHANGE:

The proposed change to the Unit 2 Technical Specifications Table 3.3.5.1-1 "Emergency Core Cooling System Instrumentation" updates the values for both the Core Spray (CS) and LPCI "Reactor Steam Dome Pressure-Low" Allowable Values. Specifically the currently specified value of " ≥ 416 " psig is proposed to be changed to " ≥ 407 psig and ≤ 433 psig" for Functions 1.c, 1.d, 2.c, and 2.d. The setpoint and Allowable Values are determined based on guidance in GE NEDC-31336 "General Electric Instrument Setpoint Methodology" and documented in PP&L calculation.

Function 1.c and 2.c are the ECCS initiation functions associated with CS and LPCI and 1.d and 2.d are the system discharge valve injection permissives. The functions are separated in the Technical Specification Table solely to ensure that the proper actions are taken for each function. The instrumentation and allowable values are identical for both functions.

Attachment 3 contains the markup pages of the current Technical Specification pages that reflect the change.



SAFETY ANALYSIS:

The functional design basis of the Core Spray and LPCI systems is to inject water into the reactor vessel to cool the core during a LOCA by opening the Core Spray and LPCI injection valves when reactor pressure drops below the reactor vessel low pressure permissive. The upper analytical limit for the permissive is the Core Spray and LPCI systems' maximum design pressure, and the lower analytical limit is the lowest pressure which allows injection to prevent exceeding the fuel cladding temperature limit. The new allowable values were selected to lie within the upper and lower limits to ensure there will be no change in the required logic or functions of the Core Spray and LPCI systems. These new values do not affect the LOCA or its "limiting fault" frequency of occurrence and do not introduce any new accidents or malfunctions of equipment important to safety. Since they do not affect the LOCA, they do not change the probability of occurrence of the LOCA. The new allowable values do not change the logic or function of the reactor vessel low pressure permissive. These new values simply provide the basis for which the associated pressure instruments are to be set to ensure proper operation of Core Spray and LPCI within the design pressures as described above.

CONCLUSIONS:

The proposed change to SSES Unit 2 Technical Specification Surveillance Requirements enhances the assurance that the CS and RHR systems perform their design basis LOCA function.

ATTACHMENT 3 TO PLA-4992

TECHNICAL SPECIFICATION MARK-UP'S