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50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylva 05000388
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BUTLER,W.R. Project Directorate I-2

SUBJECT: Requests temporary waiver of compliance from requirements of Tech Spec Table 3.3.2-2,Item 4.b to increase trip setpoint from 118.3 F to 131 F & allowable value from 125.3 F to 137 F.Waiver requested until 911015.

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JUL 08 1991

Director of Nuclear Reactor Regulation
Attention: Dr. W. R. Butler, Project Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
REQUEST FOR WAIVER -
SPECIFICATION 3.3.2
PLA-3601 FILES R41-2, A17-2

Docket Nos. 50-387
and 50-388

Dear Dr. Butler:

The purpose of this letter is to request a temporary waiver of compliance from the requirements of the Susquehanna SES Units 1 and 2 Technical Specifications.

REQUIREMENTS FOR WHICH WAIVER IS REQUESTED

The Susquehanna SES Technical Specification Table 3.3.2-2 Item 4.b provides a Trip Setpoint of 118.3°F and an Allowable Value of 125.3°F to isolate the Reactor Water Cleanup System on a High RWCU Penetration Room Temperature. This isolation logic is part of the Steam Leak Detection System whose purpose is to provide timely detection and isolation of small high energy line leaks prior to catastrophic failure of the piping system while maintaining sufficient margin above normal operating/post accident room temperatures.

PP&L is requesting a waiver to increase the Technical Specification Trip Setpoint from 118.3° to 131°F and the Allowable Value from 125.3° to 137°F. The circumstances requiring this waiver and the associated justification follows.

CIRCUMSTANCES REQUIRING PROMPT ACTION

Susquehanna SES Unit 2 has recently experienced two inadvertent isolations of the RWCU System on High RWCU Penetration Room Temperature. Both instances were attributed to the normal room temperature operating very close to the isolation setpoint. This situation occurs during the summer and is caused by extremes in outdoor air temperature.

Following the recent isolation, Operations personnel confirmed that there was no visible leakage in the Unit 2 RWCU Pump Room, Heat Exchanger Room, or the Penetration Room. I&C personnel confirmed the temperature switch setpoint was

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within tolerance. The following day the Plant Technical Staff investigated and confirmed proper operation of the Reactor Building Ventilation System and the Reactor Building Chilled Water System. The room was also inspected for signs of loose/fallen insulation, leaks, etc. and none were found. The room temperature was confirmed with a hand held thermometer. In conclusion, all plant systems were functioning properly and the isolation was the result of the normal RWCU Penetration Room temperature.

Automatic isolations of the RWCU System result in:

1) Primary coolant chemistry excursions which can ultimately result in a plant shutdown as well as increase the susceptibility to IGSCC related failures.

2) Increased thermal cycling of the RWCU Pump seals resulting in premature seal failure. Repair of the failed seal requires the RWCU Pump to be out of service.

3) Increases in radiation exposure to Operations personnel, Maintenance personnel, and Health Physics personnel responding to the plant transient and resultant pump seal repairs.

Without the requested waiver, the risk of incurring additional inadvertent isolations cannot be reduced. The operating margin between the room temperature and the Trip Value is too small to allow for any extended periods of hot weather or ventilation system transients.

The ultimate solution to this problem rests with a permanent setpoint change to the Trip Setpoint and Allowable Values identified in the Technical Specifications. Such a request was submitted in January 1991 and is presently under review by your Staff. The need for this waiver cannot be avoided since the existing operation margin has already been maximized to the extent possible.

COMPENSATORY ACTIONS

Upon issuance of the Waiver of Compliance and until its expiration, the following compensatory actions will be enacted:

1) A pre-isolation alarm will be received when the room temperature reaches 120°F. The alarm response procedures (AR-101-001 and AR-201-001) presently require the operator to a) confirm the room temperature and b) confirm whether or not there are any steam leaks. The procedures are being revised to include monitoring the Reactor Building Sump Level and the Reactor Building Ventilation release rates.

2) The RWCU System room temperatures will be monitored and logged every 6 hours to ensure that any steam leak will be promptly detected.

SAFETY SIGNIFICANCE AND CONSEQUENCES OF PROPOSED REQUEST

The safety function of the leak detection system is to detect leakage from the Reactor Coolant Pressure Boundary (RCPB) as required by 10CFR50 Appendix A GDC 30 and Regulatory Guide 1.45. The purpose of leak detection, as described in FSAR Sections 7.3.1.1a.2.1 and 7.6.1a.4.4.1, is to prevent the excessive loss of reactor coolant and the release of radioactive material. Temperature monitoring is designed to detect small leaks of high energy fluids far below those resulting from a pipe break. The system is thereby intended to provide advance warning of a pipe flaw or other breach in the RCPB and prevent the development of a larger scale accident, such as a high energy line break (HELB). Other means of leak detection are also provided and include room flood detectors, high system flow, high system differential flow, and primary coolant level.

The isolation valves provide a portion of the RCPB in accordance with 10CFR50 Appendix A GDC 54, 55 and 56. These valves isolate the system under accident conditions including primary coolant leaks and high energy line breaks. The isolation valves are described in FSAR Section 6.2.4.3.2.10.

FSAR Section 7.3.1.1a.2.4.1 describes the "Primary Containment and Reactor Vessel Isolation Control System (PCRVICS) Isolation Functions and Settings", which includes the RWCU Steam Leak Detection System. Although RWCU leak detection is discussed in this section, the leakage rate basis for the temperature setpoints is not provided. Additionally, neither the leak duration or the process temperature are defined. Pressure, flow, and reactor water level are discussed in FSAR Sections 7.3 and 7.6, but room flood detection in the RWCU room is not discussed.

Transient temperature calculations were performed for the RWCU equipment rooms in support of the permanent Technical Specification Change Request previously submitted. These calculations were performed using a verified and validated computer model (COTTAP) developed by PP&L for this type of application. The results from this calculation provided the design inputs for the setpoint calculations which determine the actual instrument Trip Setpoint and Allowable Values for the Technical Specifications. This calculation included the following inputs:

1) The Trip Setpoint should provide sufficient margin above the maximum design operating temperature to preclude inadvertent system isolation.

2) The leaking process fluid for the RWCU Penetration Room is water at 550°F and 1000 psig.

3) The temperature selected for the Allowable Value will be capable of detecting a leak less than or equal to 25 gpm equivalent water in a timely manner.

This calculation resulted in a Trip Setpoint of 131°F and an Allowable Value of 137°F. With these setpoints, the RWCU Steam Leak Detection System will be capable of detecting a 25 gpm leak under winter operation conditions. *(Note: During summer conditions, this system is capable of detecting a 10-15 gpm leak due to the higher initial room temperature.)*

The proposed increase in the temperature setpoint does not affect the ability to detect leakage as required by GDC 30 and Regulatory Guide 1.45. The new setpoints do not affect the safety function of the RWCU (Steam Leak Detection) System. All other safety functions of the RWCU System remain unaffected by this change.

Additionally, it is PP&L's understanding that a number of BWRs have been licensed with a 25 gpm leak rate as a basis for their steam leak detection setpoints, including Perry, Grand Gulf, Clinton, River Bend and others.

JUSTIFICATION FOR DURATION OF PROPOSED REQUEST

PP&L is requesting that this waiver remain in effect until October 15, 1991. This will allow for a sufficient operating margin to be obtained during the summer and early fall when abnormally hot weather is possible. Approval of the permanent change previously submitted should preclude the need for any additional actions in the future.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

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

   The FSAR does not analyze a small leak on which the temperature setpoints are based. Other accidents which result in coolant leakage outside containment are analyzed in FSAR Sections 15.6.2 (Instrument Line Break) and 15.6.4 (Steam System Piping Break Outside Containment). Both of these are assumed accidents, with no causes identified. The analysis in Section 15.6.4 is the enveloping evaluation for pipe breaks outside containment. The proposed 25 gpm leakage rate basis is well below the leakage corresponding to a catastrophic pipe failure for the applicable system piping and does not increase the risk of a break.

   The temperature switches and isolation valves are redundant. Failure of a single switch to detect a leak does not preclude detection and, where appropriate, isolation by the other switch and valve. The reliability of the temperature switches is not affected by the setpoint. The other

methods of leak detection provide backup for the temperature instruments. These methods include other type of alarms which alert operators to an abnormal condition related to a steam leak in the RWCU penetration room including high area radiation, room flood detection, room fire detection, differential flow and backdraft isolation damper closure. The alarm response procedures direct the operator to take action as a result of any alarm.

Based on the above, the proposed action will not significantly increase 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 accident previously evaluated.

   The proposal does not affect any systems other than leak detection and does not affect the ability to detect and isolate leakage. The increase of the setpoint does not create the possibility of a new or different type of accident from any accident previously evaluated.

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

   As stated in Item 1, the increase in the setpoint in the RWCU penetration area is bounded by the existing analysis. The increase in the setpoint will increase the margin between the operating temperature and isolation setpoint thus reducing the potential for inadvertent isolations and the risk of an unwarranted transient on the RWCU system.

ENVIRONMENTAL CONSEQUENCES

The radiological consequences associated with a prolonged steam leak are summarized below. The projected doses are based on the methodology described in FSAR Chapter 15 utilizing very conservative assumptions, such as;

1) The maximum iodine I-131 concentration allowed by Tech Specs is assumed.

2) The leak is assumed to pass directly to the environment with no filtration, hold-up or decay.

3) The doses are calculated assuming a 25 gpm leak rate for 16 hours.

4) The total dose for the 16 hr. period is compared against the 2 hr. site boundary requirement.

As can be seen, the resultant doses are well within those allowed by 10CFR100 or 10CFR50 Appendix A, GDC 19.

DOSE CATEGORY	25 GPM LEAK (16 hr. duration) DOSE (rem)	ACCEPTANCE CRITERIA (rem)
2 Hr Site Boundary Thyroid	16.6	300 (@ 2 hrs)
2 Hr Site Boundary Whole Body	3.0×10^{-2}	25 (@ 2 hrs)
30 Day LPZ Thyroid	1.7	300 (@ 30 days)
30 Day LPZ Whole Body	3.05×10^{-4}	25 (@ 30 days)
30 Day* Control Room Thyroid	0.426	30 (@ 30 days)
30 Day* Control Room Whole Body	8.0×10^{-5}	5 (@ 30 days)
30 Day* Control Room Skin	2.53×10^{-5}	30 (@ 30 days)

* No further dose accrued for 16 hours to 30 days.

Therefore, the resultant doses are well within allowable limits.

CONCLUSION

The requested change will reduce the risk of inadvertent isolations by providing a greater operating margin between the RWCU Penetration Room temperature and the Technical Specification Trip Setpoint and Allowable Value. There are no significant hazards or adverse consequences associated with this change.

PP&L is requesting the waiver be approved as soon as possible in order to support plant operation during the summer months. The waiver should be conditioned to remain effective until October 15, 1991 or until the NRC staff completes its review of the pending application whichever is earlier.

Additionally, please note that a complete response to the NRC Staff's request for additional information (dated 6/13/91) regarding the Technical Specification Change Request previously submitted will be provided by August 9, 1991.

The Plant Operations Review Committee (PORC) has reviewed and approved this request.

Any questions on this request should be directed to Mr. C.T. Coddington at (215) 774-7915.

Very truly yours,

H. W. Keiser

cc: [Document Control Desk (original)]
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