



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 164 TO FACILITY OPERATING LICENSE NO. NPF-14
AMENDMENT NO. 135 TO FACILITY OPERATING LICENSE NO. NPF-22
PENNSYLVANIA POWER & LIGHT COMPANY
ALLEGHENY ELECTRIC COOPERATIVE, INC.
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2
DOCKET NOS. 50-387 AND 388

1.0 INTRODUCTION

By letter dated November 18, 1996, Pennsylvania Power and Light Company (the licensee) submitted a request for changes to the Susquehanna Steam Electric Station (SSES), Units 1 and 2, Technical Specifications (TSs). The requested changes would change the TSs for SSES, Units 1 and 2, by increasing the maximum isolation times for reactor core isolation cooling inboard warm-up line isolation valves from 3 seconds to 12 seconds, high pressure core injection inboard warm-up line isolation valves from 3 seconds to 6 seconds and reactor recirculation process sample line isolation valves from 2 seconds to 9 seconds.

Several Air Operated Valves and Dampers, including Primary Containment Isolation Valves, were identified by the licensee in discussions with the staff as having pilot solenoid valves which required a minimum operating pressure differential (OPD) of 10 - 15 psid and rely on the non-safety Instrument Air and Containment Instrument Gas Systems to shift to their de-energized position. Due to OPD requirements, a solenoid operated valve (SOV) with a degraded air supply may result in a partially closed valve or valve isolation times slower than TS requirements. This condition questioned conformance to General Design Criterion 23 which states in part that "the protection system, which includes the Primary Containment Isolation System, shall be designed to fail into a safe state if conditions such as disconnection of the system or loss of energy are experienced (e.g., loss of instrument air)."

An engineering analysis was performed to determine the number of SOVs from the total population that fell within this unacceptable condition and needed replacement. Six existing ASCO 3-way pilot operated solenoid valves will be replaced with new 3-way direct acting solenoid valves that require no minimum OPD. The six SOV changes will increase the maximum isolation times for the RCIC Inboard Warm-up Line Isolation Valves (HV-1/249F088) from 3 seconds to 12 seconds, the HPCI Inboard Warm-Up Line Isolation Valves (HV-1/255F100) from 3

seconds to 6 seconds and the Reactor Recirculation Process Sample Line Isolation Valves (HV-1/243F019) from 2 seconds to 9 seconds. Table 3.6.3-1 of Unit 1 and Unit 2 TSs Section 3/4.6.3 is required to be updated to reflect the increased isolation times. The licensee has stated that the proposed modifications do not alter any system operation or control logic other than to increase the time it takes for the associated containment isolation valve to close.

2.0 EVALUATION

The proposed action involves replacing the existing ASCO 3-way SOV's which require a minimum OPD to change to their de-energized position, with direct acting solenoid valves that require no minimum OPD to change to their de-energized position. The replacement solenoid valves are capable of operating with the existing 120 VAC or 125VDC power feeds presently routed to the current SOVs. The three sets of valves (one valve per unit) are (existing and proposed maximum isolation times provided):

- HV-1/249F088 - RCIC Inboard Warm-Up Isolation Valves - 3 seconds to 12 seconds
- HV-1/255F100 - HPCI Inboard Warm-Up Isolation Valves - 3 seconds to 6 seconds
- HV-1/243F019 - RR Process Sample Line Isolation Valves - 3 seconds to 9 seconds

RCIC Inboard Warm-Up Isolation Valves - During normal plant operation, the HV-1/249F088 valve is maintained closed. It can be manually opened when an isolation signal is not present to permit steam from the reactor to gradually pressurize and warm the steam supply line downstream of the Inboard RCIC Steam Supply Isolation Valve, HV-1/249F007. The safety function of the HV-1/249F088 valve is to close, if open, upon initiation of a RCIC isolation signal as listed in TS Table 3.6.3-1. These isolation signals occur due to low steam supply pressure, high steam discharge pressure or an indication of a steam line rupture or steam leak.

The HV - 1/249F088 valve is on a 1" steam line in parallel with the HV - 1/249F007 (inboard) and HV - 1/249F008 (outboard) isolation valves on the 4" RCIC main steam supply line. The isolation time for the RCIC main steam isolation valves is 20 seconds, so that the longer closure time of the larger valves bound the proposed 12 second isolation time of the 088 valve. This is acceptable to the staff.

HPCI Inboard Warm-Up Isolation Valves - During normal operation, the HV-1/255F100 valve is maintained closed. It can be manually opened when an isolation signal is not present to permit steam from the reactor to gradually pressurize and warm the steam supply line downstream of the HPCI Inboard Steam Supply Isolation Valve, HV-1/255F002. The safety function of the HV-1/255F100 valve is to close, if open, upon initiation of a HPCI isolation signal as listed in TS Table 3.6.3-1. These isolation signals occur due to low steam supply pressure, high steam discharge pressure or an indication of a steam line rupture or steam leak.

The HV - 1/255F100 valve is on a 1" steam line in parallel with the HV - 1/255F002 (inboard) and HV - 1/255F003 (outboard) isolation valves on the 10" HPCI main steam supply line. The isolation time for the HPCI main steam isolation valves is 50 seconds, so that the longer closure time of the larger valves bound the proposed 6 second isolation time of the 100 valve. This is acceptable to the staff.

Reactor Recirculation Process Sample Line Isolation Valves (HV - 1/243F019) -
The reactor recirculation process sample line is used to continuously monitor reactor coolant chemistry to satisfy TSs surveillance requirements when the normal sampling point in the Reactor Water Cleanup System is out of service. The HV-1/243F019 valve is normally open and is required to close on receipt of a primary containment isolation signal as listed in TS Table 3.6.3-1. Automatic closure is initiated on either a Low-Low (level 2) signal or a High Main Steam Line Radiation signal.

The limiting event for the recirculation process sample line is a line break. The SSES Final Safety Analysis Report (FSAR) addresses this type of transient in Section 15.6.2, "Instrument Line Break." The instrument line break event assumes a circumferential rupture of an instrument line which is connected to the primary coolant system which occurs outside primary containment but inside secondary containment. This scenario bounds a break occurring in the primary containment. The FSAR analysis of this event assumes a break outside containment that is not isolable. This condition bounds the intended TS changes requiring a 9-second maximum isolation time. The change is therefore acceptable to the staff.

The licensee has proposed to increase the maximum isolation times for the RCIC and HPCI Inboard Warm-Up Line Isolation Valves and the Reactor Recirculation Process Sample Line Isolation Valves. The RCIC Inboard Warm-Up Line Isolation Valve maximum closure time will increase from 3 seconds to 12 seconds. The HPCI Inboard Warm-Up Line Isolation Valve maximum closure time will increase from 3 seconds to 6 seconds. The Reactor Recirculation Process Sample Line Isolation Valve maximum closure time will increase from 2 seconds to 9 seconds. The licensee has stated that the proposed modifications do not alter any system operation or control logic other than to increase the times it takes for the associated containment isolation valve to close. The proposed closure times of the HPCI and RCIC Warm-Up line valves are bounded by the larger isolation valves on the HPCI and RCIC main steam supply lines. Therefore, these changes are acceptable. The SSES FSAR instrument line break event assumes a non-isolable break. Therefore, isolation time changes to the recirculation process sample line isolation valve are also acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.



4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (61 FR 2191). Accordingly, the amendments meet eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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