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

May 4, 1993

Docket Nos. 50-272
and 50-311

Mr. Steven E. Miltenberger
Vice President and Chief Nuclear
Officer
Public Service Electric and Gas
Company
Post Office Box 236
Hancocks Bridge, New Jersey 08038

Dear Mr. Miltenberger:

SUBJECT: TECHNICAL SPECIFICATION BASES CHANGE FOR TURBINE OVERSPEED PROTECTION, SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2 (TAC NOS. M86050 AND M86051)

By letter dated February 25, 1992, Public Service Electric and Gas Company (PSE&G) submitted a proposed change to the Salem 1 and 2 Technical Specification Bases, Section 3/4.3.4, to clarify and list the overspeed protection systems that need to be considered when determining whether at least one overspeed protection system is operable.

The change is being requested in response to NRC Inspection Report 50-311/91-81 which raised concerns regarding the turbine overspeed event at Salem Generating Station, Unit 2. This change responds to the concern over the clarity of Technical Specification 3.3.4. PSE&G committed to revise the Bases of Technical Specification 3.3.4 in NLR-N92015 dated February 10, 1992.

The staff offers no objection to your proposal to clarify and list the turbine overspeed protection systems which need to be considered when determining whether at least one overspeed protection system is operable. Enclosed is a

DF01

copy of the revised Bases pages B 3/4 3-4 and B 3/4 3-5 for Salem 1 and pages B 3/4 3-3 and B 3/4 3-4 for Salem 2. All staff activities related to TAC Nos. M86050 and M86051 are considered complete.

Sincerely,

Original signed by:

James C. Stone, Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

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Project Directorate I-2
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Mr. Steven E. Miltenberger
Public Service Electric & Gas
Company

Salem Nuclear Generating Station,
Units 1 and 2

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Public Service Commission of Maryland
Engineering Division
ATTN: Chief Engineer
231 E. Baltimore Street
Baltimore, MD 21202-3486

3/4.3.4 TURBINE OVERSPEED PROTECTION

This specification is provided to ensure that the turbine overspeed protection instrumentation and the turbine speed control valves are OPERABLE and will protect the turbine from excessive overspeed. Protection from turbine excessive overspeed is required since excessive overspeed of the turbine could generate potentially damaging missiles which could impact and damage safety-related components, equipment or structures.

The overspeed protection instrumentation consists of five solenoid valves and one trip mechanism which can be grouped into three independent systems. These are:

1. Mechanical Overspeed Trip

   The mechanical overspeed trip valve will dump the autostop oil. The dump of the autostop oil will open the oil operated interface valve to dump the emergency electro-hydraulic trip fluid.

2. Electrical Overspeed Trip

   The electrically sensed overspeed will trip two solenoid valves either of which will dump the autostop oil. The dump of the autostop oil will open the oil operated interface valve to dump the emergency electro-hydraulic trip fluid. The solenoid valves associated with the electrical overspeed are also energized by the various generator protection trips.

   The dump of the autostop oil will actuate a solenoid to dump the emergency electro-hydraulic trip fluid. This solenoid serves as a backup for both the mechanical and electrical overspeed trips. The backup solenoid is also energized by the various generator protection trips.

3. Overspeed Protection Controller

   Either of the two overspeed protection control solenoid dump valves will dump the control electro-hydraulic trip fluid from the governor and intercept valves. When turbine speed decreases, and the overspeed condition clears, the signal is removed and the governor and intercept valves reopen.

Salem Unit 1 turbine is operated at full time, partial arc admission. To prevent double shocking the turbine, perform turbine valve testing in accordance with manufacturer's recommendations.

3/4.3.4 TURBINE OVERSPEED PROTECTION (continued)

During normal operation, turbine valve testing is performed at a frequency consistent with the methodology presented in WCAP-11525, "Probabilistic Evaluation of Reduction in Turbine Valve Frequency." This report evaluates the contribution of failure or unavailability of the turbine valve safety function to the probability that the turbine will overspeed and eject a missile. It concludes that extended intervals between turbine valve functional tests can be achieved without exceeding the NRC acceptance criteria for the probability of a turbine missile ejection incident. Factors which affect the selected valve test interval include low pressure turbine rotor type and inspection interval; turbine valve type, arrangement and overspeed controls; and secondary side water chemistry.

3/4.3.3.8 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the procedures in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50. The purpose of tank level indicating devices is to assure the detection and control of leaks that if not controlled could potentially result in the transport of radioactive materials to UNRESTRICTED AREAS.

3/4.3.3.9 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the procedures in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. This instrumentation also includes provisions for monitoring (and controlling) the concentrations of potentially explosive gas mixtures in the waste gas holdup system. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

3/4.3.4 TURBINE OVERSPEED PROTECTION

This specification is provided to ensure that the turbine overspeed protection instrumentation and the turbine speed control valves are OPERABLE and will protect the turbine from excessive overspeed. Protection from turbine excessive overspeed is required since excessive overspeed of the turbine could generate potentially damaging missiles which could impact and damage safety-related components, equipment or structures.

The overspeed protection instrumentation consists of five solenoid valves and one trip mechanism which can be grouped into three independent systems. These are:

1. Mechanical Overspeed Trip

   The mechanical overspeed trip valve will dump the autostop oil. The dump of the autostop oil will open the oil operated interface valve to dump the emergency electro-hydraulic trip fluid.

3/4.3.4 TURBINE OVERSPEED PROTECTION (continued)

2. Electrical Overspeed Trip

The electrically sensed overspeed will trip two solenoid valves either of which will dump the autostop oil. The dump of the autostop oil will open the oil operated interface valve to dump the emergency electro-hydraulic trip fluid. The solenoid valves associated with the electrical overspeed are also energized by the various generator protection trips.

The dump of the autostop oil will actuate a solenoid to dump the emergency electro-hydraulic trip fluid. This solenoid serves as a backup for both the mechanical and electrical overspeed trips. The backup solenoid is also energized by the various generator protection trips.

3. Overspeed Protection Controller

Either of the two overspeed protection control solenoid dump valves will dump the control electro-hydraulic trip fluid from the governor and intercept valves. When turbine speed decreases, and the overspeed condition clears, the signal is removed and the governor and intercept valves reopen.

Salem Unit 2 turbine is operated at full time, full arc admission. To prevent excessive steam flow induced cyclic stresses of the control stage blading, perform turbine valve testing in accordance with manufacturer's recommendations.

During normal power operation, turbine valve testing is performed at a frequency consistent with the methodology presented in WCAP-11525, "Probabilistic Evaluation of Reduction in Turbine Valve Test Frequency." This report evaluates the contribution of failure or unavailability of the turbine valve safety function to the probability that the turbine will overspeed and eject a missile. It concludes that extended intervals between turbine valve functional tests can be achieved without exceeding the NRC acceptance criteria for the probability of a turbine missile ejection incident. Factors which affect the selected valve test interval include low pressure turbine rotor type and inspection interval; turbine valve type, arrangement and overspeed control; and secondary side water chemistry.

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