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PSEG Nuclear LLC

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Attn: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

REPORT OF CHANGES, TESTS AND EXPERIMENTS
SALEM GENERATING STATION, UNITS 1 AND 2
DOCKET NOs. 50-272 AND 50-311

Pursuant to the requirements of 10CFR50.59(d)(2), this correspondence forwards a summary of changes, tests and experiments implemented at Salem Units 1 and 2 during the period March 1, 2003 through February 28, 2005 which were reviewed against the eight criteria of 10CFR50.59(c)(2).

PSEG Nuclear is currently reviewing the status of all design changes prepared prior to the current reporting period but installed after March 1, 2003. These may have been reviewed against either the three criteria of 10CFR50.59(a)(2) which were in effect prior to March 13, 2001, or the eight criteria of 10CFR50.59(c)(2) subsequent to that date.

Results of that review will be provided by May 15, 2005 as a supplementary report.

Should you have any questions, please contact Ralph Donges at (856) 339-1640.

Sincerely,

Christina L. Perino
Regulatory Assurance Director

Attachment

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SUMMARY OF CHANGES TESTS AND EXPERIMENTS
SALEM UNITS 1 & 2

Removal of Station Air Compressors from Service for Maintenance (A Salem Common change)

SC.OP-PM.SA-0001(Z) is a new procedure allowing the temporary removal from service of all three Station Air Compressors and the substitution in their place of three Temporary Station Air Compressors of similar capacity in order to support maintenance on equipment that cannot be isolated during normal Station Air Compressor operation.

The Station Air (SA) system provides a reliable supply of clean, oil-free, compressed air for use in the Service Air, the Control Air (CA), and the Penetration Cooling systems. Although the proposed procedure temporarily disables the automatic start signal to the Emergency Control Air Compressors (ECACs), operator action to start the ECACs from the Control Room replaces the automatic signal. The operator action is based on communication between the Control Room operator and the dedicated operator locally monitoring the temporary air compressors.

The current safety analyses do not credit the SA system operation during any design basis accident.

Restoration of the Positive Displacement Pump as the Normal Charging Pump (A Salem Common change)

This change restores the Positive Displacement Pump (PDP) original design function as the preferred normal charging pump in Modes 1 through 4, allowing the High Head Safety Injection (HHSI) pumps to be returned to Emergency Core Cooling System (ECCS) standby mode.

The PDP is not an ECCS pump and is not modeled in the Chapter 15 design basis accidents except for the Spurious Operation of the Safety Injection System at Power analysis (UFSAR 15.2.14) event. The only PDP safety-related function credited in the Chapter 15 safety analysis is that it retains pressure boundary integrity during design basis accidents.

The evaluation concludes that the change may be made without prior approval from the NRC.

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SUMMARY OF CHANGES TESTS AND EXPERIMENTS
SALEM UNITS 1 & 2

Control Area Ventilation Tracer Gas Test (A Salem Common test)

This test injects a gas (sulfur hexafluoride) to determine the unfiltered air in-leakage into the Control Room. The nominal upper values of tracer gas concentration used are approximately 50 parts per billion.

The Control Room Emergency Air Compressor System is designed to maintain control room ambient temperatures inside the Control Room Envelope (CRE) and to ensure the CRE will remain habitable during and following all design basis accidents (DBA). The testing is restricted to less than six hours duration to ensure that the CREACS vent path used to support the test has a negligible effect on the 30-day dose to control room personnel following a DBA.

The evaluation concluded the test may be conducted as described without prior approval by the NRC.

Upgrade Condenser Air Ejector Radiation Monitoring Channel 1R15 (A Salem Unit 1 change)

The design change replaces obsolete and relatively inaccurate, analog equipment with state-of-the-art, microprocessor based digital equipment. The upgrade satisfies the EPRI requirements for primary-to-secondary leak detection. A 10CFR50.59 evaluation was performed because the change created the potential for adversely affecting the UFSAR described design functions.

The new equipment was noted as being compatible with the environmental conditions for its intended usage, it meets the applicable seismic criteria, and has been evaluated for EMI/RFI effects and determined to be within the guidelines of EPRI-TR-102323.

The evaluation concluded the change would have no effect on any analytical methods described in the UFSAR, nor would it alter any assumptions previously made in evaluating the consequences of any accident described in the UFSAR. Instrument setpoint calculations were performed/revised using the existing UFSAR described methodology. Consequently, the equipment was upgraded without prior approval by the NRC.

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SUMMARY OF CHANGES TESTS AND EXPERIMENTS
SALEM UNITS 1 & 2

Increase in the programmed Tavg temperature of 2.0^{0}F (A Salem Unit 2 change)

This change increased the programmed Tavg temperature by 2.0^{0}F. The new operating setpoint was raised to 572.5^{0}F, but it remains within the design range of 566.0^{0}F to 577.9^{0}F. The change was needed to achieve full power with the new design of the High Pressure Turbine.

The evaluation shows that the increased Reactor Coolant System (RCS) operating temperatures were considered in all the component analyses that were done to demonstrate American Society of Mechanical Engineers (ASME) Code compliance.

The change in operating Tavg does have an impact on a number of Reactor Coolant Pressure Boundary (RCPB) degradation mechanisms. None are significant except primary water stress corrosion cracking (PWSCC). An increase in T_{hot} could impact PWSCC initiation and growth rates for susceptible inconel 600 material used for the Steam Generator tubing and Reactor Vessel head penetration, but the changes do not create any new failure mechanism, do not require any added inspections, nor do they require any change to the inspection programs or acceptance criteria already in place.

The evaluation concludes that the rescaling in the NSSS control systems and OPΔT and OTΔT trip setpoints required to implement the Tavg change are minor and do not constitute a change to the facility as described in the licensing basis. There is no change to the design or license basis of the unit as described in the UFSAR and Technical Specifications (TS) since the changes are within the previously established operating range.

Turbine Retrofit (A Salem Unit 1 change)

This change replaces the main turbine rotors and steam path with new components that have improved efficiencies, which increase the turbine/generator output to 1214 MWe, without increasing reactor core thermal power. The new components are designed by Siemens Westinghouse Power Corporation (SWPC) and are compatible with the unchanged OEM components of the Westinghouse turbine.

SUMMARY OF CHANGES TESTS AND EXPERIMENTS
SALEM UNITS 1 & 2

The 10CFR50.59 evaluation was revised to reflect Revision 1 to SWPC's Technical Report , CT-27336, "Missile Probability Analysis PSEG Nuclear LLC Salem Unit 1". The revision included updated overspeed probabilities and extended SWPC's recommended turbine valve test frequencies to six months.

The replacement of the main turbine does not affect any systems that perform or support the performance of a Design Basis Function. This evaluation addresses the change to an evaluation methodology. The method of calculating low pressure turbine rotor generated missiles is changed by this DCP, however, The NRC has approved this revised methodology via a NRC SER (TAC MB5679).

Digital EHC Upgrade (A Salem Unit 1 change)

This change replaces the Salem Unit 1 analog Electro-Hydraulic Control (EHC) system with a digital EHC system to improve system reliability. This change fundamentally altered the existing means of performing or controlling design functions. The modification involves new digital controls, which contain different failure modes than the existing analog system.

In addition, the modification involves more than minimal differences in the Human System Interface by the use of soft controls instead of hard controls (i.e., use of touch-sensitive screens instead of pushbuttons and selection switches).

Using the guidance in EPRI Report TR-102348 "Guideline for Licensing Digital Upgrades", an analysis was performed relative to Failure Analysis, Software Dependability, and Human System Interface. Based on that analysis, the probability of inadvertently tripping the turbine, opening governor valves beyond a desired value, or not accomplishing a turbine trip during an overspeed event due to software does not result in more than a minimal increase and does not adversely affect any SSC Design Function.