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Energy to Serve Your WorldSM

Docket Nos.: 50-321
50-366

NL-06-1637

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Edwin I. Hatch Nuclear Plant
Request to Implement an Alternative Source Term

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.90 and 10 CFR 50.67, Southern Nuclear Operating Company (SNC) proposes to revise the Edwin I. Hatch Nuclear Plant (HNP) licensing/design basis with a full scope implementation of an alternative source term (AST). As justified by the implementation of an AST, SNC also proposes to revise the HNP Units 1 and 2 Technical Specifications (TS), Appendix A to Operating Licenses DPR-57 and NPF-5, respectively.

10 CFR 50.67, "Accident Source Term," provides a mechanism for revising the accident source term used in the radiological consequences analyses for the design basis accidents. Full scope AST analyses have been performed consistent with the guidance in Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," dated July, 2000 and Standard Review Plan section 15.0.1 revision 0, "Radiological Consequence Analyses Using Alternative Source Terms." In addition, applicable issues covered in NRC Regulatory Issue Summary 2006-04, "Experience with Implementation of Alternative Source Terms," have been addressed.

The AST analyses include determination of the on-site radiological doses, specifically the main control room and technical support center, and off-site radiological doses resulting from the HNP design bases accidents, specifically the loss-of-coolant accident, main steam line break accident, control rod drop accident, and fuel handling accident. The analyses demonstrate that, using AST methodologies, the post-accident onsite and offsite doses remain within regulatory acceptance limits.

Generic Letter (GL) 2003-01, "Control Room Habitability," requests confirmation that the actual unfiltered inleakage into the main control room boundary is bounded by the value assumed in the design bases radiological consequences analyses. NRC issuance of Amendments 249 and 193 to the HNP Units 1 and 2 Operating Licenses, respectively, authorized SNC to credit administering potassium iodide (KI) to reduce the 30-day post-accident thyroid dose to the occupants of the main control room for an interim period

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of 4 years, ending on May 31, 2010. With the crediting of KI, the interim current licensing basis reflects a main control room unfiltered inleakage limit of 110 cfm. This facilitated the completion of ASTM E741 tracer gas testing in June, 2006, that demonstrated that the actual main control room unfiltered inleakage is 5 cfm which is bounded by the current licensing basis limit of 110 cfm. With the completion of tracer gas testing, SNC will be completing its response to GL 2003-01 under a separate letter.

The interim current licensing basis crediting KI also facilitates the NRC review and approval of AST and subsequent SNC implementation. AST implementation will result in a licensing basis main control room unfiltered inleakage limit of 115 cfm. AST implementation is necessary to allow for a reasonable main control room unfiltered inleakage design margin and to replace the current interim current licensing basis by May 31, 2010.

As justified by AST, the following HNP Units 1 and 2 TS revisions are proposed:

- Revise the definition of dose equivalent I-131 (DE I-131) to replace “thyroid dose” with “Committed Effective Dose Equivalent” and to reference Federal Guidance Report 11 for the dose conversion factors used in calculating I-131 concentration on Units 1 and 2 (reference TS 1.1).
- Revise the maximum allowed reactor coolant specific activity from 4.0 $\mu\text{Ci/gm}$ DE I-131 to 2.0 $\mu\text{Ci/gm}$ DE I-131 on Units 1 and 2 (reference TS 3.4.6).
- Add a Unit 1 TS on secondary containment bypass leakage, consistent with the current licensing basis on Unit 2, and conservatively increase the maximum allowed bypass leakage rate from 0.9% to 2.0% of the maximum allowable primary containment leakage rate (L_a) to allow for newly identified secondary containment bypass leakage paths (reference new TS surveillance SR 3.6.1.3.13 on Unit 1 and existing SR 3.6.1.3.10 on Unit 2).
- Revise the maximum allowed combined main steam line isolation valve leakage rates by increasing the Unit 1 limit and decreasing the Unit 2 limit to 100 scfh and by eliminating the per line leakage limit. In addition, two separate surveillance acceptance criteria will be provided dependant on leakage rate test pressure (reference TS surveillance SR 3.6.1.3.10 on Unit 1 and SR 3.6.1.3.11 on Unit 2).
- Add a residual heat removal drywell spray TS on Units 1 and 2 reflecting the crediting of drywell spray as part of the AST loss-of-coolant accident assumptions (reference TS 3.6.2.5).
- Revise the TS Bases to support the above listed TS revisions and to reflect the implementation of AST by adding appropriate references to 10 CFR 50.67 in lieu of 10 CFR 100.

In addition, the following key revisions to the HNP licensing/design basis are credited and justified as part of the full scope AST analyses:

- A main steam isolation valve alternate leakage treatment path is credited in AST for HNP Unit 1. NRC previously approved a similar revision for HNP Unit 2. A seismic verification of the Unit 1 alternate leakage treatment path is provided that conforms to the NRC safety evaluation, dated March 3, 1999, of the GE topical report NEDC-31858P revision 2, “BWROG Report for Increasing MSIV

Leakage Limits and Elimination of Leakage Control Systems.” In addition, deposition in the main condenser is credited for those secondary containment bypass leakage paths that terminate in the main condenser. Therefore, seismic verifications for the Units 1 and 2 bypass paths are provided that also conform to the referenced March 3, 1999 NRC SER.

- The main control room, as part of the control building, is located between the open end bays of the Units 1 and 2 turbine buildings. The Units 1 and 2 turbine building ventilation exhaust systems are credited in AST with purging the area around the main control room following a loss-of-coolant accident, main steam line break accident, and control rod drop accident. Applying the precedent established by NRC approval of the main steam isolation valve alternate leakage treatment path, seismic verifications have been performed to demonstrate that the Units 1 and 2 turbine building exhaust ductwork will remain in place and maintain exhaust flow in the event of a design basis earthquake. These verifications are based on earthquake experience data and use the methodology documented in Electric Power Research Institute (EPRI) Technical Report 1007896 “Seismic Evaluation Guidelines for HVAC Duct and Damper Systems,” dated April, 2003. Finally, peer reviews of the EPRI guidelines and their application to HNP Unit 1 were performed by Dr. R. P. Kennedy, an acknowledged industry expert.
- A new design function is added for the standby liquid control system to buffer the suppression pool, preventing iodine re-evolution following a design basis loss-of-coolant accident.
- As stated previously, drywell spray is credited in AST following a design basis loss-of-coolant accident.
- The atmospheric dispersion factors for the main control room and technical support center are revised as follows. ARCON96 is used, instead of ARCON95, and the atmospheric dispersion factors are based on a set of 3 years of meteorological data, instead of one year of data.
- A plant modification will be implemented to automatically secure the cable spreading room supply and exhaust fans when the control room pressurization mode is initiated. Currently, these supply and exhaust fans, located in the cable spreading room beneath the main control room, are secured via operator action when the control room is pressurized to preclude a potential malfunction of those fans which could impact the capability to maintain the control room at a positive pressure relative to the surrounding turbine building.

A list of enclosures is provided at the end of this letter. These enclosures, together with this letter, comprise SNC’s proposed revision of the licensing and design bases of HNP to incorporate AST.

A similar amendment has been previously approved for Browns Ferry on September 27, 2004 and Vermont Yankee on March 29, 2005. In addition, the HNP application of AST incorporates elements of the Columbia and Oyster Creek AST submittals currently under review by the NRC.

SNC requests approval of the proposed license amendment requests by December 31, 2008. The proposed changes will be implemented by May 31, 2010. Also, conforming changes will be made to the Units 1 and 2 HNP updated Final Safety Analysis Reports

(FSARs) following issuance of the amendment, and submitted to the NRC in accordance with the requirements of 10 CFR 50.71 as part of the normal FSAR update process.

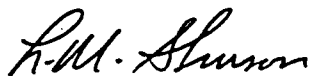
In accordance with the requirements of 10 CFR 50.91, a copy of this letter and all applicable enclosures will be sent to the designated State official of the Environmental Protection Division of the Georgia Department of Natural Resources.

Mr. L. M. Stinson states he is a Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



L. M. Stinson

Sworn to and subscribed before me this 29 day of August, 2006.


Notary Public

My commission expires: July 5, 2010

LMS/CLT/daj

- Enclosures:
1. AST Safety Assessment
 2. Description and Justification of TS Changes
 3. 10 CFR 50.92 Significant Hazards Evaluation and Environmental Assessment
 4. Regulatory Safety Analysis
 5. Marked-up TS and Bases Pages
 6. Clean Typed TS and Bases Pages
 7. List of Regulatory Commitments
 8. Unit 1 Main Steam Isolation Valve Alternate Leakage Path Seismic Evaluation
 9. Unit 1 Seismic Verification of Potential Secondary Containment Bypass Leakage Paths Terminating at the Main Condenser
 10. Unit 2 Seismic Verification of Potential Secondary Containment Bypass Leakage Paths Terminating at the Main Condenser
 11. Hatch Nuclear Plant Unit 1 Seismic Verification of the Turbine Building Exhaust Ductwork
 12. Hatch Nuclear Plant Unit 2 Seismic Verification of the Turbine Building Exhaust Ductwork
 13. EPRI Technical Report 1007896, Seismic Evaluation Guidelines for HVAC Duct and Damper Systems

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14. R. P. Kennedy Peer Review Comments on EPRI Seismic Evaluation
Guidelines for HVAC Duct and Damper Systems

15. R. P. Kennedy Peer Review of the Hatch Unit 1 Seismic Verification
of the Turbine Building Exhaust Ductwork

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. D. R. Madison, General Manager – Plant Hatch
RType: CHA02.004

U. S. Nuclear Regulatory Commission
Dr. W. D. Travers, Regional Administrator
Mr. C. Gratton, NRR Project Manager – Hatch
Mr. D. S. Simpkins, Senior Resident Inspector – Hatch

State of Georgia
Mr. L. C. Barrett, Commissioner – Department of Natural Resources