



## GE Energy

**Joseph A. Savage**  
Manager, ABWR Licensing  
3901 Castle Hayne Road, M/C  
J70  
Wilmington, NC 28402-2819  
USA  
T 910-602-1885  
F 910-602-1720  
[joseph.savage@ge.com](mailto:joseph.savage@ge.com)

MFN 07-280  
May 17, 2007

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

Subject: **Submittal of ABWR Licensing Topical Report (LTR)  
Synopsis and Table of Contents -- Update**

Reference: GE Letter MFN 07-044, S. Stark to NRC Document Control Desk, dated  
January 26, 2007  
GE Letter MFN 07-180, J Savage to NRC Document Control Desk, dated  
March 28, 2007

To aid the NRC in planning for the review of the upcoming Licensing Topical Reports (LTRs) associated with the Advanced Boiling Water Reactor (ABWR) licensing activities, the referenced letters provided a list of proposed General Electric (GE) LTRs to be submitted in 2007 regarding the ABWR certified design. GE also provided the proposed submittal schedule, a synopsis of each LTR, and each LTR's proposed Table of Contents. This letter provides a revision to the attached listing of LTRs.

The purpose of this letter is to update the NRC staff on changes to our proposed submittals and the current status. Note that GE has canceled two LTRs identified in previous correspondence. The following two LTRs have been deleted from the listing of planned LTRs and will not be submitted:

1. The Preoperational Test Specifications LTR, an engineering document that provides detailed test requirements for each plant system down to the

D050

component level, was identified in the early phases of the STP project as a candidate LTR and proposed amendment to the ABWR certified design. This LTR was intended to respond to a COL Information Item required per subsections 14.2.13.1 and 14.2.13.2 of the DCD. GE has determined it will be prudent to wait until the necessary site specific information is available to prepare these specifications. The required information will not be available until significant equipment procurement and construction engineering specific to STP 3&4 has been accomplished. The project team will submit the preoperational test specifications in a formal letter to the NRC after the necessary information to establish preoperational testing requirements becomes available. The preoperational testing specifications will be submitted after COLA approval.

2. The Editorial Changes to the US ABWR DCD LTR is cancelled due to recent NRC rulings. NRC Staff Requirements Memorandum, dated April 11, 2007, (with reference to SECY-06-220), limits the DCD amendment process to correction of "material" errors, which would not allow for GE to pursue a DCD amendment for correction of administrative errors, consistent with GE's initial plans. The DCD errors that are not material errors will now be included and evaluated in the combined license application (COLA). These administrative errors will be treated as departures from certified design material in Part 7 of the COLA, consistent with the COLA preparation requirements.

If you have any questions about the information provided here, or during the course of your reviews, please contact me at 910-602-1885.

Sincerely,

A handwritten signature in black ink, appearing to read 'Joseph A. Savage', with a long, sweeping horizontal stroke extending to the right.

Joseph A. Savage  
Project Manager, ABWR Licensing



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Alternate RCIC Pumps	Submitted to NRC on December 20, 2006	This LTR is generated to obtain NRC approval of a generic change in the design certification for the U.S. ABWR certified design, in accordance with planned revisions to 10 CFR 52.63. The design change involves replacement of certain portions of the Reactor Core Isolation Cooling turbine and pump system design with an integrated alternate turbine-pump system design. Operating experience is examined. Qualification information for the proposed changes will be documented. The safety basis for the proposed change is examined. The alternate design will result in improvements in performance and reliability of the system. These proposed changes are to both Tier 1 and Tier 2 of the ABWR Design Control Document, Revision 4. These proposed changes were developed during performance of first-of-a-kind-engineering for the ABWR.	Description of Certified Design Description of Proposed Departure Justification for Departure Qualification Information Description of The TWL Type Alternate Design Operating Experience Nuclear Safety Review Consistency with ABWR Design Control Document (DCD) Descriptions of DCD Markup	06/29/07	09/28/07	12/29/07

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Plant Procedures Development Plan	Submitted to NRC on January 19, 2007	<p>This LTR prescribes and guides the conduct of procedure development for the US ABWR. Regulatory requirements are identified. This implementation plan meets the requirements of ABWR Design Control Document/Tier 2 sections 13.5.3.1 through 13.5.3.4.</p> <p>The scope of the procedures covered in this Implementation Plan includes the following categories: Administrative Procedures, Maintenance and Other Procedures, Plant Operating Procedures, Emergency Operating Procedures (EOP). Types of procedures in each category are specified. The generic processes for development of procedures are described. Links to TMI Action Items are specified. Verification and validation requirements are identified.</p>	<p>Reference Documents Supporting Documents Codes and Standards Regulation and Regulatory Requirements Implementation Plan Administrative Procedures Development Maintenance and Other Procedures Development Plant Operating Procedures Development Emergency Operating Procedures Development Additional Requirements Procedures Included in Scope of Plan Administrative Procedures Maintenance and Other Procedures Procedures for Radiation Control Integrated Operating Procedures System Operating Procedures Alarm (Anunciator) Response Procedures Abnormal Operating Procedures Surveillance Test Procedures Emergency Operating Procedures</p>	07/31/07	10/30/07	01/29/08

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Startup Administrative Manual	Submitted to NRC on February 28, 2007	<p>This LTR is provided to respond to a COL Information Item required per subsection 14.2.13.2 of the DCD. A startup administrative manual defining various administrative controls to be in place during the initial plant test program is required per 14.2.13.2 items (5) – (9).</p> <p>The purpose of this document is to provide a written outline of methods and practices for administering the Initial Test Program for the ABWR. This manual establishes methods for controlling the start of testing, for performing tests, for preparing and modifying approved procedures, for identifying and correcting test exceptions, and for reviewing and approving test results.</p>	Purpose and Scope Applicable Documents Supporting and Supplemental Documents Codes and Standards Regulations and Regulatory Requirements Startup Organization and Responsibilities Initial Test Program Planning -Scheduling Test Plateaus Test Sequence Startup Test Program Planning Startup Test Program Scheduling Conduct of Testing Distributions and Control of Procedures Adherence to Procedures Use of Procedures Performance of Pre-op and Startup Tests Test Procedure and Test Control Content of Test Procedures Preparation, Initial Review, and Approval Procedure Modifications Test Results Review and Acceptance	08/29/07	11/28/07	02/27/08

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APRM Oscillation Monitoring Logic (OPRM)	Submitted to NRC on April 2, 2007	<p>This LTR is provided to respond to a COL Information Item required per subsection 7.6.2.1 of the DCD.</p> <p>The BWROG Stability Solution Option III is applied to the OPRM design. These changes will deviate from the certified design. The major changes are: (1) the time constant of the Butterworth signal filter is changed; (2) the Backup Stability Protection regions are established for operation when OPRM is inoperative; (3) the Period-Based Detection Algorithm settings (cut-off frequency, period tolerance, maximum period, and minimum period) are modified to resolve the unexpected Confirmation Count reset concern; (4) an Option III Trip enabled region will be added and the "Region III" in the original DCD is eliminated, (5) an OPRM Inoperative trip is separated from the APRM Inoperative trip; and (6) the OPRM 2/4 trip logic is performed separately from other APRM trips.</p> <p>The OPRM LTR will revise the STP DCD Section 7.6.1.1.2.2, including any text, tables, figures, appendices, and data that are necessary for NRC review per NEDO-32465-A.</p>	<p>Description Of the Design</p> <p>Justification for Departure</p> <p>Qualification Information</p> <p>Operating Experience</p> <p>Nuclear Safety Review</p> <p>Consistency with ABWR DCD</p> <p>Descriptions of DCD Markups</p> <p>Figures</p> <p>LPRM Assignment to OPRM Channels</p> <p>OPRM Logic</p> <p>Appendix</p> <p>ABWR DCD Significant Tier 2 Changes</p>	10/01/07	01/02/08	04/02/08

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Vibration Assessment Program	Submitted to NRC on May 1, 2007	<p>The ABWR DCD Subsection 3.9.2.4 and COL Information Item 3.27 are the bases for this LTR.</p> <p>This LTR will provide the results of the vibration assessment program for the ABWR prototype internals, a requirement for the first ABWR COL applicant. These results will include the information specified in Regulatory Guide 1.20. NRC review and approval of the above information on the first COL applicant's docket will complete the vibration assessment program requirements for prototype reactor internals.</p> <p>Furthermore, the first COL applicant will provide the information on the schedules in accordance with the applicable portions of position C.3 of Regulatory Guide 1.20 for non-prototype internals. Subsequent COL applicants need only provide the information on the schedules in accordance with the applicable portions of position C.3 of Regulatory Guide 1.20 for non-prototype internals.</p>	<p>Summary And Conclusions            Test Description            Component Selections            Sensor Locations            Test Conditions            Data Reduction Methods            Time History Analysis            Frequency Analysis            Data Evaluation Methods            Finite Element Models            Stress Evaluation            Results And Discussion            In-Core Monitor Guide Tubes            In-Core Monitor Housings            Control Rod Guide Tubes And Cr Drive Housings            Core Flooder Sparger            Core Flooder Coupling And Thermal Ring Shroud            Steam Dryer            Pressure Sensors            Summary Of Component Maximum Stresses</p> <p>Appendix            Unbalanced, Steady State Pumping Configurations</p>	10/18/07	01/17/08	04/17/08

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Materials and Surveillance Capsule	Submitted to NRC on April 27, 2007	<p>This LTR will respond to FSAR COL Information Item - 5.5 (FSAR 5.3.4.2) – RPV Material Surveillance Program. Two reports are necessary. The initial report will identify: 1) the specific materials in each surveillance capsule, 2) the capsule lead factors 3) the withdrawal schedule for each surveillance capsule, 4) the neutron fluence to be received by each capsule at the time of its withdrawal, and 5) the vessel end-of-life peak neutron fluence. See Subsection 5.3.1.6.4. The ABWR DCD is the basis for this requirement. The initial report will provide estimated values of lead factors, capsule and RPV peak EOL fluence data. Existing ABWR operating experience data will be identified.</p> <p>The final report will be prepared following completion of the fuel and core design and fluence analysis.</p>	<p>Codes and Standards</p> <p>Description of Plan</p> <p>Surveillance Capsule Withdrawal Schedule</p> <p>RPV Material Surveillance Program</p> <p>Surveillance Test Specimens</p> <p>Location of Installed Specimen</p> <p>Fluence and Lead Factors</p> <p>Operation of Reactor</p> <p>Normal Heating &amp; Temperature Change Rate</p> <p>Minimum RPV Temperature</p>	10/18/07	01/17/08	04/17/08

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Common Equipment and Structures	Submitted to NRC on May 1, 2007	The LTR will describe the STP two units ABWR site layout and design of structures and systems in relationship to the certified design, and building footprints. Shared structures and systems including Radwaste building and equipment, firewater pump house and equipment, and the circulating water intake and discharge structures and equipment will be described. The amendment will indicate that the common systems are only applicable to a 2-unit plant, and that the existing DCD (Revision 4) continues to apply to a 1-unit plant.	Certified Design Layout Description of Buildings Proposed Changes Common Radwaste Building and Equipment Common Firewater Pump House Equipment Common Circulating Water Intake and Discharge Structure and Equipment DCD Markups Nuclear Safety Review	10/18/07	01/17/08	04/17/08

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Startup Test Specifications	Submitted to NRC on April 26, 2007	<p>This LTR responds to a COL Information Item per 14.2.13.1 and 14.2.13.2 of the DCD. A "scoping document" covering the initial startup test program is required, 14.2.13.2 item (1), will include "other testing" as needed per 14.2.13.1.</p> <p>This LTR examines the Startup Test Phase in three parts: 1) initial fuel loading and open vessel testing; 2) testing during nuclear heatup to rated temperature and pressure (approximately 5% of rated power); and 3) power ascension tests from 5 to 100 % of rated power.</p> <p>The Startup Test Program evaluates safety concerns and performance warranties. The tests listed represent the minimum startup tests required to be performed.</p> <p>Required tests and operating conditions are defined. The test purpose, a brief discussion of the test methods and philosophy, and the test criteria for each test are included. A list of signals (process parameters) that are to be available during each specified test is included. LTR will be based on SRP 14.2.</p>	<p>Specification Scope</p> <p>Power-Flow Operating Map</p> <p>Startup Test Conditions</p> <p>Startup Test Sequence</p> <p>Test Criteria Definitions</p> <p>Applicable Documents</p> <p>Supporting and Supplemental Documents</p> <p>Codes and Standards</p> <p>Regulations and Regulatory Requirements</p> <p>General Design Basis</p> <p>Individual Test Requirements</p> <p>Startup Test Signal List</p> <p>(LTR = ~150 pages)</p>	10/29/07	02/01/08	04/28/08

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Plant Medium Voltage Electrical System	05/18/07	This LTR will define departures from Tier 2 DCD material in Chapter 8 related to the medium voltage electrical distribution system. Specifically, it covers the change from a single 6.9kV to a dual 13.8kV/4.16kV system. The LTR will provide an alternative approach to the single 6.9kV medium voltage design as described in the DCD. No Tier 1 or Tier 2* material is affected by this change.	Description Of Certified Design Description Of Proposed Departure Justification for Departure Nuclear Safety Review Descriptions of DCD Markup	11/16/07	02/15/08	05/16/08
Hydrogen Recombiner Requirements Elimination	05/18/07	This LTR is generated to obtain US Nuclear Regulatory Commission approval of a generic change in the design certification for the U.S. ABWR design, in accordance with planned revisions to 10 CFR 52.63. The design change involves deletion of the hydrogen recombinder equipment from the ABWR design. The nuclear safety basis for the proposed change will be established. The proposed changes will be an amendment request or generic LTR applicable to both Tier 1 and Tier 2 of the ABWR DCD Revision 4, US NRC Docket #52-001.	Description Of Certified Design Description Of Proposed Departure Justification for Departure Nuclear Safety Review Descriptions of DCD Markup	11/16/07	02/15/08	05/16/08

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Life Cycle Management Program	05/18/07	<p>This LTR is provided to respond to a COL Information Item required per subsection 1.2.3.1 of the DCD.</p> <p>The design life for STP is 60 years. The license for the STP plant is initially for 40 years. STP may apply for license renewal for an additional 20 years in accordance with the License Renewal Rule 10 CFR 54.</p> <p>GE intends to develop a design life plan (also known as "life cycle management (LCM)" plan) that includes a design life classification system, condition monitoring and plant environmental monitoring system. The design life plan will identify the information that STP will need to submit a license renewal application to extend the license by 20 years.</p> <p>The LCM plan is to define an integrated program to optimize plant performance, managing aging, and controlling the lifetime of the STP plant and its systems, structures and components. STP will develop life cycle management program during plant operation.</p>	<p>Plant Design Life Plan</p> <p>Design Life Classification System</p> <p>Condition Monitoring</p> <p>Environmental Monitoring System</p> <p>Aging Management Plan</p> <p>Life Cycle Management Program Development Plan</p>	11/16/07	02/15/08	05/16/08

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ABWR Stability Evaluation	06/15/07	<p>This LTR will be addressing the analysis to support the ABWR APRM Oscillation Monitoring Logic LTR (NEDO-33328). The analysis will be performed using a GE 14 core, and not GE 7 that was the basis of the original DCD safety analysis. The technical specifications associated with the Option III for STP stability implementation will be included.</p> <p>The LTR will provide any text, tables, figures, appendices, and data that are necessary for the NRC to review and conclude acceptability of the resulting safety analyses. The LTR will be structured to support the areas of review and acceptance criteria provided in SRP Section 4.4.</p>	<p>Solution Design Philosophy</p> <p>Solution Description</p> <p>Licensing Methodology</p> <p>Defense in Depth Algorithms</p> <p>Backup Stability Protection</p> <p>References</p> <p>Tables: Tables of Analysis Results</p> <p>Figures: Multiple Figures with Analysis Results Power Flow Map</p>	12/17/07	03/14/08	06/16/08

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Radiation Protection	07/13/07	<p>This LTR will address top conceptual design requirements for radiation protection (ABWR DCD Tier 1 Section 3.2) features in the ABWR for both plant personnel and the general public. This LTR will provide design details for radiological shielding, ventilation and airborne monitoring equipment of the Reactor, Turbine, Control, Service and Radwaste Buildings.</p> <p>This LTR will also provide implementation details for STP Units 3 &amp; 4. The design will be in conformance with Standard Review Plan (SRP) Sections 12.3-12.4.</p> <p>The LTR will provide any text, tables, figures, appendices, and data that are necessary for the NRC to review and conclude acceptability of the design. The LTR will be structured to support the areas of review and acceptance criteria provided in SRP Sections 12.3- 12.4.</p>	<p>Safety Design Bases</p> <p>Codes and Standards</p> <p>General Requirements Description</p> <p>Implementation Details</p> <p>Safety Evaluation</p> <p>Inspection and Testing Requirements</p> <p>Instrumentation Requirements</p> <p>Tables: None at this time</p> <p>Figures: General Arrangement Radiation Zones</p>	01/15/08	04/16/08	07/14/08

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Containment Analysis for ABWR	09/1/07	<p>This LTR will be the amendment for the containment analysis DCD Section 6.2. The previous analysis was based GE 7 fuel, that is no longer available, so the new analysis will be performed using decay heat from a GE 14 core.</p> <p>The LTR will provide any text, tables, figures, appendices, and data that are necessary for the NRC to review and conclude acceptability of the resulting safety analyses. The LTR will be structured to support the areas of review and acceptance criteria provided in SRP Sections 6.2.1, 6.2.1.1.C, 6.2.1.3, 6.2.1.4, and 6.2.2. The content of the LTR will support an evaluation of the design against the guidance of the SRP revision mandated by the regulations in effect at the time of the COLA submittal.</p>	<p>Safety Design Bases</p> <p>Codes and Standards</p> <p>General Requirements Description</p> <p>Descriptions of differences in the model and inputs between the DCD and the Amendment</p> <p>Safety Evaluation</p> <p>Safety Analysis Description</p> <p>Tables:</p> <p>Comparison of GE 7 vs. GE 14 fuel (design details)</p> <p>Comparison of Decay Heats Analysis Results</p> <p>Figures:</p> <p>Multiple figures with analysis results</p>	03/03/08	06/02/08	09/03/08

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Design Reliability Assurance Program	09/06/07	<p>The Design Reliability Assurance Program (D-RAP) will be performed during the detailed design and equipment specification phase prior to initial fuel load. The D-RAP evaluates and prioritizes the Structures, systems and components (SSCs) in the design based on risk significance. Failure modes, key assumptions, and risk insights for the risk-significant SSCs will be identified.</p> <p>The D-RAP purpose is to provide reasonable assurance that the plant design proceeds in a manner that is consistent with the original bases and design assumptions. The D-RAP scope includes risk-significant SSCs as determined by probabilistic, deterministic, or other methods used for design certification.</p> <p>This LTR will address the list of SSCs based on the certified design with additional selected SSCs based on site-specific PRA results.</p> <p>The guidance described in DCD subsection 17.3.11 and DCD 19K Tables will be implemented.</p> <p>The LTR will provide confirmation of DCD/Tier 1 Section 3.6 ITAAC.</p>	<p>Scope</p> <p>Purpose</p> <p>Objective</p> <p>SSCs Identification/Prioritization</p> <p>Evaluation of Significant SSCs</p> <ul style="list-style-type: none"> <li>• System description</li> <li>• System operation</li> <li>• Major Difference from operating BWRs</li> <li>• System fault trees</li> <li>• System design response</li> </ul> <p>References</p>	03/06/08	06/06/08	09/08/08