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MFN 10-069 Supplement 1

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

Subject: **Transmittal of ESBWR DCD Tier 2 Chapter 4 Markup Related to Reactor**

The purpose of this letter is to submit ESBWR DCD, Tier 2 Chapter 4 markups that are being incorporated into Revision 7. The change reflected by the markup is a correction identified by GEH, which consists of reversing a previously proposed change (see Reference 1) to the citation of reference 4D-8. The DCD has been reviewed against the LTR changes and no further changes to the DCD are necessary. The markup page and a revised list of changes to Chapter 4 is contained in Enclosure 1. The change list identifies the letters that transmitted the latest LTR revisions.

If you have any questions or require additional information, please contact me.

Sincerely,

Richard E. Kingston

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Vice President, ESBWR Licensing

Reference:

1. MFN 10-069, Letter from Richard E. Kingston to U.S. Nuclear Regulatory Commission, *Transmittal of ESBWR DCD Tier 2 Chapter 4 Markups Related to Reactor*, February 22, 2010

Enclosure:

1. MFN 10-069 Supplement 1 Transmittal of ESBWR DCD Tier 2 Chapter 4 Markup Related to Reactor – Markup and Change List

cc:

AE Cubbage	USNRC (with enclosures)
JG Head	GEH/Wilmington (with enclosures)
DH Hinds	GEH/Wilmington (with enclosures)
SC Moen	GEH/Wilmington (with enclosures)
eDRFSection	0000-0113-8479 Revision 1

Enclosure 1

MFN 10-069 Supplement 1

Transmittal of ESBWR DCD Tier 2 Chapter 4 Markup Related to Reactor Markup and Change List

4D-4 GE Nuclear Energy, J. G. M. Andersen, et al., "TRACG Application for Anticipated Operational Occurrences (AOO) Transient Analyses," NEDE-32906P-A, Class III (Proprietary), Revision 3, September 2006, NEDO-32906-A, Revision 3, Class I (Non-proprietary), September 2006.

4D-5 GE Nuclear Energy, F. T. Bolger and M. A. Holmes, "TRACG Application for ATWS Overpressure Transient Analysis," NEDE-32906P, Class III (Proprietary), Supplement 1-A, November 2003.

4D-6 GE Hitachi Nuclear Energy, J. G. M. Andersen, et al., "TRACG Model Description," NEDE-32176P, Revision 4, Class III (Proprietary) January 2008, and NEDO-32176, Revision 4, Class I (Non-proprietary), January 2008.

4D-7 GE Nuclear Energy, J. G. M. Andersen, et al., "TRACG Qualification," NEDE-32177P, Class III (Proprietary), Revision 3, August 2007.

4D-8 GE Nuclear Energy, J. R. Fitch, et al., "TRACG Qualification for SBWR," NEDC-32725P, Class III (Proprietary), Revision 1, Vol. 1 and 2, August 2002.

4D-9 GE Nuclear Energy, J. R. Fitch, et al., "TRACG Qualification for ESBWR," NEDC-33080P Class III (Proprietary), Revision 1, May 2005.

4D-10 USNRC, "Quantifying Reactor Safety Margins: Application of Code Scaling, Applicability, and Uncertainty Evaluation Methodology to a Large-Break, Loss-of-Coolant Accident," NUREG/CR-5249, December 1989.

4D-11 GE Nuclear Energy, B.S.Shiralkar, et al, "TRACG Application for ESBWR Stability Analysis," NEDE-33083P-A, Class III (Proprietary), Supplement 1, Revision 1, January 2008.

4D-12 M. Aritomi, J. H. Chiang. M. Mori, "Fundamental Studies on Safety-Related Thermal-Hydraulics of Natural Circulation Boiling Parallel Channel Flow System under Startup Conditions (Mechanism of Geysering in Parallel Channels)," Nuclear Safety, Vol. 33, No.2, pp. 170-182, 1992.

4D-13 F. Inada, Y. Yasuo, "The Boiling Flow Instability of a Natural Circulation BWR with a Chimney at Low Pressure Startup," Proc. International Conference on the Design and Safety of Advanced Nuclear Power Plants (ANP 1992), Tokyo, Japan, Paper 25.3, October 25-29, 1992.

4D-14 S. Kuran, M. Ishii, X. Sun, L. Cheng, Y. Xu, H. Yoon, S.T. Revankar, "Nuclear Coupled Flow Instability Study for Natural Circulation BWR Startup Transient," Paper N6P002, 6th International Conference on Nuclear Thermal Hydraulics, Operation and Safety (NUTHOS-6), Nara, Japan, October 2004.

4D-15 D.D.B. van Bragt and T.H.J.J. van der Hagen, "Stability of Natural Circulation Boiling Water Reactors: Part II - Parametric Study Of Coupled Neutronic-Thermohydraulic Stability," Nuclear Technology 121 (1998), 52-62.

4D-16 T.H.J.J. van der Hagen, F.J. van der Kaa, J. Karuza, W.H.M. Nissen, A.J.C. Stekelenburg, J.A.A. Wouters, "Startup of the Dodewaard Natural Circulation Boiling Water Reactor," GKN Report 92-017/FY/R, 1992.

ESBWR DCD Tier 2 Chapter 4

26A6642AP Revision 6 to Revision 7 Change List

Item	Location	Description of Change
1.	Entire Chapter	Global chapter editorial changes to correct misspelling and grammar, spell out or integrate acronyms where appropriate
2.	S4.4.3.2, 2nd paragraph, 5th sentence and new 6th sentence.	Corrected sentence from "The void fraction qualification database (References 4.4-1 and 4.4-11) contains void fractions in excess of 0.93 and covers the void fraction range expected for normal steady-state operation as well as AOOs" to "The void fraction qualification (Reference 4.4-11) contains void fractions in excess of 0.93 and covers the void fraction range expected for normal steady-state operation as well as AOOs. The channel pressure drop qualification is discussed in section 4.4.2.3.5" for DCD consistency. See MFN 10-035.
3.	S4.4.8	Corrected references by deleting reference 4.4-1 for DCD consistency. See MFN 10-035.
4.	S4.4.8 reference 4.4-21	Corrected reference from "…Revision 3," to "Revision 4," in two places. See MFN 10-069.
5.	S4D.2.2.1, 2nd paragraph, 3rd sentence	Corrected sentence from "…with the RWCU/SDC auxiliary heater…" to "…with auxiliary heat…" for DCD consistency. See MFN 10-035.
6.	S4D.5, Reference 4D-19	Updated reference from "…Revision 5, April 2009 and NEDO-33217, Class I (Non-proprietary), Revision 5, April 2009…" to "…Revision 6, February 2010 and NEDO-33217, Class I (Non-proprietary), Revision 6, February 2010…" See MFN 10-029 and MFN 10-062.