

ENCLOSURE 2

MFN 03-071

Hypothetical ESBWR Core Design
Response to NRC RAI numbers (7 and 8)

1 Introduction

This document describes a hypothetical equilibrium ESBWR core design containing 1020 fuel bundles similar to GE12. This document will be used by the U.S. NRC to setup and perform calculations that can be compared to results obtained from TRACG. Other details regarding ESBWR evaluations are outside the scope of this document.

2 ESBWR F-LATTICE CORE DESIGN

The purpose of this section is to describe the methods used in the core and fuel design for the ESBWR F-Lattice core. In general, these methods can be used with any standard BWR simulation code.

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Figure 2-1, F-Lattice Configuration

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Figure 2-2, ESBWR Core Configuration (showing Control Cells)

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¹ This procedure was benchmarked by comparison with a quarter-core case with the center rod out.

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2.1 Hot Excess Reactivity

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2.2 Cold Shutdown Margin

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2.3 Maximum Linear Heat Generation Rate

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2.4 Minimum Critical Power Ratio

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2.5 Fuel Cycle Summary

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Table 2-1, Fuel Cycle Characteristics

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Table 2-2, Thermal Operating Limits for the Equilibrium Cycle

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3 Panacea Wrapups

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Table 3-1 PANACEA Wrapups

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4 Bundle Designs

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Table 4-1 Bundle Lattices

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5 Core Design

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Table 5-1 General Core Information

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6 References

- [1] General Electric Fuel Bundle Designs, NEDE-31152P, Revision 7, June 20

Appendix A

Hypothetical ESBWR Bundle Design

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The data and calculations provided
are preliminary pending detail design.

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Hypothetical ESBWR Core Design

Appendix B

**PANAC10 Summary “ARK” Edits
for Rodded Depletion**

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The data and calculations provided
are preliminary pending detail design.

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Hypothetical ESBWR Core Design

Appendix C

PANAC11 Summary Edits for “Haling” Depletion

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Hypothetical ESBWR Core Design

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Appendix D

Reference GE12 Design Basis Specifications

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GE12 lattice dimensions for Figure 2 (English units)

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Detailed channel sketch

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