

generation *mPower*

Human Factors Engineering

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This is a pre-application document and includes preliminary B&W mPower Reactor design or design supporting information and is subject to further internal review, revision, or verification.

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Agenda

- Present Status
- HFE Plan
- HFE Plan Challenges
 - Verification and Validation Scenarios
 - Style Guide
 - Concept of Operations Document
 - Concept of HSI Document
 - Other Areas of Interest



Present Status

- Development of mPower HFE program elements is continuing in accordance with latest guidance and industry practices
- Previously drafted HFE element technical reports submitted for NRC review in June 2012 and September 2012 were based on NUREG-0711 Rev 2
 - HFE Program Management
 - Operating Experience Review
 - Treatment of Important Human Actions
 - Functional Requirements Analysis/Functional Allocation
 - Task Analysis/Staffing and Qualification
 - Human Factors Verification and Validation

Plan for HFE Submittals

- Focus - HFE requirements for DCA submittal
 - Revise existing Technical Reports
 - Align to NUREG-0711 Rev 3 review criteria
 - Incorporate NRC feedback on previously submitted reports
 - Target completion of revisions and pending Technical Reports by 1Q2014
 - Request NRC feedback on Technical Reports
 - GmP prefers priority be given to Technical Reports not previously reviewed
 - Training and procedure development programs
 - Program development and procedure development elements (with the exception of computer-based procedures) will be incorporated and submitted in DCD Chapter 13
 - No separate submittal of technical reports on training and procedures
 - Consistent with guidance in NUREG-0711 Rev 3 and NUREG-0800 Rev 2

HFE Plan Challenges

- The following challenges are driven by lack of predecessor plant
 - Complete & detailed set of verification & validation scenarios
 - Style guide Rev 0
 - Concepts of operations
 - Concepts of HSI

Verification and Validation Scenarios

- Develop a sample plan to incorporate requirements outlined in NUREG-0711 Rev 3
- Develop scenarios events based on NUREG-0711, Safety Analysis and PRA
- Include known Important Human Actions (IHAs) to date
- Develop accident mitigation strategies for events selected
- []

[Proprietary per Affidavit 4(a)-(f)]

Verification and Validation Scenarios

- Scenarios based on known accepted format
- []
- Scenario development process to insure accordance with NUREG-0711 Rev 3
- Scenarios contained in a non-Tier 2* document

[Proprietary per Affidavit 4(a)-(f)]

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Style Guide

- Style Guide - Rev 0
- Style Guide contained in a non-Tier 2* document
- Reflect the level of detail as submitted in the DCA
- Methodology developed to describe revision process to the style guide as the design matures on the HSI

Concept of Operations Document

- Document will support HSI Design Technical Report
- Concept of Operations contained in a non-Tier 2* document
- Reflect the level of detail as submitted in the DCA
- Methodology developed to describe revision process to the Concept of Operations as the plant design and concepts mature

Concept of HSI Document

- Document will support HSI Design Technical Report
- Concept of HSI contained in a non-Tier 2* document
- Reflect the level of detail as submitted in the DCA
- Methodology developed to describe revision process to the Concept of HSI as the plant design and concepts mature

Other Areas of Interest

- Potential changes to NUREG-0711 in anticipated issue of Rev 4
- Schedule for issue of NUREG-0711, Rev 4



Questions?