

ENCLOSURE 2

M260059 Rev. 1

Presentation Material for Pre-Submittal Meeting

Non-Proprietary Information

INFORMATION NOTICE

Enclosure 2 is a non-proprietary version of the Presentation Material for Pre-Submittal Meeting from Enclosure 1, which has the proprietary information removed. Portions that have been removed are indicated by open and closed double brackets as shown here [[]].

Non-Proprietary Information



ODYSY STABILITY RODDED DEPLETION LTR

NRC Pre-submittal Meeting
June 29, 2026

Safety Minute

Leadership Safety Values and Actions	Problem Identification and Resolution	Personal Accountability
Leaders demonstrate a commitment to safety in their decisions and behaviors.	Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance.	All individuals take personal responsibility for safety.
Work Processes	Continuous Learning	Environment for Raising Concerns
The process of planning and controlling work activities is implemented so that safety is maintained.	Opportunities to learn about ways to ensure safety are sought out and implemented.	A safety conscious work environment is maintained where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment or discrimination.
Effective Safety Communications	Respectful Work Environment	Questioning Attitude
Communications maintain a focus on safety.	Trust and respect permeate the organization.	Individuals avoid complacency and continually challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action.

Introductions

- Andrew Jacobs – Stability Analysis Lead Engineer
- Faisal Raja – Stability Analysis Technical Leader
- Alan Chung – Stability Analysis Principal Engineer
- Kent Halac – Technical Regulations and Standards Senior Engineer
- Roseanne Harrington – LOCA, Containment, and Stability Analysis Manager

Agenda and High-Level Meeting Objectives

Meeting Agenda

- Part 1 – The ODYSY Application for Reload Licensing Process & Lessons Learned
- Part 2 – Determination of Rodded Axial Power Shape Effects
- Part 3 – New Fuel Licensing Changes

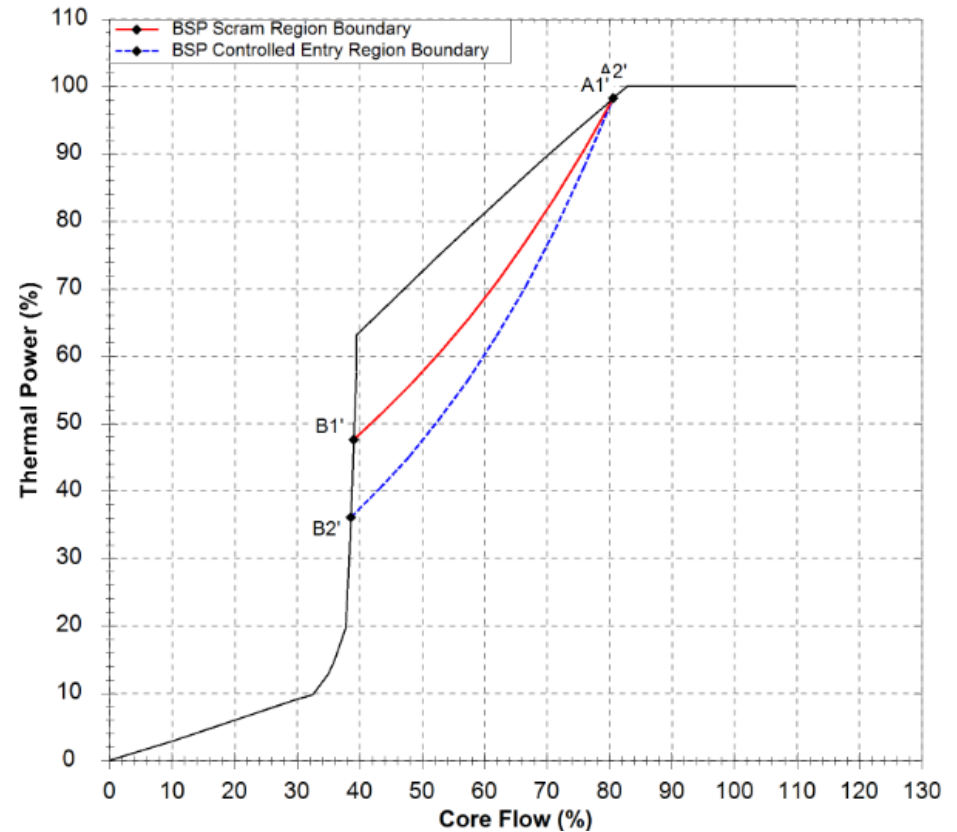
Meeting Objectives

- Communicate how this submittal fits into the overall GVH/GNF Stability Reload Licensing framework
- Describe the strategy for the LTR content
- Discuss a scope of review supporting the final approval

PART 1: THE ODYSY APPLICATION FOR RELOAD LICENSING PROCESS & LESSONS LEARNED

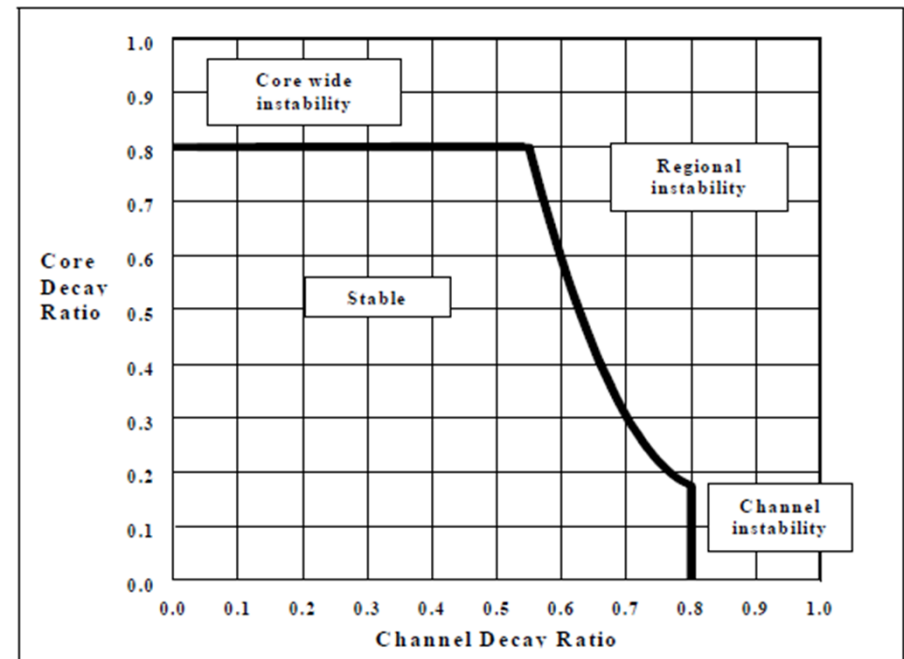
Current ODYSY Haling Procedure

- Three main oscillation prevention analyses, each solution specific:
 - Exclusion Region (ER) (Option I-D / Option II) and Buffer Region (BR) (Option I-D only)
 - Backup Stability Protection (BSP) Regions (Option III / Detect and Suppress – Confirmation Density (DSS-CD))
 - Reload Validation Matrix (RVM) (Enhanced Option I-A (E1A))
- Solutions/Methodologies have been historically very successful at preventing Thermal-Hydraulic Instability (THI)
- Haling depletion is burned to a bounding late cycle exposure with all rods out and a conservative hot channel axial power shape
 - Haling depletion is over conservative, leading to unrealistic decay ratio calculations
 - Flat nature of the Haling depletion over penalizes advanced fuel designs



Stability – ODYSY Rodded Depletion LTR

- A new LTR to support the use of the rodded depletion as the basis for reload licensing decay ratio calculations via the ODYSY criteria map:
 - New LTR will support all existing stability Long-Term solutions:
 - Option I-D / Option II (NEDE-33213P-A / Plant Specific Application LTR)
 - Option III (OG 02-0119-260)
 - DSS-CD (NEDC-33075P-A)
 - E1A (NEDO-32339P-A)
 - New LTR is compatible with all OLMCPR Methodologies:
 - Delta over Initial CPR vs. Oscillation Magnitude (DIVOM) / Detect and Suppress (D&S) (NEDO-32465-A)
 - GE-Hitachi Simplified Stability Solution (GS3) (NEDE-33766P-A)
 - DSS-CD



ODYSY Rodded Depletion LTR Application

- **Updates from NEDE-33213P-A, NEDO-32339P-A, NEDC-33075P-A, OG 02-0119-260 include:**

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- **Updated THI event benchmark done to support the use of the rodded depletion**

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- **Proposed change to GESTAR II Section 1.1.8 to remove new fuel licensing stability requirements**

- Stability performance of new fuel designs is assessed on a per cycle basis

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Rodded Depletion Demonstration



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PART II – DETERMINATION OF RODDED AXIAL POWER SHAPE EFFECTS

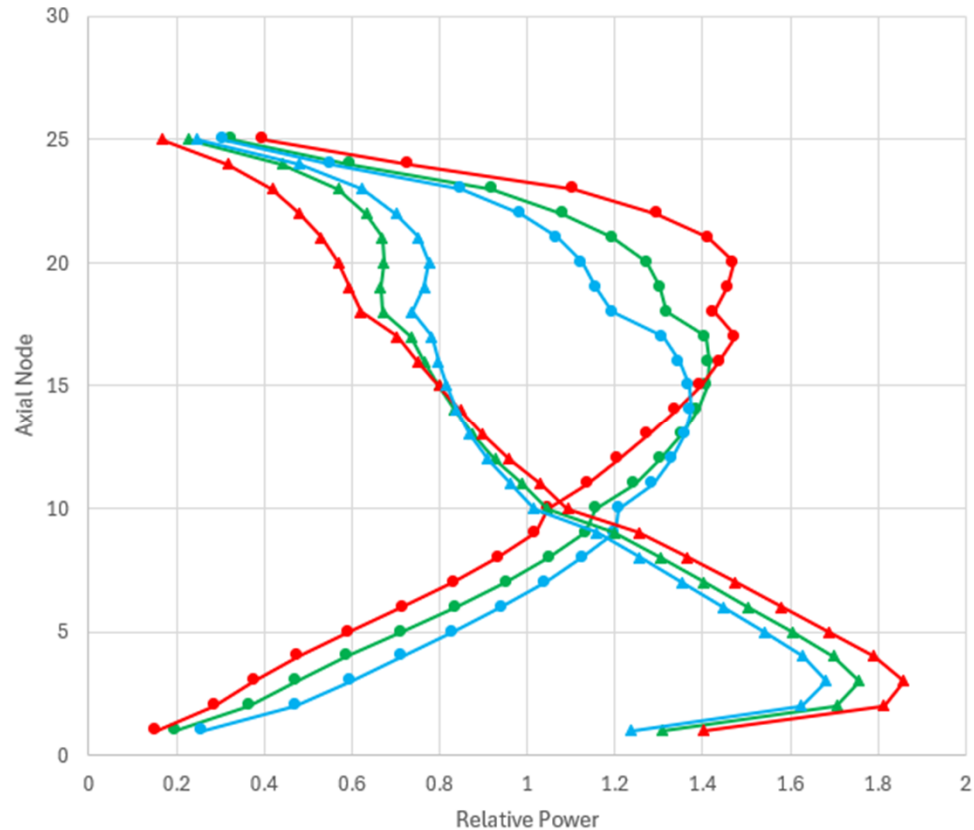
Operational Impacts

- Actual operation may not correspond to the control rod patterns or power shapes assumed during reload licensing

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- Typical BWR power shapes are bottom peaked early in the cycle and top peaked late in the cycle
 - Depletions that are relatively top and bottom peaked versus the nominal depletion are considered



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Typical Power Shape Impact vs. Core Decay Ratio



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Typical Power Shape Trend vs. Hot Channel Decay Ratio



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US BWR/4 THI Event Rodded BSP Region Demonstration

- A demonstration of the rodded BSP procedure for an Option III plant THI event performed and included in LTR
- Rodded BSP regions remain bounding of THI event trace

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PART III – NEW FUEL LICENSING CHANGES

New Fuel Licensing – GESTAR II Section 1.1.8

GESTAR II Section 1.1.8: New fuel designs must satisfy criterion A or B below:

- A. The stability behavior, as indicated by core and limiting channel decay ratios, must be equal to or better than a previously approved GE BWR fuel design
 - B. If the core and limiting channel decay ratios are not equal to or better than a previously approved GVH fuel design, it must be demonstrated that there is no change to the exclusion zone
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- It is desired that this requirement be removed from GESTAR II for future fuel designs with justification provided as a part of this LTR
 - Stability performance of a given fuel design is already assessed on a per cycle basis during the reload safety analysis

New Fuel Licensing - E1A Region Generation

- A deviation from the E1A LTR (NEDO-32339P-A) is discussed in this LTR to forgo the overly restrictive Standard Cycle to Reference Cycle E1A region generation process when a new fuel product is introduced into the core
 - The Standard Cycle to Reference Cycle analysis using the FABLE/BYPSS legacy methodology with the ODYSY/Haling process is described in detail in NEDO-32339P-A
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Conclusions

- ODYSY LTR for the use of the rodged depletion in lieu of the use of the Haling depletion in reload licensing analyses is to be submitted
 - Scope of review is limited to updates with the use of the rodged depletion application procedure. This is an update of the ODYSY application procedure, the ODYSY methodology remains unchanged and is pre-approved.
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- The use of the rodged depletion is supported with an additional THI event Option III BSP demonstration
- Amendment to GESTAR II Section 1.1.8 is described as part of the ODYSY Rodged Depletion LTR
 - Cycle specific assessment of new fuel designs
- Amendment to E1A LTR described as part of the ODYSY Rodged Depletion LTR
 - Cycle specific assessment of existing E1A stability regions
- ODYSY Rodged depletion LTR allows for development of more realistic stability regions

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Q & A