

Detect & Suppress Program Status

Presentation to USNRC

February 20, 2003

Agenda

- | | |
|-----------------------------------|--------------------------------|
| • Program Overview and Status | Mike May |
| • Licensing Application Framework | Jens Andersen/
Charlie Heck |
| • SAFDL Selection | Charlie Heck |
| • Milestones / Schedule | Mike May |

Purpose

- Discuss licensing application framework for BWROG Stability Limit approach
- Present program schedule
- Obtain NRC feedback

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Detect & Suppress Program Phases

- ✓ Phase 1: Identify methodology success path
- ✓ Phase 2: Define new stability limit to show compliance to fuel design criteria
- Phase 3: Develop the technical bases for new stability limit and develop the framework for licensing submittal
- Phase 4: Perform all analyses, submit LTR, and obtain NRC approval

Currently in
end of phase 3 →

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BWROG Stability Limit

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BWROG Requirements for Stability Limit

- Must satisfy regulatory requirements
- Must satisfy applicable fuel design limits for stability
- Must allow a return to operation immediately after a stability event (i.e., no additional evaluations necessary)
- Applicable to all BWR fuel vendors
- Compatible with existing stability based hardware/software
- Establish generic stability scram setpoint

- main goal

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BWROG Stability Limit Approach

- More realistic characterization of oscillation event
- Approach permits oscillations that take fuel into and out of boiling transition
- Evaluate fuel response relative to applicable fuel design limits appropriate for stability
- ↳ Define new stability limit to ensure negligible impact on fuel

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Summary of Feasibility Study

- Results indicate that impact on stability fuel design limits is negligible
 - Limiting issue is annealing of irradiation hardening
 - Preliminary TRACG analysis shows acceptable temperature oscillation
 - Need to establish oscillation temperature limit that ensures negligible annealing (BWROG Stability Limit)

BWROG requirements can be met

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Benefits of BWROG Stability Limit

- Ensure a more robust solution that is not susceptible to methodology issues in the future
- Expand solution applicability for current and future core and fuel designs (including all BWR fuel vendors) and operating domains
- Produce solution applicable to all plants
- Bring permanent closure to BWR D&S stability issues

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Licensing Application Framework

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Licensing Application Framework

- Developing licensing framework document
 - Defines all necessary licensing elements
 - Establishes work scope
 - Provides roadmap for NRC
- Draft framework document provided to NRC to facilitate feedback
- Final framework document transmitted after NRC comments addressed

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*Roadmap
for process*

Application Methodology for BWROG Stability Limit Analysis

Presentation by Jens Andersen / Charlie Heck

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*? still open
Want feedback
on draft LTR*

Milestones / Schedule

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Major Milestones

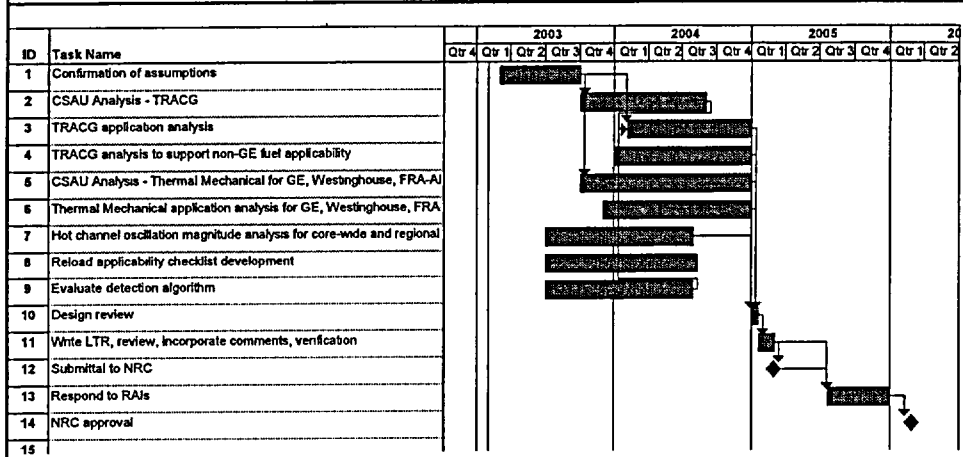
- | | |
|-----------------------------------|---------|
| • Analysis to Confirm Assumptions | 3Q 2003 |
| • Complete Engineering Analysis | 4Q 2004 |
| • Submit Licensing Topic Reports | 1Q 2005 |
| • Receive NRC Approval | 1Q 2006 |

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Proposed Phase 4 Schedule



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NRC Comments and Feedback

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