



Long-Term Operations Or “Life Beyond 60”

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Industry Materials Programs Information Exchange

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Presentation Overview

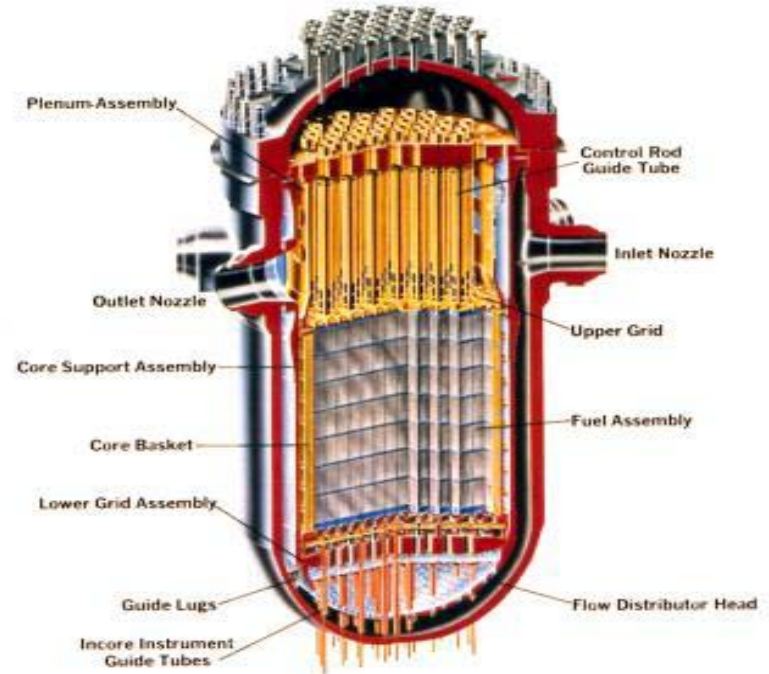
- Goals and Objectives
- Key R&D Areas
- LTO Integration
- Aging Management Programs

LTO Goals and Objectives

- Technical basis for safe, reliable plant operation through extended lifetime
- Provide useful results in 2014 to 2019 timeframe
- Develop and demonstrate technology to manage plant assets long term
- Coordinate with DOE, NRC Research, Owners Group and International R&D programs

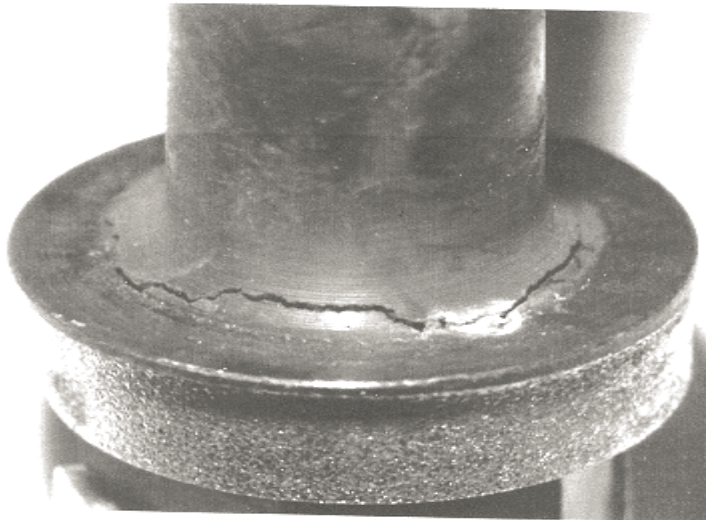
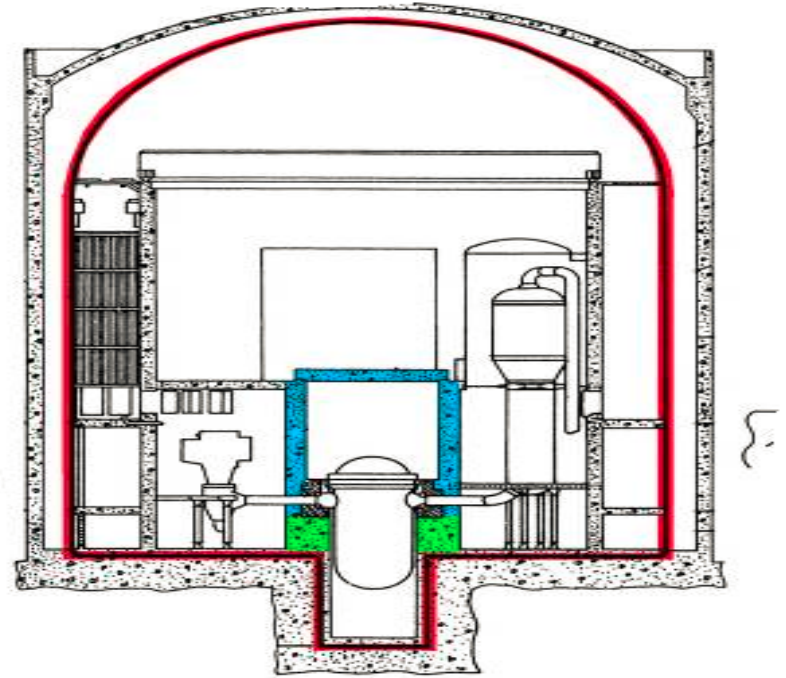


Pressurized Water Reactor



Key R&D Area – Life Limiting Components

- Primary System Metals
- Reactor Pressure Vessel
- Concrete Structures and Containment Systems
- Cable Systems



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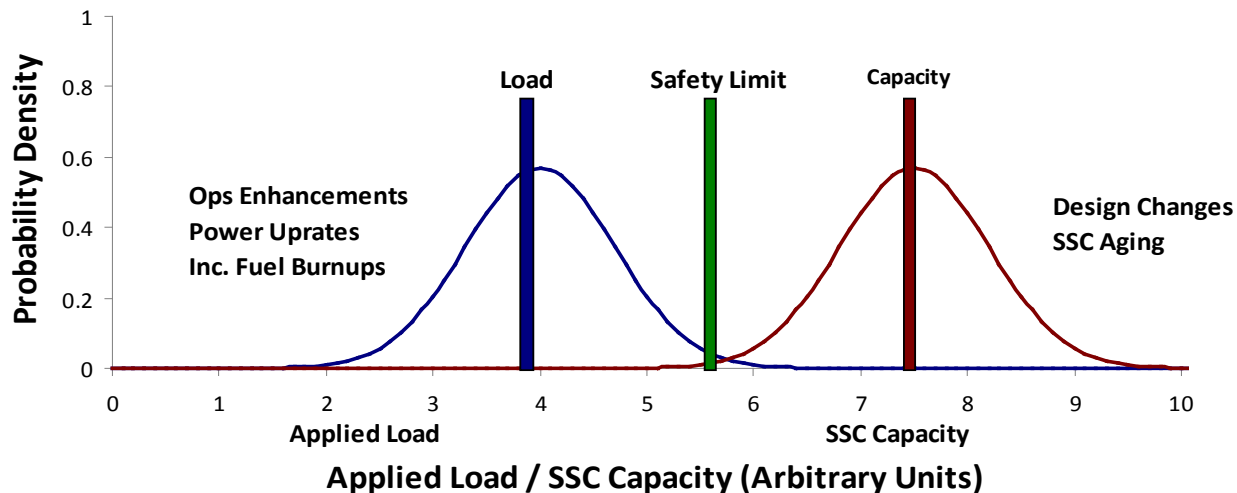


Key R&D Area – Opportunities for Modernization

- Advance I&C and IT
- Advance Safety Analysis and Risks Methods
- Advance Fuel Designs

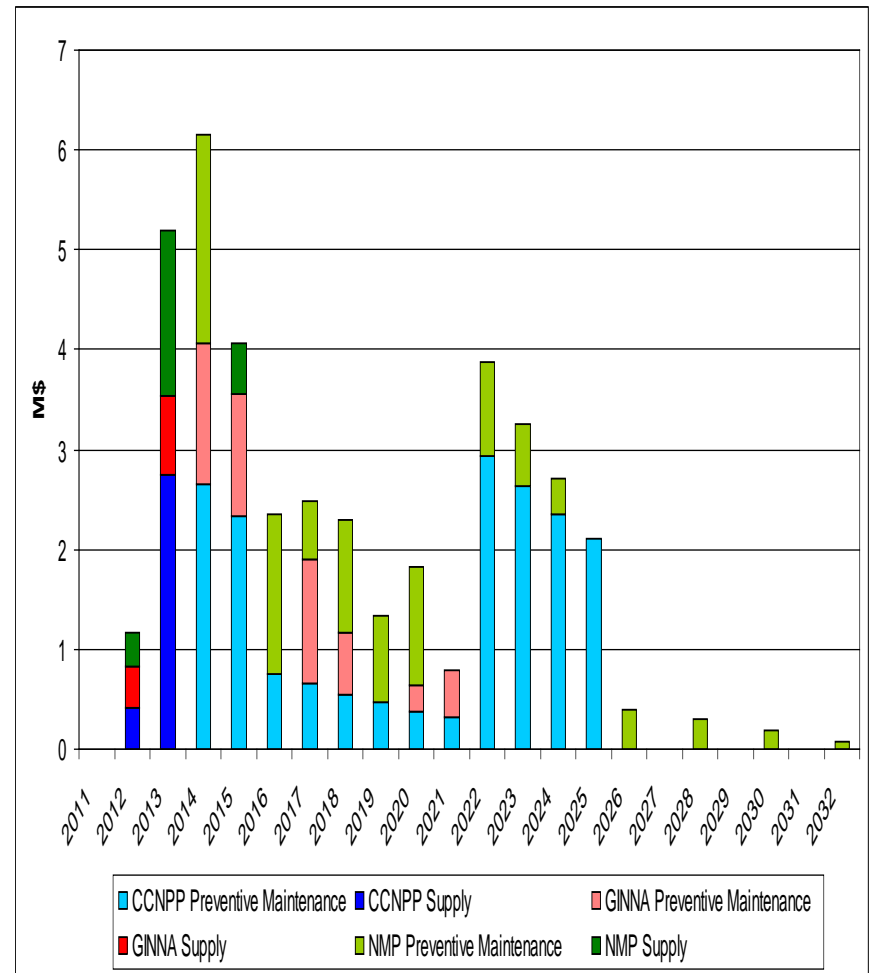


Potential Impacts of LTO on Safety Margins



Key R&D Area – Enabling Technologies

- Integrated Life Cycle Management
- Plant Demonstration Projects
- **Aging Management Program Reviews to support Subsequent License Renewals (SLR)**



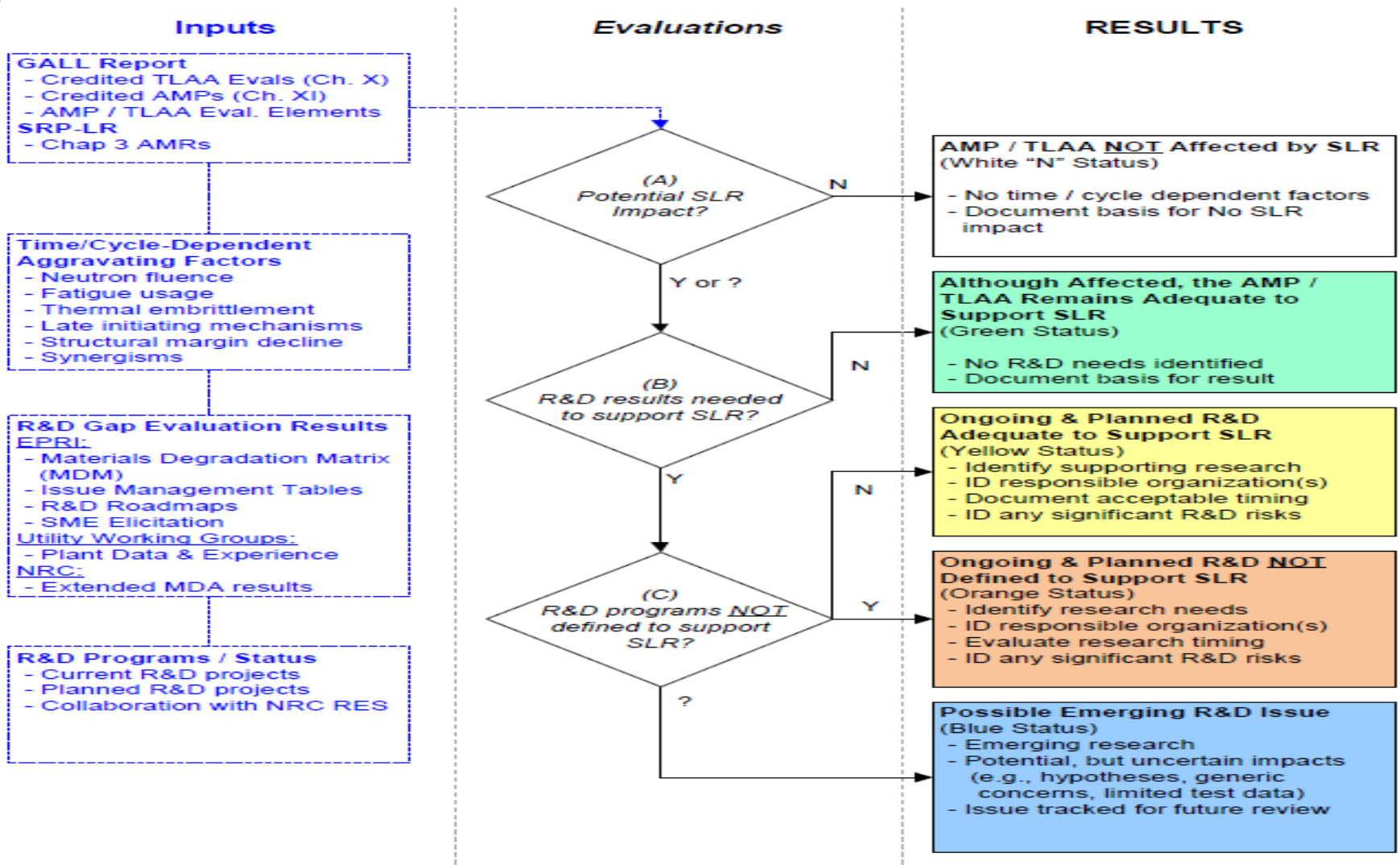
LTO Integration into EPRI Materials R&D

- Integrates with BWRVIP, MRP and SGMP
- Examples of where 60 to 80 years is covered:
 - Materials Degradation Matrix (MDM) and Issue Management Tables (IMTs)
 - RPV coordinated and supplemental surveillance capsule programs
 - Advance welding techniques for highly irradiated materials
 - On-going IASCC and EAC R&D projects
- Gaps for 60 to 80 years:
 - Reactor vessel internals (void swelling, baffle bolts)
 - Extended data base for Alloy 690
 - Environmentally assisted fatigue (EAF)

AMP Review to Support SLR

- Proactive review of SCCs within scope for 10 CFR Part 54
 - Review existing AMPs
 - Incorporate R&D results and OE
- Reviews
 - NEI working groups, EPRI SMEs, Industry through BWRVIP and MRP members
- Schedule
 - Complete AMP and TLAA reviews Sept 2012
 - Initial draft of gaps findings and basis Nov 2012
 - Publication 2013

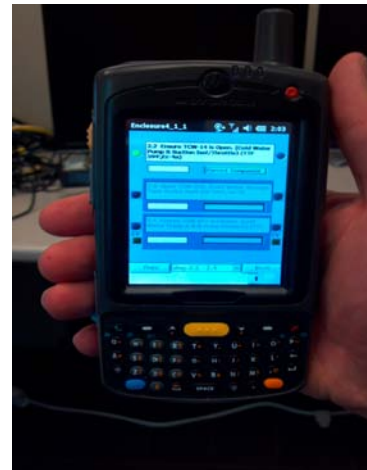
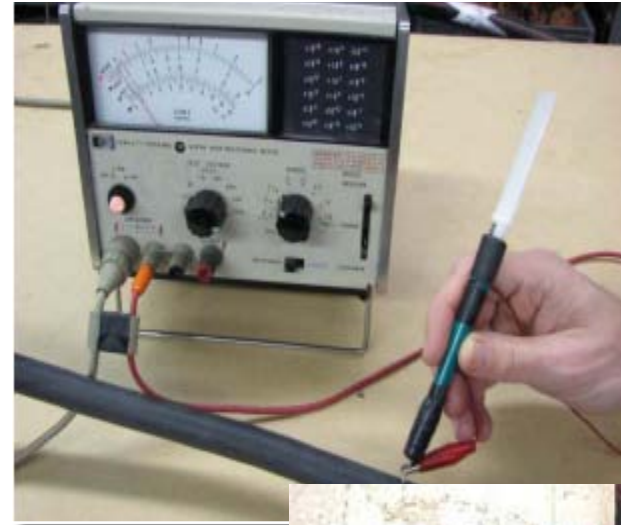
AMPs Review to Support SLR



AMP / TLAA R&D Evaluation Process

Technology for AMPs

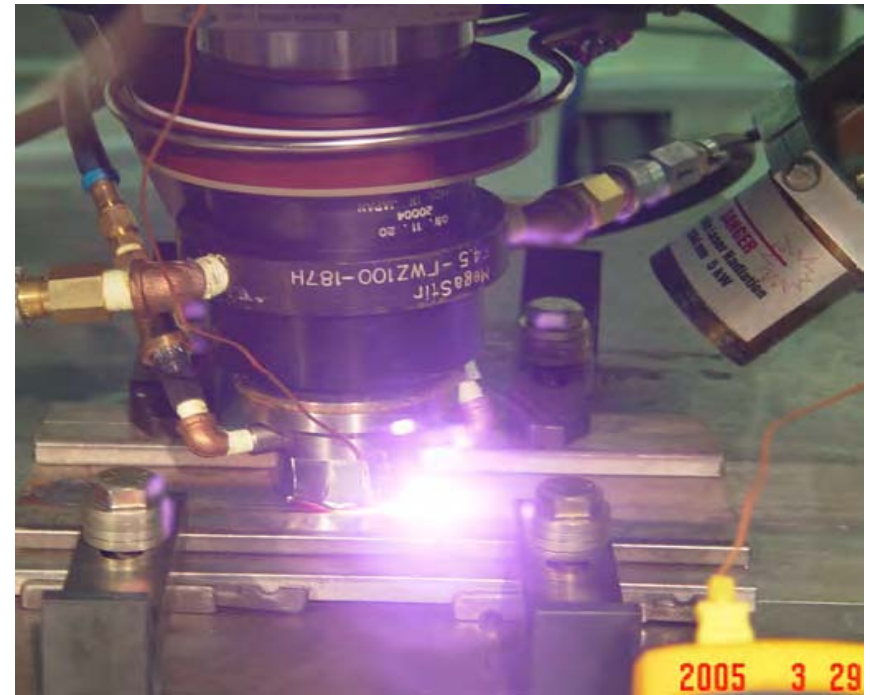
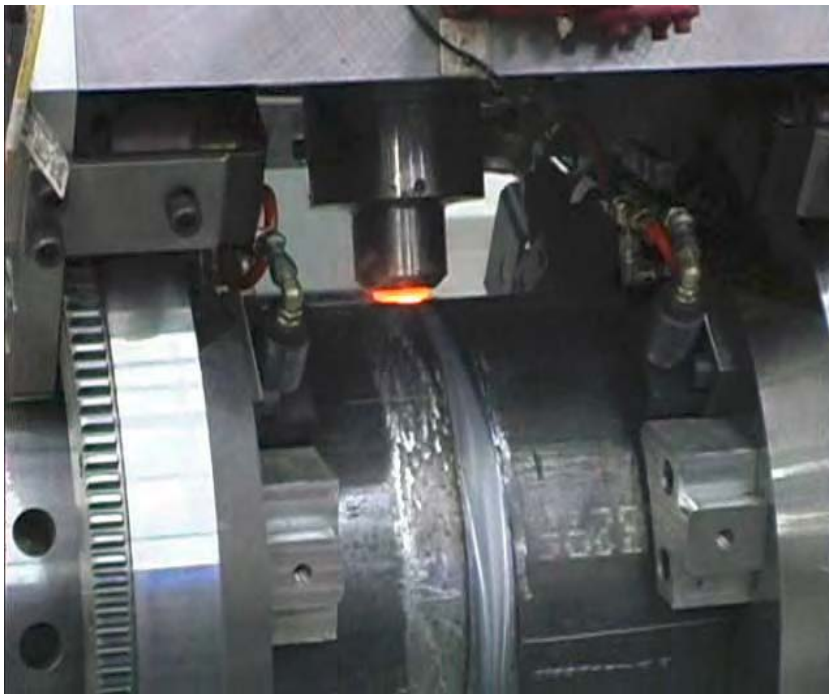
- Understand of aging degradation mechanisms and failure modes
- Initiation and growth rates
- Inspection techniques
- Mitigation strategies
- Condition monitoring
- Detection of new degradation mechanisms
- Prediction of Remaining Useful Life



Robust Aging Management Programs

Summary

- Continue working with NEI on steps needed for Subsequent License Renewals
- Program will need to be dynamic to respond to changing R&D needs when the first US plant applies for SLR



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