



## RIC 2010 License Renewal

Brian Holian, Director  
Division of License Renewal  
Office of Nuclear Reactor Regulation  
March 10, 2010

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Dresden, Unit 2



Oyster Creek



Nine Mile Point, Unit 1



R. E. Ginna

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H. B. Robinson



Monticello



Point Beach, Unit 1

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### AGENDA

- Jerry Dozier      LR Guidance Documents Update (GALL)
- Andy Imboden    LR Environmental Guidance Documents Update (GEIS)
- Rich Conte        Inspection Insights Related to IP71003
- Neil O'Keefe      Inspection Insights & Assessing and Documenting Concerns
- Garry Young, NEI    NEI Perspectives
- Toru Osaki, JNESO   Degradation of Materials of Components and Structures in Early-Constructed Japanese LWRs
- Brian Holian/All    Question/Answer & Summary/Close Out

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### License Renewal - History

- 1982 - NRC established a comprehensive program for nuclear plant aging research
- 1991 - Part 54 published
- 1995 - Part 54 amended
- 1996 - Generic Environmental Impact Statement published; also a revised Part 51
- 1998 - First application (Calvert Cliffs)

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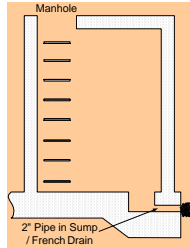
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## Safety Review Issues

- Inaccessible medium voltage cables
  - Identified water in the manholes at several nuclear power plants, necessitating commitments from the applicants to access and manage the ingress of water into the manholes, and to periodically test the cables.



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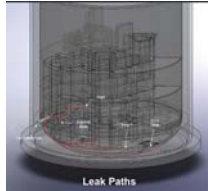
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## Safety Review Issues

- Refueling Cavity Leakage
  - Staff has ensured that licensees that have had, or are experiencing leakage of borated water from the refueling cavity, are properly evaluating and assessing the aging impacts of the leakage on both metal and concrete in containment.



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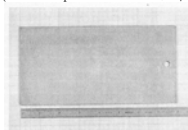
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## Safety Review Issues

- Neutron Absorber Degradation
  - Identified the need for plants to monitor the performance of neutron absorber materials (such as Boral) for criticality control in the spent fuel pools. Degradation identified, including blistering and loss of material, challenges assumptions made in spent fuel criticality analyses. Staff ensuring plants have a program that verifies neutron absorption performance coupon surveillance testing or in-situ measurements.

PWR Coupon  
(Clad Composite – Al & Al/B<sub>4</sub>C)



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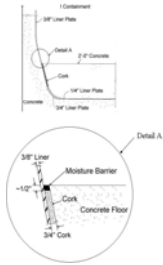
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## Safety Review Issues

- Containment Liner Degradation (PWR)
  - The NRC staff has evaluated containment liner degradation at plants due to corrosion caused by water accumulation or the degradation of barrier seals.
  - Plants have repaired the conditions and/or committed to improved monitoring and inspection



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## Safety Review Issues

### Drywell Shell

Before



After



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## Safety Review Issues

- Buried Piping



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## Safety Review Issues

Containment Liner Hole



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## LICENSE RENEWAL

- Renewed Licenses issued for 59 units
- Renewing applications for 19 units
- Public has become more interested and involved in the renewal process
- 4 plants entered 41<sup>st</sup> year in 2009
- 3 plants will enter 41<sup>st</sup> year in 2010
- For more information:
  - Reactor License Renewal Web Page
  - <http://www.nrc.gov/reactors/operating/licensing/renewal.html>

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## BACKUP SLIDES

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### NRC/DOE "Life Beyond 60"

#### 2008 Workshop Goals

- Identify technical issues that may require resolution to support safe long-term operations of light-water reactors (LWRs)
- Identify prioritized research areas
- Identify appropriate responsibilities and roles for industry, DOE, and NRC in potential collaborative research program to ensure continued safe LWR operation

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### Historical Perspective Observations

- 10 CFR 54 has been successfully implemented and does not need to be changed
- Industry suggests that license renewal implementation guidance can be simplified
- Research is recommended to support plant life extension beyond 60 years
- Ultimately, plant life extension is a utility business decision

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### New Technologies

- Establish basis for new technologies
- Suggested research areas:
  - Develop NDE/measurements matrix to compliment materials degradation matrix
  - NDE/measurements matrix
    - Concrete: NDE methods and targets
    - Cables: infrared and nanocoatings
    - Cast stainless steel: ultrasonic inspection capability
    - Groundwater protection: buried pipe/tanks, SPF liner
    - Global versus local tests: guided waves, acoustic emission
  - Important issues
    - Accessibility, design for inspection, validation, applicability
  - NDE implementation
    - Enhanced techniques, mgt/analysis of large data, personnel
  - Online monitoring
    - Establish failure signature database

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### Potential Roles & Responsibilities

- Industry has lead role to drive the process and identify issue resolutions
- NRC's primary role: ensure plant safety
  - Coordinate and collaborate on confirmatory research efforts
- DOE will facilitate R&D and coordinate national laboratory efforts
- Industry, national laboratories, academia, and international collaborators will conduct necessary R&D

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### NRR/Research User Need

- Hold NRC/Industry workshops on operating experience and industry research activities
- Develop an expanded materials degradation assessment
- Assess results from implementation of Aging Management Programs
- Share expertise; domestic & international

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### NRR/Research User Need

- A few questions!
  - Are there any critical SSCs as we look to 80 years?
  - Should we implement license conditions to have licensees revise aging management programs?
  - Should we require replacing obsolete equipment? Require piping replacement?
  - Reconsider SSCs considered "active" and "passive"? (e.g. digital I&C)
  - Are postulated DBAs and associated assumptions still valid?
  - Require "boat samples"?
  - Require new NDE methods?
  - Are there code assumptions that may not be conservative?

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### Conclusions

- License renewal is a successful program
- NRC ensures that safety-significant issues are identified and resolved in a timely manner
- Although not NRC's responsibility to solve potential aging issues for the industry, NRC will collaborate with industry and others in an integrated, holistic program to ensure long-term safety

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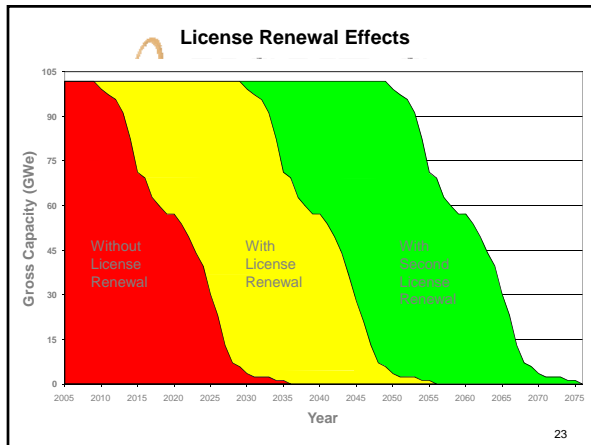
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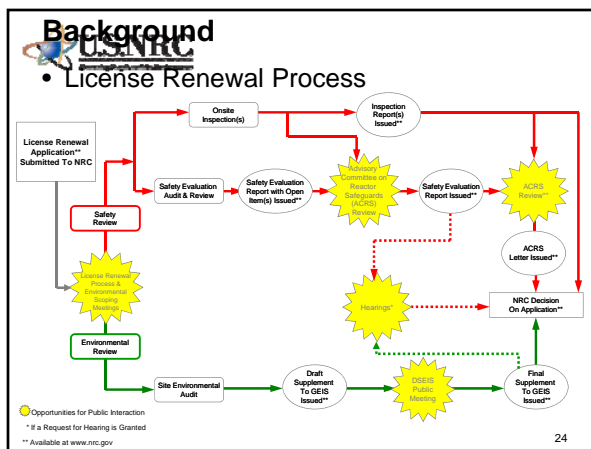
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