



Briefing on Subsequent License Renewal

May 8, 2014

License Renewal Overview

**John Lubinski, Director
Division of License Renewal
Office of Nuclear Reactor Regulation**

Safety is Ensured During the First 40 Years

- **Regulatory process ensures safety**
- **Licensing basis is continuously enhanced**
- **Aging management is key for ensuring safety**

License Renewal Principles

Maintain Safety

- **With the exception of the detrimental effects of aging, the existing regulatory process is adequate for safe plant operations**
- **Each plant licensing basis must be maintained**

Safety Continues to be Maintained Beyond 60 Years

- **The principles of license renewal would continue to be effective to ensure safety**
- **Additional focus on the effectiveness of aging management programs**

Proposed Regulatory Framework

**Bo Pham, Chief
Subsequent License Renewal Branch
Division of License Renewal
Office of Nuclear Reactor Regulation**

Enhance Aging Management Program Effectiveness

- **Self-assessments**
- **Aging-related degradation**
- **Changes to subsequent
license renewal activities**

Timing of Subsequent License Renewal Applications

- **Current - subsequent license renewal application concurrent with entering its first period of extended operation**
- **Revised - rule to require more operating experience**

Other Rulemaking Considerations

- **Licensing basis update**
- **Recordkeeping requirements**
- **Timely renewal requirements**
- **Add additional passive systems, structures, and components**

Non-Concurrence: Staff Response

- **Probabilistic risk assessments are not required to maintain plant safety**
- **Probabilistic risk assessments are not unique to license renewal**
- **Applicants can risk-inform aging management programs**

Subsequent License Renewal Research

Dr. Mirela Gavrilas

Acting Deputy Director

Division of Engineering

Office of Nuclear Regulatory Research

Research Activities

- **Current knowledge base**
- **Department of Energy and industry engagement**
- **Aging management program implementation**

Expanded Material Degradation Assessment

- **International experts participation**
- **Phenomena identification and ranking techniques**
 - **Safety-significant degradation**
 - **Susceptibility and knowledge level**

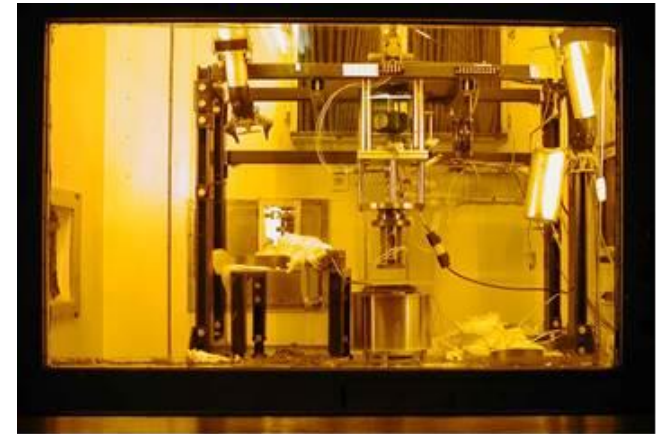
Piping and Core Internals – High Susceptibility Scenarios

- **High knowledge**
 - **Primary water stress corrosion cracking**
 - **Corrosion in balance-of-plant piping**
- **Low knowledge**
 - **High fluence irradiation effects**



Reactor Pressure Vessel – High or Intermediate Susceptibility Scenarios

- **High knowledge**
 - **Neutron irradiation embrittlement**
- **Low knowledge**
 - **Environmentally-assisted fatigue**



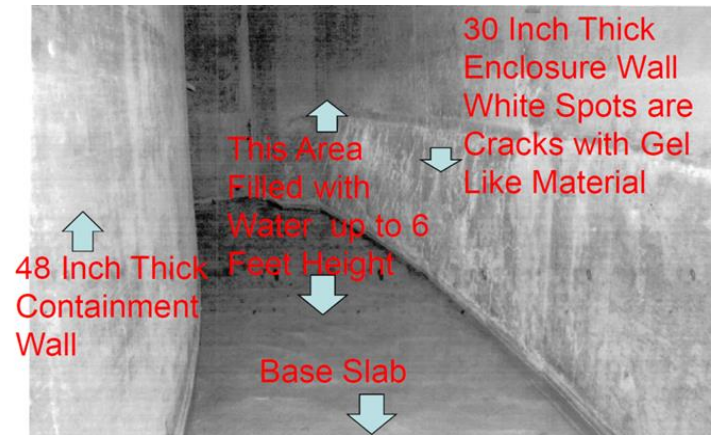
Electrical Cables – High Susceptibility Scenarios

- **High knowledge**
 - Thermal aging
 - Irradiation effects
- **Low knowledge**
 - Long-term submersion of low and medium voltage cables



Concrete Structures – High Susceptibility Scenarios

- **High knowledge**
 - **Freeze-thaw damage**
- **Low knowledge**
 - **Long-term irradiation effects**
 - **Alkali-silica reaction**



Summary

- **Principles of license renewal are adequate for ensuring safety for subsequent license renewal**
- **Regulatory process is effective**
- **Technical reviews ensure effective aging management**

Acronyms

- **DOE: Department of Energy**
- **EMDA: Expanded Material Degradation Assessment**
- **EPRI: Electric Power Research Institute**
- **FSAR: Final Safety Analysis Report**
- **NIST: National Institute of Standards and Technology**
- **NFPA: National Fire Protection Association**
- **NRR: Office of Nuclear Reactor Regulation**
- **PMDA: Proactive Materials Degradation Assessment**
- **PRA: Probabilistic Risk Assessment**
- **SLR: Subsequent License Renewal**