NRC/NEI Quarterly Meeting

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What's New in DLR

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- Staff Changes
- Impact on Schedules

Status of LR-ISG-2011-05, "Ongoing Review of Operating Experience"

Milestone	Date
Issued draft LR-ISG-2011-05 for public comment	August 24, 2011
Extended comment period	September 20, 2011
Held public meeting	October 12, 2011
Comment period ended	October 23, 2011
Re-issued draft LR-ISG-2011-05 for public comment	November 25, 2011
Subsequent comment period ends	December 15, 2011
Issue final LR-ISG-2011-05	Late February 2012 (planned)

Additional Areas in the Re-Issued Draft LR-ISG-2001-05

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- Identify operating experience (OE) as related to aging
- Consider the content of guidance as OE
- Include in OE evaluations the essentials of an aging management review
- Review program implementation results to identify potential changes to aging management activities
- Provide training on aging issues to those personnel who process OE
- Have guidelines for sharing aging-related OE with the industry
- Implement aging-related OE review activities when the renewed license is issued

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Alkali Silica Reaction (ASR) at Seabrook

Overview of ASR

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- Chemical reaction between alkaline cement paste and reactive silica found in common coarse aggregates

- Reaction requires <u>ALL</u> 3 of the following:
  - Susceptible aggregate (reactive silica)
  - Sufficient alkali content
  - Sufficient moisture (RH>80%)

- If the reaction occurs, it forms an expansive gel which causes cracking

Background

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- June 2009: Licensee begins walkdowns in preparation for license renewal application (LRA), including performance of an integrated plant assessment
  Identify extensive cracking in areas with known groundwater infiltration
- June 2010: Testing of concrete in "B" electrical tunnel (Control Building) shows reduction in compressive strength and modulus of elasticity
- Aug 2010: Licensee confirms presence of ASR through petrographic examination

Seabrook Electrical Tunnel

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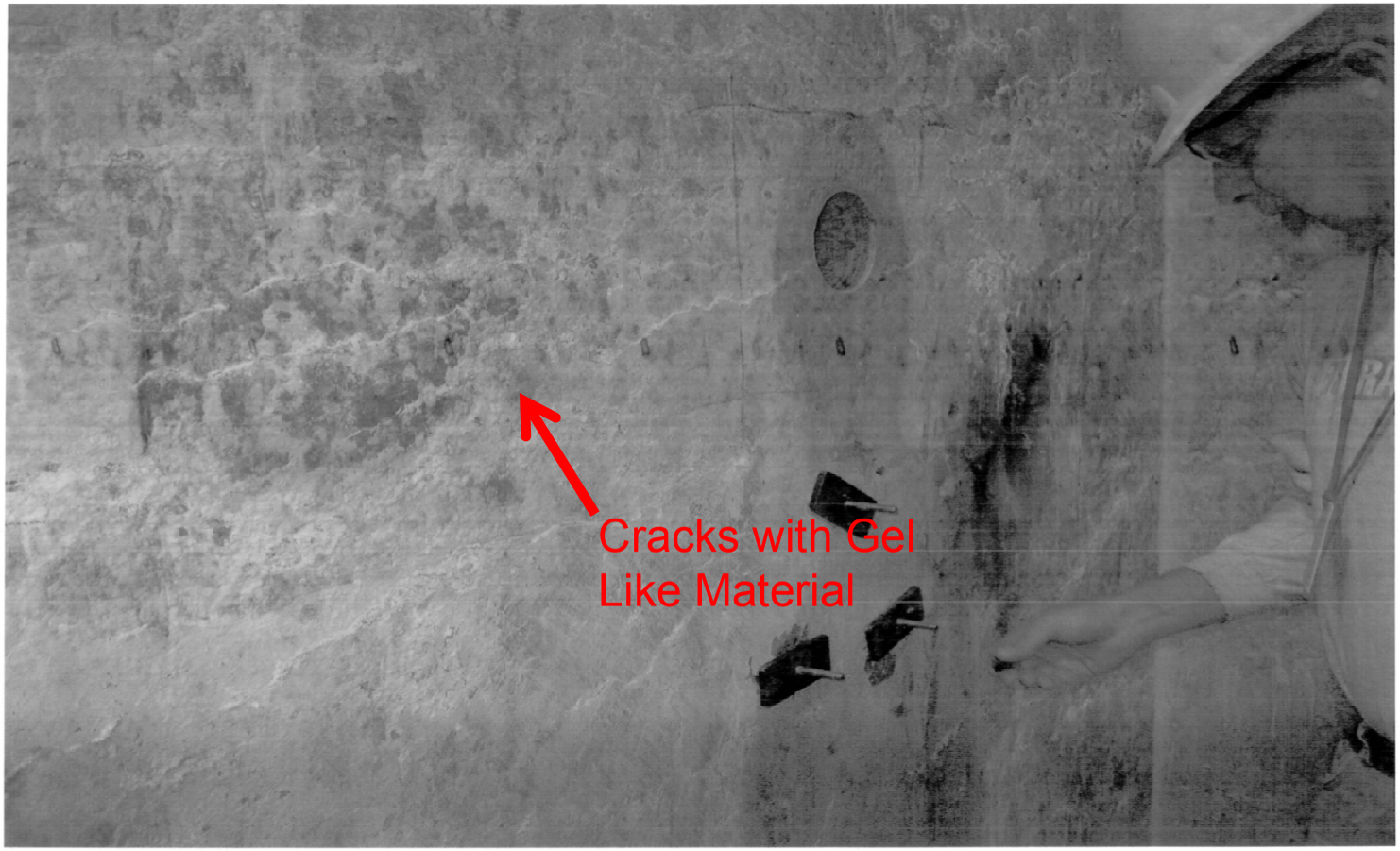

Background (cont.)

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- **Oct 2010:** DLR staff conducts on-site AMP audit and notes plant OE with 6 feet of water in containment annulus region

  When water was removed, patterned cracking indicative of ASR on both primary containment and containment enclosure building was identified

- **April 2011:** Licensee takes cores from 5 additional areas

- **July 2011:** Core tests identify ASR in 4 of the 5 additional locations

Seabrook Station Plan

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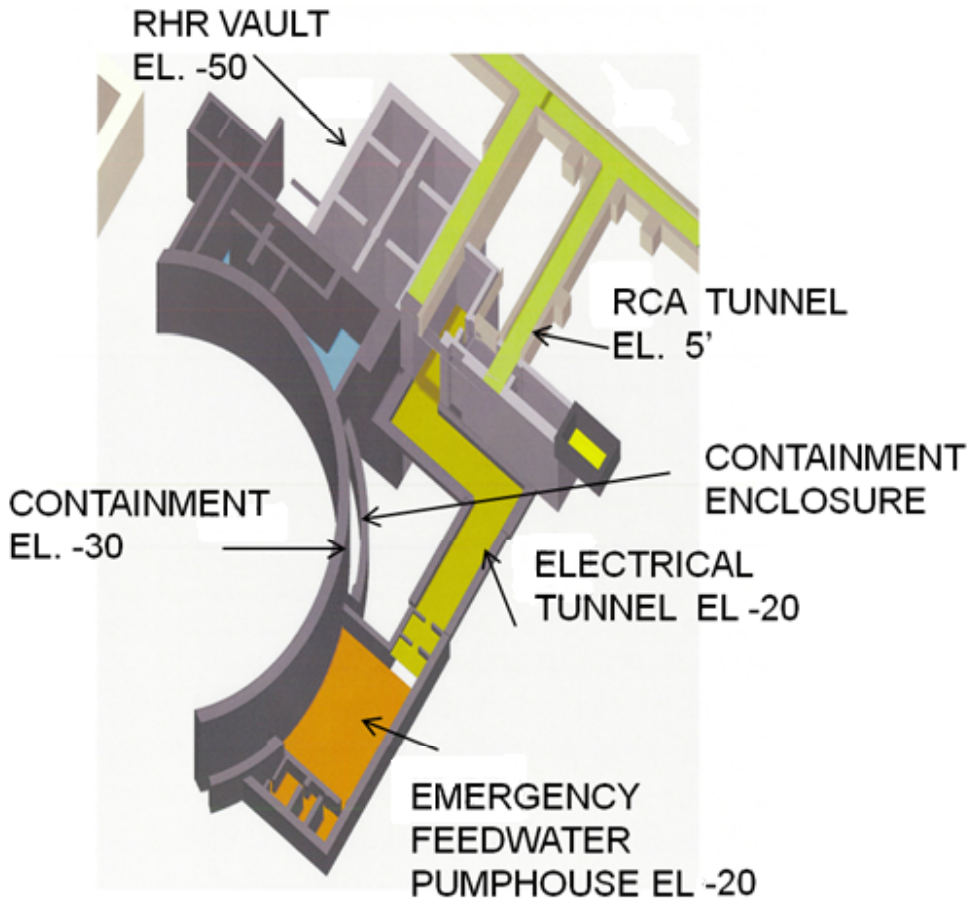
GRADE EL. +20
WATER TABLE +10



Current Status

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- Licensee's review has determined the structural integrity of affected structures remains intact

- The licensee is developing a comprehensive test and evaluation plan to manage ASR and its associated aging effects
  - A summary of the plan is expected in the licensee's response to NRC license renewal RAIs due in March 2012
  - The license renewal schedule is delayed pending development of an acceptable aging management program

Summary

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- The licensee is continuing to develop plans for testing, quantifying, and mitigating ASR
- The licensee's response to NRC license renewal RAIs is due in March 2012
- NRC issued IN 2011-20 "Concrete Degradation by Alkali-Silica Reaction," to inform licensees of the issue
- Region I and Headquarters are continuing to work together to ensure functionality (Part 50) and to evaluate how effects of aging will be properly managed (Part 54)

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AMP Effectiveness Audits for Subsequent License Renewal

Purpose of AMP Audits

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- Gain an improved understanding of how AMPs have been implemented in PEO
- Review AMPs findings in PEO to determine effectiveness in identifying aging
- Look at changes and evolution of AMPs in response to inspection findings and plant-specific and industry operating experience
- Results of assessment will inform considerations for subsequent license renewal

AMP Effectiveness Audits

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- Ginna
  - August 2011
  - Entered the period of extended operation on Sept 19, 2009
  - Reviewed 39 AMPs
- Nine Mile Point – Unit 1
  - November 2011
  - Entered the period of extended operation on August 22, 2009
  - Reviewed 40 AMPs

Audit Activities

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- Constellation provided NRC staff access to "eDocs Library" portal prior to audits
  - Program Basis Documents (PBDs) for AMPs
  - Procedures implementing AMPs
  - Selected condition reports
  - Trending and health reports
  - Some corporate procedures
- NRC staff developed general questions on AMPs and detailed questions focused on particular AMPs
- Up to eight NRC staff from DLR and RES attended audit for 3 days
- Conducted interviews with owners on all AMPs
- Off-site NRC staff and contractors also participated in interviews by telephone

General Observations

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- Audits provided a better understanding of how AMPs are implemented, for example:
  - AMP owners
  - Plant procedures
  - Condition Reports
- Implementations varied from Ginna to NMP
- Good practices
  - Self –assessments of AMP effectiveness
  - Efforts to train AMP owners in the basis and history of their AMPs and other staff in identifying aging effects

General Observations

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- Items for consideration
  - Turnover expected for AMP owners and staff; maintaining knowledge of AMPs, component history, and implementation will present challenges
  - Difficult to identify changes in the AMPs that have resulted from plant-specific or industry-wide operating experience related to aging issues
- Uncertainties to be addressed by industry for subsequent renewal
  - Continuity of knowledge for effective implementation of AMPs
  - Evidence of AMPs evolving and responding to operating experience rather than static from time of application

Future Activities

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- NRC staff will review data collected from audits to evaluate effectiveness of AMP implementations
- Findings will be considered along with other factors for subsequent renewal
- NRC staff will evaluate and provide industry with needs for additional audits
- NRC's resource loading for effort will depend on certainty of first application for subsequent renewal

Status of ISG/RIS

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- PWR Vessel Internals – MRP 227
  - Draft ISG early 2012
- Wall Thinning Due to Mechanisms Other than Flow-Accelerated Corrosion (FAC)
  - Draft ISG early 2012
- Aging Management in Treated Borated Water
  - ISG early 2012
- Buried and Underground Piping and Tanks
  - Draft ISG early 2012

Status of ISG/RIS (cont.)

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- Insights Into Recent License Renewal Application Consistency with the Generic Aging Lessons Learned Report
  - RIS early spring 2012
- Fatigue Analysis Performed by Computer Software
  - RIS early 2012

24th Annual Regulatory Information Conference (RIC) 2012

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- March 13 – 15, 2012 at Bethesda North Marriott Hotel and Conference Center
- License Renewal 2-Part Session:
  - Part 1 – Status of Current License Renewal, March 15, 8:30 – 10:00 AM
    - Topics include: Lessons Learned from Recent License Renewal Applications and Operating Experience Reviews (Regulator, Industry and International Perspectives)
  - Part 2 – Status of Current Research in Support of Subsequent License Renewal, March 15, 10:30 – 12:00 PM
    - Topics include: Industry Implementation of Aging Management Programs, and Expanded Materials Degradation Assessment (Regulator and Industry perspectives)
- On-line Registration: January 2012, http://www.nrc.gov/public-involve/conference-symposia/ric/index.html

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- New Topics
- Questions