

Public Meeting

Seabrook Station Alkali-Silica Reaction Testing Program December 18, 2013

Agenda

- Introductions and Opening Remarks
- Large Scale Testing Program
- Continuing NRC Oversight Activities
- License Renewal Activities
- Transition to Public Question & Answer (After ten minute break)



NRC Representatives



- David Lew – Deputy Regional Administrator
- James Trapp – Deputy Director, Division of Reactor Safety (DRS)
- Michael Marshall, Chief, Aging Management of Structures, Electrical and Systems Branch, Division of License Renewal
- Glenn Dentel – Chief, Projects Branch 3, Division of Reactor Projects (DRP)
- Mel Gray – Chief, Engineering Branch 1, DRS
- William Cook – Inspection Team Leader

Testing Program Presentation by NextEra



Continuing Regulatory Oversight Activities

- Periodic onsite inspections focused on NextEra's actions to resolve the ASR non-conforming condition (PI&R Samples)
- Inspections and monitoring of NextEra's large-scale specimen testing at the Ferguson Structural Engineering Laboratory, University of Texas – Austin
- Coordinate NRC Review of ASR via the Seabrook ASR Issue Technical Team (SAITT)
- Resident inspectors onsite



Continuing Regulatory Activities

License Renewal Application



- Need reasonable assurance aging effects can be managed
- Recent license renewal activities concerning ASR:

June 2010	NextEra submitted Seabrook license renewal application	ML101590094
Feb 2013	Public meeting on actions/programs in application	ML13066A488
Sep 2013	NextEra supplemented application	ML13261A145
Nov 2013	NRC conducted license renewal audit	Pending

- Remaining safety review milestones are TBD
- Safety review is ongoing
- No regulatory decision made on the application



Transition to Public Question and Answer Session

- 10 Minute Break to Set-up



Contacting the NRC



- Report a safety concern
 - 1-800-695-7403
 - allegation@nrc.gov

General questions

- www.nrc.gov
- Region I Public Affairs
 - Diane Screnci, 610-332-5330
diane.screnci@nrc.gov, or
 - Neil Sheehan, 610-332-5331
neil.sheehan@nrc.gov

Key Points

- Seabrook Structures Remain Operable
- NextEra has detailed plans for additional research and testing
- Significant NRC oversight will continue
- Resolution of the Seabrook ASR issue will require further NRC review



Back-Up Slides

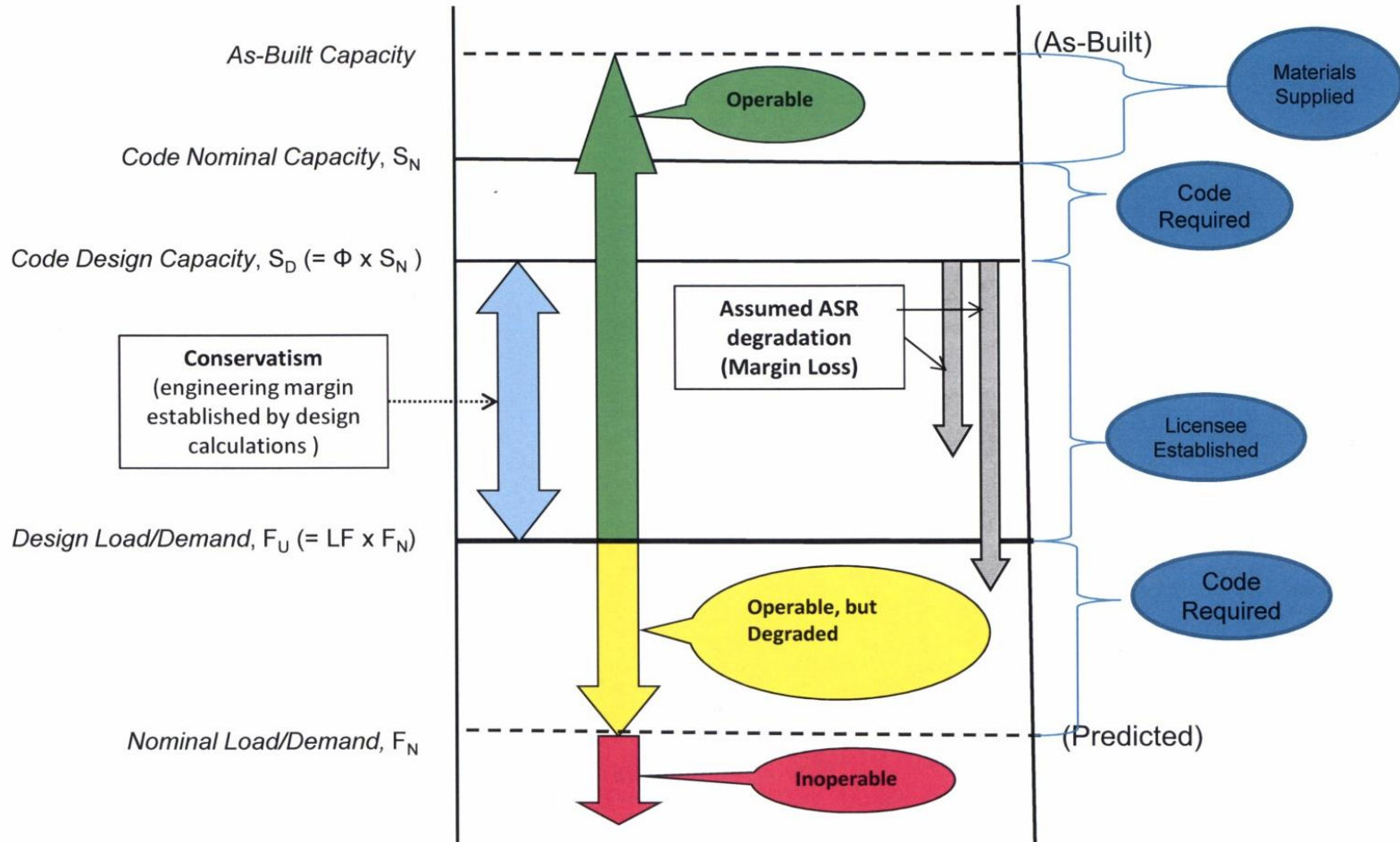


SAFETY RELATED STRUCTURES REMAIN OPERABLE

- NextEra's structural engineering analysis (independently reviewed by NRC team) provides reasonable assurance of adequate design (safety) margin for ASR-affected reinforced concrete structures
- No significant visible deformations, distortions, or displacement identified in affected structures
- No indications of rebar degradation
- ASR limited to localized areas of the effected structures
- ASR degradation progressed slowly



Margins Assessment



Reference Documents ADAMS Ascension Numbers

- Confirmatory Action Letter (CAL) Closure Letter, dated October 9, 2013 (ML13274A670)
- CAL Follow-Up Inspection Report No. 05000443/2012009, dated December 3, 2012 (ML12338A283)
- CAL Follow-Up Inspection Report No. 05000443/2012010, dated August 9, 2013 (ML13221A172)

CAL Follow-Up Inspection Report No. 05000443/2012009

CAL Items Closed

- **Prompt Operability Determinations for “B” Electrical Tunnel and Extent of Condition identified structures (CAL Nos. 1, 5)**
- **Interim Structural Assessment (CAL No. 3)**
- **Completed Mortar Bar Test (CAL No. 6)**
- **Initial six-month interval crack measurement results from 26 locations (CAL No. 10)**

CAL Follow-Up Inspection Report No. 05000443/2012010

CAL Items Closed

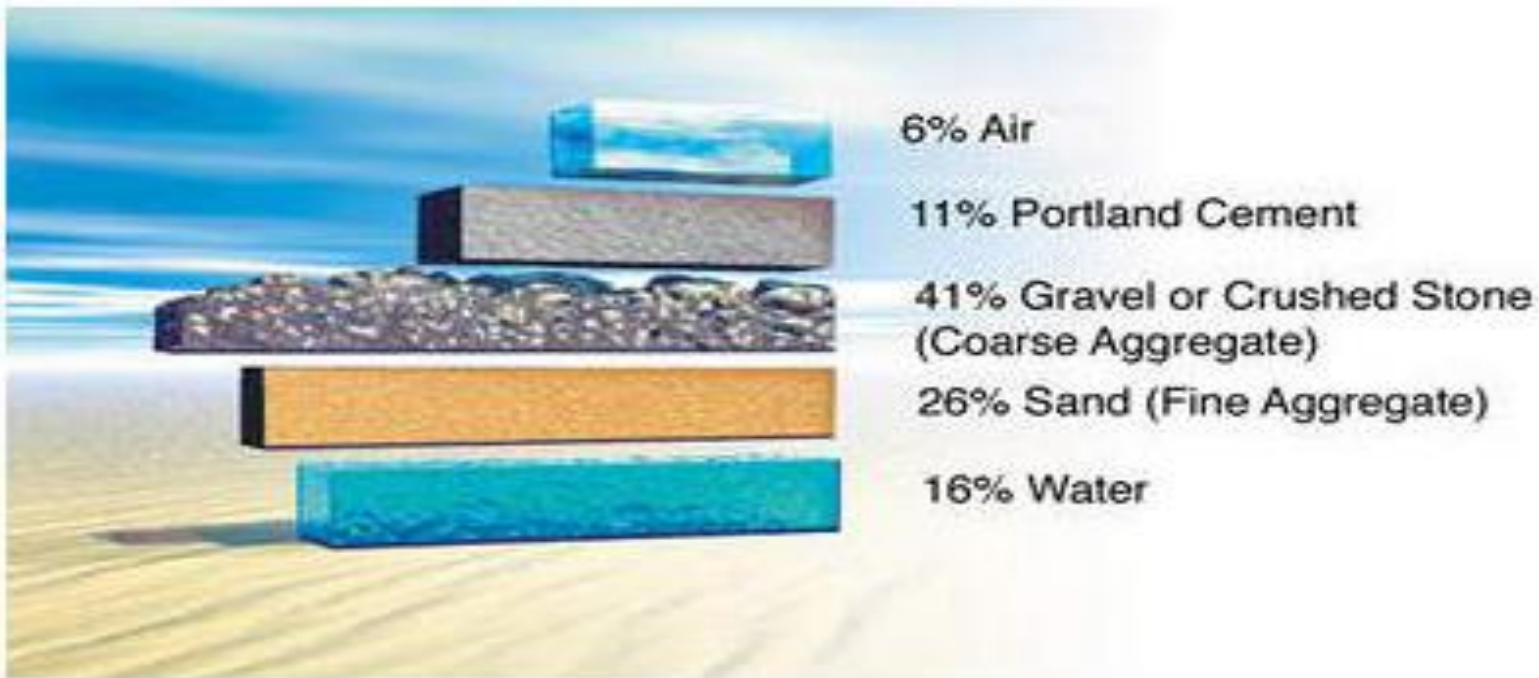
- **Revised the Root Cause Evaluation (CAL No. 2)**
- **Revised the Integrated Corrective Action Plan (CAL No. 4)**
- **Cancelled the Prism Test (CAL No. 7)**
- **Technical details for Large-scale Beam Testing Program (CAL No. 8)**
- **Revised the Structures Monitoring Program (CAL No. 9)**
- **Technical details for Anchor Testing Program (CAL No. 11)**
- **Review of open issues from IR 05000443/2012009**

- Part 50.59 – this regulation outlines the processes by which a licensee may make changes to their facility, procedures, tests, experiments or evaluation methods as described in the Final Safety Analysis Report
- Part 50.90 – this regulation outlines the process by which a licensee requests an amendment to their operating license

What is ASR?

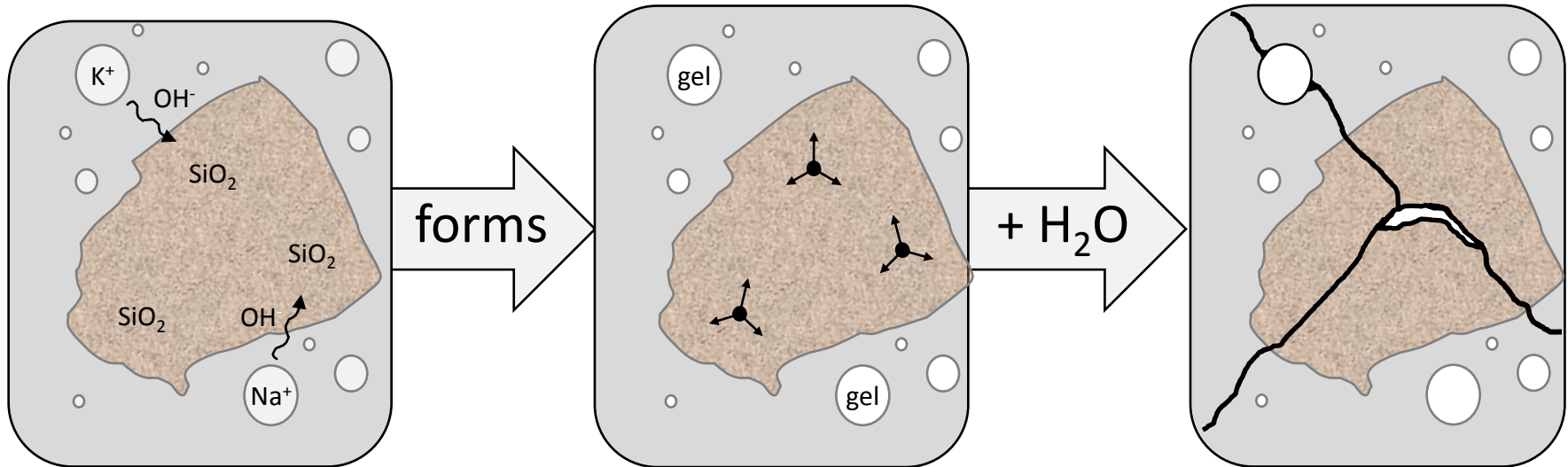
Concrete Ingredients

TYPICAL RATIO OF CONCRETE INGREDIENTS BY VOLUME



What is ASR?

Chemical Reaction



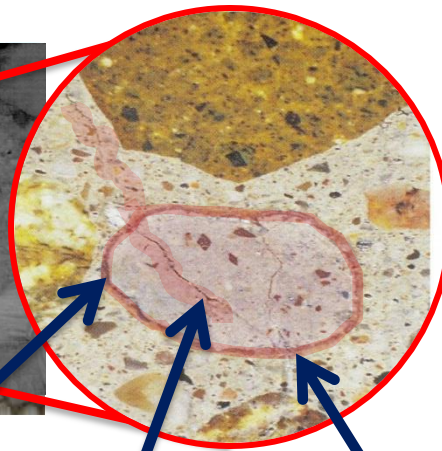
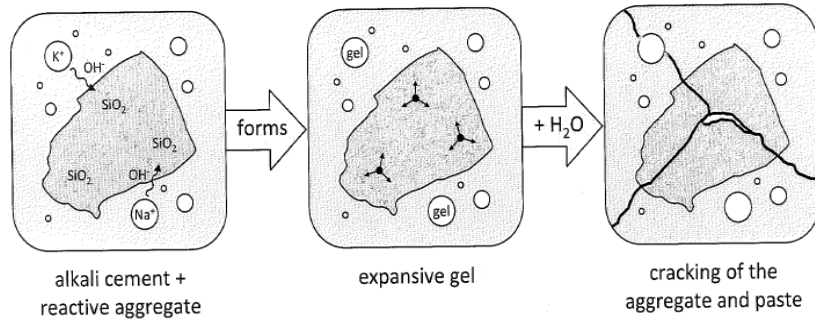
alkali (in cement)
reacts with silica (in
aggregate) and
water

silica gel forms

cracking occurs
as gel expands

What is ASR?

Indications of ASR



Reactive Aggregate

Cracking through Aggregate

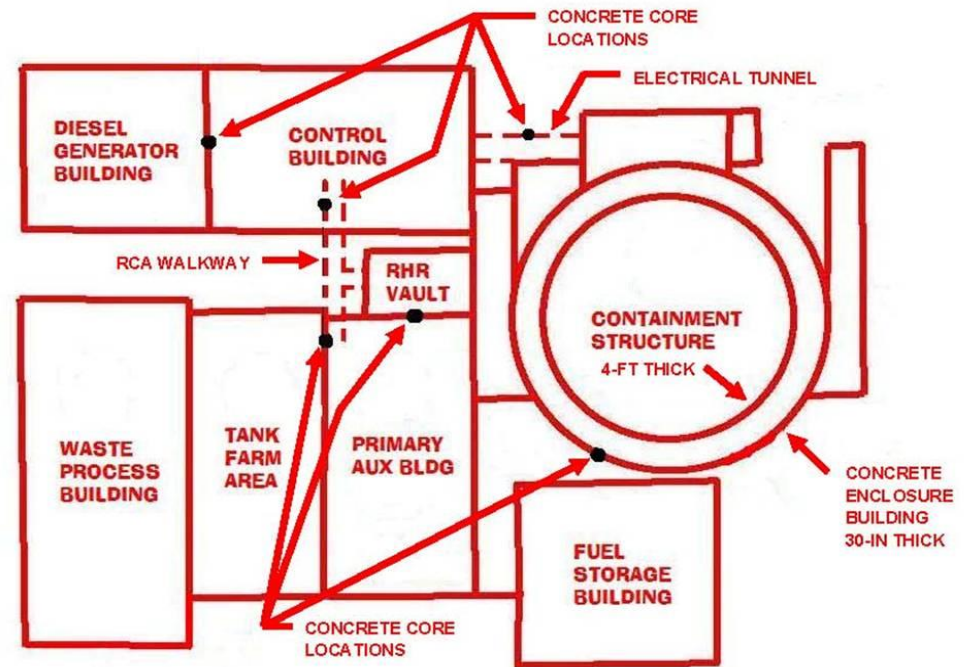
ASR Gel Ring

- ASR has been identified in localized areas of Seabrook concrete structures
- ASR is a chemical reaction in concrete, which occurs over time in the presence of water, between the alkaline cement and reactive silica found in some aggregates.
- ASR forms a gel that expands causing micro-cracks that effect concrete material properties

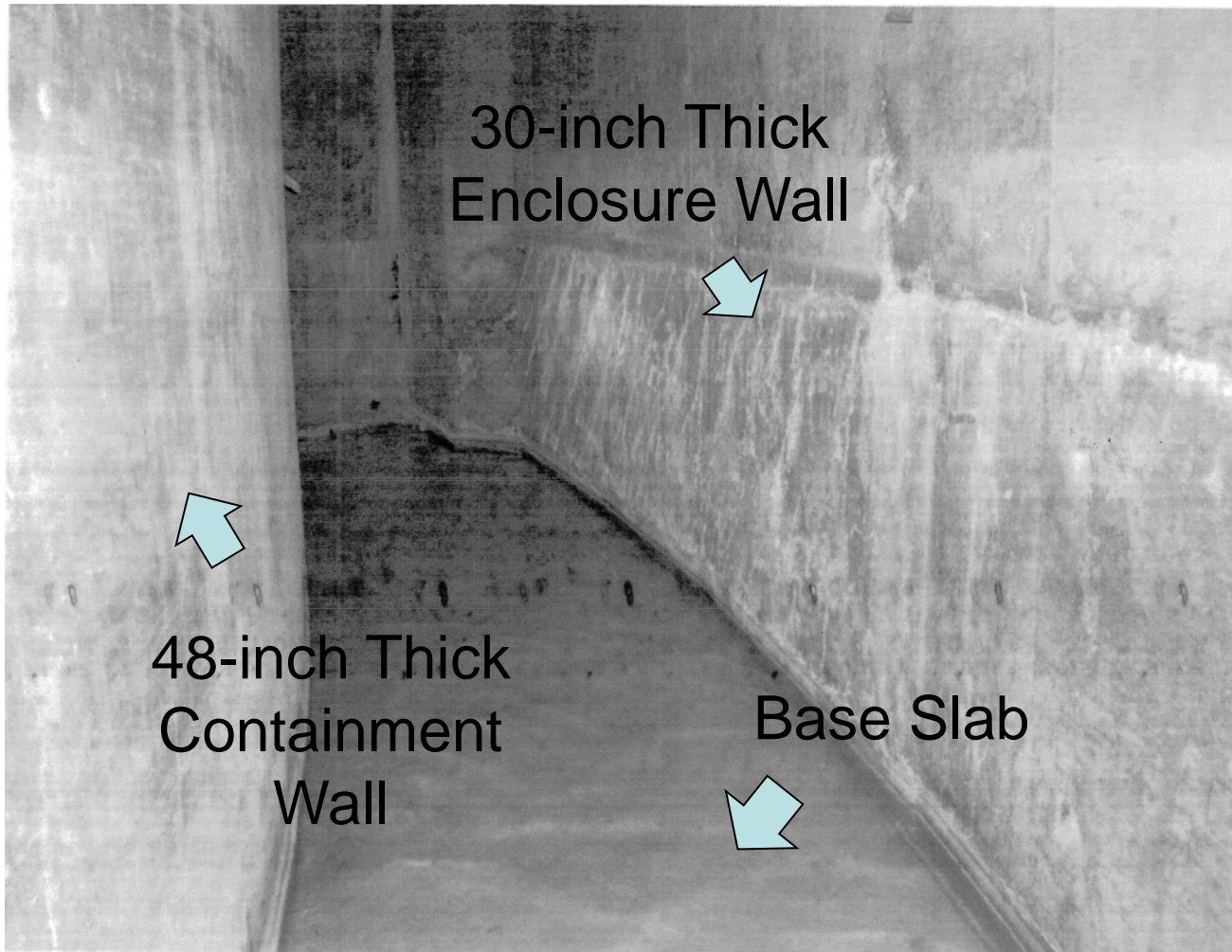
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Confirmed localized areas of ASR

- Effected Structures include:
 - “B” Electrical Tunnel
 - Containment Enclosure Building
 - Residual Heat Removal Vault
 - Emergency Diesel Generator Building
 - Emergency Feedwater Building



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Annulus area
between Primary
Containment and
Containment
Enclosure Building

TOUR OF PLANT

Other locations where ASR identified

- Primary Auxiliary Building
- Main Steam/Feedwater Pipe Chase East
- Alternate Cooling Tower
- Service Water Pump House
- Containment

VISUAL CRITERIA

Pattern cracking
Secondary deposits
Staining and discoloration
Deposits of alkali silica gel



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Pattern Cracking (approx. 3 ft x 3 ft area)



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ASR Monitoring Method

