

# Seabrook Station Safety Performance in 2011 & Seabrook Station Safety in light of the Alkali-Silica Reaction Occurring in Plant Structures

2011 Reactor Oversight Process  
Nuclear Regulatory Commission – Region I

# NRC Representatives



- Chris Miller – Director of Reactor Safety
- Arthur Burritt - Branch Chief
- William Raymond – Senior Resident Inspector
- Joe DeBoer– Acting Resident Inspector
- Meena Khanna – Branch Chief

Art



Bill



Joe



Meena



Chris



# Agenda

- Introduction
- Discussion of safety performance at Seabrook in 2011
- Discussion of Seabrook plant safety in light of ASR occurring in site structures
- Closing remarks
- NRC to address public questions



# NRC Assessment Summary



## Seabrook for 2011

- NextEra operated the plant safely
- Seabrook remained in the Licensee Response Column
- No substantive cross-cutting issues were identified
- The NRC plans to perform baseline inspections in 2012



# NRC Inspection Activities

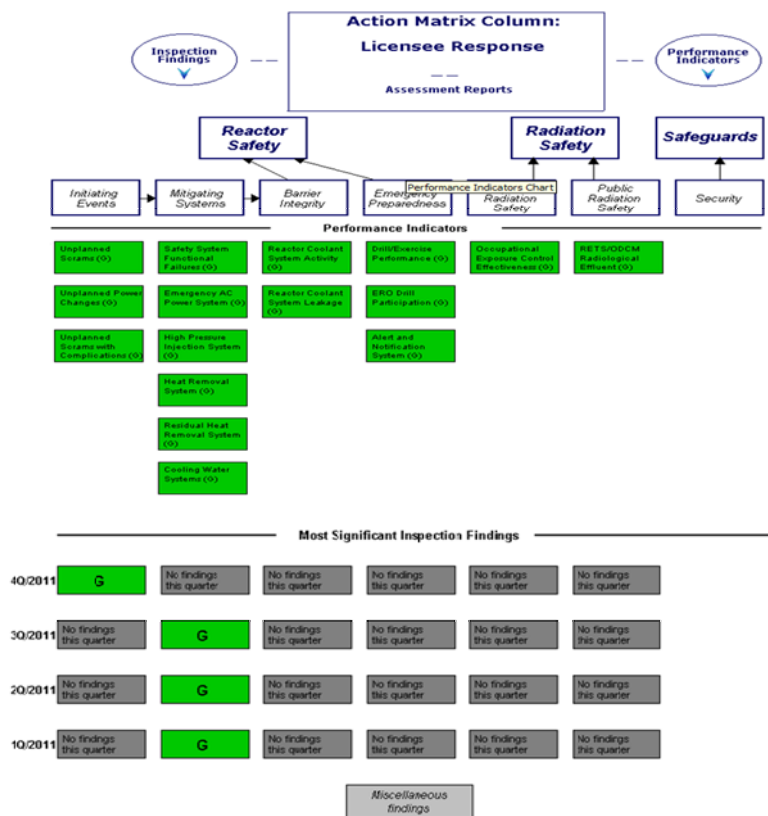
## Seabrook for 2011

- 8111 hours of inspection and related activities
- Two resident inspectors on site – residents perform inspections daily and can respond to plant events at any time
- Three team inspections
  - License Renewal Inspection
  - Triennial Fire Protection
  - **Operational Safety And Review Team**



# Seabrook PIs and Findings

## January 1 through December 31, 2011



- All Green Performance Indicators
- Seven Green findings related to:
  - Maintenance Rule structure, systems and component monitoring
  - Operability determinations
  - Control of transient combustibles
  - Reactor trip

# 2011 Seabrook Assessment Summary

<b>Licensee Response</b>	<b>Regulatory Response</b>	<b>Degraded Cornerstone</b>	<b>Multiple Repetitive Degraded Cornerstone</b>	<b>Unacceptable Performance</b>
All Inputs are Green; Cornerstone Objectives Fully Met	1 or 2 White Inputs; Cornerstone Objectives Fully Met	2 White or 1 Yellow Input; Cornerstone Objectives Met w/ Moderate Degradation in Safety Performance	Multiple Yellow Inputs or 1 Red Input; Cornerstone Objectives Met w/ Significant Degradation in Safety Performance	Overall Unacceptable Performance; Plants not permitted to Operate w/in this Column; Unacceptable Margin to Safety

- Seabrook was operated safely
- Licensee Response column of the Action Matrix
- Baseline inspections planned for 2011



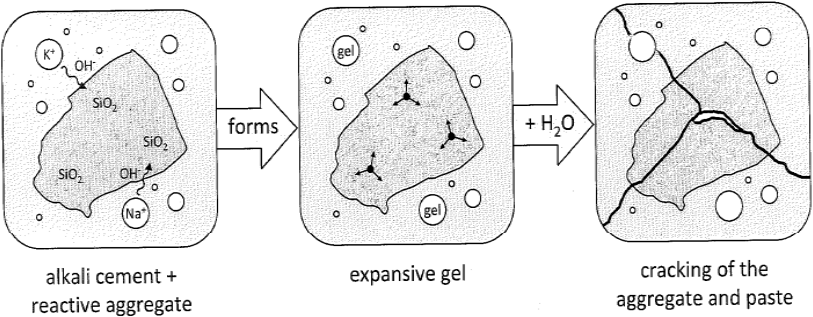
# Seabrook Station Safety in light of the Alkali-Silica Reaction Occurring in Plant Structures

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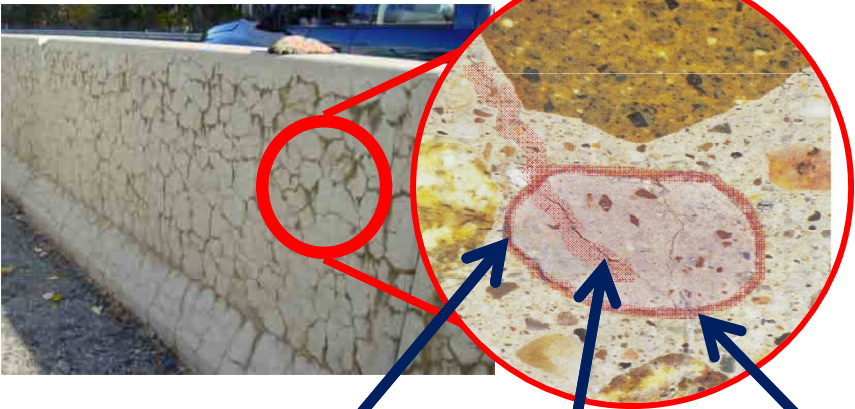


# Alkali-Silica Reaction (ASR)

## What is ASR?



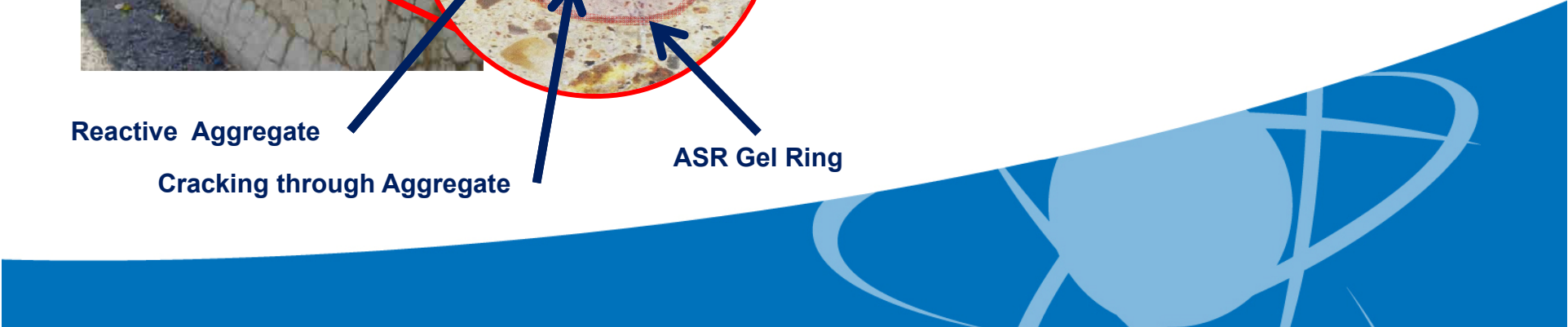
- ASR is a slow chemical reaction in concrete, which occurs in the presence of water, between the alkaline cement and reactive silica found in some aggregates.
- ASR forms a gel that expands causing micro-cracks that affects concrete properties



Reactive Aggregate

Cracking through Aggregate

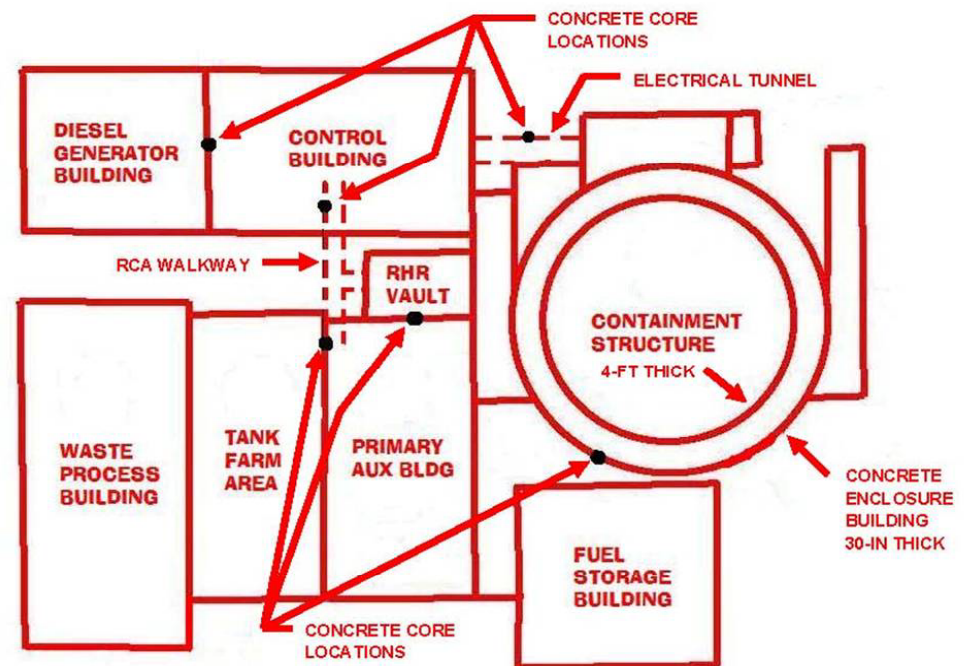
ASR Gel Ring



# Alkali-Silica Reaction (ASR)

## Where is ASR Confirmed to be Occurring at Seabrook?

- Affected Structures include:
  - B Electrical tunnel
  - Containment enclosure building
  - RHR vault
  - EDG building
  - EFW building



# Alkali-Silica Reaction (ASR)

## Why is Seabrook Still Safe?

- Conservative safety factors and assumptions used for plant design
- No significant visible deformation, distortion, or displacement was identified in the affected structures
- No indications of rebar corrosion
- ASR limited to localized areas of the affected structures
- ASR and the degradation it causes occurs slowly

# Alkali-Silica Reaction (ASR)



## What are the Next Steps?

- NRC continually reviews the Structural assessments to verify safety as more information becomes available
- NRC ongoing inspections continue to covering all aspects of the issue under the current license (short term), and long term aging management
- Coordinated effort by multiple NRC offices
- Future public meeting close to site

# Meeting Ground Rules



1. Please be respectful to the speaker – only one speaker at a time
2. See NRC staff if you have procedural questions/concerns or still want to sign up.
3. NRC staff members will be available after the meeting to talk to those interested



# Contacting the NRC



- Report a safety concern
  - 1-800-695-7403
  - [allegation@nrc.gov](mailto:allegation@nrc.gov)

## General questions

- [www.nrc.gov](http://www.nrc.gov)
- Region I Public Affairs
  - Diane Screnci, 610-332-5330  
[diane.screnci@nrc.gov](mailto:diane.screnci@nrc.gov)
  - Neil Sheehan, 610-332-5331 or  
[neil.sheehan@nrc.gov](mailto:neil.sheehan@nrc.gov)