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## NETCO-SNAP-IN<sup>®</sup> Rack Inserts: Update on Current & Future Projects

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INMM Spent Fuel Seminar 2013  
Arlington, VA

*K. Scot Leuenroth*  
1/16/2013



Adoption of NETCO-SNAP-IN Inserts as a Permanent Mitigation Measure for Degraded Boraflex Expanded Significantly Since Initial Presentation in 2007

NRC Granted LaSalle County Nuclear Station Amendments 186 and 199 for use of the NETCO-SNAP-IN Inserts in 2011. LaSalle is No Longer Reliant on Boraflex.

Projects Currently in Deployment at 2 Plants with Additional Projects in Development

Currently, Over 19,000 Inserts are Planned to be In Service by the End of 2016

# What are NETCO-SNAP-IN® Inserts?

Replace Lost  
Reactivity Hold-  
Down



Made of Al/B<sub>4</sub>C  
Composite  
Material



**NETCO-SNAP-IN®**

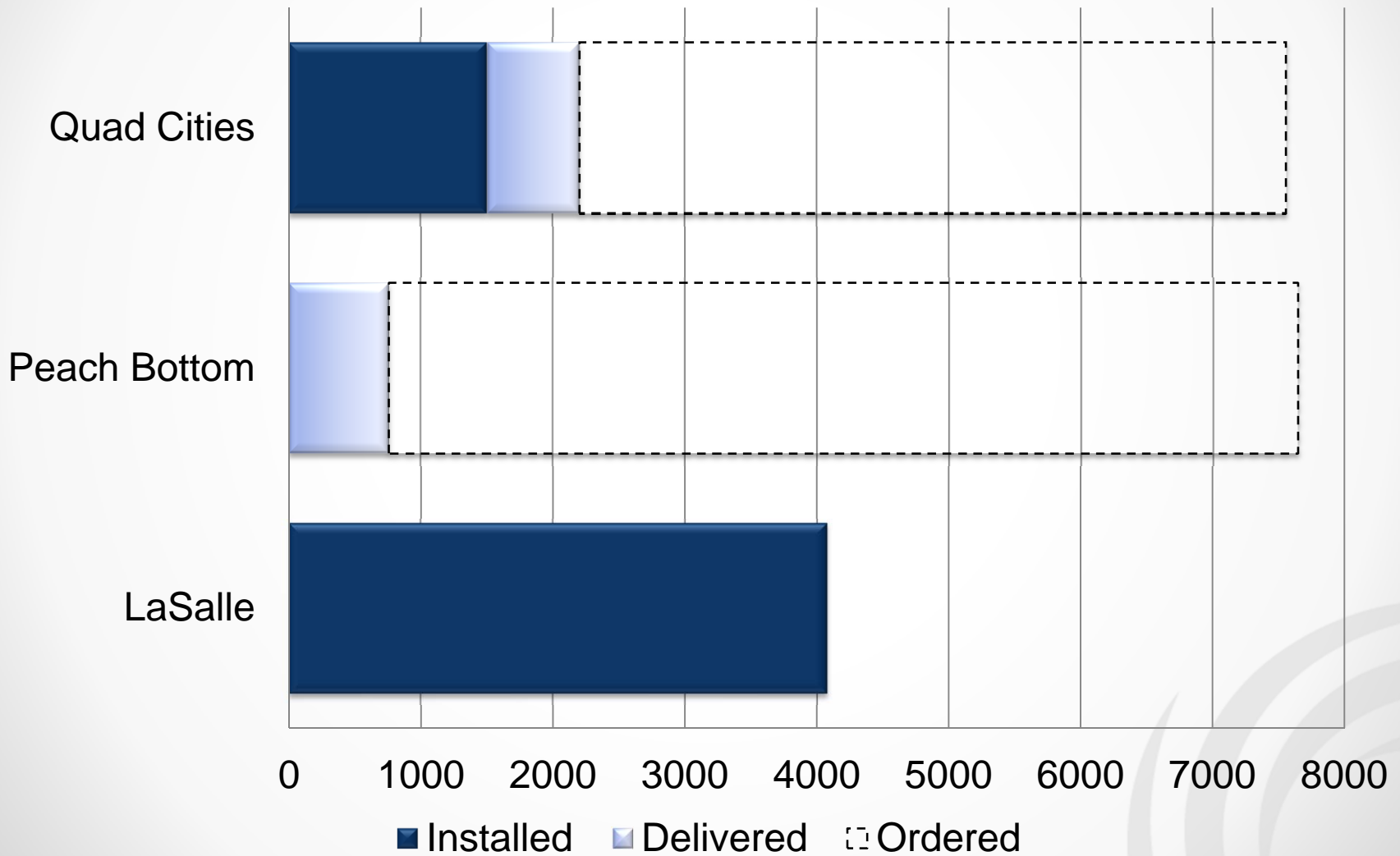
Extends Useful  
Storage Rack Life



Minimal Impact  
on Fuel Move  
Operations



# Current NETCO-SNAP-IN® Projects



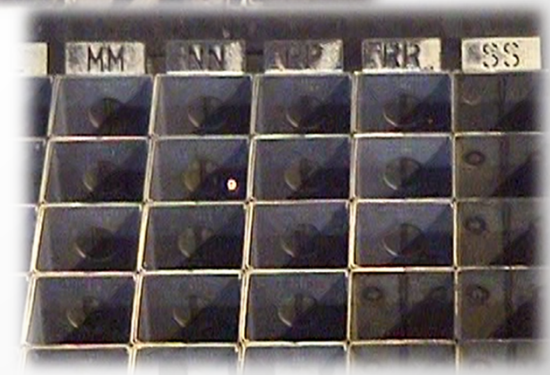
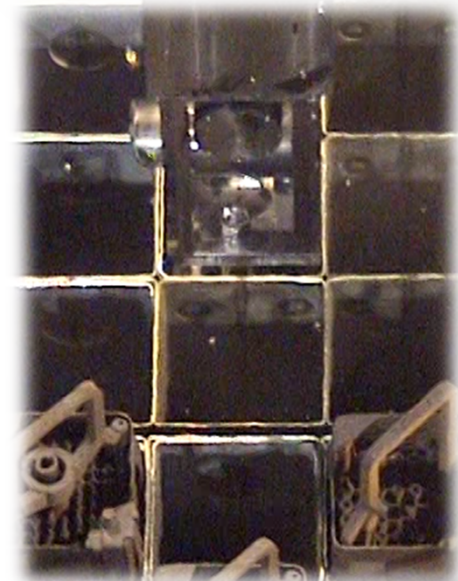


# LaSalle Station

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## Installation Complete as of Dec 2011

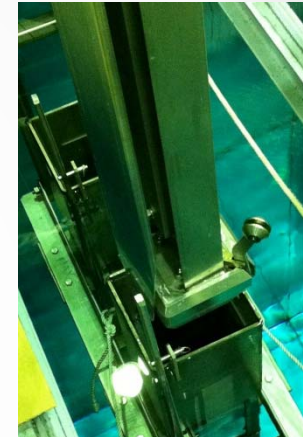
- LAR Approval was Granted 1/28/2011
- 4073 Inserts Installed in Less Than 1 Year
- Installation Rate Averaged About 20 Inserts per Day
- No Major Issues During Installation
- LaSalle Presented the NETCO-SNAP-IN Insert Installation as a Contender for the TIP Award this Year
  - “The Inserts are currently the most feasible and economic solution to Boraflex degradation available.”



# Peach Bottom

## Units 2 & 3, 7638 Inserts

- Submitted LAR Nov. 3<sup>rd</sup>, 2011
- Significant Modifications to Installation Tooling
  - Manual Release Mechanism Added
- Inserts Currently Being Manufactured
  - 759 Delivered
  - 2880 Scheduled to be Delivered Through 2013
- First Application of Removal Tool



## Removal Tool

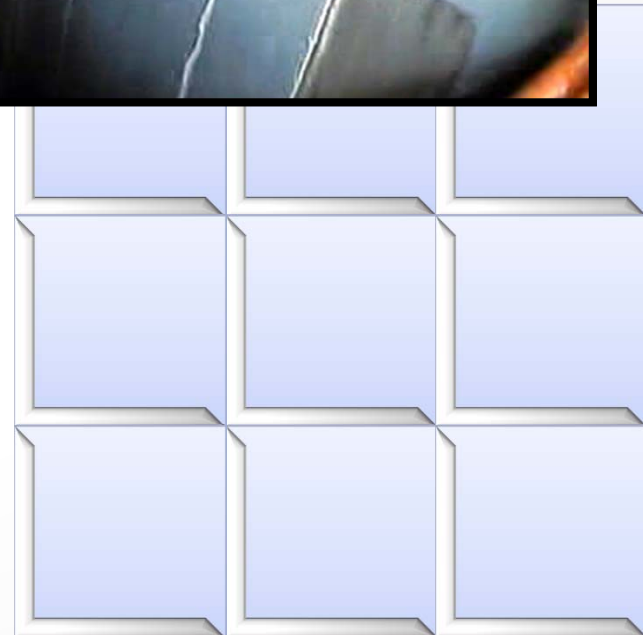
- Designed to Allow for Removal of Inserts if Necessary
- Removal to Support Surveillance Program.
  - Frequency and Location to be Determined by Service History



# Quad Cities

## Units 1 & 2, 7554 Inserts

- Submitting LAR Next Year
- Installing Inserts in Advance of LAR Submittal
- Accelerating Project Plan to Have Installation Complete in 2014
  - 2200 Delivered by End of Last Year
  - 2880 To be Delivered in 2013
- Approximately 2000 Installed To Date
  - Peak Installation Rate of About 100/day

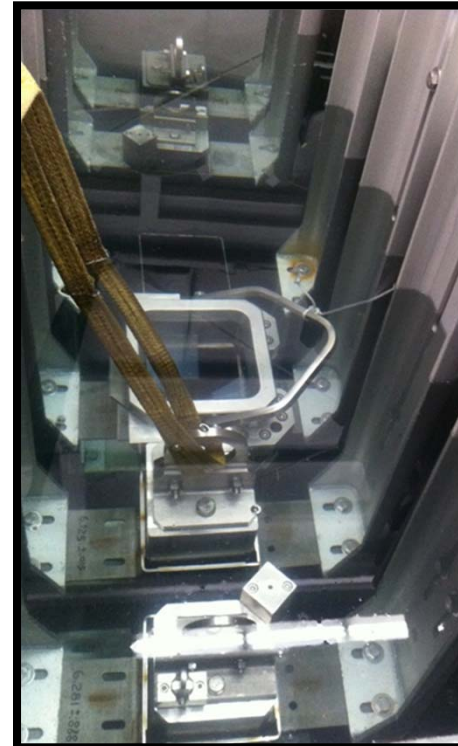




# Manufacturing, Installation & Licensing Experience

## Manufacturing & Installation Issues

- Peach Racks (Westinghouse Design) Provided a Challenge Due to Variation in As-Manufactured Dimensions
- Quad Rack Conditions Required Last Minute Changes to Their Insert Design
- Rack Inspection Tool has been Developed to Better Characterize Insert Design Requirements
- Added New Test Facility in Danbury, CT

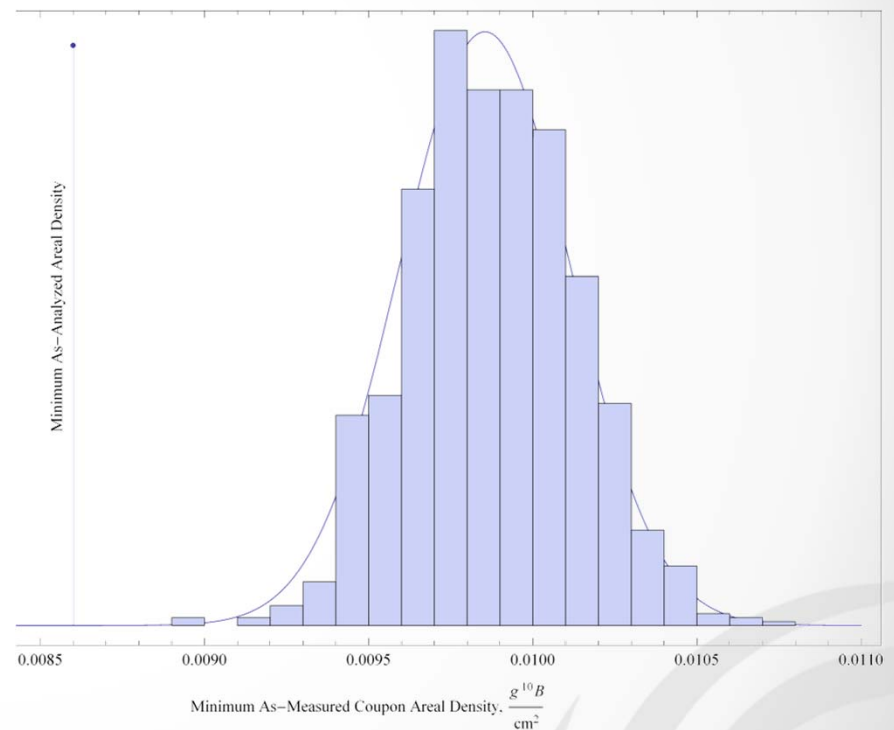




Clean Test Facilities at  
Scientech's Danbury, CT  
Site Allow for More Flexible  
Test Conditions

# Rio-Tinto Alcan W1100N Series Material Performance

- Surveillance Test Results Show Consistency with Accelerated Test Predictions
- Material Produced So Far:
  - Loadings from 16-23 vol-% B<sub>4</sub>C
  - Insert thickness from 0.065” to 0.125”
  - Bend radius down to 0.25”
  - Areal Density Values from 8.6 to 25 mg B<sub>10</sub>/cm<sup>2</sup>





# Qualified Second Material Supplier

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## MAXUS Aluminum Core Technology from Nippon Light Metal

- Accelerated Corrosion Test Program Completed Early 2012
- Audit Performed to Add ACT/Nippon Light Metal as a Qualified Insert Supplier
- 5000 Series Aluminum Cladding Provides Additional Wear Resistance
- Demonstration Installations Successfully Performed at Clean Pool Facility



# Manufacturing, Installation & Licensing Experience

## Licensing Issues

- Interim Credit for Boraflex During Insert Installation Continues to be a Difficult Issue
- Majority of RAI's Issued are With Regard to Interim Credit
- Some RAI Questions Regarding Coupon Program and Seismic Qualification



## Potential Applications

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- NETCO-SNAP-IN<sup>®</sup> Inserts Provide an Additional Option in the Approach To Reactivity Mitigation
- Applications:
  - Supplement Hold-Down for Higher Enrichments
  - System for New-Build Racks
  - System for Dry Cask Applications



**Questions?**