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**Sent:** Monday, March 09, 2009 4:40 PM
**To:** Stacy Joseph
**Subject:** Presentation
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Here is the presentation I made at the March 3-4 audit. It is not proprietary.

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**Sent Date:** 3/9/2009 4:39:54 PM
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# NRC Containment Audit for STP 3&4 COLA

## Containment Analysis Licensing History

J. Tomkins – South Texas Project

March 3, 2009

Westinghouse Energy Center, Monroeville, PA

# Purpose

Discuss the licensing history of containment P/T response and pool swell dynamic loads issues

# Design Control Document (DCD)

- Initial ABWR Part 50 application submitted September 1987
- Application for design certification (Part 52) submitted December 1991
- DCD Rev. 4 submitted March 1997
- ABWR DC issued June 11, 1997
- 34 RAIs on Containment Analysis

# DCD (contin. )

- Pressure/Temperature response calculated using Mark III methods described in NEDO-20533
- Pool Swell based on Mark II model (NUREG-0808)
- Mark II Pool Swell model assessed against Mark III test data
- Structural impact to be assessed based on NUREG-0479 and NUREG-0978

# P/T Response Issues during Certification

- NRC initially unable to conclude models were acceptable (DSER) SECY-91-355
- Had questions generally about the applicability of NEDO-20533 to the ABWR

# P/T Response Issues during Certification (contin.)

- NRC Raised Questions Regarding:
  - Modeling of two drywell volumes with one node
  - Modeling of combination of horizontal and vertical vents
  - Air carryover from the drywell volumes to the suppression pool

# P/T Response Issues during Certification (contin.)

- GE clarified its modeling in a May 6, 1992 meeting with the NRC
- GE provided additional information in a letter of May 22, 1992 demonstrating the conservatism of its analysis
- GE developed and ran a two-node model resulting in lower pressure results, demonstrating conservatism of one-node model
- NRC concludes " GE's use of NEDO-20533 is acceptable"

# Pool Swell Issues during Certification

- Non-uniform pool swell
- Protection of safety related components potentially impacted by pool swell
- Modeling assumptions (use of Mark II model) for calculating pool swell

# Pool Swell Issues during Certification (contin.)

- 80 % Correction Factor to account for non-uniform swell
- COL Applicant item to protect drywell-to-wetwell vacuum breakers
- ITAAC for pool swell loads required
- NRC approved pool dynamic loads analysis

# COLA Revision 0

- During the preparation of Rev. 0, errors are identified in the DCD P/T response calculations
- GE submits NEDO-33372 on Sept. 4, 2007
- Corrects assumptions in three main areas:
  - Vent modeling
  - Feedwater flow
  - Decay heat
- Added a trip of condensate pumps to ensure feedwater flow assumptions are met

# COLA Revision 0

- NEDO-33372 incorporated by reference into Sections 3B, 6.2, and the T. S. in September 2007.
- Results increased peak pressure and pool swell height

# COLA Rev 1

- No significant changes made to 3B and 6.2

# COLA Rev 2

- GE requested NRC suspend review of NEDO-33372 in the spring of 2008
- Short term containment analysis performed and completed by WEC
- Long term and pool swell analysis ongoing

# COLA Rev. 2

- Submitted in September 2008
- Removed reference to NEDO-33372
- Appendix 3B and Section 6.2 markups added WEC P/T short term results where they changed from the DCD
- Figure 3B-13, Schematic of Pool Swell Height, was conservatively modified based on WEC preliminary calculations and engineering judgment

# COLA Revision 2(contin.)

- Bulk Pool Swell changed to 8.5 m (from 8.3)
- Froth Height to 11.7 m (from 11.6)
- Changes based on engineering judgment based on short term analysis
- Pool Swell height affects SRV discharge piping, catwalk, drywell/wetwell vacuum breakers
- Final detailed design of affected equipment will reflect these more conservative conditions