

## **ESBWR Technology Program : Scaling**

**Robert Gamble**

**NRC Staff - GE Meeting**

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# ***Scaling of SBWR Related Tests***

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- ***History of SBWR scaling studies and reports***
- ***NRC reviews***
  - Containment branch
  - Reactor systems branch

## ***History of SBWR Scaling Studies and Reports***

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- ***“Scaling of SBWR Related Tests”, NEDC 32288P, Rev 0***
  - NRC reviewed: liked methodology but wanted more detail on application to actual tests and plant
- ***Added Scaling Application in Appendix B to TAPD, Rev A***
  - NRC reviewed along with TAPD
- ***Expanded in TAPD Rev B in response to NRC RAI’s and feedback***
  - NRC reviewed along with TAPD, Rev B
- ***Combined theory from scaling report and application from TAPD into stand alone Rev 1 of “Scaling of SBWR Related Tests”, NEDC-32288P***
  - Incorporated all lessons learned from previous reviews
- ***Scaling Presented to ACRS T/H Subcommittee***
  - Feedback was very favorable

***Extensive iteration and review of scaling methodology and application***

# ***Containment Branch Review of “Scaling of SBWR Related Tests”, Rev 1***

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- ***Reference: Letter from Theodore R. Quay to James E. Quinn, Staff Review of GE’s Scaling Report, NEDC-32288P, Rev. 1, April 24, 1996.***
- ***“GE Scaling methodology is a systematic application of the hierarchical two-tiered scaling method and, therefore, is acceptable”***
- ***Results of NRC Review***
  - 14 RAI’s
  - Additionally, a number of comments were made on the application of the methodology
    - Extract and summarize important information
    - Summarize impact and safety significance of distortions, including ones caused by simplifications and omissions
    - Lack of multi-dimensional data and scaling
    - Closure with the PIRT (i.e. relating scaling groups to PIRT parameters)
  - Roadmap for closure outlined by staff
- ***GE will address the RAIs as part of its August submittals***
  - GE gave initial responses to the RAI’s but some items were deferred for when review was resumed

## ***Promised Items from RAI (containment branch) response***

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- ***Errata sheet***
- ***Complete list of input parameters for PCCS phase calculations***
- ***Copy of Vacuum Breaker Scaling report***
- ***Revise WW pressure scaling to gas space only***
- ***Executive summary with most important conclusions and scaling groups***
- ***An evaluation of the impact of distortions***

# ***Reactor Systems Branch Review of “Scaling of SBWR Related Tests, Rev 1”***

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- ***Reference: Letter from Theodore R. Quay to James E. Quinn, Staff Review of GE Scaling Report, NEDC-32288P, Rev. 1, May 14, 1996.***
- ***“the general scaling approach appears to be acceptable”***
- ***“Subject to the issues discussed below, reactor-systems-related data from tests in the scaled SBWR integral facilities (i.e. GIRAFFE/SIT and PANDA) appear to be applicable for validation of computer codes used for SBWR analyses”***
- ***Issues***
  - Link the PIRT to the scaling
  - Highlight important parameters
  - Discuss impact of distortions on testing
- ***NO RAIs were included***

# ***ESBWR Scaling Submittal Plan***

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- ***Rely on SBWR Scaling report for theory and method***
- ***Update tables for ESBWR plant***
- ***Include ESBWR specific TEPSS test***
- ***Incorporate summary and conclusions requested in RAIs***

# Summary

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- ***Scaling methodology and application extensively reviewed by NRC and ACRS***
  - Methodology has been found acceptable
  - Remaining questions do not question the validity of the scaling approach or jeopardize the applicability of the test data for its intended purpose
  - Open questions will be addressed in ESBWR scaling submittal
- ***Mutually acceptable road map for closure of remaining items has been defined***