

ENCLOSURE 1

M220049

ACRS Full Committee Presentation Slides for NEDC-33922P,  
BWRX-300 Containment Evaluation Method Licensing Topical Report

Non-Proprietary Information



**HITACHI**

# ACRS Full Committee Presentation

GE-Hitachi (GEH)

Licensing Topical Report (LTR) NEDC-33922P  
BWRX-300 Containment Evaluation Method  
(Open Session)

April 6, 2022

# LTR Purpose and Scope

- GEH is seeking NRC approval for application of an analysis method to be used for evaluating the BWRX-300 dry containment thermal hydraulic performance.
- The LTR scope includes
  - Method description and qualification
  - Sensitivity studies
  - Demonstration cases
- The analysis method used for the BWRX-300 containment thermal hydraulics performance demonstrates that the containment design complies with 10 CFR 50, Appendix A, General Design Criteria 2, 4, 16, 38, 41, 50, and 51.
- Details of the containment performance acceptance criteria are listed in Section 4.0 of NRC-approved LTR NEDC-33911P, BWRX-300 Containment Performance
- GEH is not requesting NRC approval for exemptions from any regulatory requirements.

# BWRX-300 Containment Design Features

The following containment design features are relevant to the purposes of the LTR:

- Dry enclosure, near atmospheric pressure during normal operation
- Inerted with nitrogen during normal operation
- Design pressure and temperature are within the experience base of conventional BWRs
- No subcompartments containing large bore high energy lines
- The subcompartments have sufficiently large openings such that the boundaries of the subcompartments do not experience large pressure differentials resulting from pipe breaks outside the subcompartments

# Limiting Pipe Breaks

- The limiting large breaks are:
  - Main steam pipe
  - Feedwater pipe
- All design basis large breaks are rapidly isolated at the RPV nozzle.
- The limiting small breaks are unisolated instrument line breaks, either in the steam or liquid space.

# Overview of the Evaluation Model

TRACG used to evaluate the mass and energy release

- Applies the ESBWR TRACG-LOCA method
- Performed both base and conservative demonstration cases:
  - Main Steam and Feedwater Large Breaks
  - Small Steam and Liquid Pipe Break Cases

GOTHIC used to evaluate containment response

- New containment model developed for BWRX-300
- Code has been benchmarked to separate effect and integral tests. Benchmarking to the test data of a similar size containment is included in the LTR.
- Performed both base and conservative cases
- Same approach that was taken for the ESBWR containment method

# Conclusion

In summary...

- GEH is seeking NRC approval for application of an analysis method to be used for evaluating the BWRX-300 dry containment thermal hydraulic performance.
- GEH is not requesting NRC approval for exemptions from any regulatory requirements.
- TRACG utilizes the applicable parts of the TRACG Application for ESBWR approved LTR, which is incorporated in the approved ESBWR Design Certification
- Utilizes GOTHIC, a standard code used for evaluating thermal-hydraulic containment response in the nuclear industry
- Individual key inputs, assumptions and modeling parameters conservatively biased simultaneously in the conservative cases (same approach taken for the ESBWR containment method)

Questions or Comments