

ENCLOSURE 1

M220048

ACRS Full Committee Presentation Slides for NEDO-33914,
BWRX-300 Advanced Civil Construction and Design Approach
Licensing Topical Report

Non-Proprietary Information



HITACHI

ACRS Full Committee Presentation

GE Hitachi (GEH)

Licensing Topical Report (LTR) NEDO-33914

BWRX-300 Advanced Civil Construction and

Design Approach

April 7, 2022

Licensing Topical Report Purpose

GEH is seeking NRC approval for the application of an alternative approach to the construction, analyses, and design of the BWRX-300 below-grade Reactor Building.

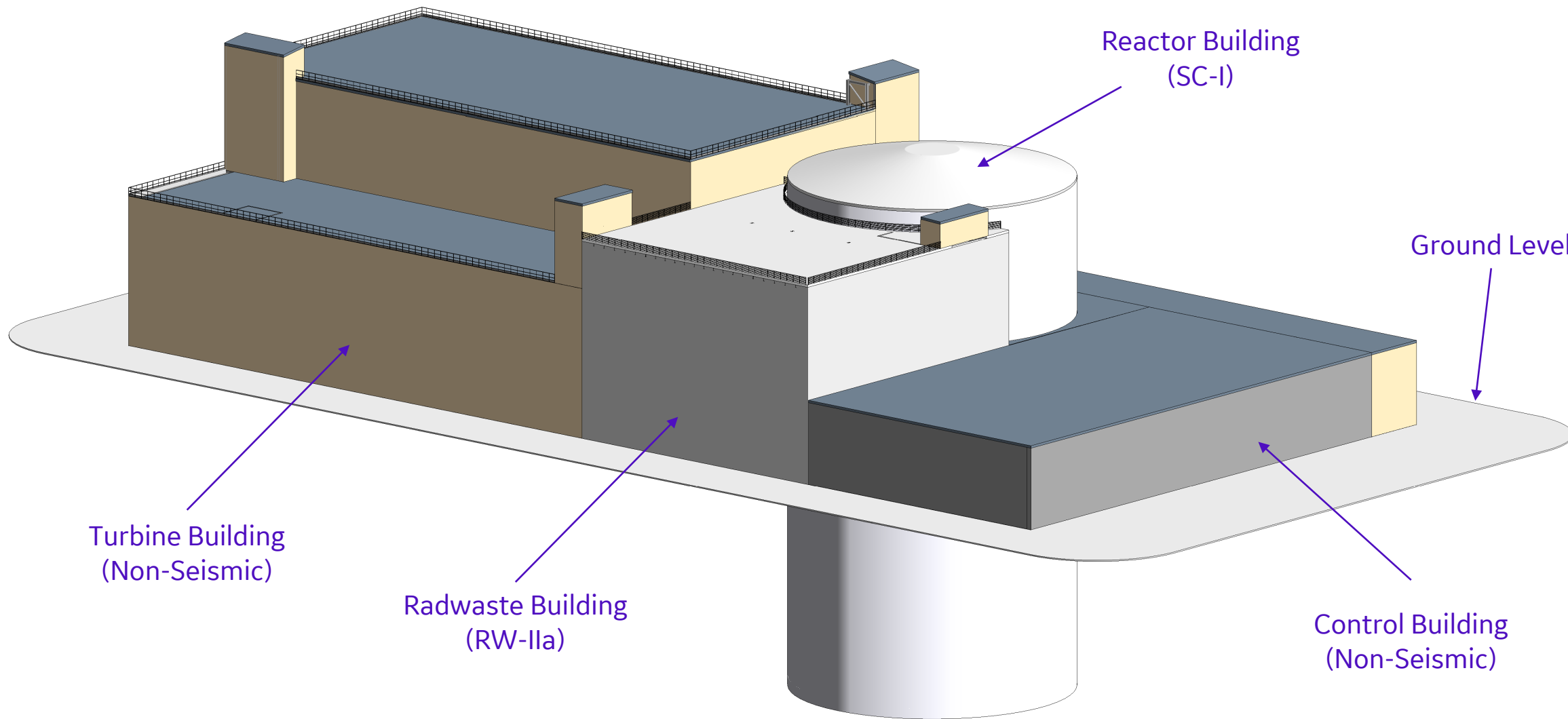
The purpose of the LTR is to present design, analysis, and monitoring guidelines and requirements to support the request for NRC approval of the innovative and comprehensive construction approach for the construction of the below grade BWRX-300 small modular reactor Reactor Building vertical right cylinder shaft.

Licensing Topical Report Scope

This request is supported by the following information in the LTR:

- Regulatory basis specific for the innovative approaches
- Guidelines and requirements for characterizing subsurface conditions, including geotechnical site investigations and laboratory testing programs, as well as the inspection and monitoring programs
- Requirements and guidelines for performing the foundation interface analysis
- Design requirements, acceptance criteria and guidelines for the deeply embedded Reactor Building
- An approach for addressing Seismic Category (SC) II/I interactions
- Generic seismic and geotechnical design parameters

BWRX-300 Building Seismic Categories



Regulatory Basis

- The design and analyses described in the LTR comply with all applicable regulatory requirements and guidance for:
 - Defining Site Subsurface Conditions
 - Site Design Parameters
 - Seismic Analysis
 - II/I Interactions
 - Testing, Inspection and Monitoring
- The implemented innovative approaches meet the intent of the current regulatory guidance for large light water reactors and address the specifics related to the seismic and structural design of deeply embedded small modular reactors.
- GEH is not requesting NRC approval for exemptions from any regulatory requirements or any exceptions to any regulatory guidance.

BWRX-300 Monitoring, Analysis and Design Process

- Innovative property characterization and monitoring approaches driven by the RB structure being deeply embedded
- Investigation, testing, inspection, and monitoring programs, in conjunction with the results of a set of foundation interface analyses, ensure the safe siting of the BWRX-300 plant
- Non-linear constitutive 3D foundation interface analysis numerical modeling includes interface modeling, structural modeling, fluid soil interaction, and consideration of all plant life stages
- Static and seismic soil-structure interaction analysis approaches for designing the deeply embedded RB structure
- Graded approach for the design and II/I interaction evaluations of the structures adjacent to the deeply embedded Safety Classification I RB structure.

BWRX-300 Generic Design Approach

- Methodology for development of generic seismological and geotechnical site parameters for the conceptual design of the BWRX-300
 - Generic Design Response Spectra (GDRS)
 - Generic subgrade dynamic properties
 - Generic static properties for different subgrade materials
 - Friction coefficient values and groundwater table elevations

Conclusion

In summary...

- The design and analyses described in the LTR comply with all applicable regulatory requirements and guidance.
- The innovative approaches meet the intent of current regulatory guidance for large light water reactors and address the specifics related to the seismic and structural design of deeply embedded SMRs.
- GEH is not requesting NRC approval for exemptions from any regulatory requirements or any exceptions to any regulatory guidance.

Questions or Comments