Nuclear Island (NI) Structural Reconciliations

ITAAC 3.3.00.02.a.i.a (760)
ITAAC 3.3.00.02.a.i.b (761)
ITAAC 3.3.00.02.a.i.c (762)
ITAAC 3.3.00.02.a.i.d (763)

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NI Structural Reconciliations

Acceptance Criteria

A report exists which reconciles deviations during construction and concludes that the as-built structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

- ITAAC 3.3.00.02.a.i.a – Containment
- ITAAC 3.3.00.02.a.i.b – Shield Building
- ITAAC 3.3.00.02.a.i.c – Non- radiologically controlled area of the Aux Building
- ITAAC 3.3.00.02.a.i.d – Radiologically controlled area of the Aux Building

NI Structural Reconciliations

Introduction

- Nuclear Island (NI) structures include the containment internal structures, shield building structures, non-radiologically controlled area of the auxiliary building, and radiologically controlled area of the auxiliary building.
- The NI structures, including critical sections identified in COL Appendix C Table 3.3-1, are inspected during construction to verify the as-built structures conform to the design, codes and standards.
- Structural deviations are documented, evaluated, and reconciled by engineering to confirm the structures' ability to withstand design basis loads without loss of structural integrity or safety-related functions.

NI Structural Reconciliations

As-Design Reports

- The “final” design is documented in a series of as-designed summary reports.
- The as-designed summary report is provided for the standard plant global structural analysis and for each of the major building structures.
- Includes all design changes (E&DCRs) issued at time of report effective date.
- The reports are developed to address the information outlined in Appendix C to Section 3.8.4 of NUREG 0800.

As-Built Reports

- As-Built (Reconciliation) Reports are generated to document reconciliations.
  - As-built reports are initiated during NI structure construction and finalized after construction completion.
- A configuration set is developed which identifies the design input and design output documents for each structure.
  - Design Inputs are those criteria, performance requirements, codes and standards, design bases, regulatory requirements, or other design requirements upon which the design is based.
  - Design Outputs are drawings, specification and other documents used to define and/or justify the technical requirements of structures.

NI Structural Reconciliations

As-Built Reports

- Design changes (E&DCRs) and as-built non-conformances (N&Ds) are identified and evaluated to ensure that the structural design meets the design criteria documents.
  - E&DCRs and N&Ds will have an individual assessment to determine if any changes or deviations during construction affect the design criteria, analysis, calculations and supporting documents captured in the as-designed summary reports.
  - All E&DCRs and N&Ds which impact design documents are entered into a tracking data base.
  - Changes to design documents are reviewed and accepted using approved procedures.
  - The corrective action database captures E&DCRs and N&Ds that impact the design or result in a non-conformance.

NI Structural Reconciliations

As-Built Reports

- Work divided into 7 areas based on design responsibility
  - NI Basemat, including under CV up to El. 100’-0”
  - Containment Internal Structures (CIS) Large Modules (CA01, CA02, CA03, CA04, CA05)
  - Remaining CIS – (Includes reinforced concrete, structural steel, CH module, CA3x and CA5x series floors)
  - Auxiliary Building (except basemat and CA20)
  - Shield Building (SC portions, tension ring, roof)
  - Module CA20
  - Global Analysis

NI Structural Reconciliations

Global Analysis

- The Global Analysis is the Seismic Category I analysis of the NI Structure (containment building, shield building, and auxiliary building).
  - License Condition 2.D.12(g)1 requires an update of the seismic interaction analysis in UFSAR Section 3.7.5.3 to reflect as-built information.
  - License Condition 2.D.12(g)2 requires the seismic analysis described in UFSAR Section 3.7.2 to account for detailed design changes.
  - The NI seismic model consist of various building models (containment building, shield building, and auxiliary building) interconnected to form the overall dynamic model of the NI.
  - The as-built NI structural reconciliation reports created for these ITAACs provide input to the global analysis.

As-Built Report Content

- Introduction
  - Objective Scope
  - Background
  - As-Designed Summary Reports
    - The “final” design is documented in a series of as-designed summary reports. The reports are developed to address the information outlined in Appendix C to Section 3.8.4 of NUREG 0800.
  - As-Built Summary Reports
    - The as-built summary report addresses changes that affect the design calculations identified in the as-designed summary report.

As-Built Report Content

- Design Documentation
  - Configuration Set
    - Comprehensive set of documents that defines the design input and output documents
  - Change Documentation
    - Describes the E&DCR process for justifying a change to the design and associated documents
    - Design Documents Applicable to Vogtle Unit 3/4
    - Identifies all unincorporated E&DCRs for each design document

As-Built Report Content

- Vogtle Unit 3/4 Deviations
  - Nonconformances
    - Describes the N&D process for evaluating nonconformances
  - Vogtle Unit 3/4 Nonconformance Affecting Design Documents
    - Identifies all N&Ds that impact design documents
- Conclusion

Reconciliation Schedule

As-Design Reports

• Basemat	Complete
• CIS	2Q2019
• Aux Building	1Q2019
• Shield Building	1Q2019
• CA20	2Q2019

As-Built Reports

	Unit 3	**Unit 4**
• Basemat	1Q2019	2Q2019
• CIS Large Modules	2Q2020	1Q2021
• Other CIS	4Q2019	4Q2020
• Aux Building	3Q2020	1Q2021
• Shield Building	4Q2019	3Q2021
• CA20	1Q2020	1Q2020
• Global Analysis	3Q2020	3Q2021

NI Structural Reconciliations

Questions