



Agenda/Objectives

Brandon Waites
Construction Licensing Project Engineer
Southern Nuclear

10/14/2010

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COMPANY

Agenda

- Objectives
- Construction Schedule
- Definition of Construction
- Turbine Building Foundation
Preconstruction Screening
- Questions and Closeout

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Objectives

- Discuss Construction Schedule Needs
- Discuss Understanding of 10 CFR 50.10
 - Definition of construction
 - ISG-004 clarification
- Establish Rationale for Proposed Turbine Building Foundation Installation

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Construction Schedule

Brandon Waites

Construction Licensing Project Engineer
Southern Nuclear

William Futrell

Construction Manager - Nuclear Island
Shaw

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Construction Schedule

- Excavation for Unit 3 and 4 Nuclear Islands and Turbine Buildings completed in March 2010
- Backfill is currently underway and scheduled to reach elevation 180 feet above sea level (bottom of the Nuclear Island) by December 2010
- The EL 180' milestone releases several activities:
 - Shear Wave testing
 - Installation of Nuclear Island mud mats, waterproof membranes, and mechanically stabilized earth (MSE) walls
 - Installation of the large diameter Circulating Water Piping
 - Backfilling both units to grade to support Nuclear Island construction

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Construction Schedule

- The Critical Path schedule above EL 180' (Nov 2010 – Dec 2011) includes:
 - Circulating water pipe @ EL 180' including footings
 - MSE wall EL 180'–220' including footing, mud mat, and waterproofing
 - Backfill to grade (EL 215'–220') for both units
 - Installation of Heavy Lift Derrick (HLD) foundation at EL 208'-215'
 - Placement of pad 139 for assembly of Module CR-10
 - Assembly of Module CR-10
 - First placement of Nuclear Island (NI) Foundation (after COL)
 - Rigging CR-10 into position on NI (after COL)
 - Placement of Containment Vessel bottom head on CR-10 (after COL)

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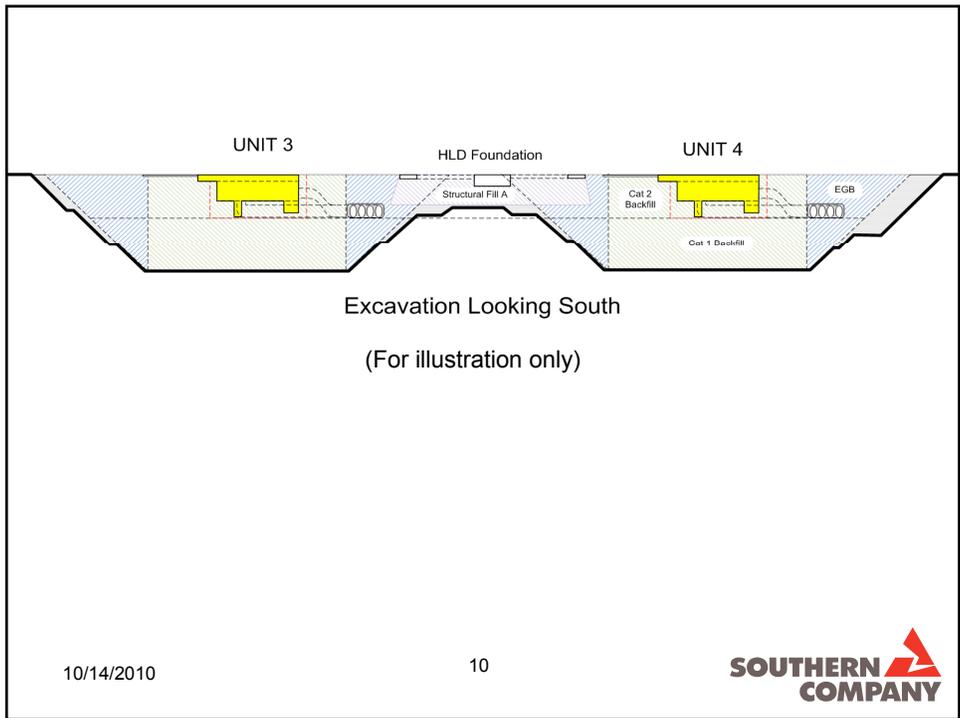
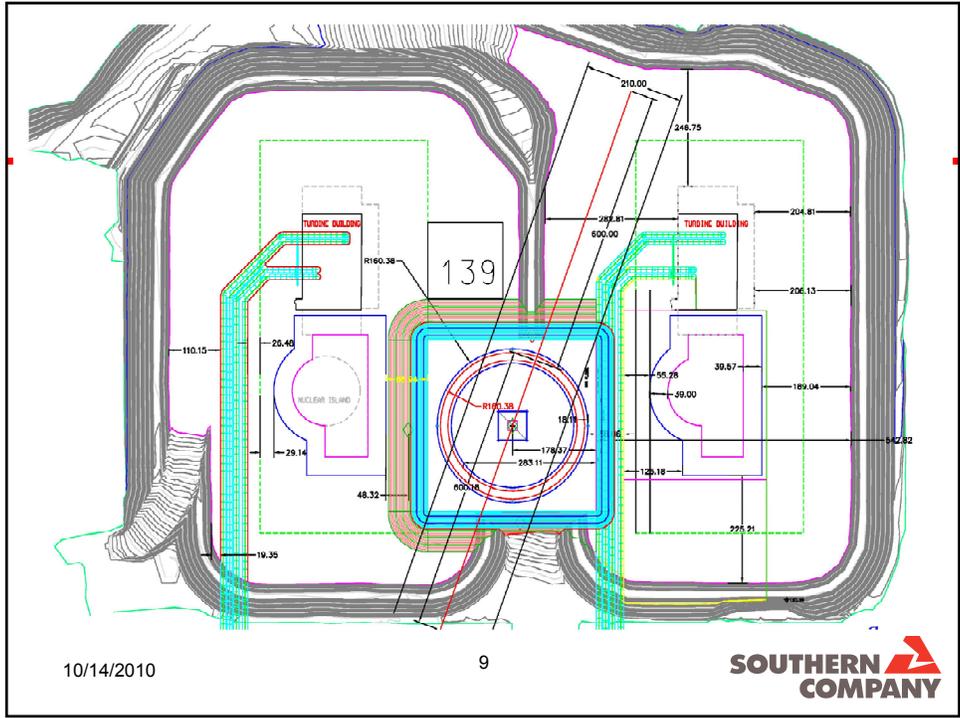
Construction Schedule

- The Critical Path requires plant to be brought to grade for both units
- Turbine Building undergrounds must be built, backfilled or retained using other means such as MSE walls
 - Backfilling solution requires:
 - Added ~40,000 yds of Cat-2 material
 - Added ~70,000 yds of excavation and additional 30,000 yds of backfill
 - Sloping of excavated areas which interferes with MSE wall reinforcement
 - Additional MSE wall around Turbine Building would require several walls at various locations
 - Turbine Building foundations construction would include:
 - Condensate Pit from EL 181'-196'
 - Waste Water Sump from EL 185'-196'
 - Condenser Pit slab and walls from EL 196'-214'
 - Turbine Building slab from EL 214'-220'

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Construction Schedule

- Preferred construction schedule is to install Turbine Building foundation as a preconstruction activity (prior to COL issuance)
 - Most efficient construction sequence
 - Reduces ~40,000 yds of safety related Category-2 material
 - Eliminates need to re-excavate ~70,000 yds of safety related Cat-2 that has been placed, compacted, tested and documented; and then replace 30,000 yds of this re-excavated material
 - Avoids re-excavation interference with MSE wall (2:1 slope layback between Turbine Building and Nuclear Island interferes with mechanically stabilized wall anchors)
 - Provides better potential for attaining and maintaining high quality backfill
 - Provides a safer approach to completing this work

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Definition of Construction

Brandon Waites
Construction Licensing Project Engineer
Southern Nuclear

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Definition of Construction

- 10 CFR 50.10 – “Construction” and “Not Construction”
- Statements of Consideration (SOC)
 - Commission determined: Construction should include activities that have a reasonable nexus to radiological health and safety or common defense and security
 - Scope for construction derived from scope of maintenance rule
 - This scope was supplemented to also include:
 - Fire Protection
 - Security
 - Emergency Plans

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Definition of Construction

- COL/ESP-ISG-004 Interim Staff Guidance on the definitions of construction and on Limited Work Authorizations (LWA)
- Guidance on the rule
- Examples clarify the delineation of preconstruction and construction activities

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Definition of Construction

- COL/ESP-ISG-004 (continued)
- Structures, systems and components (SSCs) that may be considered preconstruction
 - Buried Circulating Water System piping up to the Turbine Building
 - Circulating Water Intake structure
 - Cooling Towers
 - **Turbine Building structure or foundation**
 - Temporary or permanent structures
 - Construction Crane foundations and support pads

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Definition of Construction

- COL/ESP-ISG-004 (continued)
Discussion of Examples.

“The turbine/generator system is within the scope of construction because failure of the turbine/generator could cause a reactor scram. However, depending on the plant design, it is possible for the applicant to demonstrate that a **plausible failure of the turbine building structure or foundation (settling) would not result** in a reactor scram or safety system actuation. Depending on the facility design, the turbine building structure or foundation may not fall within the scope of construction, if the reactor scram or safety system actuation criterion is the only reason to consider it.”

This example provides a clarification that, depending on the design, a foundation can be outside the scope of construction **if there are no plausible failures for the foundation which would result in the failure of the function of an SSC discussed in 10 CFR 50.10(a)(1)**

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Turbine Building Foundation Preconstruction Screening

Samuel Bradley
Site Licensing Manager
Westinghouse

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Turbine Building Foundation Preconstruction Screening

50.10 License required; limited work authorization.

(a) *Definitions.* As used in this section, *construction* means the activities in paragraph (a)(1) of this section, and does not mean the activities in paragraph (a)(2) of this section.

(1) Activities constituting construction are the driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, **installation of foundations**, or in-place assembly, erection, fabrication, or testing, which are for:

- (i) Safety-related structures, systems, or components (SSCs) of a facility, as defined in 10 CFR 50.2;
- (ii) SSCs relied upon to mitigate accidents or transients or used in plant emergency operating procedures;
- (iii) SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function;
- (iv) **SSCs whose failure could cause a reactor scram or actuation of a safety-related system;**
- (v) SSCs necessary to comply with 10 CFR part 73;
- (vi) SSCs necessary to comply with 10 CFR 50.48 and criterion 3 of 10 CFR part 50, appendix A; and
- (vii) Onsite emergency facilities, that is, technical support and operations support centers, necessary to comply with 10 CFR 50.47 and 10 CFR part 50, appendix E.

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Turbine Building Foundation Preconstruction Screening

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 - (ii) **SSCs relied upon to mitigate accidents or transients or used in plant emergency operating procedures;**
 - (iii) **SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function;**
 - (iv) **SSCs whose failure could cause a reactor scram or actuation of a safety-related system;**
 - (v) **SSCs necessary to comply with 10 CFR part 73;**
 - (vi) **SSCs necessary to comply with 10 CFR 50.48 and criterion 3 of 10 CFR part 50, appendix A;** and
 - (vii) Onsite emergency facilities, that is, technical support and operations support centers, necessary to comply with 10 CFR 50.47 and 10 CFR part 50, appendix E.

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Turbine Building Foundation Preconstruction Screening

- Interpretation of 10 CFR 50.10(a)(1) for the Turbine Building foundation is consistent with the evolution of the definition of construction
- September 1960 – Definition does not include turbine buildings
- March 1972 – Passage of NEPA results in turbine buildings being included in the definition
- April 1974 – LWA-1 created for non-safety related SSCs to require site suitability report and environmental impact statement. LWA-1 had no requirement for safety finding
- October 2007 – Current rule narrows definition to SSCs having reasonable nexus to radiological health and safety or common defense and security
- March 2009 – COL/ESP-ISG-004 clarified the rule. ISG-004 includes example showing how to treat turbine building structure or foundation

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Turbine Building Foundation Preconstruction Screening

- Proposed Activity – Turbine Bldg. foundation only
 - Foundation up to and including grade level of 220 feet
 - Concrete, reinforcing steel, attachments for equipment, embedded plates, pipe supports, walls and structural members
 - Wastewater sumps, embedded floor drain pipes, grounding grid and cable
 - Condensate pump pits
 - The foundation encompasses the buried Circulating Water piping
 - First bay foundation

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Turbine Building Foundation Preconstruction Screening

- 10 CFR 50.10(a)(1) (i-vii) Screening
 - (i) Safety-related structures, systems, or components (SSCs) of a facility, as defined in 10 CFR 50.2;
 - 1. Turbine Building, including the foundation, is not safety-related and contains no safety-related equipment

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Turbine Building Foundation Preconstruction Screening

- 10 CFR 50.10(a)(1) (i-vii) Screening (continued)
(ii) SSCs relied upon to mitigate accidents or transients or used in plant emergency operating procedures;
 1. The foundation as an SSC does not meet this criterion
 2. There are no plausible failures of the Turbine Building foundation that could affect SSCs that meet this criterion

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Turbine Building Foundation Preconstruction Screening

- 10 CFR 50.10(a)(1) (i-vii) Screening (continued)
(iii) SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function;
 1. The foundation as an SSC does not meet this criterion
 2. The seismic Category II portion of the foundation (adjacent to the Auxiliary and Annex Buildings) is not within the scope of construction consistent with the maintenance rule
 3. There are no plausible failures of the Turbine Building foundation that could affect SSCs that meet this criterion

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Turbine Building Foundation Preconstruction Screening

- 10 CFR 50.10(a)(1) (i-vii) Screening (continued)
(iv) SSCs whose failure could cause a reactor scram or actuation of a safety-related system;
 1. The foundation as an SSC does not meet this criterion
 2. There are no plausible failures of the Turbine Building foundation that could affect SSCs that meet this criterion

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Turbine Building Foundation Preconstruction Screening

- 10 CFR 50.10(a)(1) (i-vii) Screening (continued)
(v) SSCs necessary to comply with 10 CFR part 73;
 1. The foundation as an SSC does not meet this criterion
 2. There are no features in the design and construction of the Turbine Building foundation which are included in order to meet 10 CFR 73 requirements
 3. The supported SSCs that meet this criterion do not influence the foundation design
 4. There are no plausible failures of the Turbine Building foundation that could affect SSCs that meet this criterion

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Part 73 SSCs

Construction Allowed?	
A	Foundation and Wall
B	Foundation Only
C	Foundation and Wall
D	Neither

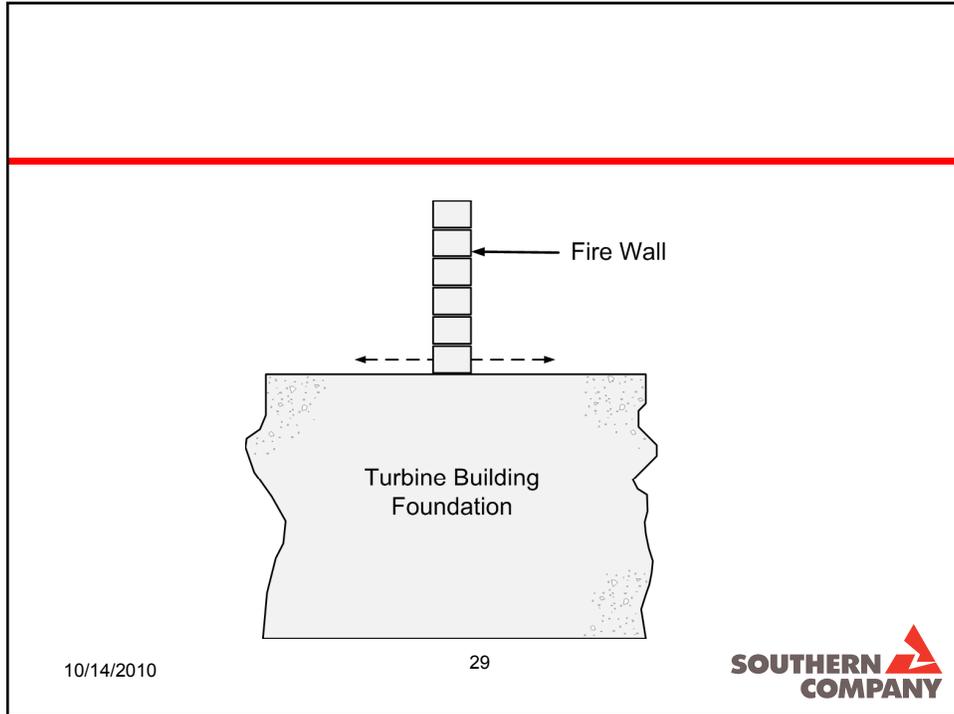
Typical Structural Wall and Foundation

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Turbine Building Foundation Preconstruction Screening

- 10 CFR 50.10(a)(1) (i-vii) Screening (continued)
 - (vi) SSCs necessary to comply with 10 CFR 50.48 and criterion 3 of 10 CFR Part 50, Appendix A; and
 1. The foundation as an SSC does not meet this criterion
 2. There are no features in the design and construction of the Turbine Building foundation which are included in order to meet 10 CFR 50.48 and criterion 3 of 10 CFR part 50, Appendix A requirements
 3. The supported SSCs that meet this criterion do not influence the foundation design
 4. There are no plausible failures of the Turbine Building foundation that could affect SSCs that meet this criterion

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Turbine Building Foundation Preconstruction Screening

- 10 CFR 50.10(a)(1) (i-vii) Screening (continued)
 - (vii) Onsite emergency facilities, that is, technical support and operations support centers, necessary to comply with 10 CFR 50.47 and 10 CFR part 50, appendix E.
 1. Onsite Emergency Facilities will not be located in the Turbine Building

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Turbine Building Foundation Preconstruction Screening

- The Turbine Building foundation does not meet the definition of construction as defined in 10 CFR 50.10(a)(1)
- The Turbine Building foundation has no reasonable nexus to radiological health and safety or common defense and security

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Questions and Closeout



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