# 2.0 System Based Design Description of ITAAC

## 2.1 Structures

### 2.1.1 Nuclear Island

### 1.0 Description

The Nuclear Island (NI) consists of the structures supported by the NI Common Basemat and the NI Common Basemat itself. The NI includes the Reactor Building (RB), Safeguard Buildings (SB), Fuel Building (FB), Main Steam Valve Rooms, NI Foundation Common Basemat, Vent Stack, and Stair Towers. The physical arrangement of the NI structures is shown on Figure 2.1.1-1 and Figure 2.1.1-2. Information in tables and figures in this section are for information only with the exception of the specific features listed in the ITAAC for verification.

The NI foundation common basemat is a heavily reinforced concrete slab, approximately 360 ft x 360 ft x 10 ft thick, which supports NI structures including the RB, FB, and SBs. The NI foundation common basemat acts together with the Reactor Containment Building (RCB) to maintain an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to maintain containment design conditions important to safety so that they are not exceeded for as long as postulated accident conditions require. ITAAC for testing the essentially leak-tight barrier is addressed in Tier 1, Section 3.3.

Structures, systems and components (SSC) important to safety are designed and located to minimize the probability and effect of fires and explosions. This is done, in part, by compartmentalization of the plant into separate fire areas. Specifically, based on the hazards and the need for physical separation of SSC important to safety, the plant is segregated into separate fire areas by passive, fire-rated structural barriers (i.e., walls, floors, and ceilings).

A continuous structural barrier is formed around the RB, FB, and SB 2/3 structures as shown on Figure 2.1.1-2 and Figure 2.1.1-3. This barrier is designed to provide protection against design basis external hazards such as hurricanes and tornados, and certain beyond design basis events such as aircraft hazard and explosion pressure waves.

### 2.0 Arrangement

2.1 The basic configuration of the NI structures is as shown on Figure 2.1.1-1 and Figure 2.1.1-2.

### 3.0 Key Design Features

3.1 The basic configuration of the NI structures includes:

3.1a A continuous structural barrier;

3.1b Decoupling of SB 2/3 and FB internal structures from their outer external hazards barrier walls, at their exterior walls along the entire wall length and the upper ceiling, and from the RSB above elevation 0 feet, 0 inches.

3.2 The NI site grade level is located between 12 inches and 18 inches below the finish floor elevation at ground entrances.

3.3 The NI structures include barriers for post-accident radiation shielding as described in Table 2.1.1-3.

3.4 Deleted.

3.5 Deleted.

3.6 NI Seismic Category I structural walls or floors having exterior penetrations located below grade elevation are protected against external flooding by watertight seals.

3.7 The NI structures have key dimensions that are confirmed after construction.

## 4.0 Interface Requirements

There are no interface requirements for the NI Structures.

## 5.0 Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.1.1-4 lists the NI ITAAC.

### 2.1.1.1 Reactor Building

#### 1.0 Description

The RB consists of the Reactor Shield Building (RSB), the Reactor Containment Building (RCB) and the RB internal structures. The RSB is a heavily reinforced Seismic Category I safety-related cylindrical concrete structure, with an outside diameter of approximately 186 feet by approximately 230 feet high, which completely encloses the RCB. The RSB is surrounded by SBs 1, 2, 3, and 4 and by the FB, which are Seismic Category I safety-related structures. The primary function of the RSB is to protect the RCB from missiles and loadings resulting from design basis external events such as hurricanes and tornados, and certain beyond design basis events such as aircraft hazard and explosion pressure waves. The RCB is a Seismic Category I safety-related cylindrical post-tensioned concrete structure, with an outside diameter of approximately 162 feet and a height of approximately 218 feet. It has an approximately 0.25 inch thick steel liner on its inside surface. The primary functions of the RCB are:

- To protect the safety-related SSC located within.
- To prevent the release of radiation during plant operations.
- To prevent the release of radiation and contamination in the event of accident conditions.
- To establish an essentially leak-tight barrier against the uncontrolled release of radioactivity.
- To accommodate the calculated pressure and temperature conditions resulting from any loss of coolant accident without exceeding the design leakage rate and with sufficient margin.

The Reactor Building Annulus (RBA) is the annular space between the RSB and the RCB. The annular space is approximately 5 feet, 11 inches wide between the faces of the concrete walls of the two buildings. The primary function of the RBA is to serve as an access area to allow the passage of personnel, piping, ventilation ducts, electrical cables, and other equipment between the RSB and the RCB.

The RCB design includes consideration for severe accident mitigation. Downward expansion of the lower head is limited by concrete support structures provided at the bottom of the reactor cavity. These structures preserve sufficient space for the outflow of core melt and the later formation of a molten pool in the reactor cavity. Installed barriers prevent water ingress into the core spreading area prior to the arrival of core melt, which could lead to steam explosion. Installed barriers prevent core melt relocation to the upper containment, which could lead to direct containment heating.

#### 2.0 Key Design Features

2.1 Six rib support structures, provided at the bottom of the reactor cavity, as shown on Figure 2.1.1-9, limit lower reactor pressure vessel head deformation due to thermal expansion and creep during severe accident mitigation.

2.2 As shown on Figure 2.1.1-4, a flooding barrier is provided to prevent ingress of water into the core melt spreading area.

2.3 Core melt cannot relocate to the upper containment due to the existence of concrete barriers, as shown on Figure 2.1.1-9.

2.4 The RB structures are Seismic Category I and are designed and constructed to withstand design basis loads without loss of structural integrity and safety-related functions. The design basis loads are those loads associated with:

- Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads).
- Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, and missile impact loads).
- External events (including rain, snow, flood, tornado, tornado-generated missiles and earthquake).

2.5 The RCB, including the liner plate and penetration assemblies, maintains its pressure boundary integrity at the design pressure.

2.6 The RCB is post-tensioned, pre-stressed concrete structure.

2.7 The RBA is separated from the SBs and the FB by an internal hazard protection barrier that has a minimum 3-hour fire rating, as indicated on Figure 2.1.1-20.

2.8 The following are provided for water flow to the in-containment refueling water storage tank (IRWST):

- As shown on Figure 2.1.1-4, RCB rooms which are adjacent to the IRWST contain wall openings slightly above the floor to allow water flow into the IRWST.
- As shown on Figure 2.1.1-5, RCB rooms which are directly above the IRWST, contain trapezoidal-shaped openings in the floor to allow water flow into the IRWST. The floor openings are protected by weirs and trash racks to provide a barrier against material transport into the IRWST.

2.9 RBA penetrations that contain high-energy pipelines, as described in Table 2.1.1 7, have guard pipes.

2.10 Essential equipment required for plant shutdown located in the RB and RBA is located above the internal flood level.

2.11 The reactor pressure vessel, reactor coolant pumps, pressurizer, steam generators, and interconnecting RCS piping are insulated with reflective metallic insulation.

2.12 The RB structures have key dimensions that are confirmed after construction.

2.13 The RCB has a minimum containment free volume that is confirmed after construction.

2.14 The RCB and RB internal structures have a minimum containment heat sink surface area value.

2.15 The integrated leak rate from the RCB does not exceed the maximum allowable leakage rate.

## 3.0 Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.1.1-8 lists the RB ITAAC.

### 2.1.1.2 Safeguard Buildings

### 1.0 Description

The SBs are reinforced concrete, Seismic Category I, safety-related structures located around the perimeter of the RSB. The SBs are arranged to accommodate four safeguard divisions. SB 4 and 1 are located adjacent to the RSB as shown on Figure 2.1.1-2. SBs 2 and 3 are contained in a single structure separated by a common wall and are located adjacent to the RSB as shown on Figure 2.1.1-2. As shown on Figure 2.1.1-15 and Figure 2.1.1-17, SBs 2 and 3 are decoupled from the external hazards barrier by a gap between the SBs external walls and their uppermost ceilings. The SBs and the RSB share the reinforced concrete cylindrical shell from the basemat to elevation 0 feet, 0 inches; above this elevation the structures are physically separated by a seismic gap.

The SBs 2 and 3 structure has overall dimensions of approximately 92 feet out from the RSB wall by 180 feet long by 140 feet high. The SB 1 structure has overall dimensions of approximately 87 feet out from the RSB wall by 100 feet long by 115 feet high. The SB 4 structure has dimensions of approximately 87 feet out from the RSB wall by 100 feet long by 150 feet high.

The primary function of the SBs is to provide physical separation between redundant divisions of safeguard equipment. The main control room (MCR) and the technical support center (TSC) are located within SBs 2 and 3 as shown on Figure 2.1.1-16. The remote shutdown station (RSS), which is separate from the MCR, is located within SB 3 as shown on Figure 2.1.1-15. Also located in the SBs are the reinforced concrete main steam valve rooms. Stair towers are provided between the different SBs and the SBs and FB.

### 2.0 Key Design Features

2.1 The SB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety-related functions.

- Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads).
- Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, and missile impact loads).
- External events (including rain, snow, flood, tornado, tornado-generated missiles and earthquake).

2.2 The basic configuration of the NI structures separates the four SBs by an internal hazards separation barrier so that the impact of internal hazards, including fire, flood, high energy break and missile impact, is contained within the SB of hazard origination. Figure 2.1.1-20 through Figure 2.1.1-37 identify the internal hazards separation barrier.

2.3 The SB structures have key dimensions that are confirmed after construction.

## 3.0 Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.1.1-10 lists the SBs ITAAC.

### 2.1.1.3 Fuel Building

#### 1.0 Description

The FB is a reinforced concrete, Seismic Category I, safety-related structure. It extends approximately 58 feet out from the RSB wall and is approximately 160 feet long by 140 feet high. The FB is located adjacent to the RSB at 180 degrees as shown on Figure 2.1.1-2. As shown on Figure 2.1.1-11 and Figure 2.1.1-12 the FB is decoupled from the external hazards barrier by a gap between the FB external wall and its uppermost ceiling. The FB and the RSB share the reinforced concrete cylindrical shell from the basemat to elevation 0 feet 0 inches; above this elevation the structures are physically separated by a seismic gap. The primary function of the FB is to house new and spent fuel and to provide radiation protection during normal operation by shielding areas of higher radiation from areas of lower radiation. The FB supports the vent stack, a steel structure approximately 12 feet, 6 inches in diameter by 100 feet high located on top of the stair tower between the FB and SB 4. Stair towers are provided between the different SBs and the FB. These stair towers provide personnel access among the various elevations of the NI and tie together the buildings around the periphery of the RSB.

#### 2.0 Key Design Features

2.1 The FB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety-related functions.

- Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads).
- Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, and missile impact loads).
- External events (including rain, snow, flood, tornado, tornado-generated missiles and earthquake).

2.2 The basic configuration of the NI structures provides internal separation between independent divisions within the FB and separates the FB from other NI structures by an internal hazards separation barrier so that the impact of internal hazards, including fire, flood, high line energy break and missile impact, is contained within the FB division of hazard origination. Figure 2.1.1-20 and Figure 2.1.1-38 through Figure 2.1.1-44 identify the internal hazards separation barrier.

2.3 The Spent Fuel Storage Pool (SFSP) has a minimum depth from the bottom of the SFSP to the spent pool operating floor that is confirmed after construction.

2.4 The SFSP includes no gates, openings, or drains below an elevation corresponding to the top of stored fuel assemblies.

2.5 The SFSP includes no piping that extends below an elevation of 10 feet above the top of the stored fuel assemblies.

## 3.0 Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.1.1-11 lists the FB ITAAC.

## Table 2.1.1-1—Key Dimensions of Nuclear Island Structures

| Label | Section Descriptions | Region | Floor Elevation or Elevation Range | Key Dimension[(1)(2)] |
|---|---|---|---|---|
| F1 | RB Foundation Basemat. | Refer to Figure 2.1.1-9 | Top of slab for the RB basemat is located at nominal RB floor Elevation -20 ft | 10 ft - 9 15/16 in. |
| F2 | SB Foundation Basemat. | Refer to Figure 2.1.1-14, Figure 2.1.1-17, and Figure 2.1.1-19 | Top of slab for the SB basemat is located at nominal SB floor Elevation -31 ft | 9 ft - 10 1/8 in. |
| F3 | FB Foundation Basemat. | Refer to Figure 2.1.1-12 | Top of slab for the FB basemat is located at nominal FB floor Elevation -31 ft | 9 ft - 10 1/8 in. |

**Notes:**

1. The foundation basemat typical thickness does not apply in locations where the top of slab for rooms extend below nominal floor elevation -31 ft (such as tank rooms, sump rooms, elevator shafts and air shafts).

2. Concrete forming and placement tolerances for construction of the RCB shall conform to the requirements of ACI 359; however, where not specifically addressed in ACI 359 these tolerances shall conform to the requirements of ACI 349 and ACI 117. Concrete forming and placement tolerances for construction of other safety related structures shall conform to the requirements of ACI 349 and ACI 117.

## Table 2.1.1-2—Key Dimensions of Nuclear Island Foundation Footprint

| Label | Section Descriptions | Region | Key Dimension | Tolerance |
|---|---|---|---|---|
| D1 | Distance from North edge of SB 2/3 to South edge of FB foundation base slabs. | Refer to Figure 2.1.1-1 | 344 ft - 10 in. | +/- 12 in. |
| D2 | Distance from West edge of SB 1 to East edge of SB 4 foundation base slabs. | Refer to Figure 2.1.1-1 | 362 ft - 6 in. | +/- 12 in. |
| D3 | Distance from finish floor at +0 ft elevation to FB roof elevation. | Refer to Figure 2.1.1-12 | 111 ft - 7 in. | +/- 12 in.(1) |
| D4 | Distance from finish floor at +0 ft elevation to top of FB foundation base slab. | Refer to Figure 2.1.1-12 | 31 ft - 6 in. | |
| D5 | Distance from finish floor at +0 ft elevation to SB 1 roof elevation. | Refer to Figure 2.1.1-14 | 96 ft - 2 in. | +/- 12 in.(1) |
| D6 | Distance from finish floor at +0 ft elevation to top of SB 1 foundation base slab. | Refer to Figure 2.1.1-14 | 31 ft - 6 in. | |
| D7 | Distance from finish floor at +0 ft elevation to SB 2/3 roof elevation. | Refer to Figure 2.1.1-17 | 94 ft - 6 in. | +/- 12 in.(1) |
| D8 | Distance from finish floor at +0 ft elevation to top of SB 2/3 foundation base slab. | Refer to Figure 2.1.1-17 | 31 ft - 6 in. | |
| D9 | Distance from finish floor at +0 ft elevation to SB 4 roof elevation. | Refer to Figure 2.1.1-19 | 96 ft - 2 in. | +/- 12 in.(1) |
| D10 | Distance from finish floor at +0 ft elevation to top of SB 4 foundation base slab. | Refer to Figure 2.1.1-19 | 31 ft - 6 in. | |

**Notes:**

1. Tolerance specified is for the total dimension from top of foundation to top of roof elevation. The key dimensions individually are permitted to utilize up to the total tolerance specified provided the combined total tolerance for the two key dimensions does not exceed the tolerance specified.

## Table 2.1.1-3—Radiation Barriers (5 Sheets)

| NI Structure | From Room(s) [KKS] | To Room(s) [KKS] | Door (1) | Wall | Slab (2) | Elevation(s) | Minimum Thickness (feet) |
|---|---|---|---|---|---|---|---|
| SB 1 (4) | 1UJH01 007 | 1UJH01 026 | | X | | -31 feet | 1.9 |
| | 1UJH01 001 | 1UJH01 025 | | X | | -31 feet | 1.9 |
| | 1UJH01 001 | 1UJH01 021 | X | X | | -31 feet | 1.9 |
| | 1UJH01 010 | UFA01 002 | | X | | -31 feet | 1.9 |
| | 1UJH01 011 | UFA01 002 | X | X | | -31 feet | 1.9 |
| | 1UJH05 013 | UFA05 003 | X | X | | -16 feet | 1.9 |
| | 1UJH05 013 | 1UJH01 026 | | X | | -16 feet | 1.9 |
| | 1UJH05 008 | 1UJH01 026 | | X | | -16 feet | 1.9 |
| | 1UJH05 005 | 1UJH05 025 | | X | | -16 feet | 1.9 |
| | 1UJH05 001 | 1UJH05 021 | X | X | | -16 feet | 1.9 |
| | 1UJH10 001 | – | | | X | +/- 0 feet | 1.6 |
| | 1UJH10 004 | – | | | X | +/- 0 feet | 1.4 |
| SB 2 (4) | 2UJH01 005 | 2UJH01 040 | X | X | | -31 feet | 1.9 |
| | 2UJH01 005 | 2UJH01 020 | | X | | -31 feet | 1.9 |
| | 2UJH01 010 | 2UJH01 020 | | X | | -31 feet | 1.9 |
| | 2UJH01 011 | 2UJH01 024 | | X | | -31 feet | 1.9 |
| | 2UJH05 005 | 2UJH05 040 | | X | | -16 feet | 1.9 |
| | 2UJH05 006 | 2UJH05 020 | | X | | -16 feet | 1.9 |
| | 2UJH05 010 | 2UJH05 025 | | X | | -16 feet | 1.9 |
| | 2UJH10 002 | – | | | X | +/- 0 feet | 1.4 |
| | 2UJH10 005 | – | | | X | +/- 0 feet | 1.4 |
| | 2UJH10 006 | – | | | X | +/- 0 feet | 1.8 |

## Table 2.1.1-3—Radiation Barriers (5 Sheets)

| NI Structure | From Room(s) [KKS] | To Room(s) [KKS] | Door (1) | Wall | Slab (2) | Elevation(s) | Minimum Thickness (feet) |
|---|---|---|---|---|---|---|---|
| | 2UJH10 007 | – | | | X | +/- 0 feet | 1.4 |
| | 2UJK31 034 | – | | | X | +69 feet | 1.64 |
| | 2UJK31 035 | – | | | X | +69 feet | 1.64 |
| SB 3 (4) | 3UJH01 005 | 3UJH01 040 | X | X | | -31 feet | 1.9 |
| | 3UJH01 005 | 3UJH01 020 | | X | | -31 feet | 1.9 |
| | 3UJH01 010 | 3UJH01 020 | | X | | -31 feet | 1.9 |
| | 3UJH01 011 | 3UJH01 024 | | X | | -31 feet | 1.9 |
| | 3UJH05 005 | 3UJH05 040 | | X | | -16 feet | 1.9 |
| | 3UJH05 006 | 3UJH05 020 | | X | | -16 feet | 1.9 |
| | 3UJH05 010 | 3UJH05 025 | | X | | -16 feet | 1.9 |
| | 3UJH10 002 | – | | | X | +/- 0 feet | 1.4 |
| | 3UJH10 005 | – | | | X | +/- 0 feet | 1.4 |
| | 3UJH10 006 | – | | | X | +/- 0 feet | 1.8 |
| | 3UJH10 007 | – | | | X | +/- 0 feet | 1.4 |
| | 3UJK31 034 | – | | | X | +69 feet | 1.64 |
| | 3UJK31 035 | – | | | X | +69 feet | 1.64 |
| SB 4 (4) | 4UJH01 007 | 4UJH01 026 | | X | | -31 feet | 1.9 |
| | 4UJH01 001 | 4UJH01 025 | | X | | -31 feet | 1.9 |
| | 4UJH01 001 | 4UJH01 021 | X | X | | -31 feet | 1.9 |
| | 4UJH01 010 | UFA01 054 | | X | | -31 feet | 1.9 |
| | 4UJH01 011 | UFA01 051 | X | X | | -31 feet | 1.9 |
| | 4UJH05 013 | UFA05 051 | X | | | -16 feet | 1.9 |

## Table 2.1.1-3—Radiation Barriers (5 Sheets)

| NI Structure | From Room(s) [KKS] | To Room(s) [KKS] | Door (1) | Wall | Slab (2) | Elevation(s) | Minimum Thickness (feet) |
|---|---|---|---|---|---|---|---|
| | 4UJH05 006 | 4UJH05 026 | | X | | -16 feet | 1.9 |
| | 4UJH05 005 | 4UJH05 025 | | X | | -16 feet | 1.9 |
| | 4UJH05 005 | 4UJH05 021 | | X | | -16 feet | 1.9 |
| | 4UJH05 001 | 4UJH05 021 | X | X | | -16 feet | 1.9 |
| | 4UJH10 002 | – | | | X | +/- 0 feet | 1.4 |
| | 4UJH10 004 | – | | | X | +/- 0 feet | 1.4 |
| FB | UFA13 017 | UFA15 022 | | X | | +12 feet | 4.5 |
| | UFA13 057 | UFA15 022 | | X | | +12 feet | 4.5 |
| | UFA15 022 | – | | | X | +12 feet | 5.8 |
| | UFA18 015 | UFA19 021 | | X | | +24 feet | 3.4 |
| | UFA18 062 | UFA19 021 | | X | | +24 feet | 3.4 |
| | UFA17 017 | UFA15 022 | | X | | +24 feet | 4.5 |
| | UFA18 062 | UFA15 022 | | X | | +24 feet | 4.0 |
| | UFA17 025 | UFA15 022 | | X | | +24 feet | 4.5 |
| | UFA17 057 | UFA15 022 | | X | | +24 feet | 4.5 |
| | UFA17 057(4) | UFA17 084 | | X | | +24 feet | 1.0 |
| | UFA21 015 | UFA19 021 | | X | | +36 feet | 3.4 |
| | UFA21 099 | UFA19 021 | | X | | +36 feet | 3.4 |
| | UFA21 099 | UFA15 022 | | X | | +36 feet | 4.0 |
| | UFA21 017 | UFA15 022 | | X | | +36 feet | 4.1 |
| | UFA21 057 | UFA15 022 | | X | | +36 feet | 4.5 |
| | UFA21 084 | UFA16 023 | | X | | +36 feet | 4.9 |

## Table 2.1.1-3—Radiation Barriers (5 Sheets)

| NI Structure | From Room(s) [KKS] | To Room(s) [KKS] | Door (1) | Wall | Slab (2) | Elevation(s) | Minimum Thickness (feet) |
|---|---|---|---|---|---|---|---|
| | UFA21 082 | UFA16 023 | | X | | +36 feet | 4.9 |
| | UFA23 015 | UFA19 021 | | X | | +49 feet | 3.4 |
| | UFA23 018 | UFA19 021 | | X | | +49 feet | 3.4 |
| | UFA23 014 | UFA19 021 | | X | | +49 feet | 3.4 |
| | UFA23 014 | UFA15 022 | | X | | +49 feet | 4.1 |
| | UFA24 017 | UFA15 022 | | X | | +49 feet | 4.1 |
| | UFA24 085 | – | | | X | +49 feet | 1.3 |
| | UFA29 090 | – | | | X | +64 feet | 1.3 |
| NAB | UKA03 012 | UKA03 020 | | X | | -21 feet | 2.3 |
| | UKA03 093 | UKA06 067 | | X | | -11 feet | 2.6 |
| | UKA06 091 | UKA06 066 | | X | | -11 feet | 2.6 |
| | UKA06 063 | UKA06 066 | | X | | -11 feet | 2.6 |
| | UKA06 070 | UKA06 067 | | X | | -11 feet | 2.6 |
| | UKA06 036 | UKA03 020 | X | X | | -11 feet | 2.6 |
| | UKA06 012 | UKA03 020 | | X | | -11 feet | 2.3 |
| | UKA10 096 | UKA06 067 | | X | | +/- 0 feet | 2.6 |
| | UKA10 096 | UKA06 066 | | X | | +/- 0 feet | 2.6 |
| | UKA10 036 | UKA03 020 | | X | | +/- 0 feet | 2.6 |
| | UKA10 012 | UKA03 020 | | X | | +/- 0 feet | 2.3 |
| | UKA10 036 | UKA03 020 | | X | | +12 feet | 2.6 |
| | UKA13 012 | UKA03 020 | | X | | +12 feet | 2.3 |
| | UKA25 012 | UKA20 001 | | X | | +50 feet | 1.0 |

## Table 2.1.1-3—Radiation Barriers (5 Sheets)

| NI Structure | From Room(s) [KKS] | To Room(s) [KKS] | Door (1) | Wall | Slab (2) | Elevation(s) | Minimum Thickness (feet) |
|---|---|---|---|---|---|---|---|
| RWB | UKS01 020 | UKS01 065 | | X | | -31 feet 6 inches | 2.8 |
| | UKS03 063 | UKS01 065 | | X | | -21 feet 4 inches | 2.8 |
| | UKS10 092 | – | | | X | 0 feet 0 inches | 2.2 |
| | UKS10 093 | – | | | X | 0 feet 0 inches | 2.2 |
| | UKS10 091 | – | | | X | 0 feet 0 inches | 2.2 |
| | UKS10 058 | – | | | X | 0 feet 0 inches | 2.0 |
| RCB (4) | NA(3) | RBA | | X | | (3) | 3.0 |

**Notes:**

1. Doors have the same radiation attenuation ability as the walls in which they are placed.
2. These are floor slabs.
3. This barrier is the entire RCB peripheral wall, which is adjacent to the RBA.
4. Barriers for response to accident missions.

## Table 2.1.1-4—Nuclear Island ITAAC (3 Sheets)

| Commitment Wording | | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.1 | The basic configuration of the NI structures is as shown on Figure 2.1.1-1 and Figure 2.1.1-2. | a. An inspection of the as-built basic configuration of the NI structures will be performed. | a. The as-built basic configuration of the NI structures is as follows:<br>– The RCB peripheral wall and dome is within the RSB as shown on Figure 2.1.1-9.<br>– SBs 1 and 4 are adjacent to the RSB as shown on Figure 2.1.1-1 and Figure 2.1.1-2.<br>– SBs 2 and 3 are adjacent to the RSB as shown on Figure 2.1.1-1 and Figure 2.1.1-2.<br>– The FB is adjacent to the RSB as shown on Figure 2.1.1-1 and Figure 2.1.1-2.<br>– The RSB cylindrical wall is thicker above the point where this wall meets the FB and SB structures roofs as shown on Figure 2.1.1-9.<br>– The vent stack is located on top of the FB stair tower as shown on Figure 2.1.1-2.<br>– The main steam valve rooms are located in SBs 1 and 4 as shown on Figure 2.1.1-2.<br>– The MCR, RSS, and TSC are located in the SBs 2 and 3, with the MCR and RSS separated, as shown on Figure 2.1.1-15 and Figure 2.1.1-16. |

**Table 2.1.1-4—Nuclear Island ITAAC (3 Sheets)**

| | Commitment Wording | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 3.1 | The basic configuration of the NI structures includes:<br>a. A continuous external hazards barrier.<br>b. Decoupling of SB 2/3 and FB internal structures from their outer external hazards barrier walls, at their exterior walls along the entire wall length and the upper ceiling, and from the RSB above elevation 0 feet, 0 inches. | An inspection of the as-built basic configuration of the NI structures will be performed. | The as-built basic configuration of the NI structures has the following features:<br>a. The RB, SB 2/3, and the FB share a common boundary exterior surface at the SBs and FB structures roofs and walls to form a continuous external surface for the RB, SB 2/3 and FB structures as shown on Figure 2.1.1-2 and Figure 2.1.1-3.<br>b. SB 2/3 and the FB are decoupled from the external hazards barrier by a minimum of 3 inches at the external SBs and FB walls along their entire length and the upper ceiling, and from the RSB above the 0' 0" elevation as shown on Figure 2.1.1-11, Figure 2.1.1-12, Figure 2.1.1-15 and Figure 2.1.1-17. |
| 3.2 | The NI site grade level is located between 12 inches and 18 inches below finish floor elevation at ground entrances. | An inspection of the as-built NI site grade level will be performed. | The as-built NI site grade level is located between 12 inches and 18 inches below finish floor elevation at ground entrances. |
| 3.3 | The NI structures include barriers for post-accident radiation shielding as described in Table 2.1.1-3. | An inspection of the as-built NI accident radiation barriers will be performed. | The as-built NI structures barriers that provide post-accident radiation shielding are as described in Table 2.1.1-3. |
| 3.4 | Deleted. | Deleted. | Deleted. |
| 3.5 | Deleted. | Deleted. | Deleted. |
| 3.6 | NI Seismic Category I structural walls or floors having exterior penetrations located below grade elevation are protected against external flooding by watertight seals. | An inspection of NI Seismic Category I exterior structural wall and floor penetrations located below grade elevation will be performed. | Watertight seals exist for exterior penetrations of NI Seismic Category I structural walls and floors located below grade elevation. |

**Table 2.1.1-4—Nuclear Island ITAAC (3 Sheets)**

| Commitment Wording | | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 3.7 | The NI structures have key dimensions that are confirmed after construction. | An inspection of key dimensions of the as-built NI structures will be performed. During construction, deviations from the approved design will be analyzed for design basis loads. | Deviations from the key dimensions and tolerances specified in Table 2.1.1-1 and Table 2.1.1-2 are reconciled and the as-built NI structures will withstand the design basis loads without loss of structural integrity and safety related functions. |

## Table 2.1.1-5—Key Dimensions of Reactor Building Structures (2 Sheets)

| Label | Section Descriptions | Region | Floor Elevation or Elevation Range | Key Dimension (1) |
|---|---|---|---|---|
| S1 | Slab Supporting Steam Generators and Reactor Coolant Pumps. | Refer to Figure 2.1.1-5 | Nominal elevation +5 ft | 6 ft - 6 ¾ in. |
| S2 | Slab Supporting Steam Generators and Reactor Coolant Pumps. | Refer to Figure 2.1.1-5 | Nominal elevation +5 ft | 3 ft - 3 3/8 in. |
| W1 | Steam Generator and Reactor Coolant Pump Typical Cavity Walls. | Refer to Figure 2.1.1-6 | From nominal elevations +17 ft to +29 ft | 3 ft - 11 1/4 in. |
| W2 | Steam Generator and Reactor Coolant Pump Typical Cavity Walls. | Refer to Figure 2.1.1-6 | From nominal elevations +17 ft to +29 ft | 3 ft - 3 3/8 in. |
| S3 | Slab Supporting Pressurizer. | Refer to Figure 2.1.1-7 | Nominal elevation +49 ft | 2 ft - 9 7/16 in. |
| S4 | Slab Supporting Pressurizer. | Refer to Figure 2.1.1-7 | Nominal elevation +49 ft | 1 ft - 7 11/16 in. |
| W3 | Pressurizer Typical Cavity Wall. | Refer to Figure 2.1.1-7 | From nominal elevations +21 ft to +92 ft | 2 ft - 7 ½ in. |
| S5 | Operating floor area. | Refer to Figure 2.1.1-8 | Nominal floor elevation +64 ft | 2 ft - 7 ½ in. |
| S6 | Operating floor area. | Refer to Figure 2.1.1-8 | Nominal floor elevation +64 ft | 3 ft - 3 3/8 in. |
| S7 | Operating floor area. | Refer to Figure 2.1.1-8 | Nominal floor elevation +64 ft | 4 ft - 3 3/16 in. |
| W4 | Steam Generator and Reactor Coolant Pump Typical Cavity Walls. | Refer to Figure 2.1.1-8 | From nominal elevations +52 ft to +64 ft | 3 ft - 3 3/8 in. |
| W5 | Steam Generator and Reactor Coolant Pump Typical Cavity Walls. | Refer to Figure 2.1.1-8 | From nominal elevations +52 ft to +64 ft | 3 ft - 3 3/8 in. |

### Table 2.1.1-5—Key Dimensions of Reactor Building Structures (2 Sheets)

| Label | Section Descriptions | Region | Floor Elevation or Elevation Range | Key Dimension [1] |
|---|---|---|---|---|
| W6 | RSB Wall above FB Roof Connection | Refer to Figure 2.1.1-9 | The FB roof is at top of slab nominal elevation +112 ft | 5 ft - 10 7/8 in. |
| W7 | RSB Wall below FB Roof Connection | Refer to Figure 2.1.1-9 | The FB roof is at top of slab nominal elevation +112 ft | 4 ft - 3 3/16 in. |
| S8 | FB Roof at RSB Wall Connection | Refer to Figure 2.1.1-9 | The FB roof is at top of slab nominal elevation +112 ft | 5 ft - 10 7/8 in. |
| W8 | RSB Wall above SB 2/3 Roof Connection | Refer to Figure 2.1.1-9 | The SB 2/3 roof is at top of slab nominal elevation +94 ft | 5 ft - 10 7/8 in. |
| W9 | RSB Wall below SB 2/3 Roof Connection | Refer to Figure 2.1.1-9 | The SB 2/3 roof is at top of slab nominal elevation +94 ft | 4 ft - 3 3/16 in. |
| S9 | SB 2/3 Roof at RSB Wall Connection | Refer to Figure 2.1.1-9 | The SB 2/3 roof is at top of slab nominal elevation +94 ft | 5 ft - 10 7/8 in. |
| G1 | RCB Wall to Foundation Gusset Connection. | Refer to Figure 2.1.1-9 and Figure 2.1.1-10 | From bottom of RB foundation base slab to nominal elevation -8 ft | Varies as shown on Figure 2.1.1-10 |

**Notes:**

1. Concrete forming and placement tolerances for construction of the RCB shall conform to the requirements of ACI 359; however, where not specifically addressed in ACI 359 these tolerances shall conform to the requirements of ACI 349 and ACI 117. Concrete forming and placement tolerances for construction of other safety related structures shall conform to the requirements of ACI 349 and ACI 117.

## Table 2.1.1-6—Table Deleted

**Table 2.1.1-7—RBA Penetrations that Contain High Energy Pipelines**

| KKS | Penetration | Description |
|---|---|---|
| JEW | JMK10BQ001 | Chemical & Volume Control System - Seal return |
| JEW | JMK10BQ004 | Chemical & Volume Control System - Seal injection |
| KBA | JMK10BQ002 | CVCS - Charging |
| KBA | JMK10BQ003 | CVCS - Letdown |
| KPL | JMK60BQ005 | Gaseous Waste Processing System |
| KPL | JMK60BQ006 | Gaseous Waste Processing System |
| LAB | JMK60BQ109 | Feedwater to SG1 |
| LAB | JMK70BQ207 | Feedwater to SG2 |
| LAB | JMK80BQ306 | Feedwater to SG3 |
| LAB | JMK90BQ409 | Feedwater to SG4 |
| LBA | JMK10BQ110 | Main Steam Piping System - Main Steam 1 |
| LBA | JMK20BQ208 | Main Steam Piping System - Main Steam 2 |
| LBA | JMK30BQ307 | Main Steam Piping System - Main Steam 3 |
| LBA | JMK40BQ410 | Main Steam Piping System - Main Steam 4 |
| LCA | JMK10BQ304 | Main Condensate Piping System - Condensate to Blowdown Coolers |
| LCA | JMK10BQ305 | Main Condensate Piping System - Condensate from Blowdown Coolers |
| LCQ | JMK60BQ019 | Steam Generator Blowdown System |
| LCQ | JMK60BQ205 | Steam Generator Blowdown System |

## Table 2.1.1-8—Reactor Building ITAAC (6 Sheets)

| | Commitment Wording | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.1 | Six rib support structures are provided at the bottom of the reactor cavity as shown on Figure 2.1.1-9. | Inspection of the reactor vessel cavity will be performed. | Six rib support structures are provided at the bottom of the reactor cavity as shown on Figure 2.1.1-9. |
| 2.2 | As shown on Figure 2.1.1-4, a flooding barrier is provided to prevent ingress of water into the core melt spreading area. | Inspection of the core melt water ingression barrier will be performed. | The RCB provides a spreading area water ingression barrier as shown on Figure 2.1.1-4.<br>Penetrations and doors within the core melt water ingression barrier are water tight. |
| 2.3 | Core melt cannot relocate to upper containment due to the existence of concrete barriers as shown on Figure 2.1.1-9. | Inspection of the RCB will be performed. | Concrete barriers are located within the RCB as shown on Figure 2.1.1-9. |
| 2.4 | The RB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety related functions.<br>• Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads).<br>• Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, and missile impact loads).<br>• External events (including rain, snow, flood, tornado, tornado-generated missiles and earthquake) | An analysis of the RB structures for the design basis loads will be performed. During construction, deviations from the approved design will be analyzed for design basis loads. | A report exists which reconciles deviations during construction and concludes that the as-built RB structures conform to the approved design and will withstand the design basis loads specified without loss of structural integrity or safety-related functions. |

**Table 2.1.1-8—Reactor Building ITAAC (6 Sheets)**

| | Commitment Wording | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.5 | The RCB, including the liner plate and penetration assemblies, maintains its pressure boundary integrity at the design pressure. | a. Inspections will be performed for the existence of ASME Code Section III Design Report(s) for the RCB liner plate and penetration assemblies. | a. ASME Code Section III Design Report(s) (NCA-3550) exist for the RCB liner plate and penetration assemblies. |
| | | b. Inspections will be performed to verify the existence of RCB liner plate and penetration assemblies analyses which reconcile as-built deviations to the ASME Code Design Report as required by ASME Code Section III. | b. ASME Code Date Reports (NCA-8000) exist and conclude that Reconciliation (NCA-3554) of the as-built RCB liner plate and penetration assemblies with the Design Report (NCA-3550) has occurred. |
| | | c. Inspections of pressure boundary welds will be performed to verify that welding on the RCB liner plate and penetration assemblies is performed in accordance with ASME Code Section III requirements. | c. ASME Code Section III Data Reports exist and concludes that pressure boundary welding has been performed on the RCB liner plate and penetration assemblies in accordance with ASME Code Section III. |
| | | d. A Structural Integrity Test of the RCB, including the liner plate and penetration assemblies, will be performed. | d. The RCB, including the liner plate and penetration assemblies, maintains its integrity at the design pressure of at least 62 psig. |
| | | e. Pre-service Inspections on the RCB liner plate and penetration assemblies has been performed in accordance with ASME Code Section III. | e. ASME Code Section III Data Reports exist and concludes that Pre-service NDE performed on the RCB liner plate and penetration assemblies meets ASME Section III requirements. |

## Table 2.1.1-8—Reactor Building ITAAC (6 Sheets)

| | Commitment Wording | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.6 | The RCB is a post-tensioned, pre-stressed concrete structure. | a. Inspections will be performed for the existence of ASME Code Section III Design Report(s) for the RCB post-tensioned, pre-stressed concrete structure. | a. ASME Code Section III Design Report(s) (NCA-3550) exist for the RCB post-tensioned, pre-stressed concrete structure. |
| | | b. Inspections will be performed to verify the existence of RCB post-tensioned, pre-stressed concrete structure analyses which reconcile as-built deviations to the ASME Code Design Report as required by ASME Code Section III. | b. ASME Code Date Reports (NCA-8000) exist and conclude that Reconciliation (NCA-3554) of the as-built RCB post-tensioned, pre-stressed concrete structure with the Design Report (NCA-3550) has occurred. |
| | | c. A Structural Integrity Test of the RCB post-tensioned, pre-stressed concrete structure will be performed. | c. The RCB post-tensioned, pre-stressed concrete structure maintains its integrity at the design pressure of at least 62 psig. |
| | | d. Pre-Service Inspections on the RCB post-tensioned, pre-stressed concrete structure has been performed in accordance with ASME Code Section III. | d. ASME Code Section III Data Reports exist and concludes that Pre-Service Inspections on the RCB post-tensioned, pre-stressed concrete structure meets ASME Section III. |
| 2.7 | The RBA is separated from the SBs and the FB by an internal hazard protection barrier as shown on Figure 2.1.1-20 that has a minimum 3-hour fire rating,. | a. A fire protection analysis will be performed. | a. Completion of fire protection analysis that indicates barriers, doors, dampers, and penetrations that separates the RBA from the SBs and FB have a minimum 3-hour fire rating. |

**Table 2.1.1-8—Reactor Building ITAAC (6 Sheets)**

| | Commitment Wording | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| | | b. Inspection of as-built conditions of barriers, doors, dampers, and penetrations, which separate the RBA from the SBs and FB, versus construction drawings of barriers, doors, dampers and penetrations as determined in the part (a) analysis will be performed. | b. The as-built configuration of fire barriers, doors, dampers, and penetrations that separate the RBA from the SBs and FB (as shown on Figure 2.1.1-20) agrees with the construction drawings. |
| | | c. Testing of dampers that separate the RBA from the SBs and FB will be performed. | c. Dampers that separate the RBA from the SBs and FB close on receipt of signal. |
| | | d. A post-fire safe shutdown analysis will be performed. | d. Completion of the post-fire safe shutdown analysis indicates that at least one success path comprised of the minimum set of SSC is available for safe shutdown. |

**Table 2.1.1-8—Reactor Building ITAAC (6 Sheets)**

| | Commitment Wording | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.8 | The following provisions are provided for water flow to the IRWST:<br>• As shown on Figure 2.1.1-4, RCB rooms which are adjacent to the IRWST contain wall openings slightly above the floor to allow water flow into the IRWST.<br>• As shown on Figure 2.1.1-5, RCB rooms which are directly above the IRWST, contain trapezoidal-shaped openings in the floor to allow water flow into the IRWST. The floor openings are protected by weirs and trash racks to provide a barrier against material transport into the IRWST. | Inspection of the RCB will be performed. | The as-built RCB configuration includes the following provisions:<br>• As shown on Figure 2.1.1-4, the two rooms labeled Areas for MHSI, LHSI & SAHRS pipe penetrations contain wall openings slightly above the floor to allow water flow into the IRWST.<br>• As shown on Figure 2.1.1-5 the rooms labeled RCP Oil Collection Tank Areas for each loop contain trapezoidal-shaped openings in the floor and are provided with weirs and trash racks. |
| 2.9 | RBA penetrations that contain high-energy pipelines, as described in Table 2.1.1-7, have guard pipes. | Inspection of the RBA will be performed. | RBA penetrations that contain high-energy pipelines, as described in Table 2.1.1-7, have guard pipes. |
| 2.10 | Essential equipment required for plant shutdown located in the RB and RBA is located above the internal flood level. | a. An internal flood analysis for the RB and RBA will be performed.<br>b. A walkdown of the essential equipment in the RB and RBA required for plant shutdown will be performed. | a. Completion of the internal flood analysis for the RB and RBA indicates essential equipment required for plant shutdown is located above the internal flood level.<br>b. Essential equipment in the RB and RBA required for plant shutdown is located above the internal flood level. |

## Table 2.1.1-8—Reactor Building ITAAC (6 Sheets)

| Commitment Wording | | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.11 | The reactor pressure vessel, reactor coolant pumps, pressurizer, steam generators, and interconnecting RCS piping are insulated with reflective metallic insulation. | An inspection will be performed. | The reactor pressure vessel, reactor coolant pumps, pressurizer, steam generators, and interconnecting RCS piping are insulated with reflective metallic insulation. |
| 2.12 | The RB structures have key dimensions that are confirmed after construction. | An inspection of key dimensions of the as-built RB structures will be performed. During construction, deviations from the approved design will be analyzed for design basis loads. | Deviations from the key dimensions and tolerances specified in Table 2.1.1-5 are reconciled and the as-built RB structures will withstand the design basis loads without loss of structural integrity and safety related functions. |
| 2.13 | The RCB has a minimum containment free volume that is confirmed after construction. | During construction, dimensional deviations from the RCB and RB internal structures concrete outline drawings will be analyzed for impact on the minimum containment free volume value. | The final RCB minimum containment free volume is greater than or equal to 2.755 x $10^6$ $ft^3$ after all volumetric changes resulting from dimensional deviations to the RCB and RB internal structures concrete outline drawings have been reconciled. |
| 2.14 | The RCB and RB internal structures have a minimum containment heat sink surface area value. | During construction, surface area dimensional deviations from the RCB and RB internal structures construction drawings will be analyzed for impact on the minimum containment heat sink surface area value. | As-built deviations to the surface area dimensions shown on construction drawings have been reconciled against the minimum value of 699,633 $ft^2$. |
| 2.15 | The integrated leak rate from the RCB does not exceed the maximum allowable leakage rate. | A test will be performed to evaluate the RCB leakage rate. | The leakage rate does not exceed 0.25% of RCB air mass per day at containment pressure of 55 psig. |

## Table 2.1.1-9—Key Dimensions of Safeguard Building Structures

| Label | Section Descriptions | Region | Floor Elevation or Elevation Range | Key Dimension [(1)] |
|---|---|---|---|---|
| W10 | External Walls Below Grade. | Refer to Figure 2.1.1-13 and Figure 2.1.1-18 | From nominal elevations -31 ft to 0 ft | 4 ft - 11 in. |

**Notes:**

1. Concrete forming and placement tolerances for construction shall conform to the requirements of ACI 349 and ACI 117.

**Table 2.1.1-10—Safeguard Buildings ITAAC (3 Sheets)**

| Commitment Wording | | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.1 | The SB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety related functions.<br>• Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads).<br>• Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, and missile impact loads).<br>• External events (including rain, snow, flood, tornado, tornado-generated missiles and earthquake). | An analysis of the SB structures for the design basis loads will be performed. During construction, deviations from the approved design will be analyzed for design basis loads. | A report exists which reconciles deviations during construction and concludes that the as-built SB structures conform to the approved design and will withstand the design basis loads specified without loss of structural integrity or safety-related functions. |

## Table 2.1.1-10—Safeguard Buildings ITAAC (3 Sheets)

| Commitment Wording | | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.2 | The basic configuration of the NI structures separates the four SBs by an internal hazards separation barrier so that the impact of internal hazards, including fire, flood, high energy line break and missile impact, is contained within the SB of hazard origination. Figure 2.1.1-20 through Figure 2.1.1-37 identify the internal hazards separation barrier. | a. An inspection of the as-built basic configuration of the SBs structures will be performed. During construction, deviations from the approved design will be analyzed for design basis internal hazards. | a. The as-built basic configuration of the SBs structures provides separation as shown on Figure 2.1.1-20 through Figure 2.1.1-37. |
| | | b. A fire protection analysis will be performed. | b. Completion of fire protection analysis that indicates barriers, doors, dampers, and penetrations providing separation have a minimum 3-hour fire rating and mitigate the propagation of smoke to the extent that safe shutdown is not adversely affected. |
| | | c. Inspection of the as-built conditions of barriers, doors, dampers, and penetrations existing within the internal hazards protective barriers separating the four SBs, versus construction drawings of barriers, doors, dampers, and penetrations as determined in the part (b) analysis, will be performed. | c. The as-built configuration of fire barriers, doors, dampers and penetrations that separate the four SBs agrees with the construction drawings. |
| | | d. Testing of dampers that separate the four SBs will be performed. | d. Dampers that separate the four SBs close on receipt of signal. |
| | | e. A post-fire safe shutdown analysis will be performed. | e. Completion of the post-fire safe shutdown analysis indicates that at least one success path comprised of the minimum set of SSC is available for safe shutdown. |

**Table 2.1.1-10—Safeguard Buildings ITAAC (3 Sheets)**

| Commitment Wording | | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| | | f. An internal flooding analysis for the SBs will be performed. | f. Completion of the internal flooding analysis for the SBs indicates that the impact of internal flooding is contained within the SB of origin. |
| | | g. A walkdown of the SB features identified in the internal flooding analysis in part (f) that maintain the impact of the internal flooding to the SB of origin will be performed. | g. The SB flood protection features that maintain the impact of internal flooding to the SB of origin are installed and agree with the construction drawings. |
| 2.3 | The SB structures have key dimensions that are confirmed after construction. | An inspection of key dimensions of the as-built SB structures will be performed. During construction, deviations from the approved design will be analyzed for design basis loads. | The as-built SB dimensions conform to the key dimensions specified in Table 2.1.1-9. Deviations from the approved design are reconciled. |

**Table 2.1.1-11—Fuel Building ITAAC (3 Sheets)**

| Commitment Wording | | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.1 | The FB structure is Seismic Category I and is designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety related functions.<br>• Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads).<br>• Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, and missile impact loads).<br>• External events (including rain, snow, flood, tornado, tornado-generated missiles and earthquake. | An analysis of the FB structure for the design basis loads will be performed. During construction, deviations from the approved design will be analyzed for design basis loads. | A report exists which reconciles deviations during construction and concludes that the as-built FB structures conform to the approved design and will withstand the design basis loads specified without loss of structural integrity or safety-related functions. |

**Table 2.1.1-11—Fuel Building ITAAC (3 Sheets)**

| Commitment Wording | | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| 2.2 | The basic configuration of the NI structures provides internal separation between independent divisions within the FB and separates the FB from other NI structures by an internal hazards separation barrier so that the impact of internal hazards, including fire, flood, high line energy break and missile impact, is contained within the FB division of hazard origination. Figure 2.1.1-20 and Figure 2.1.1-38 through Figure 2.1.1-44 identify the internal hazards separation barrier. | a. An inspection of the as-built basic configuration of the FB and surrounding NI structures will be performed. During construction, deviations from the approved design will be analyzed for design basis internal hazards. | a. The as-built basic configuration of the FB and surrounding NI structures provides separation as shown on Figure 2.1.1-20 and Figure 2.1.1-38 through Figure 2.1.1-44. |
| | | b. A fire protection analysis will be performed. | b. Completion of an analysis that indicates barriers, doors, dampers, and penetrations providing separation have a minimum 3-hour fire rating and mitigate the propagation of smoke to the extent that safe shutdown is not adversely affected. |
| | | c. Inspection of the as-built conditions of barriers, doors, dampers, and penetrations that separate the FB from other NI structures, versus construction drawings of barriers, doors, dampers, and penetrations as determined in the part (b) analysis, will be performed. | c. The as-built configuration of barriers, doors, dampers, and penetrations providing separation agrees with the construction drawings. |
| | | d. Testing of dampers that separate the FB from other NI structures will be performed. | d. Dampers that separate FB from other NI structures close on receipt of signal. |
| | | e. A post-fire safe shutdown analysis will be performed. | e. Completion of the post-fire safe shutdown analysis indicates that at least one success path comprised of the minimum set of SSC is available for safe shutdown. |

**Table 2.1.1-11—Fuel Building ITAAC (3 Sheets)**

| Commitment Wording | | Inspections, Tests, Analyses | Acceptance Criteria |
|---|---|---|---|
| | | f. An internal flooding analysis for the FB will be performed. | f. Completion of the internal flooding analysis for the FB indicates that the impact of internal flooding is contained within the FB division of origin. |
| | | g. A walkdown of the FB features identified in the internal flooding analysis that maintain the impact of the internal flooding to the FB of origin will be performed. | g. The FB flood protection features that maintain the impact of internal flooding to the FB division of origin are installed and agree with the construction drawings. |
| 2.3 | The SFSP has a minimum depth from the bottom of the SFSP to the spent pool operating floor that is confirmed after construction. | An inspection of the SFSP will be performed. | The SFSP has a minimum depth of 47 feet, 2 inches as measured from the bottom of the SFSP to the spent fuel pool operating floor. |
| 2.4 | The SFSP includes no gates, openings, or drains below an elevation corresponding to the top of stored fuel assemblies. | An inspection of the SFSP will be performed. | The SFSP includes no gates, openings, or drains below 16 feet, 6-11/16 inches as measured from the bottom of the SFSP. |
| 2.5 | The SFSP includes no piping that extends below an elevation of 10 feet above the top of the stored fuel assemblies. | An inspection of the SFSP will be performed. | The SFSP includes no piping that extends below 26 feet, 6-11/16 inches as measured from the bottom of the SFSP. |

Next File