

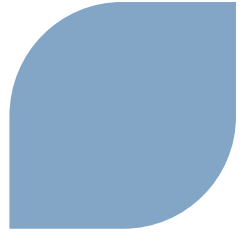
# **U.S. EPR FSAR Revision 5 Public Meeting**

## **August 7-8, 2013**

Tim Stack and Tony Lentz  
U.S. EPR Design Certification

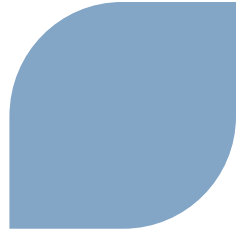


# Purpose



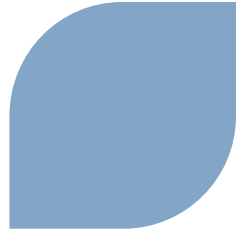
- ▶ **To discuss changes in Revision 5 of the FSAR for the U.S. EPR Design Certification and any associated impacts of these changes on other parts of the U.S. EPR Design Certification review**

# Agenda



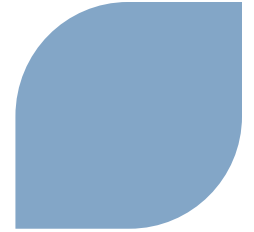
- ▶ **Opening Remarks – Len Gucwa**
- ▶ **Review Scope and Approach – Tim Stack**
- ▶ **Impact of Changes on U.S. EPR FSAR – Tim Stack and Tony Lentz**
  - ◆ **Tier 2 Impacts - Chapter by Chapter Basis**
  - ◆ **Tier 1 Impacts**
- ▶ **Follow-up on Specific NRC Staff Questions - Tim Stack and Tony Lentz**
- ▶ **Summary/Conclusions – Tim Stack**
  - ◆ **Conclusions Regarding FSAR Impacts**
  - ◆ **Next Steps**

# Review Scope



- ▶ **Changes in FSAR that are unrelated to RAI submittals occurred from two sources:**
  - ◆ Design Change Request (DCR)
  - ◆ Corrective Action Report (CR)
- ▶ **Changes in FSAR that are unrelated to RAI submittals are reflected in both Tier 1 and Tier 2**
- ▶ **All changes in FSAR Tier 2 are included, except for Chapter 19 PRA**
  - ◆ Changes in Chapter 19 were recently discussed at PRA Level 1 and Level 2 audits
  - ◆ Changes in Chapter 19 were recently discussed at Aircraft Impact Assessment audit
- ▶ **Based on this review, the following Chapters do not contain any changes that are unrelated to RAI submittals:**
  - ◆ 2, 4, 11, 13, 14 and 18

# Review Approach



## ▶ Design Change Request (DCR)

### ◆ Brief description of change

### ◆ Basis (or rationale) for change

- Resolve CR
- Enhance Licensing/Safety of Plant
- Improve Marketability of Plant

### ◆ Impacted FSAR sections, tables and figures

- Chapter specific impacts provided
- Integrated impact of DCR reflected as composite of individual chapters

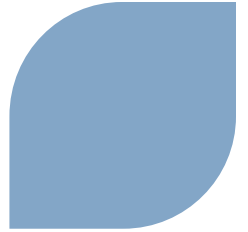
## ▶ Corrective Action Report (CR)

### ◆ Brief description of change

### ◆ Impacted FSAR sections, tables and figures

- Chapter specific impacts provided
- Integrated impact of CR reflected as composite of individual chapters

# Chapter 1



## ► Revision 5 Design Changes

### ◆ 113-9084789: Changes to US EPR Codes and Standards

- Reconcile US EPR Codes and Standards to resolve condition report
- Basis: Resolve CR 2010-3702
- Revision to Section 1.9.6 (update reference to NUREG-0933 to include Supplements 1-31)

### ◆ 113-9043231: Interior-Exterior Door Reduction

- Remove high cost/high technology doors in Safeguard Buildings
- Basis: Enhanced Marketability of Plant
- Revised Figure 1.2-52, 1.2-53 (Relocate door from Safeguard Building 3 to Access Building to ground floor)

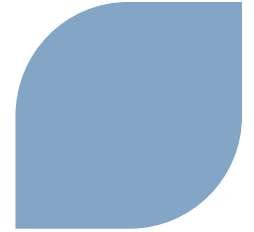
### ◆ 113-7000159: Remove Decontamination System for Process Vessels and Equipment

- Remove permanent decontamination system. Plant owners will use purchased or leased system.
- Basis: Enhanced Marketability of Plant
- Revised Figure 1.2-7 9 (Equipment Legend)

### ◆ 113-7000697: Smoke Confinement System Reduction

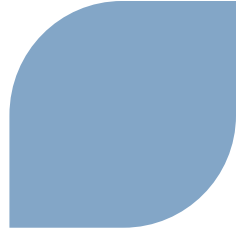
- Remove all subsystems of Smoke Confinement, except the Safeguard Building Division 2&3 Interconnecting Passageway Supply & Exhaust Air Subsystem
- Basis: Enhanced Marketability of Plant
- Revised Figure 1.2-16

# Chapter 1 (continued)



- ◆ **113-7011161: NABVS Check Damper Addition at Vent Stack**
  - Add check damper to Nuclear Auxiliary Building Ventilation System (NABVS) as class break to safety related vent stack (see DCR 113-7002936)
  - Basis: Resolve CR 2009-4624
  - Revised Figure 1.2-13 (Show opening in wall for ventilation duct)
- ◆ **113-7011346: Design Updates for Aircraft Hazard Protection**
  - Increase wall thickness and upgrade missile shield specifications for Aircraft Impact Assessment (AIA) barrier improvements
  - Basis: Enhanced Licensing/Safety
  - Revised Figures 1.2-12, 1.2-13, 1.2-20, 1.2-21
- ◆ **113-7012802: Move Nuclear Auxiliary Building Additional 1 ft from Nuclear Island**
  - Move Nuclear Auxiliary Building and Radwaste Building 1 ft East and 1 ft South to eliminate seismic interaction
  - Basis: Enhanced Licensing/Safety
  - Revised Figures 1.2-4, 1.2-5, 1.2-6, 1.2-7, 1.2-8, 1.2-9, 1.2-10, 1.2-11, 1.2-12, 1.2-13, 1.2-14, 1.2-18, 1.2-19, 1.2-20, 1.2-21, 1.2-22, 1.2-23, 1.2-24, 1.2-25
- ◆ **113-7013280: Revise Top and Bottom of Slab Elevations in Nuclear Auxiliary Building**
  - Revise slab thickness in three rooms and correct elevation view discrepancy
  - Basis: Resolve CR 2012-8986
  - Revised Figures 1.2-6, 1.2-17

# Chapter 1 (continued)



## ◆ Editorial

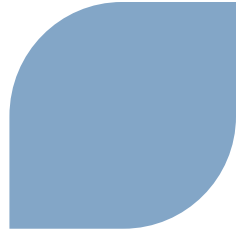
- Section Lines were adjusted for consistency with the Appendix 3B figures
- Revised Figure 1.2-50, 1.2-51, 1.2-52, 1.2-54

## ▶ Revision 5 Corrective Action Reports Incorporated

### ◆ CR 2013-1447: Inconsistency between Elevation and Plan views for Access Building

- Elevation views were corrected
- Revised Figure 1.2-57, 1.2-58





## ► Revision 5 Design Changes

### ◆ 113-9043231: Interior-Exterior Door Reduction

- Remove high cost/high technology doors in Safeguard Buildings
- Basis: Enhanced Marketability of Plant
- Revision to Figures 3.8-56, 3B-33, 3.8-66, 3.8-67 (Relocate door from Safeguard Building 3 to Access Building to ground floor)

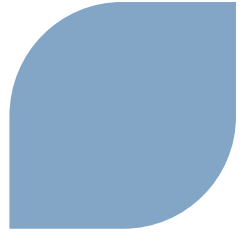
### ◆ 113-9048305: SSC Classification Revision to SG Blowdown and Condensate Polisher Shielding

- Change SG Blowdown piping and components in Nuclear Auxiliary Building from Seismic II to NSC
- Change turbine island SG Blowdown piping and components from quality group E to quality group D and from seismic class CS to NSC.
- Change safety classification for condensate polisher shielding from safety-related to non-safety related
- Basis: Enhanced Licensing/Safety
- Revision to Table 3.2.2-1

### ◆ 113-9084789: Changes to US EPR Codes and Standards

- Reconcile US EPR Codes and Standards to resolve condition report
- Basis: Resolve CR 2010-3702
- Revision to Section 3.8.6 (updated reference to AISC 303-00 to include the year 2000)

## Chapter 3 (continued)



### ◆ **113-7002936: Reclassify Vent Stack to Safety Related**

- Change safety classification of vent stack from non-safety-related to safety related
- Basis: Resolve CR 2009-4624
- Original update in Revision 2
- Conforming Revision to Tables 3.2.2-1 and 3.11-1 (change safety classification of radiation monitors located within the vent stack from non-safety-related to safety related)

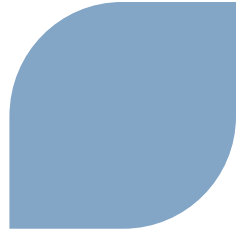
### ◆ **113-7006837: Room UJA15-024 Shielding Changes**

- Modify shielding in Reactor Building room UJA15-024 to support normal refueling and dropped fuel assembly
- Basis: Resolve CR 2010-1587 and update for Consistency with RAI 280, Question 12.03-12.04-17 Item 5 response
- Revision to Figures 3.8-56, 3B-6, 3B-33

### ◆ **113-7007107: FPCPS Changes**

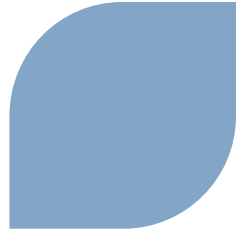
- Include Fuel Pool Cooling and Purification System (FPCPS) components classified as safety-related and located in harsh radiation environments in Equipment Qualification program
- Basis: Resolve CR 2010-3199
- Revision to Tables 3.10-1, 3.10-2, 3.11-1, 3.11-2

## Chapter 3 (continued)



- ◆ **113-7008586: SIS/RHR IST Program**
  - Change active/passive classification of SIS/RHRS valves 30JNA30/40 AA006 and 30JNG13/23/33/43 AA602, and test frequency of SIS/RHRS valve 30JNA30/40 AA006
  - Basis: Resolve CR 2010-6716
  - Revision to Table 3.9.6-2
- ◆ **113-7009641: Redesign of Ventilation for the EDG Diesel Hall and ESW Cooling for the Electrical Control Room**
  - Replace safety related electrical control room refrigerant unit with safety related ESW cooling coil, and change maximum/minimum temperature ratings for room
  - Add non-safety related refrigerant unit for electrical control room and non-safety related ventilation for EDG diesel hall
  - Separate diesel exhaust from HVAC exhaust
  - Basis: Resolve CR 2011-3143
  - Conforming Revision to Tables 3.2.2-1, 3.10-1, 3.11-1 (add emergency power generating building ventilation system coolers to the ESW system)
  - Will be included in final response to RAI 578
- ◆ **113-7009873: Changes to HELB Terminal Ends Documentation**
  - Re-select isolation valves credited as terminal end points for isolation of the high energy portion of the Safety Injection, Emergency Feedwater, and Chemical Volume Control Systems
  - Basis: Resolve CR 2010-5152
  - Revision to Table 3.6.1-2

## Chapter 3 (continued)



### ◆ **113-7010029: Electrical Changes to FSAR Table 3.2.2-1**

- Reconcile classifications for selected Normal Power Supply, Lighting and small power system components
- Basis: Resolve CR 2010-4794
- Revision to Table 3.2.2-1

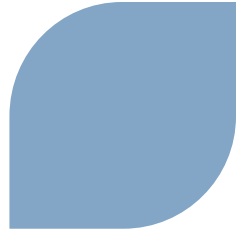
### ◆ **113-7010199: Separation Gap of RBIS walls from RCB at Elevation +19.5m (+64.0 ft)**

- Provide 6 inch gap between Reactor Building Internal Structure (RBIS) and Reactor Building containment wall at two locations
- Basis: CR 2011-141
- Revision to Figures 3.8-8, 3.8-56, 3.8-142, 3B-33 (correction of structural background on fire barrier figures)

### ◆ **113-7011161: NABVS Check Damper Addition at Vent Stack**

- Add check damper to Nuclear Auxiliary Building Ventilation System (NABVS) as class break to safety related vent stack (see DCR 113-7002936)
- Basis: Resolve CR 2009-4624
- Revised Figure 3.8-47, 3B-24 (show opening in wall for ventilation duct)

## Chapter 3 (continued)



### ◆ 113-7011346: Design Updates for Aircraft Hazard Protection

- Increase wall thickness and upgrade missile shield specifications for Aircraft Impact Assessment (AIA) barrier improvements
- Basis: Enhanced Licensing/Safety
- Revision to Figures 3.8-56, 3.8-78, 3B-33, 3B-55

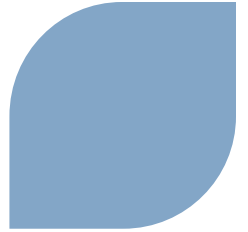
### ◆ 113-7011374: Establish Floor Penetration Size in Spent Fuel Cask Loading Pit

- Change the size of the floor penetration in the spent fuel cask loading pit back to 6'-5-1/2" square (see DCR 113-9104329)
- Basis: Enhanced Licensing/Safety
- Revision to Figures 3.8-43, 3B-20

### ◆ 113-7012156: SSC Classification Changes

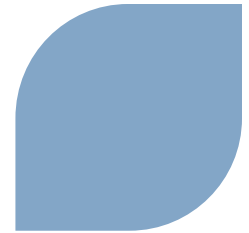
- Extent of condition performed for CR 2012-3366 and 2012-7715 determined that multiple non-safety related components are not classified in accordance with SSC classification procedure and Regulatory Guide 1.26. Change SSC classifications to conform to SSC classification procedure and Regulatory Guide 1.26.
- Basis: Resolve CRs 2012-2815, 2012-3366, 2012-7715
- Revision to Table 3.2.2-1

## Chapter 3 (continued)



- ◆ **113-7012642: Self Powered Neutron Detectors Amplifier Circuit Modifications**
  - To prevent an undetected single failure in the amplifier that would lead to the loss of two SPNDs, add one TXS cabinet per division.
  - Basis: Resolve CR 2011-0606
  - Revision to Tables 3.2.2-1, 3.11-1 (add TXS data)
- ◆ **113-7012826: Fukushima Response - Core Cooling in Modes 5 and 6**
  - Add non-safety related primary coolant injection pump to safety injection system
  - Add ELAP diesel generator and auxiliaries to Fire Protection Building
  - Add transfer switches to Divisions 1 and 2 of Class 1E power distribution system to connect ELAP diesel generator
  - Basis: Enhanced Licensing/Safety
  - Revision to Figures 3.8-53, 3B-30 (room description for Room 7 (1UJH01 008) changed [background change])
- ◆ **113-7013213: CCWS Safety Class Interface Inconsistencies**
  - Change the SSC classifications of the coolers supplied with cooling water by the Component Cooling Water system (CCWS) to safety-related
  - Basis: Resolve CR 2010-5698
  - Revision to Tables 3.2.2-1, 3.10-1

## Chapter 3 (continued)



### ◆ **113-7013328: Inservice Testing Program**

- Revise Pump and Valve Inservice Testing Program to resolve condition reports. Comprehensive review of IST Program performed to ensure conformance to O&M Code.
- Basis: Resolve CRs 2012-9284, 2012-9481, 2013-1507, and 2013-1538
- Revision to Tables 3.9.6-1, 3.9.6-2

### ◆ **113-7013337: Change EQ Program Designation for FPCPS Isolation Valve**

- Change EQ Program designation for FPCPS Lances Storage Compartment isolation valve 30FAL10AA003 actuator
- Basis: Resolve CR 2012-7927
- Revision to Table 3.11-1

### ◆ **113-7013440: Change ESWS Valves from Local Manual Actuation to MOVs That Are Operable from Severe Accident Controls**

- Change ESWS valves 30PEB80 AA003, AA004, AA013, and AA014 from local manual actuation to MOVs that are operable from SA controls
- Basis: Resolve CR 2013-0720
- Revision to Tables 3.2.2-1, 3.10-1, 3.11-1

## Chapter 3 (continued)



### ◆ **113-7013497: Fire Barrier Changes to Improve Plant Response to Beyond Design Basis Fire**

- Upgrade fire barrier ratings and pressure ratings of exterior walls on Nuclear Island common basemat for AIA protection
- Basis: Enhanced Licensing/Safety
- Revision to Figures 3.8-41, 3.8-42, 3.8-66

### ◆ **113-7013559: Fire Barrier Improvements for Nuclear Island Towers for BDBE**

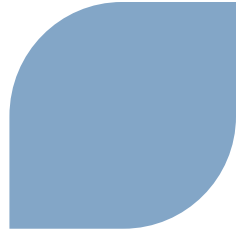
- Revise walls/doors separating Nuclear Island stair towers from remainder of building to be 3 hour rated for AIA protection
- Basis: Enhanced Licensing/Safety
- Revision to Figures 3.8-38, 3.8-39, 3.8-40, 3.8-41, 3.8-42, 3.8-43, 3.8-44, 3.8-45, 3.8-46, 3.8-47, 3.8-56, 3.8-64, 3.8-66, 3.8-70, 3.8-71, 3.8-72, 3B-15, 3B-16, 3B-17, 3B-18, 3B-19, 3B-20, 3B-21, 3B-22, 3B-23, 3B-24, 3B-33, 3B-41, 3B-43, 3B-47, 3B-48, 3B-49

### ◆ **135-7014459: Critical Sections Additional Design Details**

- Add design details to support Civil Critical Section calculations
- Basis: Enhanced Licensing/Safety
- Revision to Figures 3.8-11, 3.8-12, 3.8-13, 3.8-41, 3B-3, 3B-6, 3B-7, 3B-12, 3B-13, 3B-14, 3B-18, 3B-23, 3B-24, 3B-25, 3B-26



## Chapter 3 (continued)



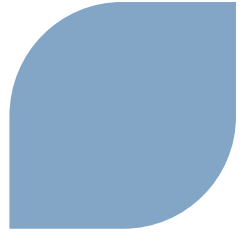
### ◆ Structural/Background Clarifications

- Correction of structural background on fire barrier figures
- Basis: Enhanced Licensing/Safety
- Revision to Figures 3.8-2, 3.8-10, 3.8-49, 3.8-50, 3.8-51, 3.8-52, 3.8-54, 3.8-63, 3.8-65, 3.8-68, 3.8-69, 3.8-74, 3.8-75, 3.8-76, 3.8-93, 3.8-94, 3B-11, 3B-31, 3B-25, 3B-26, 3B-27, 3B-28, 3B-29, 3B-42, 3B-44, 3B-45, 3B-46, 3B-51, 3B-52, 3B-53, 3B-54, 3B-67, 3B-68

### ◆ Editorial

- Added clarifying dimension of 8'-6" at azimuth 230 degrees for centerline of Airlock to support critical sections
- Revision to Figures 3.8-4, 3.8-138, 3B-5

## Chapter 3 (continued)



### ► Revision 5 Corrective Action Reports Incorporated

#### ◆ CR 2011-5867: HVAC Opening Not Shown on Arrangement Drawings

- Openings were included in the design, but that were not shown on the drawing were added
- Revision to Figure 3B-4

#### ◆ CR 2013-1378: DCR 113-9114680-000, Safeguard Building 1 and 4 Battery Room Changes, Was Implemented Incompletely in General Arrangement Drawings

- Update room legend in general arrangement, dimensional, and fire barrier drawings because DCR 113-9114680-000 was not fully implemented
- Revision to Figures 3.8-56, 3.8-57, 3.8-63, 3.8-78, 3.8-79, 3.8-85, 3B-33, 3B-34, 3B-40, 3B-55, 3B-56, 3B-62

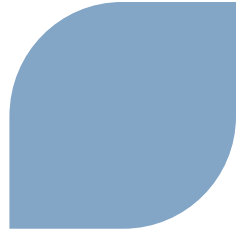
#### ◆ CR 2013-1454: Incorrect Location of Steel Columns and Beams on Drawings

- Revise drawings to clarify the correct location of columns and beams
- Revision to Figures 3.8-3, 3.8-4, 3.8-5, 3.8-6, 3.8-7, 3.8-8, 3.8-9, 3.8-12, 3.8-13, 3.8-137, 3.8-138, 3.8-139, 3.8-140, 3.8-141, 3.8-142, 3.8-143, 3B-4, 3B-5, 3B-6, 3B-7, 3B-8, 3B-9, 3B-10, 3B-13, 3B-14

#### ◆ CR 2013-2846: Gap Shown in 02-DCD-CGE-2UJH-3200-A0 between Slab and Aircraft Hazard Wall

- Correction of structural background on fire barrier figures
- Revision to Figures 3.8-56, 3.8-66, 3B-33, 3B-43

# Chapter 5



## ▶ Revision 5 Design Changes

- ◆ None identified

## ▶ Revision 5 Corrective Action Reports Incorporated

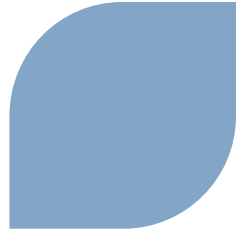
### ◆ CR 2009-6311: FSAR Table 5.3-4 Fluence Column Heading Incorrect $\leq$ sign

- In FSAR Table 5.3-4 the Fluence Column headings (the first 3 column headers) read “E<1MeV” instead of “E>1MeV”.
- Revised Table 5.3-4

### ◆ CR 2012-7766: PSRV Design Is Not Single Failure Proof as Required by BTP 5-2, Section B.3

- Clarified which two of the three PSRVs are used for LTOP
- Revised Section 5.2.2.9

# Chapter 6



## ▶ **Revision 5 Design Changes**

### ◆ **113-9084789: Changes to US EPR Codes and Standards**

- Reconcile US EPR Codes and Standards to resolve condition report
- Basis: Resolve CR 2010-3702
- Revision to Section 6.3.6 (update reference to NUREG-0933 to include Rev. 21 and Supplements 1-31)

### ◆ **Structural/Background Clarifications**

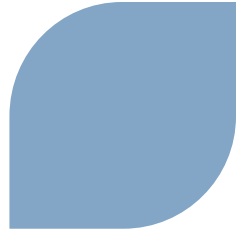
- Correction of structural background on fire barrier figures
- Basis: Enhanced Licensing/Safety
- Revision to Figures 3.8-65, 3.8-68, 3.8-69, 3.8-74, 3.8-93, 3.8-94, 3B-42, 3B-44, 3B-45, 3B-46, 3B-51, 3B-67, 3B-68, 3B-31, 3.8-54, 3.8-63

## ▶ **Revision 5 Corrective Action Reports Incorporated**

### ◆ **CR 2013-1094: RAI 546 FSAR Change Not Saved Properly in FSAR Rev. 4**

- Section 6.1.1.4 mark-ups that were in the RAI 546 Supplement 1 response did not get saved into FSAR Rev 4
- Revision to Section 6.1.1.4

# Chapter 7



## ▶ Revision 5 Design Changes

- ◆ None identified

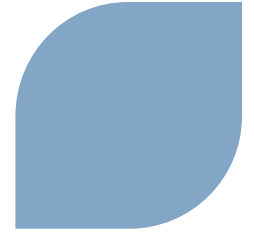
## ▶ Revision 5 Corrective Action Reports Incorporated

### ◆ CR 2010-4359: Changes Needed to FSAR Chapter 7 Section 7.3.1.2.12

- Clarified that in the absence of a safety injection signal, the CCW and ESW pumps are the second and third load steps, respectively. The first load step is re-energizing the buses of the EPSS.
- Revision to Section 7.3.1.2.12

### ◆ CR 2012-8873: FSAR Description of Three CVCS Isolation Valves Does Not Match CVCS System Description

- Clarified that CVCS charging isolation valves receive a Containment Isolation Phase 2 signal
- Revision to Figure 7.3-21



## ▶ Revision 5 Design Changes

### ◆ 113-9084789: Changes to US EPR Codes and Standards

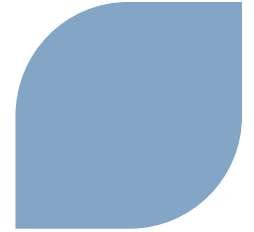
- Reconcile US EPR Codes and Standards to resolve condition report
- Basis: Resolve CR 2010-3702
- Revision to Section 8.3.3 (update reference to NFPA 70 to change edition from 2004 to 2005)

### ◆ 113-9111123: Change Normal Operating Position of Passive Flooding Lines MOVs

- Remove one of two MOVs, change normal position of MOV from open to closed, and remove power from MOV during normal operation to protect IRWST from inadvertent drainage
- Basis: Enhanced Licensing/Safety
- Originally incorporated in Revision 2 by RAI 212, Supplement 1, Q 06.02.02-23
- Conforming Revision to Section 8.3.1.2.11

## ▶ Revision 5 Corrective Action Reports Incorporated

### ◆ None identified



## ▶ Revision 5 Design Changes

### ◆ 113-9043231: Interior-Exterior Door Reduction

- Remove high cost/high technology doors in Safeguard Buildings
- Basis: Enhanced Marketability of Plant
- Revised Figure 9A-19, 9A-20, 9A-100, 9A-101 (relocate door from Safeguard Building 3 to Access Building to ground floor)

### ◆ 113-9064778: Upgrade NIDVS Sump Level Instrumentation

- Upgrade Nuclear Island Drain and Vent System (NIDVS) sump level instrumentation to safety-related to protect Safeguards Buildings from internal floods
- Basis: RAI 163 Supplement 5, Q 09.03.03-5
- Conforming Revision to Figure 9.3.3-1, Sheet 7

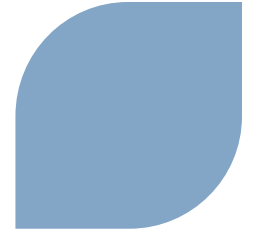
### ◆ 113-9084789: Changes to US EPR Codes and Standards

- Reconcile US EPR Codes and Standards to resolve condition report
- Basis: Resolve CR 2010-3702
- Revision to Section 9.3.1.6 (Update reference to NUREG-0933 to include Supplements 1-31)

### ◆ 113-9099652: Add Capability to Pump Spent Resins from Coolant Purification System to Demineralizer Subsystem

- Add capability to pump spent resins from coolant purification system resin waste tanks to liquid waste processing system demineralizer subsystem to allow for option of disposing of spent resins into HICs
- Basis: Resolve CR 2008-0420
- Originally incorporated Chapter 11 in Revision 2
- Conforming Revision to Figure 9.3.4-2, Sheet 5

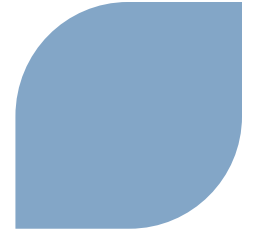
## Chapter 9 (continued)



- ◆ **113-9104090: Changes to Fire Protection and Flooding Documents for Reactor Building, Safeguard Buildings 2 and 3, and the Fuel Building**
  - Update fire barrier drawings for Reactor Building, Safeguards Buildings, Fuel Building, Emergency Power Generating Buildings and Nuclear Auxiliary Buildings to support RAI responses
  - Update fire water distribution system for flooding analysis to support RAI responses
  - Basis: Changes originally reflected in responses to RAIs 132, 25 and 151
  - Revision to Figures 9A-1, 9A-2, 9A-5
- ◆ **113-9104329: Fuel Building Changes to Accommodate Spent Fuel Cask Transfer Facility**
  - Extend length of cask loading pit in north-south direction, increase size of cask loading pit floor penetration (see DCR 113-7011374), and align spent fuel pool gate with cask loading pit penetration
  - Reorient new fuel storage room, eliminate dedicated room for new fuel examination, and compress special use room at 36'-5" Elevation and docking control room at 24'-3" Elevation
  - Basis: Resolve CR 2010-4382
  - Revision to Figure 9A-95
- ◆ **113-9105372: Strengthening of the Aircraft Hazard Protection Shield Structure**
  - Add buttresses to the outside of the Fuel Building and Safeguards 2/3 for AIA protection
  - Basis: Enhanced Licensing/Safety
  - Revised Figure 9A-17, 9A-18, 9A-20, 9A-21, 9A-84, 9A-85, 9A-86, 9A-96, 9A-97, 9A-98, 9A-99, 9A-100, 9A-101, 9A-102, 9A-103, 9A-104, 9A-105, 9A-106 (correction of structural background on fire barrier figures)



## Chapter 9 (continued)



### ◆ **113-9110463: HVAC Duct & Air Handling Unit from Concrete to Sheet Metal**

- Replace horizontal, concrete HVAC duct in Safeguards Building, Fuel Building and Reactor Building with sheet metal duct
- Replace Safeguards Electrical Building Ventilation system concrete air handling unit (AHU) housings with sheet metal/structural steel housings
- Basis: Enhanced Licensing/Safety and Marketability of Plant
- Revised Figure 9A-20, 9A-95, 9A-96, 9A-97 (correction of structural background on Rad Zone figures)

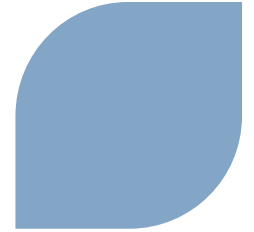
### ◆ **113-7000500: Changes to General Arrangement Drawings**

- Correct errors on general arrangement drawings for the Nuclear Island common basemat structures
- Basis: Resolve CRs 2009-3535 and 2009-3601
- Revision to Figures 9A-6, 9A-7, 9A-17, 9A-18, 9A-20, 9A-21, 9A-28, 9A-29, 9A-84 (correct and add Civil Drawing Figure Symbols (doors, ladders, hatches, etc.). Changed room names/numbers.)

### ◆ **113-7000697: Smoke Confinement System Reduction**

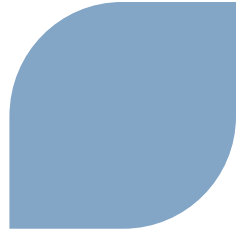
- Remove all subsystems of Smoke Confinement, except the Safeguard Building Division 2&3 Interconnecting Passageway Supply & Exhaust Air Subsystem
- Basis: Enhanced Marketability of Plant
- Revised Figures 9A-64, 9A-96, 9A-97

## Chapter 9 (continued)



- ◆ **113-7001555: Revision to the Dimensional Arrangement Drawings**
  - Correct errors on dimensional arrangement drawings for the Nuclear Island common basemat structures
  - Convert from metric units to imperial units on dimensional arrangement drawings
  - Basis: Resolve CR 2009-8155
  - Revision to Figures 9A-6, 9A-7, 9A-18, 9A-20, 9A-28, 9A-29, 9A-84, 9A-85, 9A-86, 9A-95, 9A-97
- ◆ **113-7001998: Utilize a Common Top of Concrete Elevation for the Safeguard Buildings Basemat**
  - Utilize common top of concrete elevation for the Safeguard Buildings basemat and first elevated floor. Elevator pit slabs, sumps, etc. in affected areas that are part of basemat will be lowered by the same amount as basemat.
  - Basis: Enhanced Marketability of Plant
  - Revision to Figures 9A-6, 9A-7, 9A-17, 9A-18, 9A-28, 9A-29 (correction of structural background on fire barrier figures)
- ◆ **113-7003650: SAHRS HX Design Change**
  - Increase surface area in Severe Accident Heat Removal System (SAHRS) heat exchanger and Dedicated CCW heat exchanger to accommodate required heat load
  - Basis: Resolve CR 2009-8440
  - Revision to Figure 9.2.2-4 (revise design temperature for Design Area L for SAHRS)

## Chapter 9 (continued)



### ◆ 113-7003739: FPCPS Design Mods for FPP Overpressure Protection

- Revise design pressure for fuel pool purification components
- Basis: Resolve CR 2011-0299
- Revision to Table 9.1.3-1, Figure 9.1.3-2 (Sheets 1 thru 5)

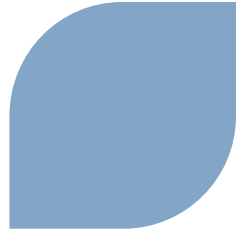
### ◆ 113-7004142: Revision to Fire Boundary Drawings

- Revise Fire Barrier drawings to address conflicts between fire protection and flood protection design
- Basis: Resolve CR 2009-8023
- Revision to Figures 9A-6, 9A-7, 9A-17, 9A-18, 9A-20, 9A-21, 9A-28, 9A-29

### ◆ 113-7004709: Floor Elevation, Doorway, and Stair Modifications – Fuel Building +12 ft Elevation

- Revise floor elevation, door and stair configuration on + 12 ft Elevation from room UFA15016 to the elevated walkway in Loading Hall, room UFA10015. Elevated walkway in Loading Hall is at 14'-7" Elevation.
- Basis: Enhanced Marketability
- Revision to Figures 9A-97

## Chapter 9 (continued)



### ◆ **113-7005191: Nuclear Island Common Basemat Structures Dimensional Design Changes**

- Correct dimensional errors for structures on Nuclear Island common basemat
- Basis: Resolve CRs 2010-4887, 2010-4932 and 2010-4933
- Revision to Figure 9A-84 (correction of structural background on Rad Zone figures)

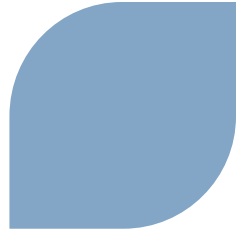
### ◆ **113-7009641: Redesign of Ventilation for the EDG Diesel Hall and ESW Cooling for the Electrical Control Room**

- Replace safety related electrical control room refrigerant unit with safety related ESW cooling coil, and change maximum/minimum temperature ratings for room
- Add non-safety related refrigerant unit for electrical control room and non-safety related ventilation for EDG diesel hall
- Separate diesel exhaust from HVAC exhaust
- Basis: Resolve CR 2011-3143
- Conforming Revision to Section 9.2.1, Figure 9.2.1-1 Sheet 2 (add emergency power generating building ventilation system coolers to the ESW system)
- Will be included in final response to RAI 578

### ◆ **113-7010082: RBWMS Revised Design Pressure**

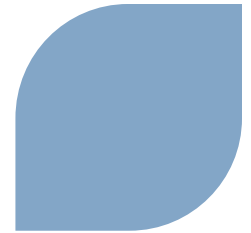
- Revise design pressure rating for Design Area A of Reactor Boron and Water Makeup System (RBWMS) from 0 psig to 45 psig
- Basis: Resolve CR 2011-0995
- Revision to Figure 9.3.4-4 Sheet 1

## Chapter 9 (continued)



- ◆ **113-7010199: Separation Gap of RBIS walls from RCB at +19.5m Elevation (+64.0 ft)**
  - Provide 6 inch gap between Reactor Building Internal Structure (RBIS) and Reactor Building containment wall at two locations
  - Basis: CR 2011-141
  - Revised Figure 9A-46 (correction of structural background on fire barrier figures)
- ◆ **113-7011207: Dual Position Indicators on CCWS RCP Thermal Barrier CIVs**
  - Add Dual Position Indicators on CCWS RCP Thermal Barrier CIVs
  - Basis: Resolve CR 2010-8843
  - Revision to Figure 9.2.2-2
- ◆ **113-7011346: Design Updates for Aircraft Hazard Protection**
  - Increase wall thickness and upgrade missile shield specifications for Aircraft Impact Assessment (AIA) barrier improvements
  - Basis: Enhanced Licensing/Safety
  - Revision to Figures 9A-9, 9A-31, 9A-60, 9A-61, 9A-62, 9A-68, 9A-69
- ◆ **113-7011449: Add Flood Relief Opening to Reactor Building Wall at -8 ft. Elevation**
  - Add wall opening and labyrinth in Reactor Building at -8 ft. elevation for flooding relief to allow communication between retention baskets (GSI-191)
  - Basis: Enhanced Licensing/Safety and response to RAI 488, Question 06.02.02-91
  - Revised Figure 9A-41

## Chapter 9 (continued)



### ◆ 113-7012826: Fukushima Response - Core Cooling in Modes 5 and 6

- Add non-safety related primary coolant injection pump to safety injection system
- Add ELAP diesel generator and auxiliaries to Fire Protection Building
- Add transfer switches to Divisions 1 and 2 of Class 1E power distribution system to connect ELAP diesel generator
- Basis: Enhanced Licensing/Safety
- Revision to Figures 9A-6 (room description for Room 7 (1UJH01 008) changed [background change])

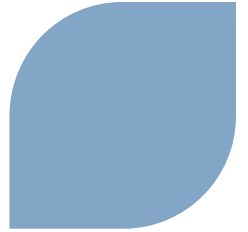
### ◆ 113-7013062: Update FSAR Table 9.2.1-3 with correct alarm information

- Update ESWS alarm summary table to correct the entry for the UHS cooling tower basin water level Lo-Lo-Lo (Min 3) by deleting "if > Min2". Also clarify purpose of Lo-Lo-Lo-Lo setpoint (alarm and ESW pump trip for NPSH protection).
- Basis: Resolve CR 2012-9122
- Revision to Table 9.2.1-3

### ◆ 113-7013213: CCWS Safety Class Interface Inconsistencies

- Change the SSC classifications of the coolers supplied with cooling water by the Component Cooling Water system (CCWS) to safety-related
- Basis: Resolve CR 2010-5698
- Revision to Sections 9.3.2, 9.3.3, 9.3.4, 9.4.7, Figures 9.3.2-1, 9.3.4-1, 9.4.7-4

## Chapter 9 (continued)



- ◆ **113-7013280: Revise Top and Bottom of Slab Elevations in Nuclear Auxiliary Building**
  - Revise slab thickness in three rooms and correct elevation view discrepancy
  - Basis: Resolve CR 2012-8986
  - Revision to Figures 9A-54, 9A-65
- ◆ **113-7013383: Change to ANSI N14.6 Code Year**
  - Change code year cited for ANSI N14.6 from 2004 to 1993 (2004 version never issued), 1993 version was endorsed by the NRC in SRP 9.1.5
  - Basis: Resolve CR 2013-1717
  - Revision to Sections 9.1.4, 9.1.5
- ◆ **113-7013440: Change ESWS Valves from Local Manual Actuation to MOVs That Are Operable from Severe Accident Controls**
  - Change ESWS valves 30PEB80 AA003, AA004, AA013, and AA014 from local manual actuation to MOVs that are operable from SA controls
  - Basis: Resolve CR 2013-0720
  - Revision to Section 9.2.1, Figure 9.2.1-1 Sheet 4

## Chapter 9 (continued)



### ◆ **113-7013497: Fire Barrier Changes to Improve Plant Response to Beyond Design Basis Fire**

- Upgrade fire barrier ratings and pressure ratings of exterior walls on Nuclear Island common basemat for AIA protection
- Basis: Enhanced Licensing/Safety
- Revision to Figures 9A-9, 9A-10, 9A-11, 9A-12, 9A-13, 9A-14, 9A-15, 9A-16, 9A-19, 9A-20, 9A-21, 9A-22, 9A-23, 9A-24, 9A-25, 9A-26, 9A-27, 9A-30, 9A-31, 9A-32, 9A-33, 9A-34, 9A-35, 9A-36, 9A-37, 9A-38, 9A-49, 9A-50, 9A-51, 9A-86, 9A-87, 9A-88, 9A-89, 9A-90, 9A-91, 9A-92, 9A-93, 9A-94, 9A-95, 9A-96, 9A-97

### ◆ **113-7013559: Fire Barrier Improvements for Nuclear Island Towers for BDBE**

- Revise walls/doors separating Nuclear Island stair towers from remainder of building to be 3 hour rated for AIA protection
- Basis: Enhanced Licensing/Safety
- Revised Figure 9A-20, 9A-17, 9A-18, 9A-19, 9A-20, 9A-23, 9A-24, 9A-25, 9A-84, 9A-85, 9A-86, 9A-87, 9A-88, 9A-89, 9A-90, 9A-91, 9A-92, 9A-93, 9A-94

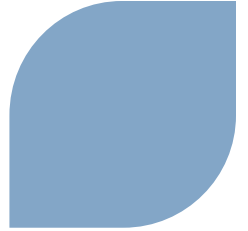
### ◆ **113-7013860: Modifications to Existing AIA Barriers with Associated Nuclear Auxiliary Building Wall Thickness and Location Changes**

- Increase wall thickness and upgrade missile barriers for AIA protection
- Basis: Enhanced Licensing/Safety
- Revision to Figures 9A-60, 9A-61 (increased thickness of a wall [background change])





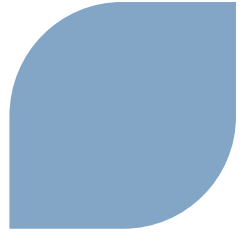
## Chapter 9 (continued)



### ◆ Structural/Background Clarifications

- Correction of structural background on fire barrier figures
- Basis: Enhanced Licensing/Safety
- Revision to Figures 9A-11, 9A-12, 9A-13, 9A-14, 9A-15, 9A-25, 9A-26, 9A-27, 9A-30, 9A-33, 9A-34, 9A-35, 9A-36, 9A-37, 9A-39, 9A-40, 9A-42, 9A-43, 9A-44, 9A-45, 9A-47, 9A-48, 9A-49, 9A-50, 9A-51, 9A-52, 9A-53, 9A-54, 9A-55, 9A-56, 9A-57, 9A-58, 9A-59, 9A-60, 9A-61, 9A-62, 9A-63, 9A-66, 9A-67, 9A-68, 9A-69, 9A-70, 9A-71, 9A-72, 9A-73, 9A-74, 9A-75, 9A-87, 9A-88, 9A-89, 9A-90, 9A-91, 9A-92, 9A-93, 9A-94

## Chapter 9 (continued)



### ▶ Revision 5 Corrective Action Reports Incorporated

#### ◆ CR 2013-1378: DCR 113-9114680-000, Safeguard Building 1 and 4 Battery Room Changes, Was Implemented Incompletely in General Arrangement Drawings

- Update room legend in general arrangement, dimensional arrangement, and fire barrier drawings because DCR 113-9114680-000 was not fully implemented
- Revision to Figures 9A-9, 9A-16, 9A-31, 9A-32, 9A-38

#### ◆ CR 2013-1420: Fire Barrier Drawing Errors

- Correct miscellaneous fire barrier drawing errors
- Revision to Figures 9A-8, 9A-22, 9A-23, 9A-24, 9A-70

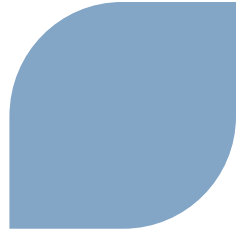
#### ◆ CR 2013-1447: Inconsistency between Elevation and Plan views for Access Building

- Elevation views were corrected
- Revised Figures 9A-105, 9A-106

#### ◆ CR 2013-2846: Gap Shown in 02-DCD-CGE-2UJH-3200-A0 between Slab and Aircraft Hazard Wall

- Correction of structural background on fire barrier figures
- Revision to Figure 9A-19

## Chapter 9 (continued)

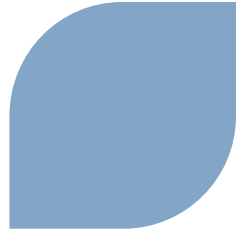


### ▶ Revision 5 Corrective Action Reports Incorporated

#### ◆ CR 2013-2341: ESW System Design Description Did Not Fully Incorporate DCR 113-7005460-000

- Clarified that valve 30PED10/20/30/40AA010 will be opened when there is Automatic ESW Actuation from CCWS or LOOP
- Revision to Section 9.2.1.7.1

# Chapter 10



## ▶ Revision 5 Design Changes

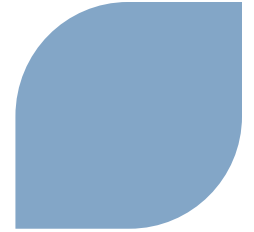
### ◆ 113-9048305: SSC Classification Revision to SG Blowdown and Condensate Polisher Shielding

- Change SG Blowdown piping and components in Nuclear Auxiliary Building from Seismic II to NSC
- Change turbine island SG Blowdown piping and components from quality group E to quality group D and from seismic class CS to NSC.
- Change safety classification for condensate polisher shielding from safety-related to non-safety related
- Basis: Enhanced Licensing/Safety
- Revision to Figures 10.4.8-1, 10.4.8-2

## ▶ Revision 5 Corrective Action Reports Incorporated

### ◆ None identified

# Chapter 12



## ▶ Revision 5 Design Changes

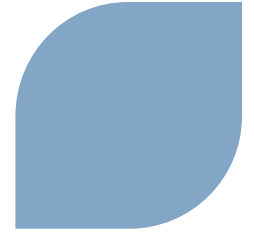
### ◆ 113-7000159: Remove Decontamination System for Process Vessels and Equipment

- Remove permanent decontamination system. Plant owners will use purchased or leased system.
- Basis: Enhanced Marketability of Plant
- Revised Figures 12.3-44,12.3-45,12.3-54,12.3-58

### ◆ 113-7000500: Changes to General Arrangement Drawings

- Correct errors on general arrangement drawings for the Nuclear Island common basemat structures
- Basis: Resolve CRs 2009-3535 and 2009-3601
- Revised Figures 12.3-13,12.3-21,12.3-22,12.3-23,12.3-24,12.3-25,12.3-26,12.3-27,12.3-28,12.3-29,12.3-30,12.3-31,12.3-33,12.3-34,12.3-35,12.3-36,12.3-37,12.3-38,12.3-39,12.3-40,12.3-64,12.3-65,12.3-67,12.3-70,12.3-71(correct and add Civil Drawing Figure Symbols (doors, ladders, hatches, etc.). Changed room names/numbers.)

# Chapter 12 (continued)



## ◆ **113-7000556: New Fuel Storage Dimension Changes**

- Move walls on the +49' and +64' elevations of the Fuel Building to accommodate the fuel rack design
- Basis: Enhanced Licensing/Safety
- Revised Figures 12.3-35,12.3-36,12.3-37,12.3-38

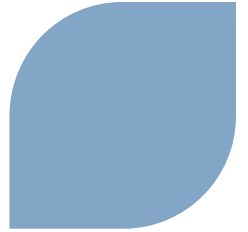
## ◆ **113-7000697: Smoke Confinement System Reduction**

- Remove all subsystems of Smoke Confinement, except the Safeguard Building Division 2&3 Interconnecting Passageway Supply & Exhaust Air Subsystem
- Basis: Enhanced Marketability of Plant
- Revised Figures 12.3-13,12.3-71

## ◆ **113-7001555: Revision to the Dimensional Arrangement Drawings**

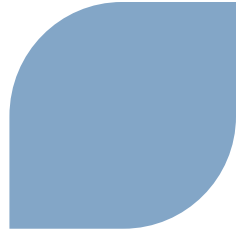
- Correct errors on dimensional arrangement drawings for the Nuclear Island common basemat structures
- Convert from metric units to imperial units on dimensional arrangement drawings
- Basis: Resolve CR 2009-8155
- Revised Figures 12.3-13,12.3-21,12.3-22,12.3-23,12.3-24,12.3-25,12.3-26,12.3-27,12.3-28,12.3-29,12.3-30,12.3-31,12.3-32,12.3-33,12.3-34,12.3-35,12.3-36,12.3-37,12.3-38,12.3-39,12.3-40,12.3-41,12.3-64,12.3-65,12.3-66,12.3-67,12.3-68,12.3-69,12.3-71

## Chapter 12 (continued)



- ◆ **113-7001998: Utilize a Common Top of Concrete Elevation for the Safeguards Buildings Basemat**
  - Utilize common top of concrete elevation for the Safeguard Buildings basemat and first elevated floor. Elevator pit slabs, sumps, etc. in affected areas that are part of basemat will be lowered by the same amount as basemat.
  - Basis: Enhanced Marketability of Plant
  - Revised Figures 12.3-21,12.3-22,12.3-23,12.3-24,12.3-25,12.3-26,12.3-27,12.3-28,12.3-29,12.3-64,12.3-65,12.3-66,12.3-67,12.3-68,12.3-69 (correction of structural background on Rad Zone figures)
- ◆ **113-7002088: Pressurizer Compartment Changes**
  - Provide fluid relief openings in Pressurizer compartment to accommodate HELBs
  - Basis: Enhanced Licensing/Safety and support of RAI 242, Q 06.02.02-31
  - Revised Figures 12.3-13,12.3-71 (correction of structural background on Rad Zone figures)
- ◆ **113-7004142: Revision to Fire Boundary Drawings**
  - Revise Fire Barrier drawings to address conflicts between fire protection and flood protection design
  - Basis: Resolve CR 2009-8023
  - Revised Figures 12.3-52,12.3-53,12.3-54,12.3-55,12.3-56

## Chapter 12 (continued)



### ◆ **113-7004709: Floor Elevation, Doorway, and Stair Modifications – Fuel Building +12 ft Elevation**

- Revise floor elevation, door and stair configuration on + 12 ft Elevation from room UFA15016 to the elevated walkway in Loading Hall, room UFA10015. Elevated walkway in Loading Hall is at 14'-7" Elevation.
- Basis: Enhanced Marketability
- Revised Figures 12.3-34

### ◆ **113-7005191: Nuclear Island Common Basemat Structures Dimensional Design Changes**

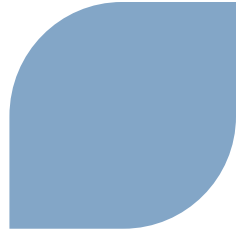
- Correct dimensional errors for structures on Nuclear Island common basemat
- Basis: Resolve CRs 2010-4887, 2010-4932 and 2010-4933
- Revised Figures 12.3-30, 12.3-34, 12.3-35, 12.3-36, 12.3-37 (correction of structural background on Rad Zone figures)

### ◆ **113-7006837: Room UJA15-024 Shielding Changes**

- Modify shielding in Reactor Building room UJA15-024 to support normal refueling and dropped fuel assembly
- Basis: Resolve CR 2010-1587 and update for Consistency with RAI 280, Question 12.03-12.04-17 Item 5 response
- Revised Figures 12.3-33, 12.3-35, 12.3-36, 12.3-37



# Chapter 12 (continued)



## ◆ 113-7007688: Tendon Gallery Wall Thickness Increase

- Increase thickness of walls and basemat of tendon gallery and access gallery to support Civil design
- Basis: Enhanced Licensing/Safety
- Revised Figures 12.3-13, 12.3-30, 12.3-31, 12.3-32, 12.3-33, 12.3-71 (correction of structural background on Rad Zone figures)

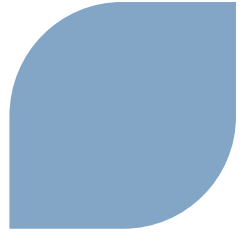
## ◆ 113-7009663: Documentation of Design Requirements for Aircraft Hazard Protection

- Add design detail for aircraft hazard protection (physical protection design requirements and fire protection design requirements)
- Basis: Enhanced Licensing/Safety
- Revised Figures 12.3-23, 12.3-24, 12.3-26, 12.3-29, 12.3-33, 12.3-34, 12.3-38, 12.3-42, 12.3-43, 12.3-44, 12.3-45, 12.3-50, 12.3-54, 12.3-55, 12.3-56 (correction of structural background on Rad Zone figures)

## ◆ 113-7011161: NABVS Check Damper Addition at Vent Stack

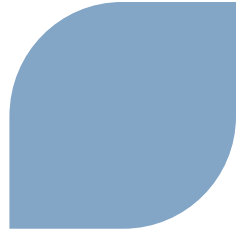
- Add check damper to Nuclear Auxiliary Building Ventilation System (NABVS) as class break to safety related vent stack (see DCR 113-7002936)
- Basis: Resolve CR 2009-4624
- Revised Figures 12.3-39, 12.3-51 (correction of structural background on Rad Zone figures)

## Chapter 12 (continued)



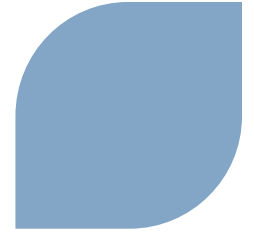
- ◆ **113-7011374: Establish Floor Penetration Size in Spent Fuel Cask Loading Pit**
  - Change the size of the floor penetration in the spent fuel cask loading pit back to 6'-5-1/2" square (see DCR 113-9104329)
  - Basis: Enhanced Licensing/Safety
  - Revision to Figure 12.3-6
- ◆ **113-7011381: Aircraft Hazard - Add Tapered Walls in Material Lock Room**
  - Taper the walls on the inner side at the top part of the Material Lock Room for AIA protection
  - Basis: Enhanced Licensing/Safety
  - Revised Figure 12.3-37 (correction of structural background on Rad Zone figures)
- ◆ **113-7012826: Fukushima Response - Core Cooling in Modes 5 and 6**
  - Add non-safety related primary coolant injection pump to safety injection system
  - Add ELAP diesel generator and auxiliaries to Fire Protection Building
  - Add transfer switches to Divisions 1 and 2 of Class 1E power distribution system to connect ELAP diesel generator
  - Basis: Enhanced Licensing/Safety
  - Revised Figures 12.3-21, 12.3-64 (room description for Room 7 (1UJH01 008) changed [background change])

## Chapter 12 (continued)



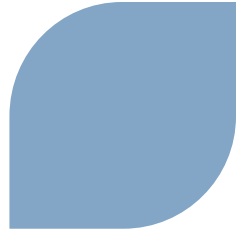
- ◆ **113-7013341: Seismic Category I Accelerometers for SFCTF and Revised Rad Zone for Fuel Building Loading Hall**
  - Upgrade accelerometers for Spent Fuel Cask Transfer Facility (SFCTF) to seismic Category I
  - Revise Rad Zone for Fuel Building Loading Hall to RED for highest expected dose during cask loading operation
  - Basis: Enhanced Licensing/Safety
  - Revised Figures 12.3-33, 12.3-34, 12.3-35 (revise Rad Zone for Fuel Building Loading Hall)
- ◆ **113-7013497: Fire Barrier Changes to Improve Plant Response to Beyond Design Basis Fire**
  - Upgrade fire barrier ratings and pressure ratings of exterior walls on Nuclear Island common basemat for AIA protection
  - Basis: Enhanced Licensing/Safety
  - Revision to Figure 12.3-5

## Chapter 12 (continued)



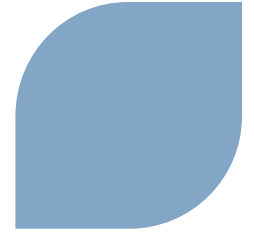
- ◆ **113-7013559: Fire Barrier Improvements for Nuclear Island Towers for BDBE**
  - Revise walls/doors separating Nuclear Island stair towers from remainder of building to be 3 hour rated for AIA protection
  - Basis: Enhanced Licensing/Safety
  - Revised Figures 12.3-5, 12.3-6, 12.3-24, 12.3-26, 12.3-30, 12.3-31, 12.3-32, 12.3-33, 12.3-34, 12.3-35, 12.3-36, 12.3-37, 12.3-38, 12.3-39, 12.3-67, 12.3-69
- ◆ **113-7013860: Modifications to Existing AIA Barriers with Associated Nuclear Auxiliary Building Wall Thickness and Location Changes**
  - Increase wall thickness and upgrade missile barriers for AIA protection
  - Basis: Enhanced Licensing/Safety
  - Revised Figures 12.3-50, 12.3-51 (increased thickness of a wall [background change])
- ◆ **113-7014524: Align Building Openings between the Nuclear Auxiliary Building and Adjacent Buildings**
  - Align openings in Nuclear Auxiliary Building (NAB) and adjacent buildings to accommodate NAB move (DCR 113-7012802) and AIA protection
  - Basis: Enhanced Licensing/Safety
  - Revised Figures 12.3-45, 12.3-46, 12.3-50, 12.3-51 (correction of structural background on Rad Zone figures)

## Chapter 12 (continued)



- ◆ **113-9043231: Interior/Exterior Door Reduction**
  - Remove high cost/high technology doors in Safeguard Buildings
  - Basis: Enhanced Marketability of Plant
  - Revised Figures 12.3-16,12.3-17,12.3-26, 12.3-60
- ◆ **113-9054946: Fuel Building Seismic Redesign**
  - Thicken and relocate selected walls in Fuel Building to support Civil design
  - Basis: Enhanced Licensing/Safety
  - Revised Figure 12.3-41 (correction of structural background on Rad Zone figures)
- ◆ **113-9086516: Revision to Gap between Aircraft Protection Wall and Fuel Building Inner Structure at +19.50 m**
  - Increase the gap between the aircraft protection wall and the Fuel Building inner structure for AIA protection
  - Basis: Enhanced Licensing/Safety
  - Revised Figures 12.3-38,12.3-39,12.3-40 (correction of structural background on Rad Zone figures)

## Chapter 12 (continued)



### ◆ **113-9103167: Radiation Zone Calculation and Drawings**

- Revise minimum radiation shielding to be less than wall thickness required for Civil design
- Basis: Resolve CR 2008-5505
- Revised Figures 12.3-13, 12.3-55, 12.3-71

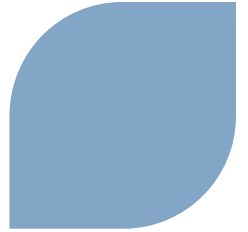
### ◆ **113-9104329: Fuel Building Changes to Accommodate Spent Fuel Cask Transfer Facility**

- Extend length of cask loading pit in north-south direction, increase size of cask loading pit floor penetration (see DCR 113-7011374), and align spent fuel pool gate with cask loading pit penetration
- Reorient new fuel storage room, eliminate dedicated room for new fuel examination, and compress special use room at 36'-5" Elevation and docking control room at 24'-3" Elevation
- Basis: Resolve CR 2010-4382
- Revised Figures 12.3-35, 12.3-36, 12.3-37, 12.3-38 (correction of structural background on Rad Zone figures)

### ◆ **113-9105372: Strengthening of the Aircraft Hazard Protection Shield Structure**

- Add buttresses to the outside of the Fuel Building and Safeguards 2/3 for AIA protection
- Basis: Enhanced Licensing/Safety
- Revised Figures 12.3-14, 12.3-15, 12.3-16, 12.3-17, 12.3-18, 12.3-19, 12.3-20, 12.3-24, 12.3-25, 12.3-26, 12.3-30, 12.3-31, 12.3-32, 12.3-33, 12.3-34, 12.3-35, 12.3-36, 12.3-37, 12.3-38, 12.3-39, 12.3-40, 12.3-41, 12.3-67 (correction of structural background on Rad Zone figures)

## Chapter 12 (continued)



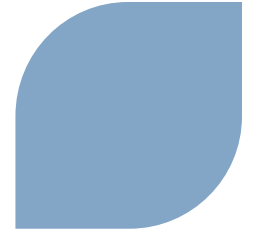
### ◆ 113-9110463: HVAC Duct & Air Handling Unit from Concrete to Sheet Metal

- Replace horizontal, concrete HVAC duct in Safeguards Building, Fuel Building and Reactor Building with sheet metal duct
- Replace Safeguards Electrical Building Ventilation system concrete air handling unit (AHU) housings with sheet metal/structural steel housings
- Basis: Enhanced Licensing/Safety and Marketability of Plant
- Revised Figures 12.3-13, 12.3-71

### ◆ Structural/Background Clarifications

- Correction of structural background on Rad Zone figures
- Basis: Enhanced Licensing/Safety
- Revised Figures 12.3-13, 12.3-33, 12.3-51, 12.3-61, 12.3-62, 12.3-71

## Chapter 12 (continued)



### ► Revision 5 Corrective Action Reports Incorporated

#### ◆ CR 2013-1454: Incorrect Location of Steel Columns and Beams on Civil Drawings

- Correction of structural background on Rad Zone figures
- Revised Figures 12.3-2, 12.3-3, 12.3-4, 12.3-8, 12.3-9

#### ◆ CR 2013-2846: Gap Shown in 02-DCD-CGE-2UJH-3200-A0 between Slab and Aircraft Hazard Wall

- Correction of structural background on Rad Zone figures
- Revised Figures 12.3-26, 12.3-69

#### ◆ CR 2013-3675: Reference Usage Errors, Methodology Errors, and Zone Map Inconsistencies in EQ Calculation for Direct Dose

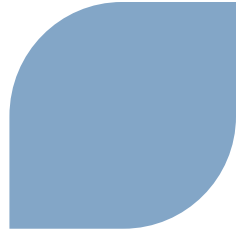
- Identification and application of the zone map basis for normal operating and accident doses were made inconsistently
- Revised Figures 12.3-64, 12.3-65, 12.3-66, 12.3-67, 12.3-68, 12.3-69, 12.3-70, 12.3-81

#### ◆ CR 2013-3895: Incorrect Zone Noted for Area above UKS06024 during Resin Proportioning Operations

- Incorrect zone noted for area above room UKS06024 in Radioactive Waste Processing Building during resin proportioning operations
- Revised Figure 12.3-55



# Chapter 15



## ▶ Revision 5 Design Changes

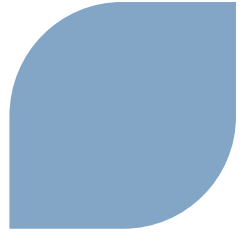
### ◆ 113-7005724: Remove References to High Neutron Flux (Source Range)

- Remove discussion of High Neutron Flux Source Range Trip. This type of trip is not credited in the Chapter 15 safety analysis.
- Basis: Resolve CR 2010-3262
- Revision to Sections 15.4.3.1.2, 15.4.6.1.2, 15.4.6.1.3

## ▶ Revision 5 Corrective Action Reports Incorporated

### ◆ None identified

# Chapter 16



## ▶ Revision 5 Design Changes

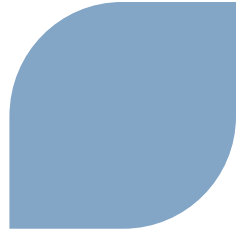
### ◆ 113-9100258: Incorporate Vendor Specific Information into EDG Documentation

- Revise EDG documentation to reflect vendor specific information for EDG and support systems (e.g., air start, lubrication, etc.)
- Basis: Enhanced Licensing/Safety
- Relocate stored fuel oil and lube oil volume values from LCO 3.8.3 to Bases
- Revise minimum pressure in air start receiver, revise fuel oil and lube oil minimum/normal volumes
- Update reference to ANSI N195-1976

### ◆ 113-9112381: Reinstate SG Blowdown Transfer Valves and Piping

- Add capability (piping and valves) to transfer inventory and depressurize an affected SG to an unaffected SG through the SG blowdown lines. Capability is needed for mitigation of either a SGTR + LOOP or a fire in the main steam valve room + LOOP.
- Basis: Enhanced Licensing/Safety
- Add new LCO 3.7.22 and Bases

# Chapter 16 (continued)



## ▶ Revision 5 Design Changes

### ◆ 113-7012620: Volume Requirements to EDG Fuel Oil, Lube Oil, and Day Tanks

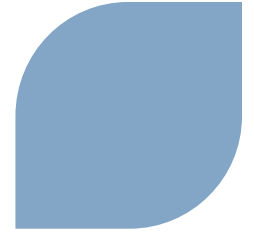
- Clarify inventory requirements for EDG fuel oil, lube oil and day tanks to better support Technical Specification periodic testing.
- Basis: Enhanced Licensing/Safety
- Revision to LCO 3.8.3 and Bases

## ▶ Revision 5 Corrective Action Reports Incorporated

### ◆ CR 2012-7766: PSRV Design Is Not Single Failure Proof as Required by BTP 5-2, Section B.3

- Clarified which two of the three PSRVs are used for LTOP
- Revision to Bases 3.4.11

# Chapter 17



## ▶ Revision 5 Design Changes

### ◆ 113-9111705: I&C Architecture Changes – Diverse Actuation System

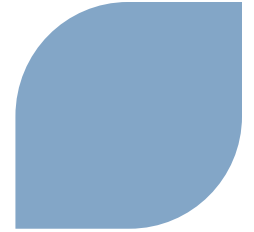
- Provide system level manual actuation of critical safety functions from PICS to DAS
- Change PACS design from AV42 module to separate, dedicated priority module
- Separate DAS from PAS
- Remove component level connection from SICS to PACS
- Basis: Enhanced Licensing/Safety
- Conforming Revision to Table 17.4-3 (addition of Diverse Actuation System to RAP)

### ◆ 113-7010004: I&C Architecture Changes

- Modify I&C architecture to address NRC concerns with interdivisional communication between SICS, PS and SAS, bidirectional communication between Service Unit and safety divisions, and bidirectional communication between PICS and safety divisions
- Add Signal Conditioning & Distribution System to I&C architecture
- Add Rod Position Measurement System to I&C architecture
- Basis: Enhanced Licensing/Safety
- Conforming Revision to Table 17.4-3 (addition of Signal Conditioning & Distribution System and Rod Position Measurement System to RAP)

## ▶ Revision 5 Corrective Action Reports Incorporated

### ◆ None identified



## ► Revision 5 Design Changes

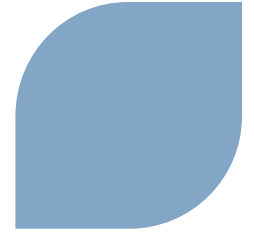
### ◆ 113-9112381: Reinstate SG Blowdown Transfer Valves and Piping

- Add capability (piping and valves) to transfer inventory and depressurize an affected SG to an unaffected SG through the SG blowdown lines. Capability is needed for mitigation of either a SGTR + LOOP or a fire in the main steam valve room + LOOP.
- Basis: Enhanced Licensing/Safety
- Revision to Sections 2.4.1, 2.4.25, 2.8.7

### ◆ 113-7009641: Redesign of Ventilation for the EDG Diesel Hall and ESW Cooling for the Electrical Control Room

- Replace safety related electrical control room refrigerant unit with safety related ESW cooling coil, and change maximum/minimum temperature ratings for room
- Add non-safety related refrigerant unit for electrical control room and non-safety related ventilation for EDG diesel hall
- Separate diesel exhaust from HVAC exhaust
- Basis: Resolve CR 2011-3143
- Conforming Revision to Section 2.7.11, Figure 2.7.11-1
- Will be included in final response to RAI 578

## Tier 1 (continued)



### ◆ **113-7012642: Self Powered Neutron Detectors Amplifier Circuit Modifications**

- To prevent an undetected single failure in the amplifier that would lead to the loss of two SPNDs, add one TXS cabinet per division.
- Basis: Resolve CR 2011-0606
- Revision to Tables 3.2.2-1, 3.11-1

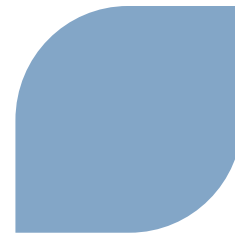
### ◆ **113-7013440: Change ESWS Valves from Local Manual Actuation to MOVs That Are Operable from Severe Accident Controls**

- Change ESWS valves 30PEB80 AA003, AA004, AA013, and AA014 from local manual actuation to MOVs that are operable from SA controls
- Basis: Resolve CR 2013-0720
- Revision to Table 2.4.19-1

## ▶ **Revision 5 Corrective Action Reports Incorporated**

- ◆ **None identified**

# Summary/Conclusions



## ▶ Summary/Conclusions for Revision 5 FSAR Impacts

### ◆ Impact on Tier 1 is limited (four DCRs)

### ◆ Impact on Tier 2 Chapters is varied

- About 1/3 of the Chapters have no impact
- About 1/3 of the Chapters have limited impact (two DCRs/CRs or less)
- About 1/3 of the Chapters have more significant impact (three or more DCRs/CRs)

### ◆ Basis (or rationale) for changes reflects FSAR progression to completion

- About 40% are DCRs to resolve CRs
- About 35% are DCRs to enhance licensing/safety of plant
- About 5% are DCRs to improve marketability of plant
- About 20% are to resolve CRs (no DCR needed)

## ▶ Next Steps

- ◆ NRC feedback on approach, level of detail, etc. to discuss changes
- ◆ Plan public meeting for Revision 6 FSAR impacts discussion