

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

In February 2015, SONGS submitted the UFSAR to the NRC as documented in Southern California Edison letter from Thomas J. Palmisano dated February 11, 2015, titled "Docket Nos. 50-361 and 50-362 Updated Final Safety Analysis Report and Updated Fire Hazard Analysis, Revised February, 2015 San Onofre Nuclear Generating Station, Units 2 and 3."

Since that submittal, there have been three revisions to the UFSAR. The following is a summary of the changes to the UFSAR (now Revision 3), by Chapter, from the revision submitted to the NRC in February 2015:

NOTE: A generic introductory paragraph addressing the status of the system(s) within each Section, as appropriate, relative to the permanently defueled plant condition was added at the beginning of each applicable Section. In addition to the introductory paragraph, a table of applicable structures/systems/components (SSC) and respective status (Available, Partially Removed from Service, or Removed from Service) was added to each Section, where appropriate. For those systems "Partially Removed from Service" or "Removed from Service", appropriate descriptive text and UFSAR Figures were removed from the applicable Section.

1. Chapter 1:

- A. Relocation of "historical" information to a controlled document¹.

2. Chapter 2:

- A. Chapter descriptive text was added/ revised/ deleted, as applicable, for the following changes identified below:

- 1. Changes to indicate that the Offsite Probable Maximum Flood berm is not required for external flood protection of the plant as a result of a new hydrologic analysis;
- 2. Change to indicate that the Ultimate Heat Sink is now Atmosphere versus Pacific Ocean with the removal from service of the Salt Water Cooling System and the installation of the Independent Spent Fuel Pool Cooling System;
- 3. Revised applicable UFSAR Offsite Hazards Analysis (OHA) data and notes to reflect the latest revision of the SONGS OHA dated January 2016;
- 4. Removal from service of the Toxic Gas Isolation System;
- 5. Relocation of references to Regulatory Guides to a controlled document²;
- 6. Removal from service of the Plant Computer System;
- 7. Addition of Command Center Data Acquisition System;
- 8. Addition of Salt Water Dilution System;
- 9. Deletion of applicable UFSAR text for the Release of Toxic Gases Due to Transportation Accidents.

¹ Historical information is information that is no longer relevant to the permanently shutdown and defueled condition but has been retained for reference (i.e., reflects the physical components remaining) in SONGS Controlled Document 90216.

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

- B. Relocation of “historical” information to a controlled document.
3. Chapter 3:
- A. Deletion of reference to Appendix 3A relocation of applicable Regulatory Guides to a controlled document ²;
 - B. Removed discussion of Protection of Multiple Fission Product Barriers for Criteria relevant to:
 - 1. Reactor;
 - 2. Reactor Coolant System;
 - 3. Containment;
 - 4. Electric Power Systems;
 - 5. Plant Protections Systems;
 - 6. Emergency Core Cooling Systems.
 - C. Added seismic classification specific clarifications to Regulatory Guide 1.29 as delineated in the Q-List;
 - D. Removal of appropriate missile identification/source information and related text due to removal of systems from service that are no longer a threat of generating a missile both inside and outside of containment;
 - E. Removal of appropriate discussion of postulated rupture of fluid systems in high energy piping;
 - F. Removal of appropriate discussion of seismic analysis for Reactor Coolant System;
 - G. Added introductory paragraph and applicable SSC table. Applicable descriptive text was removed from the Chapter for those affected SSC(s) removed from service as identified below:
 - 1. High Energy Piping;
 - 2. Containment (partial);
 - 3. Containment Tendons;
 - 4. Containment Liner;
 - 5. Equipment and Personnel Penetrations;
 - 6. Process Pipe Penetrations;
 - 7. Electrical Penetrations;
 - 8. Fuel Transfer Tube (partial);
 - 9. Attachment and Brackets (partial);
 - 10. Wall-to-Base Slab Connection (partial);
 - 11. Buttresses;
 - 12. Large Penetrations;
 - 13. Temporary Construction Opening for the Steam Generator Replacement Project (partial);

² All Regulatory Guides were reviewed for applicability based on the permanently shutdown and defueled condition and have been moved to SONGS Controlled Document 90215. These Regulatory Guides have been dispositioned as follows: (1) those remaining applicable, (2) those no longer applicable due to the decommissioning decision by SCE for SONGS in 2013 and associated NRC notifications, (3) those no longer applicable due to SONGS receiving NRC approval for several License Amendment Requests, and (4) those never applicable to SONGS due to the nature of the RG or NRC action.

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

- 14. Design Transients;
 - 15. Pump and Valve Operability Assurance;
 - 16. Control Element Drive Mechanism;
 - 17. Reactor Pressure Vessel Internals;
 - 18. In-Service Inspection Program;
 - 19. Flooding Sensors System;
 - 20. Seismic Instrumentation System;
 - 21. Flood barriers in the Unit 2 and 3 Safety Equipment Building corridors.
 - H. Removal of Seismic Qualification of Seismic Category I Instrumentation and Electrical Equipment;
 - I. Removal of Environmental Design of Mechanical and Electrical Equipment.
4. Appendix 3.2A:
- A. Relocation of the Q-List (contained entirely in this UFSAR Appendix) to a controlled document.
5. Appendix 3B:
- A. Relocation of “historical” information to a controlled document.
6. Chapter 4:
- A. Added introductory paragraph and applicable SSC table. Applicable descriptive text was removed from the Chapter for those affected SSC(s) removed from service as identified below:
 - 1. Reactor;
 - 2. Control Element Drive Mechanism;
 - 3. Vibration and Loose Parts Monitoring.
 - B. Relocation of “historical” information to a controlled document.
7. Chapter 5:
- A. Added introductory paragraph and applicable SSC table. Applicable descriptive text was removed from the Chapter for those affected SSC(s) removed from service as identified below:
 - 1. Reactor Vessel;
 - 2. Reactor Coolant Pumps;
 - 3. Steam Generators;
 - 4. Reactor Coolant Piping;
 - 5. Main Steam Line Flow Restrictors;
 - 6. Main Steam Line Isolation System;
 - 7. Residual Heat Removal System (Shutdown Cooling System);
 - 8. Main Steam Line and Feedwater Piping;
 - 9. Pressurizer;
 - 10. Quench Tank (Pressurizer Relief Tank);
 - 11. Valves;
 - 12. Safety and Relief Valves;
 - 13. Associated Component Supports.
 - B. Relocation of “historical” information to a controlled document.

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

- 8. Chapter 6:
 - A. Added introductory paragraph and applicable SSC table. Applicable descriptive text was removed from the Chapter for those affected SSC(s) removed from service as identified below:
 - 1. Containment Building (partial);
 - 2. Habitability (partial);
 - 3. Containment Spray;
 - 4. Emergency Operation Containment Ventilation;
 - 5. Containment Isolation;
 - 6. Safety Injection;
 - 7. ESF Filter;
 - 8. Auxiliary Feedwater;
 - 9. Containment Dome Circulation;
 - 10. Hydrogen Monitoring System;
 - 11. Hydrogen Gas System;
 - 12. Toxic Gas Isolation.
 - B. Relocation of “historical” information to a controlled document.

- 9. Chapter 7:
 - A. Added introductory paragraph and applicable SSC table. Applicable descriptive text was removed from the Chapter for those affected SSC(s) removed from service as identified below:
 - 1. Emergency Response Data System
 - 2. Plant Protection Systems
 - a. Reactor Protective System;
 - b. Engineered Safety Features Actuation System.
 - 3. Engineered Safety Feature Systems
 - a. Safety Injection;
 - b. Containment Emergency Sump Recirculation;
 - c. Containment Spray;
 - d. Containment Isolation;
 - e. Containment Purge Isolation;
 - f. Main Steam Isolation;
 - g. Auxiliary Feedwater;
 - h. Containment Cooling;
 - i. Control Room Isolation;
 - j. Toxic Gas Isolation.
 - 4. Auxiliary Supporting Systems
 - a. Salt Water Cooling System;
 - b. Component Cooling System;
 - c. Diesel Generator System;
 - d. Emergency Chilled Water System;
 - e. Heating, Ventilating and Air Conditioning System.
 - 5. Systems Required for Safe Shutdown
 - a. Auxiliary Feedwater System;
 - b. Atmospheric Steam Dump System;
 - c. Shutdown Cooling System;

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

- d. Chemical and Volume Control System (Charging and Boric Acid Makeup portion);
 - e. Reactor Coolant System;
 - f. Main Steam System Integrity Up to and Including Main Steam and Isolation Valves;
 - g. Reactor Protection System (Reactor Trip Manual Pushbuttons in Control Room, Reactor Trip Actuation Circuitry Downstream of Manual Pushbuttons, and Reactor Trip Breakers Only);
 - h. Containment Emergency Cooling.
6. Safety Related Display Instrumentation
- a. Reactor Protective System;
 - b. Engineered Safety Features System;
 - c. Auxiliary Support Systems;
 - d. Plant Process Instrumentation;
 - e. Bypass and Inoperable Status Indication;
 - f. Post-Accident Monitoring Instrumentation;
 - g. Control Element Assembly Position;
 - h. Remote Shutdown Panel Instrumentation;
 - i. Pressurizer Safety Valve Position Indication;
 - j. Instrumentation for Detection of Inadequate Core Cooling.
7. All Other Systems Required for Safety
- a. Shutdown Cooling Interlocks;
 - b. Safety Injection Tank Isolation Valve Interlocks;
 - c. Critical Function Monitoring System including Historical Data and Retrieval;
 - d. Dose Assessment Computer System;
 - e. Draindown Reactor Water Level Indication;
 - f. Anticipated Transient Without Scram/Diverse Scram System;
 - g. Anticipated Transient Without Scram/Diverse Emergency Feedwater Actuation System;
 - h. Data Acquisition System.
8. Control Systems Not Required for Safety
- a. Reactivity Control – CEA Control;
 - b. Reactivity Control – Boron Control;
 - c. Pressurizer Control – Pressure Control;
 - d. Pressurizer Control – Level Control;
 - e. Feedwater Control;
 - f. Steam Flow Control – Steam Bypass Control;
 - g. Steam Flow Control – Main Turbine Control;
 - h. Core Operating Limits Surveillance System;
 - i. Plant Monitoring System;
 - j. In-Core Instrumentation System;
 - k. Ionization Chambers;
 - l. Essential Plant Parameter Monitoring System;
 - m. Tank Data Acquisition System.
- B. Addition of Command Center Data Acquisition System.

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

10. Chapter 8:

- A. Added introductory paragraph and applicable SSC table. Applicable descriptive text was removed from the Chapter for those affected SSC(s) removed from service as identified below:
 - 1. 6.9 kV System;
 - 2. 4.16 kV System;
 - 3. 480 VAC System (partial);
 - 4. 120 VAC System (partial);
 - 5. Emergency Diesel Generators;
 - 6. DC Power (partial);
 - 7. Main Generators;
 - 8. Iso-Phase Buses;
 - 9. Main, Unit, and Reserve Auxiliary Transformers.
- B. Rewrite of the chapter to describe the current electrical configuration to include:
 - 1. Installation of the 12 kV Ring Bus;
 - 2. Installation of the 480 VAC Load Centers (partial);
 - 3. Installation of the 120 VAC (partial);
 - 4. Installation of the 4k VAC Diesel Generator;
 - 5. Installation of the 480 VAC Diesel Generator.
- C. Relocation of “historical” information to a controlled document.

11. Chapter 9:

- A. Added introductory paragraph and applicable SSC table. Applicable descriptive text was removed from the Chapter for those affected SSC(s) removed from service as identified below:
 - 1. New Fuel Storage (partial);
 - 2. Fuel Handling System (partial);
 - 3. Makeup Demineralizer System;
 - 4. Condensate Storage and Transfer System;
 - 5. Turbine Plant Cooling Water System;
 - 6. Compressed Air System;
 - 7. Process Sampling System;
 - 8. Chemical and Volume Control System;
 - 9. Hydrogen System;
 - 10. Post-Accident Sampling System;
 - 11. Reactor Coolant Gas Vent System;
 - 12. Other Auxiliary Systems
 - a. Fire Protection System (partial);
 - b. Diesel Generator Fuel Oil Storage and Transfer System;
 - c. Diesel Generator Cooling Water System;
 - d. Diesel Generator Starting System;
 - e. Diesel Generator Lubrication System;
 - f. Diesel Generator Combustion Air Intake and Exhaust System.
 - 13. Component Cooling Water System;
 - 14. Saltwater Cooling System;
 - 15. Domestic Water System (partial);
 - 16. Ultimate Heat Sink (Pacific Ocean);

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

- 17. Nuclear Service Water System;
- 18. Component Cooling Water Area Sump (Radioactive) (partial);
- 19. Containment Area Sump (Radioactive) (partial);
- 20. Storage Tank Area Sump (Radioactive) (partial);
- 21. Compressed Air System;
- 22. Sump and Drain Systems (partial);
- 23. Containment Building Ventilation Systems
 - a. Containment Normal Cooling System;
 - b. Large Volume Purge and Recirculation Cleanup System;
 - c. CEDM Cooling System;
 - d. Reactor Cavity Cooling System;
 - e. Lower-Level Circulation System;
 - f. Tendon Gallery Ventilation System;
 - g. Mini-Purge System;
 - h. MSIV Enclosure and Penetration Area Cooling System;
 - i. Containment Emergency Cooling Units;
 - j. Dome Air Circulating Units.
- 24. Auxiliary Building Heating, Ventilating and Air Conditioning Systems
 - a. Normal Auxiliary Building HVAC Systems (partial);
 - b. Emergency Auxiliary Building HVAC Systems (partial);
 - c. Normal Chilled Water System;
 - d. Emergency Chilled Water System.
- 25. Support Building Ventilation Systems
 - a. Fuel Handling Building Ventilation System (partial);
 - b. Safety Equipment Building HVAC System (partial);
 - c. Turbine Building HVAC System (partial);
 - d. Diesel Generator Building Ventilation System;
 - e. Penetration Building and Electric Piping Tunnels Ventilation System (partial);
 - f. Intake Structure Ventilation System;
 - g. Auxiliary Feedwater Pump Room Ventilation System;
 - h. Safety Equipment Building Elevator Machine Room;
 - i. Full Flow Condensate Polishing Demineralizer Building Control Room and Laboratory Room.
- B. Changes made to the SONGS communication systems;
- C. Include text to indicate that the spent fuel pool level indication is available both locally and remotely in the control room;
- D. Update to address BTP 9.5-1 and delete fire protection features and systems permanently removed from service;
- E. Added clarification that the reactivity effects of spent fuel pool temperature between 68 degrees F to 50 degrees F are bounded by existing analysis at 68 degrees F.
- F. Rewrite of the Chapter text to include discussion of the following:
 - 1. Addition of the Independent Spent Fuel Pool Cooling System;
 - 2. Addition of Salt Water Dilution;
 - 3. Addition of Ultimate Heat Sink (Atmosphere);

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

4. Reconfiguration of Fuel Handling Building HVAC for permanently shutdown conditions;
5. Reconfiguration of Non-Rad Sumps for permanently shutdown conditions;
6. Reconfiguration of Radwaste Building HVAC for permanently shutdown conditions;
7. Reconfiguration of Fire Detection for permanently shutdown conditions;
8. Reconfiguration of Telecommunications Repower for permanently shutdown conditions;
9. Reconfiguration of Control Building HVAC for permanently shutdown conditions;
10. Relocation of Circulating Water System from Chapter 10;
11. Addition of the Large Organism Exclusion Device;
12. Reclassification of Lighting Systems per new Ring Bus;
13. Inclusion of information regarding Spent Fuel Pool Makeup System and repurposing the Makeup Demineralizer System tanks to Fuel Pool Makeup System.

12. Appendix 9A:

- A. Addition of the Independent Spent Fuel Pool Cooling System;
- B. Removal of the original Spent Fuel Pool Cooling System;
- C. Inclusion of information regarding Spent Fuel Pool Makeup System and repurposing the Makeup Demineralizer System tanks to Fuel Pool Makeup System.
- D. Revision of the Emergency Action Level criteria for declaration of either a Notification of an Unusual Event or an Alert.

13. Chapter 10:

- A. Added introductory paragraph and applicable SSC table. Applicable descriptive text was removed from the Chapter for those affected SSC(s) removed from service as identified below:
 1. Turbine Generator;
 2. Main Steam Supply System;
 3. Main Condenser;
 4. Main Condenser Evacuation System;
 5. Turbine Gland Sealing;
 6. Turbine Bypass;
 7. Circulating Water System (partial);
 8. Condensate Cleanup System;
 9. Full Flow Condensate Polishing Demineralizer;
 10. Condensate and Feedwater System;
 11. Steam Generator Blowdown Processing System;
 12. Auxiliary Feedwater System;
 13. Turbine Plant Chemical Addition System.
- B. Relocation of Circulating Water System to Chapter 9.

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

14. Chapter 11:

- A. Reformatted Chapter for readability and to describe current configuration, as follows:
 - 1. Removed radiological source terms, and associated design basis, methods, and methodology that no longer support the remaining Chapter 15 events;
 - 2. Added description of repurposed plant equipment including sumps and tanks to facilitate storage of liquid radwaste until a future processing skid is obtained and placed in service to allow for processing;
 - 3. Removed description of the tents in the North Industrial Area used for temporary storage of the original steam generators.
- B. Added introductory paragraph and applicable SSC table. Applicable descriptive text was removed from the Chapter for those affected SSC(s) removed from service as identified below:
 - 1. Plant Area Radwaste Management Systems
 - a. Liquid Radwaste System
 - 1) Coolant Radwaste System;
 - 2) Coolant and Boric Acid Recycle System;
 - 3) Miscellaneous Liquid Waste System (partial);
 - 4) Mixed Waste Processing Unit.
 - b. Gaseous Radwaste System
 - 1) High-reactivity Reactor Coolant Gaseous Radwaste System;
 - 2) Main Condenser Evacuation System;
 - 3) Turbine Gland Seal System;
 - 4) Building Ventilation Systems (partial);
 - c. Solid Radwaste System.
 - 2. South Yard Area Radwaste Management Systems
 - a. Decontamination Shop
 - 3. North Industrial Area Systems
- C. Relocation of “historical” information to a controlled document.

15. Chapter 12:

- A. Relocation of “historical” information to a controlled document.

16. Chapter 13:

- A. Relocation of “historical” information to a controlled document.
- B. Revision of Edison International and SCE organizational information.

17. Chapter 14:

- A. Relocation of “historical” information to a controlled document.

18. Chapter 15:

- A. Relocation of “historical” information to a controlled document.

19. Appendix 15G:

- A. Relocation of “historical” information to a controlled document.

Summary of Changes to the Updated Final Safety Analysis Report / Defueled Safety Analysis Report

20. Chapter 16:

- A. Revised the necessary text to reflect the conversion from Technical Specifications to the Permanently Defueled Technical Specifications.

21. Chapter 17:

- A. Relocation of the Quality Assurance (QA) Program from the UFSAR to a controlled document.