UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 4, 2015

Mr. Thomas J. Palmisano
Vice President and Chief Nuclear Officer
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3 AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION – EXEMPTIONS FROM CERTAIN EMERGENCY PLANNING REQUIREMENTS AND RELATED SAFETY EVALUATION (TAC NOS. MF3835, MF3836, AND MF3837)

Dear Mr. Palmisano:

The U.S. Nuclear Regulatory Commission (NRC) has approved the enclosed exemptions from specific requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.47, "Emergency plans," and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50. This action is in response to your application for exemptions dated March 31, 2014, as supplemented by letters dated September 9, October 2, October 6, October 7, October 27, November 3, and December 15, 2014.

The exemptions are provided in Enclosure 1 and the NRC staff's related safety evaluation is provided in Enclosure 2. The exemptions will be forwarded to the Office of the Federal Register for publication.

Sincerely,

Thomas J. Wengert, Senior Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-206, 50-361, 50-362,
and 72-41

Enclosures:
1. Exemptions
2. Safety Evaluation

cc w/encls: Distribution via Listserv

ENCLOSURE 1

EXEMPTIONS

SOUTHERN CALIFORNIA EDISON COMPANY

SAN ONOFRE NUCLEAR GENERATING STATION,

UNITS 1, 2, AND 3, AND

INDEPENDENT SPENT FUEL STORAGE INSTALLATION

DOCKET NOS. 50-206, 50-361, 50-362, AND 72-41

[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[Docket Nos. 50-206, 50-361, 50-362, and 72-41; NRC-20YY-XXXX]

Southern California Edison Company

San Onofre Nuclear Generating Station, Units 1, 2, and 3, and

Independent Spent Fuel Storage Installation

AGENCY: Nuclear Regulatory Commission.

ACTION: Exemption; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is granting exemptions in response to a request from Southern California Edison Company (SCE or the licensee) regarding certain emergency planning (EP) requirements. The exemptions will eliminate the requirements to maintain formal offsite radiological emergency plans and reduce the scope of the onsite EP activities at the San Onofre Nuclear Generating Station (SONGS), Units 1, 2, and 3, and the Independent Spent Fuel Storage Installation (ISFSI), based on the reduced risks of accidents that could result in an offsite radiological release at the decommissioning nuclear power reactors. Provisions would still exist for offsite agencies to take protective actions, using a comprehensive emergency management plan to protect public health and safety, if protective actions were needed in the event of a very unlikely accident that could challenge the safe storage of spent fuel.

ADDRESSES: Please refer to Docket ID <**INSERT:** NRC-20YY-XXXX> when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- **Federal Rulemaking Web Site:** Go to http://www.regulations.gov and search for Docket ID <**INSERT:** NRC-20YY-XXXX>. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; e-mail: Carol.Gallagher@nrc.gov. For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly available documents online in the ADAMS Public Documents collection at http://www.nrc.gov/reading-rm/adams.html. To begin the search, select "ADAMS Public Documents" and then select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. The ADAMS accession number for each document referenced in this document (if that document is available in ADAMS) is provided the first time that a document is referenced.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Thomas Wengert, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; telephone: 301-415-4037; e-mail: Thomas.Wengert@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Background.

SONGS Units 1, 2, and 3, are decommissioning power reactors located in San Diego County, California. The licensee, SCE, is the holder of SONGS Facility Operating License Nos. DPR-13, NPF-10, and NPF-15. The licenses provide, among other things, that the facility is subject to all rules, regulations, and orders of the NRC now or hereafter in effect.

SONGS Unit 1 was permanently shut down in 1993. On June 12, 2013 (ADAMS Accession No. ML131640201), the licensee provided the certifications that SONGS Units 2 and 3, had permanently ceased power operations. On June 28 (ADAMS Accession No. ML13183A391), and July 22, 2013 (ADAMS Accession No. ML13204A304), the licensee provided certifications that all fuel had been permanently removed from the SONGS Units 3 and 2, reactors, respectively. As a permanently shutdown and defueled facility, and pursuant to section 50.82(a)(2) of Title 10 of the *Code of Federal Regulations* (10 CFR), SCE is no longer authorized to operate the reactors or emplace fuel into the reactor vessels, but is still authorized to possess and store irradiated nuclear fuel. Irradiated fuel is currently stored onsite at SONGS in spent fuel pools (SFPs) and in the ISFSI dry casks.

During normal power reactor operations, the forced flow of water through the reactor coolant system (RCS) removes heat generated by the reactor. The RCS, operating at high temperatures and pressures, transfers this heat through the steam generator tubes converting non-radioactive feedwater to steam, which then flows to the main turbine generator to produce electricity. Many of the accident scenarios postulated in the updated safety analysis reports (USARs) for operating power reactors involve failures or malfunctions of systems that could affect the fuel in the reactor core, which in the most severe postulated accidents, would involve

the release of some fission products into the environment. With the permanent cessation of reactor operations at SONGS and the permanent removal of the fuel from the reactor vessels, such accidents are no longer possible. The reactors, RCS, and supporting systems are no longer in operation and have no function related to the storage of the irradiated fuel. Therefore, postulated accidents involving failure or malfunction of the reactors, RCS, or supporting systems are no longer applicable.

The EP requirements of 10 CFR 50.47, "Emergency plans," and appendix E to 10 CFR part 50, "Emergency Planning and Preparedness for Production and Utilization Facilities," continue to apply to nuclear power reactors that have permanently ceased operation and have removed all fuel from the reactor vessel. There are no explicit regulatory provisions distinguishing EP requirements for a power reactor that is permanently shut down and defueled from those for a reactor that is authorized to operate. To reduce or eliminate EP requirements that are no longer necessary due to the decommissioning status of the facility, SCE must obtain exemptions from those EP regulations. Only then can SCE modify the SONGS emergency plan to reflect the reduced risk associated with the permanently shutdown and defueled condition of SONGS .

II. Request/Action.

By letter dated March 31, 2014 (ADAMS Accession No. ML14092A332), "Emergency Planning Exemption Request," SCE requested exemptions from certain EP requirements of 10 CFR part 50 for SONGS. More specifically, SCE requested exemptions from certain planning standards in 10 CFR 50.47(b) regarding onsite and offsite radiological emergency plans for nuclear power reactors; from certain requirements in 10 CFR 50.47(c)(2) that require establishment of plume exposure and ingestion pathway emergency planning zones for nuclear

power reactors; and from certain requirements in 10 CFR part 50, appendix E, Section IV, which establishes the elements that make up the content of emergency plans. In letters dated September 9, October 2, October 7, October 27, November 3, and December 15, 2014 (ADAMS Accession Nos. ML14258A003, ML14280A265, ML14287A228, ML14303A257, ML14309A195, and ML14351A078, respectively), SCE provided responses to the NRC staff's requests for additional information (RAI) concerning the proposed exemptions. In addition, SCE submitted a letter dated October 6, 2014, which contains security-related information, and is therefore withheld from public disclosure. The December 15, 2014, letter is a redacted, publicly-available version of this letter.

The information provided by SCE included justifications for each exemption requested. The exemptions requested by SCE would eliminate the requirements to maintain formal offsite radiological emergency plans, reviewed by the Federal Emergency Management Agency (FEMA) under the requirements of 44 CFR part 350, and reduce the scope of onsite EP activities. SCE stated that application of all of the standards and requirements in 10 CFR 50.47(b), 10 CFR 50.47(c), and 10 CFR part 50, appendix E is not needed for adequate emergency response capability, based on the substantially lower onsite and offsite radiological consequences of accidents still possible at the permanently shutdown and defueled facility as compared to an operating facility. If offsite protective actions were needed for a very unlikely accident that could challenge the safe storage of spent fuel at SONGS, provisions exist for offsite agencies to take protective actions using a comprehensive emergency management plan (CEMP) under the National Preparedness System to protect the health and safety of the public. A CEMP in this context, also referred to as an emergency operations plan (EOP), is addressed in FEMA's Comprehensive Preparedness Guide 101, "Developing and Maintaining Emergency Operations Plans." Comprehensive Preparedness Guide 101 is the foundation for State, territorial, Tribal, and local EP in the United States. It promotes a common understanding of the

fundamentals of risk-informed planning and decision-making and helps planners at all levels of government in their efforts to develop and maintain viable, all-hazards, all-threats emergency plans. An EOP is flexible enough for use in all emergencies. It describes how people and property will be protected; details who is responsible for carrying out specific actions; identifies the personnel, equipment, facilities, supplies and other resources available; and outlines how all actions will be coordinated. A CEMP is often referred to as a synonym for "all-hazards planning."

III. Discussion.

In accordance with 10 CFR 50.12, "Specific exemptions," the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR part 50 when: (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) any of the special circumstances listed in 10 CFR 50.12(a)(2) are present. These special circumstances include, among other things, that the application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.

As noted previously, the current EP regulations contained in 10 CFR 50.47(b) and appendix E to 10 CFR part 50 apply to both operating and shutdown power reactors. The NRC has consistently acknowledged that the risk of an offsite radiological release at a power reactor that has permanently ceased operations and removed fuel from the reactor vessel is significantly lower, and the types of possible accidents are significantly fewer, than at an operating power reactor. However, current EP regulations do not recognize that once a power reactor permanently ceases operation, the risk of a large radiological release from a credible

emergency accident scenario is reduced. The reduced risk is largely the result of the low frequency of credible events that could challenge the SFP structure, and the reduced decay heat and reduced short-lived radionuclide inventory due to decay. The NRC's NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants," dated August 31, 1997 (ADAMS Accession No. ML082260098) and NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," dated February 28, 2001 (ADAMS Accession No. ML010430066), confirmed that for permanently shutdown and defueled power reactors bounded by the assumptions and conditions in the reports, the risk of offsite radiological release is significantly less than that for an operating power reactor.

In the past, EP exemptions similar to those requested by SCE, have been granted to licensees of permanently shutdown and defueled power reactors. However, the exemptions did not relieve the licensees of all EP requirements. Rather, the exemptions allowed the licensees to modify their emergency plans commensurate with the credible site-specific risks that were consistent with a permanently shutdown and defueled status. Specifically, for previous permanently shutdown and defueled power reactors, the basis for the NRC staff's approval of the exemptions from certain EP requirements was based on the licensee's demonstration that: (1) the radiological consequences of design-basis accidents would not exceed the limits of the U.S. Environmental Protection Agency's (EPA) Protective Action Guidelines (PAGs) at the exclusion area boundary, and (2) in the unlikely event of a beyond-design-basis accident resulting in a loss of all modes of heat transfer from the fuel stored in the SFP, there is sufficient time to initiate appropriate mitigating actions, and if needed, for offsite authorities to implement offsite protective actions using a CEMP approach to protect the health and safety of the public. Based on precedent exemptions, the site-specific analysis should show that there is sufficient time following a loss of SFP coolant inventory until the onset of fuel damage to implement onsite

mitigation of the loss of SFP coolant inventory and if necessary, to implement offsite protective actions. To meet this criterion, the staff accepted in precedent exemptions that the time should exceed 10 hours from the loss of coolant until the fuel temperature reaches 900 degrees Celsius (°C), assuming no air cooling.

The NRC staff reviewed the licensee's justification for the requested exemptions against the criteria in 10 CFR 50.12(a) and determined, as described below, that the criteria in 10 CFR 50.12(a) are met, and that the exemptions should be granted. An assessment of the SCE EP exemptions is described in SECY-14-0144, "Request by Southern California Edison for Exemptions from Certain Emergency Planning," dated December 17, 2014 (ADAMS Accession No. ML14251A554). The Commission approved the NRC staff's recommendation to grant the exemptions in the staff requirements memorandum to SECY-14-0144, dated March 2, 2015 (ADAMS Accession No. ML15061A521). Descriptions of the specific exemptions requested by SCE and the NRC staff's basis for granting each exemption are provided in SECY-14-0144 and summarized in a table at the end of this document. The staff's detailed review and technical basis for the approval of the specific EP exemptions, requested by SCE, are provided in the NRC staff's safety evaluation dated June 4, 2015 (ADAMS Accession No. ML15082A204).

A. Authorized by Law

The licensee has proposed exemptions from certain EP requirements in 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR part 50, appendix E, Section IV, which would allow SCE to revise the SONGS Emergency Plan to reflect the permanently shutdown and defueled condition of the station. As stated above, in accordance with 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR part 50. The NRC staff has determined that granting of the licensee's proposed exemptions will not result in a violation of the Atomic Energy

Act of 1954, as amended, or the NRC's regulations. Therefore, the exemptions are authorized by law.

B. No Undue Risk to Public Health and Safety

As stated previously, SCE provided analyses that show the radiological consequences of design-basis accidents will not exceed the limits of the EPA PAGs at the exclusion area boundary. Therefore, formal offsite radiological emergency plans required under 10 CFR part 50 are no longer needed for protection of the public beyond the exclusion area boundary, based on the radiological consequences of design-basis accidents still possible at SONGS.

Although very unlikely, there is one postulated beyond-design-basis accident that might result in significant offsite radiological releases. However, NUREG-1738 confirms that the risk of beyond-design-basis accidents is greatly reduced at permanently shutdown and defueled reactors. The NRC staff's analyses in NUREG-1738 concludes that the event sequences important to risk at permanently shutdown and defueled power reactors are limited to large earthquakes and cask drop events. For EP assessments, this is an important difference relative to operating power reactors, where typically a large number of different sequences make significant contributions to risk. Per NUREG-1738, relaxation of offsite EP requirements, under 10 CFR part 50, a few months after shutdown resulted in only a small change in risk. The report further concludes that the change in risk due to relaxation of offsite EP requirements is small because the overall risk is low, and because even under current EP requirements for operating power reactors, EP was judged to have marginal impact on evacuation effectiveness in the severe earthquakes that dominate SFP risk. All other sequences including cask drops (for which offsite radiological emergency plans are expected to be more effective) are too low in likelihood to have a significant impact on risk.

Therefore, granting exemptions to eliminate the requirements of 10 CFR part 50 to maintain offsite radiological emergency plans and to reduce the scope of onsite EP activities will not present an undue risk to the public health and safety.

C. Consistent with the Common Defense and Security

The requested exemptions by SCE only involve EP requirements under 10 CFR part 50 and will allow SCE to revise the SONGS Emergency Plan to reflect the permanently shutdown and defueled condition of the facility. Physical security measures at SONGS are not affected by the requested EP exemptions. The discontinuation of formal offsite radiological emergency plans and the reduction in scope of the onsite EP activities at SONGS will not adversely affect SCE's ability to physically secure the site or protect special nuclear material. Therefore, the proposed exemptions are consistent with the common defense and security.

D. Special Circumstances

Special circumstances, in accordance with 10 CFR 50.12(a)(2)(ii), are present whenever application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule. The underlying purposes of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR part 50, appendix E, Section IV, are to provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency, to establish plume exposure and ingestion pathway emergency planning zones for nuclear power plants, and to ensure that licensees maintain effective offsite and onsite radiological emergency plans. The standards and requirements in these regulations were developed by considering the risks associated with operation of a power reactor at its licensed full-power level. These risks include the potential for a reactor accident with offsite radiological dose consequences.

As discussed previously in Section III of this document, because SONGS Units 1, 2, and 3 are permanently shutdown and defueled, there is no longer a risk of offsite radiological release from a design-basis accident and the risk of a significant offsite radiological release from a beyond-design-basis accident is greatly reduced when compared to the risk at an operating power reactor. In a letter dated March 31, 2014 (ADAMS Accession No. ML14092A332), the licensee provided analyses to demonstrate that the radiological consequences of design-basis accidents at SONGS will not exceed the limits of the EPA PAGs at the exclusion area boundary. The NRC staff has confirmed the reduced risks at SONGS by comparing the generic risk assumptions in the analyses in NUREG-1738 to site-specific conditions at SONGS; and has determined that the risk values in NUREG-1738 bound the risks presented by SONGS. In addition, the significant decay of short-lived radionuclides that has occurred since the January 2012 shutdown provides assurance in other ways. As indicated by the results of research conducted for NUREG-1738 and more recently, for NUREG-2161, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor" (ADAMS Accession No. ML15255A365), while other consequences can be extensive, accidents from SFPs with significant decay time have little potential to cause offsite early fatalities, even if the formal offsite radiological EP requirements were relaxed. SCE's analysis of a beyond-design-basis accident involving a complete loss of SFP water inventory, where adequate fuel handling building air exchange with the environment and air cooling of the stored fuel is available, shows that by August 31, 2014, air cooling of the spent fuel assemblies was sufficient to keep the fuel within a safe temperature range, indefinitely, without fuel cladding damage or offsite radiological release.

The only analyzed beyond-design-basis accident scenario that progresses to a condition where a significant offsite release might occur, involves the very unlikely event where the SFP drains in such a way that all modes of cooling or heat transfer are assumed to be unavailable,

which is postulated to result in an adiabatic heatup of the spent fuel. SCE's analysis of this beyond-design-basis accident shows that as of October 12, 2014, more than 17 hours would be available between the time the fuel is initially uncovered (at which time adiabatic heatup is conservatively assumed to begin), until the fuel cladding reaches a temperature of 1652 degrees Fahrenheit (°F) (900 °C), which is the temperature associated with rapid cladding oxidation and the potential for a significant radiological release. This analysis conservatively does not include the period of time from the initiating event causing a loss of SFP water inventory until all cooling means are lost.

The NRC staff has verified SCE's analyses and its calculations. The analyses provide reasonable assurance that in granting the requested exemptions to SCE, there is no design-basis accident that will result in an offsite radiological release exceeding the EPA PAGs at the exclusion area boundary. In the unlikely event of a beyond-design-basis accident affecting the SFP that results in a complete loss of heat removal via all modes of heat transfer, there will be well over 10 hours available before an offsite release might occur and, therefore, at least 10 hours to initiate appropriate mitigating actions to restore a means of heat removal to the spent fuel. If a radiological release were projected to occur under this unlikely scenario, a minimum of 10 hours is considered sufficient time for offsite authorities to implement protective actions using a CEMP approach to protect the health and safety of the public.

Exemptions from the offsite EP requirements in 10 CFR part 50 have previously been approved by the NRC when the site-specific analyses show that at least 10 hours are available following a loss of SFP coolant inventory accident with no air cooling (or other methods of removing decay heat) until cladding of the hottest fuel assembly reaches the zirconium rapid oxidation temperature. The NRC staff concluded in its previously granted exemptions, as it does with the SCE-requested EP exemptions, that if a minimum of 10 hours are available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to

implement protective actions using a CEMP approach, then formal offsite radiological emergency plans, required under 10 CFR part 50, are not necessary at permanently shutdown and defueled power reactors.

Additionally, in its letters to the NRC dated October 6, 2014, and December 15, 2014, SCE described the SFP makeup strategies that could be used in the event of a catastrophic loss of SFP inventory. The multiple strategies for providing makeup water to the SFP include: using existing plant systems for inventory makeup; an internal strategy that relies on installed fire water pumps and service water or fire water storage tanks; or an external strategy that uses portable pumps to initiate makeup flow into the SFPs through a seismic standpipe and standard fire hoses routed to the SFPs or to a spray nozzle. These strategies will continue to be required as a license condition. Considering the very low probability of beyond-design-basis accidents affecting the SFP, these diverse strategies provide defense-in-depth and time to provide additional makeup or spray water to the SFP before the onset of any postulated offsite radiological release.

For all the reasons stated above, the NRC staff concludes that application of certain requirements in 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR part 50, appendix E, as summarized in the table at the end of this document, is not necessary to achieve the underlying purpose of these regulations and, therefore, satisfies the special circumstances in 10 CFR 50.12(a)(2)(ii). The staff further concludes that the exemptions granted by this action will maintain an acceptable level of emergency preparedness at SONGS and provide reasonable assurance that adequate offsite protective measures, if needed, can and will be taken by State and local government agencies using a CEMP approach, in the unlikely event of a radiological emergency at the SONGS facility. Since the underlying purposes of the rules, as exempted, would continue to be achieved, even with the elimination of the requirements under 10 CFR part 50 to maintain formal offsite radiological emergency plans and the reduction in the

scope of the onsite EP activities at SONGS, the special circumstances required by 10 CFR 50.12(a)(2)(ii) exist.

E. Environmental Considerations

In accordance with 10 CFR 51.31(a), the Commission has determined that the granting of these exemptions will not have a significant effect on the quality of the human environment, as discussed in the NRC staff's Environmental Assessment and Finding of No Significant Impact published on April 17, 2015 (80 FR 21271).

IV. Conclusions.

Accordingly, the Commission has determined, pursuant to 10 CFR 50.12(a), that SCE's request for exemptions from certain EP requirements in 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR part 50, appendix E, Section IV, and as summarized in the table at the end of this document, are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security. Also, special circumstances are present. Therefore, the Commission hereby grants SCE exemptions from certain EP requirements of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR part 50, appendix E, Section IV, as discussed and evaluated in detail in the staff's safety evaluation dated June 4, 2015. The exemptions are effective as of June 4th 2015.

Dated at Rockville, Maryland, this 4th day of June 2015.

For the Nuclear Regulatory Commission.

A. Louise Lund

A. Louise Lund, Acting Director,
Division of Operating Reactor Licensing,
Office of Nuclear Reactor Regulation.

Table of Exemptions Granted to Southern California Edison (SCE)

10 CFR 50.47	NRC Staff Basis for Exemption
10 CFR 50.47(b). The NRC is granting exemption from portions of the rule language that would otherwise require offsite emergency response plans.	In the Statement of Considerations (SOC) for the final rule for emergency planning (EP) requirements for independent spent fuel storage installations (ISFSIs) and for monitor retrievable storage (MRS) facilities (60 FR 32430; June 22, 1995), the Commission responded to comments concerning offsite EP for ISFSIs or an MRS and concluded that, "the offsite consequences of potential accidents at an ISFSI or an MRS would not warrant establishing Emergency Planning Zones." In a nuclear power reactor's permanently defueled state, the accident risks are more similar to an ISFSI or an MRS than an operating nuclear power plant. The EP program would be similar to that required for an ISFSI under Section 72.32(a) of 10 CFR when fuel stored in the spent fuel pool (SFP) has more than 5 years of decay time and would not change substantially when all the fuel is transferred from the SFP to an onsite ISFSI. Exemptions from offsite EP requirements have previously been approved when the site-specific analyses show that at least 10 hours is available from a partial drain-down event where cooling of the spent fuel is not effective until the hottest fuel assembly reaches the zirconium ignition temperature of 900 degrees Celsius (°C). The technical basis that underlies the approval of the exemption request is based partly on the analysis of a time period in which spent fuel stored in the SFP is unlikely to reach the zirconium ignition temperature in less than 10 hours. This time period is based on a heat-up calculation which uses several simplifying assumptions. Some of these assumptions are conservative (adiabatic conditions), while others are non-conservative (no oxidation below 900°C). Weighing the conservatisms and non-conservatisms, the staff judges that this calculation reasonably represents conditions that may occur in the event of an SFP accident.

10 CFR 50.47	NRC Staff Basis for Exemption
	The staff concluded that if 10 hours were available to initiate mitigative actions, or if needed, offsite protective actions using a comprehensive emergency management plan (CEMP), formal offsite radiological emergency plans are not necessary for these permanently defueled nuclear power reactor licensees. As supported by the licensee's SFP analysis, the staff believes an exemption from the requirements for formal offsite radiological emergency plans is justified for a zirconium fire scenario considering the low likelihood of this event together with time available to take mitigative or protective actions between the initiating event and before the onset of a postulated fire. The SCE analysis has demonstrated that the radiological consequences of design-basis-accidents (DBAs) will not exceed the limits of the U.S. Environmental Protection Agency's (EPA's) Protective Action Guides (PAGs) at the exclusion area boundary. These analyses also show that as of October 12, 2014, in the unlikely event of a beyond DBA where the hottest fuel assembly adiabatic heat-up occurs, 17.8 hours is available to take mitigative or, if needed, offsite protective actions using a CEMP from the time the fuel is uncovered until it reaches the auto-ignition temperature of 900°C. SCE furnished information to supplement its exemption request concerning its SFP inventory makeup strategies. The multiple strategies for providing makeup to the SFP include: using existing plant systems for inventory makeup; an internal strategy that relies on installed fire water pumps (two motor-driven and one diesel-driven) and service and firewater storage tanks; or an external strategy that uses portable pumps to initiate make-up flow into the pools through a seismic standpipe and standard fire water hoses routed either over the pools' edges or to spray nozzles. SCE further provides that designated on-shift staff is trained to

10 CFR 50.47	NRC Staff Basis for Exemption
	implement such strategies and they have plans in place to mitigate the consequences of an event involving a catastrophic loss-of-water inventory concurrently from both San Onofre Nuclear Generating Station (SONGS), Units 2 and 3 SFPs. It is estimated that it would take approximately 55 minutes to deliver flow to one pool, with an additional 35 minutes to provide water to the second pool without having to relocate the trailer-mounted pump. Relocation of the trailer-mounted pump, if required, would take approximately 30 additional minutes. SCE will maintain its Mitigating Strategies License Conditions for Units 2 and 3 (2.C(26) for Unit 2 and 2.C(27) for Unit 3). These license conditions require SONGS to maintain its SFP inventory makeup strategies as discussed above.
10 CFR 50.47(b)(1). The NRC is granting exemption from portions of the rule language that would otherwise require the need for Emergency Planning Zones (EPZs).	Refer to basis for 10 CFR 50.47(b).
10 CFR 50.47(b)(3). The NRC is granting exemption from portions of the rule language that would otherwise require the need for an emergency operations facility (EOF).	Decommissioning power reactors present a low likelihood of any credible accident resulting in a radiological release together with the time available to take mitigative or, if needed, offsite protective actions using a CEMP between the initiating event and before the onset of a postulated fire. As such, an EOF would not be required. The "nuclear island," control room, or other onsite location can provide for the communication and coordination with offsite organizations for the level of support required. Also refer to basis for 10 CFR 50.47(b).

10 CFR 50.47	NRC Staff Basis for Exemption
10 CFR 50.47(b)(4). The NRC is granting exemption from portions of the rule language that would otherwise require reference to formal offsite radiological emergency response plans.	Decommissioning power reactors present a low likelihood of any credible accident resulting in a radiological release together with the time available to take mitigative or, if needed, offsite protective actions using a CEMP between the initiating event and before the onset of a postulated fire. As such, formal offsite radiological emergency response plans are not required. The Nuclear Energy Institute (NEI) document NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors" (Revision 6), was found to be an acceptable method for development of emergency action levels (EALs) and was endorsed by the NRC in a letter dated March 28, 2013 (ADAMS Accession No. ML12346A463). NEI 99-01 provides EALs for non-passive operating nuclear power reactors, permanently defueled reactors and ISFSIs. SCE requested a license amendment to revise its EAL scheme to NEI 99-01, Revision 6 in a letter dated March 31, 2014, "Permanently Defueled Emergency Action Level Scheme, San Onofre Nuclear Generating Station, Units 1, 2, and 3, Respectively, and Independent Spent Fuel Storage Installation" (ADAMS Accession No. ML14092A249). Also refer to basis for 10 CFR 50.47(b).
10 CFR 50.47(b)(5). The NRC is granting exemption from portions of the rule language that would otherwise require early notification of the public and a means to provide instructions to the public within the plume exposure pathway EPZ.	Refer to basis for 10 CFR 50.47(b).
10 CFR 50.47(b)(6). The NRC is granting exemption from portions of the rule language that would otherwise require prompt communications with the public.	Refer to basis for 10 CFR 50.47(b).

10 CFR 50.47	NRC Staff Basis for Exemption
10 CFR 50.47(b)(7). The NRC is granting exemption from portions of the rule language that would otherwise require information to be made available to the public on a periodic basis about how they will be notified and what their initial protective actions should be.	Refer to basis for 10 CFR 50.47(b).
10 CFR 50.47(b)(9). The NRC is granting exemption from portions of the rule language that would otherwise require the capability for monitoring offsite consequences.	Refer to basis for 10 CFR 50.47(b).
10 CFR 50.47(b)(10) The NRC is granting exemption from portions of the rule language that would reduce the range of protective actions developed for emergency workers and the public. Consideration of evacuation, sheltering, or the use of potassium iodide will no longer be necessary. Evacuation time estimates (ETEs) will no longer need to be developed or updated. Protective actions for the ingestion exposure pathway EPZ will not need to be developed.	In the unlikely event of an SFP accident, the iodine isotopes, which contribute to an offsite dose from an operating reactor accident, are not present, so potassium iodide distribution would no longer serve as an effective or necessary supplemental protective action. In the SOC for the final rule for EP requirements for ISFSIs and for MRS facilities (60 FR 32430), the Commission responded to comments concerning site-specific EP that includes evacuation of surrounding population for an ISFSI not at a reactor site, and concluded, "The Commission does not agree that as a general matter emergency plans for an ISFSI must include evacuation planning." Also refer to basis for 10 CFR 50.47(b).
10 CFR 50.47(c)(2). The NRC is granting exemption from portions of the rule language that would otherwise require the establishment of a 10-mile radius plume exposure pathway EPZ and a 50-mile radius ingestion pathway EPZ.	Refer to basis for 10 CFR 50.47(b)(10).

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.1. The NRC is granting exemption from portions of the rule language that would otherwise	The EP rule published in the *Federal Register* (76 FR 72560; November 23, 2011) amended certain requirements in 10 CFR Part 50. Among the changes, the definition of "hostile

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
require onsite protective actions during hostile action.	action" was added as an act directed toward a nuclear power plant or its personnel. This definition is based on the definition of "hostile action" provided in NRC Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events," dated July 18, 2005 (ADAMS Accession No. ML051740058). NRC Bulletin 2005-02 is not applicable to nuclear power reactors that have permanently ceased operations and have certified that fuel has been removed from the reactor vessel. SCE certified that it had permanently ceased operations at SONGS Units 2 and 3 and that all fuel at those units had been removed from the reactor vessels. Therefore, the enhancements for hostile actions required by the 2011 EP Final Rule are not necessary for SONGS in its permanently shut down and defueled status. Additionally, the NRC excluded non-power reactors from the definition of "hostile action" at the time of the 2011 rulemaking because, as defined in 10 CFR 50.2, a non-power reactor is not considered a nuclear power reactor and a regulatory basis had not been developed to support the inclusion of non-power reactors in the definition of "hostile action." Similarly, a decommissioning power reactor or ISFSI is not a "nuclear reactor" as defined in the NRC's regulations. Like a non-power reactor, a decommissioning power reactor also has a lower likelihood of a credible accident resulting in radiological releases requiring offsite protective measures than does an operating reactor. Although this analysis provides a justification for exempting SONGS from "hostile action" related requirements, some EP requirements for security-based events are maintained. The classification of security-based events, notification of offsite authorities and coordination with offsite agencies under a CEMP concept are still required.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.2. The NRC is granting exemption from portions of the rule language concerning the evacuation time analyses within the plume exposure pathway EPZ for the licensee's initial application.	Refer to basis for 10 CFR 50.47(b)(10).
10 CFR Part 50, Appendix E, Section IV.3. The NRC is granting exemption from portions of the rule language that would otherwise require use of NRC-approved ETEs and updates to State and local governments when developing protective action strategies.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.2.
10 CFR Part 50, Appendix E, Section IV.4. The NRC is granting exemption from portions of the rule language that would otherwise require licensees to update ETEs based on the most recent census data and submit the ETE analysis to the NRC prior to providing it to State and local governments for developing protective action.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.2.
10 CFR Part 50, Appendix E, Section IV.5. The NRC is granting exemption from portions of the rule language that would otherwise require licensees to estimate the EPZ permanent resident population changes once a year between decennial censuses.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.2.
10 CFR Part 50, Appendix E, Section IV.6. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to submit an updated ETE analysis to the NRC based on changes in the resident population that result in exceeding specific evacuation time increase criteria.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.2.
10 CFR Part 50, Appendix E, Section IV.A.1. The NRC is granting exemption from the word "operating" in the requirement to describe the normal plant organization.	Based on the permanently shut down and defueled status of the reactor, a decommissioning reactor is not authorized to operate under 10 CFR 50.82(a). Because the licensee cannot operate the reactors, the licensee does not have a "plant operating organization."

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.A.3. The NRC is granting exemption from the requirement to describe the licensee's headquarters personnel sent to the site to augment the onsite emergency response organization.	The number of staff at decommissioning sites is generally small but is commensurate with the need to safely store spent fuel at the facility in a manner that is protective of public health and safety. Decommissioning sites typically have a level of emergency response that does not require response by the licensee's headquarters personnel.
10 CFR Part 50, Appendix E, Section IV.A.4. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to identify a position and function within its organization, which will carry the responsibility for making offsite dose projections.	Although the likelihood of events that would result in doses in excess of the EPA PAGs to the public beyond the exclusion area boundary based on the permanently shut down and defueled status of the reactor is extremely low, the licensee is still required to determine if a radiological release is occurring. If a release is occurring, then the licensee staff should promptly communicate that information to offsite authorities for their consideration. The offsite organizations are responsible for deciding what, if any, protective actions should be taken based on a CEMP. Also refer to basis for 10 CFR 50.47(b).
10 CFR Part 50, Appendix E, Section IV.A.5. The NRC is granting exemption from the requirement for the licensee to identify individuals with special qualifications, both licensee employees and non-employees, for coping with emergencies.	SONGS has performed an on-shift staffing analysis, addressing SFP mitigating strategies, including review of collateral duties. The specific event scenario utilized for the staffing analysis involves a catastrophic loss-of-water inventory in one SFP. In addition to the scenario described above, SONGS performed a separate case study to validate that the minimum on-shift staff can perform mitigation efforts in the event that the second SFP is also affected by a catastrophic loss-of-water inventory. Also refer to basis for 10 CFR 50.47(b).
10 CFR Part 50, Appendix E, Section IV.A.7. The NRC is granting exemption from portions of the rule language that would otherwise require a description of the assistance expected from State, local, and Federal agencies for coping with a hostile action.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.1.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.A.8. The NRC is granting exemption from the requirement to identify the State and local officials for ordering protective actions and evacuations.	Offsite emergency measures are limited to support provided by local police, fire departments, and ambulance and hospital services, as appropriate. Due to the low probability of DBAs or other credible events to exceed the EPA PAGs, protective actions such as evacuation should not be required, but could be implemented at the discretion of offsite authorities using a CEMP. Also refer to basis for 10 CFR 50.47(b)(10).
10 CFR Part 50, Appendix E, Section IV.A.9. The NRC is granting exemption from the requirement for the licensee to provide an analysis demonstrating that on-shift personnel are not assigned responsibilities that would prevent performance of their assigned emergency plan functions.	The duties of the on-shift personnel at a decommissioning reactor facility are not as complicated and diverse as those for an operating power reactor. Responsibilities should be well defined in the emergency plan and procedures, regularly tested through drills and exercises audited and inspected by the licensee and the NRC. The staff considered the similarity between the staffing levels at a permanently shut down and defueled reactor and staffing levels at an operating power reactor site. The minimal systems and equipment needed to maintain the spent nuclear fuel in the SFP or in a dry cask storage system in a safe condition require minimal personnel and is governed by Technical Specifications. In the EP final rule published in the *Federal Register* (76 FR 72560; November 23, 2011), the NRC concluded that the staffing analysis requirement was not necessary for non-power reactor licensees due to the small staffing levels required to operate the facility. The staff also examined the actions required to mitigate the very low probability beyond-design-basis events for the SFP. In a letter dated October 1, 2014, "Docket Nos. 50-361 and 50-362 Supplement 1 to Amendment Applications 266 and 251 Permanently Defueled Technical Specifications San Onofre Nuclear Generating Station, Units 2 and 3" (ADAMS Accession No. ML14280A264), SCE withdrew the proposed changes to the Mitigating Strategies License Condition for

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
	Units 2 and 3 (2.C(26) for Unit 2 and 2.C(27) for Unit 3). This license condition requires SONGS to maintain its SFP inventory makeup strategies as discussed above. SONGS has performed an on-shift staffing analysis, addressing SFP mitigating strategies, including review of collateral duties. The specific event scenario utilized for the staffing analysis involves a catastrophic loss-of-water inventory in one SFP. In addition to the scenario described above, SONGS performed a separate case study to validate that the minimum on-shift staff can perform mitigation efforts in the event that the second SFP is also affected by a catastrophic loss-of-water inventory. Also refer to basis for 10 CFR Part 50, Appendix E, Section IV.1.
10 CFR Part 50, Appendix E, Section IV.B.1. The NRC is granting exemption from portions of the rule language that would otherwise require offsite EALs and offsite protective measures and associate offsite monitoring for the emergency conditions. In addition, the NRC is granting exemption from portions of the rule language that would otherwise require EALs based on hostile action.	NEI 99-01 was found to be an acceptable method for development of EALs. No offsite protective actions are anticipated to be necessary, so classification above the alert level is no longer required, which is consistent with ISFSI facilities. As discussed previously, SCE requested a license amendment to revise its EAL scheme to NEI 99-01, Revision 6 in a letter dated March 31, 2014, "Permanently Defueled Emergency Action Level Scheme, San Onofre Nuclear Generating Station, Units 1, 2, and 3, respectively, and Independent Spent Fuel Storage Installation" (ADAMS Accession No. ML14092A249). Before SCE can amend its EAL scheme to reflect the risk commensurate with power reactors that have been permanently shut down and defueled, SCE needs an exemption from the requirement for the site area emergency and general emergency classifications. Also refer to basis for 10 CFR Part 50, Appendix E, Section IV.1.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.C.1. The NRC is granting exemption from portions of the rule language that would otherwise require EALs based on operating reactor concerns, such as offsite radiation monitoring, pressure in containment, and the response of the emergency core cooling system. In addition, the NRC is striking language that would otherwise require offsite EALs of a site area emergency and a general emergency.	Containment parameters do not provide an indication of the conditions at a defueled facility and emergency core cooling systems are no longer required. Other indications, such as SFP level or temperature, can be used at sites where there is spent fuel in the SFPs. In the SOC for the final rule for EP requirements for ISFSIs and for MRS facilities (60 FR 32430), the Commission responded to comments concerning a general emergency at an ISFSI and MRS, and concluded that, "...an essential element of a General Emergency is that a release can be reasonably expected to exceed EPA PAGs exposure levels off site for more than the immediate site area." The probability of a condition at a defueled facility causing a release of radioactive material offsite necessitating a declaration of a site area or general emergency is very low. In the event of an accident at a defueled facility that meets the conditions for exemption from formal EP requirements, there will be available time for event mitigation and, if necessary, implementation of offsite protective actions using a CEMP. NEI 99-01 was found to be an acceptable method for development of EALs. No offsite protective actions are anticipated to be necessary, so classification above the alert level is no longer required.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.C.2. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to assess, classify, and declare an emergency condition within 15 minutes.	In the EP rule published in the November 23, 2011, *Federal Register* (76 FR 72560), nuclear power reactor licensees were required to assess, classify and declare an emergency condition within 15 minutes. Non-power reactors do not have the same potential impact on public health and safety as do power reactors, and as such, non-power reactor licensees do not require complex offsite emergency response activities and are not required to assess, classify and declare an emergency condition within 15 minutes. An SFP and an ISFSI are also not nuclear power reactors as defined in the NRC's regulations and do not have the same potential impact on public health and safety as do power reactors. A decommissioning power reactor has a low likelihood of a credible accident resulting in radiological releases requiring offsite protective measures. For these reasons, the staff concludes that a decommissioning power reactor should not be required to assess, classify and declare an emergency condition within 15 minutes.
10 CFR Part 50, Appendix E, Section IV.D.1. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to reach agreement with local, State, and Federal officials and agencies for prompt notification of protective measures or evacuations. In addition, the NRC is granting exemption from identifying the associated titles of officials to be notified for each agency within the EPZs.	Refer to basis for 10 CFR 50.47(b) and 10 CFR 50.47(b)(10).
10 CFR Part 50, Appendix E, Section IV.D.2. The NRC is granting exemption from the requirement for the licensee to annually disseminate general information on EP and evacuations within the plume exposure pathway EPZ. In addition, the NRC is granting exemption for the need for signage or other measures to	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.D.1.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
address transient populations in the event of an accident.	
10 CFR Part 50, Appendix E, Section IV.D.3. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to have the capability to make notifications to State and local government agencies within 15 minutes of declaring an emergency.	While the capability needs to exist for the notification of offsite government agencies within a specified time period, previous exemptions have allowed for extending the State and local government agencies' notification time up to 60 minutes based on the site-specific justification provided. SCE's license amendment request to approve its Permanently Defueled Emergency Plan (PDEP) dated March 31, 2014 (ADAMS Accession No. ML14092A314), provides that SONGS will make notifications to the State of California, the local counties (Orange and San Diego), and Marine Corps Base Camp Pendleton within 60 minutes of declaration of an event. Considering the very low probability of beyond-design-basis events affecting the SFP, and with the time available to initiate mitigative actions consistent with plant conditions or, if needed, for offsite authorities to implement appropriate protective measures using a CEMP (all-hazards) approach between the loss of both water and air cooling to the spent fuel and the onset of a postulated zirconium cladding fire, formal offsite radiological response plans are not needed. Therefore, decommissioning reactors are not required to notify State and local governmental agencies within 15 minutes. For similar reasons, the requirement for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ using an alert and notification system is not required. Also refer to basis for 10 CFR 50.47(b) and 10 CFR 50.47(b)(10).
10 CFR Part 50, Appendix E, Section IV.D.4. The NRC is granting exemption from the requirement for the licensee to obtain U.S. Federal Emergency Management Agency (FEMA) approval of its backup alert and notification capability.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.D.3 regarding the alert and notification system requirements.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.E.8.a.(i). The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to have an onsite technical support center (TSC) and EOF.	Due to the low probability of DBAs or other credible events to exceed the EPA PAGs at the site boundary, the available time for event mitigation at a decommissioning power reactor and, if needed, to implement offsite protective actions using a CEMP, an EOF would not be required to support offsite agency response. In addition, an onsite TSC with Part 50, Appendix E requirements would not be needed. SCE proposes in its PDEP that onsite actions would be directed from the Command Center.
10 CFR Part 50, Appendix E, Section IV.E.8.a.(ii). The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to have an onsite operational support center (OSC).	NUREG-0696, "Functional Criteria for Emergency Response Facilities," provides that the OSC is an onsite area separate from the control room and the TSC where licensee operations support personnel will assemble in an emergency. For a decommissioning power reactor, an OSC is no longer required to meet its original purpose of an assembly area for plant logistical support during an emergency. The OSC function can be incorporated into the Command Center, as proposed by SCE.
10 CFR Part 50, Appendix E, Section IV.E.8.b. and subpart Sections IV.E.8.b.(1) - E.8.b.(5). The NRC is granting exemption from the requirements related to an offsite EOF location, space and size, communications capability, access to plant data and radiological information, and access to coping and office supplies.	Refer to basis for 10 CFR 50.47(b)(3).
10 CFR Part 50, Appendix E, Section IV E.8.c. and Sections IV E.8.c.(1) - E.8.c.(3). The NRC is granting exemption from the requirements to have an EOF with the capabilities to obtain and display plant data and radiological information; the capability to analyze technical information and provide briefings; and the capability to support events occurring at more than one site (if the emergency operations center supports more than one site).	Refer to basis for 10 CFR 50.47(b)(3).

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV E.8.d. The NRC is granting exemption from the requirements to have an alternate facility that would be accessible even if the site is under threat of or experiencing hostile action, to function as a staging area for augmentation of emergency response staff.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.1 regarding hostile action.
10 CFR Part 50, Appendix E, Section IV.E.8.e. The NRC is granting exemption from the requirement regarding the need for the licensee to comply with paragraph 8.b of this section.	Refer to basis for 10 CFR 50.47(b)(3).
10 CFR Part 50, Appendix E, Section IV.E.9.a. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to have communications with contiguous State and local governments that are within the plume exposure pathway EPZ (which is no longer required by the exemption granted to 10 CFR 50.47(b)(10)).	Refer to basis for 10 CFR 50.47(b) and 10 CFR 50.47(b)(10). The State and the local governments in which the nuclear facility is located need to be informed of events and emergencies, so lines of communication are required to be maintained.
10 CFR Part 50, Appendix E, Section IV.E.9.c. The NRC is granting exemption from the requirements for communication and testing provisions between the control room, the onsite TSC, State/local emergency operations centers, and field assessment teams.	Because of the low probability of DBAs or other credible events that would be expected to exceed the EPA PAGs and the available time for event mitigation and, if needed, implementation of offsite protective actions using a CEMP, there is no need for the TSC, EOF, or offsite field assessment teams. Also refer to justification for 10 CFR 50.47(b)(3). Communication with State and local emergency operations centers is maintained to coordinate assistance on site if required.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.E.9.d. The NRC is granting exemption from portions of the rule language that would otherwise require provisions for communications from the control room, onsite TSC, and EOF with NRC Headquarters and appropriate Regional Operations Center.	The functions of the control room, EOF, TSC, and OSC may be combined into one or more locations at a permanently shutdown and defueled facility due to its smaller facility staff and the greatly reduced required interaction with State and local emergency response facilities, as compared to an operating reactor. Also refer to basis for 10 CFR 50.47(b).
10 CFR Part 50, Appendix E, Section IV.F.1. and Section IV F.1.viii. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to provide training and drills for the licensee's headquarters personnel, Civil Defense personnel, or local news media.	Decommissioning power reactor sites typically have a level of emergency response that does not require additional response by the licensee's headquarters personnel. Therefore, the staff considers exempting licensee's headquarters personnel from training requirements to be reasonable. Due to the low probability of DBAs or other credible events to exceed the EPA PAGs, offsite emergency measures are limited to support provided by local police, fire departments, and ambulance and hospital services, as appropriate. Local news media personnel no longer need radiological orientation training since they will not be called upon to support the formal Joint Information Center. The term "Civil Defense" is no longer commonly used; references to this term in the examples provided in the regulation are, therefore, not needed.
10 CFR Part 50, Appendix E, Section IV.F.2. The NRC is granting exemption from portions of the rule language that would otherwise require testing of a public alert and notification system.	Because of the low probability of DBAs or other credible events that would be expected to exceed the limits of EPA PAGs and the available time for event mitigation and, if necessary, offsite protective actions from a CEMP, the public alert and notification system will not be used and, therefore, requires no testing. Also refer to basis for 10 CFR 50.47(b).

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.F.2.a. and Sections IV.F.2.a.(i) through IV.F.2.a.(iii). The NRC is granting exemption from the requirements for full participation exercises and the submittal of the associated exercise scenarios to the NRC.	Due to the low probability of DBAs or other credible events that would be expected to exceed the limits of EPA PAGs, the available time for event mitigation and, if necessary, implementation of offsite protective actions using a CEMP, no formal offsite radiological response plans are required. Therefore, the need for the licensee to exercise onsite and offsite plans with full participation by each offsite authority having a role under the radiological response plan is not required. The intent of submitting exercise scenarios at an operating power reactor site is to check that licensees utilize different scenarios in order to prevent the preconditioning of responders at power reactors. For decommissioning power reactor sites, there are limited events that could occur and, as such, the previously routine progression to general emergency in an operating power reactor site scenario is not applicable. The licensee would be exempt from 10 CFR Part 50, Appendix E, Section IV.F.2.a.(i)-(iii) because the licensee would be exempt from the umbrella provision of 10 CFR Part 50, Appendix E, Section IV.F.2.a.
10 CFR Part 50, Appendix E, Section IV.F.2.b. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to submit scenarios for its biennial exercises of its onsite emergency plan. In addition, the NRC is granting exemption from portions of the rule language that requires assessment of offsite releases, protective action decision making, and references to the TSC, OSC, and EOF.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.F.2.a. The low probability of DBAs or other credible events that would exceed the EPA PAGs, the available time for event mitigation and, if necessary, implementation of offsite protective actions using a CEMP, render a TSC, OSC, and EOF unnecessary. The principal functions required by regulation can be performed at an onsite location that does not meet the requirements of the TSC, OSC or EOF.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.F.2.c. and Sections IV F.2.c.(1) through F.2.c.(5). The NRC is granting exemption from the requirements regarding the need for the licensee to exercise offsite plans biennially with full participation by each offsite authority having a role under the radiological response plan. The NRC is also granting exemptions from the conditions for conducting these exercises (including hostile action exercises) if two different licensees have facilities on the same site or on adjacent, contiguous sites, or share most of the elements defining co-located licensees.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.F.2.a.
10 CFR Part 50, Appendix E, Section IV.F.2.d. The NRC is granting exemption from the requirements to obtain State participation in an ingestion pathway exercise and a hostile action exercise, with each State that has responsibilities, at least once per exercise cycle.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.2.
10 CFR Part 50, Appendix E, Section IV.F.2.e. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to allow participation exercise in licensee drills by any State and local government in the plume exposure pathway EPZ when requested.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.2.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
10 CFR Part 50, Appendix E, Section IV.F.2.f. The NRC is granting exemption from portions of the rule language that would otherwise require FEMA to consult with the NRC on remedial exercises. The NRC is granting exemption from portions of the rule language that discuss the extent of State and local participation in remedial exercises.	FEMA is responsible for evaluating the adequacy of offsite response during an exercise. Because the NRC is granting exemptions from the requirements regarding the need for the licensee to exercise onsite and offsite plans with full participation by each offsite authority having a role under the radiological response plan, FEMA will no longer evaluate adequacy of offsite response during remedial or other exercises. No action is expected from State or local government organizations in response to an event at a decommissioning power reactor site other than firefighting, law enforcement and ambulance/medical services support. A memorandum of understanding should be in place for those services. Offsite response organizations will continue to take actions on a comprehensive EP basis to protect the health and safety of the public as they would at any other industrial site.
10 CFR Part 50, Appendix E, Section IV.F.2.i. The NRC is granting exemption from portions of the rule language that would otherwise require the licensee to drill and exercise scenarios that include a wide spectrum of radiological release events and hostile action.	Due to the low probability of DBAs or other credible events to exceed the EPA PAGs, the available time for event mitigation and, if needed, implementation of offsite protective actions using a CEMP, the previously routine progression to general emergency in power reactor site scenarios is not applicable to a decommissioning site. Therefore, the licensee is not expected to demonstrate response to a wide spectrum of events. Also refer to basis for 10 CFR Part 50, Appendix E, Section IV.1 regarding hostile action.
10 CFR Part 50, Appendix E, Section IV.F.2.j. The NRC is granting exemption from the requirements regarding the need for the licensee's emergency response organization to demonstrate proficiency in key skills in the principal functional areas of emergency response. In addition, the NRC is granting exemption during an eight calendar year exercise cycle,	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.F.2.

10 CFR Part 50, Appendix E, Section IV	NRC Staff Basis for Exemption
from demonstrating proficiency in the key skills necessary to respond to such scenarios as hostile actions, unplanned minimal radiological release, and scenarios involving rapid escalation to a site area emergency or general emergency.	
10 CFR Part 50, Appendix E, Section IV.I The NRC is granting exemption from the requirements regarding the need for the licensee to develop a range of protective actions for onsite personnel during hostile actions.	Refer to basis for 10 CFR Part 50, Appendix E, Section IV.E.8.d.

ENCLOSURE 2

SAFETY EVALUATION RELATED TO

SOUTHERN CALIFORNIA EDISON COMPANY

SAN ONOFRE NUCLEAR GENERATING STATION,

UNITS 1, 2, AND 3, AND

INDEPENDENT SPENT FUEL STORAGE INSTALLATION

DOCKET NOS. 50-206, 50-361, 50-362, AND 72-41

REQUEST FOR EXEMPTIONS FROM PORTIONS OF

10 CFR 50.47 AND 10 CFR PART 50, APPENDIX E

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO REQUEST FOR EXEMPTIONS FROM PORTIONS OF

10 CFR 50.47 AND 10 CFR PART 50, APPENDIX E

SOUTHERN CALIFORNIA EDISON COMPANY

SAN ONOFRE NUCLEAR GENERATING STATION,

UNITS 1, 2, AND 3, AND

INDEPENDENT SPENT FUEL STORAGE INSTALLATION

DOCKET NOS. 50-206, 50-361, 50-362, AND 72-41

1.0 INTRODUCTION

San Onofre Nuclear Generating Station (SONGS) Units 1, 2, and 3 are decommissioning nuclear power reactors located approximately 45 miles southeast of Long Beach, California in San Diego County, approximately 62 miles southeast of Los Angeles and approximately 51 miles northwest of San Diego, on an 84 acre site located entirely within the Camp Pendleton Marine Corps Base. Southern California Edison (SCE or the licensee) is the holder of Facility Operating License Nos. DPR-13, NFP-10 and NFP-15 for SONGS Units 1, 2, and 3, respectively, issued pursuant to the Atomic Energy Act of 1954, as amended, and Part 50, "Domestic Licensing of Production and Utilization Facilities," of Title 10 of the *Code of Federal Regulations* (10 CFR), which authorize the licensee to possess and store spent nuclear fuel and greater-than-Class C radioactive waste at the permanently shutdown and defueled SONGS facility.

SONGS Unit 1 was permanently shut down in 1993 and is in the decommissioning phase. All fuel assemblies were removed from the Unit 1 reactor on March 6, 1993. SONGS Unit 1 above-ground structures have been dismantled, and the spent fuel from Unit 1 is stored in the onsite dry cask storage facility (independent spent fuel storage installation (ISFSI)) and in the General Electric-Hitachi Morris facility located in Morris, Illinois.

SONGS Units 2 and 3 have been shut down since January 2012. After the reactors were shut down, all fuel assemblies were removed from the reactor vessels and placed in spent fuel pools (SFPs). The spent fuel is currently stored onsite in SFPs and in an onsite ISFSI.

By letter dated June 12, 2013 (Reference 1), SCE submitted a certification to the U.S. Nuclear Regulatory Commission (NRC) indicating its intention to permanently cease power operations at SONGS Units 2 and 3 as of June 7, 2013, pursuant to 10 CFR 50.82(a)(1)(i). By letters dated June 28, 2013 (Reference 2), and July 22, 2013 (Reference 3), SCE submitted certifications of permanent removal of fuel from the Unit 3 and Unit 2 reactor vessels as of October 5, 2012, and July 18, 2013, respectively, pursuant to 10 CFR 50.82(a)(1)(ii). Upon docketing of these certifications, the 10 CFR Part 50 licenses for SONGS Units 2 and 3 no longer authorize operation of the reactors or emplacement or retention of fuel into the reactor vessels, as specified in 10 CFR 50.82(a)(2).

By letter dated March 31, 2014 (Reference 4), SCE requested exemptions from specific emergency preparedness (EP) requirements of 10 CFR Part 50 for SONGS. More specifically, SCE requested exemptions from certain planning standards in 10 CFR 50.47(b) regarding onsite and offsite radiological emergency preparedness (REP) plans for nuclear power reactors; from certain requirements in 10 CFR 50.47(c)(2) that require establishment of plume exposure and ingestion pathway emergency planning zones (EPZs) for nuclear power reactors; and from certain requirements in 10 CFR Part 50, Appendix E, Section IV, "Content of Emergency Plans," which establish the elements that make up the content of REP plans. The licensee requested exemptions to eliminate the requirements for offsite REP plans and reduce the scope of the onsite emergency planning activities at SONGS, based on the reduced risks of an offsite radiological release at SONGS, given its permanently shutdown and defueled status. The exemptions will maintain the requirements for an onsite emergency plan and will continue to ensure the capability to communicate and coordinate with offsite response authorities. Examples of the reduced EP requirements include: setting the highest emergency plan event classification as an "Alert"; extending the timing requirements for notification of offsite authorities consistent with the regulations in 10 CFR 72.22(a); requiring only onsite exercises with the opportunity for offsite response organization (ORO) participation; and maintaining arrangements only for the ORO (i.e., law enforcement, fire and medical services) that may respond to onsite emergencies.

The NRC staff issued a request for additional information (RAI) in a letter dated August 27, 2014 (Reference 5). In a letter dated September 9, 2014 (Reference 6), SCE provided responses to the RAI. The NRC staff also transmitted a supplemental RAI to the licensee in an e-mail dated September 22, 2014 (Reference 7). In a letter dated October 6, 2014 (Reference 8), SCE provided responses to the supplemental RAI, which contained information applicable to the SFP inventory makeup strategies for mitigating the loss-of-water inventory. This letter contains security-related information and is, therefore, withheld from public disclosure. By letter dated December 15, 2014 (Reference 9), the licensee provided a redacted version of the October 6, 2014, letter.

By letter dated October 7, 2014 (Reference 10), the licensee corrected a factual error in its October 2, 2014, RAI response (Reference 11) regarding a comparison of the dose from a SFP boiling accident to the Environmental Protection Agency's (EPA) Protective Action Guide (PAG) (Reference 17) dose criterion of 1 roentgen equivalent man (rem). The correction resulted in the calculated four-day dose at the exclusion area boundary[1] (EAB), due to the SFP boiling

[1] The area surrounding the reactor, where the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel or property.

accident, increasing from 1.92 millirem (mrem) to 3.84 mrem. The licensee stated that the error did not change the conclusions stated in the relevant paragraph of the October 2, 2014, RAI response (Reference 11), in that the revised calculated dose of 3.84 mrem (0.00384 rem) from the SFP boiling accident remains very small compared to the EPA PAG limit of 1 rem.

In an e-mail dated October 8, 2014 (Reference 12), the NRC staff requested a clarification of two items in the licensee's October 6, 2014, RAI response (Reference 8). By letter dated October 27, 2014 (Reference 13), SCE provided a response containing additional information applicable to its SFP water inventory makeup and spray strategies.

The NRC staff found the application complete, and the licensee's associated technical justification provides a basis for the Commission's consideration of the requested exemption.

In accordance with 10 CFR 50.12, "Specific exemptions," the licensee stated that this exemption request: (1) is authorized by law; (2) will not present an undue risk to the public health and safety; (3) is consistent with the common defense and security; and (4) meets the requirement for special circumstances in 10 CFR 50.12(a)(2).

1.1 Discussion

The regulations that require each nuclear power reactor licensee to establish and maintain emergency plans and preparedness are set forth in 10 CFR 50.47, "Emergency plans," and Appendix E to 10 CFR Part 50, "Emergency Planning and Preparedness for Production and Utilization Facilities." The regulations include standards for both onsite and offsite REP plans. However, as applied to a decommissioning nuclear power reactor, the regulations do not take into account the reduced risk of an offsite radiological release at a permanently shutdown and defueled reactor.

With the termination of reactor operations at SONGS, and the permanent removal of the spent fuel from the reactor vessels, most of the accident scenarios postulated for operating power reactors are no longer possible. The spent fuel is now stored in either the SFPs or the SONGS ISFSI, and will remain onsite until it can be moved offsite for long-term storage or disposal. The reactors, reactor coolant systems (RCS), and supporting systems are no longer in operation and have no function related to the storage of the spent fuel. Therefore, postulated accidents involving failure or malfunction of the reactors, RCS, and supporting systems are no longer applicable.

During reactor decommissioning, the principal public safety concerns involve the perceived radiological risks associated with onsite storage of spent fuel. For a period of time after fuel has been irradiated in a power reactor, the spent fuel is stored in an SFP. A highly unlikely accident scenario has been postulated whereby a loss-of-water inventory from the SFP, due to a beyond-design-basis accident[2] (beyond-DBA), could result in a significant heatup of the spent fuel, culminating in substantial zirconium cladding oxidation and fuel damage, also known as a zirconium fire.

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[2] Beyond Design-Basis Accidents - This term refers to accident sequences that are possible but unlikely and are considered beyond the scope of design-basis accidents that a nuclear facility must be designed and built to withstand.

In August 1997, the NRC published NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR [boiling water reactor] and PWR [pressurized water reactor] Permanently Shutdown Nuclear Power Plants" (Reference 14), which provided recommendations on operationally-based regulations that could be partially or totally removed for decommissioning power reactor licensees without impacting public health and safety. It recommended that licensees apply for exemptions from certain EP requirements after the spent fuel is no longer susceptible to substantial zirconium oxidation and the fuel cladding remains intact when the SFP is drained.

In the late 1990s, the NRC staff developed thermal-hydraulic criteria for determining when reductions in EP requirements at decommissioning power reactors could be permitted. The criteria were used on a case-by-case basis to grant exemptions from certain EP requirements. The underlying technical basis was a demonstration that: (1) the radiological consequences of DBAs would not exceed radiological release limits at the site EAB; and (2) for a highly unlikely beyond-DBA where the SFP is drained and no cooling (air or water) of the fuel is taking place, the spent fuel stored in the SFP would not reach the zirconium ignition temperature in fewer than 10 hours starting from the time at which the accident was initiated. The NRC staff concluded that if 10 hours were available to initiate mitigation actions or, if needed, offsite protective actions using a comprehensive emergency management plan[3] (CEMP) approach, then formal offsite REP plans would not be necessary for permanently defueled power reactor licensees.

The analysis and 10-hour criterion for mitigating the potential consequences of beyond-DBAs at an SFP does not credit the natural air cooling and water cooling in the SFP after the event, as a modeling simplification. It assumes that the fuel immediately begins to heat up without removing any of its energy (often referred to as an adiabatic heatup). These assumptions include the simplified treatment of the thermal-hydraulic response and the use of often bounding configurations that do not allow for thermal radiation between high powered bundles and low power bundles and from the spent fuel assemblies to the SFP wall liner. In a more realistic calculation, as provided in the recent NUREG-2161, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor," dated September 2014 (Reference 15), thermal radiation heat transfer (in addition to air cooling) can play a significant role. For example, the NUREG-2161 study indicated that it could take more than 10 hours for the fuel in the SFP to heat up to the zirconium cladding ignition temperature of 900 degrees Celsius (C) after only one month of being moved from the reactor to the SFP, for the reference plant, if the assemblies most recently removed from the reactor are distributed among older, cooler fuel assemblies. It should be noted that this assessment applies to BWR fuel only. Due to the much higher mass and slightly higher burnup of a typical PWR assembly,

[3] A comprehensive emergency management plan in this context, also referred to as an emergency operations plan (EOP), is addressed in the Federal Emergency Management Agency's (FEMA) Comprehensive Preparedness Guide (CPG) 101, "Developing and Maintaining Emergency Operations Plans." CPG 101 is the foundation for State, territorial, Tribal, and local emergency planning in the United States. It promotes a common understanding of the fundamentals of risk-informed planning and decision making and helps planners at all levels of government in their efforts to develop and maintain viable, all-hazards, all-threats emergency plans. An EOP is flexible enough for use in all emergencies. It describes how people and property will be protected; details who is responsible for carrying out specific actions; identifies the personnel, equipment, facilities, supplies, and other resources available; and outlines how all actions will be coordinated. A comprehensive emergency management plan is often referred to as a synonym for "all-hazards planning."

the time to reach an air-coolable configuration is significantly longer for PWR fuel, using similar analytical methods and assumptions.

The 10-hour time frame is not intended to be the time in which it would take to repair all key safety systems or to repair a large SFP breach. Rather, considering the very low probability of beyond-DBAs affecting the SFP, in the NRC staff's judgment, 10 hours provides a reasonable time period to implement pre-planned mitigation measures to provide makeup or spray to the SFP before the onset of zirconium cladding ignition and, if necessary, for offsite authorities to implement protective actions using a CEMP (all-hazards) approach.

In February 2001, the NRC prepared NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants" (Reference 16), to provide a technical basis for a proposed rulemaking outlined in SECY-00-0145, "Integrated Rulemaking for Nuclear Power Plant Decommissioning" (Reference 25), and subsequently updated in SECY-01-0100, "Policy Issues Related to Safeguards, Insurance, and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools" (Reference 26). Although the rulemaking was later deferred in light of higher priority work after the terrorist attacks of September 11, 2001, NUREG-1738 provides insights that the NRC staff continues to find helpful for the evaluation of exemption requests concerning EP requirements. Among these insights, NUREG-1738 identified beyond design-basis seismic events as the dominant contributor to events that could result in a loss of SFP coolant that uncovers fuel for plants in the Central and Eastern United States. Although the hazard to SFP integrity of beyond design-basis seismic events has not been specifically assessed for Western U.S. sites, these events would also be the dominant contributor to loss of SFP coolant inventory events that uncover fuel.

NUREG-1738 identified a zirconium fire resulting from a substantial loss-of-water inventory from the SFP, as the only postulated scenario at a decommissioning plant that could result in a significant offsite radiological release. The scenarios that lead to this condition have very low frequencies of occurrence (i.e., on the order of one to tens of times in a million years) and are considered beyond-DBAs because the SFP and attached systems are designed to prevent a substantial loss of coolant inventory under accident conditions. However, the consequences of such accidents could potentially lead to an offsite radiological dose in excess of the EPA PAGs (Reference 17) at the EAB.

However, the risk associated with zirconium cladding fire events decreases as the spent fuel ages, decay time increases, decay heat decreases, and short-lived radionuclides decay away. As decay time increases, the overall risk of a zirconium cladding fire continues to decrease due to two factors: (1) the amount of time available for preventative actions increases, which reduces the probability that the actions would not be successful; and (2) the increased likelihood that the fuel is air coolable, which decreases the reliance on actions to prevent a zirconium fire. The NRC staff also notes that the results of research conducted for NUREG-1738 and NUREG-2161 suggest that, while other radiological consequences can be extensive, a postulated accident scenario leading to a SFP zirconium fire, where the fuel has had significant decay time, will have little potential to cause offsite early fatalities, regardless of the type of offsite EP response (i.e., formal offsite REP plan or CEMP).

Although the risk of sabotage is not considered in any standard reactor risk analyses, the NRC staff cannot rule out radiological sabotage (which is not quantifiable) as an insignificant risk contributor relative to other zirconium cladding fire initiators. Therefore, permanently shutdown and defueled reactors must continue to provide a high assurance of adequate protection from the design-basis threat of radiological sabotage under the plant's Physical Security Plan. Physical security for special nuclear material at fixed sites, including decommissioning power reactors, is required by 10 CFR Part 73, "Physical Protection of Plants and Materials." Decommissioning power reactor licensees are required by 10 CFR 73.55(f) to develop target sets for use in the development and implementation of security strategies that protect against spent fuel sabotage. However, the number of target sets at a decommissioning reactor is significantly less than that for an operating power reactor. Implementation of the protective strategy at a decommissioning reactor takes into account this reduction in target sets.

In the March 31, 2014, letter (Reference 4), the licensee provided a description of the permanently defueled accident analysis, which included: (1) a radioactive waste system leak or failure; (2) a spent fuel cask drop accident; (3) a SFP boiling accident; (4) a fuel handling accident in the fuel handling building; (5) the hottest fuel assembly adiabatic heatup; and 6) a loss-of-pool inventory dose. Events associated with loss of SFP inventory are considered beyond-DBAs. The analyses demonstrate that, in all cases, with the exception of the hottest fuel assembly adiabatic heatup, radiation exposure levels at the EAB would be less than the EPA PAGs. The hottest fuel assembly adiabatic heatup analysis considered a loss of cooling water inventory in the SFP with no air cooling or other modes of heat removal.

In the October 6, and December 15, 2014, letters (References 8 and 9, respectively), SCE stated that, based on its analysis of an adiabatic heatup, as of October 12, 2014, at least 17 hours would be available, from the time of SFP drainage until the hottest fuel assembly reaches 900 degrees C, to take mitigative actions consistent with plant conditions and, if necessary, for offsite authorities to implement protective actions using a CEMP (all-hazards) approach. The analysis also demonstrates that the time to reach 565 degrees C, which is the lowest temperature at which incipient cladding failure may occur and is below the temperature at which exothermic cladding oxidation may begin adding significant heat, is already greater than 10 hours. Therefore, the results also demonstrate that, in the event that ample air is available for cladding oxidation, the extra heat produced by cladding oxidation could not result in heatup times to 900 degrees C in less than 10 hours.

Also in the October 6, and December 15, 2014, letters, SCE furnished information concerning its SFP inventory makeup strategies that could be used in the event of a catastrophic loss of SFP water inventory. The multiple strategies for providing makeup to the SFP include: using existing plant systems for inventory makeup; an internal strategy that relies on installed fire water pumps (two motor-driven and one diesel-driven) and service and firewater storage tanks; or an external strategy that uses portable pumps to initiate makeup flow into the SFPs through a seismic standpipe and standard fire hoses routed either over the SFPs' edges or to spray nozzles. The portable pumps consist of a skid-mounted pump that is capable of delivering 500 gallons per minute (gpm) and a trailer-mounted pump capable of delivering 2,500 gpm. SCE states that designated on-shift personnel are trained to implement such strategies. SCE estimates that it would take approximately 55 minutes to deliver flow to one pool, with an additional 35 minutes to provide water to the second pool without relocation of the trailer-mounted pump. Relocation of the trailer-mounted pump, if required, would take approximately

30 additional minutes. If high radiation levels prevent access to the SFP operating deck, once the fire system is pressurized by the portable engine-driven pump(s), a spray monitor (spray nozzle) connected to the fire system outside the SFP operating deck would be placed in the open doorway to the SFP. Water would then be sprayed over the operating deck and into the SFP. In the letter dated September 9, 2014 (Reference 6), SCE provided the results of an analysis showing that as of August 31, 2014, in the event of a complete loss of SFP water inventory, where air cooling is possible, spent fuel peak cladding temperature would only reach 553 degrees C, which is less than the minimum temperature that incipient cladding failure is expected to occur.

By letter dated September 23, 2014, SCE submitted a Post-Shutdown Decommissioning Activities Report (PSDAR) (Reference 18), which identified that SONGS Units 2 and 3 will decommission using a DECON[4] methodology for decommissioning. Per the PSDAR, the licensee plans to complete the transfer of all spent fuel from the SFPs to the ISFSI in 2019, after which time the irradiated fuel will be stored onsite in dry casks at the ISFSI site until shipped offsite, in accordance with the schedules described in the PSDAR and the updated Irradiated Fuel Management Plan (Reference 19). The SFPs and their supporting systems are dedicated only to spent fuel storage.

In the unlikely situation that a radiological release is expected, elements of the revised onsite requirements, for which the exemptions are requested, would still facilitate the ability of offsite authorities to take protective actions under a CEMP (all-hazards) approach. The licensee must still maintain an ability to determine if a radiological release is occurring and, if a release is occurring or expected to occur, promptly communicate that information to offsite authorities. The licensee uses commercial telephone, with satellite phone as backup, to notify the California Office of Emergency Services, the Marine Corps Base (Camp Pendleton) and local agencies' warning points.

The NRC staff provided an evaluation of SCE's exemption requests to the Commission in SECY-14-0144, "Request by Southern California Edison for Exemptions from Certain Emergency Planning Requirements," dated December 17, 2014 (Reference 20), which was approved by the Commission in the Staff Requirements Memorandum (SRM) to SECY-14-0144, dated March 2, 2015 (Reference 21).

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.12(a)(2)(ii) provide that the NRC may, upon application by a licensee or on its own initiative, grant exemptions from the requirements of the regulations in circumstances in which application of the regulation would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule[5].

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[4] DECON is a method of decommissioning in which structures, systems and components that contain radioactive contamination are removed from a site and safely disposed at a commercially operated low-level waste disposal facility or decontaminated to a level that permits the site to be released for unrestricted use shortly after it ceases operation.

[5] Notwithstanding the special circumstances of the exemption request, 10 CFR 50.12(a)(1) requires that the exemption must be authorized by law, not present an undue risk to the public health and safety, and be consistent with the common defense and security.

The underlying purposes of the planning standards in 10 CFR 50.47(b), the requirements in 10 CFR 50.47(c)(2), and certain requirements of 10 CFR Part 50, Appendix E, Section IV, are to: ensure that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency, establish plume exposure and ingestion pathway EPZs for nuclear power plants, and ensure that licensees maintain effective offsite and onsite radiological emergency response plans.

The NRC staff relied on past precedent to assess whether the SONGS request for EP exemptions satisfied the underlying purposes of the EP regulations. The last exemptions that eliminated requirements for formal offsite radiological EP planning were approved in March 2015 for the Crystal River Unit 3 Nuclear Generating Plant (CR3) (Reference 22) and in October 2014 for the Kewaunee Power Station (KPS) (Reference 23). The exemptions requested for SONGS, as described in this safety evaluation (SE), are consistent with those approved by the NRC for KPS and CR3. Prior to KPS, the last approved exemptions that eliminated the requirements for formal offsite radiological EP planning were for the Zion Nuclear Power Station in 1999 (Reference 24). The NRC staff recognizes that the planning standards in 10 CFR 50.47(b), the requirements in 10 CFR 50.47(c)(2), and certain requirements in 10 CFR 50, Appendix E, Section IV, were developed taking into consideration the risks associated with accidents that have the potential for significant offsite radiological dose consequences during operation of a nuclear power reactor at its licensed full-power level. As provided in Section 1.1 of this SE, the NRC staff has concluded that after a reactor has permanently shut down and defueled, the risks associated with accidents that have a potential for offsite radiological release, are significantly reduced for those licensees that are reasonably aligned with the analyses presented in NUREG-1738 (Reference 16). This position has been further informed by recent SFP studies provided in NUREG-2161 (Reference 15).

Based on the low risk of postulated beyond-DBAs that will result in significant offsite radiological consequences, the NRC staff considers that the special circumstances condition of 10 CFR 50.12(a)(2)(ii) can be met by demonstrating that SONGS satisfies the two criteria provided below. Specifically, the planning standards in 10 CFR 50.47(b), the requirements in 10 CFR 50.47(c)(2), and certain requirements in 10 CFR 50, Appendix E, Section IV, from which SCE has requested exemptions, would not serve or be necessary to achieve the underlying purpose of the EP regulations if the SONGS site-specific analyses demonstrate that:

1. An offsite radiological release will not exceed the EPA PAGs at the EAB for a DBA; and

2. In the unlikely event of a beyond-DBA, resulting in a loss of all modes of cooling for the spent fuel stored in the SFP, there is a minimum of 10 hours for the hottest fuel assembly to reach 900 degrees C, the critical temperature threshold for self-sustained oxidation of cladding in air. This will ensure that sufficient time exists to initiate appropriate mitigating actions and, if needed, sufficient time is available for offsite agencies to take protective actions using a CEMP (all-hazards) approach to protect the health and safety of the public.

Previously granted exemptions from EP regulations reduced EP requirements to those consistent with the standards of 10 CFR 50.47(d), which states the requirements for a license authorizing fuel loading and low power testing only, and 10 CFR 72.32(a), which establishes the information required in an emergency plan for an ISFSI. Examples of the reduced EP

requirements include: setting the highest emergency plan event classification as an "Alert"; extending the timing requirements for notification of offsite authorities; requiring only onsite exercises with the opportunity for ORO participation; and only maintaining arrangements for the OROs (i.e., law enforcement, fire and medical services) that may respond to onsite emergencies. No formal offsite REP plans were required after the exemptions were granted for these licensees.

As part of the review for SCE's exemption request, the NRC staff also considered the EP regulations in 10 CFR 72.32 and Spent Fuel Project Office Interim Staff Guidance (ISG) – 16, "Emergency Planning," (Reference 27) as references to ensure consistency between specific-licensed and general-licensed ISFSIs. Furthermore, the licensee should address the Industry Decommissioning Commitments (IDCs) and Staff Decommissioning Assumptions (SDAs) that formed the basis of the analyses presented in NUREG-1738.

2.1 Design-Basis Accidents

During normal power reactor operations, the forced flow of water through the reactor coolant system (RCS) removes the heat generated by the reactor. The RCS, operating at high temperatures and pressures, transfers this heat through the steam generator tubes to the secondary system. The most severe postulated accidents for nuclear power plants involve damage to the nuclear reactor core and the release of large quantities of fission products to the reactor coolant system and subsequent release of some fission products to the environment. Many of the accident scenarios postulated in the facility safety analysis report involve failures or malfunctions of systems that could affect the reactor core. With the termination of reactor operations and the permanent removal of the fuel from the reactor core, such accidents are no longer possible. Therefore, the postulated accidents involving failure or malfunction of the reactor, RCS, or secondary system are no longer applicable. Postulated accidents that could potentially apply to a permanently shutdown and defueled facility include a fuel handling accident, an accidental release of waste liquid, an accidental release of waste gas, a spent fuel cask drop accident, and a spent fuel pool boiling event. The potential offsite consequences of these events are affected by the time available for decay of fission products in the fuel and, possibly, the availability of engineered safety features, such as ventilation systems to filter fission products from the accident area atmosphere before they are released outside the facility.

The regulations in 10 CFR 50.67, "Accident source term" state, in part, that:

> (i) An individual located at any point on the boundary of the exclusion area for any 2-hour period following the onset of the postulated fission product release, would not receive a radiation dose in excess of 0.25 Sv [Sievert] (25 rem) total effective dose equivalent (TEDE), (ii) An individual located at any point on the outer boundary of the low population zone, who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage), would not receive a radiation dose in excess of 0.25 Sv (25 rem) total effective dose equivalent (TEDE), and (iii) Adequate radiation protection is provided to permit access to and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 0.05 Sv (5 rem) total effective dose equivalent (TEDE) for the duration of the accident.

Appendix A to 10 CFR Part 50, "General Design Criteria (GDC)," Criterion 19--Control room, states, in part:

> A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. Equipment at appropriate locations outside the control room shall be provided (1) with a design capability for prompt hot shutdown of the reactor, including necessary instrumentation and controls to maintain the unit in a safe condition during hot shutdown, and (2) with a potential capability for subsequent cold shutdown of the reactor through the use of suitable procedures.

NUREG-0800, "Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition," (SRP) Section 15.0.1, "Radiological Consequence Analyses Using Alternative Source Terms," Revision 0, July 2000 (Reference 28), provides review guidance to the NRC staff for the review of alternative source term amendment requests. SRP Section 15.0.1 states that the NRC reviewer should evaluate the proposed change against the guidance in Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluation Design Basis Accidents at Nuclear Power Reactors" (Reference 29). As provided in RG 1.183, the dose acceptance criteria for a fuel handling accident (FHA) are a TEDE of 6.3 rem at the EAB for the worst 2 hours, 6.3 rem at the outer boundary of the low population zone (LPZ), and 5 rem in the control room for the duration of the accident.

SRP 11.0, Branch Technical Position 11-5, "Postulated Radioactive Release Due to a Waste Gas System Leak or Failure" (Reference 30), provides guidance to the NRC staff in assessing the analysis of an accidental release from the waste gas system.

The NRC approved implementation of the Alternative Source Term (AST) methodology at SONGS Units 2 and 3, by License Amendment Nos. 210 and 202 dated December 29, 2006 (Reference 31). These license amendments represent full scope implementation of the AST described in RG 1.183.

NRC Regulatory Issue Summary (RIS) 2006-04, "Experience with Implementation of Alternative Source Terms" (Reference 32), discusses experiences with analyzing an accident involving a release from off-gas or waste systems. As part of full AST implementation, some licensees have included an accident involving a release from their off-gas or waste gas system. For this type of accident, licensees have proposed acceptance criteria of 500 mrem TEDE. The acceptance criterion for this event is that associated with the dose to an individual member of the public, as described in 10 CFR Part 20, "Standards for Protection Against Radiation." When the NRC revised 10 CFR Part 20 to incorporate a TEDE dose, the offsite dose to an individual member of the public was changed from 500 mrem whole body to 100 mrem TEDE. Therefore, a licensee who chooses to implement AST for an off-gas or waste gas system release, as did SCE, should base its acceptance criteria on 100 mrem TEDE. Licensees may also choose not

to implement AST for this accident and continue with their existing analysis and acceptance criteria of 500 mrem whole body.

The EPA's "Protective Action Guide and Planning Guidance for Radiological Incidents," Draft for Interim Use and Public Comment, issued March 2013 (Reference 17), provides radiological protection criteria for application to all incidents that would require consideration of protective actions, with the exception of nuclear war. This manual provides recommended numerical PAGs for the principal protective actions available to public officials during a radiological incident. The EPA developed this manual to assist public officials in planning for emergency response to radiological incidents. To support a request for exemptions from requirements for offsite planning zones, a licensee needs to compare its calculated accident doses to the EPA PAGs, which suggest that protective actions, such as, sheltering-in-place or evacuation of the public, are justified when the projected dose to an individual is 1 rem projected over 4 days.

The Nuclear Energy Institute (NEI) document NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6, dated November 2012 (Reference 33), provides guidance for the development of emergency action levels (EALs) for reactors in a permanently defueled condition. NEI 99-01, Revision 6, was endorsed by the NRC in a letter dated March 28, 2013 (Reference 34). NEI 99-01 states that the accident analysis necessary to adopt the permanently defueled EAL scheme must confirm that the source terms and release motive forces are not sufficient to warrant classification of a site area emergency (SAE) or General Emergency (GE), resulting in the maximum classification level of an Alert during an accident. An SAE would be declared for any event where exposure levels beyond the EAB are expected to exceed 10 percent of the EPA PAGs, which are a projected dose of 1 to 5 rem TEDE in four days for sheltering or evacuation of the public, and a projected dose of 5 rem child thyroid dose from radioactive iodine for administration of prophylactic drugs (potassium iodide). Correspondingly, NEI 99-01 established the SAE classification threshold as 100 mrem TEDE or 500 mrem thyroid committed dose equivalent.

2.2 Beyond-Design-Basis Accidents

The NRC staff has long recognized that the frequency of a large radiological release at a decommissioning power reactor storing irradiated fuel in an SFP is lower than the frequency of a large offsite radiological release at an operating reactor. The staff evaluated the potential for large releases caused by beyond-design basis events affecting SFP storage in the 1980s (NUREG-1353, "Regulatory Analysis for the Resolution of Generic Issue 82, 'Beyond Design Basis Accidents in Spent Fuel Pools,'" issued April 1989 (Reference 35)), and determined that the risk was acceptably low, largely as a result of the low frequency of events that could challenge the integrity of the SFP structure. After permanent cessation of operations at decommissioning reactors, the heat generated by the irradiated fuel in the SFP continually decreases. The decreased heat generation increases the time from an initiating event that damages the pool until fuel temperatures high enough to damage the fuel cladding could develop, after loss of adequate coolant inventory. The increasing time to heatup the fuel would eventually allow for sufficient time to perform ad hoc measures to mitigate the consequences of the radiological release that could follow fuel cladding damage and, if necessary, initiate protective measures. On this basis, the NRC granted exemptions from emergency planning requirements at many decommissioning reactors in the 1990s.

As stated previously in this SE, the NRC staff completed a detailed study of decommissioning risk, which is documented in NUREG-1738 (Reference 16). For spent fuel that has aged one year, the NRC staff estimated the frequency of fuel uncovery to range from 5.8 to 24 per 10 million years for the plants studied. The frequency of fuel uncovery was used as a simplifying and conservative surrogate for the overall frequency of severe fuel damage resulting from inadequate cooling following a loss-of-coolant inventory. Consistent with the NUREG-1353 (Reference 35) results, beyond-design-basis seismic initiating events dominate the fuel uncovery frequency estimates. Fuel cask handling accidents were also significant contributors to the frequency estimate. The analysis relied on several assumptions to evaluate the likelihood of successful recovery, mitigation, and emergency response activities, which were classified as IDCs and SDAs. Because the configuration of the fuel, the storage racks, and the pool structure could be affected in unpredictable ways by a major seismic event or cask drop, the associated consequence evaluation could not rule out conditions where air cooling would be inadequate, even after many years of decay. To assess the available time for response measures, the analysis considered both situations where the heat of oxidation affected heatup rate in air-cooled configurations and adiabatic heatup in configurations where air cooling would be precluded.

The licensee also evaluated the beyond-design-basis event concerning the effects of a loss-of-water inventory from the SONGS SFPs and uncovery of the spent fuel assemblies, to determine the potential radiological impact due to loss of shielding to the public at the EAB. The EPA PAG criterion of a projected dose of 1 rem over a 4-day period is used as the acceptance criterion for exempting the requirements for offsite EPZs.

In this SE, the NRC staff verifies the licensee's assumptions, calculations, and overall analyses of the beyond-DBAs supporting the licensee's justification for the EP exemption requests, in accordance with the criteria discussed in Section 2.0 of this SE.

3.0 TECHNICAL EVALUATION

3.1 Design-Basis Accidents

In Section 3.0 of Enclosure 1 to the EP exemption request, SCE described that, with the permanent cessation of reactor operations and permanent removal of fuel from the reactor vessels for SONGS Units 2 and 3, most of the initial conditions of accident and transient analyses included in Chapter 15 of the SONGS Updated Final Safety Analysis Report (UFSAR) are no longer possible. Therefore, SCE has updated the SONGS UFSAR to reflect that accidents and transients involving the failure or malfunction of fuel within primary containment, the RCS, or the secondary system are no longer applicable. The only DBA scenarios with the potential to result in a radiological release described in the UFSAR that are applicable to the permanently shutdown and defueled SONGS Units 2 and 3, are a FHA in the fuel handling building (FHB), a spent fuel cask drop accident, a SFP boiling accident, a liquid radioactive waste system leak or failure, a radioactive release due to liquid tank failures, and an accidental release of waste gas. Because the waste gas decay tanks have been purged of their contents and analyses of liquid tank failures in SONGS UFSAR Section 15.7.3.3.5 describe that no credible liquid release would exceed 10 CFR Part 20 limits, an accidental release of waste gas and a liquid tank failure are not relevant to the SONGS EP. The licensee determined that the remaining DBAs would be within relevant regulatory limits, assuming fuel activity calculated as

of August 2013 and without credit for dose consequence mitigation by engineered safety feature systems. The NRC staff's technical evaluation of the licensee's analysis of the remaining DBAs at SONGS is provided in Sections 3.1.1 through 3.1.5.

3.1.1 Fuel Handling Accident Inside Fuel Building

A revision to the FHA accident analysis was incorporated into the SONGS UFSAR, Section 15.7.3.4, under the provisions of 10 CFR 50.59, "Changes, tests, and experiments," to address the permanently defueled condition. The analysis determined a reasonable time post-cessation of operations for movement of fuel from the SFP during which, if a fuel handling accident occurs, dose consequences would be within 10 CFR 50.67 and RG 1.183 dose limits. The licensee evaluated the maximum 2-hour TEDE to an individual located at the EAB, and the 30-day TEDE to an individual at the outer boundary of the LPZ and in the control room (CR). The resulting doses in SCE's analyses are less than the RG 1.183 and SRP 15.0.1 dose acceptance criteria, the 10 CFR 50.67 limits, and the EPA PAG levels recommended for protection of the public.

The FHA inside the FHB (FHA-FHB) involves the inadvertent dropping of a fuel assembly during fuel handling operations, and the subsequent rupture of fuel pins in the dropped assembly and any stationary assembly impacted by the dropped assembly. A maximum of 472 fuel rods are assumed to fail as a result of the drop of a fuel assembly onto the fuel assemblies stored in SFP fuel racks. The fission product inventory in the fuel rod gap of the damaged rods is assumed to be released instantaneously into the SFP. The FHA-FHB dose analysis models 17 months (12,240 hours) of radioactive decay prior to the event. The NRC staff finds that the decay time assumed by the licensee is consistent with RG 1.183, Regulatory Position 3.1, "Fission Product Inventory," which provides, in relevant part, "For events postulated to occur while the facility is shutdown, e.g., a fuel handling accident, radioactive decay from the time of shutdown may be modeled."

The SFP water level is controlled by the SONGS Units 2 and 3 Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.16, which limits the movement of irradiated fuel assemblies in the SFP unless the water level is at least 23 feet over the top of the irradiated fuel assemblies, seated in the storage racks. As such, the licensee assumes that the SFP water level is at least 23 feet over the top of the irradiated fuel assemblies, seated in the storage racks.

Should an FHA occur, fission products released from the damaged fuel are decontaminated by passage through the pool water, with the degree of decontamination dependent upon their physical and chemical forms. The licensee assumed no decontamination for noble gases, a decontamination factor of 200 for radioiodine, and retention of all aerosol and particulate fission products. This is consistent with RG 1.183 Appendix B Section 2, which provides, in relevant part, "If the depth of water above the damaged fuel is 23 feet or greater, the decontamination factors for the elemental and organic species are 500 and 1, respectively, giving an overall effective decontamination factor of 200.

The radioactive material that escapes from the SFP to the FHB is assumed to be released to the environment over a 2-hour time period. The FHA-FHB dose analysis does not credit the generation of an engineered safety feature actuation system FHB isolation signal (FHIS). The

FHB normal ventilation exhaust is assumed to remain operational throughout the FHA-FHB event. The FHA-FHB AST dose analysis does not model a reduction in the amount of radioactive material available for release from the FHB by the fuel handling building Post-Accident Cleanup Unit (PACU) filter system. Therefore, the licensee assumes the release to the environment is an unfiltered release via the FHB normal ventilation exhaust system through the main plant vent, or as leakage through FHB penetrations. This is consistent with RG 1.183, Appendix B, Section 4.1, which states, "The radioactive material that escapes from the fuel pool to the fuel building is assumed to be released to the environment over a 2-hour time period.

Activity released during the FHA-FHB event is transported by atmospheric dispersion to the CR heating, ventilation and air conditioning (HVAC) intake and to the offsite EAB and LPZ dose receptors. Consistent with RG 1.183, Regulatory Position 5.3, "Meteorology Assumptions," the atmospheric dispersion factor values for the EAB and the LPZ, which were approved by the NRC during initial facility licensing were used by the licensee in performing the AST radiological analyses. The NRC had also approved the use of these meteorology atmospheric dispersion values by License Amendment Nos. 210 and 202 (Reference 31). Consistent with RG 1.183, Regulatory Position 4.1.7, no correction is made for depletion of the effluent plume by deposition on the ground.

The CR dose during a design basis FHA-FHB, following permanent shutdown of SONGS Units 2 and 3, is based on no credit for the Control Room Emergency Air Cleanup System (CREACUS) and Control Room Isolation Signal (CRIS) and no gamma radiation shine from CREACUS charcoal and high-efficiency particulate air filters. Control room doses are evaluated at various CR unfiltered inflow (including in leakage) flow rates. The flow rates were varied from 500 cubic feet per minute (cfm) to 15,000 cfm, but only the bounding CR dose is reported. The SONGS site-specific 95th percentile meteorology atmospheric dispersion factors for the CR are used.

The licensee concluded that the radiological consequences at the EAB and LPZ and in the CR are within the dose criteria for DBAs specified in 10 CFR 50.67 and SRP Section 15.0.1. The licensee also concluded that the radiological consequences are less than the dose criteria specified in the EPA PAG Manual. The NRC staff reviewed the licensee's evaluation and performed confirmatory calculations. In performing this review, the NRC staff relied upon information provided by the licensee as well as NRC staff experience in performing similar reviews. The NRC staff reviewed the methods, parameters, and assumptions that the licensee used in its radiological dose consequence analyses and concludes that they are acceptable because they are consistent with the guidance provided in RG 1.183. Using the FHA-FHB analyses assumptions described above, the NRC staff's confirmatory analyses of the licensee's FHA-FHB yield results for the CR, EAB and LPZ that are less than the RG 1.183 and SRP 15.0.1 dose acceptance criteria and would not exceed the EPA PAG recommendations at the EAB.

3.1.2 Spent Fuel Cask Drop Accident

A re-analysis of the spent fuel cask drop accidents specified in the USFAR, Section 15.7.3.5, was performed with a cask load of up to 32 fuel assemblies and a minimum of 17 months of decay. The spent fuel cask drop event is evaluated based on the ability of the cask drop to cause a release of radioactive material. This includes consideration of the allowed travel paths

of the casks, their lift heights, and the items onto which they can be dropped. Even though single-failure-proof cranes are used at SONGS Units 2 and 3 to lift a spent fuel transfer cask out of a cask pool, a drop can be postulated when the cask is placed on the upper shelf (i.e., step) of a cask pool when performing a yoke-lift change-out, prior to the transfer cask being welded closed. The spent fuel cask drop accident considered to bound the radiological consequences of a spent fuel transfer cask drop (due to a seismic event) is from the upper shelf in the cask pool back into the lower portion of the cask pool. During this evolution, the transfer cask is not restrained and could fall back into the lower portion of the cask pool if an earthquake occurs. The fuel rods from all 32 fuel assemblies present in a transfer cask are conservatively assumed to rupture on impact with the bottom of the cask pool. All of the radioactive iodine and noble gases present in the gap volumes of the decayed fuel rods are assumed to be released from the unwelded transfer cask. As required by the AST License Amendment Nos. 210 and 202 (Reference 31), for SONGS Units 2 and 3, respectively, the new analysis was performed by the licensee with the AST methodology, including TEDE criteria. The NRC staff concludes that the licensee's modelling of decay time is consistent with RG 1.183, Regulatory Position 3.1.

Other than the number of fuel assemblies considered to fail, the radiological consequence analysis is modeled identically to that of the FHA in the FHA-FHB (see Section 3.1.1 of this SE). The fission product inventory in the fuel rod gap of the damaged rods is assumed to be released instantaneously into the SFP. The SFP water level is required to be at least 23 feet over the top of the irradiated fuel assemblies seated in the storage racks, as controlled by TS. Consistent with RG 1.183, Appendix B, Regulatory Position 4.1, the radioactive material that escapes from the SFP to the FHB is released to the environment over a 2-hour time period, ensuring that at least 99.9 percent of the gaseous activity will be released to the environment. Consistent with RG 1.183, Regulatory Position 5.3, the atmospheric dispersion factors values for the EAB and the LPZ that were approved by the NRC during initial facility licensing are used in performing the AST radiological analyses. The NRC had also approved use of these meteorology atmospheric dispersion values by License Amendment Nos. 210 and 202, for SONGS Units 2 and 3, respectively. Consistent with RG 1.183, Regulatory Position 4.1.7, no correction is made for depletion of the effluent plume by deposition on the ground.

The licensee concluded that the radiological consequences at the EAB and LPZ and in the CR are within the dose criteria for the DBAs specified in 10 CFR 50.67. The licensee also concluded that the radiological consequences are less than the dose criteria specified in the EPA PAG Manual. The NRC staff reviewed the licensee's evaluation and performed confirmatory calculations. In performing this review, the NRC staff relied upon information provided by the licensee and NRC staff experience in performing similar reviews. The NRC staff reviewed the methods, parameters, and assumptions that the licensee used in its radiological dose consequence analyses and concludes that they are acceptable because they are consistent with the guidance provided in RG 1.183. Using the analyses assumptions described above, the NRC staff's confirmatory analyses yield results for the CR, EAB and LPZ that are less than the RG 1.183 dose acceptance criteria and would not exceed the EPA PAG recommendations at the EAB.

3.1.3 Spent Fuel Pool Boiling Accident

The postulated loss of all SFP cooling is assumed to result in SFP boiling and release of a portion of the radionuclide inventory, contained in the stored spent fuel assemblies and the SFP

water. The re-evaluation of the radiological consequences for the SFP boiling event assumes a minimum of 17 months since the shutdown of SONGS Units 2 and 3. The licensee used the AST methodology in performing this evaluation. The NRC staff concludes that the licensee's modelling of decay time is consistent with RG 1.183, Regulatory Position 3.1.

The radiological consequence analysis does not differentiate between the activity release rates before and after the onset of SFP boiling. Noble gas, iodine and tritium activity present in the failed fuel rod gap spaces of fuel rods, stored within the SFP, is released to the SFP water at the noble gas, iodine and tritium escape rate coefficients, with the added conservatism of an assumed spiking factor of 100. The noble gas and iodine fuel rod gap fractions are consistent with the AST methodology. The tritium fuel rod gap fraction is assumed to be the same as that for the majority of noble gas and iodine isotopes. Tritium activity present in the SFP water, prior to the loss of SFP cooling, is assumed to be released at the SFP boiling rate for the duration of the event. Both before and after the onset of SFP boiling, spent fuel noble gases, iodine and tritium gas escaping from the failed fuel rod gap spaces are assumed to be instantaneously released with no hold up or iodine partitioning in the SFP water. The SFP boiling rate is a function of the decay heat load, and the heat of vaporization of water.

Following a loss of SFP cooling, activity releases from the spent fuel, due to evaporation and boiling, disperse to the CR, EAB and LPZ locations. No credit is taken for activity retention within the fuel handling building air. No credit is taken for FHIS or filtration by the FHB PACUs. All activity escaping from the SFP is assumed to be instantaneously released to the environment and atmospherically dispersed to the CR and offsite dose receptors. No credit is taken for CRIS or CREACUS.

The consequence analysis is modeled identically to that of the FHA-FHB (see Section 3.1.1 of this SE). Consistent with RG 1.183, Appendix B, Section 4.1, the radioactive material that escapes from the SFP to the FHB is released to the environment over a 2-hour time period, ensuring that at least 99.9 percent of the gaseous activity will be released to the environment. For conservatism, the CR dose is calculated for an individual at the CR outside air intake location.

Consistent with RG 1.183, Regulatory Position 5.3, the atmospheric dispersion factors values for the EAB and the LPZ, which were approved by the NRC during initial facility licensing, are used in performing the AST radiological analyses. The NRC staff had also approved use of these meteorology atmospheric dispersion values by License Amendment Nos. 210 and 202 for SONGS Units 2 and 3, respectively (Reference 31). Consistent with RG 1.183, Regulatory Position 4.1.7, no correction is made for depletion of the effluent plume by deposition on the ground.

The licensee concluded that the radiological consequences at the EAB, LPZ and CR are within the dose criteria for DBAs, as specified in 10 CFR 50.67. The licensee also concluded that the radiological consequences are less than the dose criteria specified in the EPA PAG Manual. The NRC staff reviewed the licensee's evaluation and performed confirmatory calculations. In performing this review, the NRC staff relied upon information provided by the licensee, as well as NRC staff experience in performing similar reviews. The NRC staff reviewed the methods, parameters, and assumptions that the licensee used in its radiological dose consequence analyses and finds that they are acceptable because they are consistent with the guidance

provided in RG 1.183. Using the analyses assumptions described above, the NRC staff's confirmatory analyses yield results for the CR, EAB and LPZ that are less than the RG 1.183 dose acceptance criteria and would not exceed the EPA PAG recommendations at the exclusion area boundary.

3.1.4 Radioactive Waste System Leak or Failure (Release to Atmosphere) Accident

The Radioactive Waste System Leak or Failure (with release to atmosphere) accident analysis (UFSAR Section 15.7.3.2) was revised to calculate the EAB and LPZ doses using the AST methodology. As required by the AST License Amendment Nos. 210 and 202 for SONGS Units 2 and 3, respectively, the evaluation includes TEDE dose criteria, and a revised offsite dose acceptance criterion of 100 mrem TEDE, as addressed in NRC RIS 2006-04 (Reference 32). The evaluation does not assume any post-shutdown decay time.

Releases from the Liquid Radioactive Waste System considered rupture of: radwaste tanks, refueling water storage tanks, primary ion-exchangers, and the blowdown demineralizer neutralization sump line. The most limiting of these is defined as an unexpected and uncontrolled release of the radioactive liquid stored in a radwaste secondary tank. The radwaste secondary tanks are Seismic Category II, Quality Class III tanks at atmospheric pressure. Rupture of these tanks is considered a limiting fault. A radwaste secondary tank rupture would release the liquid contents in the auxiliary building (radwaste area). It is assumed that all of the radioactive fission gases and iodines are released to the outside atmosphere in 2 hours.

The dose analysis for persons located at the EAB and the LPZ considers the dose consequences of inhalation and submersion in a radioactive cloud, as described in RG 1.183. Activity released during the event is transported by atmospheric dispersion to the offsite EAB and LPZ dose receptors. Consistent with RG 1.183, Regulatory Position 5.3, the atmospheric dispersion factor values for the EAB and the LPZ, which were approved by the NRC during initial facility licensing, are used in performing the AST radiological analyses. The NRC staff had also approved use of these meteorology atmospheric dispersion values by License Amendment Nos. 210 and 202 for SONGS Units 2 and 3, respectively. Consistent with RG 1.183, Regulatory Position 4.1.7, no correction is made for depletion of the effluent plume by deposition on the ground.

The licensee concluded that the radiological consequences are less than 100 mrem TEDE offsite dose criterion per RIS 2006-04. The licensee also concluded that the radiological consequences are less than the dose criteria specified in the EPA PAG Manual. The NRC staff reviewed the licensee's evaluation and performed confirmatory calculations. In performing this review, the NRC staff relied upon information provided by the licensee, as well as NRC staff experience in performing similar reviews. The NRC staff reviewed the methods, parameters, and assumptions that the licensee used in its radiological dose consequence analyses and concludes that they are acceptable because they are consistent with the guidance provided in RG 1.183. Using the analyses assumptions described above, the NRC staff's confirmatory analyses yield results for the EAB and LPZ that are less than the offsite dose criteria per RIS 2006-04 and would not exceed the EPA PAG recommendations at the EAB.

3.1.5 Design-Basis Accidents Conclusion

The NRC staff reviewed the assumptions, inputs, and methods used by the licensee to assess the radiological consequences of DBAs for the permanently defueled condition at SONGS. The NRC staff concludes that the licensee used analysis methods and assumptions consistent with the conservative regulatory requirements and guidance identified in Section 2.1 of this SE. The NRC staff compared the doses estimated by the licensee to the applicable criteria in the SRP and NEI 99-01, Revision 6, as well as to the results of confirmatory analyses conducted by the NRC staff. The NRC staff finds, with reasonable assurance, that given the permanently shutdown and defueled condition of SONGS Units 2 and 3, with spent fuel stored in the SFPs and ISFSI, the radiological consequences of DBAs are well below the limits of the offsite radiological release and exposure limits described in Section 2.0 of this SE. The NRC staff finds, with respect to the consequences of the remaining DBAs at SONGS, that any offsite radiological release will not exceed the EPA PAGs at the EAB. Therefore, the underlying purpose of the regulations applicable to EP would still be achieved if the requested EP exemptions were granted, as discussed in Section 2.0 of this SE.

3.2 Beyond-Design-Basis Accidents

In Section 4.0 of Enclosure 1 to the March 31, 2014, EP exemption request, SCE discussed beyond-DBA scenarios involving the adiabatic heatup of the hottest fuel assembly and the dose rates associated with a complete loss of SFP coolant inventory. In Enclosure 1 to the letter dated September 9, 2014, the licensee also provided an evaluation of the capability of the stored fuel to be cooled by natural circulation of air in a completely drained SFP. The NRC staff has reviewed the licensee's beyond-DBA analyses and finds that the scope of these postulated events reasonably encompasses events with the greatest potential for significant radiological release from the SONGS site. The NRC staff focused its review on the evaluation of accident scenarios involving substantial loss of SFP coolant inventory because, as shown in NUREG-1738, these events, although very unlikely, have the greatest potential to result in a significant offsite release and challenge emergency response capabilities. The staff performed a review of the calculation summaries concerning: 1) an evaluation of time to the potential onset of fuel damage with air cooling available, and; 2) an evaluation of the time for the hottest fuel assembly to heat adiabatically to a temperature at which runaway oxidation of the cladding is possible. The results of the licensee's analyses show that only the adiabatic heatup scenario would be expected to reach temperatures associated with a significant release. The assessment of the adiabatic heatup is important because it is also a criteria used by the staff in its finding of special circumstances related to the emergency planning regulation exemptions.

3.2.1 Implementation of Supporting Actions and Commitments

In accordance with the safety analysis in NUREG-1738 (Reference 16), the beyond-design-basis event sequences that dominate risk at a decommissioning power reactor are large earthquake and cask-drop events. This is an important difference relative to an operating power reactor, where typically a large number of different initiating events make significant contributions to risk.

Assurance that the results of the NUREG-1738 analysis bound the plant-specific conditions at SONGS can be established by assessing the facility against certain design and operational

characteristics that were assumed in the risk analysis. These characteristics were identified in the NUREG-1738 study as recovery, mitigation, and emergency response activities assumptions that were relied on to evaluate the likelihood of success in event sequences. These characteristics are referred to as Industry Decommissioning Commitments (IDCs) and Staff Decommissioning Assumptions (SDAs) in the NUREG-1738 analyses. Conformance with the intent of the IDCs and SDAs is sufficient because the decay heat rate, at the time the proposed exemption would be effective, is far below the maximum decay heat considered in the NUREG-1738 analysis. This greatly extends the available recovery time, and underlying functions may be accomplished by methods different than those described in NUREG-1738's IDCs and SDAs.

In the response to an NRC staff RAI provided by letter dated September 9, 2014 (Reference 6), the licensee described the conformance of the SONGS facility and operations with the IDCs and the SDAs. Included in its discussion of the IDCs and SDAs, SCE addressed measures in place to minimize the potential risk from event sequences that dominate risk at a decommissioning reactor with fuel stored in an SFP (for example, those IDCs and SDAs related to fuel cask handling activities and seismic events).

The NRC staff's evaluation focuses on SCE conformance with IDCs and SDAs that are related to the design and operation of structures, systems, and components associated with the SFPs. The following provides the IDC and SDA item text, the licensee response, and the staff's assessment:

IDC #1

IDC #1 states that the cask drop analyses will be performed or single failure-proof cranes will be in use for handling of heavy loads (i.e., phase II of NUREG-0612 will be implemented (Reference 36)).

To provide for safe handling of heavy loads in the vicinity of the SFP, SCE upgraded the SONGS fuel handling buildings' cask handling cranes to single-failure-proof designs. Section 9.1.4 of the SONGS UFSAR describes fuel and heavy load handling systems, including the design features and administrative controls applied to the cask handling crane to ensure safety. The NRC staff finds that the qualification and operation of the SONGS cask handing crane as a single-failure-proof handling system, as described in the SONGS UFSAR, satisfies the conditions assumed in the NRC staff's analysis presented in NUREG-1738 with respect to protection from potential cask drop events.

IDC #2

IDC #2 states that procedures and training of personnel will be in place to ensure that onsite and offsite resources can be brought to bear during an event.

IDC #3

IDC #3 states that procedures will be in place to establish communication between onsite and offsite organizations during severe weather and seismic events.

IDC #4

IDC #4 states that an offsite resource plan will be developed which will include access to portable pumps and emergency power to supplement onsite resources. The plan would principally identify organizations or suppliers where offsite resources could be obtained in a timely manner.

The licensee stated that EP Implementing Procedures (EPIPs) and other Mitigating Strategies procedures are in place, that these procedures include provisions for access to onsite and offsite resources, and that appropriate personnel are trained on these procedures. As described by the licensee, a CEMP, as addressed in the Federal Emergency Management Agency's (FEMA) Comprehensive Preparedness Guide CPG-101, "Developing and Maintaining Emergency Operations Plans," will be employed for offsite response. Also, the licensee stated that EPIPs provide communication protocols and practices for communication with offsite organizations. In its letters to the NRC dated October 6, 2014, and December 15, 2014, (References 8 and 9, respectively), SCE described the SFP makeup strategies that could be used in the event of a catastrophic loss of SFP inventory. The multiple strategies for providing makeup to the SFP include: using existing plant systems for inventory makeup; an internal strategy that relies on installed fire water pumps and service water or fire water storage tanks; or an external strategy that uses portable pumps to initiate makeup flow into the SFPs through a seismic standpipe and standard fire hoses routed to the SFPs or to a spray nozzle. These strategies will continue to be required as a license condition. Therefore, the NRC staff concludes that SCE has adequate procedures and resource plans to satisfy the conditions assumed in the NRC staff's analysis presented in NUREG-1738 regarding effective use of onsite and offsite resources to respond to events affecting the SFP.

IDC #5

IDC #5 states that SFP instrumentation will include readouts and alarms in the control room (or where personnel are stationed) for SFP temperature, water level, and area radiation levels.

The licensee described that SFP level and temperature alarms, and radiation level indication and alarms are available in the Main Control Room (MCR). Additionally, shift walk-downs of the SFP are conducted, as described in the revised SONGS UFSAR. Therefore, the NRC staff finds that the licensee will maintain adequate SFP monitoring instrumentation to satisfy the conditions assumed in the NRC staff's analysis presented in NUREG-1738 regarding monitoring events affecting the SFP.

IDC #6

IDC #6 states that SFP seals that could cause leakage leading to fuel uncovery in the event of seal failure shall be self-limiting to leakage or otherwise engineered so that drainage could not occur.

SCE described that the bottom of the SFP gate openings are located at least 2 feet above fuel stored in rack modules. The design of the seals provides further assurance of their reliability through redundant pressurization systems and other means. Local alarms would indicate less than normal operating pressure in the seals. The NRC staff finds that the described design

features that minimize the potential for drainage through the gate seals are consistent with the assumptions used in the NRC staff's analysis presented in NUREG-1738.

IDC #7

IDC #7 states that procedures or administrative controls to reduce the likelihood of rapid draindown events will include (1) prohibitions on the use of pumps that lack adequate siphon protection or (2) controls for pump suction and discharge points. The functionality of anti-siphon devices will be periodically verified.

The licensee stated that procedures or administrative controls are in place to reduce the likelihood of rapid drain-down events. The licensee also addressed the permanently installed systems to ensure no drain paths are present. The installed SFP cooling pumps include anti-siphon devices which are regularly verified. Similar design features are planned for the new SFP islanding equipment (SFP cooling and filtration units not relying on permanent plant support systems). Features that prevent inadvertent draining of the SFP are required to be maintained by the SONGS Design Features TS 4.3.2, "Drainage." The NRC staff finds that the described design features that minimize the potential for siphon or drainage through temporary or permanent systems are consistent with the assumptions used in the NRC staff's analysis presented in NUREG-1738.

IDC #8

IDC #8 states that an onsite restoration plan will be in place to provide repair of the SFP pool cooling systems or to provide access for makeup water to the SFP. The plan will provide for remote alignment of the makeup source to the SFP without requiring entry to the refuel floor.

The licensee described that SONGS Mitigation Strategies include means to provide makeup water to the SFP with or without requiring entry to the refueling floor. The licensee has described multiple strategies for providing makeup to the SFP including: using existing plant systems for inventory makeup; an internal strategy that relies on installed fire water pumps (two motor-driven and one diesel-driven) and service and firewater storage tanks; or an external strategy that uses portable pumps to initiate make-up flow into the pools through a seismic standpipe and standard fire water hoses routed either over the pools' edges or to spray nozzles. SCE further provides that designated on-shift staff are trained to implement such strategies and they have plans in place to mitigate the consequences of an event involving a catastrophic loss-of-water inventory concurrently from both SONGS Units 2 and 3 SFPs. It is estimated that it would take approximately 55 minutes to deliver flow to one pool, with an additional 35 minutes to provide water to the second pool without having to relocate the trailer-mounted pump. Relocation of the trailer-mounted pump, if required, would take approximately 30 additional minutes. These mitigating strategies complement the normal cooling and makeup capability addressed in SDA #1 and as described in the enclosure to the letter from SCE dated November 3, 2014 (Reference 37), which responded to the NRC staff's RAI regarding the quality and redundancy of SFP cooling and makeup capability during decommissioning. The NRC staff finds that the licensee's planned SFP cooling and makeup water availability conforms to the capabilities assumed for the NRC staff's analysis presented in NUREG-1738.

IDC #9

IDC #9 states that procedures will be in place to control SFP operations that have the potential to rapidly decrease SFP inventory. These administrative controls may require additional operations or management review, management physical presence for designated operations or administrative limitations such as restrictions on heavy load movements.

The licensee described that SFP operations that have the potential to rapidly decrease SFP inventory are governed by the administrative controls described in procedures S023-3-2.11, "Spent Fuel Pool Operations," and S023-3-2.11.1, "SFP Level Change and Purification Cross-Tie Operations." The NRC staff finds that the described procedures conform to the administrative controls considered in the NRC staff's analysis presented in NUREG-1738.

IDC #10

IDC #10 states that routine testing of the alternative fuel pool makeup system components will be performed and administrative controls for equipment out of service will be implemented to provide added assurance that the components would be available, if needed.

The licensee described that normal makeup to the SFPs would be provided from the plant makeup water storage tank through a primary makeup water pump at a rate of 150 gpm. Makeup may also be provided by two electric-driven fire pumps and one diesel-driven fire pump that can supply makeup water to the SFP via the fire water system. The licensee stated that administrative controls for these components, including surveillance requirements, limits on out-of-service time, and compensatory measures for out-of-service components, were contained in the SONGS Decommissioning Fire Protection Program. The NRC staff finds that the surveillance testing and administrative controls for out-of-service equipment conform to those considered in the NRC staff's analysis presented in NUREG-1738.

SDA #1

SDA #1 states that the licensee's SFP cooling design will be at least as capable as that assumed in the risk assessment, including instrumentation. Licensees will have at least one motor-driven and one diesel-driven fire pump capable of delivering inventory to the SFP.

The licensee fully described the SFP cooling and makeup capabilities planned to be maintained throughout the decommissioning process in the enclosure to the SCE letter dated November 3, 2014 (Reference 37). The SONGS Mitigation Strategies do not rely solely on fire pumps, and sufficient redundancy and diversity would be provided through multiple systems, as described in the evaluation for IDC #8 above. The NRC staff finds that the cooling and makeup capabilities described in the licensee's application exceeded the capabilities considered in the NRC staff's analysis presented in NUREG-1738.

SDA #2

SDA #2 states that walk-downs of SFP systems will be performed at least once per shift by the operators. Procedures will be developed for and employed by the operators to provide

guidance on the capability and availability of onsite and offsite inventory makeup sources and time available to initiate these sources for various loss of cooling or inventory events.

In its September 9, 2014, submittal, the licensee stated that procedures would be revised to ensure that walkdowns and patrols are periodically performed and that mitigating strategy procedures provide the necessary guidance. In addition, the revised SONGS UFSAR, Section 9A.3.2 states that walkdowns of the SONGS Units 2 and 3 SFPs and SFP pump rooms are performed by operators on the day shift. However, once per shift, surveillances performed by the control room verify SFP cooling functionality and record SFP temperatures. The SONGS UFSAR also identifies the procedures that are in place to provide operators with guidance on the capability of onsite inventory makeup sources. The NRC staff finds that the proposed monitoring of the SFP systems and procedural guidance would be consistent with that assumed for the staff's analysis presented in NUREG-1738.

SDA #3

SDA #3 states that control room instrumentation that monitors SFP temperature and water level will directly measure the parameters involved. Level instrumentation will provide alarms at levels associated with calling in offsite resources and for declaring an emergency.

The licensee described that level and temperature alarm instrumentation that is based on direct measurement of the relevant parameters was provided in the MCR. The Human Reliability Assessment in Appendix 2A of NUREG-1738 principally credits the control room alarms (passive) and operator tours (active) in identifying abnormal conditions in the SFP. The control room indications are not credited based on potential dependencies shared with the alarms. Instrumentation is currently available in the MCR to declare emergencies for changes of conditions in the SFP.

The NRC staff finds that the SFP monitoring capability is consistent with the commitments and assumptions in the NRC staff's analysis presented in NUREG-1738.

SDA #4

SDA #4 states that the licensee determines that there are no drain paths in the SFP that could lower the pool level (by draining, suction, or pumping) more than 15 feet below the normal pool operating level....

TS 4.3.2, "Drainage" for SONGS Units 2 and 3 states that each SFP is designed and shall be maintained to prevent inadvertent draining of the pool. Further, the revised SONGS UFSAR describes provisions in place to protect SFPs from inadvertent drain down (from draining, suction, or pumping). The design of the SFPs are such that unlikely scenarios could result in draindown of the pool by more than 15 feet below normal operating level, but spent fuel remains adequately covered with sufficient margin to implement mitigating strategies to restore level. Therefore, the SFP design protects against drainage consistent with the assumptions used in the NRC staff's analysis presented in NUREG-1738.

SDA #5

SDA #5 states that the Load Drop consequence analyses will be performed for facilities with non-single failure-proof systems. The analyses and any mitigative actions necessary to preclude catastrophic damage to the SFP that would lead to a rapid pool draining would be sufficient to demonstrate that there is high enough confidence in the [facility's] ability to withstand a heavy load drop.

As discussed under IDC #1, SCE utilizes single-failure proof cranes for such loads. Therefore, the NRC staff finds that the protection against heavy load drops is consistent with the assumptions considered in the NRC staff's analysis presented in NUREG-1738.

SDA #6

SDA #6 states that each decommissioning plant will successfully complete the seismic checklist provided in Appendix 2B to NUREG-1738. If the checklist cannot be successfully completed, the decommissioning plant will perform a plant specific seismic risk assessment of the SFP and demonstrate that SFP seismically induced structural failure and rapid loss of inventory is less than the generic bounding estimates provided in [NUREG-1738] ($<1 \times 10^{-5}$ per year including non-seismic events).

As noted in NUREG-1738, severe seismic events with relatively low frequencies of occurrence have been found to be the dominant challenge to SFP structural integrity. Attachment 1 to Appendix 2B of NUREG-1738 presents a seismic checklist to establish a high-confidence of a low probability of SFP structural failure as a result of seismic events below 1.2g peak ground acceleration. Item 10 of the NUREG-1738 seismic checklist provides an alternative to the detailed seismic analysis that specifies a delay in any reduction in EP capability until plant-specific analyses suggest a zirconium cladding fire is no longer a credible concern. The licensee has provided site-specific analyses indicating that, by the end of August 2014, a zirconium fire would no longer be a credible outcome of events that lead to a complete draining of either of the SONGS SFPs and allow development of natural circulation air cooling with normal building ventilation available. The NRC staff's evaluation of that site-specific analysis is provided in Section 3.2.2 of this safety evaluation. Additionally, SCE provided an analysis of adiabatic heating of the fuel indicating that, as of October 12, 2014, the heat generated within the fuel could not heat the fuel cladding to temperatures that begin to damage the cladding in less than 10 hours. Furthermore, SCE noted that the analysis in NUREG/CR-6451 (Reference 14) estimated that a decay time of 17 months would be adequate for the fuel from a reference PWR to reach a state where natural circulation air cooling would prevent fuel damage in a drained SFP. The spent fuel in the SONGS Units 2 and 3 SFPs has decayed for 31 months or more as of August 31, 2014.

The NRC staff finds that as of the end of October 2014, the potential for seismically-initiated radiological releases from the SONGS SFPs would be acceptably small to conform with the NRC staff's analysis presented in NUREG-1738 because the fuel would either be adequately cooled by air or heat so slowly that there would be sufficient time to initiate mitigation strategies or implement protective measures. Therefore, the conditions at SONGS satisfy the alternative to performing a detailed seismic analysis.

SDA #7

SDA #7 states that licensees will maintain a program to provide surveillance and monitoring of Boraflex in high-density spent fuel racks until such time as spent fuel is no longer stored in these high-density racks.

Revised SONGS UFSAR, Section 9A.3.7.2 states that the SONGS Units 2 and 3 storage racks are composed of stainless steel cells that contain Boraflex, which is held in place along the outer cells by a wrapper, but that the Boraflex has degraded and is no longer credited in the safety analysis. The SONGS Units 2 and 3 SFPs contain neither Boraflex panels nor any other solid neutron absorber materials in the SFP racks for nuclear criticality control. The margin to criticality is maintained by a combination of geometry, fuel placement based on burnup and enrichment, the presence of neutron poison within the fuel assemblies, and, for accident or abnormal conditions, soluble boron. These elements are subject to administrative control by SONGS Units 2 and 3 TSs.

The NRC finds that the criticality prevention measures satisfy the intent of the assumption regarding the integrity of solid neutron absorbing panels assumed in the NRC staff's analysis presented in NUREG-1738.

3.2.1.1 Licensee Control of Changes During Decommissioning

In the enclosure to the SCE letter dated November 3, 2014 (Reference 37), the licensee responded to the NRC staff's RAI regarding control of changes to spent fuel storage conditions throughout the decommissioning process, including conformance with the IDCs and SDAs. The licensee stated that design changes and installation activities would be controlled in compliance with standard design change processes including 10 CFR 50.59, which applies to changes to the facility design and operation as described in the SONGS UFSAR. The licensee also stated that the NUREG-1738 SDAs and IDCs are included in the SONGS UFSAR, and are thereby addressed by the design change processes. Furthermore, the licensee detailed planned changes to the design of systems interfacing with the SFP, including the redundancy, electric power supply, seismic design class, and quality group applicable to the SFP forced cooling and primary makeup systems. The NRC staff has reviewed the licensee's response and finds that the proposed change control mechanism would be in compliance with 10 CFR 50.59, which is the appropriate NRC regulation for that activity, and the planned changes affecting the reliability of systems interfacing with the SFP are commensurate with the reduced likelihood of fuel overheating should the function of those systems be impaired.

3.2.1.2 Summary of NRC Staff Evaluation of IDCs and SDAs

Based on the above evaluations, the NRC staff concludes that the design and operation of structures, systems, and components associated with SFP storage provide for safe storage of spent fuel and are consistent with the capabilities assumed in the analysis presented in NUREG-1738.

3.2.2 Site-Specific Analyses

The licensee performed site-specific quantitative analyses of beyond-design-basis events affecting fuel stored in the SFPs at SONGS Units 2 and 3. In Enclosure 1 to the SCE letter dated September 9, 2014 (Reference 6), the licensee provided a summary of the calculation used to determine the date where decay heat would be low enough to preclude the fuel cladding from reaching a temperature of 565 degrees C, associated with the onset of fuel damage. In the enclosure to the EP exemption request, the licensee provided a summary of a calculation used to determine the time for the hottest fuel assembly to heat adiabatically from its normal storage temperature to a temperature of 900 degrees C, where runaway zirconium oxidation may begin. Between 565 degrees C and 900 degrees C, zirconium oxidation may generate significant additional heat if oxygen can freely react with the zirconium cladding.

A. Analysis of Onset of Fuel Damage

In its September 9, 2014, response to the NRC staff's RAI, SCE provided a summary of a calculation evaluating air-cooling of the spent fuel at SONGS. This analysis used a GOTHIC (Generation of Thermal-Hydraulic Information for Containments) model of the SONGS Unit 2 FHB to determine quasi steady-state air temperatures in specific locations within the building, including the down-comer region around the spent fuel. SONGS Unit 2 was used because its SFP contained fuel with the greater total decay heat generation rate. Using these air temperatures, a separate model using the COBRA (Coolant Boiling in Rod Arrays) code determined the maximum fuel cladding temperature assuming a completely drained SFP and the resulting natural circulation air flow through the fuel assemblies. The COBRA code was initially developed to model two-phase coolant flow in fuel assemblies, and was modified by Pacific Northwest Laboratories in the 1990s to model the heat transfer within and between fuel assemblies in storage and transportation systems.

The GOTHIC model was used to evaluate fuel handling area temperatures for yearly high summer outdoor temperature conditions with the fuel decay heat calculated for August 31, 2014. The GOTHIC air temperature analysis used plant-specific parameters for the configuration of the Unit 2 FHB and included a number of assumptions regarding heat sources and sinks. The total decay heat rate for the fuel stored in the SONGS Unit 2 SFP was calculated using the guidance provided in Branch Technical Position ASB 9-2 (1981) in the NRC SRP (NUREG-0800). In Enclosure 1 to the letters dated October 6 and December 15, 2014 (References 8 and 9, respectively), SCE confirmed that this method of decay heat determination was conservative based on comparison of calculations using ASB 9-2 methods with the results of the 2011 decay heat measurement. The ventilation system was assumed to be in service in a normal alignment that resulted in air exchange with the outdoor environment. The analysis also included consideration of heat absorption by structures, heat transfer through the structures to the environment, heat generation by electrical equipment, and the heat gain from solar radiation. With these assumptions, the maximum temperature in the space between the fuel storage racks and the pool walls was found to be 110 degrees C (230 degrees Fahrenheit (F)). These temperatures were then used to establish the fuel channel entry air temperatures using the COBRA code.

The determination of the highest cladding temperature using the COBRA code considered the actual fuel distribution in the pool to select a limiting configuration of assemblies for analysis

purposes. This configuration consisted of one assembly from the final discharge that defueled the reactor following the last operating cycle (Cycle 16) with fuel assemblies from Cycle 16 with decay heat rates of 8,293 British Thermal Units per hour (BTU/hr) in two face-adjacent storage locations and fuel assemblies from Cycle 13 with decay heat rates of 3,476 BTU/hr in the two remaining face-adjacent storage locations, which constituted a group of five total assemblies. The licensee determined this configuration was conservative based on inspection of the fuel storage configuration in the SONGS Units 2 and 3 SFPs.

The results of the COBRA evaluation showed that the peak cladding temperature would not exceed the temperature selected to represent the onset of potential cladding damage, 565 degrees C (1049 degrees F). The COBRA results showed that the peak cladding temperature would be 553 degrees C (1027 degrees F) for the central Cycle 16 assembly. This temperature is below the temperature associated with the onset of potential cladding damage, and far below temperatures of 900 degrees C (1652 degrees F) associated with rapid cladding oxidation and the potential for a significant radiological release.

Based on the provided analysis and the results of previous studies, the NRC staff concludes that there is reasonable assurance that, by the end of August 2014, the spent fuel stored in the SONGS Units 2 and 3 SFPs would remain at temperatures far below those associated with a significant radiological release under conditions where adequate fuel handling building air exchange with the environment and air cooling of the stored fuel is available. The NRC staff recognized that the assumption of a normal ventilation flow pattern provided an effective means of transferring heat to the environment, but the ventilation systems may not be available in some scenarios. However, sufficient heat transfer to the environment may be available by other paths, and the heat that must be removed continually decreases as the fuel continues to decay. Furthermore, the analysis demonstrated ample margin to temperatures where runaway zirconium oxidation could be a concern. Therefore, the NRC staff finds air cooling to be a credible method to maintain the fuel cladding temperature below that associated with the onset of cladding damage.

B. Heatup Analysis Assuming No Air Cooling

In Enclosure 1 to the exemption request dated March 31, 2014 (Reference 4), the licensee presented its evaluation of the response of the hottest fuel assemblies under conditions where the heat generated within the assembly would be retained within the assembly. The calculation used an assumed initial temperature, the calculated thermal capacity of the fuel assembly within the heated length of the assembly, and an estimated decay heat rate for the hottest fuel assembly. From this information, the licensee calculated the time to reach temperatures of 565 degrees C (1049 degrees F), which corresponds to incipient fuel cladding damage; and 900 degrees C (1652 degrees F), which corresponds to runaway cladding oxidation and the potential for a large radiological release.

An initial fuel assembly temperature of 60 degrees C (140 degrees F) was assumed because it is the maximum normal temperature permitted in the pool specified in the SONGS UFSAR. The time for the fuel assembly to reach specified temperatures was calculated assuming the fuel assembly was dry at the initial temperature, which is conservative relative to the actual conditions following a rare and challenging event that could lead to a loss of a significant amount of SFP water. For these events, water would be expected to be present for a significant

time, considering the large volume of water initially in the pool, and absorb nearly all the decay heat generated during that time.

The thermal capacity of the fuel assembly was calculated based on the dimensions and materials used for the most recent fuel assembly design, which are also the assemblies producing the highest decay heat. The thermal capacity calculation for the limiting fuel assembly considered only the zirconium alloy tubes and uranium dioxide fuel within the approximately 12.5 foot heated length of the 236 fuel rods and the 5 guide tubes within the fuel assembly. Although the fuel assembly was constructed from a zirconium alloy, the licensee concluded that the specific heat and density of pure zirconium could be used, since there is little variation in these properties among other pure metals and their alloys.

The decay heat rate for the limiting Cycle 16 assembly was estimated using a computer code called SCALE 6, which used the ORIGEN-ARP/ORIGEN-S decay heat models. The heat generation by the hottest assembly was determined based on the fuel type, initial uranium mass, initial enrichment, fuel assembly burnup, specific power, light element weights, and decay time. Since the heat from the hottest assembly was absorbed over the entire heated length of the assembly, the heat generation was treated as uniform along the length of the assembly. The results of the SCALE 6 code indicated that the decay heat rate of the limiting assembly would be 2.31 kilowatts (kW) as of October 12, 2014, and continue decreasing. The licensee provided a table of decay heat generation rates in Enclosure 1 to the LAR dated March 31, 2014. This table included heat generation rates at 4 month intervals from June 12, 2013, to June 12, 2015; and at six month intervals from June 12, 2015 to December 12, 2016.

The licensee also provided a table of adiabatic heatup times in its responses to RAIs dated October 6, 2014, and December 15, 2014. This table indicated that, with 33 months decay for the limiting assembly as of October 12, 2014, the time to reach 565 C (1049 F), which corresponds to the potential onset of cladding damage, would exceed 10 hours and the time to reach 900 C (1652 F), which represents the onset of runaway zirconium oxidation, would exceed 17 hours. By December 12, 2015, the licensee estimated that these times would exceed 15 hours and 25 hours, respectively.

The NRC staff independently verified the adiabatic heatup calculation results. Specifically, the NRC staff determined that the physical parameters cited for zirconium and uranium dioxide were consistent with other published data and that the decay heat rate was consistent with the reported power history and decay time. Also, the NRC staff completed the calculation to verify the results.

The NRC staff finds that the licensee's adiabatic heatup calculation is adequate to demonstrate that a time exceeding 10 hours would be available before a significant radiological release might occur following an accident leading to loss of SFP water with no air cooling. The adiabatic heatup calculation is a simplified method for determining the minimum time available for the deployment of mitigation equipment and, if necessary, implementation of offsite measures using a CEMP (all-hazards) approach. The methodology used was sufficiently conservative to compensate for simplifications related to phenomena such as axial variation in heat generation and the potential acceleration of the temperature increase as exothermic zirconium oxidation begins at high temperatures. The conservatisms include discounting the time for the water to drain from the SFP and neglecting additional heat sinks and heat transfer mechanisms that

would exist in scenarios involving loss of SFP water inventory, even in situations where cooling air flow would be blocked.

C. Assessment of Loss of SFP Water Inventory Dose

The licensee analyzed the radiological consequences of a beyond-design-basis scenario to evaluate the effects of a loss-of-water inventory from one of the SONGS SFPs as of June 12, 2013, the date on which SCE certified permanent cessation of power operations of SONGS Units 2 and 3. The SONGS Unit 2 SFP is modeled in this analysis because it has a more restrictive radiation source term. The primary purpose of this calculation is to determine the dose rates, as a function of time, after permanent cessation of power operations at the EAB due to loss of shielding for an event in which the spent fuel assemblies are uncovered following drain down. The dose rates determined by this calculation are due to direct and scatter radiation (also known as sky-shine) from spent fuel assemblies. This calculation does not determine airborne immersion or inhalation doses due to releases of radioactive material from a spent fuel pool boiling accident (see Section 3.1.3 of this SE), which postulates a release of a portion of the radionuclide inventory contained in the spent fuel pool water. The EPA-PAG criterion of a projected dose of 1 rem over a 4-day period is used as the acceptance criterion for an exemption from requiring offsite EPZs.

The method used to perform the calculation utilized the computer code, Monte Carlo N-Particle version 5-1.60 (MCNP5), a general-purpose Monte Carlo radiation transport code used for neutron, photon, electron, or coupled neutron/photon/electron transport. The computer code, MCNP5, was developed and is maintained by Los Alamos National Laboratory. A complete MCNP5 model requires a definition of the geometry, materials, radiation source term, and tally function to calculate the dose rate at the EAB from sky-shine radiation emitted from the spent fuel pool following a drain down event. An explanation of how the licensee modeled each definition of then SONGS Unit 2 SFP MCNP5 model is provided below.

MCNP5 treats the geometry of the model in terms of regions or volumes bounded by first and second order degree surfaces that contain user-defined materials. As such, the licensee's MCNP5 model includes major concrete structures in the vicinity of the SFP considered important for shielding and which provides a surface to scatter radiation, as well as, local topology within the EAB. Other major buildings at SONGS (including all Unit 3 structures) are not included in the model since they do not provide significant scatter surfaces. The geometry model of the SONGS FHB and containment building (CB) were developed using the plant coordinate system with the center of the CB as the origin in the x-y direction and the origin in the z direction corresponding to sea level. The SONGS Units 2 and 3 exclusion area is roughly formed by two semi-circles with radii of 1967.5 feet each. There are no industrial, commercial, institutional, or residential structures within the EAB. Standard material properties typically applied in Monte Carlo calculations were utilized in developing the SONGS MCNP5 model with exception for the SFP fuel region. The SFP fuel region is modeled as a homogenized material representing the materials composing fuel assemblies and racks, which include: stainless steel-304, Zircaloy-4, Inconel-718, uranium oxide, and air.

The SFP contains fuel assemblies discharged from several fuel cycles. After each cycle of operation, a fraction of the fuel assemblies are permanently discharged into the spent fuel pool, while new assemblies are loaded into the reactor core to replace the older discharged fuel

assemblies. The radiation source term for the spent fuel pool model considers the contribution from all irradiated fuel assemblies located in the spent fuel pool at one year increments, starting at the target date of June 12, 2013, until June 12, 2015. The radiation source term was calculated using the ORIGEN-ARP/ORIGEN-S modules within the SCALE 6 Computer package. The SCALE computer package is a system of codes developed by Oak Ridge National Laboratory for the NRC to satisfy a need for a standardized method of analysis for the evaluation of nuclear fuel facility and package designs. The ORIGEN-S computer code computes the time-dependent concentrations and source terms of a large number of isotopes, which are simultaneously generated or depleted through neutronic transmutation, fission, and radioactive decay. The ORIGEN-ARP computer code is used to automate the depletion-decay sequence calculations. These calculations pertain to the irradiated fuel within nuclear reactors, or the storage, management, transportation, or subsequent chemical processing of removed fuel elements. The licensee's calculated ORIGEN-ARP/ORIGEN-S results represent the total activity in all of the fuel assemblies located within the SONGS SFP, where no credit is taken for radioactive decay between fuel cycles. These radiation source term results are then applied to the SONGS MCNP5 SFP model to calculate dose rates, as a function of time, at the EAB from neutron and photon radiations.

Dose rates at the EAB were calculated from three types of radiation: gammas, neutrons, and secondary gammas produced from neutron interactions. Dose rates from gammas were calculated for the decay times of June 12, 2013, June 12, 2014, and June 12, 2015, using the gamma source terms described above. Dose rates from neutrons and secondary gammas were calculated for the decay time of June 12, 2013, using the neutron source term described above. For each radiation type, the MCNP5 F5 tally-function paired with the approximate flux-to-dose rate conversion factors were used to make an estimate of the dose rate at the EAB. The MCNP5 tally-function is used to make a deterministic estimate of the fluence contribution at the EAB from the direct and scatter radiation emitted from the SFP. The fluence-to-dose conversion factors for neutrons and gamma rays convert the F5 tally-function estimate of the fluence at the EAB to human biological dose equivalent rates. The conversion factors for both neutrons and photons applied in the licensee's analysis are referenced from the American National Standards Institute/American Nuclear Society (ANSI/ANS)-6.1.1-1977, "Neutron and Gamma-Ray Flux-to-Dose-Rate Factors."

To support its request for exemption from requirements for offsite planning zones, the licensee compared the calculated dose rates to the EPA PAGs, which suggest that protective actions to sheltering-in-place or evacuation of the public are justified when the projected dose to an individual is 1 rem projected over 4 days. The acceptance criterion for establishing the EALs is less than 100 mrem for a 2-hour period to a member of the public. The licensee's conclusion, based on the calculated direct and scattered dose rates from spent fuel assemblies in a SONGS SFP following drain down, is that the maximum dose at the EAB would not trigger the proposed EALs and are well below the EPA PAGs acceptance criteria.

The NRC staff reviewed the licensee's evaluation and performed confirmatory calculations of the radiological consequences of a beyond-design-basis scenario to evaluate the effects of a loss-of-water inventory from the SONGS SFPs, as of June 12, 2013. Using the scenario assumptions described by the licensee and the SONGS UFSAR, the NRC staff utilized the general purpose Monte Carlo radiation transport code, MCNP5, to perform a confirmatory analysis of the potential radiological impacts due to loss of shielding of the SFP. The staff's

confirmatory analyses yield results for the EAB that are within the acceptance criterion threshold for establishing the EALs of less than 100 mrem for a 2-hour period to a member of the public.

3.2.3 Conclusion Concerning Beyond-Design-Basis Loss of SFP Cooling Water Inventory Accidents (with and without Air Cooling)

The NRC staff has confirmed the licensee's analysis showing that by October 12, 2014, there will be well over 10 hours, from the initiation of the very unlikely beyond-DBA where the SFP coolant inventory is lost in such a manner that all methods of heat removal from the spent fuel are no longer available, until the spent fuel cladding reaches a temperature where a significant offsite radiological release might occur. Under conditions where cooling air-flow can develop and air exchange between the fuel building and outside environment occurs, sufficiently conservative calculations indicate that, by August 31, 2014, the fuel would remain at temperatures where the cladding would be undamaged for an unlimited period. Furthermore, as discussed in Section 3.2.2 of this safety evaluation, the design and operation of structures, systems, and components associated with SFP storage provide for safe storage of spent fuel and are consistent with the capabilities assumed in the analysis presented in NUREG-1738. This confirms that there is sufficient time available to support deployment of mitigation equipment consistent with plant conditions and if needed, for offsite agencies to take protective actions using a comprehensive emergency management plan to protect the health and safety of the public.

4.0 EXEMPTIONS

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when: (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. Evaluation of the exemption criteria (1) above for each of the following exemptions is addressed in the NRC exemption, Sections III.A, III.B, and III.C of Enclosure 1 to this letter. The evaluation of the special circumstances provision in (2) above is evaluated in Sections 4.1 and 4.2 of this SE.

Special circumstances exist when application of the regulation in the particular circumstance would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule (10 CFR 50.12(a)(2)(ii)). The underlying purpose of Section 50.54(q) is to ensure that licensees follow and maintain in effect emergency plans that provide reasonable assurance, that adequate protective measures can and will be taken in the event of an emergency at a nuclear reactor. Sections 50.47(b) and (c) outline the planning standards and size of emergency planning zones, respectively, that are to be considered in emergency plans, and Appendix E to 10 CFR Part 50 identifies the information that must be included in emergency plans.

This section reflects the staff's technical evaluation of the licensee's exemption requests, as provided to the Commission in SECY-14-0144 (Reference 20), which was approved by the Commission in the SRM to SECY-14-0144, dated March 2, 2015 (Reference 21).

4.1 Specific Exemptions for 10 CFR 50.47

SCE's letters dated March 31, 2014 (Reference 4) and September 9, 2014 (Reference 6), requested an exemption from certain sections (as indicated by strikeout and bolded text) of 10 CFR 50.47 for SONGS.

4.1.1 10 CFR 50.47(b)

> The onsite **~~and, except as provided in paragraph (d) of this section, offsite~~** emergency response plans for nuclear power reactors must meet the following standards:

The NRC requires a level of licensee EP commensurate with the potential consequences to public health and safety, and common defense and security at the licensee's site. SCE's exemption request included radiological analyses to show that, as of August 2013, the radiological consequences of DBAs will not exceed the limits of the EPA PAGs at the EAB. The licensee also concluded and the NRC staff confirmed that, as of October 12, 2014, in the unlikely event that all cooling is lost to the spent fuel and a heatup under adiabatic conditions results, greater than 10 hours would be available before the hottest fuel assembly reached 900 degrees C to take mitigative actions, or if necessary, to implement protective actions using a CEMP approach. The NRC staff's evaluation of the licensee's analyses can be found in Section 3.0 of this SE.

Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions or, if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated zirconium cladding fire, formal offsite REP plans are not necessary for a permanently shut down and defueled nuclear power reactor.

Based on the above analysis, the NRC staff concludes that the exempted language from 10 CFR 50.47(b) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.1.2 10 CFR 50.47(b)(1)

> Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations **~~within the Emergency Planning Zones~~** have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," dated November 1978 (Reference 39), provided that emergency response plans should be useful for responding to any accident that would produce offsite radiological doses in excess of

the EPA PAGs. Additionally, it introduced the concept of generic plume exposure pathway zones as a basis for the planning of response actions which would result in dose savings in the environs of nuclear facilities in the event of a serious power reactor accident. As previously discussed in Section 4.1.1, SCE has provided revised radiological analyses that show that, as of August, 2013, the radiological consequences for DBAs at SONGS will not exceed the limits of the EPA PAGs at the EAB. In addition, reactor core melt (Class 9) scenarios, which were also considered in NUREG-0396, are no longer applicable to a permanently shut down and defueled power reactor.

In the Statement of Consideration (SOC) for the Final Rule for EP requirements for ISFSIs and for Monitored Retrievable Storage (MRS) facilities (Reference 44), the Commission responded to comments concerning an EPZ for an ISFSI and MRS, and concluded that, "...based on the potential inventory of radioactive material, potential driving forces for distributing that amount of radioactive material, and the probability of the initiation of these events, the Commission concludes that the offsite consequences of potential accidents at an ISFSI or a MRS would not warrant establishing Emergency Planning Zones."

Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, designated plume exposure and ingestion pathway EPZs are no longer needed.

Based on the above analysis, the NRC staff concludes that the exempted language from 10 CFR 50.47(b)(1) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.1.3 10 CFR 50.47(b)(3)

> Arrangements for requesting and effectively using assistance resources have been made, ~~**arrangements to accommodate State and local staff at the licensee's Emergency Operations Facility have been made,**~~ and other organizations capable of augmenting the planned response have been identified.

The NRC requires a level of licensee EP commensurate with the potential consequences to public health and safety and common defense and security at the licensee's site. With the termination of reactor operations at SONGS and the permanent removal of the spent fuel from the reactor vessels, most of the accident scenarios postulated for operating power reactors are no longer possible. The spent fuel is now stored in the SFPs and the ISFSI, and will remain onsite until it can be moved offsite for long-term storage or disposal. The reactor, RCS, and secondary systems are no longer in operation and have no function related to the storage of the spent fuel. Therefore, postulated accidents involving failure or malfunction of the reactor, RCS, or supporting systems are no longer applicable. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel onsite.

The emergency operations facility (EOF) is a support facility for the purpose of managing the overall licensee emergency response (including coordination with Federal, State, and local officials), coordination of radiological and environmental assessments, and determination of recommended public protective actions. Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, an EOF would not be needed to coordinate these types of assessments for determining public protective actions. Onsite operations staff will continue to maintain and provide for communication and coordination capabilities with offsite authorities and OROs for the level of support required for remaining DBAs and the prompt implementation of mitigative actions in response to a SFP accident.

Based on the above analysis and the analysis provided in Section 4.1.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR 50.47(b)(3) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.1.4 10 CFR 50.47(b)(4)

> A standard emergency classification and action level scheme, the basis of which include facility system and effluent parameters, is in use by the nuclear facility licensee**~~, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures~~**.

Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, the requirement for minimum initial offsite response measures is not needed.

Based on the above analysis and the analysis provided in Section 4.1.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR 50.47(b)(4) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.1.5 10 CFR 50.47(b)(5)

> Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations **~~and the public~~** has been established**~~; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established~~**.

Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, a means to provide early notification and clear instruction to the populace within a designated plume exposure EPZ is no longer needed.

Based on the above analysis and the analysis provided in Sections 4.1.1 and 4.1.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR 50.47(b)(5) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.1.6 10 CFR 50.47(b)(6)

> Provisions exist for prompt communications among principal response organizations to emergency personnel ~~**and to the public**~~.

Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, the requirement to provide prompt communication to the public within a designated plume exposure EPZ in regards to initial or pre-determined protective actions is no longer needed.

Based on the above analysis and the analysis provided in Sections 4.1.1 and 4.1.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR 50.47(b)(6) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.1.7 10 CFR 50.47(b)(7)

> ~~**Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors),**~~ [T]he principal points of contact with the news media for dissemination of information during an emergency ~~**(including the physical location or locations)**~~ are established in advance, and procedures for coordinated dissemination of information to the public are established.

Considering the very low probability of beyond design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, the requirement to provide periodic information to the public within a designated plume exposure

emergency planning zone on how they will be notified and what their initial or predetermined protective actions should be in an emergency is not needed.

Based on the above analysis and the analysis provided in Section 4.1.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR 50.47(b)(7) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.1.8 10 CFR 50.47(b)(9)

> Adequate methods, systems, and equipment for assessing and monitoring actual or potential ~~offsite~~ consequences of a radiological emergency condition are in use.

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirement for assessing or monitoring offsite consequences beyond the EAB is not needed.

Based on the above analysis and the analysis provided in Section 4.1.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR 50.47(b)(9) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.1.9 10 CFR 50.47(b)10)

> A range of protective actions has been developed ~~for the plume exposure pathway EPZ~~ for emergency workers and the public. ~~In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees. Licensees shall update the evacuation time estimates on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.~~

In 1995, the Commission provided its view on evacuation planning for an ISFSI (not at an operating reactor site) in its Statement of Considerations for the Final Rule for EP requirements for an ISFSI and an MRS facility (60 FR 32439), "The Commission does not agree that as a general matter emergency plans for an ISFSI must include evacuation planning."

The NRC staff finds the licensee's proposal to discontinue offsite REP planning activities and reduce the scope of onsite emergency planning acceptable, in view of the greatly reduced offsite radiological consequences associated with the permanently shut down and defueled state of the power reactors. The NRC has determined that no credible events within the design basis would result in doses to the public that would exceed the EPA PAGs at the EAB.

Therefore, EPZs beyond the EAB and the associated protective actions developed from evacuation time estimates (ETE) are no longer needed. Additionally, in the unlikely event of an SFP accident, the iodine isotopes, which contribute to an offsite dose from an operating power reactor accident, are not present; therefore, potassium iodide (KI) distribution would no longer serve as an effective or necessary supplemental protective action. As such, the NRC staff concludes that SCE provides for an acceptable level of emergency preparedness at SONGS, in its permanently shutdown and defueled condition, and also provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at SONGS.

Although formal offsite REP planning has typically been exempted for decommissioning sites, OROs will continue to be relied upon for firefighting, law enforcement, ambulance and medical services in support of the licensee's (onsite) emergency plan. The licensee is responsible for providing protective measures for any emergency workers responding onsite. Additionally, the licensee is responsible for control of activities within the EAB, including public access. The licensee actions that are necessary to protect the health and safety of members of the public who are in the EAB may include, but are not limited to, evacuation, sheltering and decontamination in the unlikely event of a release of radioactive materials.

Based on the above analysis and the analysis provided in Sections 4.1.1 and 4.1.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR 50.47(b)(10) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.1.10 10 CFR 50.47(c)(2)

> ~~**Generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries.~~ The size of the EPZs ~~**also**~~ may be determined on a case-by-case basis for gas-cooled nuclear reactors and for reactors with an authorized power level less than 250 MW thermal. ~~**The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway.**~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirement for an EPZ is not needed.

Section 50.47(c)(2) and footnote 1 to Appendix E to Part 50 both include this sentence: "The size of the EPZs also may be determined on a case-by-case basis for gas-cooled nuclear

reactors and for reactors with an authorized power level less than 250 MW thermal." This is not applicable to SONGS, and therefore, requires no exemption.

Based on the above analysis and the analysis provided in Section 4.1.9 of this SE, the NRC staff concludes that the exempted language from 10 CFR 50.47(c)(2) above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2 Specific Exemptions for 10 CFR Part 50, Appendix E, Section IV

SCE's letters dated March 31, 2014 (Reference 4) and September 9, 2014 (Reference 6), requested an exemption from certain sections (as indicated by strikeout and bolded text) of Appendix E to 10 CFR Part 50 for SONGS.

4.2.1 10 CFR Part 50, Appendix E, Section IV.1

> The applicant's emergency plans shall contain, but not necessarily be limited to, information needed to demonstrate compliance with the elements set forth below, i.e., organization for coping with radiological emergencies, assessment actions, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, recovery~~, and onsite protective actions during hostile action~~. In addition, the emergency response plans submitted by an applicant for a nuclear power reactor operating license under this part, or for an early site permit (as applicable) or combined license under 10 CFR part 52, shall contain information needed to demonstrate compliance with the standards described in § 50.47(b), and they will be evaluated against those standards.

After the terrorist attacks of September 11, 2001, the NRC staff evaluated the EP planning basis to ensure it continued to protect the public health and safety in the current threat environment. In 2002, the NRC staff issued Orders (Reference 45) requiring compensatory measures which included nuclear security and EP. The NRC staff determined that the EP planning basis continued to protect public health and safety, however, the NRC staff recognized that enhancements were desirable to ensure effective plan implementation during security-related events at nuclear power reactors. Examples of such enhancements included more timely NRC notification, improvement to onsite protective actions and revisions of emergency action levels to identify security-related emergencies more succinctly. The NRC issued NRC Bulletin (BL) 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events," dated July 18, 2005 (Reference 42), to obtain information from licensees on progress in implementing security-event-related EP program enhancements. The 2011 EP Final Rule made generically applicable the security-based response elements of BL 2005-02. SCE certified that it had permanently ceased operations at SONGS Units 2 and 3 and that all fuel at those units had been removed from the reactor vessels. The enhancements of BL 2005-02 were not applicable to holders of operating licenses for nuclear power reactors that had permanently ceased operations and had certified that fuel had been removed from the reactor vessel. Therefore, the enhancements for hostile actions, as required by the 2011 EP Final Rule, are not necessary for SONGS in its permanently shut down and defueled status.

Additionally, the NRC excluded non-power reactors from the definition of "hostile action" at the time of the 2011 rulemaking because, as defined in 10 CFR 50.2, a non-power reactor is not considered a nuclear power reactor and a regulatory basis had not been developed to support the inclusion of non-power reactors in the definition of "hostile action." Similarly, a decommissioning power reactor or ISFSI is not a "nuclear reactor" as defined in the NRC's regulations. Like a non-power reactor, a decommissioning power reactor also has a lower likelihood of a credible accident resulting in radiological releases requiring offsite protective measures than does an operating reactor. For all of the above reasons, the staff concludes that a decommissioning power reactor is not a facility that falls within the definition of "hostile action."

Although this analysis provides a justification for exempting SONGS from "hostile action" related requirements, some EP requirements for security-based events are maintained. The classification of security-based events, notification of offsite authorities, and coordination with offsite agencies under a CEMP approach are still required.

Based on the above analysis, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.1 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.2 10 CFR Part 50, Appendix E, Section IV.2

> ~~**This nuclear power reactor license applicant shall also provide an analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, using the most recent U.S. Census Bureau data as of the date the applicant submits its application to the NRC.**~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirements for an EPZ and ETEs are not needed.

Based on the above analysis and the analysis provided in Section 4.1.9 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.2 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.3 10 CFR Part 50, Appendix E, Section IV.3

> ~~**Nuclear power reactor licensees shall use NRC approved evacuation time estimates (ETEs) and updates to the ETEs in the formulation of protective action recommendations and shall provide the ETEs and ETE updates to State and local governmental authorities for use in developing offsite protective action strategies.**~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated fire, offsite REP plans are not needed. Since offsite REP plans are not needed, the requirement to have an ETE and to perform an update to the ETE is not needed.

Based on the above analysis and the analysis provided in Section 4.2.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.3 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.4 10 CFR Part 50, Appendix E, Section IV.4

> ~~**Within 365 days of the later of the date of the availability of the most recent decennial census data from the U.S. Census Bureau or December 23, 2011, nuclear power reactor licensees shall develop an ETE analysis using this decennial data and submit it under § 50.4 to the NRC. These licensees shall submit this ETE analysis to the NRC at least 180 days before using it to form protective action recommendations and providing it to State and local governmental authorities for use in developing offsite protective action strategies.**~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated fire, offsite REP plans are not needed. Since offsite REP plans are not needed, the requirement to have an ETE and to perform an update to the ETE is not needed.

Based on the above analysis and the analysis provided in Section 4.2.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.4 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.5 10 CFR Part 50, Appendix E, Section IV.5

> ~~**During the years between decennial censuses, nuclear power reactor licensees shall estimate EPZ permanent resident population changes once a year, but no later than 365 days from the date of the previous estimate, using the most recent U.S. Census Bureau annual resident population estimate and State/local government population data, if available. These licensees shall maintain these estimates so that they are available for NRC inspection during the period between decennial censuses and shall submit these estimates to the NRC with any updated ETE analysis.**~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if

needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated fire, offsite REP plans are not needed. Since offsite REP plans are not needed, the requirement to have an ETE and to perform an update to the ETE is not needed.

Based on the above analysis and the analysis provided in Section 4.2.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.5 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.6 10 CFR Part 50, Appendix E, Section IV.6

> ~~**If at any time during the decennial period, the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the nuclear power reactor licensee's currently NRC approved or updated ETE, the licensee shall update the ETE analysis to reflect the impact of that population increase. The licensee shall submit the updated ETE analysis to the NRC under § 50.4 no later than 365 days after the licensee's determination that the criteria for updating the ETE have been met and at least 180 days before using it to form protective action recommendations and providing it to State and local governmental authorities for use in developing offsite protective action strategies.**~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated fire, offsite REP plans are not needed. Since offsite REP plans are not needed, the requirement to have an ETE and to perform an update to the ETE is not needed.

Based on the above analysis and the analysis provided in Section 4.2.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.6 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.7 10 CFR Part 50, Appendix E, Section IV.A.1

> A description of the normal plant ~~**operating**~~ organization.

With the certifications of 10 CFR 50.82(a)(1)(ii), the 10 CFR Part 50 licenses for SONGS Units 2 and 3 no longer authorize operation of the SONGS Units 2 and 3 reactors, or emplacement or retention of fuel into the reactor vessels, as specified in 10 CFR 50.82(a)(2). Because the licensee is no longer authorized to operate the reactors, the licensee does not have a plant "operating" organization. A description of the plant organization, as it relates to the requirements in 10 CFR Part 50, Appendix E, Section IV.A.1, is still required.

Based on the above analysis, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.A.1 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.8 10 CFR Part 50, Appendix E, Section IV.A.3

> ~~**A description, by position and function to be performed, of the licensee's headquarters personnel who will be sent to the plant site to augment the onsite emergency organization.**~~

The number of staff at decommissioning sites is generally small, but is commensurate with the need to safely store spent fuel at the facility in a manner that is protective of public health and safety. Decommissioning power reactor sites typically have a level of emergency response that does not require a response by the licensee's headquarters organization. However, this would not preclude the use of licensee staff normally located offsite to augment the on-shift organization, if needed. As discussed previously in Section 1.1, SCE furnished information concerning its SFP inventory makeup strategies that could be used in the event of a catastrophic loss of SFP water inventory and stated that designated on-shift personnel are trained to implement such strategies with equipment maintained onsite. SCE has site personnel designated to respond within 2 hours of the Alert classification to assist the on-shift staff. As such, designation of specific headquarters personnel is not necessary to augment the on-shift staff, and therefore, neither is its description.

Based on above analysis and the analysis in Section 4.1.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.A.3 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.9 10 CFR Part 50, Appendix E, Section IV.A.4

> Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making ~~**offsite**~~ dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, NRC, and other appropriate governmental entities.

The license's analysis demonstrated that no DBAs result in doses in excess of the EPA PAGs to the public beyond the EAB. While it is unlikely that a beyond-DBA would result in doses in excess of the EPA PAGs to the public beyond the EAB, the licensee still must be able to determine if a radiological release is occurring, thereby achieving the underlying purpose of the rule. If a release is occurring, then the licensee's staff should promptly communicate that information to offsite authorities for their consideration. The offsite organizations are responsible for deciding what, if any, protective actions should be taken based on a CEMP approach, rather than that based on a detailed formal offsite REP plan.

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirements for offsite dose projections are not needed.

Based on above analysis and the analysis in Section 4.1.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.A.4 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.10 10 CFR Part 50, Appendix E, Section IV.A.5

> ~~**Identification, by position and function to be performed, of other employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are not employees of the licensee and who may be called upon for assistance for emergencies shall also be identified. The special qualifications of these persons shall be described.**~~

The number of the licensee's staff at decommissioning sites is generally smaller than that for an operating power reactor, but is still commensurate with the need to operate the facility in a manner that is protective of public health and safety. The NRC staff considered the similarity between the staffing levels at a permanently shutdown and defueled reactor and staffing levels at an operating power reactor site, since the spectrum of accidents at a decommissioning facility is greatly reduced requiring less specialized qualifications. The minimal systems and equipment needed to maintain the spent nuclear fuel in the SFP in a safe condition requires minimal personnel and is governed by the technical specifications.

As discussed previously in Section 1.1, SCE furnished information concerning its SONGS SFPs inventory makeup strategies that could be used in the event of a catastrophic loss of SFP water inventory and stated that designated on-shift personnel are trained to implement such strategies with equipment maintained onsite. SCE has site personnel designated to respond within 2 hours of the Alert classification to assist the on-shift staff. As such, additional employees or other persons with special qualifications are not anticipated.

Considering the very low-probability of beyond-design-basis events affecting the SFP, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirement for personnel with special qualifications in 10 CFR Part 50, Appendix E, Section IV.A.5, is not needed.

Based on above analysis and the analysis in Section 4.1.1 and 4.2.8 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.A.5 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.11 10 CFR Part 50, Appendix E, Section IV.A.7

> ~~By June 23, 2014,~~ identification of, ~~and a description of the~~ assistance expected from, appropriate State, local, and Federal agencies with responsibilities for coping with emergencies, including ~~hostile action at the site. For purposes of this appendix, "hostile action" is defined as~~ an act directed toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force.

In the EP Final Rule, the Commission defined "hostile action" as, in part, "an act directed toward a nuclear power plant or its personnel." The Final rule made generically applicable, the security-based response elements of BL 2005-02 (Reference 42). The enhancements BL 2005-02 were applicable to all holders of operating licenses for nuclear power reactors, except those who have permanently ceased operation and have certified that fuel has been removed from the reactor vessel.

Although the "hostile action" enhancements in the EP Final Rule are not applicable to a decommissioning reactor, the licensee's physical security plan must continue to provide high assurance against a potential security event impacting a designated target set. Therefore, some EP requirements for security-based events are maintained, such as the classification of security-based events, notification of offsite authorities, and coordination for the response of offsite organizations (i.e., law enforcement, firefighting, medical assistance) onsite.

With the certifications of 10 CFR 50.82(a)(1)(ii), the 10 CFR Part 50 licenses for SONGS Units 2 and 3 no longer authorize operation of the reactors, or emplacement or retention of fuel into the reactor vessels, as specified in 10 CFR 50.82(a)(2). Therefore, the enhancements for hostile actions required by the 2011 EP Final Rule are not applicable for SONGS in its permanently shut down and defueled status.

Based on the above analysis, and the analysis provided in Sections 4.1.1 and 4.2.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.A.7 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.12 10 CFR Part 50, Appendix E, Section IV.A.8

> ~~Identification of the State and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary.~~

Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset

of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, identification of the State and/or local officials responsible for detailed pre-planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary, is no longer needed.

Based on the above analysis, and the analysis provided in Section 4.1.1 and 4.1.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.A.8 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.13 10 CFR Part 50, Appendix E, Section IV.A.9

> ~~**By December 24, 2012, for nuclear power reactor licensees, a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.**~~

The number of staff required at decommissioning sites is generally small but is commensurate with the need to safely store spent fuel at the facility, in a manner that is protective of public health and safety. The duties of the on-shift personnel at a decommissioning reactor facility are not as complicated and diverse as those for an operating power reactor. The systems and equipment needed to maintain the spent fuel in a SFP or in a dry cask storage system in a safe condition require minimal personnel and are governed under Technical Specifications. In the 2011 EP Final Rule (Reference 40), the NRC required nuclear power plant licensees to provide a detailed analysis to show that on-shift personnel assigned emergency plan implementation functions were not assigned any responsibilities that would prevent them from performing their assigned emergency plan functions. As part of the 2011 EP Final Rule, the NRC concluded that the staffing analysis requirement was not necessary for non-power reactor licensees due to the small staffing levels required to operate the facility. Therefore, based on similarities of non-power reactors and decommissioning reactors with regard to staffing, and as discussed in Section 4.2.1, a detailed staffing analysis is not needed for a decommissioning reactor.

As part of the SCE exemption request, it stated that the assigned operators on shift were trained in the use of the procedures and adequate in number to carry out the actions required for restoring SFP cooling/level in accordance with their procedures. The licensee also provided descriptions of multiple strategies for providing makeup to the SFP. SCE states that designated on-shift personnel are trained to implement such strategies. The specific event scenario utilized for the staffing analysis involved a catastrophic loss-of-water inventory in one SFP. In addition to the scenario described above, SONGS performed a separate case study to validate that the minimum on-shift staff can perform mitigation efforts in the event that the second SFP is also affected by a catastrophic loss-of-water inventory.

Based on the above analysis, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.A.9 above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provisions of 10 CFR 50.12(a)(2)(ii).

4.2.14 10 CFR Part 50, Appendix E, Section IV.B.1

> The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within ~~and outside~~ the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite ~~and offsite~~ monitoring. ~~By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant.~~ The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and State and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis.

NEI 99-01, Revision 6 (Reference 33) is an acceptable method for development of an EAL scheme for a non-passive operating nuclear power reactor, a permanently defueled power reactor, and an ISFSI. No offsite protective actions are anticipated to be necessary, so classification above the Alert level is no longer required, which is consistent with exemptions for previous decommissioning power reactors. The licensee is still required to maintain EALs for the classification of security-based events to the Alert level, which was approved by the NRC in a letter dated March 22, 2012 (Reference 46). In the EP Final Rule, the Commission defined "hostile action" as, in part, "an act directed toward a nuclear power plant or its personnel." The Final Rule made generically applicable the security-based response elements of BL 2005-02, (Reference 42). BL 2005-02 provided numerous enhancements to licensee emergency plans including security-based EALs. The staff is maintaining the requirement for security-based EALs similar to power reactors as they were required by the NRC Order, "Order Modifying Licenses for Interim Safeguards and Security Compensatory Measures," dated May 23, 2002 (Reference 43). Exemption from hostile action enhancements for decommissioning reactors was previously discussed in Section 4.2.1 of this SE.

Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach between the loss of both water and air cooling to the spent fuel and before the onset of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, a decommissioning reactor does not need to have EALs to determine protective measures offsite.

Based on the above analysis and the analysis provided in Sections 4.1.1 and 4.2.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.B.1, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.15 10 CFR Part 50, Appendix E, Section IV.C.1

> The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described. The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall be described. Emergency action levels (based not only on onsite ~~and offsite~~ radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency~~, such as the pressure in containment and the response of the Emergency Core Cooling System~~) for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) Notification of unusual events, (2) alert, ~~(3) site area emergency, and (4) general emergency~~. These classes are further discussed in NUREG-0654/FEMA-REP-1.

Containment and emergency core cooling system parameters no longer provide an indication of a potential emergency for a permanently shut down and defueled power reactor, and emergency core cooling systems are no longer required. Other indications, such as SFP level, SFP temperature, and area radiation monitors indicate the conditions at SONGS.

In the SOC for the Final Rule for EP requirements for ISFSIs and for MRS facilities (60 FR 32430), the Commission responded to comments concerning a general emergency at an ISFSI and MRS, and concluded, "An essential element of a General Emergency is that '[a] release can be reasonably expected to exceed EPA Protective Action Guidelines exposure levels off site for more than the immediate site area.' As previously discussed, NRC studies have concluded that the maximum offsite dose would be less than 1 rem which is within the EPA Protective Action Guides." It further provides a response to comments concerning an EPZ for an ISFSI and MRS: "[B]ased on the potential inventory of radioactive material, potential driving forces for distributing that amount of radioactive material, and the probability of the initiation of these events, the Commission concludes that the offsite consequences of potential accidents at an ISFSI or a MRS would not warrant establishing Emergency Planning Zones."

As discussed in Section 3.1 of this SE, the licensee's analysis demonstrates that no DBA would reach the dose criteria for the declaration of an SAE or a GE. As discussed in Section 3.2 of this SE, the probability of a beyond-DBA condition that could reach emergency classifications of an SAE or a GE is very low. In the unlikely event of a severe beyond-DBA resulting in the loss of all cooling to the stored fuel, it would take at least 17 hours from the time the fuel attains an adiabatic condition, until it reaches a temperature of 900 degrees C. During this time, the licensee could initiate mitigative actions consistent with plant conditions, and if necessary, notify offsite authorities to consider appropriate protective measures using a CEMP approach.

Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, a

decommissioning reactor does not need to use offsite radiation monitoring information and emergency classification levels of an SAE or emergency GE.

Based on the above analysis and the analysis provided in Section 4.1.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.C.1, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.16 10 CFR Part 50, Appendix E, Section IV.C.2

> ~~**By June 20, 2012, nuclear power reactor**~~ [L]icensees shall establish and maintain the capability to assess, classify, and declare an emergency condition ~~**within 15 minutes**~~ after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded. Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary to protect public health and safety provided that any delay in declaration does not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety.

In the 2011 EP Final Rule (Reference 40), nuclear power reactor licensees were required to assess, classify and declare an emergency condition within 15 minutes. Non-power reactors do not have the same potential impact on public health and safety as do power reactors, and as such, non-power reactor licensees do not require complex offsite emergency response activities and are not required to assess, classify and declare an emergency condition within 15 minutes. Similarly, a decommissioning power reactor has a lower likelihood of a credible accident resulting in radiological releases requiring offsite protective measures than does an operating power reactor. Unlike operating reactor accident sequences potentially leading to large early releases, accident scenarios at decommissioning plants' SFPs evolve slowly and provide a longer time period to initiate SFP mitigative actions or protective actions, including public evacuation, if necessary. Because a decommissioning power reactor, like a non-power reactor, does not have the same potential impact on public health and safety as a power reactor, the NRC staff concludes that a decommissioning power reactor should not be required to assess, classify and declare an emergency condition within 15 minutes.

Based on the above analysis, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.C.2, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.17 10 CFR Part 50, Appendix E, Section IV.D.1

> Administrative and physical means for notifying local, State, and Federal officials and agencies ~~**and agreements reached with these officials and agencies for**~~

~~the prompt notification of the public and for public evacuation or other protective measures, should they become necessary,~~ shall be described. This description shall include identification ~~of the appropriate officials, by title and agency,~~ of the State and local government agencies ~~within the EPZs.~~

Considering the very low-probability of beyond-design-basis events affecting the SFP, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirements for prompt notification of the public within an EPZ are not needed.

Based on the above analysis, and the analyses in Sections 4.1.1, 4.1.2, and 4.1.6 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.D.1, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.18 10 CFR Part 50, Appendix E, Section IV.D.2

~~Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirements for dissemination of emergency planning information to the public and an EPZ are not needed.

Based on the above analysis and the analyses in Sections 4.1.1, 4.1.2, and 4.1.5 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.D.2, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.19 10 CFR Part 50, Appendix E, Section IV.D.3

A licensee shall have the capability to notify responsible State and local governmental agencies ~~within 15 minutes~~ after declaring an emergency. ~~The~~

~~licensee shall demonstrate that the appropriate governmental authorities have the capability to make a public alerting and notification decision promptly on being informed by the licensee of an emergency condition. Prior to initial operation greater than 5 percent of rated thermal power of the first reactor at the site, each nuclear power reactor licensee shall demonstrate that administrative and physical means have been established for alerting and providing prompt instructions to the public with the plume exposure pathway EPZ. The design objective of the prompt public alert and notification system shall be to have the capability to essentially complete the initial alerting and notification of the public within the plume exposure pathway EPZ within about 15 minutes. The use of this alerting and notification capability will range from immediate alerting and notification of the public (within 15 minutes of the time that State and local officials are notified that a situation exists requiring urgent action) to the more likely events where there is substantial time available for the appropriate governmental authorities to make a judgment whether or not to activate the public alert and notification system. The alerting and notification capability shall additionally include administrative and physical means for a backup method of public alerting and notification capable of being used in the event the primary method of alerting and notification is unavailable during an emergency to alert or notify all or portions of the plume exposure pathway EPZ population. The backup method shall have the capability to alert and notify the public within the plume exposure pathway EPZ, but does not need to meet the 15 minute design objective for the primary prompt public alert and notification system. When there is a decision to activate the alert and notification system, the appropriate governmental authorities will determine whether to activate the entire alert and notification system simultaneously or in a graduated or staged manner. The responsibility for activating such a public alert and notification system shall remain with the appropriate governmental authorities.~~

In the permanently shut down and defueled condition of the reactor, the rapidly developing scenarios associated with events initiated during reactor power operation are no longer credible. The slow progression of SFP events allows greater time for the licensee to successfully mitigate the accidents and, if necessary, for offsite authorities to protect the health and safety of the public using a CEMP approach.

SONGS proposes to complete emergency notifications within 60 minutes after an emergency declaration or a change in classification. State and local agency staffed Warning Points for the State of California, Orange County, San Diego County, the Camp Pendleton Marine Corps Base and the NRC will be notified within 60 minutes. Although SONGS is a general licensed ISFSI and the Emergency Plan is based on 10 CFR Part 50, the staff considers the requirements in 10 CFR 72.32(a) to ensure consistency between general and specific licensed ISFSIs. This 60 minute notification timeliness is consistent with the notification time requirements for emergency plans based on the regulations in 10 CFR Part 72. Information will be disseminated to the public and media in accordance with State and local plans.

In the SOC for the Final Rule for EP requirements for ISFSIs and for MRS facilities (60 FR 32430), the Commission responded to comments concerning a notification time of 15 minutes, and concluded that, "[t]he Commission has established a reasonable time limit for notification which has proven to be adequate in the past. 'The licensee shall also commit to notify the NRC Operations Center immediately after notifications of the appropriate offsite response organizations and not later than one hour after the licensee declares an emergency.'"

Considering the very low probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated zirconium cladding fire, offsite REP plans are not needed. Therefore, decommissioning reactors do not need to notify State and governmental agencies within 15 minutes. Additionally, the requirement for prompt notification of the public and an EPZ is not needed.

Based on the above analysis and the analyses in Sections 4.1.1 and 4.1.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.D.3, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.20 10 CFR Part 50, Appendix E, Section IV.D.4

> ~~**If FEMA [Federal Emergency Management Agency] has approved a nuclear power reactor site's alert and notification design report, including the backup alert and notification capability, as of December 23, 2011, then the backup alert and notification capability requirements in Section IV.D.3 must be implemented by December 24, 2012. If the alert and notification design report does not include a backup alert and notification capability or needs revision to ensure adequate backup alert and notification capability, then a revision of the alert and notification design report must be submitted to FEMA for review by June 24, 2013, and the FEMA-approved backup alert and notification means must be implemented within 365 days after FEMA approval. However, the total time period to implement a FEMA-approved backup alert and notification means must not exceed June 22, 2015.**~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirements for prompt notification of the public and an EPZ, including backup alert and notification capabilities, are not needed.

Based on the above analysis and the analysis in Section 4.2.19 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.D.4, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.21 10 CFR Part 50, Appendix E, Section IV.E 8.a.(i)

> A licensee ~~onsite technical support center and an emergency operations~~ facility from which effective direction can be given and effective control can be exercised during an emergency;

NUREG-0696, "Functional Criteria for Emergency Response Facilities," dated February 1981 (Reference 41), provides that the technical support center (TSC) is an onsite facility located close to the control room that shall provide plant management and technical support to the reactor operating personnel located in the control room during emergency conditions. As there are no DBAs that would exceed the EPA PAGs at the EAB, the low probability of beyond-DBAs to exceed the EPA PAGs at the EAB, and the available time to take mitigation actions consistent with plant conditions, and, if necessary, for offsite authorities to implement appropriate protective measures using a CEMP approach, an EOF would not be required to support an offsite agency response. Coordination with offsite authorities and response organizations can be coordinated from the control room or another onsite location.

In addition, onsite actions may be directed from the control room or another onsite location, without the requirements imposed on a TSC. Due to the reduced size of on-shift and Emergency Response Organization (ERO) staffing for a permanently shutdown and defueled power reactor, separate facilities to accommodate emergency response staffing are no longer required. As such, greater efficiency and coordination is gained by locating staff in a central onsite facility.

Based on the above analysis and the analysis in Sections 4.1.1 and 4.1.3 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.E.8.a.(i), above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.22 10 CFR Part 50, Appendix E, Section IV.E.8.a.(ii).

> ~~For nuclear power reactor licensees, a licensee onsite operational support center;~~

The Operational Support Center (OSC) is an onsite area separate from the control room and the TSC where licensee operations support personnel will assemble in an emergency. The OSC should provide a location where plant logistical support can be coordinated during an emergency and restrict control room access to those support personnel specifically requested by the shift supervisor.

With the permanently shutdown and defueled status of the SONGS reactors and the storage of the spent nuclear fuel in the SFPs, an OSC is no longer needed to meet its original purpose during an emergency, nor to support initial SFP mitigation actions if needed. The SONGS PDEP provides that the Command Center is the onsite facility used to respond to emergency events. Plant systems and equipment parameters may be monitored in this location.

Command Center personnel evaluate and control the emergency and initiate activities necessary for coping with the emergency. In the event that augmented staff personnel respond, the Command Center provides space for those personnel to support the response.

Based on the above analysis and the analysis in Section 4.2.21 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.E.8.a.(ii), above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.23 10 CFR Part 50, Appendix E, Section IV.E.8.b.

> ~~**For a nuclear power reactor licensee's emergency operations facility required by paragraph 8.a of this section, either a facility located between 10 miles and 25 miles of the nuclear power reactor site(s), or a primary facility located less than 10 miles from the nuclear power reactor site(s) and a backup facility located between 10 miles and 25 miles of the nuclear power reactor site(s). An emergency operations facility may serve more than one nuclear power reactor site. A licensee desiring to locate an emergency operations facility more than 25 miles from a nuclear power reactor site shall request prior Commission approval by submitting an application for an amendment to its license. For an emergency operations facility located more than 25 miles from a nuclear power reactor site, provisions must be made for locating NRC and offsite responders closer to the nuclear power reactor site so that NRC and offsite responders can interact face-to-face with emergency response personnel entering and leaving the nuclear power reactor site. Provisions for locating NRC and offsite responders closer to a nuclear power reactor site that is more than 25 miles from the emergency operations facility must include the following:**~~
>
> ~~**(1) Space for members of an NRC site team and Federal, State, and local responders;**~~
>
> ~~**(2) Additional space for conducting briefings with emergency response personnel;**~~
>
> ~~**(3) Communication with other licensee and offsite emergency response facilities;**~~
>
> ~~**(4) Access to plant data and radiological information; and**~~
>
> ~~**(5) Access to copying equipment and office supplies;**~~

Based on the analysis in Sections 4.1.1 and 4.1.3 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.E.8.b, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.24 10 CFR Part 50, Appendix E, Section IV.E.8.c.

> ~~By June 20, 2012, for a nuclear power reactor licensee's emergency operations facility required by paragraph 8.a of this section, a facility having the following capabilities:~~
>
> ~~(1) The capability for obtaining and displaying plant data and radiological information for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves;~~
>
> ~~(2) The capability to analyze plant technical information and provide technical briefings on event conditions and prognosis to licensee and offsite response organizations for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves; and~~
>
> ~~(3) The capability to support response to events occurring simultaneously at more than one nuclear power reactor site if the emergency operations facility serves more than one site; and~~

Based on the analysis in Sections 4.1.1 and 4.1.3 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.E.8.c, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.25 10 CFR Part 50, Appendix E, Section IV.E.8.d.

> ~~For nuclear power reactor licensees, an alternative facility (or facilities) that would be accessible even if the site is under threat of or experiencing hostile action, to function as a staging area for augmentation of emergency response staff and collectively having the following characteristics: the capability for communication with the emergency operations facility, control room, and plant security; the capability to perform offsite notifications; and the capability for engineering assessment activities, including damage control team planning and preparation, for use when onsite emergency facilities cannot be safely accessed during hostile action. The requirements in this paragraph 8.d must be implemented no later than December 23, 2014, with the exception of the capability for staging emergency response organization personnel at the alternative facility (or facilities) and the capability for communications with the emergency operations facility, control room, and plant security, which must be implemented no later than June 20, 2012.~~

Based on the analyses in Sections 4.1.1, 4.2.1, and 4.2.11 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.E.8.d, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.26 10 CFR Part 50, Appendix E, Section IV.E.8.e.

> ~~**A licensee shall not be subject to the requirements of paragraph 8.b of this section for an existing emergency operations facility approved as of December 23, 2011;**~~

Based on the analysis in Sections 4.1.3 and 4.2.21 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.E.8.e, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.27 10 CFR Part 50, Appendix E, Section IV.E.9.a.

> Provision for communications with contiguous State/local governments ~~**within the plume exposure pathway EPZ**~~. Such communications shall be tested monthly.

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, provisions for communications with contiguous State/local governments within the plume exposure pathway EPZ are not needed.

Based on the above analysis and the analysis in Sections 4.1.1 and 4.1.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.E.9.a, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.28 10 CFR Part 50, Appendix E, Section IV.E.9.c.

> ~~**Provision for communications among the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility; and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually.**~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, as discussed in Sections 4.2.21 and 4.2.22 of this SE, there is no need for a TSC, an EOF, or offsite field assessment teams to achieve the underlying purpose of the rule. With the elimination of the TSC, EOF, and field assessment teams, the requirements to perform annual testing are no longer needed. Communications with State/local governments will continue to be tested monthly under 10 CFR Part 50, Appendix E, Section IV.E.9.a.

Based on the above analysis and the analyses in Sections 4.1.1, 4.1.3, 4.2.21 and 4.2.22 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.E.9.c, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.29 10 CFR Part 50, Appendix E, Section IV.E.9.d.

> Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the ~~nuclear power reactor control room, the onsite technical support center, and the emergency operations~~ facility. Such communications shall be tested monthly.

Based on the smaller facility staff and the greatly reduced required interaction with State and local emergency response facilities, the NRC staff concludes that the functions of the control room, EOF, TSC and the OSC may be combined into one or more locations.

As discussed in Section 4.2.21 and 4.2.22 of this SE, there is no need for the TSC and EOF. As a result, communications between the EOF and TSC, and the NRC, and monthly testing of these capabilities are no longer needed. Communications with NRC headquarters and the appropriate NRC Regional Office Operations Center will be conducted from one or more locations and will continue to be tested monthly.

Based on the above analysis and the analysis in Sections 4.1.1, 4.1.3, 4.2.21, and 4.2.22 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.E.9.d, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.30 10 CFR Part 50, Appendix E, Section IV.F.1

> The program to provide for: (a) The training of employees and exercising, by periodic drills, of emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiation emergency shall be described. This shall include a description of specialized initial training and periodic retraining programs to be provided to each of the following categories of emergency personnel:
>
> i. Directors and/or coordinators of the plant emergency organization;
>
> ii. Personnel responsible for accident assessment, including control room shift personnel;
>
> iii. Radiological monitoring teams;
>
> iv. Fire control teams (fire brigades);

v. Repair and damage control teams;

vi. First aid and rescue teams;

vii. Medical support personnel;

~~viii. Licensee's headquarters support personnel;~~

ix. Security personnel.

In addition, a radiological orientation training program shall be made available to local services personnel; e.g., local emergency services~~/Civil Defense~~, local law enforcement personnel~~, local news media persons~~.

The number of staff required at decommissioning sites is generally small but is commensurate with the need to safely store spent fuel at the facility, in a manner that is protective of public health and safety. Decommissioning sites typically have a level of emergency response that does not require additional response by headquarters personnel, therefore training of these personnel is not needed. Training for licensee personnel responding from company locations offsite will still be required based on the ERO positions specified above.

"Civil Defense" is an outdated term and no longer used. The category of offsite responders, which could be expected to respond onsite, is captured under "local emergency services" and "local law enforcement." Additionally, local news media are not included in the category of offsite responders. Local news media are not included in the category of local services personnel requiring periodic radiological orientation training. SCE's Corporate Communications Department is the principle point of contact for the dissemination of information during an event at SONGS. The Communications Department will disseminate information to the public through press releases and media conferences in accordance with corporate communication protocols.

Based on the above analysis and the analysis in Sections 4.1.1 and 4.2.8 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.1, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.31 10 CFR Part 50, Appendix E, Section IV.F.2.

The plan shall describe provisions for the conduct of emergency preparedness exercises as follows: Exercises shall test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, ~~test the public alert and notification system,~~ and ensure that emergency organization personnel are familiar with their duties.

Based on the analysis in Sections 4.1.1 and 4.2.19 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.2, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.32 10 CFR Part 50, Appendix E, Section IV.F.2.a.

> ~~A full participation exercise which tests as much of the licensee, State, and local emergency plans as is reasonably achievable without mandatory public participation shall be conducted for each site at which a power reactor is located. Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in a full participation exercise required by this paragraph 2.a.~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions, or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirement to conduct a full participation exercise with State and local agencies is not needed.

Based on above analysis and the analysis in Section 4.1.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.2.a, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.33 10 CFR Part 50, Appendix E, Section IV.F.2.b.

> Each licensee at each site shall conduct a subsequent exercise of its onsite emergency plan every 2 years. ~~Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in an exercise required by this paragraph 2.b. The exercise may be included in the full participation biennial exercise required by paragraph 2.c. of this section.~~ In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, event classification, notification of offsite authorities, assessment of the onsite ~~and offsite~~ impact of radiological releases, ~~protective action recommendation development, protective action decision making, plant~~ system repair and mitigative action implementation. During these drills, activation of all of the licensee's emergency response facilities ~~(Technical Support Center (TSC), Operations Support Center (OSC), and the Emergency Operations Facility (EOF))~~ would not be necessary, licensees would have the opportunity to consider accident management strategies, supervised instruction would be permitted, operating staff in all participating facilities would have the opportunity to resolve problems (success paths) rather than have controllers intervene, and the drills may focus on the onsite exercise training objectives.

The intent of submitting exercise scenarios at an operating power reactor site, in advance, is to check that licensees utilize different scenarios in order to prevent the preconditioning of responders at power reactors. For decommissioning power reactor sites, there are limited events that could occur, and as such, the submittal of exercise scenarios for the purpose of ensuring that responders do not get preconditioned to certain scenarios is not necessary to achieve the underlying purpose of the rule.

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, drills involving principle functional areas associated with offsite REP are not needed.

Based on the above analysis and the analysis in Sections 4.1.1, 4.2.21, 4.2.22, and 4.2.32 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.2.b, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.34 10 CFR Part 50, Appendix E, Section IV.F.2.c.

> ~~**Offsite plans for each site shall be exercised biennially with full participation by each offsite authority having a role under the radiological response plan. Where the offsite authority has a role under a radiological response plan for more than one site, it shall fully participate in one exercise every two years and shall, at least, partially participate in other offsite plan exercises in this period. If two different licensees each have licensed facilities located either on the same site or on adjacent, contiguous sites, and share most of the elements defining co-located licensees, then each licensee shall:**~~
>
> ~~**(1) Conduct an exercise biennially of its onsite emergency plan;**~~
>
> ~~**(2) Participate quadrennially in an offsite biennial full or partial participation exercise;**~~
>
> ~~**(3) Conduct emergency preparedness activities and interactions in the years between its participation in the offsite full or partial participation exercise with offsite authorities, to test and maintain interface among the affected State and local authorities and the licensee. Co-located licensees shall also participate in emergency preparedness activities and interaction with offsite authorities for the period between exercises;**~~
>
> ~~**(4) Conduct a hostile action exercise of its onsite emergency plan in each exercise cycle; and**~~

~~(5) Participate in an offsite biennial full or partial participation hostile action exercise in alternating exercise cycles.~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions or if needed, for offsite authorities to implement appropriate protective measures using a CEMP (all-hazards) approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirement to conduct a full participation exercise with State and local agencies is not needed.

Based on the above analysis and the analysis in Sections 4.1.1 and 4.2.32 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.2.c, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.35 10 CFR Part 50, Appendix E, Section IV.F.2.d.

~~Each State with responsibility for nuclear power reactor emergency preparedness should fully participate in the ingestion pathway portion of exercises at least once every exercise cycle. In States with more than one nuclear power reactor plume exposure pathway EPZ, the State should rotate this participation from site to site. Each State with responsibility for nuclear power reactor emergency preparedness should fully participate in a hostile action exercise at least once every cycle and should fully participate in one hostile action exercise by December 31, 2015. States with more than one nuclear power reactor plume exposure pathway EPZ should rotate this participation from site to site.~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. In addition, the requirement to exercise the offsite portion of the REP plan is also not needed. Therefore, the requirement to ensure that the State fully participate in the ingestion pathway portion of the exercise is not needed.

Based on the above analysis and the analysis in Sections 4.1.1 and 4.2.32 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.2.d, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.36 10 CFR Part 50, Appendix E, Section IV.F.2.e.

Licensees shall enable any State or local Government **~~located within the plume exposure pathway EPZ~~** to participate in the licensee's drills when requested by such State or local Government.

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans and their associated EPZs are not needed Therefore, identifying State and local Governments in relation to a plume exposure pathway EPZ, that is no longer needed, is not needed.

Based on the above analysis and the analysis in Sections 4.1.1 and 4.1.2 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.2.e, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.37 10 CFR Part 50, Appendix E, Section IV.F.2.f.

> Remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC~~, in consultation with FEMA,~~ cannot (1) find reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency or (2) determine that the Emergency Response Organization (ERO) has maintained key skills specific to emergency response. ~~The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.~~

Considering the very low-probability of beyond-design-basis events affecting the SONGS SFPs, and with the time available to initiate mitigative actions consistent with plant conditions or if needed, for offsite authorities to implement appropriate protective measures using a CEMP approach, between the loss of both water and air cooling to the spent fuel, and before the onset of a postulated fire, offsite REP plans are not needed. Therefore, the requirement to conduct a full participation exercise with State and local agencies is not needed. Since the NRC staff previously concluded that full participation emergency plan exercises are not required and FEMA does not have responsibilities related to onsite emergency preparedness, NRC consultation with FEMA is not necessary.

Based on the above analysis and the analysis in Sections 4.1.1 and 4.2.32 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.2.f, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.38 10 CFR Part 50, Appendix E, Section IV.F.2.i.

> Licensees shall use drill and exercise scenarios that provide reasonable assurance that anticipatory responses will not result from preconditioning of participants. ~~Such scenarios for nuclear power reactor licensees must include a wide spectrum of radiological releases and events, including hostile action.~~ Exercise and drill scenarios as appropriate must emphasize coordination among onsite and offsite response organizations.

The NRC staff previously evaluated the issue of preconditioning drill scenarios in Section 4.2.32 of this SE. The NRC staff previously evaluated the issue of including hostile action scenarios at decommissioning plants in Section 4.2.1 of this SE. In each instance, the NRC staff concluded that the exempted words were not needed to achieve the underlying purpose of the rule.

Based on the above analysis and the analyses provided in Sections 4.1.1, 4.2.1 and 4.2.32 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.2.i, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.39 10 CFR Part 50, Appendix E, Section IV.F.2.j.

> ~~**The exercises conducted under paragraph 2 of this section by nuclear power reactor licensees must provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to implement the principal functional areas of emergency response identified in paragraph 2.b of this section. Each exercise must provide the opportunity for the ERO to demonstrate key skills specific to emergency response duties in the control room, TSC, OSC, EOF, and joint information center. Additionally, in each eight calendar year exercise cycle, nuclear power reactor licensees shall vary the content of scenarios during exercises conducted under paragraph 2 of this section to provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to respond to the following scenario elements: hostile action directed at the plant site, no radiological release or an unplanned minimal radiological release that does not require public protective actions, an initial classification of or rapid escalation to a Site Area Emergency or General Emergency, implementation of strategies, procedures, and guidance developed under § 50.54(hh)(2), and integration of offsite resources with onsite response. The licensee shall maintain a record of exercises conducted during each eight year exercise cycle that documents the content of scenarios used to comply with the requirements of this paragraph. Each licensee shall conduct a hostile action exercise for each of its sites no later than December 31, 2015. The first eight-year exercise cycle for a site will begin in the calendar year in which the first hostile action exercise is conducted. For a site licensed under Part 52, the first eight-year exercise cycle begins in the calendar year of the initial exercise required by Section IV.F.2.a.**~~

In the SOC for the EP Final Rule, the NRC discussed the addition of a new Section IV.F.2.j to Appendix E to require all nuclear power reactor licensees to provide an opportunity for the ERO to demonstrate proficiency in response to a wide spectrum of scenarios, including a "hostile action" and a loss of large areas of the plant due to fire or explosion. The NRC staff previously evaluated the need for hostile action enhancements in Section 4.2.1 above. Section IV.F.2.j further provides that the ERO must demonstrate key skills specific to emergency response duties in the control room, TSC, OSC, EOF and joint information center. The NRC staff previously concluded that the functions of the control room, EOF, TSC and the OSC may be

combined into one or more locations.in Sections 4.2.21, 4.2.22 and 4.2.29 above. A dedicated joint information center is also not needed based on the analysis in Section 4.2.30 above. At a decommissioning site, where only the SFP and its related support systems, structures, and components remain, there are no other facilities in which ERO personnel could demonstrate proficiency.

Based on the above analysis and the analysis in Sections 4.1.1, 4.2.1, and 4.2.33 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.F.2.j, above, is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provision of 10 CFR 50.12(a)(2)(ii).

4.2.40 10 CFR Part 50, Appendix E, Section IV.I.

> ~~**By June 20, 2012, for nuclear power reactor licensees, a range of protective actions to protect onsite personnel during hostile action must be developed to ensure the continued ability of the licensee to safely shut down the reactor and perform the functions of the licensee's emergency plan.**~~

Based on the analysis provided in Section 4.2.1 of this SE, the NRC staff concludes that the exempted language from 10 CFR Part 50, Appendix E, Section IV.I. above is not necessary to achieve the underlying purpose of the rule as it applies to SONGS and, therefore, meets the special circumstances provisions of 10 CFR 50.12(a)(2)(ii).

5.0 ENVIRONMENTAL CONSIDERATION

The environmental considerations for the exemption request are addressed in Section III.E of the associated EP exemption (ADAMS Accession No. ML15082A143).

6.0 CONCLUSION

The NRC staff has completed its review of the licensee's request for an exemption from certain requirements of 10 CFR 50.47(b), 10 CFR 50.47(c), and Appendix E to 10 CFR Part 50, as specified in this safety evaluation. The standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50 that remain in effect are provided in the licensee's letter dated March 31, 2014 (Reference 4), as supplemented by letter dated September 9, 2014 (Reference 6). On the basis of its review, the NRC staff concludes that the postulated dose to the general public from any design-basis accident would not exceed the EPA PAGs and, for those beyond-DBAs that could result in a radiological release beyond the EAB, the length of time available to implement pre-planned mitigation measures consistent with plant conditions and, if necessary, for offsite authorities to implement protective actions using a CEMP approach provides confidence that offsite measures for the public could be taken without preplanning. The conclusion is consistent with the staff's evaluation, as provided to the Commission in SECY-14-0144 (Reference 20), which was approved by the Commission in the SRM to SECY-14-0144 (Reference 21).

The exemptions will maintain the requirements for an onsite emergency plan and will continue to ensure the capability to communicate and coordinate with offsite response authorities. Examples of the reduced EP requirements include: setting the highest emergency plan event classification as an "Alert"; extending the timing requirements for notification of offsite authorities consistent with the regulations in 10 CFR 72.22(a); requiring only onsite exercises with the opportunity for ORO participation; and only maintaining arrangements for ORO (i.e., law enforcement, fire and medical services) that may respond to onsite emergencies. Thus, the underlying purpose of the regulations will not be adversely affected by eliminating offsite emergency planning activities or reducing the scope of onsite emergency planning.

The review considered the permanently shutdown and defueled status of SONGS and the low likelihood of any credible accident resulting in radiological releases requiring offsite protective measures. This safety evaluation was supported by the licensee's analyses and NRC staff's assessment of both DBAs and beyond-DBAs. The NRC staff concludes that the emergency planning requirements for SONGS, as modified by the exemptions described in this safety evaluation, would provide: (1) an adequate basis for an acceptable state of emergency preparedness; and (2) in conjunction with arrangements made with offsite response agencies, reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at SONGS.

Accordingly, the NRC staff has determined that, pursuant to 10 CFR 50.12(a), the exemptions evaluated above are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security. Also, special circumstances are present. Specifically, the NRC staff finds the licensee's requested exemptions meet the underlying purpose of the planning standards in 10 CFR 50.47 and requirements in Appendix E to 10 CFR Part 50, and acceptably satisfy the special circumstances in 10 CFR 50.12(a)(2)(ii) in view of the reduced risk of offsite radiological consequences associated with the permanently shutdown and defueled state of the plant.

The SONGS Permanently Defueled Emergency Plan (PDEP) and Emergency Action level (EAL) scheme license amendment requests that incorporate these exemptions will be reviewed separately under the 10 CFR 50.90 license amendment process.

7.0 REFERENCES

1. Dietrich, P. T., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket Nos. 50-361 and 50-362 Certification of Permanent Cessation of Power Operations San Onofre Nuclear Generating Station Units 2 and 3," dated June 12, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML131640201).

2. Dietrich, P. T., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-362 Permanent Removal of Fuel from the Reactor Vessel San Onofre Nuclear Generating Station Unit 3," dated June 28, 2013 (ADAMS Accession No. ML13183A391).

3. Dietrich, P. T., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-361 Permanent Removal of Fuel from the Reactor Vessel San Onofre Nuclear Generating Station Unit 2," dated July 22, 2013 (ADAMS Accession No. ML13204A304).

4. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-206, 50-361, 50-362 and 72-041 Emergency Planning Exemption Request, San Onofre Nuclear Generating Station, Units 1, 2, and 3 and Independent Spent Fuel Storage Installation," dated March 31, 2014 (ADAMS Accession No. ML14092A332).

5. Wengert, T. J., U.S. Nuclear Regulatory Commission letter to Southern California Edison Company, "San Onofre Nuclear Generating Station, Units 1, 2, and 3 – Request for Additional Information Re: Emergency Planning Exemption Request (TAC Nos. MF3835, MF3836, and MF3837)," dated August 27, 2014 (ADAMS Accession No. ML14209A005).

6. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-206, 50-361, 50-362, and 72-041 Response to Request for Additional Information Regarding Emergency Planning Exemption Request San Onofre Nuclear Generating Station, Units 1, 2, 3 and ISFSI," dated September 9, 2014 (ADAMS Accession No. ML14258A003).

7. Wengert, T., U.S. Nuclear Regulatory Commission e-mail to Andrea Sterdis, Southern California Edison, "SONGS-Draft RAI RE: Emergency Planning Exemption Request (TAC Nos. MF3835, MF3836, and MF3837)," dated September 22, 2014 (ADAMS Accession No ML14274A213).

8. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-206, 50-361 and 50-362; and 72-041 Response to Request for Additional Information Proposed Exemptions from Certain Portions of 10 CFR 50.47 and Appendix E," dated October 6, 2014 (Security-related; Not publicly available).

9. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-206, 50-361 and 50-362; and 72-041 Redacted Version of Response to Request for Additional Information Proposed Exemptions from Certain Portions of 10 CFR 50.47 and Appendix E," dated December 15, 2014 (ADAMS Accession No. ML14351A078)

10. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-206, 50-361, and 50-362, and 72-041 Response to Request for Additional Information Regarding Emergency Planning Exemption Request San Onofre Nuclear Generating Station, Units 1, 2, 3 and ISFSI," dated October 7, 2014 (ADAMS Accession No. ML14287A228).

11. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-206, 50-361, 50-362, and 72-041 Response to Request for Additional Information Regarding Emergency Planning Exemption Request San Onofre Nuclear Generating Station, Units 1, 2, 3 and ISFSI," dated October 2, 2014 (ADAMS Accession No. ML14280A265).

12. Wengert, T., U.S. Nuclear Regulatory Commission, e-mail to Andrea Sterdis, Southern California Edison, "SONGS - Request for Clarification of October 6, 2014, RAI Response Concerning Proposed Exemption from Certain EP Requirements (TAC Nos. MF3835, MF3836, and MF3837)," dated October 8, 2014 (ADAMS Accession No. ML14296A469).

13. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-206, 50-361, 50-362 and 72-041 Response to Requests for Clarification of October 6, 2014 RAI Responses Concerning Emergency Planning Exemption Request San Onofre Nuclear Generating Station, Units 1, 2, 3 and ISFSI," dated October 27, 2014 (ADAMS Accession No. ML14303A257).

14. U.S. Nuclear Regulatory Commission, NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants," dated August 1997 (ADAMS Accession No. ML082260098).

15. U.S. Nuclear Regulatory Commission, NUREG-2161, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor," dated September 2014 (ADAMS Accession No. ML14255A365).

16. U.S. Nuclear Regulatory Commission, NUREG-1738, "Technical Study of Spent Fuel Accident Risk at Decommissioning Nuclear Power Plants," dated February 2001 (ADAMS Accession No. ML010430066).

17. U.S. Environmental Protection Agency, "Protective Action Guide and Planning Guidance for Radiological Incidents," Draft for Interim Use and Public Comment dated March 2013 (PAG Manual).

18. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket Nos. 50-361 and 50-362, San Onofre Nuclear Generating Station, Units 2 and 3 Post-Shutdown Decommissioning Activities Report," dated September 23, 2014 (ADAMS Accession No. ML14269A033).

19. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket Nos. 50-361 and 50-362, San Onofre Nuclear Generating Station, Units 2 and 3, "Irradiated Fuel Management Plan," dated September 23, 2014 (ADAMS Accession No. ML14269A032).

20. U.S. Nuclear Regulatory Commission, SECY-14-0144, "Request by Southern California Edison for Exemptions from Certain Emergency Planning Requirements," dated December 17, 2014 (ADAMS Accession No. ML14251A554).

21. U.S. Nuclear Regulatory Commission, "Staff Requirements – SECY-14-0144 – Request by Southern California Edison for Exemptions from Certain Emergency Planning Requirements," dated March 2, 2015 (ADAMS Accession No. ML15061A516).

22. Orenak, M. D., U.S. Nuclear Regulatory Commission, letter to Mr. Terry D. Hobbs, Crystal River Nuclear Plant, "Crystal River Unit 3 – Exemptions from Certain Emergency Planning Requirements and Related Safety Evaluation (TAC No. MF2981)," dated March 30, 2015 (ADAMS Accession No. ML15058A906).

23. Wengert, T. J., U.S. Nuclear Regulatory Commission, letter to Mr. David A. Heacock, Dominion Energy Kewaunee, Inc., "Kewaunee Power Station – Exemptions from Certain Emergency Planning Requirements and Related Safety Evaluation (TAC No. MF2567)," dated October 27, 2014 (ADAMS Accession No. ML14261A223).

24. U.S. Nuclear Regulatory Commission, Approval of Defueled Station Emergency Plan and Exemption from Certain Requirements of 10 CFR 50.47 for Zion Nuclear Power Station, dated August 31, 1999 (ADAMS Legacy Accession No. 9909070079).

25. U.S. Nuclear Regulatory Commission, SECY-00-0145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning," dated June 28, 2000 (ADAMS Accession No. ML003721626).

26. U.S. Nuclear Regulatory Commission, SECY-01-0100, "Policy Issues Related to Safeguards, Insurance, and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools," dated June 4, 2001 (ADAMS Accession No. ML011450420).

27. U.S. Nuclear Regulatory Commission, "Spent Fuel Project Office Interim Staff Guidance – 16, 'Emergency Planning,"' dated June 14, 2000 (ADAMS Accession No. ML003724570).

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29. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," July 2000 (ADAMS Accession No. ML003716792).

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31. Kalyanam, N., U.S. Nuclear Regulatory Commission, letter to Mr. Richard M. Rosenblum, Southern California Edison Company, "San Onofre Nuclear Generating Station, Units 2 and 3 – Issuance of Amendments Re: Full-Scope Implementation of an Alternative Source Term (TAC Nos. MC5495 and MC5496)," dated December 29, 2006 (ADAMS Accession No. ML063400359).

32. U.S. Nuclear Regulatory Commission, Regulatory Issue Summary (RIS) 2006-04, "Experience with Implementation of Alternative Source Terms," dated March 7, 2006 (ADAMS Accession No. ML053460347).

33. Nuclear Energy Institute (NEI) 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6, dated November 2012 (ADAMS Accession No. ML12326A805).

34. Thaggard, M., U.S. Nuclear Regulatory Commission, letter to Ms. Susan Perkins-Grew, Nuclear Energy Institute "U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 99-01, Revision 6, dated November, 2012 (TAC No. D92368)," March 28, 2013 (ADAMS Accession No. ML12346A463).

35. U. S. Nuclear Regulatory Commission, NUREG-1353, "Regulatory Analysis for the Resolution of Generic Issue 82, 'Beyond Design Basis Accidents in Spent Fuel Pools,'" April 1989 (ADAMS Accession No. ML082330232).

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37. Palmisano, T. J., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "Docket No. 50-206, 50-361, 50-362, and 72-041 Response to Request for Additional Information Regarding Emergency Planning Exemption Request San Onofre Nuclear Generating Station, Units 1, 2, 3 and ISFSI," dated November 3, 2014 (ADAMS Accession No. ML14309A195).

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39. U.S. Nuclear Regulatory Commission, NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," dated December 1978 (ADAMS Accession No. ML051390356).

40. 2011 EP Final Rule, "Enhancements to Emergency Preparedness Regulations," published in the *Federal Register* (76 FR 72560) and associated Statements of Consideration (76 FR 72589) dated November 23, 2011.

41. U.S. Nuclear Regulatory Commission, NUREG-0696, "Criteria for Emergency Operations Facilities for Nuclear Power Reactors," dated August 24, 1981.

42. U.S. Nuclear Regulatory Commission Bulletin 2005-002, "Emergency Preparedness and Response Actions for Security-Based Events," dated July 18, 2005 (ADAMS Accession No. ML051740058).

43. U.S. Nuclear Regulatory Commission, "Order Modifying Licenses For Interim Safeguards and Security Compensatory Measures," dated May 23, 2002 (ADAMS Accession No. ML021420288).

44. Final Rule, "Emergency Planning Licensing Requirements for Independent Spent Fuel Storage Facilities (ISFSI) and Monitored Retrievable Storage Facilities (MRS)," published in the Federal Register (60 FR 32430) dated June 22, 1995.

45. Collins, S. J., U.S. Nuclear Regulatory Commission letter to Southern California Edison Company, "San Onofre Nuclear Station, Units 2 & 3 - Issuance of Order for Interim Compensatory Security Measures," dated February 25, 2002 (ADAMS Accession No. ML020510241).

46. Ridenoure, R. T., Southern California Edison, letter to U.S. Nuclear Regulatory Commission, "San Onofre Nuclear Generating Station, Units 1, 2, and 3 - Emergency Plan Changes to Incorporate New Emergency Action Level Scheme Based on NEI 99-01, Revision 5 (TAC Nos. ME1014, ME1015, and ME1016)," dated March 22, 2010 (ADAMS Accession No. ML100620983).

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Date: June 4, 2015

June 4, 2015

Mr. Thomas J. Palmisano
Vice President and Chief Nuclear Officer
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3 AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION – EXEMPTIONS FROM CERTAIN EMERGENCY PLANNING REQUIREMENTS AND RELATED SAFETY EVALUATION (TAC NOS. MF3835, MF3836, AND MF3837)

Dear Mr. Palmisano:

The U.S. Nuclear Regulatory Commission (NRC) has approved the enclosed exemptions from specific requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.47, "Emergency plans," and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50. This action is in response to your application for exemptions dated March 31, 2014, as supplemented by letters dated September 9, October 2, October 6, October 7, October 27, November 3, and December 15, 2014.

The exemptions are provided in Enclosure 1 and the NRC staff's related safety evaluation is provided in Enclosure 2. The exemptions will be forwarded to the Office of the Federal Register for publication.

Sincerely,
/RA/

Thomas J. Wengert, Senior Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-206, 50-361, 50-362,
and 72-41

Enclosures:
1. Exemptions
2. Safety Evaluation

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ADAMS Accession Nos.: Letter ML15082A204; Exemption: ML15082A143 *via memorandum ** via e-mail

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Letter to Thomas J. Palmisano from Thomas J. Wengert dated June 4, 2015.

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3 AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION – EXEMPTIONS FROM CERTAIN EMERGENCY PLANNING REQUIREMENTS AND RELATED SAFETY EVALUATION (TAC NOS. MF3835, MF3836, AND MF3837)

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