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March 31, 2014

10 CFR 50.54(q)
10 CFR 50.12
10 CFR 50, Appendix E

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington D.C. 20555-0001

Subject: **Docket Nos. 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**

References:

1. SCE to NRC letter dated March 31, 2014, Docket Nos. 50-206, 50-361, 50-362, and 72-041, Amendment Application Numbers 223, 267, and 252, Permanently Defueled Emergency Plan, San Onofre Nuclear Generating Station, Units 1, 2, and 3, respectively, and Independent Spent Fuel Storage Installation

2. SCE to NRC letter dated June 12, 2013, Docket Nos. 50-361 and 50-362, Certification of Permanent Cessation of Power Operations, San Onofre Nuclear Generating Station, Units 2 and 3

3. SCE to NRC letter dated June 28, 2013, Permanent Removal of Fuel from the Reactor Vessel, San Onofre Nuclear Generating Station Unit 3

4. SCE to NRC letter dated July 22, 2013, Permanent Removal of Fuel from the Reactor Vessel, San Onofre Nuclear Generating Station Unit 2

Dear Sir or Madam:

Pursuant to 10 CFR 50.12, Southern California Edison (SCE) submits the enclosed exemption request from certain requirements of 10 CFR 50.47, "Emergency plans," and 10 CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," for San Onofre Nuclear Generating Station (SONGS) Units 1, 2, and 3, and the Independent Spent Fuel Storage Facility.

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In References 2, 3, and 4, SCE provided certification of SONGS Units 2 and 3 permanent cessation of power operation and permanent removal of fuel from the reactor vessels. Accordingly, pursuant to 10 CFR 50.82(a)(2), the 10 CFR license for SONGS Units 2 and 3 no longer authorize operation of the reactors or emplacement or retention of fuel in the reactor vessel. SONGS Units 2 and 3 pose significantly less risk to the public health and safety in this condition. The proposed exemption request reflects the reduced risk associated with SONGS in the permanently defueled condition. Operation of SONGS in accordance with this exemption requests and the associated Permanently Defueled Emergency Plan (PDEP) will continue to provide adequate protection for plant personnel and the public.

The proposed exemption request would allow SCE to discontinue offsite emergency planning activities and reduce the scope of onsite emergency planning as a result of the substantially lower onsite and offsite radiological consequences of accidents possible at SONGS. The exemption request will also allow implementation of a Permanently Defueled Emergency Plan (PDEP), which was submitted to the NRC under separate cover letter (Reference 1).

Enclosure 1 contains the evaluation of the proposed exemption request. Enclosure 2 provides a table of the relevant regulations, marked up to show those requirements that SCE is requesting exemption from, and provides specific justification for the individual exemption requests.

SCE requests approval of these proposed changes by December 31, 2014

There are no new regulatory commitments made within this submittal.

If there are any questions or if additional information is needed, please contact Mark E. Morgan at (949) 368-6745.

I declare under penalty of perjury that the foregoing is true and correct. Executed on 3/31/, 2014

Sincerely,

Enclosures:

1. Evaluation of Proposed Exemption Request
2. San Onofre Nuclear Generating Station (SONGS) Review of Applicable Emergency Plan Regulations and Request for Exemptions

cc: Marc Dapas, Regional Administrator, NRC Region IV
C. Gratton, NRC Project Manager, San Onofre Units 2 and 3 Decommissioning
G. G. Warnick, NRC Senior Resident Inspector, San Onofre Units 2 and 3
S. Y. Hsu, California Department of Public Health, Radiologic Health Branch

ENCLOSURE 1

EVALUATION OF PROPOSED EXEMPTION REQUEST

1.0 SUMMARY DESCRIPTION

This is a request for exemption from certain emergency planning requirements of 10 CFR 50.47(b), 10 CFR 50.47(c)(2) and 10 CFR Part 50, Appendix E. The exemption request reflects the permanently defueled condition of San Onofre Nuclear Generating Station (SONGS), and would allow SCE to discontinue offsite emergency planning activities and reduce the scope of onsite emergency planning as a result of the substantially lower onsite and offsite radiological consequences of accidents. Approval of the exemption request will allow implementation of the SONGS Permanently Defueled Emergency Plan (PDEP), requested under separate cover letter (Reference 5.1). The scope and basis for the specific exemptions are consistent with the guidance provided in Draft NSIR/DPR-ISG-02 except where noted.

2.0 DETAILED DESCRIPTION

SONGS Unit 1 was permanently shut down in 1993 and is in the decommissioning phase. Above-ground structures have been dismantled. Unit 1 fuel is stored in the Independent Spent Fuel Storage Installation and in the GE-Hitachi Morris facility.

By letter dated June 12, 2013 (Reference 5.2), Southern California Edison (SCE) submitted a certification to the NRC indicating its intention to permanently cease power operations at SONGS Units 2 and 3, pursuant to 10 CFR 50.82(a)(1)(i). On June 28, 2013, SCE submitted a certification of permanent removal of fuel from the reactor vessel for SONGS Unit 3 (Reference 5.3) pursuant to 10 CFR 50.82(a)(1)(ii). On July 22, 2013, SCE submitted a certification of permanent removal of fuel from the reactor vessel for SONGS Unit 2 (Reference 5.4) 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 reactor or emplacement or retention of fuel into the reactor vessel, as specified in 10 CFR 50.82(a)(2). Accordingly, pursuant to 10 CFR 50.82(a)(2), the 10 CFR 50 licenses for SONGS Units 2 and 3 no longer authorize operation of the reactor or emplacement or retention of fuel in the reactor vessel.

SONGS Units 2 and 3 have been shut down since January 2012. At the time of this submittal, it will have been at least two years since the most recent irradiation of spent fuel in the Units 2 and 3 spent fuel pools. It is expected that SONGS Units 2 and 3 will remain in a wet fuel storage configuration for approximately five years. SONGS poses significantly lower risk to the public health and safety in this condition. SCE intends to transition to a PDEP, which will discontinue offsite emergency planning activities and reduce the scope of onsite emergency planning, based upon the substantially lower radiological consequences from accidents. Because of these proposed changes, the PDEP will not meet all standards of 10 CFR 50.47, "Emergency plans," and 10 CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and

Utilization Facilities." Thus, SCE is requesting specific exemptions from certain requirements of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR Part 50, Appendix E.

As stated above, the proposed exemption will allow SCE to discontinue offsite emergency planning activities and reduce the scope of onsite emergency planning. Examples of requirements subject to the proposed exemption that are related to discontinuing offsite emergency planning activities include, but are not limited to, requirements for offsite agency emergency plans, emergency planning zones and ingestion pathway zones, the emergency operations facility, evacuation time estimates, offsite notification timeliness, offsite dose projections, and protective action recommendations. Examples of requirements subject to the proposed exemption that are related to reducing the scope of onsite emergency planning activities include, but are not limited to, requirements for the emergency response data system, onsite facilities (operations support center and technical support center), and hostile action-based exercises. A detailed table describing all of the proposed exemptions and their justifications is provided in Enclosure 2 of this submittal.

The proposed exemptions are consistent with the guidance contained in Interim Staff Guidance NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants." As such, the proposed exemptions will support implementation of a defueled Emergency Plan that will continue to protect the health and safety of the public.

3.0 DESIGN BASIS ACCIDENT ANALYSIS

SONGS Units 2 and 3 have permanently ceased operation and removed all nuclear fuel from their reactor vessels. The irradiated fuel will be stored in the spent fuel pool (SFP) and in the Independent Spent Fuel Storage Installation (ISFSI) until it is shipped offsite. In this condition, the number of credible accidents/transients is significantly smaller than for a plant authorized to operate the reactor or emplace or retain fuel in the reactor vessel.

With irradiated fuel being stored in the SFP and the ISFSI, the reactor, Reactor Coolant System (RCS) and secondary system are no longer in operation and have no function related to storage of irradiated fuel. With the permanent cessation of power operation and the permanent removal of the fuel from the reactor core, the accident/transient initial conditions/initial reactor power level of the reactor core cannot be achieved and, as such, most of the accident/transient scenarios are not possible. Therefore, the postulated Updated Final Safety Analysis Report (UFSAR) Chapter 15 accidents/transients involving failure or malfunction of the reactor, RCS or secondary

system are no longer applicable. The UFSAR has been updated accordingly in accordance with 10 CFR 50.71(e).

The remaining UFSAR Chapter 15 design basis accident scenarios that apply to a permanently defueled facility that have the potential to result in a radiological release are a fuel handling accident (FHA) in the fuel handling building (FHB), a spent fuel cask drop accident, a spent fuel pool 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. Since the waste gas decay tanks have been purged of their contents, a rupture of these components will no longer be an applicable initiator or source of such an accident. With regard to the postulated radioactive release due to liquid tank failures, UFSAR Section 15.7.3.3.5 states no credible accident exists that would result in liquid releases exceeding 10 CFR 20 limits.

Previous generic and plant-specific analyses of radwaste handling accidents at decommissioning plants show the consequences to be within 10 CFR 20 limits. SCE intends to develop a plant-specific radwaste handling analysis for inclusion in the UFSAR.

As described below, the remaining accident analyses for SONGS, calculated as of August, 2013, show that the dose consequences are within the relevant regulatory limits.

Dose consequences to a member of the public are calculated at the Exclusion Area Boundary (EAB). The EAB for SONGS is roughly formed by two semi-circles with radii of 1967.5 feet each, centered on the Unit 2 containment and a point 134 feet southeast of the Unit 3 containment, with a tangent connecting the landward arcs and the seaward arcs of the two semi-circles.

3.1 Radioactive Waste System Leak or Failure (Release to Atmosphere)

UFSAR Section 15.7.3.2 discusses the radiological consequences for a liquid Radioactive Waste System leak or failure. Liquid releases considered include 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). All of the radioactive fission gases and iodines are assumed to be released to the outside atmosphere in 2 hours. As shown in Table 1, below, offsite doses due to the rupture of a radwaste secondary tank are less than the 100 mRem TEDE offsite dose criterion per Regulatory Issue Summary 2006-04 and less

than the 1 rem criterion in the Environmental Protection Agency (EPA) Protective Action Guides (PAGs).

DOSE RECEPTOR	DOSE (mRem TEDE)	ACCEPTANCE CRITERION (mRem TEDE)
EAB (Maximum 2-hour dose -- 0.0 to 2.0 hours)	7.1	100
LPZ (30-day accident duration)	1.4	100

Table 1 – Radiological Exposures as a Result of Liquid Tank Rupture
(Release to Atmosphere)

3.2 Spent Fuel Cask Drop Accident

UFSAR Section 15.7.3.5 analyzes spent fuel cask drop events. Of the three situations considered, a spent fuel transfer cask drop (due to a seismic event) from the upper shelf in the cask pool back into the lower portion of the cask pool is the only credible event with the potential for radiological release. Even though single-failure-proof cranes are used 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 for lifting yoke change-out, prior to the transfer cask being welded closed. 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.

It is assumed that a minimum of 17 months have elapsed since permanent discharge from the core for Unit 2 or 3 fuel assemblies that are loaded into a transfer cask. The fuel rods from all 32 fuel assemblies that may be 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.

No engineered safety feature (ESF) system is used to mitigate the Control Room, Exclusion Area Boundary (EAB) or Low Population Zone (LPZ) dose consequences of the cask drop accident event. This includes no credit for the Fuel Handling Isolation Signal (FHIS), the fuel handling building post-accident cleanup unit (PACU) filtration system, the Control Room Isolation Signal (CRIS) and the control room (CR) emergency air cleanup system (CREACUS). Doses are evaluated for various control room unfiltered intake plus unfiltered in-leakage inflow rates.

The release of radioactive material to the atmosphere represents a potential exposure hazard to control room personnel and the general public at the EAB and LPZ. However, as shown in Table 2, below, the control room doses and offsite radiological doses for

the postulated spent fuel cask drop accident do not exceed 25% of the 10 CFR Part 50.67 exposure guidelines, and are less than the 1 rem criterion in the EPA PAGs.

DOSE RECEPTOR	CASK DROP DOSE (REM TEDE)	ACCEPTANCE CRITERION (REM TEDE)
Control Room (30-day accident duration)	0.89E-3 (0.89 mRem TEDE)	5
EAB (Maximum 2-hour dose -- 0.0 to 2.0 hours)	3.09E-3 (3.09 mRem TEDE)	6.3
LPZ (30-day accident duration)	0.09E-3 (0.09 mRem TEDE)	6.3

Table 2 – Cask Drop Accident Dose Consequences

3.3 Spent Fuel Pool Boiling Accident

UFSAR Section 15.7.3.8 analyzes the spent fuel pool boiling accident. The postulated loss of all spent fuel pool (SFP) cooling is assumed to result in SFP boiling and the release of a portion of the radionuclide inventory contained in the stored spent fuel assemblies and the SFP water. The following evaluation of the radiological consequences for the SFP boiling event assumes a minimum of 17 months since the shutdown of Units 2 and 3.

Following a loss of SFP cooling, activity releases from the spent fuel due to evaporation and boiling disperse to the Control Room, 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 Fuel Handling Building PACUs. All activity escaping from the SFP is assumed to be instantaneously released to the environment and atmospherically dispersed to the control room and offsite dose receptors.

No credit is taken for CRIS or CREACUS. For conservatism the control room dose is calculated for an individual at the control room outside air intake location. The total effective dose equivalent (TEDE) dose at this location is conservatively greater than it would be inside the Control Room. The activity concentration inside the control room would be smaller since only a portion of the outside cloud would enter the control room envelope via ventilation system inflow or in-leakage. As shown in Table 3, below, the offsite radiological doses for the postulated SFP boiling accident do not exceed 25% of the 10 CFR Part 50.67 exposure guidelines, and are less than the 1 rem criterion in the EPA PAGs.

DOSE RECEPTOR	SFP BOILING DOSE (REM TEDE)	ACCEPTANCE CRITERION (REM TEDE)
Control Room (30-day accident duration)	11.96E-3 (11.96 mRem TEDE)	5
EAB (Maximum 2-hour dose -- 0.0 to 2.0 hours)	0.08E-3 (0.08 mRem TEDE)	6.3
LPZ (30-day accident duration)	0.25E-3 (0.25 mRem TEDE)	6.3

Table 3 – Radiological Consequences of Spent Fuel Pool Boiling

3.4 Fuel Handling Accident Analysis for the Permanently Defueled Condition

A revision to the FHA analysis was incorporated into SONGS UFSAR Section 15.7.3.4 under the provisions of 10 CFR 50.59 to address the permanently defueled condition. The analysis determined a reasonable time post-cessation of operations for movement of fuel from the fuel storage pool during which, if a fuel handling accident occurs, dose consequences would be within 10 CFR 50.67 and Regulatory Guide 1.183 dose limits. The analysis assumed fuel storage pool decontamination based on 23 feet of water over the failed fuel assembly, no credit for emergency ventilation or filtration (control room or otherwise) and no credit taken for radioactive decay of the isotopes during atmospheric dispersion transit to the control room or offsite dose locations.

The FHA inside the 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/or the impacted assembly. A maximum of 472 fuel rods are assumed to fail as a result of the drop of a fuel assembly on to the fuel assemblies stored in fuel storage pool fuel racks. The FHA-FHB dose analysis models 17 months (12,240 hours) of radioactive decay prior to the event. All gap activity in the damaged rods is assumed to be instantaneously released into the fuel storage pool. During the movement of fuel assemblies in the fuel storage pool, the fuel storage pool water level is assumed to be at least 23 feet over the top of the irradiated fuel assemblies seated in the storage racks.

The radioactive material that escapes from the fuel storage pool to the FHB is assumed to be released to the environment over a 2-hour time period (i.e., FHB closure is not modeled during the FHA-FHB event). Consistent with the 2-hour release model assumption, the FHA-FHB alternate source term (AST) dose analysis does not model

the generation of an Engineered Safety Feature Actuation System (ESFAS) fuel handling [building] isolation signal (FHIS). The FHB normal ventilation exhaust is assumed to remain operational throughout the FHA-FHB event. The FHB air volume dilutes the gaseous activity released from the damaged fuel rods.

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 filter system.

Activity released during the FHA-FHB event is transported by atmospheric dispersion to the control room HVAC intake and to the offsite EAB and LPZ dose receptors. Activity may be released to the environment via the FHB normal ventilation exhaust system through the main plant vent, or as leakage through FHB penetrations (e.g., doors). No credit is taken for radioactive decay of the isotopes during atmospheric dispersion transit to the control room or offsite dose locations. Table 4 presents the San Onofre site-specific 95th percentile meteorology atmospheric dispersion factors for these release pathways for control room dose calculation.

FHA-FHB to CR 95th Percentile Atmospheric Dispersion Factors (seconds/m^3)			
Time Interval	FHB Release Point	Main Plant Vent Release Point	Modeled Value
0 to 2 hours	9.48E-04	1.15E-03	1.15E-03
2 to 8 hours	7.61E-04	6.23E-04	7.61E-04
8 to 24 hours	1.92E-04	2.14E-04	2.14E-04
1 to 4 days	2.65E-04	2.22E-04	2.65E-04
4 to 30 days	2.43E-04	2.02E-04	2.43E-04

Table 4 – FHA-FHB Control Room Atmospheric Dispersion Factors

The FHA-FHB dose analysis for persons located at or beyond the boundary of the exclusion area, including the outer boundary of the low population zone, considers the dose consequences of inhalation and immersion. Radioactive material in the fuel handling building is assumed to be a negligible radiation shine source to the offsite dose receptors relative to the dose associated with immersion in the radioactive plume released from the facility.

The Control Room (CR) dose during a design basis FHA-FHB following permanent shut down of SONGS Units 2 and 3 is based on:

(a) No credit for control room emergency air cleanup system (CREACUS) and Control Room Isolation Signal (CRIS) and no gamma radiation shine from CREACUS charcoal and HEPA filters.

(b) CR doses are evaluated at various CR unfiltered inflow (including inleakage) flow rates. The flow rates were varied from 500 cfm to 15,000 cfm, but only the bounding CR dose is reported.

FHA-FHB dose analysis for persons located in the control room considers the dose consequences of inhalation, immersion, and radiation shine from the environmental (or outside) cloud. Radiation shine from contaminated air in the fuel handling building is considered negligible due to the presence of numerous intervening concrete walls and the geometric attenuation due to the distance between the FHB and the control room.

The resulting FHA-FHB offsite and control room operator doses are listed in Table 5. The analysis demonstrates that the FHA-FHB event criteria are met, and that the doses are less than the 1 rem criterion in the EPA PAGs.

DOSE RECEPTOR	FHA-FHB DOSE (REM TEDE)	ACCEPTANCE CRITERION (REM TEDE)
Control Room (30-day accident duration)	0.06E-3 (0.06 mRem TEDE)	5
EAB (Maximum 2-hour dose -- 0.0 to 2.0 hours)	0.20E-3 (0.20 mRem TEDE)	6.3
LPZ (30-day accident duration)	0.01E-3 (0.01 mRem TEDE)	6.3

Table 5 – FHA-FHB Dose Consequences

4.0 BEYOND-DESIGN-BASIS ACCIDENT ANALYSIS

The following analyses of beyond design basis scenarios demonstrate that the changes will be acceptable even with a completely drained spent fuel pool:

Hottest Fuel Assembly Adiabatic Heatup

Loss of Pool Water Inventory Dose

Dose results are compared to the Environmental Protection Agency (EPA) Protective Action Guides (PAGs) to support the exemption from requirements for offsite planning zones. Fuel clad temperature rise results are compared to the current draft of Interim Staff Guidance NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants."

The results of the two beyond design basis calculations are described in the next two sections.

4.1 HOTTEST FUEL ASSEMBLY ADIABATIC HEATUP

4.1.1 General Description

This analysis is provided to evaluate the conditions for the hottest fuel assembly stored in the SONGS fuel pools. The results are compared to criteria applicable to offsite emergency response for the unit in the decommissioning process proposed in SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants," NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants," and NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants." The criteria consider the time for the hottest assembly to heat up adiabatically to critical or failure temperatures for the zirconium cladding. SECY-99-168 performed an evaluation of the heat up time from 30°C to 900°C. NUREG/CR-6451 states that 565°C is the lowest temperature where incipient cladding failure may occur. According to NUREG-1738 the oxidation heat source becomes a significant heat source at temperatures above 600°C and 900°C is the limit for incipient temperature escalation. 900°C is appropriate for determining the 10 hour heat-up time. As indicated in SECY-99-168, a heat up time of 10 hours is sufficient time to take mitigating action. This is a beyond design basis event and is bounding for any other loss of inventory event.

The NRC recently published for comment Interim Staff Guidance NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants." The guidance presented draws on past NRC practice. Site-specific analyses must "provide sufficient assurance that an offsite radiological release is not postulated to exceed the EPA PAGs at the site boundary, or that there is sufficient time to initiate appropriate mitigating actions by offsite agencies on an ad hoc basis to protect the health and safety of the public. The expected analysis will include the amount of time that lapses from when the SFP drains and air flow passages are blocked to when the hottest fuel assembly reaches 900 degrees Celsius." This calculation is consistent with this guidance.

Inputs to this calculation are summarized below for use in confirmatory calculations.

Maximum Zirconium Temperature

Several studies are presented in NUREG/CR-6451 discussing the maximum allowable temperature of zirconium cladding that will ensure that failure of the zirconium cladding will not occur. Per NUREG/CR-6451, 565 °C (1049 °F) is the lowest temperature where incipient cladding failure might occur. NUREG-1738 uses 900 °C (1652 °F) as the

temperature where "runaway oxidation" is expected to occur (pg. 3-7 of NUREG-1738). These two temperatures are the critical temperatures of interest for this calculation.

Zirconium Properties

The specific heat of zirconium at 600 K (620 °F) is 322 J/kg-K and the density of zirconium is 6570 kg/m^3 (Ref. 5.5, pg. 822). A temperature of 620 °F is in the temperature range (roughly the midpoint for both ranges) of this analysis. From Reference 5.5, the specific heat slightly increases with an increase in temperature for most of the range of temperatures in this analysis. At higher temperatures, the zirconium would heat up more slowly. This temperature (620 °F) is representative of the full temperature range for this analysis.

Spent Fuel Pool Temperature

Because this analysis assumes that the accident will take place more than a year after the last offload, the initial temperature used in this analysis is 140 °F. Table 9.1-AA of the UFSAR states that the maximum allowable SFP temperature during normal conditions is 140 °F and that the maximum allowable SFP temperature under abnormal or refueling conditions is 160 °F.

Geometry for Limiting Assemblies

Fuel assembly geometry data used in this calculation are applicable to all SONGS 2 and 3 fuel assemblies.

Fuel Pellet Diameter	0.3255 inches
Cladding Thickness (diametral)	0.050 inches
Outer Diameter of Cladding	0.382 inches
Rod Configuration and Total Spaces	16 x 16. 256 spaces
Number of Guide Tubes, Instrument Tubes	5 guide tubes (each occupies the space of 4 rods)
Total Number of Heated Rods	236 rods
Guide Tube Thickness	0.040 inches
Outer Diameter of Guide Tubes	0.980 inches
Heated Height of Rods	150.00 inches
Cladding and Guide Tube Material	Zirconium Alloy for CE Fuel M5 for AREVA Fuel
Theoretical Uranium Dioxide Density	10.96 g/cm^3
Theoretical Uranium Dioxide Density Percentage[1]	94.5% - 96.5% for CE Fuel 97.5% max for AREVA Fuel
Core Thermal Power (Section 1.0 of Ref. 2.3)	3438 MWt
Number of Assemblies in Core (Ref. 2.5)	217

1. A smaller uranium density percentage results in a smaller thermal mass and therefore a shorter heatup time. Therefore a TD for uranium dioxide of 94.5% is used in this analysis.

Heat Load

The assembly with the highest heat load will have the shortest heat-up time. The table showing the maximum fuel assembly heat generation rate for several years is below.

Heat Generated by Highest Heat Load Assembly

Date	Watts
June 12, 2013	4381
October 12, 2013	3624
February 12, 2014	3076
June 12, 2014	2653
October 12, 2014	2314
February 12, 2015	2054
June 12, 2015	1847
December 12, 2015	1608
June 12, 2016	1433
December 12, 2016	1300

4.1.2 Methodology

The adiabatic heatup calculation uses the hottest fuel assembly in the SONGS pools based on fuel management records and determined its heat generation rate as a function of the decay date. For example, as of June 12, 2014, the heat generation rate in the hottest fuel assembly will be 2653 Watts (9052 BTU/hr). The bundle was analyzed as a closed system with no work or heat transfer out of the system. However, there is heat generation in the system. The fuel bundle is modeled as being insulated by a perfect insulator. The masses and specific heats were identified for the materials that make up the fuel assembly: specifically the uranium dioxide (UO2) and zirconium alloy.

The fundamental equation for a closed system is:

$Q + W = \Delta U$ (Reference 5.6)

Since work (W) is zero the equation reduces to:

$Q = \Delta U = m \cdot Cp \cdot (\Delta T)$ (mass X specific heat of the materials X temperature change)

Q is a function of heat generation rate and time:

$Q = Qdot \cdot t$, where Qdot = the heat generation rate

Solving for the heat up time, the equation becomes:

$t = m \cdot Cp \cdot (\Delta T) / Qdot$

4.1.3 Results

As of August 2013, the heat up time to 900°C was more than 10 hours.

4.1.4 Conclusions

The analysis demonstrates that as of August 2013 SONGS Units 2 and 3 satisfied the criterion discussed in Interim Staff Guidance NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants." As of August 2013 it would take more than 10 hours for the hottest fuel assembly to reach 900°C.

4.2 DOSE RATES DUE TO SPENT FUEL ASSEMBLIES IN SONGS SPENT FUEL POOL FOLLOWING DRAIN DOWN

4.2.1 General Description

The purpose of this calculation is to evaluate the effects of a loss of water inventory from the SONGS spent fuel pools as of June 12, 2013, the date on which SCE certified permanent cessation of power operations of SONGS Units 2 and 3. Specifically, the primary purpose of this calculation is to determine the potential radiological impact due to loss of shielding to the public at the Exclusion Area Boundary for the event in which the spent fuel assemblies are uncovered following drain down. This is a beyond design basis event.

Dose rates have been calculated at other locations to provide supplemental information regarding the impact to plant personnel. This information can be used to provide some level of preplanning in the event the spent fuel assemblies are uncovered following drain down, however those results are not reported in this summary.

Neutron, (neutron, gamma), and gamma dose rates for the Exclusion Area Boundary locations are reported in this summary.

4.2.2 Methodology

The Monte Carlo N-Particle version 5-1.60 (MCNP5) (Reference 5.7) radiation transport computer code is used for calculating the dose rates from the SONGS SFP. MCNP5 was developed and is maintained by the Los Alamos National Laboratory and is widely used and accepted by the nuclear utility industry to perform radiological analysis. MCNP5 has undergone verification and validation under the vendor Nuclear QA Program.

The source terms for neutron and gamma radiation in spent fuel pools were calculated with consideration of plant shutdown dates as outlined earlier.

4.2.3 Results

A summary of the results from calculations performed are provided in this section. The summary is based on the condition of SONGS spent fuel assemblies as of June 12, 2013. The dose rate results decrease for later dates. Table 6 presents the dose rates at the EAB based on a beyond design basis accident event (loss of water inventory in the SFP) due to direct and scattered radiation from spent fuel assemblies in a SONGS SFP.

Table 6: Maximum Dose Rates at the SONGS EAB
As of June 12, 2013

	Dose Rate (mRem/hr)
Gamma	1.55E-02
Neutron	5.40E-05
(Neutron, Gamma)	6.05E-06

The results of the MCNP5 calculation have relative errors less than 0.05 and thus pass the statistical checks described in the MCNP5 user manual.

4.2.4 Conclusions

Based on calculated direct and scattered dose rates from spent fuel assemblies in a SONGS SFP following drain down, it is concluded that the maximum dose at the EAB would be well below the acceptance criteria. The acceptance criterion for exemption from requiring offsite emergency planning zones is less than 1 rem projected dose for a four day period. The acceptance criterion for establishing the EALs proposed in this request is less than 100 mrem for a two hour period to a member of the public.

5.0 References

5.1 Letter from T. J. Palmisano (SCE) to the U. S. Nuclear Regulatory Commission (NRC) dated 03/31/14; Subject: Docket Nos. 50-206, 50-361, 50-362 and 72-041, Amendment Application Numbers, 223, 267, and 252, Permanently Defueled Emergency Plan, San Onofre Nuclear Generating Station, Units 1, 2, and 3, respectively, and Independent Spent Fuel Storage Installation

5.2 Letter from P. T. Dietrich (SCE) to the U. S. Nuclear Regulatory Commission (NRC) dated June 12, 2013; Subject: Certification of Permanent Cessation of Power Operations San Onofre Nuclear Generating Station, Units 2 and 3

5.3 Letter from P. T. Dietrich (SCE) to the U. S. Nuclear Regulatory Commission (NRC) dated June 28, 2013; Subject: Permanent Removal of Fuel from the Reactor Vessel, San Onofre Nuclear Generating Station Unit 3

5.4 Letter from P. T. Dietrich (SCE) to the U. S. Nuclear Regulatory Commission (NRC) dated July 22, 2013; Subject: Permanent Removal of Fuel from the Reactor Vessel, San Onofre Nuclear Generating Station, Unit 2

5.5 Incropera & DeWitt, "Fundamentals of Heat and Mass Transfer," Fifth Edition, John Wiley & Sons, Inc., 2002

5.6 "Marks Standard Handbook for Mechanical Engineers," 9th Edition

5.7 MCNP5, S&L Computer Program Number 03.7.511-5.0-1.60, Version 1.60

6.0 REGULATORY EVALUATION

In accordance with 10 CFR 50.12, "Specific exemptions", Southern California Edison (SCE) is hereby requesting exemption from requirements of portions of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR 50, Appendix E for the San Onofre Nuclear Generating Station (SONGS). The exemptions requested are consistent with the guidance in Draft Interim Staff Guidance NSIR/DPR-ISG-02, and in accordance with the requirements of 10 CFR 50.12.

6.1 No Significant Hazards Consideration Determination

Southern California Edison (SCE) has evaluated the proposed exemptions to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, as discussed below:

(1) *Do the proposed exemptions involve a significant increase in the probability or consequences of an accident previously evaluated?*

San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 have permanently ceased operations (Reference 6.6.1). The proposed exemptions will allow SONGS to discontinue offsite emergency planning activities and to reduce the scope of onsite emergency planning as a result of the substantially lower onsite and offsite radiological consequences of accidents possible at SONGS. The proposed exemptions are consistent with the criteria discussed in Interim Staff Guidance NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants." The proposed exemptions have no effect on structures, systems, and components (SSCs) and no effect on the capability of any plant SSC to perform its design function. The proposed exemptions would not increase the likelihood of the malfunction of any plant SSC.

The spent fuel pool and its support systems are used for spent fuel storage. It is expected that SONGS will remain in a wet fuel storage configuration for approximately five years. In this condition, the spectrum of postulated accidents is much smaller than for an operational plant. As a result of the certifications submitted by SCE in accordance with 10 CFR 50.82(a)(1), and the consequent removal of authorization to operate the reactor or to place or retain fuel in the reactor in accordance with 10 CFR 50.82(a)(2), most of the accident scenarios postulated in the SONGS Final Safety Analysis Report are no longer possible. The proposed exemptions continue to maintain the effectiveness for coping with the radiological emergencies that are postulated to occur in the permanently defueled condition. The ability to identify, assess, and mitigate these remaining events will be maintained such that there will be no significant increase in the consequences of any event.

The exemptions will not significantly increase the probability of occurrence of previously evaluated accidents, since most previously analyzed accidents can no longer occur and the probability or consequences of the few remaining are unaffected by the requested exemptions.

Therefore, the proposed exemptions do not involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) *Do the proposed exemptions create the possibility of a new or different kind of accident from any accident previously evaluated?*

The proposed exemptions do not involve any change in the plant's design, configuration, or operation. The proposed exemptions are for the plant's defueled condition. The proposed exemptions discontinue offsite emergency

planning activities and reduce the scope of onsite emergency planning as a result of the substantially lower onsite and offsite radiological consequences of accidents possible at SONGS. No new or different type of equipment will be installed and there are no physical modifications to existing equipment associated with the proposed exemptions. Similarly, the proposed exemptions would not physically change any SSCs involved in the prevention, diagnosis, or mitigation of accidents previously evaluated. Accidents cannot result in different or more adverse failure modes or accidents than those previously evaluated because the reactors are permanently shut down and defueled and SONGS is no longer authorized to operate the reactors.

The proposed exemptions do not affect systems credited in the remaining relevant accident analyses. No changes are being made to parameters within which the plant is normally operated or in the setpoints which initiate protective or mitigating actions, and no new failure modes are being introduced. Proper control and monitoring of safety significant parameters such as dose assessments to determine any radiological releases and provisions for communications and coordination with offsite organizations will be maintained.

The proposed exemptions do not result in any new mechanisms that could initiate damage to the remaining relevant safety barriers for defueled plants (i.e., fuel cladding and spent fuel pool inventory). Since extended operation in a defueled condition is the only operation currently allowed, and therefore bounded by the existing analyses, such a condition does not create the possibility of a new or different kind of accident.

Therefore, the proposed exemptions do not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) *Do the proposed exemptions involve a significant reduction in a margin of safety?*

The proposed exemptions do not involve a change in the plant's design, configuration, or operation. The proposed exemptions do not affect either the way in which the plant SSCs perform their safety function or its design and licensing bases.

Because the 10 CFR Part 50 licenses for SONGS no longer authorize operation of the reactor or emplacement or retention of fuel into the reactor vessel, as specified in 10 CFR 50.82(a)(2), the occurrence of postulated accidents associated with reactor operation is no longer possible. The proposed exemptions do not adversely affect the inputs or assumptions of any of the remaining design basis analyses.

The proposed exemptions do not impact the safe storage of irradiated fuel. The proposed exemptions do not affect any requirements for SSCs credited in the remaining analyses of applicable postulated accidents and as such, do not

significantly decrease the margin of safety associated with these accident analyses. Postulated design basis accidents involving the reactor are no longer possible because the reactor is permanently shut down and defueled and SONGS is no longer authorized to operate the reactors.

Therefore, the proposed exemptions do not involve a significant reduction in a margin of safety.

Based on the above, SCE concludes that the proposed exemptions do not involve a significant hazards consideration, and, accordingly, a finding of "no significant hazards consideration" is justified.

6.2 Applicable Regulatory Requirements/Criteria

The 10 CFR 50.12, "Specific exemptions," provisions with respect to the requested exemptions are discussed below.

10 CFR 50.12 (a)(1): Authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security

Authorized by law

The proposed exemptions would allow SCE to reduce emergency planning requirements to reflect the permanently defueled condition of the station. The proposed exemptions would not result in a violation of the Atomic Energy Act of 1954, as amended. Therefore, the exemptions are authorized by law.

Will not present undue risk to public health and safety

The underlying purpose of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR 50, Appendix E, is to ensure that there is 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 (EPZs) for nuclear power plants, and to ensure that licensees maintain effective offsite and onsite emergency plans.

As discussed in the proposed exemptions, revised analyses have been developed that show that the radiological consequences of postulated accidents will not exceed the limits of the EPA Protection Action Guides (PAGs) at the site boundary. In addition, analyses have been developed for beyond design basis events related to the spent fuel pool which show that there is ample time to respond to such events and to prevent radiological consequences from exceeding the PAG limits at the site boundary. These analyses evaluated the time for the hottest fuel assembly stored in the SONGS fuel pools to heat up adiabatically to critical or failure temperatures for the Zirconium cladding resulting in a heat up time greater than 10 hours. Additionally, the dose rates due to spent fuel assemblies in SONGS Spent Fuel Pool following drain down were

evaluated. The results of that analysis concluded that the maximum dose at the Exclusion Area Boundary (EAB) will be well below the acceptance criterion in the EPA PAG.

Because of the considerable time available to respond to beyond design basis spent fuel pool events, there is confidence that offsite measures for the public could be taken without preplanning. Therefore, offsite emergency response plans will no longer be needed for protection of the public beyond the site boundary. According to the EPA, "Protective Action Guides and Planning Guidance for Radiological Incidents, Draft for Interim Use and Public Comment," dated March 2013 (Reference 6.6.2), Section 2.3.5, "PAGs and Nuclear Facilities EPZs," EPZs are not necessary at those facilities where it is not possible for PAGs to be exceeded off-site. Based on the reduced consequences of radiological events still possible at the site the scope of the onsite emergency preparedness organization and corresponding requirements in the emergency plan may be accordingly reduced without an undue risk to the public health and safety.

Therefore, the underlying purpose of the regulations will continue to be met and the exemptions will not present an undue risk to the public health and safety.

Are consistent with common defense and security

The reduced consequences of radiological events that remain possible at the site allows for a corresponding reduction in the scope of the onsite emergency preparedness organization and associated reduction of requirements in the emergency plan. These reductions will not adversely affect SONGS' ability to physically secure the site or protect special nuclear material. Physical security measures at SONGS are not affected by the requested exemption. Therefore, the proposed exemptions are consistent with the common defense and security.

10 CFR 50.12 (a)(2): The Commission will not consider granting an exemption unless special circumstances are present whenever...

10 CFR 50.12 (a)(2)(ii): 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

The underlying purpose of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), 10 CFR 50, Appendix E, Section IV, and 10 CFR 50, Appendix E, Section VI, is to ensure that there is 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 EPZs for nuclear power plants, and to ensure that licensees maintain effective offsite and onsite emergency plans, with the cooperation and assistance of State and local authorities.

The radiological consequences of the design basis accidents that remain possible at SONGS are substantially lower than those at an operating plant. The upper bound of

offsite dose consequences of accidents limits the highest attainable emergency class to the Alert level (projected or actual offsite doses greater than 1% but less than 10% of the PAGs). In addition, because of the reduced consequences of radiological events still possible at the site, the scope of the onsite emergency preparedness organization may be accordingly reduced. At an Alert level declaration, the awareness of the Onsite Response Organizations is heightened, allowing them to be better prepared should it be necessary to consider further actions. 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 accident analysis also demonstrates that there is ample time to respond to a beyond design basis spent fuel pool accident at SONGS to prevent the EPA PAGs from being exceeded at the site boundary. Further, because of the considerable time available to respond to beyond design basis spent fuel pool events, there is confidence that offsite measures for the public could be taken on an ad hoc basis prior to causing any off-site consequences, if necessary. Therefore, application of all of the standards and requirements in 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR 50, Appendix E, Section IV, are not necessary to achieve the underlying purpose of those rules.

The standards and requirements in 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR 50, Appendix E, Section IV, were developed taking into consideration the risks associated with operation of a nuclear power reactor at its licensed full-power level. These risks include the potential for a reactor accident with offsite radiological dose consequences.

Since the underlying purposes of the rules would be achieved by allowing SONGS to reduce the scope of emergency preparedness requirements consistent with the permanently defueled condition of the facility, the special circumstances required by 10 CFR 50.12(a)(2)(ii) exist.

10 CFR 50.12 (a)(2)(iii): Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated

Application of all of the standards and requirements in 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR 50, Appendix E, Section IV, would result in undue costs being incurred for the maintenance of an Emergency Response Organization (ERO) in excess of that actually needed to respond to the diminished scope of credible events associated with a shutdown plant. Other licensees similarly situated, such as Zion Nuclear Power Station, Unit Nos. 1 and 2, and Maine Yankee Atomic Power Company, have been granted similar exemptions by the NRC (References 6.6.3 and 6.6.4).

Therefore, compliance with the rule would result in an undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated, the special circumstances required by 10 CFR 50.12(a)(2)(iii) exist.

10 CFR 50.12 (a)(2)(iv): The exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption

There is no decrease in safety resulting from the grant of these exemptions. The proposed exemptions would allow SONGS to re-focus emergency planning to correspond to the reduced scope of remaining postulated accidents and events. As such, there will be no need to address response actions for events that are no longer possible. The new Emergency Plan would thereby enhance the ability of the ERO to respond to those scenarios that remain credible since emergency preparedness training and drills would focus only on applicable activities. Elimination of requirements for classification of EALs for events that are no longer possible would enhance the ability of the ERO to correctly classify those events that remain credible, which results in a benefit to the public health and safety. Therefore, since granting the exemption would result in benefit to the public health and safety and would not result in a decrease in safety, the special circumstances required by 10 CFR 50.12(a)(2)(iv) exist.

The proposed exemptions are being submitted to the NRC in order to establish a plan appropriate for a defueled nuclear power plant.

6.3 Conclusion

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed exemptions, (2) operation of SONGS will continue to be conducted in compliance with the Commission's regulations (as exempted), and (3) the approval of the exemptions will not be inimical to the common defense and security or to the health and safety of the public.

6.4 Precedents

The SONGS exemption requests from 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR Part 50, Appendix E, requirements are consistent with changes to emergency plans approved by the NRC for transition to a permanently defueled condition, as identified in References 6.6.3 and 6.6.4 (with respect to exemptions requested for regulations that were in place at that time). Specific SONGS exemption requests for regulations that involve hostile action and offsite planning are consistent with exemptions approved by the NRC for a shutdown facility with an Independent Spent Fuel Storage Installation (Reference 6.6.5).

Additionally, the specific SONGS request for exemption from a shift staffing analysis is consistent with the exemption approved by the NRC for a shutdown facility with an Independent Spent Fuel Storage Installation (ISFSI) (Reference 6.6.6).

6.5 ENVIRONMENTAL IMPACT EVALUATION

10 CFR 51.22(c)(9) provides criteria for and identification of licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. A proposed exemption requires no environmental assessment provided that (i) the exemption involves no significant hazards consideration, (ii) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and (iii) there is no significant increase in individual or cumulative occupational radiation exposure.

SCE has reviewed the proposed exemptions and has determined that it meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22, no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed exemptions. The following is the basis for this determination:

(i) The proposed exemptions do not involve a significant hazards consideration, as described in the Significant Hazards Evaluation in 6.1 above.

(ii) There will be no significant change in the types or a significant increase in the amounts of any effluents released offsite. Effluent flow and flow-paths have been substantially reduced and will be reduced further if not eliminated in coming months. There will be no significant change in the types or increase in the amounts of any effluents that may be released offsite and does not involve irreversible environmental consequences beyond those already associated with the SONGS Final Environmental Statement and the Generic EIS on Decommissioning of Nuclear Facilities (NUREG-0586, Supplement 1, 2002).

(iii) The proposed exemptions do not result in a significant increase to the individual or cumulative occupational radiation exposure because the exemption requests involve defueled emergency plans and other requirements of an administrative, managerial or organizational nature. Therefore, the proposed exemptions do not result in a significant increase to the individual or cumulative occupational radiation exposure.

In accordance with 10 CFR 51.30, "Environmental Assessment," and 51.32, "Finding of No Significant Impact," the following additional information is provided in support of an environmental assessment and finding of no significant impact for the proposed exemptions. The proposed exemptions will not increase the probability or consequences of accidents. No changes are being made in the types or quantities of effluents that may be released offsite, and there is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed exemptions. The proposed exemptions do not affect non-radiological plant effluents and have no other environmental impact. Therefore, there are no significant non-radiological impacts associated with the proposed exemptions. Based on the assessment above, the

proposed exemptions will not have a significant effect on the quality of the human environment.

6.6 REFERENCES

1. SONGS to NRC letter, "Certification of Permanent Cessation of Power Operations dated June 12, 2013, San Onofre Nuclear Generating Station Units 2 and 3. (ADAMS Accession No. ML131640201)

2. PAG Manual, "Protective Action Guides and Planning Guidance for Radiological Incidents, Draft for Interim Use and Public Comment," dated March 2013.

3. Letter from U.S. Nuclear Regulatory Commission to Zion Nuclear Power Station, Unit Nos. 1 and 2, "Request For Approval of Defueled Station Emergency Plan and Exemption from Certain Requirements of 10 CFR 50.47, "Emergency Plans"- Zion Nuclear Power Station, Unit Nos. 1 and 2 (TAC NOS MA5253 and MA5254)," dated August 31, 1999.

4. Letter from U.S. Nuclear Regulatory Commission to Maine Yankee Atomic Power Company, "Exemption from Certain Requirements of 10 CFR 50.54(q), 10 CFR 50.47(b) and (c), And Appendix E to 10 CFR Part 50 at Maine Yankee Atomic Power Station (TAC No. MA0069)," dated September 3, 1998.

5. Letter from U.S. Nuclear Regulatory Commission to Maine Yankee Atomic Electric Company, "Response to Exemption Request For Portions of Title 10 of the Code of Federal Regulations Part 50, Appendix E, and Section 50.47 of Title 10 of the Code of Federal Regulations for the Maine Yankee Atomic Power Station (TAC NO. L24661)," dated May 2, 2013. (ADAMS Accession No. ML13112A842)

6. Letter from U.S. Nuclear Regulatory Commission to Connecticut Yankee Atomic Power Company, "Response to Exemption Request for Portions of Title 10 of the Code of Federal Regulations Part 50 Appendix E, and Title 10 of the Code of Federal Regulations Part 50.47 for the Haddam Neck Plant (TAC No. L24663)," dated March 18, 2013. (ADAMS Accession No. ML13064A374)

Enclosure 2

San Onofre Nuclear Generating Station (SONGS)

Review of Applicable Emergency Plan Regulations and Request for Exemptions

I. DESCRIPTION

Pursuant to 10 CFR 50.12 "Specific exemptions," Southern California Edison (SCE) requests exemptions from the following for the San Onofre Nuclear Generating Station (SONGS):

- Certain standards in 10 CFR 50.47(b) regarding onsite and offsite emergency response plans for nuclear power reactors;
- Certain requirements of 10 CFR 50.47(c)(2) to establish plume exposure and ingestion pathway emergency planning zones for nuclear power plants; and
- Certain requirements of 10 CFR 50, Appendix E, Section IV, which establishes the elements that make up the content of emergency plans.

The requested exemptions would allow SCE to reduce emergency planning requirements and subsequently revise the SONGS Emergency Plan to reflect the permanently defueled condition of the station. The current 10 CFR Part 50 regulatory requirements for emergency planning (developed for operating reactors) ensure safety at SONGS. However, because the station is permanently shutdown, defueled, and in a state of decommissioning, some of these requirements are excessive and no longer substantially contribute to public safety.

SCE has submitted a certification to the NRC indicating its intention to permanently cease power operations at SONGS pursuant to 10 CFR 50.82(a)(1)(i) in Reference 1. SCE has also submitted certifications of permanent removal of fuel from the Units 2 and 3 reactor vessels (References 2 and 3 respectively) pursuant to 10 CFR 50.82(a)(1)(ii). Upon docketing of these certifications, the 10 CFR Part 50 license for SONGS no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel, as specified in 10 CFR 50.82(a)(2).

In order to allow a reduction in emergency planning requirements which corresponds to the permanently defueled condition, exemptions from portions of 10 CFR 50.47(b), 50.47(c)(2), and 10 CFR 50, Appendix E, Sections IV and VI, are needed. SCE plans to submit a revised emergency plan and a permanently defueled emergency action level (EAL) scheme, for NRC review and approval pursuant to 10 CFR 50.54(q)(4), 10 CFR 50.90 and 10 CFR 50.91. The proposed emergency plan revision will be based on approval of the exemptions requested herein.

1. The following sections of 10 CFR Part 50, Domestic Licensing of Production and Utilization Facilities, were reviewed to determine which rules apply and for which exemptions should be requested.
   - 10 CFR 50.47, Emergency Plans
   - 10 CFR 50.54, Conditions of Licenses
   - 10 CFR 50.72, Immediate Notification Requirements for Operating Nuclear Power Reactors
   - 10 CFR Part 50, Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities

Table 1 below lists the pertinent portions of regulations in the left column. The specific portion of the requirement within the regulation from which exemption is being requested is emphasized (strike through / red text). The basis for the exemption from the specific portion of each requirement is provided in the corresponding row of the column on the right.

NOTE: The SONGS requested exemptions for 10 CFR 50.47 and 10 CFR Part 50, Appendix E match the guidance provided in draft NSIR/DPR-ISG-02, Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants. The Basis for change wording was taken from ISG, with updates where site-specific information was required.

Table 1, Exemption Requests

Regulation	Basis for Change
1. §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:	In the Statement of Considerations for the Final Rule for EP requirements for ISFSIs and for MRS facilities (60 FR 32430; June 22, 1995), the Commission responded to comments concerning offsite emergency planning for ISFSIs or an MRS and concluded that, "the offsite consequences of potential accidents at an ISFSI or a MRS [monitor retrievable storage installation] 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 MRS than an operating nuclear power plant. The draft proposed rulemaking in SECY-00-0145 suggested that after at least one year of spent fuel decay time, the decommissioning licensee would be able to reduce its EP program to one similar to that required for an MRS under 10 CFR 72.32(b) and additional EP reductions would occur when: (1) approximately five years of spent fuel decay time has elapsed; or (2) a licensee has demonstrated that the decay heat level of spent fuel in the pool is low enough that the fuel would not be susceptible to a zirconium fire for all spent fuel configurations. The EP program would be similar to that required for an ISFSI under 10 CFR 72.32(a) when fuel stored in the SFP has more than five 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 been approved when the specific site analyses show that at least ten hours is available from a partial drain down event where cooling of the spent fuel is not effective until the hottest fuel assembly reaches 900°C. Because ten hours allows sufficient time to initiate mitigative actions to prevent a zirconium fire in the SFP or to initiate ad hoc offsite protective actions, offsite EP plans are not necessary for these permanently defueled nuclear power plant licensees. As shown in Enclosure 1, SCE has demonstrated a minimum of 10 hours is available for the case of spent fuel pool adiabatic heatup to 900°C.
2. §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.	See basis for 50.47(b).
3. §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~~	Decommissioning power reactors present a low likelihood of any credible accident resulting in radiological releases requiring offsite protective measures because of the permanently shut down and

~~have been made,~~ and other organizations capable of augmenting the planned response have been identified.	defueled status of the reactor. An emergency operations facility would not be required. The "nuclear island" or "control room" or other location can provide for the communication and coordination with offsite organizations for the level of support required. Also see basis for 50.47(b).
4. §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~~.	EALs are to be consistent with Section 8 (if applicable) and Appendix C of NEI 99-01 Revision 6 endorsed by the NRC in a letter dated March 28, 2013. No offsite protective actions are anticipated to be necessary, so classification above the Alert level is no longer required. Also see basis for 50.47(b).
5. §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 follow up 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~~.	Per SECY-00-0145, after approximately 1 year of spent fuel decay time [and as supported by the licensee's SFP analysis], the staff believes an exception to the offsite EPA PAG standard 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 spent fuel scoping study provides that depending on the size of the pool liner leak, releases could start anywhere from eight hours to several days after the leak starts, assuming that mitigation measures are unsuccessful. If 10 CFR 50.54(hh)(2) type of mitigation measures are successful, releases could only occur during the first several days after the fuel came out of the reactor. Therefore, offsite EP plans are not necessary for these permanently defueled nuclear power plant licensees. As shown in Enclosure 1, SCE has demonstrated a minimum of 10 hours is available for the case of spent fuel pool adiabatic heatup to 900°C.
6. §50.47(b)(6): Provisions exist for prompt communications among principal response organizations to emergency personnel ~~and to the public~~.	See basis for 50.47(b).
7. §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.	See basis for 50.47(b).

8. §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.	See basis for 50.47(b).
9. §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 the unlikely event of a SFP accident, the iodine isotopes which contribute to an off-site dose from an operating reactor accident are not present, so potassium iodide (KI) distribution off-site would no longer serve as an effective or necessary supplemental protective action. The Commission responded to comments in its Statement of Considerations for the Final Rule for emergency planning requirements for ISFSIs and MRS facilities (60 FR 32435), and concluded that, "the offsite consequences of potential accidents at an ISFSI or a MRS would not warrant establishing Emergency Planning Zones." Additionally, in the Statement of Considerations for the Final Rule for EP requirements for ISFSIs and for MRS facilities (60 FR 32430), the Commission responded to comments concerning site-specific emergency planning that includes evacuation of surrounding population for an ISFSI not at a reactor site, and concluded that, "The Commission does not agree that as a general matter emergency plans for an ISFSI must include evacuation planning." Also see basis for 50.47(b).
10. §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.~~	See basis for 50.47(b).

11. Appendix E.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.	The EP Final 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 action" was added as an act directed toward an NPP or its personnel. This definition is based on the definition of "hostile action" provided in NRC Bulletin 2005-02. NRC Bulletin 2005-02 was not applicable to nuclear power reactors that have permanently ceased operations and have certified that fuel has been removed from the reactor vessel. The NRC excluded non-power reactors (NPR) from the definition of "hostile action" at that time because an NPR is not a nuclear power plant and a regulatory basis had not been developed to support the inclusion of non-power reactors in that definition. Likewise, an SFP and an ISFSI are not nuclear power plants as defined in the NRC's regulations. The staff also considered the similarities between a decommissioning NPP and a non-power reactor to determine whether they should be included within the definition of "hostile action." NPRs pose lower radiological risks to the public from accidents than do power reactors because: (1) the core radionuclide inventories are lower as a result of their lower power levels and often shorter operating cycle lengths; and (2) NPRs have lower decay heat associated with a lower risk of core melt and fission product release in a loss-of-coolant accident. A decommissioning power reactor also has a low likelihood of a credible accident resulting in radiological releases requiring offsite protective measures. For all of these reasons, the staff concludes that a decommissioning power reactor is not a facility that falls within the definition of "hostile action."
12. Appendix E.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.~~	See basis for 50.47(b)(10).
13. Appendix E.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.~~	See basis for IV.2.

14. Appendix E.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.~~	See basis for IV.2.
15. Appendix E.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.~~	See basis for IV.2.
16. Appendix E.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.~~	See basis for IV.2.

17. Appendix E.IV.A.1 A description of the normal plant ~~operating~~ organization.	Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," states in part: "… there may be water-cooled nuclear power units for which fulfillment of some of the General Design Criteria may not be necessary or appropriate. For plants such as these, departures from the General Design Criteria must be identified and justified." In Appendix A, a nuclear power unit is defined as a nuclear power reactor and associated equipment necessary for electric power generation and includes those structures, systems, and components required to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. Based on the permanently shut down and defueled status of the reactor, a decommissioning reactor is not a facility that can be operated to generate electrical power. Therefore, it does not have a "plant operating organization."
18. Appendix E.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 sites typically have a level of emergency response that does not require response by headquarters personnel.
19. Appendix E.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.	Although the likelihood of events that would result in doses in excess of the EPA PAGs to the public beyond the owner controlled area boundary based on the permanently shut down and defueled status of the reactor is extremely low, SCE will still be able to determine if a radiological release is occurring. If a release is occurring, then SCE 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.
20. Appendix E.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 staff at decommissioning sites is generally small but is commensurate with the need to operate the facility in a manner that is protective of public health and safety.

21. Appendix E.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~~.	Requiring a decommissioning site such as SONGS to provide a description of the assistance expected from appropriate State, local, and Federal agencies with responsibilities for coping with emergencies would be an unnecessary burden, in light of the low risk of an emergency necessitating offsite assistance. Requiring SONGS to identify and describe the assistance expected from appropriate State, local, and Federal agencies with responsibilities for coping with hostile action at the site is unnecessary because, as explained in section IV.1, a decommissioning power reactor licensee is exempt from requirements in Appendix E related to a "hostile action."
22. Appendix E.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.~~	Offsite emergency measures are limited to support provided by local police, fire departments, and ambulance and hospital services as appropriate. Since EPA PAGs are not expected to be exceeded offsite, protective actions such as evacuation should not be required. Also see basis for 50.47(b)(10)
23. Appendix E.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 at decommissioning sites is generally small but should be commensurate with the need to operate the facility in a manner that is protective of public health and safety. Responsibilities are well defined in the proposed emergency plan and procedures, and will be regularly tested through drills and exercises that will be audited and inspected by SCE and the NRC. The duties of the onshift personnel at a decommissioning reactor facility are not as complicated and diverse as those for an operating reactor. The NRC staff has considered the similarity between the staffing levels at a permanently shutdown and defueled reactor and staffing levels at NPRs. The minimal systems and equipment needed to maintain the spent nuclear fuel in the spent fuel pool or in a dry cask storage system in a safe condition requires minimal personnel and is governed by Technical Specifications. In the EP Final Rule, the NRC agreed that the staffing analysis requirement was not necessary for non-power reactor licensees due to the small staffing levels required to operate the facility. For all of these reasons, the staff has concluded that a decommissioning NPP is exempt from the requirement of 10 CFR Part 50, Appendix E, Section IV.A.9.

24. Appendix E.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.	Proposed EALs are consistent with Section 8 and Appendix C of NEI 99-01, Revision 6, "Methodology for Development of Emergency Action Levels." Also see basis for section IV.1.
25. Appendix E.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~~ of 10 CFR Part 50, Appendix E, IV.C.1. These classes are further discussed in NUREG-0654/FEMA-REP-1.	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 are used for the spent fuel in the SFPs. In the Statement of Considerations 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 Protective Action Guidelines exposure levels off site for more than the immediate site area." The probability of a condition reaching the level above an emergency classification of alert is very low. In the event of an accident at a defueled facility that meets the conditions for relaxation of EP requirements, there will be time to take ad hoc measures to protect the public." As stated in NUREG-1738, for instances of small SFP leaks or loss of cooling scenarios, these events evolve very slowly and generally leave many days for recovery efforts. Offsite radiation monitoring will be performed as the need arises. Due to the decreased risks associated with defueled plants, offsite radiation monitoring systems are not required. The proposed EALs were developed with the guidance provided in NEI 99-01, Revision 6.

26. Appendix E.IV.C.2: ~~By June 20, 2012, nuclear power reactor~~ Licensees 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 Proposed Rule (74 FR 23254) to amend certain emergency planning requirements for 10 CFR Part 50, the NRC asked for public comment on whether the NRC should add requirements for non-power reactor licensees to assess, classify, and declare an emergency condition within 15 minutes and promptly declare an emergency condition. The NRC received several comments on these issues. The NRC believes there may be a need for the NRC to be aware of security related events early on so that an assessment can be made to consider the likelihood that the event is part of a larger coordinated attack. However, the NRC determined that further analysis and stakeholder interactions are needed prior to changing the requirements for non-power reactor licensees. Therefore, the NRC did not include requirements in the 2011 EP Final Rule for non-power reactor licensees to assess, classify, and declare an emergency condition within 15 minutes and promptly declare an emergency condition. The staff considered the similarity between a permanently defueled reactor and a non-power reactor for the low likelihood of any credible accident resulting in radiological releases requiring offsite protective measures.
27. Appendix E.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~~.	See basis for 50.47(b) and 50.47(b)(10).
28. Appendix E.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.~~	See basis for section IV.D.1.

29. Appendix E.IV.D.3: A licensee shall have the capability to notify responsible State and local governmental agencies ~~within 15 minutes~~ promptly (within 60 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 a 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 within 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 initiate 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.~~	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. Due to the low probability of design-basis accidents or other credible events to exceed the EPA PAGs, the significantly reduced staff, and the minimal expected offsite response required, the need to provide immediate (within 15 minutes) notification has been reduced to a 60-minute requirement. The reduced on-shift ERO's priorities may be responding to an emergency event prior to making offsite notifications. Also see basis for 50.47(b) and 50.47(b)(10).

30. Appendix E.IV.D.4: ~~If FEMA 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.~~	See basis for section IV D.3. regarding the alert and notification system requirements.
31. Appendix E.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;	Due to the low probability of design-basis accidents or other credible events to exceed the EPA PAGs, the significantly reduced staff and the minimal expected offsite response required, offsite agency response will not be required at an emergency operations facility (EOF) and onsite actions may be directed from the control room or other location, without the requirements imposed on a Technical Support Center (TSC).
32. Appendix E.IV.E.8.a.(ii): ~~For nuclear power reactor licensees, a licensee onsite operational support center;~~	NUREG-0696, "Functional Criteria for Emergency Response Facilities," provides that 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. For a defueled power plant, 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 another facility.

33. Appendix E.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;~~	See basis for 50.47(b)(3).
34. Appendix E.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~~	See basis for 50.47(b)(3).

35. Appendix E.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.~~	See basis for section IV.1. regarding hostile action.
36. Appendix E.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;~~	See basis for 50.47(b)(3).
37. Appendix E.IV.E.9.a.Provision for communications with contiguous State/local governments ~~within the plume exposure pathway EPZ.~~ Such communications shall be tested monthly.	See basis for 50.47(b) and (b)(10). The State and the local governments in which SONGS is located need to be informed of events and emergencies, so lines of communication must be maintained.
38. Appendix E.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.	Because of the low probability of design-basis accidents or other credible events that would be expected to exceed the EPA PAGs and the available time for event mitigation, there is no need for the TSC, EOF or field assessment teams. Also see justification for 50.47(b)(3). Communication with State and local EOCs is maintained to coordinate assistance on site if required.
39. Appendix E.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.	The functions of the control room, EOF, TSC and OSC may be combined into one or more locations due to the smaller facility staff and the greatly reduced required interaction with State and local emergency response facilities. Also see basis for 50.47(b).

40. Appendix E.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 radiological 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 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, the NRC staff has stated that it considers exempting licensee's headquarters personnel from training requirements reasonable.
41. Appendix E.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.	Because of the low probability of design-basis accidents or other credible events that would be expected to exceed the limits of EPA PAGs and the available time for event mitigation, the public alert and notification system will not be used and therefore requires no testing. Also see basis for 50.47(b)
43. Appendix E.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.~~ F.2.a.(i), (ii), and (iii) are not applicable.	Since the need for off-site emergency planning is relaxed due to the low probability of design-basis accidents or other credible events that would be expected to exceed the limits of EPA PAGs and the available time for event mitigation, no off-site emergency plans are in place to test. The intent of submitting exercise scenarios at power reactors is to check that licensees utilize different scenarios in order to prevent the preconditioning of responders at power reactors. For defueled sites, there are limited events that could occur and the previously routine progression to General Emergency in power reactor site scenarios is not applicable to a decommissioning site. SONGS should be exempt from F.2.a.(i)-(iii) because SONGS is exempt from the umbrella provision of F.2.a.

44. Appendix E.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.	See basis for section IV.F.2.a. The low probability of design-basis accidents or other credible events that would exceed the EPA PAGs and the available time for event mitigation at a decommissioning site render TSCs, OSCs and EOFs 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.

45. Appendix E.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,6 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.~~	See basis for section IV.F.2a.
46. Appendix E.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.~~	See basis for section IV.2.
47. Appendix E.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.	See basis for section IV.2.

48. Appendix E.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.~~	The U.S. Federal Emergency Management Agency (FEMA) is responsible for the evaluation of an offsite response exercise. No action is expected from State or local government organizations in response to an event at a decommissioning site other than firefighting, law enforcement and ambulance/medical services. SCE has Letters of Agreement in place for those services. Offsite response organizations will continue to take ad hoc actions to protect the health and safety of the public as they would at any other industrial site.
49. Appendix E.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.	For defueled sites, there are limited events that could occur and the previously routine progression to General Emergency in power reactor site scenarios is not applicable to a decommissioning site. Therefore SONGS should not be expected to demonstrate response to a wide spectrum of events. Also see basis for section IV.1 regarding hostile action.

50. Appendix E.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.~~	See basis for section IV.F.2.
51. Appendix E.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.~~	See basis for section IV.1.