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10 CFR 2.202
10 CFR 2.390(d)(1)

August 26, 2013

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-001

SUBJECT: Docket Nos. 50-361 and 50-362
License Nos. NPF-10 and NPF-15
Request for Relaxation of Commission Order Number EA-12-049
Request for Relaxation of Commission Order Number EA-12-051
And First 6 Month Status Report on Implementation of EA-12-049 and EA-12-051
San Onofre Nuclear Generating Station, Units 2 and 3

References:

1. NRC Order Number EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events dated March 12, 2012. [ADAMS Accession Number ML12054A735]

2. NRC Order Number EA-12-051, Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation dated March 12, 2012 [ADAMS Accession Number ML12054A679]

3. Southern California Edison (SCE) letter to NRC, SCE's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (EA-12-049), dated February 27, 2013 [ADAMS Accession Number ML13066A036]

4. SCE letter to NRC, SCE's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation (Order EA-12-051), dated February 27, 2013 [ADAMS Accession Number ML13064A353]

5. SCE letter to NRC, Permanent Cessation of Operations dated June 12, 2013 [ADAMS Accession Number ML131640201]

6. SCE letter to NRC, Permanent Removal of Fuel from the Reactor Vessel, SONGS Unit 3, dated June 28, 2013 [ADAMS Accession Number ML13183A391]

7. SCE letter to NRC, Permanent Removal of Fuel from the Reactor Vessel, SONGS Unit 2, dated July 23, 2013 [ADAMS Accession Number ML13204A304]

8. NEI 12-02, Revision 1, Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation"

9. JLD-ISG-2012-03, Revision 0, NRC Interim Staff Guidance for Compliance with Order EA-12-051 Reliable Spent Fuel Pool Instrumentation

Dear Sir or Madam:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Reference 1 and Reference 2 to Southern California Edison (SCE). Reference 1 was immediately effective and directed SCE to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities in the event of a beyond-design-basis external event.

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Reference 2 was immediately effective and directed SCE to provide reliable SFP level indications. Implementation of both orders was required to be completed no later than two (2) refueling cycles after submittal of the respective overall integrated plan, or December 31, 2016, whichever comes first.

On February 27, 2013, SCE submitted the overall integrated plans for implementation of Orders EA-12-049 and EA-12-051 (References 3 and 4, respectively).

Subsequently, SCE certified to the NRC that it had permanently ceased operations at San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 (Reference 5) and that it had permanently removed the fuel from the SONGS Unit 3 reactor vessel (Reference 6) and SONGS Unit 2 reactor vessel (Reference 7).

In light of the permanently defueled status of SONGS Units 2 and 3, SCE hereby requests relaxation of the requirements in Orders EA-12-049 and EA-12-051.

With respect to the requirements of Order EA-12-049, SCE requests relaxation of the requirements of Reference 1 Attachment 2 for guidance and strategies to maintain or restore core cooling and containment at SONGS. SCE is not seeking relaxation of the requirements for SFP strategies. The basis for this request is as follows:

> Guidance and strategies to maintain or restore core cooling and containment are no longer necessary at SONGS because the nuclear fuel has been permanently removed from the SONGS Units 2 and 3 reactor vessels and containments. All nuclear fuel at SONGS is in the Units 2 and 3 SFPs or the Independent Spent Fuel Storage Installation (ISFSI).

With respect to the requirements of Order EA-12-051, SCE requests full relaxation of the requirements of Reference 2 for SFP level instrumentation at SONGS. The basis for this request is as follows:

> Implementation of the requirements of Reference 2 Attachment 2 is no longer necessary at SONGS because of the decay time of the irradiated fuel in the SONGS Units 2 and 3 SFPs that will be achieved by December 31, 2016, together with implementation of alternative level indication as part of SCE's response to Order EA-12-049.
>
> Section 2.3 of the applicable industry guidance for SFP level instrumentation (Reference 8, which was endorsed by Reference 9), states that for implementation of the order, a SFP "is a water filled structure housing storage racks that contain irradiated fuel discharged from the reactor vessel that has been used for power generation within the last five years". The nuclear fuel most recently discharged from the SONGS Units 2 and 3 reactor vessels will have reached five years of decay time shortly after December 31, 2016 (in early and late January 2017, respectively). The decay heat load at this time will be less than 5% of the design basis heat load for the SFPs.
>
> In addition, as described in the Enclosure to this letter, SCE currently plans to install mechanical level (pressure) gages on the SFP cooling pump suction piping as part of the response to Order EA-12-049. These mechanical level gages will provide remote monitoring capability for SFP level in support of the SFP cooling strategies. The gages will be seismically mounted in the Fuel Handling Buildings, plant elevation 30 ft, which are protected from the design basis external events applicable to the site, and separated by 2 building floors from the SFP operating deck areas to ensure continued accessibility should the respective SFP operating deck area itself become inaccessible due to steam or radiation. A spare (uninstalled) gage will be provided as a backup. The gages will have a range which is functionally adequate to determine when makeup water must be added to the SFPs to restore or maintain normal water level, and when makeup flow must be stopped to prevent overflow (i.e., from the level at the bottom of the suction connection on the side of the pool to the overflow level).
>
> Measurement of SFP water level below the bottom of the suction connection is not needed in the defueled condition, for two reasons: (1) reactor and containment strategies would not be

implemented and hence SFP makeup would not be deferred; and (2) pre-deployment and use of the SFP spray strategy ensures that the spent fuel would remain cooled irrespective of the water level in the pool.

The first 6 month status update in accordance with Reference 1 Section IV.C.2 and Reference 2 Section IV.C.2 is enclosed. The update consists of Revision 1 to the Overall Integrated Plan for implementation of Order EA-12-049, including the alternate SFP level indication discussed above.

A version of this letter containing Security Related Information was signed and submitted to the NRC on this date.

This letter contains no new regulatory commitments. If there are any questions regarding this plan, please contact Mr. Steven D. Root at 949-368-6480.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 26, 2013.

Sincerely,

Enclosure:
SONGS Overall Integrated Plan in Response to NRC Orders EA-12-049 and EA-12-051

cc: Director, Office of Nuclear Reactor Regulation
S. A. Reynolds, Regional Administrator, NRC Region IV
G. G. Warnick, NRC Senior Resident Inspector, San Onofre Units 2 and 3
R. Hall, NRC Project Manager, San Onofre Units 2 and 3
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San Onofre Nuclear Generating Station
Overall Integrated Plan Revision 1
Response to NRC Orders EA-12-049 and EA-12-051

August 27, 2013

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General Integrated Plan Elements
San Onofre Nuclear Generating Station

Overall Integrated Plan Introduction:

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued Order EA-12-049 (the "Order"), *Issuance of Order Modifying License with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events* (Reference 8). The Order requires that licensees develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities following a beyond-design-basis event that results in loss of normal access to the ultimate heat sink and an Extended Loss of Alternating current Power (ELAP). The Order also requires that an overall integrated plan be provided that describes how the requirements of Attachment 2 of the Order will be achieved.

The Order requires a three phase approach to mitigating Beyond-Design-Basis External Events (BDBEE):

Phase 1 - Use of installed equipment to maintain or restore core cooling, containment, and Spent Fuel Pool (SFP) cooling capabilities

Phase 2 - Transition to onsite portable *Diverse and Flexible Coping Strategies* (FLEX) equipment

Phase 3 - Indefinite sustainment of these functions using offsite resources

Nuclear Energy Institute (NEI) document NEI 12-06 [Rev. 0], *Diverse and Flexible Coping Strategies (FLEX) Implementation Guide* (Reference 3), provides an approach for complying with the Order. NRC Interim Staff Guidance (ISG), JLD-ISG-2012-01 [Rev. 0], *Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events* (Reference 25), endorses the guidelines provided in NEI 12-06 [Rev. 0] as an acceptable means of meeting the requirements of the Order subject to clarifications as identified in the ISG.

Status of San Onofre Nuclear Generating Station

On June 12, 2013, Southern California Edison (SCE) submitted a letter to the NRC pursuant to 10 CFR 50.82(a)(1)(i) certifying that it has permanently ceased operation of San Onofre Nuclear Generating Station (SONGS), effective June 7, 2013 (Reference 14). On June 28, 2013 and July 23, 2013, SCE submitted letters to the NRC pursuant to 10 CFR 50.82(a)(1)(ii)

certifying that it has permanently removed the fuel from the SONGS Unit 3 and Unit 2 reactor vessels, respectively (Reference 19 and 20). Spent nuclear fuel on site is now located either in the Unit 2 or Unit 3 Spent Fuel Pools (SFPs), or in dry storage at the onsite Independent Spent Fuel Storage Installation (ISFSI).

The SCE letter to the NRC submitting this Revision of the Overall Integrated plan includes requests for relaxation of NRC Order EA-12-049 requirements for core cooling and containment strategies, and for relaxation of NRC Order EA-12-051 for reliable SFP indication, which are unnecessary based on the permanently defueled condition of SONGS Units 2 and 3 and the alternate SFP level indication included in this plan.

The permanent shutdown and defueling of the SONGS reactors affects SCE's approach to compliance with Order EA-12-049 for SFP strategies and Order EA-12-051 for reliable SFP indications. Because neither unit will be refueled, the applicable compliance date per Section IV.A.2 of the Orders is December 31, 2016. By this date, Unit 2 and Unit 3 will have been shut down for approximately 4 years and 11 months, with a SFP time to boil of several days and a very low boiloff rate. Additionally, based on NUREG-1738 Figure 2.1 (Reference 27), more than a day would be available to initiate SFP spray even in the very unlikely event that the SFP was damaged by the BDBEE and water inventory was lost. Further, because the Technical Specifications have not yet been developed for the Permanently Defueled condition, it is not known at this time what plant systems will remain available for use in SFP strategies or placed in SAFSTOR. Consequently, the SFP strategies for SONGS described in this plan are based on use of offsite equipment and water sources in conjunction with onsite hand carried equipment. With the minimal on site equipment needed, existing programmatic controls will be used in lieu of a separate FLEX program.

This combined Overall Integrated Plan describes the strategy of San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 for complying with the requirements of Orders EA-12-049 and EA-12-051(Reference 21) using methods described in NRC JLD-2012-01 [Rev. 0] and NRC JLD-2012-03 (Reference 23) in conjunction with Nuclear Energy Institute document NEI 12-06 [Rev. 0] and NEI 12-02 (Reference 22).

Determine Applicable Extreme External Hazard **Ref: NEI 12-06 section 4.0 -9.0** **JLD-ISG-2012-01 section 1.0**	*Input the hazards applicable to the site; seismic, external flood, high winds, snow, ice, cold, high temps.* *Describe how NEI 12-06 sections 5 – 9 were applied and the basis for why the plant* ***screened out*** *for certain hazards.*

SONGS has been evaluated in accordance with Nuclear Energy Institute (NEI) 12-06, Revision 0, "Diverse and Flexible Mitigation Coping Strategies (FLEX) Implementation Guide." The following applicable hazards have been identified as being applicable to SONGS:

- Seismic

- External Flooding
- High Temperatures

SCE has determined the functional threats from each of these hazards and identified the FLEX equipment that may be affected. The FLEX storage locations will provide the protection from these hazards. SCE is also developing procedures and processes to further address plant strategies for responding to these various hazards.

Seismic

Seismic hazards ***screen in*** for all sites per Section 5.2 of Reference 3. Per Reference 1, the seismic criteria for San Onofre Nuclear Generating Station (SONGS) include two design earthquake spectra: Operating Basis Earthquake (OBE) and Design Basis Earthquake (DBE). The OBE and DBE peak ground accelerations are 0.33 g and 0.67 g, respectively (Reference 1).

External Flooding

External flooding hazards ***screen in*** for SONGS per Section 6.2 of Reference 3. The design basis external flooding events that apply to SONGS are local intense precipitation, tropical storm, and tsunami.

From Reference 2, the tropical storm and tsunami flood elevation is +27 ft. mean lower low water (mllw), including 11.4 ft. from wind driven waves. This flood elevation is below plant grade in the Units 2 and 3 Protected Area (PA) (elevation +30 ft. mllw) and above plant grade in the North Industrial Area (elevation +20 ft. mllw). Consequently, the North Industrial Area, formally Unit 1, cannot be used for storage and deployment of FLEX equipment.

Local intense precipitation results in flooding above plant grade, and therefore will need to be considered in storage and deployment of FLEX equipment. The design basis maximum flood levels in the Units 2 and 3 PA are less than +31 ft. mllw (1 ft. above plant grade) (Reference 2).

Severe Storms with High Winds and Tornados

Severe storms with high winds and tornado hazards ***screen out*** for SONGS based on Figure 7-2 of Reference 3.

Snow, Ice and Extreme Cold

Snow, ice, and extreme cold hazards ***screen out*** for SONGS based on Figures 8-1 and 8-2 of Reference 3. The design basis low ambient temperature of 36 °F, as defined in Reference 4, applies.

High Temperatures

High temperature hazards ***screen in*** for all sites per Section 9.2 of Reference 3. The design basis maximum temperature of 85 °F, as defined in Reference 4, applies.

Key Site assumptions to implement NEI 12-06 strategies. **Ref: NEI 12-06 section 3.2.1**	*Provide key assumptions associated with implementation of FLEX Strategies:*

SONGS Units 2 and 3 are permanently defueled. As such, the assumptions detailed in Section 3.2.1 of Reference 3 and the Executive Summary of the Pressurized Water Reactor Owners Group (PWROG) Core Cooling Position Paper (Reference 11) for the reactor and its supporting systems are therefore no longer applicable. Key industry guidance and site-specific assumptions relevant to the SFPs are presented here:

NEI 12-06 Key Assumptions:

Assumptions shown in brackets [] are not applicable to the permanently defueled condition.

Initial Plant Conditions:

The initial plant conditions are assumed to be the following:

(1) [Reactor power history is not applicable to the permanently defueled condition.]

(2) [Reactor and supporting system parameters and equipment status is not applicable to the permanently defueled condition.]

Initial Conditions:

The following initial conditions are to be applied:

(NOTE: Some of these initial conditions are inconsequential to the permanently defueled condition and/or do not affect the credited strategies.)

(1) No specific initiating event is used. The initial condition is assumed to be a loss of offsite power (LOOP) at a plant site resulting from an external event that affects the offsite power system either throughout the grid or at the plant with no prospect for recovery of offsite power for an extended period. The LOOP is assumed to affect all units at a plant site.

(2) All installed sources of emergency onsite alternating current (AC) power and station blackout (SBO) alternate ac power sources are assumed to be not available and not imminently recoverable.

(3) Cooling and makeup water inventories contained in systems or structures with designs that are robust with respect to seismic events, floods, and high winds, and associated missiles are available.

(4) Normal access to the ultimate heat sink (UHS) is lost, but the water inventory in the UHS remains available and robust piping connecting the UHS to plant systems remains intact. The motive force for UHS flow, i.e., pumps, is assumed to be lost with no prospect for recovery.

(5) Fuel for FLEX equipment stored in structures with designs that are robust with respect to seismic events, floods and high winds and associated missiles, remains available.

(6) Permanent plant equipment that is contained in structures with designs that are robust with respect to seismic events, floods, and high winds, and associated missiles, are available. *[See site-specific assumptions below.]*

(7) Other equipment, such as portable AC power sources, portable back up direct current (DC) power supplies, spare batteries, and equipment for 10 CFR 50.54(hh)(2), may be used provided it is reasonably protected from the applicable external hazards per NEI 12-06, Sections 5 through 9 and Section 11.3 and has predetermined hookup strategies with appropriate procedures/guidance and the equipment is stored in a relative close vicinity of the site.

(8) Installed electrical distribution system, including inverters and battery chargers, remain available provided they are protected consistent with current station design.

(9) No additional events or failures are assumed to occur immediately prior to or during the event, including security events.

(10) Reliance on the fire protection system ring header as a water source is acceptable only if the header meets the criteria to be considered robust with respect to seismic events, floods, and high winds, and associated missiles.

Reactor Transient:

[Boundary conditions for the reactor transient are not applicable to the permanently defueled condition.]

Reactor Coolant Inventory Loss:

[Pressurized Water Reactor (PWR) coolant inventory loss is not applicable to the permanently defueled condition.]

SFP Conditions:

The initial SFP conditions are:

(1) All boundaries of the SFP are intact, including the liner, gates, transfer canals, etc.

(2) Although sloshing may occur during a seismic event, the initial loss of SFP inventory does not preclude access to the refueling deck around the SFP.

(3) SFP cooling system is intact, including attached piping.

(4) *[See site-specific assumptions for SFP decay heat load below.]*

Containment Isolation Valves:

[Containment isolation actions are not applicable to the permanently defueled condition.]

PWROG PSC - ELAP CORE TEAM Core Cooling Management Interim Position Paper Assumptions:

[Core cooling assumptions are not applicable to the permanently defueled condition.]

The following assumptions are specific to the SONGS site:

(1) [Declaration of an extended loss of AC power event within 2 hours is not necessary in the permanently defueled condition.]

(2) [Turbine driven auxiliary feedwater (AFW) pump assumptions are not applicable to the permanently defueled condition.]

(3) [Permanent plant equipment evaluated probabilistically for wind-driven missiles is not credited for SFP strategies in the permanently defueled condition.]

(4) [The site-specific capability for a portable steam generator feed system is not applicable to the permanently defueled condition.]

(5) The SFP decay heat load considered for the permanently defueled condition is the heat load projected for the Unit 2 SFP and Unit 3 SFP on December 31, 2016. This will be approximately 2.304 and 2.276 Million BTU per hour for Units 2 and 3, respectively [Reference 12].

(6) Flood and seismic re-evaluations pursuant to the 10 CFR 50.54(f) letter of March 12, 2012 are not completed and therefore not assumed in this submittal.

(7) Consistent with NEI 12-01 (Reference 24), the event impedes site access as follows:

A. Post event time: 6 hours – No site access. This duration reflects the time necessary to clear roadway obstructions, use different travel routes, mobilize alternate transportation capabilities (e.g., private resource providers or public sector support), etc.

B. Post event time: 6 to 24 hours – Limited site access. Individuals may access the site by walking, personal vehicle or via alternate transportation capabilities (e.g., private resource providers or public sector support).

C. Post event time: 24+ hours – Improved site access. Site access is restored to a near-normal status and/or augmented transportation resources are available to deliver equipment, supplies and large numbers of personnel.

(8) This plan defines strategies capable of mitigating a simultaneous loss of all alternating current (ac) power and loss of normal access to the ultimate heat sink resulting from a beyond-design-basis event by providing adequate capability to maintain or restore SFP cooling capabilities at all units on a site. These pre-planned strategies developed to protect the public health and safety will be incorporated into the unit abnormal operating procedures in accordance with established change processes, and their impact to the design basis capabilities of the unit evaluated under 10 CFR 50.59. The result of the beyond-design-basis event may place the plant in a condition where it cannot comply with certain Technical Specifications and/or with its Security Plan, and, as such, may warrant invocation of 10 CFR 50.54(x) and/or 10 CFR 73.55(p). (Reference 10)

Extent to which the guidance, JLD-ISG-2012-01 and NEI 12-06, are being followed. Identify any deviations to JLD-ISG-2012-01 and NEI 12-06. **Ref: JLD-ISG-2012-01 NEI 12-06 13.1**	*Include a description of any alternatives to the guidance, and provide a milestone schedule of planned action.*

SCE plans to comply with JLD-ISG-2012-01 and NEI 12-06 in implementing FLEX strategies for the SONGS site, with the following exceptions:

1. Reactor and containment strategies will not be implemented because the units are

permanently defueled.
2. Alternate strategies will be used for SFP cooling, makeup and level indication based on the low SFP decay heat load on and after December 31, 2016.
3. Due to the minimal onsite equipment needed, existing programmatic controls will be applied to the FLEX equipment.

Provide a sequence of events and identify any time constraint required for success including the technical basis for the time constraint. **Ref: NEI 12-06 section 3.2.1.7** **JLD-ISG-2012-01 section 2.1**	*Strategies that have a time constraint to be successful should be identified with a technical basis and a justification provided that the time can reasonably be met (for example, a walkthrough of deployment).* *Describe in detail in this section the technical basis for the time constraint identified on the sequence of events timeline Attachment 1A* See attached sequence of events timeline (Attachment 1A). Technical Basis Support information, see attached Nuclear Steam Supply System (NSSS) Significant Reference Analysis Deviation Table (Attachment 1B)

General:

1. In the permanently defueled condition, there are no reactor related or containment related time constraints.

2. By December 31, 2016, the time for the SONGS Units 2 and 3 SFPs to heat up to boiling following a loss of normal cooling will be more than 4.85 days (116 hours) and 4.90 days (117 hours) for Units 2 and 3, respectively (Reference 17). Additionally, based on NUREG-1738 Figure 2.1 (Reference 27), more than 30 hours would be available to initiate SFP spray in the very unlikely event that the SFP was damaged by the BDBEE and water inventory was lost. Consequently, there are large margins for the required actions and validation of action times is unnecessary.

Discussion of Time Constraints identified in Attachment 1A:

Table item 7: The request for Phase 3 support from local offsite agencies and/or SCE Corporate is required sufficiently in advance to ensure timely delivery of Phase 3 equipment. The earliest offsite support needed is spare batteries or chargers to support continued access and communications. Requesting at 2 hours provides significant margin to the 36 hours of onsite battery capacity.

Table item 8: The earliest offsite support needed is spare batteries or chargers to support

continued access and communications. These items are hand carried, such that they can be delivered without vehicle access prior to 24 hours, per NEI 12-01. Delivery within 24 hours is reasonable given the limited amount of equipment needed. This time provides significant margin to the 36 hours of onsite battery capacity.

Table item 9: Vehicle access by 24 hours is consistent with NEI 12-01. With pre-deployment of the onsite equipment and connections inside the east doors of the Auxiliary building, this time provides reasonable margin to the approximately 30 hour time for cladding fire per NUREG-1738 Figure 2.1 (extrapolating from 4 year shutdown time) (Reference 27), and significant margin to the 116 and 117 hour time-to-boil with the SFP intact for Units 2 and 3, respectively (Reference 17).

Identify how strategies will be deployed in all modes. **Ref: NEI 12-06 section 13.1.6**	*Describe how the strategies will be deployed in all modes.*

The only mode applicable for SONGS is the permanently defueled condition, due to permanent cessation of power operations (Reference 14) and permanent removal of all fuel from the Units 2 and 3 reactor vessels (Reference 20 and 19, respectively).

Hazards Constraints on Storage and Deployment

As discussed under extreme hazards above, the external hazards applicable to FLEX at SONGS are seismic, external flooding (due to tsunami, tropical storm, and local intense precipitation), and high temperature. The moderate high temperature applicable to the site (85 °F) will have no impact on deployment. The impacts of the seismic and flooding events are summarized in Attachments 3-2 and 3-3 and described below.

The bluffs and non-seismic Category I site structures, located north and south of the plant protected area (PA) and switchyard, are assumed to fail (worst case) in a design basis seismic event, and the North Industrial Area (formerly Unit 1) is expected to flood from the tsunami and tropical storm (Reference 2). Due to the more gradual slopes in the switchyard, the bluff east of the switchyard is expected to remain intact.

Within the Units 2 and 3 PA, the buildings and water tanks that are not Seismic Category I, located on the north, south, and west sides of the plant, are also assumed to fail in a design basis seismic event. Consequently, the connections are located on the east side of the plant. Flooding from rupture of the tanks that are not Seismic Category I, on the north, south and west sides will not affect the connection locations on the east side of the plant due to the distance from the tanks and slope of plant grade to the west.

The Seismic Category II fire main routed around the perimeter of the Units 2 and 3 and/or its

various branch lines are also assumed to rupture in a DBE, creating sink holes (Reference 6). Consequently, only hand carried equipment will be able to be moved within the PA. Offsite equipment and water sources for SFP makeup and spray will be parked on the bluff east of the switchyard (e.g., on Old Highway 101 outside the Owner Controlled Area or east road in the Owner Controlled Area) and hoses routed down the switchyard slope to the east road within the Protected Area (Attachment 3-3).

Only hand carried equipment will be maintained on site. The N requirement for support equipment will be met by two equipment sets, either capable of supporting the SFP strategies in both units.

Selected Storage, Deployment and Connection Locations

The onsite FLEX equipment will be stored inside Seismic Category I, flood protected structures: the Unit 2 and Unit 3 Fuel Handling Buildings (FHBs), the Unit 2 and Unit 3 Penetration buildings, and the Auxiliary building.

The connection locations for SFP makeup and spray will also be located on the east side of the plant, through the two grade level access doors from the east road in the PA to the Auxiliary building. Inside each door is a connection to a seismic fire water riser pipe as well as a walkway to the respective Auxiliary building stairwell, both leading to a corridor between Units at elevation 63 ft 6 in. The north door and its riser and stairway are the alternate connection point to the south door and its riser and stairwell for the fire hoses from the offsite equipment. The fire hoses stored onsite with the monitor nozzles will be connected to the nearest seismic riser or offsite hose in the corridor on elevation 63 ft 6 in and routed through two doors to the respective Penetration building and FHB to the SFP (Attachment 3-4).

To ensure that the strategies can be deployed in all modes applicable to the permanently defueled condition, the areas adjacent to the two grade level access doors from the east road in the PA to the Auxiliary building will be marked and maintained as exclusion areas, and sufficient margins will be included in the final hydraulic calculations to allow for hose routing, around equipment and containers staged in the PA during decommissioning activities, to both the primary and alternate connection points for each strategy.

A simplified depiction of the FLEX SFP Strategy for SONGS is shown on Attachment 3-1.

Provide a milestone schedule. This schedule should include:
• **Modifications timeline**
  ○ **Phase 1 Modifications**
  ○ **Phase 2 Modifications**
  ○ **Phase 3 Modifications**
	The dates specifically required by the order are obligated or committed dates. Other dates are planned dates subject to change. Updates will be provided in the periodic (six month) status reports.
	
	See attached milestone schedule Attachment 2.

• **Procedure guidance development complete**
  ○ **Strategies**
  ○ **Maintenance**
• **Storage plan (reasonable protection)**
• **Staffing analysis completion**
• **FLEX equipment acquisition timeline**
• **Training completion for the strategies**
• **Regional Response Centers operational**
 	
Ref: NEI 12-06 section 13.1	

Identify how the programmatic controls will be met. **Ref: NEI 12-06 section 11** **JLD-ISG-2012-01 section 6.0**	*Provide a description of the programmatic controls equipment protection, storage and deployment and equipment quality. See section 11 in NEI 12-06. Storage of equipment, 11.3, will be documented in later sections of this template and need not be included in this section.* *See section 6.0 of JLD-ISG-2012-01.*

Due to the permanently defueled condition of SONGS Units 2 and 3 and the minimal onsite equipment required for implementation of SFP strategies, SCE will apply existing programmatic controls to the FLEX equipment.

The onsite portable equipment will be inspected/tested or replaced as shown in the table of Phase 2 Portable Equipment

Equipment associated with these strategies will be procured as commercial grade, and the augmented quality guidelines of Regulatory Guide 1.155, "Station Blackout" will not be applied.

Seismic exclusion zones will be established around the FLEX equipment storage and deployment locations consistent with the existing seismic control program (Reference 5).

The FLEX strategies' bases will be documented and maintained in controlled plant documents. Existing plant configuration control procedures will be modified to ensure that changes to the plant design, physical plant layout, roads, buildings, and miscellaneous structures will not adversely impact the approved FLEX strategies.

Describe training plan	*List training plans for affected organizations or describe the plan for training development.*

The training for implementation of the FLEX mitigation strategy for SFP cooling and level monitoring will be developed and implemented as part of the post-shutdown / decommissioning training program. Training of Operations, Maintenance, Emergency personnel and general staff will be developed and implemented prior to final turnover of the first unit design implementation.

Describe Regional Response Center plan	

The industry will establish two (2) Regional Response Centers (RRCs) to support utilities during beyond-design-basis external events. The Strategic Alliance for FLEX Emergency Response (SAFER) has been selected by the industry to provide the RRCs. However, SCE has terminated its contract with SAFER for this service, because specialized equipment from the RRC is not needed for the SFP strategies with SONGS Units 2 and 3 permanently defueled. Offsite support for SONGS SFP strategies will be obtained locally through mutual aid agreements, contracted services, or procured at time of need.

Notes:

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Maintain Core Cooling & Heat Removal

Core cooling and heat removal are not necessary in the permanently defueled condition.

Maintain RCS Inventory Control

RCS inventory control is not necessary in the permanently defueled condition.

Maintain Containment

Containment pressure and temperature control are not necessary in the permanently defueled condition.

Maintain Spent Fuel Pool Cooling

Determine Baseline coping capability with installed coping[1] modifications not including FLEX modifications, utilizing methods described in Table 3-2 of NEI 12-06:

- **Makeup with Portable Injection Source**

PWR Installed Equipment Phase 1:

Provide a general description of the coping strategies using installed equipment including modifications that are proposed to maintain spent fuel pool cooling. Identify methods (makeup via portable injection source)and strategy(ies) utilized to achieve this coping time.

Phase 1 cooling will be provided passively by heat up and evaporation from the SFP, due to the low decay heat load and extended time for operator action. SFP level will be monitored by observation of the SFP level ruler (upon initiation of event), then by the remote mechanical level gage.

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*

Existing AOI for "Loss of Spent Fuel Pool Cooling" (Reference 9) directs operators to SONGS "B.5.b Mitigation Strategies" (Reference 7) to establish alternate cooling. Alternate cooling for the ELAP event is addressed under Phase 2 below. The AOI will be revised to include use of the remote mechanical level gage.

Identify modifications	*List modifications*

A mechanical pressure gage will be installed on the SFP cooling system suction piping for remote indication of SFP level.

Key SFP Parameter	*List instrumentation credited or recovered for this coping evaluation.*

SFP level by direct observation of the local gage scale in the SFP room or the remote level gage on the SFP suction piping.

Notes: The SFP cooling system suction piping is Seismic Category I. The FHB is a Seismic Category I, flood protected building.

The level gage on the suction piping will be able to measure SFP level down to approximately

[1] Coping modifications consist of modifications installed to increase initial coping time, i.e. generators to preserve vital instruments or increase operating time on battery powered equipment.

Maintain Spent Fuel Pool Cooling

elevation 54 ft 3 in, which is the bottom of the suction inlet on the side of the SFP .[Attachment 3-5]. This range is functionally adequate to determine when makeup water must be added to the SFPs to restore and/or maintain normal level, and when makeup flow must be stopped to prevent overflow. An uninstalled spare (shared between units) will be available for the gage.

Maintain Spent Fuel Pool Cooling

PWR Portable Equipment Phase 2:

Provide a general description of the coping strategies using on-site portable equipment including modifications that are proposed to maintain spent fuel pool cooling. Identify methods (makeup via portable injection source)and strategy(ies) utilized to achieve this coping time.

SFP level will continue to be monitored as described for Phase 1.

The monitor nozzles and hoses required for the Phase 3 FLEX SFP makeup and spray strategy will be pre-deployed.

[...]

[...]

Portable radios and satellite phones will be used for communication (Reference 18). Spare batteries will be provided to provide at least 36 hours of periodic use.

Flashlights will be used for lighting inside the plant. Spare batteries will be provided for at least 36 hours of periodic use.

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*

The AOI for Loss of Spent Fuel Pool Cooling (Reference 9) will be revised to incorporate the above Phase 2 strategies of pre-deploying hoses and establishing a vent path.

Maintain Spent Fuel Pool Cooling	
Identify modifications	*List modifications*
No equipment modifications are required to implement the SFP Phase 2 strategies.	
Key SFP Parameter	*List instrumentation credited or recovered for this coping evaluation.*
Same as Phase 1	
Storage / Protection of Equipment: **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List how equipment is protected or schedule to protect*
No new permanent plant equipment will be installed for the SFP Phase 2 strategies. The portable FLEX equipment will be stored within existing Seismic Category I structures (Unit 2 and Unit 3 FHBs, Unit 2 and Unit 3 Penetration buildings, and the Auxiliary building).	
Flooding	*List how equipment is protected or schedule to protect*
No new permanent plant equipment will be installed for the SFP Phase 2 strategies. The portable FLEX equipment will be stored above grade level within existing flood protected structures (Unit 2 and Unit 3 FHBs, Unit 2 and Unit 3 Penetration buildings, and the Auxiliary building).	
Severe Storms with High Winds	*List how equipment is protected or schedule to protect*
Severe storms with high winds and tornado hazards are ***screened out*** based on Figure 7-2 of Reference 3.	
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect*
Snow, ice, and extreme cold hazards are ***screened out*** based on Figures 8-1 and 8-2 of Reference 3.	
High Temperatures	*List how equipment is protected or schedule to protect*
No new permanent plant equipment will be installed for the SFP Phase 2 strategies.	

Maintain Spent Fuel Pool Cooling		
The portable FLEX equipment will be stored within existing structures (Unit 2 and Unit 3 FHBs, Unit 2 and Unit 3 Penetration buildings, and the Auxiliary building). The design basis high ambient temperature, as defined in Reference 4 (85 F) is sufficiently modest that no special storage provisions are required.		
Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Flashlights will be used to light the routes from the grade level exterior doors on the east side of the Auxiliary building to the deployment locations in the Penetration buildings and FHBs. Spare batteries stored with the flashlights will be used until offsite support is available.	None.	The flashlights and spare batteries will be stored above grade within the Seismic Category I, flood protected Auxiliary building (e.g., Room 231 in Auxiliary Control area, or the north and south stairwells in Auxiliary Radwaste area).
Radios will be used for outdoor communication between onsite responders and offsite agencies after arrival on-site. Satellite phones will be used for outdoor communication between responders and offsite agencies before arrival on site. Spare batteries stored with the radios and satellite phones will be used until offsite support is available.	None	The radios, satellite phones and spare batteries will be stored above grade within the Seismic Category I, flood protected Auxiliary building (e.g., Room 231 in Auxiliary Control area, or the north and south stairwells in Auxiliary Radwaste area).
The monitor nozzles and hoses for SFP makeup and/or spray	None.	The seismic fire riser in the Auxiliary Radwaste area is

Maintain Spent Fuel Pool Cooling		
will be pre-deployed for each SFP. The deployment paths for fire hose to the SFP makeup and spray connections are shown in Attachment 3-4.		located in the Seismic Category I, flood protected Auxiliary Building. The monitor nozzles, fire hoses and fittings will be stored above grade within the Seismic Category I, flood protected Penetration building or FHB.
Four doors will be blocked opened with door stops to pre-establish a vent path from the SFP to the roof.	None.	The doors are within the Seismic Category I, flood protected Penetration building and FHB.
Notes:		

Maintain Spent Fuel Pool Cooling

PWR Portable Equipment Phase 3:

Provide a general description of the coping strategies using phase 3 equipment including modifications that are proposed to maintain spent fuel pool cooling. Identify methods (makeup via portable injection source)and strategy(ies) utilized to achieve this coping time.

The Phase 1 and Phase 2 strategies for SFP cooling are continued in Phase 3. In addition:

Offsite equipment (e.g.; water tankers or fire trucks with hoses) will be obtained and deployed to the roadway on top of the east bluff (Old Highway 101 outside the Owner Controlled Area, or the east road inside the Owner Controlled Area). Fire hoses will be routed from the water tankers or fire trucks down through the switchyard to the PA fence, and from there to the seismic fire riser connections inside the east grade level doors to the Auxiliary building. Cutting tools will be used as needed to open the fence fabric and gates in the switchyard, PA and security delay fences for laying the fire hose to the PA. The cutting tools will be stored with the Phase 2 portable onsite equipment.

[...] [Open Item 1]

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*

Same as Phase 1 and 2.

Existing AOI for Loss of Spent Fuel Pool cooling [Reference 9] will have been entered. The AOI will be revised to incorporate the above Phase 3 strategies.

Maintain Spent Fuel Pool Cooling	
Identify modifications	*List modifications*
No modifications are required to implement the SFP strategies.	
Key SFP Parameter	*List instrumentation credited or recovered for this coping evaluation.*
Same as Phase 1	

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Retrieve cutting tools from inside the grade level doors on the east side of the Auxiliary building to create a path for fire hoses from the east road through the switchyard, Protected Area and security delay fences and gates. Lay fire hose from the offsite fire trucks or tanker trucks on the east road to the seismic riser connections inside the two grade level doors on the east side of the Auxiliary building. Initiate SFP makeup by gravity feed or SFP spray by pumping.	None.	The seismic riser connections are inside the Seismic Category I, flood protected Auxiliary building.

Notes:
Open Item 1: Determine how the minimum 10 gpm average spray flow will be provided (e.g., by cycling the existing mitigation strategies equipment or using smaller spray nozzles).

PWR Portable Equipment Phase 2

Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Maintenance*
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		Maintenance / PM requirements
Two (2) pairs of monitor nozzles for SFP makeup and spray			X			~~12~~5 gpm each	Annual inspection consistent with current NFPA requirements per Fire Protection program
Two (2) sets of fire hoses and fittings			X			Size and length to connect from the seismic fire risers to the monitor nozzles at their SFP deployment locations	Inspect/test or replace annually
Two (2) pairs of flashlights with spare batteries				X	X	Suitable for repeated use for lighting enroute to/from SFP and level gage locations. Sufficient spare batteries for 24 hours of periodic use.	Check quarterly and replace batteries as needed.
Two (2) sets of radios and satellite phones with spare batteries and spare battery chargers			X			Radios suitable for outdoor communication between onsite responders and offsite agencies after arrival on site. Satellite phones suitable for outdoor communication between responders and offsite agencies before arrival on site. Sufficient spare batteries for 24 hours of periodic use.	Check quarterly and replace batteries as needed.
Two (2) sets of door stops			X			Each set sufficient to block open 3 doors for SFP venting, plus spares.	Visually inspect annually

PWR Portable Equipment Phase 3

Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Notes*
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		
Two (2) sets of cutting tools			X		X	Suitable for opening the fence fabric and gates in the switchyard, PA and security delay fences.	Stored onsite with the Phase 2 portable equipment.
Water tankers			X			Approximately one (1) 6000 gallon tanker every 20 hours for SFP makeup	Per mutual aid agreement or contracted support
Fire trucks			X			Discharge pressure and flow sufficient to maintain 125 gpm to each of four monitor nozzles at their deployed locations.	Per mutual aid agreement or contracted support
Spare batteries or chargers for flashlights, radios and satellite phones				X	X	Maintain lighting and communications for SFP strategies after 24 hours	Per mutual aid agreement or contracted support

Phase 3 Response Equipment/Commodities

Item	Notes
Radiation Protection Equipment • Survey instruments • Dosimetry • Off-site monitoring/sampling	
Commodities • Food • Potable water	
Fuel Requirements None	
Heavy Equipment None	

Attachment 1A: Sequence of Events Timeline

Action item	Elapsed Time	Action	New Time Constraint Y/N [2]	Time Constraint (hr)	Reference(s)	Remarks
	0	**Event Starts**	**NA**			Reactor permanently defueled. All fuel in Unit 2 SFP, Unit 3 SFP or ISFSI
1	20 minutes	Diagnose loss of SFP cooling, enter AOI for loss of SFP cooling.	N		9	
2	20 minutes	Diagnose earthquake, enter AOI for Earthquake	N		16	
3	1 hour	Inspect SFPs in both Units.	N		16	
4	2 hours	Deploy monitor nozzles and hoses for SFP spray.	N		7	Existing action in mitigating strategies procedure.
5	2 hours	Pre-establish SFP vent path by blocking open 4 doors in each Unit	N		Attachment 3-6	Replaces existing action in mitigation strategies procedure for vent path through FHB ducting.
6	2 hours	Begin periodic monitoring of SFP level	N		9	New Action
7	2 hours	Request Phase 3 support from offsite mutual aid or contracted support organization.	Y	24 hours	26	New Action.

[2] Instructions: Provide justification if No or NA is selected in the New Time Constraint column
If yes include technical basis discussion as required by NEI 12-06 section 3.2.1.7

Action item	Elapsed Time	Action	New Time Constraint Y/N [2]	Time Constraint (hr)	Reference(s)	Remarks
8	24 hours	Phase 3 offsite support arrives at site with hand carried items (spare batteries or chargers for continued lighting and communications).	Y	36 hours	26	New Action Spare batteries or chargers are needed for continued access and communications.
9	24 hours	Phase 3 offsite support arrives at site with vehicles (fire trucks and/or water tankers), deploys hoses to seismic riser connections, and initiates SFP makeup or spray.	Y	30 hours	24, 27	Conditions for cladding fire reached at 30 hours in very unlikely event that SFP has drained and there is no SFP spray. SFP boiling begins at 116 hours in Unit 2 and 117 hours in Unit 3 if pools have not drained.

Attachment 2: Milestone Schedule

	Unit 2 and Unit 3
Submit FLEX Overall Integrated Plan to NRC	02/27/2013
Submit FLEX/SFPLI Overall Integrated Plan Rev 1 to NRC	08/27/2013
Regional Response Center 2 (Phoenix) operational	N/A
Design of modifications	1Q2014
Equipment procurement	2Q2014
Procedure guidance development	3Q2014
Installation	4Q2014
Training	4Q2014
FLEX implementation complete	4Q2014

Orders EA-12-049 and EA-12-051 require full implementation of this Plan no later than two refueling cycles after submittal of the Overall Integrated Plan, or by December 31, 2016, whichever comes first.

FLEX implementation for Units 2 and 3 is currently scheduled to be completed by December 31, 2014, because although Units 2 and 3 are permanently defueled and will not experience two refueling cycles prior to the end of 2016, the mitigating strategies being implemented involve a simplified approach.

The dates specified by NRC Orders EA-12-049 and EA-12-051 are regulatory obligations. Other dates above are planned dates subject to change.

Consistent with the requirements of the Order, status reports will be generated in six (6) month intervals from the initial submittal of this Plan. These submittals will outline progress made, any proposed changes in compliance methods and updates to the proposed schedule. Also, SCE will report to the NRC when full compliance with the requirements of Attachment 2 of Orders EA-12-049 and EA-12-051 has been achieved.

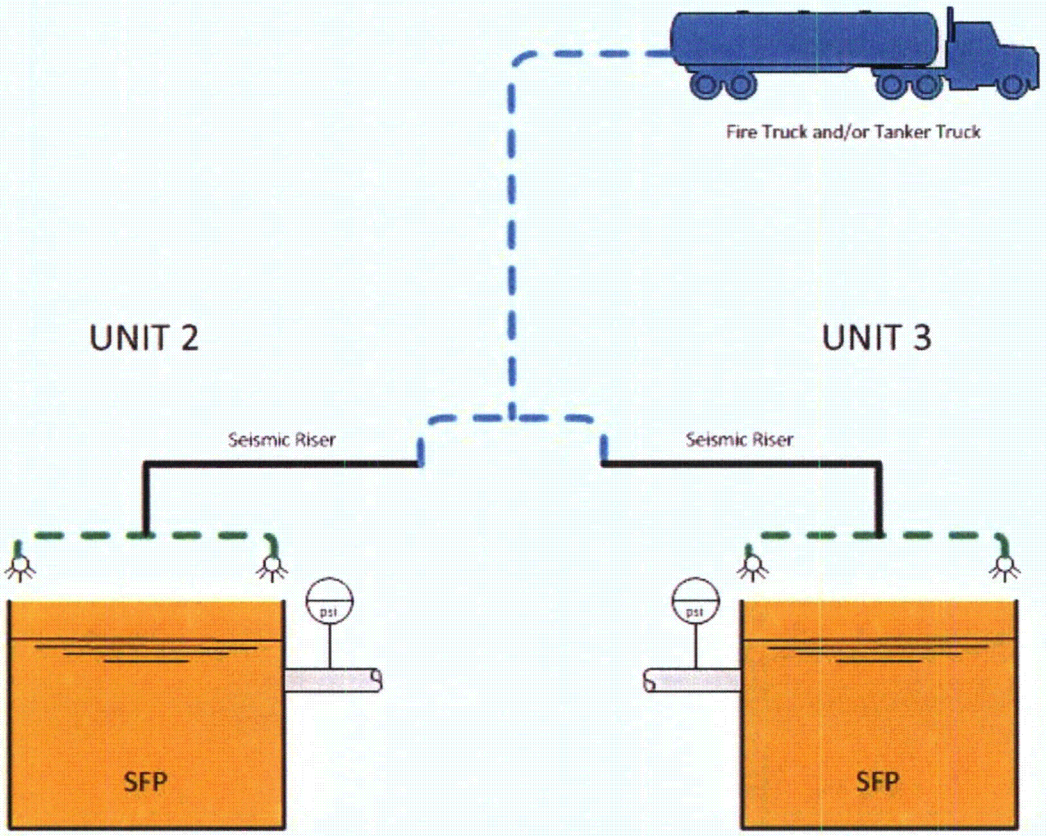
Attachment 3: Conceptual Sketches

Attachment 3-1	SONGS FLEX Strategy Diagram (1 sheet)
Attachment 3-2	Summary of Post-SSE Site Impacts (1 sheet)
Attachment 3-3	Summary of Post-SSE PA Impacts and Deployment (1 sheet)
Attachment 3-4	SFP Makeup and Spray Conceptual Sketches (11 sheets)
Attachment 3-5	SFP Mechanical Pressure Level Gage Conceptual Sketch (1 sheet)
Attachment 3-6	SFP Steam Vent Path Conceptual Sketches (2 sheets)

Attachment 3-1: SONGS FLEX Strategy Diagram (Sheet 1 of 1)

SONGS FLEX Strategy

For Permanently Defueled Condition

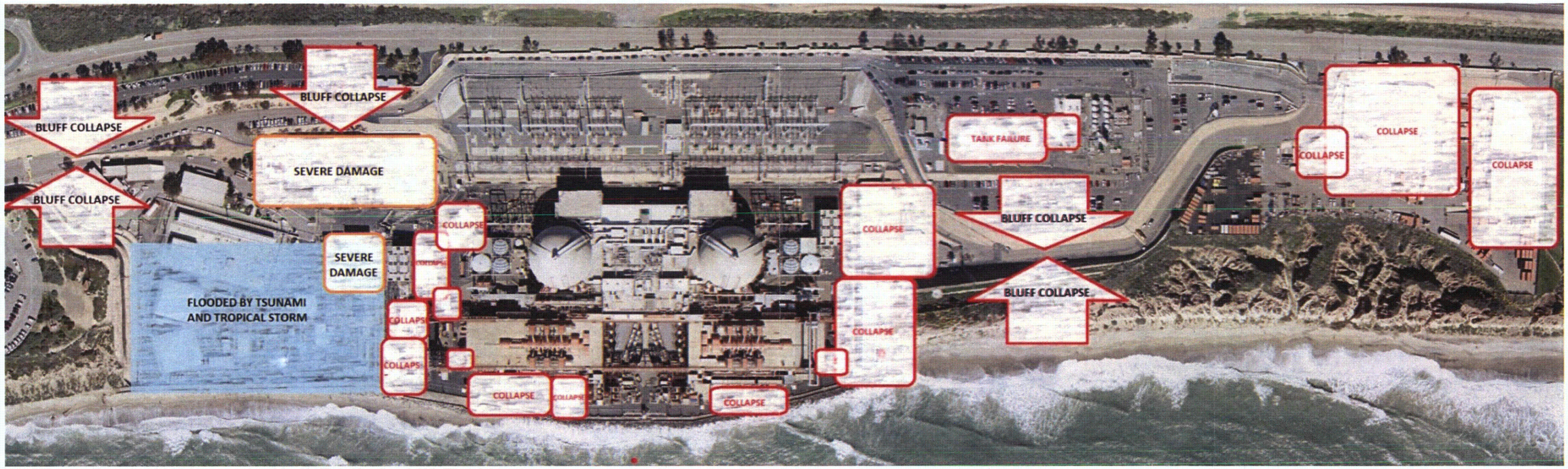


NOTE 1: Pressure gauges to be installed into SFP piping, to remote monitor SFP pressure changes that will correlate to SFP level changes.

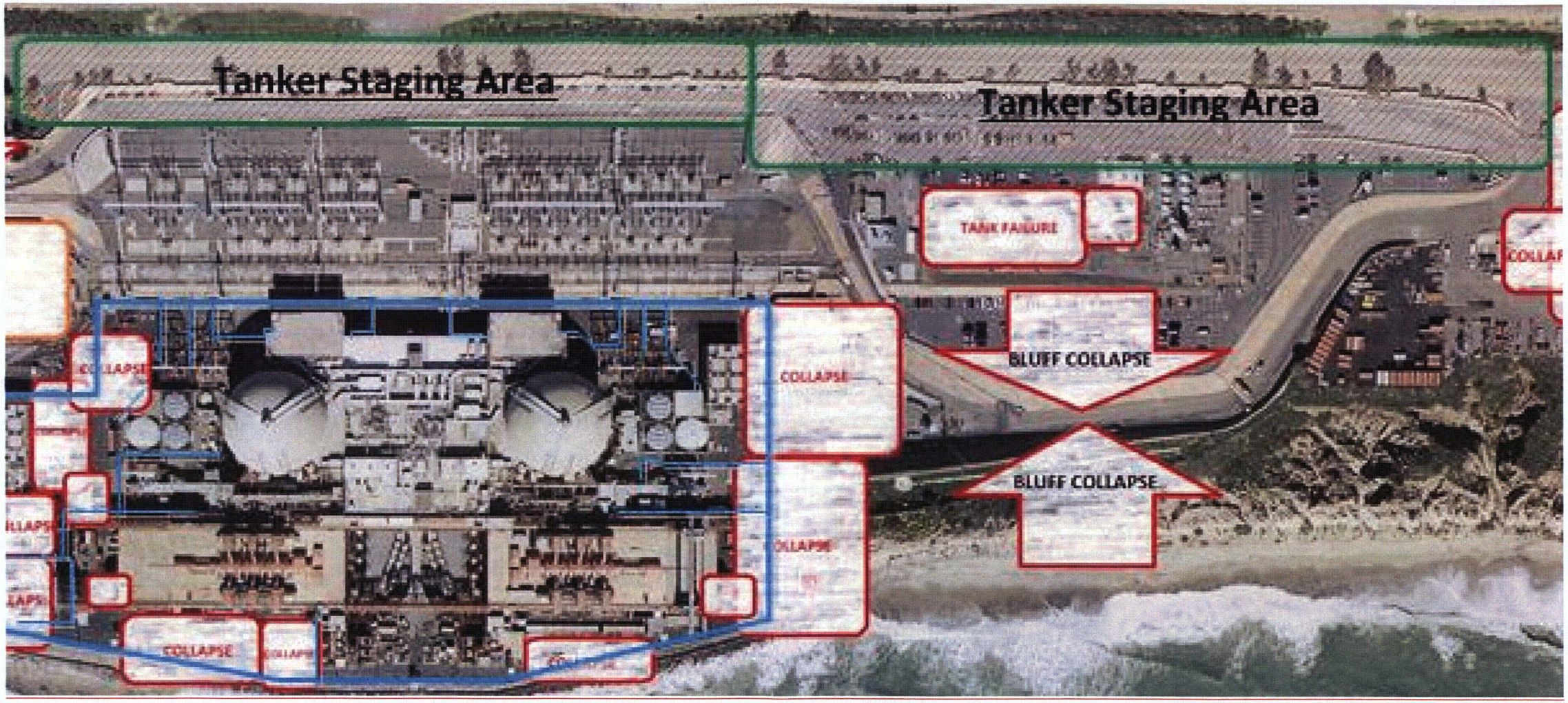
NOTE 2: The monitor nozzles and hoses between the nozzles and the seismic riser are stored onsite and pre-deployed during Phase 2.

NOTE 3: The fire truck and/or tanker truck is provided from offsite and deployed during Phase 3.

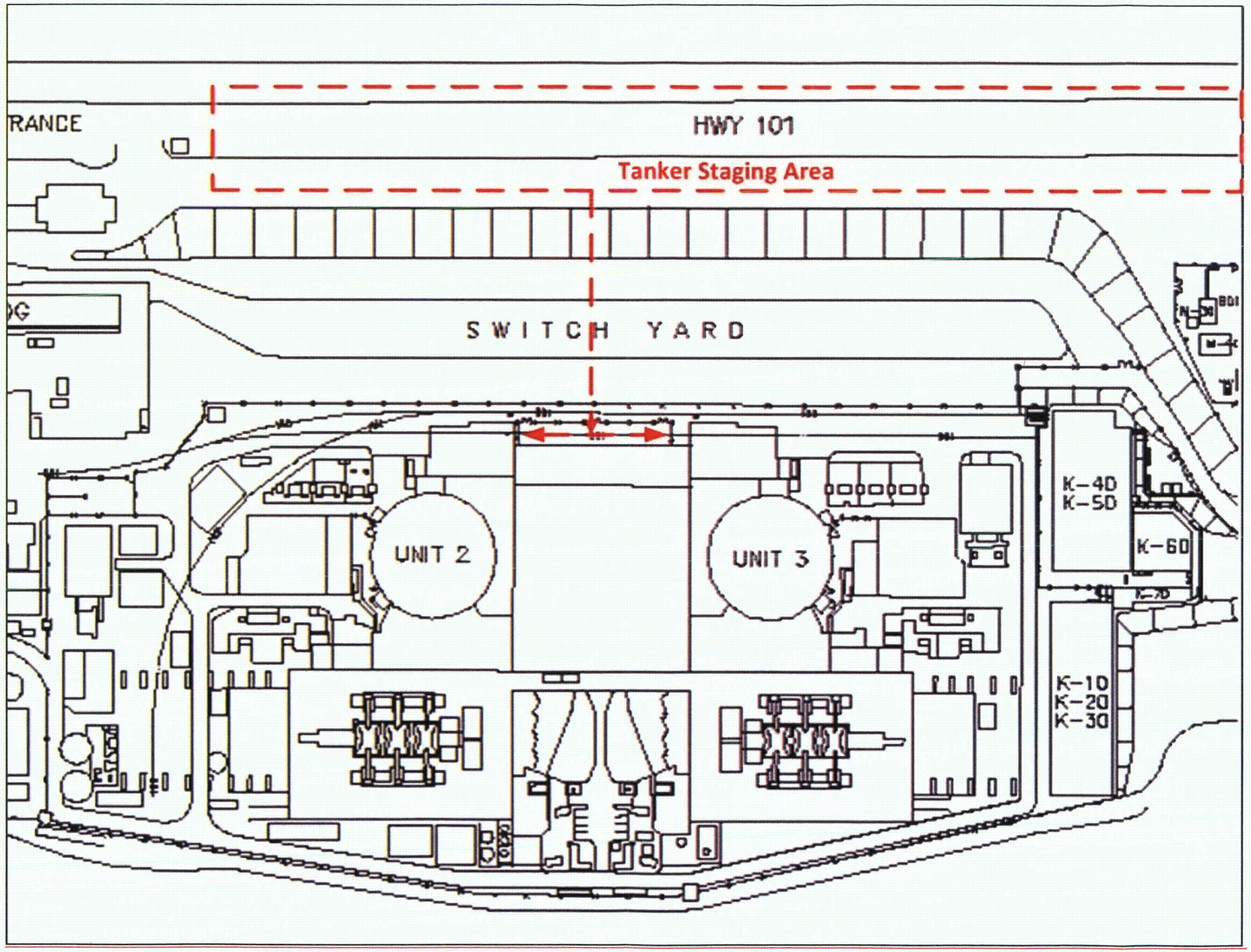
Attachment 3-2: Summary of Post-SSE Site Impacts (Sheet 1 of 1)



- Non-Seismic Category I slopes, structures and tanks assumed to fail as shown.
- North Industrial Area assumed to flood without credit for seawall flood barrier as shown.



- Non-Seismic Category I structures and tanks assumed to fail as shown.
- Non-Seismic Category I Fire Water System buried piping assumed to fail causing sink holes.
- Water Tanker deployment locations on road way, east and south east of switchyard


RANCE
HWY 101
Tanker Staging Area
SWITCH YARD
UNIT 2
UNIT 3
K-40
K-50
K-60
K-10
K-20
K-30

[...]

[...]

[...]

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Attachment 4: Acronyms, References and Open Items

Attachment 4-1: List of Acronyms

Attachment 4-2: List of References

Attachment 4-3: List of Open Items

Attachment 4-1: List of Acronyms

°F	Degrees Fahrenheit
AC	Alternating Current
AFW	Auxiliary Feedwater System
AOI	Abnormal Operating Instruction
BDB	Beyond Design Basis
BDBEE	Beyond Design Basis External Event
DBE	Design Basis Earthquake
ELAP	Extended Loss of AC Power
EPRI	Electric Power Research Institute
FHB	Fuel Handling Building
FSG	FLEX Support Guideline
gph	Gallons per hour
gpm	Gallons per minute
MBTU/hr.	Million British Thermal Units per hour
mllw	Mean Lower Low Water
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NSSS	Nuclear Steam Supply System
OBE	Operating Basis Earthquake
PA	Protected Area
PPMUT	Primary Plant Makeup Tank

Attachment 4-1: List of Acronyms

psi	Pounds per Square Inch
psia	Pounds per Square Inch Absolute
PWROG	Pressurized Water Reactor Owners Group
RRC	Regional Response Center
RWST	Refueling Water Storage Tank
SAFER	Strategic Alliance for FLEX Emergency Response
SBO	Station Blackout
SCE	Southern California Edison
SFP	Spent Fuel Pool
SOF	Statement of Fact
SONGS	San Onofre Nuclear Generating Station
SRI	Security Related Information
UFSAR	Updated Final Safety Analysis Report
UHS	Ultimate Heat Sink
VAC	Volts AC
VDC	Volts DC

Attachment 4-2: List of References

SOF Validation/ Reference Number	Type (Calc, Dwg, Other)	Name
1	UFSAR	Section 2.5.2.6 (pg 2.5-197) Section 2.5.2.7 (pg 2.5-198)
2	UFSAR	Section 2.4.2.3 (pg 2.4-8, -9) Section 2.4.5.3 (pg 2.4-34) Section 2.4.5.5 (pg 2.4-35) Section 2.4.6.6 (pg 2.4-40)
3	Report	NEI 12-06, Revision 0, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, August 2012
4	UFSAR	Section 2.3.2.3 (pg 2.3-36) Section 9.4 (pg 9.4-1)
5	Procedure	SO123-XV-1.20 Seismic Controls (all)
6	Drawing	21030 Sh 1, 21031 Sh 1, 21032 Sh 1, 21033 Sh 1
7	Procedure	SO23-V-5.100 (pgs 25-27) SOG-EO-0001 (pgs 1-21)
8	NRC Order	EA-12-049, "Issuance of Order to Modify Licenses with Regard to Beyond-Design Basis External Events" [Accession No. ML12054A735]
9	Procedure	SO23-13-23 Abnormal Operating Instruction for Loss of SFP Cooling
10	NRC Memo	Task Interface Agreement (TIA) 2004-04, "Acceptability of Proceduralized Departures from Technical Specifications (TSs) Requirements at the Surry Power Station," (TAC Nos. MC4331 and MC4332)," dated September 12, 2006. [Accession No. ML060590273]
11	PA-PSC-0965 (Core Cooling Position Paper)	Section III (pg 11) Section IV (pg 15 and 16)
12	Calculation	NFM-2/3-PH-1750, SONGS 2/3 Spent Fuel Pool Decay Heat
13	Procedure	SO23-3-2.11 SFP Operations
14	Letter	SCE Letter to NRC, Permanent Cessation of Operations dated June 12, 2013, [ADAMS Accession No. ML131640201]
15	Procedure	SO23-12-8 Emergency Operating Instruction for Station Blackout
16	Procedure	SO23-13-3 Abnormal Operating Instruction for Earthquake
17	Calculation	NN 202477326, Task 3 Spent Fuel Pool Time to Boil and Boil Off Calculation
18	Procedure	SO123-VIII-0.301, Page 21 of 22
19	Letter	SCE Letter to NRC, Permanent Removal of Fuel from the Reactor Vessel, SONGS Unit 3, dated June 28, 2018, [ADAMS Accession No. ML13183A391]
20	Letter	SCE Letter to NRC, Permanent Removal of Fuel from the Reactor Vessel, SONGS Unit 2, dated July 23, 2013, [ADAMS Accession No. ML13204A304]

Attachment 4-2: List of References

SOF Validation/ Reference Number	Type (Calc, Dwg, Other)	Name
21	NRC Order	EA-12-051, "Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012, [ADAMS Accession No. ML12054A679]
22	Guidance	NEI 12-02, Revision 1, Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation"
23	Guidance	JLD-ISG-2012-03, Revision 0, NRC Interim Staff Guidance for Compliance with Order EA-12-051 Reliable Spent Fuel Pol Instrumentation
24	Guidance	NEI 12-01, Revision 0, Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities
25	Guidance	JLD-ISG-2012-01, Revision 0, NRC Interim Staff Guidance for Compliance with Order EA-12-049, Order modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events
26	Emergency Plan	SONGS Emergency Plan, Section 5.3.4 "Local Services Support", Revision 28 page 5-12.
27	Guidance	NUREG-1738, Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants [ADAMS Accession No. ML010430066]
28	Calculation	NN 202477326, Task 4 Tanker Replacement Time Calculation
29	Calculation	NN 202477326, Task 5 Average SFP Spray Flow Required

Attachment 4-3: List of Open Items

No.	Description	Resolution
1	Determine how the minimum 10 gpm average spray flow will be provided (e.g., by cycling the existing mitigation strategies equipment or using smaller spray nozzles).	