

May 15, 2013

GL 2004-02

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Subject: **Docket Nos. 50-361 and 50-362**  
**NRC Generic Letter 2004-02 Closure Path and Schedule**  
**San Onofre Nuclear Generating Station (SONGS) Units 2 and 3**

- References:
1. Letter from John C. Butler (NEI) to William H. Ruland (NRC), dated May 4, 2012, "GSI-191 Current Status and Recommended Actions for Closure"
  2. Letter from William H Ruland (NRC) to John C. Butler (NEI), dated November 21, 2012, "Nuclear Regulatory Commission Review of Generic Safety Issue-191 Nuclear Energy Institute Revised Schedule for Licensee Submittal of Resolution Path"
  3. Staff Requirements Memorandum on SECY 12-0093, dated December 14, 2012, "Closure Options for Generic Safety Issue – 191, Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance"
  4. Final Safety Evaluation by the Office of Nuclear Reactor Regulation Topical Report WCAP-16793-NP, Revision 2, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid"
  5. NEI Memorandum APC 12-39 from Mark A. Richter to NEI Administrative Points of Contact, dated October 1, 2012 "Draft Closure Option Templates for Generic Safety Issue 191 (GSI-191)"
  6. Letter from Richard J. St. Onge (SCE) to US Nuclear Regulatory Commission Document Control Desk, dated November 12, 2009 "NRC Generic Letter 2004-02 Supplemental Response, San Onofre Nuclear Generating Station Units 2 and 3"
  7. Westinghouse Topical Report WCAP-16793-NP, Revision 2, dated October 2011, "Evaluation of Long-Term Cooing Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid"

Dear Sir or Madam:

This letter provides the closure path and schedule for San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 for Generic Safety Issue 191 (GSI-191). Industry recommended actions for closure of GSI-191 were outlined in a letter from the Nuclear Energy Institute (NEI) to the Nuclear Regulatory Commission (NRC) dated May 4, 2012 (Reference 1). A commitment was made in this letter that licensees would provide the intended closure path and schedule to

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the NRC by December 31, 2012. The NRC's letter of November 21, 2012 (Reference 2) concurred with a proposed revised schedule for submittal of the closure path letter to January 31, 2013, or 30 days following issuance of both the Staff Requirements Memorandum on SECY 12-0093, Closure Options for GSI-191 (Reference 3), and the Safety Evaluation (SE) for WCAP-16793-NP, Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid (Reference 4), whichever occurred later. The latter of the two documents to be issued, the SE for WCAP-16793-NP (Reference 4), was posted to NRC Agency-wide Document Access Management System (ADAMS) on April 16, 2013, commencing the 30 day period for submittal of the closure path and schedule letter.

The closure plan is provided in Attachment 2, following the template provided by NEI (Reference 5). In summary, SONGS will achieve closure using Option 1, Compliance with 10 CFR 50.46 Based on Approved Models. In 2009, Southern California Edison (SCE) provided a Generic Letter 2004-02 Supplemental Response (Reference 6), and indicated that upon installation of the replacement steam generators in 2009 and 2010, all necessary analyses, testing, and physical modifications in response to GL 2004-02 would be completed, with the exception of in-vessel effects. The SE for WCAP-16793-NP (Reference 4) provides for the resolution of in-vessel effects for SONGS; there are no additional physical modifications, testing, or evaluations beyond those required in the SE to achieve closure of GSI-191.

The regulatory commitments made in the November 2009 Supplemental Response are discussed in the Licensing Basis section of Attachment 2. The revised Regulatory Commitment in Attachment 2 is listed in Attachment 1. This response contains no other commitments.

It is anticipated that with the additional July 31<sup>st</sup> submittal described in Attachment 2, SCE will achieve closure of GSI-191 for SONGS Units 2 and 3.

If you have any questions or require any additional information, please contact Mark Morgan at (949) 368-6745.

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

Executed on 5/15/2013



Douglas R. Bauder  
Site Vice President and Station Manager

Attachments:

1. List of Regulatory Commitments
2. San Onofre Nuclear Generation Station (SONGS) Units 2 & 3 GSI-191 Closure Plan

cc: A. T. Howell III, Regional Administrator, NRC Region IV  
J. R. Hall, NRC Project Manager, SONGS Units 2 and 3  
G. G. Warnick, NRC Senior Resident Inspector, SONGS Units 2 and 3  
R. E. Lantz, Branch Chief, Division of Reactor Projects, NRC Region IV

# **ATTACHMENT 1**

## **List of Regulatory Commitments**

## LIST OF REGULATORY COMMITMENTS

This table identifies an action discussed in this letter that Southern California Edison commits to perform. Any other actions discussed in this submittal are described for the NRC's information and are not commitments.

COMMITMENT	TYPE		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	SUSTAINABLE ACTION	
The evaluations prescribed by WCAP-16793-NP (Reference 1) will be completed by Southern California Edison (SCE) to demonstrate compliance with the Limitations and Conditions prescribed by the Safety Evaluation (SE) for WCAP-16793-NP (Reference 2). The evaluation results and a listing of the FSAR changes associated with GSI-191 will be submitted to the NRC by July 31, 2013.	Yes	No	July 31, 2013

**Reference:**

1. Report, WCAP-16793-NP, Revision 2, dated October 2011, "Evaluation of Long-Term Cooing Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid", ML11292A021
2. Final Safety Evaluation by the Office of Nuclear Regulation Topical Report WCAP-16793-NP, Revision 2, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid"

# **ATTACHMENT 2**

**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
UNITS 2 & 3 GSI-191 CLOSURE PLAN**

## **Introduction**

Southern California Edison (SCE) has selected Option 1 from SECY 12-0093 (Reference 1), because it is determined that San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 meet the requirements of 10 CFR 50.46, "Acceptance Criteria for emergency core cooling systems for light-water nuclear power reactors", based on approved models for analyses, strainer head loss testing, and in-vessel effects.

In 2009, SCE submitted a Generic Letter 2004-02 Supplemental Response (Reference 2), and indicated that upon installation of the replacement steam generators in 2009 and 2010, all necessary analyses, testing, and physical modifications in response to GL 2004-02 would be completed, with the exception of in-vessel effects. This submittal provides the current resolution status, licensing commitments, and resolution schedule for closure of the Generic Letter and GSI-191.

## **Current Resolution Status**

The NRC Safety Evaluation (SE) for WCAP-16793-NP (Reference 4) provides the necessary evaluations and test results to provide the basis for closure of the in-vessel effects issue, and hence closure of GSI-191 for SONGS Units 2 and 3. A key limitation and condition for the applicability of WCAP-16793-NP (Reference 5) is that the Emergency Core Cooling System (ECCS) sump screen fiber bypass quantity shall not exceed 15 grams per fuel assembly (g/FA). SONGS meets this requirement based on a plant-specific test result value of 12.8 g/FA.

Bypass testing was performed in March 2006, by Alion Science and Technology (Alion). The Alion bypass test plan was reviewed by the NRC during the on-site audit in August and September 2006, as reflected in Section 5.3.2 of the Audit Report (Reference 3). Two audit Open Items (Nos. 18 and 19) resulted from the review; both pertained to accounting for the higher flow rate associated with the single failure of a Low Pressure Safety Injection (LPSI) pump to trip off on initiation of recirculation mode operation. The Alion bypass test report included reconciliation for the "errant" LPSI case, as reported in Attachment 1, Section 3.n.i and Attachment 2, Open Items 18 and 19 of the 2009 Supplemental Response (Reference 2), and as further described below.

At the time the bypass test was performed, the SONGS sump debris loads were based on a governing hot leg break at the original steam generators, which were insulated with mineral wool. As documented in the Alion bypass test report, this break resulted in 497.6 lbs of fibrous debris being transported to the containment emergency sump. The resulting bypass quantity is reported as 1.99 lbs of fiber per 1000 square feet of sump screen area for the design recirculation flow rate of 3500 gpm, and 3.64 lbs of fiber per 1000 square feet of sump screen area for the "errant" LPSI single-failure flow rate of 9000 gpm. Based on a calculation performed by SCE, the total bypass mass is 6.1 lbs; with 217 fuel assemblies, this equates to 12.8 g/FA.

In 2009, as a part of the "Test for Success" program, credit was taken for the then-imminent replacement of the steam generators, which are instead insulated with reflective metallic insulation (RMI). This shifted the governing mineral wool break from the hot leg at the steam

generator to a LPSI line adjacent to a main steam line outside of the bioshield. As documented in the Alion array test design input calculation, the revised governing mineral wool break location results in 172.4 lbs of fibrous debris being transported to the sump; approximately 35% of the quantity bases for the bypass test. Alion performed an assessment of the bypass test relative to the reduction in debris quantity and refinements in their test debris preparation protocols. Based on this evaluation, it is not expected that a bypass test with the reduced debris loading and using currently accepted debris preparation protocols would result in significantly different bypass test results than those obtained during the 2006 bypass test.

### **Licensing Basis Commitments**

SONGS currently has an open commitment, made in the 2009 Supplemental Response (Reference 2), to perform the evaluations required by Westinghouse Topical Report WCAP-16793-NP (Reference 5) relative to in-vessel effects, once the associated NRC SE is issued. The evaluations will be completed to demonstrate compliance with the Limitations and Conditions prescribed by the SE for WCAP-16793-NP (Reference 4), and the results will be submitted to the NRC by July 31, 2013.

An additional commitment was contained in the November 2009 Supplemental Response (Reference 6, Attachment 1, Section 1) to replace the original steam generators, which were insulated with mineral wool, with the replacement steam generators which have reflective metallic insulation. The replacement steam generator work was completed during the Unit 2 and Unit 3 Cycle 16 refueling outages.

### **Resolution Schedule**

As stated above, SCE will provide a submittal demonstrating compliance with the Limitations and Conditions prescribed by SE for WCAP-16793-NP (Reference 4) by July 31, 2013.

As described in Attachment 1, Section 3.p of the 2009 Supplemental Response (Reference 2), SCE updated the UFSAR to reflect the physical plant modifications and evaluations performed (with the exception of in-vessel effects). A review of the UFSAR will be performed relative to the SE for WCAP-16793-NP (Reference 4), and necessary changes will be made. An updated listing of UFSAR changes associated with GSI-191 will be included in the July 31<sup>st</sup> submittal to the NRC.

There are no other pending changes or updates required to the licensing basis.

It is anticipated that with the additional July 31<sup>st</sup> submittal described above, SCE will achieve closure of GSI-191 for SONGS Units 2 and 3.

## **References**

1. SECY 12-0093 Closure Options for Generic Safety Issue – 191, Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance, July 9, 2012: ADAMS accession number ML121310648
2. Letter; Richard J. St. Onge, SCE to NRC; NRC Generic Letter 2004-02 Supplemental Response, San Onofre Nuclear Generating Station, Units 2 and 3; November 12, 2009; ADAMS accession number ML093210174
3. Report; San Onofre Nuclear Generating Station Unit 2 and Unit 3 GSI-191 Generic Letter 2004-02 Corrective Actions Audit Report; May 2, 2007; ADAMS accession number ML070950240
4. Final Safety Evaluation by the Office of Nuclear Reactor Regulation Topical Report WCAP-16793-NP, Revision 2, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid"; ML13084A154
5. Report, WCAP-16793-NP, Revision 2, dated October 2011, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid", ML11292A021