



SOUTHERN CALIFORNIA
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A. Edward Scherer
Manager of
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August 1, 2003

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

**Subject: San Onofre Nuclear Generating Station, Units 2 and 3
Docket Nos. 50-361 and 50-362
60-Day Response to NRC Bulletin 2003-01, "Potential Impact of Debris
Blockage on Emergency Sump Recirculation at Pressurized-Water
Reactors"**

**Reference: NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency
Sump Recirculation at Pressurized-Water Reactors," dated June 9, 2003.**

Attachment: NRC Bulletin 2003-01 Requested Information

Dear Sir or Madam:

The U. S. Nuclear Regulatory Commission (NRC) issued referenced NRC Bulletin 2003-01 to inform licensees of the potential for additional adverse effects due to debris blockage of flowpaths necessary for Emergency Core Cooling System (ECCS) and Containment Spray System (CSS) recirculation and containment drainage. These additional adverse effects were based on NRC-sponsored research that identified the potential susceptibility of pressurized-water reactor recirculation sump screens to debris blockage in the event of a high energy line break that would require ECCS and CSS operation in the recirculation mode.

All affected licensees are requested to provide a response within 60 days of the date of the NRC Bulletin to either: 1) State that the ECCS and CSS recirculation functions have been analyzed with respect to the potentially adverse post-accident debris blockage effects identified in the NRC Bulletin and are in compliance with 10 CFR 50.46(b)(5) and all existing applicable regulatory requirements (Option 1); or 2) Describe any interim compensatory measures that have been or will be implemented to reduce the risk which may be associated with the potentially degraded or nonconforming ECCS and CSS recirculation functions until an evaluation to determine compliance has been completed (Option 2).

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August 1, 2003

The attachment to this letter contains the Southern California Edison response to Option 2 of the requested Information in NRC Bulletin 2003-01.

Should you have any questions or require additional information, please contact me or Mr. Jack Rainsberry at (949) 368-7420.

Sincerely,

A handwritten signature in black ink, appearing to read "T. P. Gwynn". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.


Attachment

cc: T. P. Gwynn, Acting Regional Administrator, NRC Region IV
B. M. Pham, NRC Project Manager, San Onofre Units 2, and 3
C. C. Osterholtz, NRC Senior Resident Inspector, San Onofre Units 2 & 3

State of California
County of San Diego

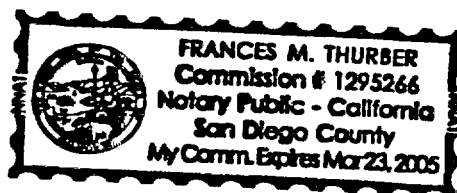
Subscribed and sworn to (or affirmed) before me this 1ST day of

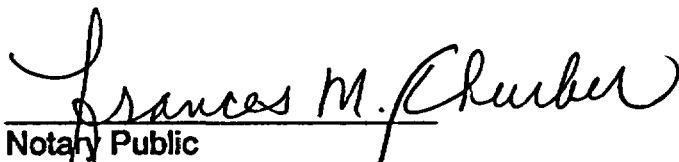
August, 2003, by



A. E. Scherer

Manager of Nuclear Regulatory Affairs





Notary Public

ATTACHMENT
NRC BULLETIN 2003-01 RESPONSE
SONGS UNITS 2 & 3

This response addresses Option 2 of the Requested Information in NRC Bulletin 2003-01. This response discusses: 1) the interim compensatory measures that have been implemented as of the submittal date of the response, and 2) plant specific measures not implemented as of the submittal date and a schedule for implementation.

1. The following interim compensatory measures have been implemented as of the submittal date of the response:

1.1 Procedural modifications, if appropriate, that would delay the switchover to containment sump recirculation (e.g., shutting down redundant pumps that are not necessary to provide required flows to cool the containment and reactor core, and operating the CSS intermittently)

Southern California Edison (SCE) provides direction to San Onofre Nuclear Generating Station Units 2 and 3 (SONGS 2 & 3) operators in accordance with CEN-152, Combustion Engineering Emergency Procedure Guidelines (EPGs). The guidelines provide for throttle/stop of safety injection flow if certain conditions are satisfied (e.g. reactor coolant system sub-cooling, pressurizer level). Training provided to the operators re-enforces the need for timely throttle/stop actions. Additionally, Westinghouse is evaluating potential changes to the guidance in CEN-152. SCE plans to review the potential changes after they become available and make procedural modifications as appropriate.

1.2 Ensuring that alternative water sources are available to refill the RWST or to otherwise provide inventory to inject into the reactor core and spray into the containment atmosphere

There are four proceduralized methods at SONGS 2 & 3 for filling the Refueling Water Storage Tanks (RWSTs). Operating Instruction (OI) SO23-3-2.2, "Makeup Operations" provides for: 1) blended makeup of the RWSTs. OI SO23-3-2.11.1, "S[pent] F[uel] P[ool] Level Change and Purification Crosstie Operations," provides for: 2) transferring spent fuel pool water to the RWST; 3) RWST makeup from Primary Tanks; and, 4) transfer of RWST water to the opposite unit's RWST.

The Functional Recovery procedure step, *EVALUATE Long Term Safety Function Control* (Main Body step 15), directs the operators to initiate makeup as required to the RWST. While no specific method is mentioned in the Emergency Operating Instructions (EOIs), the operators would utilize one of the four methods identified above.

Another step in the EOIs directing RWST refill is Floating Step 20, *MONITOR RWST Level*. It directs the operator to "VERIFY RWST level – greater than 19%" and if less than 19% to evaluate need for makeup to the RWST. Again, SO23-3-2.2 or SO23-3-2.11.1 would be utilized. Additional direction is provided in the Technical Support Center Guideline, MAINTAIN RWST Level.

The Severe Accident Management Guidelines (SAMG) provide: 1) throttling of injection flow to prolong the time to receive a Recirculation Actuation Signal, and 2) flooding the

reactor cavity using unborated water (firewater system) in order to cool the reactor vessel lower head. Both SAMG actions may require the declaration of 10 CFR 50.54 (x) and (y).

1.3 More aggressive containment cleaning and increased foreign material controls

SONGS 2 & 3 Containment Cleanliness and Foreign Material Controls

SCE took action in 1997 to address the management of materials in containment having the potential to challenge the operability of the Containment Emergency Sump (CES). The SONGS Containment Cleanliness and Loose Debris Program was developed from the findings of this activity.

Containment Cleanliness Program

SCE program procedure SO123-HK-2, "Containment Cleanliness," defines the responsibilities and requirements of the containment cleanliness program. The purpose of this procedure is to identify the elements of a program designed to prevent the accumulation of potential debris sources in containment that could potentially render the CES inoperable due to blockage of the sump screens.

SONGS 2 & 3 procedure SO23-XV-23.1.1, "Containment Cleanliness/Loose Debris Inspections," is the implementing procedure for the containment cleanliness program and provides the guidelines and methods for implementing the program requirements for the control of potential debris inside containment.

Containment Housekeeping & Cleanliness

Cleanliness requirements in containment are maintained via a "Clean As You Go" philosophy. Specific responsibilities are called out in SO23-VX-23.1.1 such that each individual working in containment is to clean up after him/herself in a timely manner so that quality is not affected and cleanliness conditions do not degrade.

Prior to containment closeout, station workers conduct a cleaning of accessible areas.

Containment Cleanliness Inspections

The Health Physics Manager is responsible for ensuring that containment cleanliness inspections are conducted on a frequency commensurate with the level and type of work activities being performed.

Containment Cleanliness Inspectors are responsible for conducting inspections based on the requirements of SO23-XV-23.1.1, and for identifying, documenting and field correcting minor deficiencies. Deficiencies found in Modes 1-4, or Modes 5-6 (when the

CES is required to be operable) are documented in the SONGS 2 & 3 corrective action program.

Currently there are over 70 qualified Containment Cleanliness Inspectors representing a broad divisional cross-section of station personnel. Since 1999 there have been over 400 containment cleanliness inspections documented in the SONGS 2 & 3 database.

SONGS 2 & 3 Service Level 1 Containment Coating Program

To ensure containment coatings are maintained in compliance with the licensing basis and that coatings debris is minimized following a Design Basis Accident, SCE implements a strong coatings assessment program.

As previously described in the SCE response to Generic Letter 98-04 for SONGS 2 & 3, Service Level 1 coatings used in containment that are procured, applied and maintained by SCE or their contractor comply with ANSI N101.2 and Regulatory Guide 1.54, except as discussed below. Protective coatings used inside containment, excluding components limited by size and/or exposed surface area, are demonstrated to withstand the design basis accident conditions via compliance with ANSI N101.2 and Regulatory Guide 1.54, except as identified in Updated Final Safety Analysis Report (UFSAR) paragraph 3A.1.54 (Reference UFSAR, Section 6.1.2.1). This UFSAR paragraph addresses SONGS 2 & 3's use of unqualified coatings for the touch up and repair of ferrous metals inside containment as long as these surfaces were previously coated with qualified coating material and the repair or touch up area is limited to less than 30 square inches. This UFSAR section also states that such repair and touch up activities need not be consistent with Regulatory Guide 1.54 with respect to surface preparation and documentation (UFSAR, Section 3A.1.54). Specifically, coatings used inside the SONGS 2 & 3 containments meet the guidance of ANSI N101.2 and Regulatory Guide 1.54, except as discussed above. Adequate assurance that the applicable requirements for the procurement, application, inspection, and maintenance of Service Level 1 coatings are implemented is provided by procedures and programmatic controls, approved under the SCE Quality Assurance Program.

Condition Assessment Walkdowns

Since our response to Generic Letter 98-04, SCE has conducted condition assessments of Service Level 1 coatings inside containment each refueling outage. As degraded or nonconforming coatings are identified, they are evaluated and repaired, or scheduled for repair as necessary, using the SONGS 2 & 3 corrective action program.

Continued Improvements

To ensure that the continued appropriate level of attention is focused on the Service Level I coatings program, the San Onofre Coatings Inspection Team (SOCIT), a multi-discipline working group, was established to provide continuous assessment of the

SONGS coating program to ensure continued compliance with regulatory and industry standards.

1.4 Ensuring containment drainage paths are unblocked

SONGS 2 & 3 procedure SO23-XV-23.1.1, "Containment Cleanliness/Loose Debris Inspections," restricts the use of material in containment that could potentially block the CES screens, and controls the material condition of the CES area.

Specific examples of material controls include:

- All the placards, signs and/or postings remaining in containment are permanently affixed by means of stainless steel braided wire or fasteners such as screws or rivets. Where adhesives are solely used they must comply with the SONGS 2 & 3 approved products list and are installed under engineering overview.
- Use of tape as a tie-down method or securing of step off pads or herculite is not allowed during Modes 1 thru 4. All tape, labels and stickers used in containment during an outage are removed prior to entering Mode 4.
- Use of hemp rope in containment is avoided; nylon rope is used preferentially.

Specific examples of mitigating actions for flow path blockage include:

- In Modes 1-4, light material such as paper, rags, plastic bags/sheeting, blankets, and herculite, capable of migrating to and blocking either the reactor cavity drain line or the CES are not stored in the refueling cavity, near the refueling cavity drain line, or in the Emergency Sump Clear Area as identified by corresponding signage and a gray painted floor surface in containment. Items remaining in containment while at power are required to be tied-off, and must be fastened using environmentally qualified anchor materials such as Tefzel tie-wraps, wire, or chain.
- Upon completion of work in containment which could introduce loose debris, a close-out inspection is performed in accordance with procedure SO23-3-2.34, "Containment Access Control, Inspections and Airlocks Operation," to ensure the containment is free of loose debris which could be transported to the CES and cause a restriction.
- Upon containment close-out after general access was permitted, operators perform a critical valve verification in accordance with procedure SO23-3-2.34 Attachment 13, "Containment Close-out Critical Valve Verification." The verification includes checking that the Refueling Pool Fill/Drain Line valve from the refueling cavity to the CES area is locked open and the flange is removed.

1.5 Ensuring sump screens are free of adverse gaps and breaches

SCE utilizes procedure SO23-I-2.53, "Containment Emergency Sump Inspection Surveillance," to perform the refueling outage inspection of the CES required by Technical Specification Surveillance Requirement 3.5.2.10. SCE revised the procedure in 1999 to include an acceptance criterion that gaps in the sump screens not exceed 0.090 inch, in response to the discovery in 1999 of gaps in excess of the allowable 0.090 inch. In response to the discovery, all gaps greater than 0.090 inch were sealed or reduced to no more than 0.090 inch. Since that time, SONGS personnel have conducted four Unit 2 and six Unit 3 inspections using the revised procedural acceptance criterion and have not identified any gaps of more than 0.090 inch.

2. The following measures will not be implemented at the time of the response to the bulletin:

- **Operator training on indications of and responses to sump clogging.**

Licensed operator requalification training will be completed by November 30, 2003 to address loss of flow/loss of pump suction while in the recirculation mode of emergency core cooling. The training will address indications of sump clogging and subsequent Severe Accident Management Guidelines. The proposed completion time for this measure is reasonable in allowing for orderly preparation of training materials while also taking into account the low probability of occurrence in the meantime of an event requiring recirculation.