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SUBJECT: Provides further clarification of util previous fire protection submittals & other issues discussed during NRC site visit during wk of 871207. Method for providing seismically qualified fire water supply capability encl.

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February 22, 1988

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

On May 31, 1987, Southern California Edison Company (SCE) transmitted the Appendix R Compliance Assessment Report for San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS 2 and 3) to the Nuclear Regulatory Commission (NRC). The Compliance Assessment Report documented the criteria, methodology and results of SCE's reassessment of SONGS 2 and 3 compliance with the requirements of 10 CFR 50, Appendix R, Sections III.G, III.J, III.L and III.O in light of new guidance provided in Generic Letter 86-10. Included as enclosures to the May 31, 1987 letter were SCE's responses to the NRC's Request for Additional Information (RAI) dated October 6, 1986 and SCE's formal requests for deviation from the requirements of 10 CFR 50, Appendix R.

By letters dated November 20, 1987 and January 21, 1988, SCE provided clarification of the May 31, 1987 submittal based on NRC questions/comments and other issues pertaining to SONGS 2 and 3 fire protection discussed in subsequent meetings between SCE and the NRC. This letter provides further clarification of SCE's previous fire protection submittals and addresses other fire protection issues discussed during the NRC site visit to SONGS 2 and 3 conducted the week of December 7, 1987.

As was discussed during the December 1987 NRC site visit and in subsequent conversations, SCE utilizes Seismic Category I fire trucks and tankers to provide fire water to areas with safe shutdown equipment following a safe shutdown earthquake. It is SCE's desire to revise the current method of supplying post-SSE fire water. Enclosure 1 to this letter provides a detailed discussion of our proposed method of providing this capability, and includes information on previous licensing commitments and the original design basis to support NRC review. The revised method will not only satisfy the necessary system functional requirements, but also addresses those issues on this subject which arose during the original SONGS 2 and 3 licensing process. The modification to the SONGS 2 salt water cooling system, and addition of pre-staged hose houses at designated locations around SONGS 2 and 3 to support this proposed method, will be completed by April 1, 1988. The modification of the SONGS 3 salt water cooling system will be completed by May 15, 1988.

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Another issue which requires clarification pertains to fuse replacement actions by operators as part of the SONGS 2 and 3 safe/alternative shutdown procedures. The version of the post-fire alternative shutdown procedure provided for NRR review reflects fuse replacement actions; however, the actions are only for non-safe shutdown components, and performance of these actions is not essential to achieve and maintain safe shutdown. The fuse replacement actions were included in the procedure since, in general, the operators would prefer to limit the extent of fire damage to non-safe shutdown plant systems wherever possible.

Following recent discussions with NRR, SCE is now aware of the NRC's desire to eliminate non-essential operator actions from post-fire safe shutdown procedures. To address this, SCE is revising the SONGS 2 and 3 alternative shutdown procedure to remove the non-essential operator actions (i.e., fuse replacements) and place them in a separate procedure step entitled, "Recovery of Non-Safe Shutdown Components." The specific changes being made to the procedure are described in Enclosure 2. These changes will be incorporated by March 18, 1988. It should be noted that, following completion of the Unit 3, Cycle 4 refueling outage Appendix R modifications, replacement of fuses will not be required to achieve and maintain safe shutdown.

As discussed in previous submittals and NRC meetings, SCE has initiated a fire area boundary penetration seal program to reassess the qualification of the fire barrier penetration seals at SONGS 2 and 3. The program is evaluating the testing basis for the seal installation details which depict the preapproved seal configurations. Where a fire rated seal is not wholly represented by a test, the fire test may be supplemented by an engineering evaluation to demonstrate the equivalent fire rating of the seal. In some instances, the fire rating of a seal may not be supported by tests or evaluation. Seals which are found to not be supported by tests or evaluation will be reviewed for acceptability for each specific application. If the adequacy of a seal cannot be demonstrated for specific applications, corrective actions will be taken.

To address NRR and NRC Region V concerns, voiced during the December 1987 site visit, regarding the acceptability of installed seals pending the final program results, SCE is maintaining in-place roving, hourly fire watch patrols as interim compensatory measures. This practice is consistent with compensatory measures utilized at other nuclear plants prior to finalization of plant-specific fire-rated penetration seal program results. When the adequacy of an individual seal cannot be demonstrated, SCE will implement compensatory measures for the corresponding penetrated barrier in accordance with Technical Specification 3.7.9, "Fire Rated Assemblies." SCE's commitment to provide interim compensatory measures for penetration seals is also documented as part of U.S. NRC Region V Inspection Report Nos. 50-361/87-33 and 50-362/87-33 dated January 29, 1988.

As discussed during the December 1987 NRC site visit and in subsequent conversations, SCE is currently preparing license amendment submittals to request interim fire protection license conditions and fire protection technical specifications. The proposed license amendments will be submitted to the NRC shortly under separate cover letters.

In cases where this submittal revised positions reflected in previous fire protection submittals, the enclosed information supersedes that previously submitted.

If you have any questions regarding this matter, please call me.

Very truly yours,

M. O. Medford/BRCox

Enclosures

cc: D. Hickman, NRR Senior Project Manager, San Onofre Units 2 and 3
J. B. Martin, Regional Administrator, NRC Region V
F. R. Huey, NRC Senior Resident Inspector, San Onofre Units 1, 2 and 3
D. J. Kubicki, NRC Staff
C. B. Ramsey, Inspector, NRC Region V

SEISMICALLY QUALIFIED FIRE WATER SUPPLY CAPABILITY

Issue: SCE currently utilizes Seismic Category (SC) I fire trucks/pumpers and tankers to supply water to safe shutdown areas following a safe shutdown earthquake (SSE). An alternative method to provide this capability is proposed. A description of this method and pertinent background information is provided below.

Background: During the initial licensing process of SONGS 2 and 3, the NRC asked SCE how water would be provided to fight a fire after an SSE. In lieu of costly modifications to seismically upgrade the existing underground yard fire main and other portions of the fire water supply system, SCE provided a manual fire fighting capability consisting of two 75 gallon/minute (gpm) hose streams (150 gpm total) of fresh water, for at least two hours, to all plant areas required for safe shutdown.

To meet the necessary system functional requirements, two fire truck tractors were provided with one self-powered fire pump mounted on each tractor unit. The fire pumps are capable of delivering 250 gpm at a discharge pressure between 150 and 250 psi. Three water tank units with a minimum capacity of 6000 gallons each are used to store water for the post SSE manual fire fighting capability. With these, a continuous water supply from all three water tank units can be provided by utilizing the second fire pump to transfer fluid from the second and third tanker to the first tanker dispatched to the scene to serve as the primary source of water. Fill provisions have been provided for this purpose on the rear of each tanker. The seismic qualification of the trucks and tankers is based on the use of tiedown restraints located in the Units 2 and 3 Fuel Handling building railroad access-tunnels/truck bays.

To support this capability, SCE modified certain existing standpipes in the containment, penetration area, control building and radwaste building to upgrade them to SC I requirements and to add isolation valves to manually isolate these standpipes from the normal non-SC I supply headers and other non-SC I lines normally served by the headers. Additionally, the upgraded standpipes were provided with valved hose connections to which a hose from a fire truck can be connected. Other plant areas containing safe shutdown equipment, such as the electrical tunnels, auxiliary feed water pump rooms, and diesel generator and safety equipment buildings, are protected by using hoses directly from the pump/tank trucks that are moved on the access road around the power block.

This post-SSE fire water capability is one element of the SONGS 2 and 3 fire protection program and design/compliance information thereon is contained in the UFHA, UFSAR, original FHA and original FHA questions and responses. As described in these licensing documents, the primary purpose of these trucks/tankers is to provide fire water to areas with safe shutdown equipment following an SSE. A secondary function of these trucks is to provide SC I makeup to the SONGS 2 and 3 component cooling water (CCW) surge tanks. In the event that makeup capability is desired for the CCW system(s), the trucks/tankers can be utilized, after performing their fire water function, to transfer water from an alternate water source to the CCW system.

Discussion: In an effort to reduce the need for Station maintenance/ surveillance activities and to alleviate logistical problems for future fuel handling building truck bay activities, SCE proposes to revise the current means of providing manual post-SSE fire fighting capability. Design Change Packages (DCPs) 2-6714.OBM and 3-6714.OBM will provide a connection to each unit's salt water cooling system to supply seawater to a pumper truck post-SSE in lieu of the three fresh water tankers. The connections will be made to existing 6-inch vent lines at the discharge of the Train A and Train B salt water pumps for both Unit 2 and Unit 3. This modification will not impact the ability of the saltwater cooling system to perform its design function. One pumper truck will be moved to a location near the intake structures and adequate suction hose to the pumper will be provided. Sufficient discharge hose from the pumper will also be provided in order to reach the furthest seismic standpipe inlet connection or any safe shutdown area not fed from the seismic standpipes (i.e., cable tunnels, diesel generator buildings, etc.). These hoses will be provided in seismically-mounted hose cabinets in pre-staged locations around Units 2 and 3 to ensure their availability post-SSE and to facilitate laying of these hoses by the fire department.

SCE intends that this capability will fully replace the three tankers for fire protection purposes. Additionally, the proposed salt water cooling system connections would necessitate that only one pumper truck be operable post-SSE. Since the salt water cooling system provides an inexhaustible water supply (i.e., the Pacific Ocean), reliance on the three tankers and the second pumper truck would be unnecessary. Therefore, operability of the three tankers and second pumper truck would no longer be required to support post-SSE manual fire fighting capability.

A related issue with respect to seismic fire truck/tanker operability requirements pertains to the need for tiedown restraints to support the SC I classification/qualification. As part of the proposed method for post-SSE fire water, SCE has

reexamined the need for seismic restraint of the equipment during an SSE. Experience data obtained from past earthquakes world-wide yields the following facts:

1. Trucks (specifically the tractor/pumpers) are inherently resistant against overturning during a seismic event,

2. Trucks may slide about a foot during an earthquake consisting of peak accelerations of approximately 0.67g and strong motions of 10 second duration (SONGS 2 and 3 design basis SSE is approximately 0.67g with strong motions of 80 second duration), and

3. There has been one case of a fully-loaded logging tractor-trailer which overturned in a recent New Zealand earthquake.

Based on these observations and SCE civil engineering assessment, the fire tractors/pumpers would not require seismic restraints to be operable when parked at least 15 feet away from potential interactions with nearby structures/objects. Therefore, in conjunction with the salt water cooling connections, SCE also proposes that at least one tractor/pumper truck will be maintained operable through the use of seismic tiedowns or by establishing a 15-foot exclusion area from potential interactions with the nearest structure/object within the SONGS 2 and 3 protected area. SCE intends to utilize one or more tankers for post-SSE CCW makeup capability and the tanker(s) would be maintained in its restrained configuration except when performing maintenance or when moving the tanker(s) from one tiedown location to another tiedown location.

Summary: SCE proposes to utilize a connection to the Units 2 and 3 salt water cooling system, one operable tractor/pumper, and pre-staged hoses in designated locations to provide post-SSE manual fire fighting capability. To maintain the tractor/pumper operable will require either seismic restraints or establishment of a 15-foot exclusion area from potential interactions with structures/objects. This revised capability will satisfy the fire water supply system functional requirements (i.e., flow rate, discharge pressure, etc.) necessary to provide two 75 gpm hose stream coverage to all SONGS 2 and 3 safe shutdown areas.

References: Updated Fire Hazards Analysis (UFHA), Revision 3

Section 3.3.2B (p. 3-11); Appendix D, Section E.2.g (p. 9 of 20), Section E.3.a (p. 10 of 20), and Section E.3.d (p. 16 of 20).

Updated Final Safety Analysis Report (UFSAR), Revision 3

Chapter 3, Section 2.1, Table 3.2-1 (p. 3.2-63);
Chapter 9, Section 2.2.1, Paragraph H (p. 9.2-21);
Chapter 9, Section 5.1.1, Paragraph N (p. 9.5-3);
Chapter 9, Section 5.1.5.7 (p. 9.5-16).

Fire Hazards Analysis and Comparison with Appendix A of NRC Branch Technical Position 9.5-1 (Original FHA), Amendment 13

NRC Questions and Responses: FQ015.9 (p. FHA-12), FQ015.36 (p. FHA-58), FQ015.41 (p. FHA-64), FQ015.50 (p. FHA-74), FQ015.58 (p. FHA-82), FQ015.60 (p. FHA-85), FQ015.61 (p. FHA-87)

JWM:9329F

REPLACEMENT OF FUSES TO ACHIEVE AND MAINTAIN SAFE SHUTDOWN

Issue: The most recent version of the SONGS 2 and 3 post-fire alternative shutdown procedure, SO23-13-2, Revision 1, contains operator actions to replace fuses as part of the safe shutdown process. These fuse replacement actions are not required for safe shutdown and are only intended to limit the extent of fire damage to non-safe shutdown plant systems wherever possible.

Background: The primary concern of the NRC regarding post-fire alternative shutdown (Appendix R) procedures is the potential for an operator to expend extraneous time and effort to complete an action which is not absolutely necessary for safe shutdown. Eliminating such steps from the safe shutdown procedures would significantly reduce the potential for an operator to neglect to perform a critical action in the appropriate time frame required for safe shutdown. In some instances, the NRC has required that licensees eliminate such non-essential operator actions from post-fire safe shutdown procedures.

Discussion: In response to these NRC concerns, SCE is revising the SO23-13-2, Revision 1 procedure to remove non-essential operator actions from various procedural steps and place them in a separate procedure step after critical actions required for safe shutdown. The changes are described below:

SO23-13-1, Rev. 1, Attachment 6 (Unit 2 ACO Duties)

The following steps will be extracted and relocated to a new step which addresses recovery of non-safe shutdown components:

15.1.2, 15.1.5, 15.1.7, 15.1.8,
15.2.2, 15.2.3, 15.2.4, 15.2.5, 15.2.7, 15.2.8,
15.3.1,
15.4.4, 15.4.5, 15.4.6, 15.4.10, 15.4.11, 15.4.12.

Step 15.4.4 will now read "Start Safe Shutdown Emergency HVAC Units", to clarify that operation of only safe shutdown HVAC will be initiated in this step.

The following notes accompany the new non-safe shutdown step:

1. The following components are not required for safe shutdown. Do not address recovery until all previous steps have been completed.

2. The following components are not protected by design. If control power fuse for any of these components has blown due to a control room fault (indication lights extinguished), then open breaker and cubicle, replace fuse, and reclose cubicle and breaker. (Replacement fuses and fuse-pullers are located at safe shutdown locker.) Replace fuses only with identically rated fuses. If replacement fuse also blows, discontinue efforts to recover that component.

S023-13-2, Rev. 1, Attachment 7 (Unit 3 ACO Duties) and Attachment 24 (Unit 3 Train B Power Recovery)

The changes are similar to those described above, with the exception that Unit 3 will still credit fuse replacement for some required safe shutdown components as an interim measure.

Summary: Through incorporation of the above noted changes, the SONGS 2 and 3 alternative shutdown procedure will direct operators not to perform non-essential, non-safe shutdown actions until after critical safe shutdown actions have been performed. Once necessary safe shutdown systems and controls have been restored and plant conditions have been stabilized, as necessary, restoration of non-safe shutdown components could be initiated utilizing the specific guidelines described above.

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