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November 29, 1983

U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596-5368

Attention: Mr. J. B. Martin, Regional Administrator

Dear Sir:

Subject: Docket Nos. 50-361 and 50-362
IE Inspection Reports 50-361/83-35 and 50-362/83-33
Response to Notice of Violation
San Onofre Nuclear Generating Station, Units 2 and 3

Mr. T. W. Bishop's letter of October 27, 1983, issued IE Inspection Report 50-361/83-35 and 50-362/83-33 and forwarded a Notice of Violation resulting from the September 26 through 30, 1983, special inspection conducted by Mr. K. M. Scown. The enclosure to this letter provides our response to the Notice of Violation contained in Appendix A to Mr. Bishop's letter of October 27, 1983. At our request (telephone conversation, Mr. P. A. Croy [SCE] to Mr. J. Eckhardt [NRC] of November 23, 1983) the due date for the enclosed response was changed to November 29, 1983, to allow time to provide a more complete reply.

If you require any additional information, please so advise.

Sincerely,

Enclosure

cc: A. E. Chaffee
(USNRC Senior Resident Inspector, Units 1, 2 and 3)

J. P. Stewart
(USNRC Resident Inspector, Units 2 and 3)

ENCLOSURE

Response to the Notice of Violation contained in Appendix A to Mr. T. W. Bishop's letter of October 27, 1983.

ITEM A

Appendix A to Mr. Bishop's letter states:

> "Unit 2 Operating License No. NPF-10, paragraph 2.C.(14).a states in part that 'SCE shall maintain in effect and fully implement all provisions of the approved Fire Protection Plan as amended through Amendment 10...' Unit 3 Operating License No. NPF-15, paragraph 2.C.(12).a states in part that 'SCE shall maintain in effect and fully implement all provisions of the approved Fire Protection Plan as amended through Amendment 12...' In the licensee's response to Question FQ015.34 contained in the Fire Hazards Analysis, (FHA) Amendment 7, page FHA-56, it states '...a new non-safety related (Seismic III) instrument panel will be provided in the electrical penetration area with self contained process instrumentation utilizing existing non-safety related transmitters which are isolated from existing instrumentation by means of transfer switches. Meters are provided on this panel to indicate steam generator pressure and level, pressurizer pressure and level and reactor coolant hot and cold leg temperatures.'
>
> "Contrary to the above requirements, on September 30, 1983, Units 2 and 3 non-safety related (Seismic III) instrumentation panels only had meters to indicate reactor coolant hot leg temperature. No meter was provided to indicate reactor coolant cold leg temperature.
>
> "This is a Severity Level IV Violation (Supplement 1) applicable to Units 2 and 3."

RESPONSE

Background Information:

As originally conceived, the Essential Plant Parameters Monitoring (EPPM) panel was to provide non-safety related readouts for both RCS hot and cold leg temperature. However, during the design of the EPPM panel, additional requirements were promulgated by the NRC (NUREG-0737) which required the addition of a subcooled margin monitoring system. This new system utilized the same temperature inputs that had been dedicated to the EPPM instrumentation. The single element reactor coolant resistance temperature detectors (RTD's) were replaced with dual element devices; however, insufficient instrument loops were available. The only temperature inputs remaining that could be utilized by the EPPM were safety related. To minimize the complexity of safety related instrument loops, RCS cold leg temperature indication was eliminated.

Although it was intended that the applicable licensing documents would be revised to reflect the elimination of RCS cold leg temperature from the EPPM panel, the response to Question FQ 015.34 was not properly amended to indicate this change. The corresponding discussion in the FSAR (Section 7.7.1.9) indicates that "Reactor coolant temperature" indication is provided and RCS hot leg is specifically addressed without reference to RCS cold leg. This FSAR section also required clarification to reflect our design intent following NUREG-0737.

A thorough re-examination of the adequacy of the existing EPPM design has been conducted by SCE, the A/E and NSSS vendor. From the results of this re-examination we have confirmed that monitoring only RCS hot leg temperature during plant cooldown under natural circulation conditions from the EPPM panel fulfills the intended function of this panel and provides the Operator with sufficient information when used with the other indications available on the panel. Temperature indication on this panel is required to monitor the cooldown process and determine when RCS conditions are such that shutdown cooling can be initiated. In addition, steam generator pressure is used to indirectly infer RCS cold leg temperature under subcooled natural circulation conditions. To accurately correlate steam generator pressure to cold leg temperature, the following three parameters, are used by the Operator at the EPPM panel:

1) Sufficient inventory in the steam generators to cover at least the first 1/3 of the tube bundle height.

2) Sufficient auxiliary feedwater flow to maintain steam generator inventory.

3) At least 20^{o}F of subcooling exists in the RCS (as measured using highest T_{hot} and pressurizer pressure).

This is consistent with the current SONGS operating instruction on natural circulation which requires monitoring of both RCS subcooling and steam generator inventory to ensure adequate natural circulation flow.

Corrective Steps Which Have Been Taken And The Results Achieved:

As discussed above, the adequacy of the EPPM design has been confirmed. As discussed below, corrective steps were initiated in June 1983 to make appropriate revisions to the FHA; revision to Question FQ015.34 will be made part of this FHA revision.

Corrective Steps Which Will Be Taken To Avoid Further Items Of Noncompliance:

As discussed above, the cause of the discrepancy identified in the Notice of Violation was lack of an adequate FHA review and update program at the time the changes were made to the EPPM Panel design. To avoid further items of noncompliance related to discrepancies between the as-built configuration of the plant and the FHA, a thorough review of the FHA was inititated in June 1983. In addition, we are preparing a complete revision of the FHA to improve its clarity. This revision of the FHA will be submitted to the NRC by February 15, 1984.

Date When Full Compliance Will Be Achieved:

It is considered that the existing design complies with the applicable requirements as discussed above. However, to correct the discrepancy in the FHA addressed in the Notice of Violation above, we will submit a revision by February 15, 1984.

ITEM B

Appendix A to Mr. Bishop's letter states:

> "Unit 3 Operating License No. NPF-15, paragraph 2.C.(12)a states in part that '...In addition, SCE shall meet the technical requirements of Section III.G, 'Fire Protection of Safe Shutdown Capability'...' Section III.G.1, Appendix R, 10 CFR 50, states in part that 'Fire protection features shall be provided for structures, systems, and components important to safe shutdown...' Section III.G.1.a states 'One train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage;...' Section III.G.2.b and c lists alternatives that can be implemented in order to meet the requirements of III.G.1. Section III.G.2.b and c state in part that 'Separation...of redundant trains by a horizontal distance of twenty feet with...fire detectors and automatic fire suppression system shall be installed in the fire area; or c. Enclosure of cable and equipment...of one redundant train in a fire barrier having a one-hour rating...'
>
> "The licensee had selected wrapping redundant equipment power cables that were found to be within 20 feet of each other with a 1-hour rated fire resistant material.

"Contrary to the above requirements, on September 30, 1983, in Unit 3 cable riser gallery, Zone 29, 30 foot elevation, redundant power supply cables 3BBZ07P1 and 3BBZ070D for heating ventilation and/or air conditioning (HVAC) units for the Plant Intake Structure Cooling Fans were not wrapped for approximately one and one-half feet where they changed direction and cable trays. These HVAC units are required to provide cooling for the Sea Water Cooling System pump motors. The Sea Water Cooling System is required for safe shutdown because it provides cooling water for the component cooling water heat exchangers.

"This a a Severity Level IV violation (Supplement 1) applicable to Unit 3 only. "

RESPONSE

Corrective Steps Which Have Been Taken And The Results Achieved:

Review of the identified item of noncompliance revealed that Train A cables, rather than Train B cables for the HVAC units for the intake structure cooling fans required wrapping in accordance with Section I.E.1 of the FHA. The discovery of this discrepancy and its correction on November 7, 1983, was reported in our 14-Day Follow-Up Report of November 10, 1983.

Corrective Steps Which Will Be Taken To Avoid Further Items Of Noncompliance:

As part of the effort described in Item A above, all safe shutdown circuits are being reviewed to verify that the working raceway drawings accurately reflect the separation criteria and that all raceways identified as requiring exposure barriers are wrapped. This effort is scheduled to be completed by December 7, 1983.

Date When Full Compliance Will Be Achieved:

Full compliance was achieved on November 7, 1983, when Train A power cables were wrapped.

ITEM C

Appendix to Mr. Bishop's letter states:

"Unit 3 Operating License No. NPF-15, paragraph 2.C.(12)a states in part that '...In addition, SCE shall meet the technical requirements of Section III.G, 'Fire Protection of Safe Shutdown Capability...' Section III.G.1 requires that 'Fire protection features shall be provided for structures, systems, and components important to safe shutdown. These

features shall be capable of limiting fire damage so that: a one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage;...' Sections III.G.2 and III.G.3 specify four alternatives that may be implemented outside of primary containment to assure that one redundant train of equipment, cabling and associated circuits necessary to achieve and maintain hot shutdown remains free of fire damage.

"The alternatives of III.G.2 state in part that:

"a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating...

"b. Separation of cables and equipment...of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or

"c. Enclosure of cable and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area,...'

"Unit 2 was commited to Appendix R, III.G, by letter dated July 27, 1982, wherein it states "Southern California Edison Company commits to compliance with technical requirements of 10 CFR 50, Appendix R, Parts III.G, J, and O for San Onofre Nuclear Generating Station, Units 2 and 3."

"Safe shutdown equipment was identified in FSAR Secton 7.4, Table 7.4-1 and in the Fire Hazards Analysis Section I.0, Table I-6. It includes the Service Water Cooling, Shutdown Cooling, Component Cooling Water and Charging and Volume Control (boron addition) systems.

"Contrary to the above requirements, at the time of the inspection, common walls of the rooms containing redundant trains of certain safe shutdown equipment (component cooling water pumps, shutdown cooling system pumps (low pressure safety injection pumps), charging pumps, and shutdown cooling heat exchangers) had open penetrations. In addition, no automatic fire suppression systems were installed in these areas. This is a Severity Level IV Violation (Supplement 1) applicable to Unit 3. This is a deviation from commitment for Unit 2."

RESPONSE

Background Information:

The existing common walls in the rooms identified in the Notice of Violation are either fire walls rated in excess of the fire loading or unsealed non-rated walls of massive concrete construction. The acceptability of walls of massive concrete construction with unsealed penetrations as suitable separation barriers between redundant safe shutdown equipment is based on the following:

a. There are minimal fire loadings in these rooms, and

b. Unsealed penetrations in walls have a small cross-sectional area compared to the total wall surface area and provide little or no path for fire propagation.

Fire severity is expressed in units of time and is based on fire loading as described in the introduction of the FHA. The fire severity of rooms listed in the Notice of Violation is less than or equal to two minutes except for the Charging Pump Rooms. The Charging Pump rooms have five minute fire severity and there are no ungrouted openings in walls between redundant trains.

Other rooms containing safe shutdown equipment have massive concrete walls, unsealed penetrations and minimal fire loadings. These rooms are:

(a) Spent Fuel Pool Heat Exchanger Rooms (no fire loading),

(b) Component Cooling Water Heat Exchanger Room (no fire loading),

(c) Boric Acid Makeup Pump Rooms (2 minute fire severity),

(d) Component Cooling Water Tank Rooms (no fire loading), and

(e) Spent Fuel Pool Pump Rooms (1 minute fire severity).

Therefore, based upon minimal fire loadings and little or no path for fire propagation, use of unrated and unsealed walls composed of massive concrete construction separating redundant trains of safe shutdown equipment is considered adequate.

It was believed that this design had been discussed with, and examined by NRR during the licensing process and found by them to be acceptable. The July 27, 1982, letter to NRR addressed in the Notice of Violation above, makes reference to our July 22, 1982, letter to NRR wherein we identified exceptions to the guidelines provided by Branch Technical Position 9.5-1. In the July 22, 1982, letter, on page 2, we state that, "Because of the vintage of SONGS 2 and 3..." the design had "...not provided three hour fire rated barriers in all areas...", "However, fire barriers have been provided, as detailed in the Fire Hazards Analysis, which have been reviewed by the [NRR] staff with respect to fire loading and safe shutdown capability and found to be acceptable...."

Our understanding that NRR had accepted this design was based on our meetings with them which included a walkdown and examination by NRR representatives in August 1979. During this walkdown, the NRR representatives examined the fire barrier walls including the walls identified in the above Notice of Violation and, although they commented and took exception to other areas of the plant during the walkdown, no exception was taken to the non-sealed massive concrete walls.

In Amendment No. 3 to the FHA, we revised our response to Question FQ015.6 in response to the ongoing narrative with NRR. In retrospect, it appears that SCE's amended response to Question FQ015.6 was somewhat ambiguous. As we stated in our response to the Question, the walls "...have minimum fire barrier ratings in excess of the maximum fire severity or are made up of massive concrete construction which has no rating...", later we state, "All areas containing safe shutdown related cable or equipment are presently separated by a minimum of 2-hour fire rated barriers."

Corrective Steps Which Have Been Taken And The Results Achieved:

As discussed above, the existing design which permits unsealed non-rated walls of massive concrete construction to be used in zones of minimal fire loading, is considered adequate. However, correction of the FHA is required. As discussed in our response to Item A, corrective steps were initiated in June 1983 to make appropriate revisions to the FHA; revision to Question FQ015.6 will be made part of this FHA revision.

Corrective Steps Which Will Be Taken To Avoid Further Items Of Noncompliance:

The corrective steps discussed in Item A above will prevent recurrence.

Date When Full Compliance Will Be Achieved:

It is considered that the existing design complies with the applicable requirements as discussed above. However, in light of the lack of clarity in the FHA, we intend to submit a revision on February 15, 1984.