

DESIGNATED ORIGINAL

Certified By

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May 9, 1986

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. 50-206, 50-361 and 50-362  
NRC Enforcement Actions Related to Inspection  
Nos. 50-206/85-30; 50-361/85-29; and 50-362/85-28  
San Onofre Nuclear Generating Station, Units 1, 2, and 3

By letter dated February 19, 1986, the NRC's Vendor Program Branch transmitted to us the results of the NRC environmental qualification audit of San Onofre Units 1, 2 and 3. The report identified seven potential enforcement/unresolved items and six open items. Mr. D. F. Kirsch's letter dated April 2, 1986 issued a Notice of Violation concerning five of the seven potential enforcement items. The purpose of this letter is to respond to the Notice of Violation. As discussed between Mr. D. F. Kirsch of your staff and Mr. J. M. Curran of SCE, the response due date was extended one week to May 9, 1986.

Provided as an enclosure is the Southern California Edison Company (SCE) response to the Notice of Violation. As indicated, all items related to Unit 1 will be completed prior to return to service of San Onofre Unit 1. The two items related to Units 2 and 3 will be completed by August 29, 1986. At the time of the audit, the items referenced in the Notice of Violation were still considered to be qualified by SCE. As demonstrated in the enclosure, the additional information obtained supported SCE's earlier conclusions concerning the qualification of the Galite and Rockbestos cable. The qualification package for the Honeywell transducer indicated it was qualified for the environment it would be exposed to in the design basis event. With the exception of the Target Rock solenoid valves, it is our opinion that adequate qualification, as required by 10 CFR 50.49(j), was demonstrated at the time of the audit. Therefore, it is our further opinion that the cable and transducer did not warrant a Notice of Violation.

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Mr. J. B. Martin

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May 9, 1986

SCE

In the case of qualification of the Target Rock solenoid valve, the qualified life was based on the assumption the solenoid was deenergized. During the audit it was determined the solenoid is normally energized. An evaluation of the Target Rock solenoid valves energization status was performed. The solenoids for the affected Target Rock solenoid valves will be replaced and the recalculated qualified life will be included in the qualification package prior to the return to service of San Onofre Unit 1.

I trust the enclosure responds adequately to all aspects of the violations. If you have any questions or if we can provide additional information, please let me know.

Very truly yours,

*Kenneth P. Bushni*

Enclosure

cc: F. R. Huey, USNRC Senior Resident Inspector  
R. Dudley, USNRC Project Manager, San Onofre Unit 1  
H. Rood, USNRC Project Manager, San Onofre Units 2 and 3

ENCLOSURE

Response to the Notice of Violation contained in the Enclosure to Mr. D. F. Kirsch's letter of April 2, 1986.

1. The enclosure to Mr. D. F. Kirsch's letter of April 2, 1986 states:

"Paragraph (j) of 10 CFR 50.49 requires that a record of qualification must be maintained to permit verification that each item is qualified for its application and meets its specified performance requirements when subjected to the conditions predicted to be present when it must perform its safety function up to the end of its qualified life.

"Paragraph (k) of 10 CFR 50.49 states that equipment previously required by the Commission to be qualified to the "Guidelines for Evaluating Environmental Qualification for Class 1E Electrical Equipment in Operating Reactors" or NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment" need not be requalified.

- a. Section 5.2.2 of the Guidelines states that the type test is only valid for equipment identical in design and material construction to the test specimen, and any deviations should be evaluated as part of the documentation. (Applicable to Unit 1)
- b. Section 5(1) of NUREG-0508 (Cat. I and II) states that the basis of qualification shall show the relationship of all facets of proof needed to support adequacy of the complete equipment. (Applicable to Units 2 and 3).

"Contrary to the above requirements, for Galite thermocouple extension cable, at the time of the inspection, the files did not establish similarity between the plant equipment and test specimen; specifically, the processes for applying insulation to the conductors were not shown to be similar.

"This is a Severity Level IV violation (Supplement I)."

RESPONSE:

The test report for the Galite cable demonstrated that the insulating material for the cable was capable of withstanding a design basis event at Units 1, 2 and 3. The cable utilized at the site was manufactured by Galite, but the cable tested was manufactured by Prestolite Wire and Cable Co. The NRC reviewer of the environmental qualification package indicated that adequate documentation had not been provided which would substantiate the similarity of the processes used by the manufacturers to apply the insulating material to the conductors. Demonstrating similarity between the manufacturers' insulating material was considered not to be sufficient by the NRC reviewer.

Consistent with industry practice at the time of the audit, under the DOR Guidelines and NUREG 0588 Category II to which the cable was qualified, it was considered unnecessary to obtain written documentation concerning details of manufacturing similarity once material similarity had been established since all manufacturers conform to the proprietary processes furnished by the insulation polymer supplier. During the audit, the cable manufacturer was contacted and additional information was obtained which demonstrates the similarity between the Galite and Prestolite processes for applying the insulation material to the conductors.

Corrective Steps Which Have Been Taken and the Results Achieved

During the audit, the cable manufacturer was contacted and additional information was obtained which demonstrates the similarity between the Galite and Prestolite processes for applying the insulation material to the conductors. The environmental qualification packages will be revised to include this additional information.

Corrective Steps Which Will Be Taken to Avoid Further Items of Noncompliance

No corrective measures, except for those already described, are required to avoid further items of noncompliance. The methods and procedures used by SCE to document compliance with appropriate environmental qualification requirements are sound. The perceived discrepancy with the completeness of the Galite cable environmental qualification document packages is not considered to be a programmatic concern.

Date When Full Compliance Will Be Achieved

Full compliance will be achieved when the environmental qualification document packages for Galite thermocouple extension cable are revised prior to return to service for Unit 1 and by August 29, 1986 for Units 2 and 3.

2. The enclosure to Mr. D. F. Kirsch's letter of April 2, 1986 states:

"Paragraph (j) of 10 CFR 50.49 requires that a record of qualification must be maintained to permit verification that each item is qualified for its application and meets its specified performance requirements when subjected to the conditions predicted to be present when it must perform its safety function up to the end of its qualified life.

"Contrary to the above requirement, for Rockbestos Firewall EP cable, at the time of the inspection, the files did not adequately support claimed qualification to 10 CFR 50.49; specifically, the test report relied on for qualification was Rockbestos Report QR#1804, which is discredited by IE Information Notice 84-44.

"This is a Severity Level IV violation (Supplement I)."

RESPONSE:

The environmental qualification document package contained a Rockbestos test report for Firewall EP cable. The package indicated that based on this test report, the cable was qualified for use in Unit 1 design basis events. IE Information Notice 84-44 was included in the document package, and even though it alerted the industry to shortcomings in the testing done by Rockbestos, it does not state the cable is not qualified. The Notice indicates the NRC staff concluded that no immediate safety problem exists in the use of Rockbestos cable, and further, indicates that it is the licensee's responsibility to ensure the Rockbestos cable is qualified for the intended use. SCE confirmed with Rockbestos during our initial preparation of the EQ document package for this cable that retesting of the Firewall EP cable was in progress. SCE intended to follow the results of this retesting to confirm acceptable results and if necessary, acquire the actual test report for incorporation into the environmental qualification package. We believed this to be an acceptable course of action consistent with those outlined in the Notice. Additionally, based on our review of the Rockbestos test report and the fact that Rockbestos was actively resolving this issue with the NRC, it was, and still is, our opinion that the cable was qualified for use at Unit 1 and an acceptable program to resolve any perceived discrepancies was in progress as recommended in IE Information Notice 84-44.

However, as a result of the audit, SCE contacted Niagara Mohawk and purchased Wyle Test Report No. 17722-1 which documents a special test performed on the Firewall EP cable. This report was used to supplement SCE's qualification package.

Corrective Steps Which Have Been Taken and the Results Achieved

Following the audit, SCE contacted Niagara Mohawk regarding the cable testing they had performed. The Firewall EP cable was included in Wyle Test Report No. 17722-1. This test report further supports the environmental qualification document package conclusions that the Firewall EP cable is qualified for use at San Onofre Unit 1. The document package will be revised to include this additional information.

Corrective Steps Which Will Be Taken to Avoid Further Items of Noncompliance

The corrective actions mentioned above are sufficient to preclude reoccurrence of further items of noncompliance. The methods and procedures used by SCE to document compliance with appropriate environmental qualification requirements are sound. No programmatic changes to the environmental qualification program are warranted.

Date When Full Compliance Will Be Achieved

Full compliance with the requirements of 10 CFR 50.49 will be achieved when the environmental qualification document package is revised prior to return to service for Unit 1.



3. The enclosure to Mr. D. F. Kirsch's letter of April 2, 1986 states:

"Paragraph (j) of 10 CFR 50.49 requires that a record of qualification must be maintained to permit verification that each item is qualified for its application and meets its specified performance requirements when subjected to the conditions predicted to be present when it must perform its safety function up to the end of its qualified life.

"Paragraph (k) of 10 CFR 50.49 stated that equipment previously required by the Commission to be qualified to the "Guidelines for Evaluating Environmental Qualification for Class 1E Electrical Equipment in Operating Reactors" need not be requalified.

"Section 5.2.5 of the Guidelines states that operational modes tested shall be representative of the actual application requirements; components which operate normally energized in the plant should be normally energized during the tests.

"Contrary to the above requirements, for Target Rock solenoid valve SV 119, at the time of the inspection, the files did not determine qualified life based on normal energization; instead life was determined without consideration for self heating effects that substantially reduced the life.

"This is a Severity Level IV violation (Supplement I)."

#### RESPONSE

The environmental qualification document package for the Target Rock solenoid valves indicated a qualified life based on the solenoids being deenergized. During the audit, it was determined that a Target Rock solenoid valve was normally energized. Due to this constant energization, the qualified life for the valve was significantly lower than the original calculations.

#### Corrective Steps Which Have Been Taken and the Results Achieved

A reverification of the energized status of the Target Rock solenoid valves in the SONGS 1 EQ Program was performed. It was determined that a total of nine Target Rock solenoid valves were normally energized. Consequently, the solenoids for the nine Target Rock solenoid valves will be replaced. The revised qualified life calculations, along with any other data required to be updated or changed, will be incorporated in the Target Rock Solenoid Valve environmental qualification document package prior to the return to service of San Onofre Unit 1.

Additionally, a reverification of the energized status of the remaining solenoid valves in the SONGS 1 EQ Program was performed. It was determined that temperature rise effects due to coil self-heating were adequately addressed in the EQ document packages pertaining to these remaining solenoid valves.

Corrective Steps Which Will Be Taken To Avoid Further Items of Noncompliance

Engineers charged with the performance of activities that could result in configuration changes or modifications will be instructed that consideration shall be given to the effect such changes have on environmental qualification requirements.

Date When Full Compliance Will Be Achieved

Full compliance will be achieved when the solenoids are replaced and the environmental qualification document package is revised prior to return to service for Unit 1.

4. The enclosure to Mr. D. F. Kirsch's letter of April 2, 1986 states:

"Paragraph (j) of 10 CFR 50.49 requires that a record of qualification must be maintained to permit verification that each item is qualified for its application and meets its specified performance requirements when subjected to the conditions predicted to be present when it must perform its safety function.

"Paragraph (k) of 10 CFR 50.49 states that equipment previously required by the Commission to be qualified to the "Guidelines for Evaluating Environmental Qualification for Class 1E Electrical Equipment in Operating Reactors" need not be requalified.

"Section 5.1 of the Guidelines requires that as a minimum the qualification for severe temperature, pressure, and steam service conditions should be based on type testing.

"Contrary to the above requirements, for Honeywell E/P transducer FCV 1115D, at the time of the inspection, qualification for a steam environment was based entirely on analysis with no type test.

"This is a Severity Level IV violation (Supplement I)."

RESPONSE:

The environmental qualification document package for the Honeywell transducer indicated that the transducer was qualified by analysis to operate in the design basis event. According to the package, the environment included steam exposure. The reviewer took exception to the analysis of a steam environment. An error was found in the section of the document package summary sheets that is used to describe the environment the Honeywell transducer sees following a DBE. Although a steam environment was inadvertently specified, the Honeywell transducer was in fact qualified for the correct design basis event (DBE) to which it would be exposed. Specifically, the DBE environment is radiation only, and the Honeywell document package adequately addressed the transducer qualification for this environment. Therefore, the fundamental qualification of the transducer was indeed valid and the error was limited to a mistake in the document package. The reviewer agreed with the

conclusion stated in the document package that the transducer was qualified when the proper DBE was specified.

Corrective Steps Which Have Been Taken and the Results Achieved

Following our review of the package, it was pointed out to the reviewer that the transducer would only be exposed to a radiation environment following a design basis event. The document package adequately addressed this environment by analysis. The transducer is qualified to operate in the design basis event environment. The environmental qualification document package will be revised to reflect this information.

Corrective Steps Which Will Be Taken to Avoid Further Items of Noncompliance

The corrective actions mentioned above are sufficient to preclude reoccurrence of further items of noncompliance. The methods and procedures used by SCE to document compliance with appropriate environmental qualification requirements are sound. No programmatic changes to the environmental qualification program are warranted.

Date When Full Compliance Will Be Achieved

Full compliance with the requirements of 10 CFR 50.49 will be achieved when the environmental qualification document package is revised prior to return to service for Unit 1.

5. The enclosure to Mr. D. F. Kirsch's letter of April 2, 1986 states:

"Paragraph (j) of 10 CFR 50.49 requires that a record of qualification must be maintained to permit verification that each item is qualified for its application and meets its specified performance requirements when subjected to the conditions predicted to be present when it must perform its safety function.

"Paragraph (k) of 10 CFR 50.49 states that equipment previously required by the Commission to be qualified to NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment" need not be requalified.

"Section 2.2(7) of NUREG-0588 Cat. II states that performance characteristics should be verified during testing throughout the range of required operability.

"Section 2.1(1) of NUREG-0588 Cat. II invokes the qualification method criteria of IEEE Standard 323-1971, which states in Section 5.2.3.4 that the type test data shall contain the static and dynamic performance characteristics.

"Contrary to the above requirements, for Rockbestos Firewall III cable, at the time of the inspection:



- a. The files did not adequately support claimed qualification to 10 CFR 50.49; specifically, the test report relied on for qualification was Rockbestos Report QR#1803, which is discredited by IE Information Notice 84-44.
- b. The files did not contain test data relevant to the required operating performance characteristics in the plant.

"This is a Severity Level IV violation (Supplement I)."

#### RESPONSE

The environmental qualification document packages contained a Rockbestos test report for Firewall III cable. The package indicated that based on this test report, the cable was qualified for use at Units 1, 2 and 3. IE Information Notice 84-44 was included in the document packages, and even though it alerted the industry to shortcomings in the testing done by Rockbestos, it does not state the cable is not qualified. The Notice indicates the NRC staff concluded that no immediate safety problem exists in the use of Rockbestos cable, and further, indicates that it is the licensee's responsibility to ensure the Rockbestos cable is qualified for the intended use. SCE confirmed with Rockbestos during the initial preparation of the EQ document package for this cable that retesting of the Firewall III cable was in progress. Following scheduled completion of this testing in late 1985, SCE planned to obtain the test reports and incorporate them into the documentation. We believed this to be an acceptable course of action consistent with those outlined in the Notice. Additionally, based on our review of the Rockbestos test report, and the fact that Rockbestos was actively resolving this issue with the NRC, it was, and still is, our opinion that the cable was qualified for use at Units 1, 2 and 3 and an acceptable program to resolve any perceived discrepancies was in progress as recommended in IE Information Notice 84-44.

#### Corrective Steps Which Have Been Taken and the Results Achieved

Following the audit, the Bechtel Quality Assurance files which pertained to the testing of the factory reworked Rockbestos Firewall III cable were obtained. The most recent Rockbestos test reports, QR #5804 and 5805, which included the Firewall III cable, have also been obtained. This additional documentation supports the conclusions contained in the environmental qualification packages that Firewall III cable is qualified for use at San Onofre Units 1, 2 and 3.

#### Corrective Steps Which Will Be Taken to Avoid Further Items of Noncompliance

The corrective actions mentioned above are sufficient to preclude reoccurrence of further items of noncompliance. The methods and procedures used by SCE to document compliance with appropriate environmental qualification requirements are sound. No programmatic changes to the environmental qualification program are warranted.

Date When Full Compliance Will Be Achieved

Full compliance will be achieved when the environmental qualification document packages for Rockbestos Firewall III cable are revised prior to return to service for Unit 1 and by August 29, 1986 for Units 2 and 3.

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