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November 19, 1984

Director, Office of Nuclear Reactor Regulation
Attention: J. L. Zwolinski, Chief
Operating Reactors Branch No. 5
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket No. 50-206
Environmental Qualification of Electrical Equipment
San Onofre Nuclear Generating Station
Unit 1

The purpose of this letter is to document the results of a meeting with the NRC staff held on December 20, 1983 in Bethesda, Maryland to discuss the environmental qualification of safety related electrical equipment at San Onofre Unit 1. The intent of the meeting was to (1) reach agreement on resolution of qualification deficiencies identified in the Franklin Research Center Technical Evaluation Report (TER), (2) address compliance with 10 CFR 50.49, and (3) address equipment "Justifications for Continued Operation" (JCO). Each of these items is discussed in this letter. This letter also documents our understanding of additional information which the NRC staff indicated should be considered regarding the resolution of the qualification deficiencies. Finally, this letter has been delayed to coordinate the response with information requested by the NRC's May 9, 1984 letter regarding the environmental qualification program.

The material which was presented during the December 20 meeting regarding the resolution of TER qualification deficiencies is provided as Enclosure 1. Our understanding of additional information which the NRC staff indicated should be considered during the qualification program is provided as Enclosure 2. Also provided in Enclosure 3 are additional details on the resolution of the qualification deficiencies identified in Enclosure 1.

Following the discussion of the Franklin TER deficiencies at the December 20 meeting, the NRC staff asked if the equipment list had been changed and if JCO's had been provided for the equipment identified. Since the NRC staff's issuance of their Safety Evaluation Report (SER) dated November 30, 1982 which included the Franklin TER dated June 28, 1982 there have been no additions to the list of safety-related equipment for San Onofre Unit 1. The equipment list was provided in our submittal dated October 31, 1980 and supplemented by letter dated November 4, 1981. By letter dated February 24, 1982 JCO's were provided for all safety-related equipment identified in the October 31, 1980 submittal. This included the equipment addressed by the Franklin TER with the exception of the charging pumps and the valve positioners for the safety injection valves. The components added by

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the November 4, 1981 submittal did not have JCO's included in the February 24, 1982 submittal. The JCO's for all equipment in the environmental qualification program including the charging pumps, valve positioners and the items from the November 4, 1981 submittal, were provided by letter dated November 3, 1984.

The NRC staff requested that we provide the method for identifying safety related (10 CFR 50.49b(1)) equipment, non-safety related (b(2)) equipment and post-accident monitoring (b(3)) equipment and confirm that the equipment identified addresses all design basis accidents including flooding outside containment. The equipment identified in the October 31, 1980 submittal and supplemented by letter dated November 4, 1981 is that safety related equipment identified by a review of the final safety analysis, emergency operating procedures and other relevant sources. The design basis accidents for which this equipment is required to operate include the LOCA and HELB inside containment and HELB outside containment. The flooding of safety related equipment outside containment resulting from a HELB was addressed as part of the effects of the non-Category A equipment failure issue which was submitted to the NRC by letter dated March 21, 1975. The results of that investigation showed that (1) safety related equipment is not affected, or (2) safety related components, systems, etc. are sufficiently monitored to allow corrective action to be taken, or (3) redundant and separate safety related equipment exists to preclude common mode failure.

With regard to the identification of non-safety related equipment, our May 20, 1983 letter in response to 10 CFR 50.49(g), indicated that compliance with 10 CFR 50.49b(2) was accomplished as a result of compliance with a number of NRC issues. This is exhibited in our efforts on SEP, Fire Protection, I and E action and our response to the NRC's April 8, 1976 letter on the single failure evaluation of the ECCS as discussed below.

The May 20, 1983 letter indicated that a preliminary review of non-safety related equipment failures was performed as part of the Fire Protection review at San Onofre Unit 1. During the review, no equipment was identified that would affect safe shutdown.

In addition to the May 20, 1983 response, the failure of non-safety related equipment has been addressed as part of requests made by various IE Bulletins, Circulars and Information Notices, including Information Notice 79-22, Interaction Between Non-Safety Grade and Safety Grade Systems. The effort on this particular notice involved the evaluation of the Steam Generator PORV Control System, the Main Feedwater Control System, the Pressurizer PORV Control System and the Rod Control System for failure of non-safety grade equipment which could affect the performance of safety functions during the accident. The results of the evaluation, which were transmitted to the NRC by letter dated October 5, 1979, were procedural changes to improve operator response to specific events. Equipment modifications or replacements were not necessary. It was determined that failure of non-safety grade equipment in the identified systems would not prevent the performance of a safety function.

As part of the ECCS single failure evaluation, the failure of ECCS equipment and its auxiliaries was addressed. This work involved a review of the equipment required to shutdown and mitigate the consequences of an accident for possible failures which would prevent the performance of a safety function. The results of this effort were provided to the NRC by letters dated December 21, 1976 and December 20, 1977. This work included a failure evaluation of safety related equipment, a flooding evaluation of equipment inside containment and a separation evaluation of the safety related equipment. Specific recommendations included installing power interrupt devices on various safety-related and non-safety related pump motors, valve operators and instrumentation inside containment and rerouting control and power cable for certain redundant safety-related equipment. The recommendations from the reports are being addressed as part of the SEP Integrated Assessment currently in progress at San Onofre Unit 1. As indicated in our May 20, 1983 letter, in the event non-safety related equipment which affects safety related equipment is identified in future reviews or modifications, they will be qualified in accordance with 10 CFR 50.49 or replaced. Based on efforts to date, additional work in this area to identify non-safety related equipment failures is not necessary.

With regard to the identification of post-accident monitoring instrumentation (i.e., 10 CFR 50.49b(3)), the response in our May 20, 1983 letter is still applicable. Post-accident monitoring equipment was identified in the October 31, 1980 submittal. Additional equipment installed as part of TMI modifications was identified in our July 2, 1982 submittal. Additional monitoring equipment may be identified as part of NUREG-0737, Supplement 1 work and will be qualified as necessary to 10 CFR 50.49.

By letter dated May 9, 1984, the NRC staff requested additional information regarding the environmental qualification program. The responses to the specific items in that request are included with this letter as Enclosure 4.

For your information, we plan to complete all activities described herein by March 31, 1985, including the identification of any equipment which will require replacement. To date, fifteen components have been identified which require replacement. Since we will be unable to replace these items with qualified components by March 31, 1985, we have submitted a request for extension to November 30, 1985. The request was transmitted to the NRC by letter dated July 30, 1984.

If you have any comments regarding this letter or its enclosures, please let me know.

Very truly yours,

M. O. Medford

Enclosures

ENCLOSURE 1

Southern California Edison
San Onofre Nuclear Generating Station
Unit 1

Environmental Equipment Qualification
TER Resolution Status

Component Type: Motorized Valve Actuators

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
10(8)	MOV-850A,B,C	Limitorque m/n SMA-1-40 w/Reliance m/n 400524-FQ	IIA	Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program	Qualifiable based on valve operating requirements. Additional evaluation to address aging, qualified life/replacement schedule will be performed.
15(1)	MOV/LCV 1100B,C	Limitorque m/n SMB-00-10 w/Reliance m/n 400524-FQ	IIA	Similarity; Aging; Qualified Life/Replacement Schedule	Additional evaluation to address deficiencies based on vendor type testing is being performed. Also evaluating qualifiability based on valve operating requirements.
15(2)	MOV/LCV 1100D	Limitorque m/n SMB-00-10 w/Peerless m/n KS45153	IIA	Similarity; Aging; Qualified Life/Replacement Schedule	Additional evaluation to address deficiencies based on vendor type testing is being performed. Also evaluating qualifiability based on valve operating requirements.
18(5)	MOV-18,19	Limitorque m/n SMB-00 w/Peerless	IIA	Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program	Additional evaluation to address deficiencies based on vendor type testing is being performed. Also evaluating qualifiability based on valve operating requirements.
59(7)	MOV-720A,B	Limitorque m/n SMB-00	IIA	Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program	Additional evaluation to address deficiencies based on vendor type testing is being performed. Also evaluating qualifiability based on valve operating requirements.
12(6)	MOV-866A,B	Limitorque m/n SMB-00 w/Peerless m/n P11766	IIA	Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program	Additional evaluation to address deficiencies based on vendor type testing is being performed.

Component Type: Motorized Valve Actuators (Cont'd.)

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
20(3)	MOV-356,357,358	Limitorque m/n SMB-00-25 w/Reliance m/n 709571-JY	IIA	Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program	Additional evaluation to address deficiencies based on vendor type testing is being performed.
23(4)	MOV-880	Limitorque m/n SMB-00 w/Peerless	IIIA	NA	Exempt from qualification. Valve not required to operate.

Component Type: Solenoid Valves

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
19(12)	FCV-1115D,E,F	ASCO m/n B8300 B56R1	IV	Documentation not provided	Valve internals rebuilt [see SCE letters 4/4/81 and 4/18/81]. Maintenance to be performed at 5-year intervals.
26(60)	CV-82(SV-128)	ASCO m/n WPLB8300 B61RV	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
(62)	CV-114(SV-118)	ASCO m/n U8302 C26R	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
28(13)	CV-102,104,106 (SV-108,110,112)	ASCO m/n WPLB8300 B61R	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
29(67)	CV-103,105,107 (SV-109,111,113)	ASCO m/n 8300 B61	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
30(68)	CV-146,147 (SV-1212-6, 1212-7)	ASCO m/n WPLB8300 B59	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.

Component Type: Solenoid Valves (Cont'd.)

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
31(66)	SV-1212-8, 1212-9	ASCO m/n HTX821027	IIA	Documentation not adequate	Replaced with qualified Target Rock valves.
32(71)	CV-117,118,119 (SV-119,120,121)	ASCO m/n WP831735	IIA	Documentation not adequate	Replaced with qualified Target Rock valves.
33(71)	CV-120,121,122 (SV-122,123,124)	ASCO m/n WP831735	IIA	Documentation not adequate	Replaced with qualified Target Rock valves.
34(67)	CV-123 (SV-125)	ASCO m/n WP8300 B61R	IIA	Documentation not adequate	Replaced with qualified Target Rock valves.
35(10)	CV-537	ASCO m/n WP HTX832093	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
36(61)	CV-115 (SV-126)	ASCO m/n WPLB8300 B64RU	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
39(63)	POV-9,10 (SV-29,30)	ASCO m/n 8345C11	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
40(64)	CV-40,116 (SV-19,127)	ASCO m/n WPLB8300 B59RF	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.

Component Type: Solenoid Valves (Cont'd.)

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
41(70)	CV-10 (SV-28)	ASCO m/n WPLB8300 B59	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
42(10)	CV-533,536	ASCO m/n WPHTX832093	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
43(11)	CV-534,535	ASCO m/n WPHT832093	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
46(69)	CV-287	ASCO	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
47(68)	CV-202,203,204 (SV-126)	ASCO m/n WPLB8300 B59	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.

Component Type: Solenoid Valves (Cont'd.)

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
48(11)	CV-532	ASCO m/n WPHTX832093	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
76(65)	CV-530,531	ASCO 8316	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
77(65)	CV-545,546	ASCO 8316	IIA	Documentation not adequate	Evaluating similarity of valves to other tested valves. Qualification evaluation will also consider valve operating requirements.
44(17)	CV-525,527	Atkomatic m/n 3101	IIA	Documentation not adequate	Will be replaced as part of Efcomatic valve modification.
45(19)	CV-526,528	Atkomatic m/n 3101	IIA	Documentation not adequate	Will be replaced as part of Efcomatic valve modification.
49(16)	CV-515,516	Atkomatic m/n 3101	IIA	Documentation not adequate	Will be replaced as part of Efcomatic valve modification.
37(14)	SV-702B,D	Morotta m/n MV583H-4A	IIA	Documentation not adequate	Exempt from qualification. Valves not required to operate.
38(15)	SV-702A,C	Morotta m/n MV583H-4A	IIA	Documentation not adequate	Exempt from qualification. Valves not required to operate.
57(9)	CV-76,77,78,79 (SV-85,86,87,88)	Valvair m/n 5682-2	IIA	Documentation not adequate	Additional evaluation to address radiation-only environment is being performed.

Component Type: Transmitters: Flow/Level/Pressure/Temperature

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
63(21)	FT-2002-A,B,C	Controlatron m/n 240N3CS40	IIA	Documentation not adequate	Replaced with fully qualified equipment (N-E10 series). Documentation is being prepared as part of TMI modification program.
3(30)	PT-430,431	Foxboro m/n N-E11GM	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program; Duration; Profile Envelope; Test Sequence	Qualified based on type testing completed in May 1983.
50(34)	PT-1120A,B,C PT-1121A,B,C	Foxboro m/n N-E11GM	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program	Qualified based on type testing completed in May 1983.
64(28)	LT-450X,451X, 452X	Foxboro m/n N-E13DM	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program; Duration; Profile Envelope; Test Sequence	Qualified based on type testing completed in May 1983.
4(29)	LT-430,431,432	Foxboro m/n E13DH	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program; Duration; Profile Envelope; Test Sequence	Qualifiable. Documentation based on vendor type testing will be performed.
2(18)	FT-456,457,458	Foxboro m/n 613DM	IIA	Documentation not adequate; Aging; Qualified Life/ Replacement Schedule; Aging Program	Replaced with fully qualified equipment (N-E10 series).
9(22)	FT-912,913,914	Foxboro m/n 630-2AS	IIA	Documentation not adequate	To be replaced with qualified transmitters.

Component Type: Transmitters: Flow/Level/Pressure/Temperature (Cont'd.)

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
3(30)	PT-432	Foxboro m/n E11GM	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program; Duration; Profile Envelope; Test Sequence	Qualifiable for all parameters except radiation. Radiation qualification is being evaluated.
1(25)	FT-460,461,462	Foxboro m/n E11DM	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program; Duration; Profile Envelope; Test Sequence	Additional evaluation to address deficiencies based on vendor type testing is being performed.
13(23)	FT-500,501	Foxboro m/n E13DM	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program; Duration; Profile Envelope; Test Sequence	Additional evaluation to address deficiencies based on vendor type testing is being performed.
25(20)	FT-504	Foxboro m/n E13DM	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program	Additional evaluation to address deficiencies based on vendor type testing is being performed.
27(33)	PT-501,502,503	Foxboro m/n E11GM	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program	Additional evaluation to address deficiencies based on vendor type testing is being performed.
80(32)	PT-425	Foxboro m/n E13GM	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program; Duration; Profile Envelope; Test Sequence	Additional evaluation to address deficiencies based on vendor type testing is being performed.
91(24)	FT-602	Foxboro m/n E13DM	IIIB	NA	Not in Scope (cold shutdown equipment).

Component Type: Transmitters: Flow/Level/Pressure/Temperature (Cont'd.)

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
14(27)	LC-951	Gems Corp. m/n LS800	IB	Qualification Pending Modification	New sump level monitoring equipment has been istalled. Documentation is being prepared as part of TMI modification program.

Component Type: Level Switches

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
17(26)	LS-73	Magnetrol m/n A153FVPKTDM	IB	Qualification Pending Modification	New sump level monitoring equipment has been installed. Documentation is being prepared as part of TMI modification program.

Component Type: Electrical Penetrations

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
72(44)	Penetrations	Amphenol	IIA	Documentation not adequate; Aging; Qualified Life/ Replacement Schedule; Profile Envelope; Spray	Qualifiable. Documentation based on vendor type testing will be performed.
71(45)	Penetrations	Conax	IA	NA	Qualified.
70(43)	Penetrations	Viking	IIA	Documentation not adequate; Profile Envelope; Steam; Spray; Radiation	Additional evaluation to assess material capability and circuit applications will be performed.

Component Type: Electric Motors

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
44(52)	CV-525,527	Boston Gear m/n ADR	IIA	Documentation not adequate	Will be replaced as part of Efcomatic valve modification.
45(51) 49(51)	CV-526,528 CV-515,516	Boston Gear m/n ADR	IIA	Documentation not adequate	Will be replaced as part of Efcomatic valve modification.
11(47)	G-45A,B	Chempump m/n GPS-60L-46H-3T	IIA	Documentation not adequate	Qualified by analysis for interim operation. Additional evaluation to assess long-term qualification will be performed.
21(48)	G-27A,B	Westinghouse m/n AALG	IIC	Aging; Qualified Life/ Replacement Schedule; Aging Program	Qualified. Documentation is in progress.
5(49)	G-3A,B	Westinghouse Type CS	IIA	Documentation not adequate	Preliminary evaluation indicates steam is the only outstanding item. Additional evaluation to resolve this concern will be performed.
16(46)	G-8A,B	Westinghouse CSP motor m/n 65F15619	IV	Documentation not provided	Preliminary evaluation indicates steam is the only outstanding item. Additional evaluation to resolve this concern will be performed.
62(50)	G-10	Westinghouse	IIA	Documentation not adequate	Preliminary evaluation indicates steam is the only outstanding item. Additional evaluation to resolve this concern will be performed.

Component Type: Electrical Cables/Splices

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
65(59)	Cable	General Electric m/n Vulkene	IIA	Documentation not adequate; Similarity; Qualified Life/ Replacement Schedule	Qualifiable. Documentation based on vendor type testing is being performed.
66(53)	Cable	General Electric m/n FP-EPR Neoprene	IIA	Documentation not adequate; Similarity; Aging; Qualified Life/Replacement Schedule; Aging Program; Submergence	Qualifiable. Documentation based on vendor type testing is being performed.
67(54)	Cable	Raychem m/n Flamtrol	IA	NA	Qualified.
68(56)	Cable	Rockbestos m/n Firewall III & SIS	IA	NA	Qualified.
69(55)	Cable	Various	IV	Documentation not provided	Previous qualification evaluation is being reviewed against new environmental profiles. Cables previously qualified for containment use are still qualified. For other cables, the materials of construction and circuit requirements are being evaluated to establish qualification.
73(39)	Cable Splices	Raychem m/n Thermofit	IA	NA	Qualified.

Component Type: Position Switch

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
44(35)	CV-525,527	Trombetta m/n SOL NA 702E1	IIA	Documentation not adequate	Will be replaced as part of Efcomatic valve modification.
45(36) 49(36)	CV-526,528 CV-515,516	Trombetta m/n SOL NA 702E1	IIA	Documentation not adequate	Will be replaced as part of Efcomatic valve modification.

Component Type: Limit Switches

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
78(37)	PORV & Block Valve	NAMCo m/n EA180-11302 & -12302	IIC	Qualified Life/Replacement Schedule	Qualified. Additional evaluation of qualified life/replacement schedule will be performed.

Component Type: Terminal Blocks

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
75(40)	Terminal Block	Various	IA	NA	Replaced with qualified Raychem Thermofit Splices [see SCE letters dated 4/28/81 and 5/18/81].

Component Type: RTD

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
61(38)	TE-606	Foxboro m/n DB-13V-26W	IIA	Documentation not adequate	Evaluating modification of lead wires to establish qualification. Also evaluating safety function of this component to see if required.
79(41)	TE-400 thru -422 A,B,C	Weed m/n 2004	IB	Qualification pending modification	Replaced with new qualified Weed RTDs. Documentation is being prepared as part of TMI modification program.

Component Type: Radiation Detector

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
87(42)	R-1232	TracerLab m/n AX-22	IB	Qualification Pending Modification	Qualified General Atomic radiation monitors have been installed. Documentation is being prepared as part of TMI modification program.

Component Type: Valve Positioner

SCE Item #	SONGS-1 ID Number	Equipment Description	NRC/TER Category	Deficiencies	Response/Resolution
19(57)	FCV-1115D,E,F	Honeywell m/n IS HE-1	IB	Qualification pending modification	Replaced with qualified equipment. Documentation and development of maintenance intervals has been prepared.
6(58)	HV-851 thru -854 A,B	Teledyne m/n 02112-002-5210 and -003-5210	IV	Documentation not provided	Previous qualification is being reviewed to incorporate new environmental profiles.

Enclosure 2

ADDITIONAL INFORMATION REQUESTED BY NRC

GENERIC

The qualification documentation should reflect the similarity between the tested component and the installed component.

An adequate time for margin should be justified in the qualification documentation.

The effect of failed equipment following completion of the safety function should be addressed in the qualification documentation.

Adequate justification should be provided for those components considered exempt. This should include the effect of failure of the component in the harsh environment.

Analysis alone will not be accepted for a steam environment.

As part of the qualification of components, the effects of failure of component local controls should be addressed.

Motorized Valve Actuators

In the event that it is necessary the check valve in series with MOV 850A, B and C should be included in the JCO.

The Franklin TER dated June 28, 1982 for MOV 18 and 19 (TER Item No. 5) indicates the valves are actuated upon safety injection initiation. This information is based on SCE's February 24, 1982 submittal. This is to clarify that MOV 18 and 19 are not automatically actuated upon safety injection. The operator remote manually opens the valves to begin long-term recirculation. The response for MOV 18 and 19 should be the same as that for MOV 356, 357 and 358 (TER Item No. 3).

A basis for the exemption of MOV 880 from qualification should be provided. The discussion will include the effect of valve failure in the harsh environment and if necessary, the check valve in series in the JCO.

Solenoid Valves

The qualification of solenoids should include consideration of normally energized solenoids for valve life.

A basis for the exemption of SV 702 A, B, C and D from qualification should be provided. The discussion will include the effect of valve failure in the harsh environment.

The Atkomatic solenoid valves will be replaced with qualified valves as part of the Efcomatic valve replacement.

Transmitters

As part of the qualification documentation for Foxboro transmitters, the electrical interface should be addressed.

Electric Motors

The Boston Gear Motors will be replaced with qualified components as part of the Efcomatic valve replacement.

The analysis for G-45 A and B should not only include a materials analysis but also the mechanical aspects of the material should also be addressed following exposure to the harsh environment. The operability of the motor should also be addressed. The Franklin TER identifies items to be specifically addressed.

Cable

Consideration should be given to developing a surveillance program for cable.

Terminal Blocks

Terminal blocks in safety related circuits inside containment have been replaced with qualified Raychem splices. The NRC was informed of the replacement by letter dated May 18, 1981. This information is included in the Franklin TER dated June 28, 1982 under TER No. 40.

Franklin TER

Components required to operate following submergence should be qualified for those conditions.

AL:0794F

Enclosure 3

ADDITIONAL INFORMATION ON RESOLUTION OF EQ DEFICIENCIES

1. Motorized Valve Actuators

   The field data regarding these actuators has been obtained. Limitorque will be contacted to identify the applicable test data for each actuator. A qualification evaluation based on the field and test data will be performed. The evaluation will address similarity, aging, qualified life and replacement schedule for each actuator.

2. Solenoid Valves

   ASCO solenoid valves will be evaluated for qualification based on operation time. This will be done utilizing available engineering reports and test data. The evaluation will address the similarity, aging, qualified life and replacement schedule for each solenoid valve if qualification is possible. The Valvair solenoid valves have been determined to be part of cold shutdown equipment and are therefore not part of this equipment qualification effort.

3. Transmitters

   The field data regarding these transmitters has been obtained. Foxboro will be contacted to determine the internal modification of the E10 series transmitters. Based on this information, the transmitters will be evaluated for qualification. The evaluation will include similarity, aging, qualified life and replacement schedule.

4. Electrical Penetrations

   Qualification testing documentation for the Amphenol penetrations is available. Additional evaluation will be performed to address aging, qualified life, chemical spray and the profile envelope to complete the existing documentation. The qualfiication of the Viking penetrations will be addressed based on testing of other Viking penetrations and analysis.

5. Electric Motors

   Field data on Westinghouse motors has been obtained. Available test data will be reviewed and Westinghouse will be contacted if necessary to determine the applicable test data. A qualification evaluation based on this information will be performed to address similarity, aging, qualified life and replacement schedule. The evaluation will also include motor lead splices, motor bearing and lubrication.

6. Electrical Cable

Qualification documentation for General Electric and Vulkene cable exists. The documentation will be utilized to address similarity, aging, qualified life and replacement schedule. For the cable identified as various, the cable manufacturers have been identified and available test data will be determined.

ACL:2483F

RESPONSE TO NRC
Letter dated May 9, 1984

By letter dated May 9, 1984, the NRC staff requested additional information regarding the environmental qualification program at San Onofre Unit 1. This responds to that request.

1. Submit all applicable JCO's that are currently being relied upon and certify the following for each JCO associated with equipment that is assumed to fail:

   No significant degradation of any safety function or misleading information to the operator as a result of failure of equipment under the accident environment resulting from a design basis event will occur.

   Response

   JCO's for all equipment items in the San Onofre Unit 1 environmental qualification program have been developed. They incorporate a reference to the specific 10 CFR 50.49(i) section which provides acceptable criteria for JCO's.

2. The licensee should certify that in performing its review of the methodology to identify equipment within the scope of 10 CFR 50.49(b)(2) that the following steps have been addressed:

   a. A list was generated of safety-related electric equipment as defined in paragraph (b)(1) of 10 CFR 50.49 required to remain functional during or following design-basis Loss of Coolant Accident (LOCA) or High Energy Line Break (HELB) Accidents. The LOCA/HELB accidents are the only design-basis accidents which result in significantly adverse environments to electrical equipment which is required for safe shutdown or accident mitigation. The list was based on reviews of the Final Safety Analysis Report (FSAR), Technical Specifications, Emergency Operating Procedures, Piping and Instrumentation Diagrams (P&IDs), and electrical distribution diagrams;

Response

As indicated on page 2 in paragraph 1 of the letter the method for identifying safety related electrical equipment is described. The list of equipment was provided to the NRC by letters dated October 31, 1980 and November 4, 1981. The list was determined by review of the FSAR, emergency operating procedures and other relevant sources which include P&IDs, Tech. Specs.

b. The elementary wiring diagrams of the safety-related electrical equipment identified in Step 1 were reviewed to identify any auxiliary devices electrically connected directly into the control or power circuitry of the safety-related equipment (e.g., automatic trips) whose failure due to postulated environmental conditions could prevent required operation of the safety-related equipment and;

Response

As part of the ECCS single failure evaluation, which resulted in two submittals to the NRC dated December 21, 1976 and December 20, 1977, the wiring diagrams were reviewed. The results of that review were documented in the report Separation and LOCA Environment Assessment of San Onofre Unit 1 ECCS dated December, 1977. The recommendations made in the report are being addressed and resolved as part of the Systematic Evaluation Program. Specific recommendations included installing power interrupt devices on various safety-related and non-safety related pump motors, valve operators and instrumentation inside containment and rerouting control and power cable for certain redundant safety-related equipment.

c. The operation of the safety-related systems and equipment were reviewed to identify any directly mechanically connected auxiliary systems with electrical components which are necessary for the required operation of the safety-related equipment (e.g., cooling water or lubricating systems). This involved the review of P&IDs, component technical manuals, and/or systems descriptions in the FSAR.

Response

The review of auxiliary systems was included as part of the development of the list of safety-related electrical equipment.

d. Nonsafety-related electrical circuits indirectly associated with the electrical equipment identified in Step 1 by common power supply or physical proximity were considered by a review of the electrical design including the use of applicable industry standards (e.g., IEEE, NEMA, ANSI, UL, and NEC) and the use of properly coordinated protective relays, circuit breakers, and fuses for electrical fault protection.

Response

As discussed on pages 2 and 3 of the letter a review of nonsafety-related circuits affecting safety-related circuits was not included as part of the environmental qualification review. However, the letter does indicate that a specific review of nonsafety-related equipment is not necessary since other efforts are in effect doing this. The other efforts include IE Bulletins, Circulars and Information Notices, Fire Protection Program and the Systematic Evaluation Program.

3. Provide certification that all design basis events which could potentially result in a harsh environment, including flooding outside containment, were addressed in identifying safety-related electrical equipment within the scope of 10 CFR 50.49(b)(1).

Response

As discussed on page 2 in paragraph 1 of the letter the design basis events include LOCA and HELB. Flooding outside containment was also addressed as part of the effects of non-Category A equipment failure.

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