Southern California Edison Company

P. O. BOX 800
2244 WALNUT GROVE AVENUE
ROSEMEAD, CALIFORNIA 91770

K. P. BASKIN
MANAGER OF NUCLEAR ENGINEERING,
SAFETY, AND LICENSING

TELEPHONE
(213) 572-1401

February 24, 1982

Director of Nuclear Reactor Regulation
Attention: D. M. Crutchfield, 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

By our letter dated October 31, 1980 we provided you with the information regarding the qualification of safety-related electrical equipment at San Onofre Unit 1. That letter also provided you with our justification for continued operation until the qualification of the equipment is completed. During the course of our investigation we discovered that specific equipment was not qualified and required replacement. These replacements were summarized in our letter to you dated May 18, 1981.

Your staff's Safety Evaluation Report which included Franklin's Technical Evaluation Report was provided to us by letter dated June 2, 1981. The SER grouped our equipment into two appendices; Appendix B, Equipment Requiring Additional Information And/Or Corrective Action, and Appendix C, Equipment Considered Acceptable or Conditionally Acceptable. We provided you with an update of the equipment qualification program by letter dated November 4, 1981. In that update we specifically addressed the equipment identified in both Appendices B and C and also addressed equipment which was not included in either Appendix.

On February 17, 1982, we met with members of your staff to review our justification for continued operation contained in our November 4, 1981 letter. During the meeting, the NRC staff expressed concern that our November 4, 1981 letter did not provide adequate justification for continued operation. We indicated that the information concerning justification for continued operation was provided in our October 31, 1980 letter and that this information was referenced rather than duplicated in our November 4, 1981 letter.

As a result of the meeting, it was noted that cross-referencing made it difficult to fully evaluate whether adequate justification for continued operation has been provided for San Onofre Unit 1. Accordingly, submitted

A048
S 1/1

herewith is a compilation of the information provided in our October 31, 1980 and November 4, 1981 letters concerning justification for continued operation at San Onofre Unit 1.

If you have any questions, or desire further information concerning the enclosure, please contact me.

Very truly yours,

K P Baskin

Enclosure

APPENDIX B

Equipment Requiring Additional Information And/Or Corrective Action

TER No.	1 (FT 460, 461 and 462)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	E 11 DM
Deficiency:	Qualification Method, Aging, Qualification Time

These transmitters are part of the Reactor Protection System and are required for reactor protection. The transmitters provide an input to reactor trip on steam flow-feedwater flow mismatch. The qualification documentation for these transmitters is Foxboro test reports which demonstrate a similar model transmitter was tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material information which would establish the relationship between the tested model and the installed model. In the event of a steam or feedwater line break, the reactor trip will occur almost immediately (i.e., seconds, rather than mintues) and consequently the transmitters will perform their safety function prior to seeing a harsh environment. Once actuated, the safety function will not be interrupted if the transmitters fail. This forms our basis for continued operation with these transmitters.

TER No.	3A and 3B (PT 430, 431 and 432)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	E11GM and NE11GM
Deficiency:	Qualification Method, Aging, Qualification Time

These transmitters are part of the Reactor Protection System and the Safety Injection System. The transmitters provide an input to reactor trip on high or low pressurizer pressure and initiate safety injection on low pressurizer pressure. In addition, these transmitters can be used to monitor RCS pressure following a small break LOCA or a secondary line break. The qualification documentation for these transmitters is Foxboro test reports which demonstrate a similar model transmitter was tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material information which would establish the relationship between the tested model and the installed model. In the event of a primary or secondary line break, high or low pressure will occur either immediately or very early in the accident (i.e., seconds rather than minutes). For a large break LOCA these transmitters would have performed their safety function (i.e., seconds rather than minutes) prior to seeing a harsh environment. Once actuated, the safety function will not be interrupted if the transmitters fail. In the event of a small break LOCA or a secondary line break, the transmitters will function early in the accident (i.e., seconds rather than minutes) and prior to being exposed to a harsh environment. The environment resulting from a small break LOCA or secondary line break will not be as severe as that resulting from a large break LOCA. Based on the qualification documentation available, it provides some assurance that these transmitters will function in the post-accident environment of the small break LOCA and secondary line break. This forms our basis for continued operation with these transmitters.

TER No.	4 (LT 430, 431 and 432)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	E13DH-HFD-SAH1
Deficiency:	Qualification Method, Aging, Qualification Time

These transmitters are part of the Reactor Protection System. The transmitters provide an input to reactor trip on high pressurizer level. In addition, these transmitters can be used to monitor pressurizer level following a small break LOCA or a secondary line break. The qualification documentation for these transmitters is Foxboro test reports which demonstrate a similar model transmitter was tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material information which would establish the relationship between the tested model and the installed model. In the event of a break which could result in high pressurizer level, reactor trip would occur early in the accident (i.e., seconds rather than minutes). Once actuated, the safety function will not be interrupted if the transmitters fail. For a large break LOCA, these transmitters would not be required to perform a safety function. For a small break LOCA or a secondary line break the transmitters would not be exposed to an environment as harsh as that resulting from a large break LOCA. Based on the qualification documentation available, it provides some assurance that these transmitters will function in the post-accident environment of the small break LOCA and secondary line break. This forms our basis for continued operation with these transmitters.

TER No.	5 (G3A and B)
Equipment Description:	Motor
Manufacturer:	Byron Jackson/Westinghouse Motor
Model/Type:	DVMX/CS Type
Deficiency:	Qualification Information Being Developed

These pumps are part of the Safety Injection System. Following a LOCA or secondary line break, the pumps deliver borated water to the Reactor Coolant System. We have obtained some information regarding the motors which requires additional analysis to demonstrate qualification. The pumps and motors are located outside containment on opposite sides of the turbine building. In the event of a LOCA, the motors will only be exposed to a radiation environment. Depending on the extent of the break, the pumps are required during the early part of the accident until long term recirculation is initiated (i.e., 30 minutes) before the pumps would accumulate a high radiation dose. In the event of a secondary line break in the vicinity of one of the pumps, the motor would be exposed to a saturated steam environment. The motors are covered and would not be expected to be exposed to the extreme conditions of the break. Since the two pumps are at opposite sides of the turbine building, any given break could only affect one motor. The safety analyses for the plant are based on one train of safety injection. Therefore, in the unlikely event one motor failed to operate in the break environment, the core would be adequately cooled. This forms the basis for continued operation with these pump motors.

TER No.	6 (HV 853, 851, 854, 852)
Equipment Description:	HV with positioner
Manufacturer:	Teledyne
Model/Type:	02112-002-5210 and 02112-003-5210
Deficiency:	Qualification Information Being Developed

These valves are part of the Safety Injection System. The valves are hydraulic valves used to tranfer the feedwater pumps identified in TER No. 5 from feedwater service to safety injection service. Each valve includes a Teledyne positioner. No qualifiction documentation was available for these positioners. We have performed a materials analysis on the positioners. The analysis addressed the temperature, pressure, relative humidity and radiation environment under which these positioners would be exposed. The radiation thresholds and thermal aging effects were also addressed. Based on the results of this evaluation the positioners are qualified for outside containment use for 40 years. This forms the basis for continued operation with these valve positioners..

TER No.	9 (FT 912, 913 and 914)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	630-2AS
Deficiency:	Qualification Information Being Developed

These transmitters are part of the Safety Injection System. The transmitters provide surviellance of safety injection flow until it is terminated and recirculation is initiated. No qualification documentation was available for these transmitters. In the event of a LOCA, the transmitters would be exposed to a radiation environment. Depending on the extent of the break, safety injection is terminated early in the accident, before the transmitters would accumulate a high radiation dose. During a secondary line break in the vicinity of the transmitters, they would be exposed to saturated steam conditions. If the transmitters fail, the operator can still determine if safety injection flow exists by monitoring RWST level, which he is required to do by the procedure. The RWST level instrumentation is located in a non-harsh environment. In either case, these transmitters are not required for operation of the safety injection system. This forms the basis for continued operation with these transmitters.

TER No.	10 (MOV 850 A, B and C)
Equipment Description:	MOV
Manufacturer:	Limitorque
Model/Type:	SMA-1-40
Deficiency:	Qualification Method, Aging

These valves are part of the Safety Injection System. The valves isolate the injection lines into the RCS cold legs and are required to open within 30 seconds following the accident. The qualification documentation available for the valve actuators is a Westinghouse WCAP which documents a test performed on a similar actuator. That WCAP indicated the actuator operated up to eight hours while being exposed to an accident environment, which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the relationship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. Since the valves are required to operate immediately following the accident, (i.e., seconds rather than minutes) the actuators will not be exposed to the extreme environmental conditions resulting from a LOCA or secondary line break. This forms our basis for continued operation with these valve actuators.

TER No.	11 (G45 A and B)
Equipment Description:	Motor
Manufacturer:	Chempump
Model/Type:	GPS-60L 46H-3T
Deficiency:	Qualification Information Being Developed

These pumps are part of the long term Recirculation System. Following safety injection, the operator initiates recirculation by actuating these pumps to deliver water from the containment sump to the Recirculation Heat Exchanger. The qualification documentation for the pumps and motors is an analysis documented in Amendment 30 to the San Onofre Unit 1 FSA. Based on additional analyses performed on the pump motors, it has been determined that the pumps are capable of functioning in a post-accident environment. This analyses included the thermal and radiation aging analysis of the non-metallic parts of the motor. The analysis addressed the pressure, temperature, submersibility, chemical and radiation environment. This forms the basis for continued operation with these pumps.

TER No.	12 (MOV 866 A and B)
Equipment Description:	MOV
Manufacturer:	Limitorque
Model/Type:	SMB-000-5
Deficiency:	Qualification Method, Aging

These valves are part of the long term Recirculation System. These are the discharge valves for the pumps identified in TER No. 11 and are opened by the operator to initiate recirculation. The qualification documentation available for the valve actuators is a Westinghouse WCAP which documents a test performed on a similar valve actuator. That WCAP indicated the actuator operated up to eight hours while being exposed to an accident environment, which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the relationship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. Under LOCA conditions, the valves will be operated early in the accident (i.e., within 30 minutes) and are not required to be operated again during the course of the accident. The WCAP provides some assurance that the actuators will operate when required. This forms the basis for continued operation with these valve actuators.

TER No.	13 (FT 500 and 501)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	E13DM
Deficiency:	Qualification Method, Aging, Qualification Time

These transmitters are part of the long term Recirculation System. The transmitters monitor the discharge flow of the pumps identified in TER No. 11. The qualification documentation for the transmitters is Foxboro test reports which demonstrate similar model transmitters were tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material information which would establish the relationship between the tested model and the installed model. These transmitters are not required for operation of the recirculation system. At nineteen hours following the accident, the operator utilizes the transmitters to establish hot leg recirculation through the alternate recirculation path in the event it was necessary. If the transmitters fail, pneumatic flow transmitters (FT 1114 A, B and C) on the safety injection recirculation lines provide adequate indication. This forms the basis for continued operation with these transmitters.

TER No.	19A (FCV 1115 D, E and F)
Equipment Description:	Flow Controller
Manufacturer:	Honeywell
Model/Type:	IS HE-1
Deficiency:	Qualification Information Being Developed

These valves are part of the long term Recirculation System. The valves are utilized to modulate the recirculation flow to the RCS cold legs. No qualification documentation is available for the valves flow controllers. We have been unable to obtain information regarding the flow controllers. Following a LOCA, the valves and controllers would be exposed to the long term recirculation radiation environment. Since the flow controllers are expected to operate in a harsh environment and other equipment in a non-harsh environment is not available to perform a similar function, the flow controllers will be replaced prior to return to power from the next outage, which is expected to commence approximately March 1, 1982.

TER No.	19B (FCV 1115 D, E and F)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	B8300-B56R1
Deficiency:	Qualification Information Being Developed

These valves are part of the long term Recirculation System. The valves are utilized to modulate the recirculation flow to the RCS cold legs. The solenoid and the actuator internals and the regulator were replaced during the last refueling/maintenance/steam generator sleeving outage. In addition, a regular maintenance program was instituted for the replaced parts. Detailed information regarding this refurbishment is documented in our letter to the NRC dated May 4, 1981.

TER No.	21 (MOV 356, 357 and 358)
Equipment Description:	MOV
Manufacturer:	Limitorque
Model/Type:	SMB-00-25
Deficiency:	Qualification Method, Aging

These valves are part of the long term Recirculation System. The valves isolate the recirculation lines to the RCS cold legs. The operator opens the valves to initiate recirculation flow to the RCS. The qualification documentation for the valve actuators is a Westinghouse WCAP which documents a test performed on a similar valve actuator. That WCAP indicated the actuator operated up to eight hours while being exposed to an accident enrironment, which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the relationship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. Under LOCA conditions, these valves will

be operated early in the accident (i.e., within 30 minutes) and are not required to be operated again during the course of the accident. The WCAP provides some assurance that the actuators will operate when required. This forms the basis for continued operation with these valve actuators.

TER No.	26 (FT 504)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	E13DM
Deficiency:	Qualification Method, Aging

This transmitter is part of the Containment Spray System. The transmitter monitors containment spray flow. The qualification documentation for the transmitter is Foxboro test reports which demonstrate similar model transmitters were tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material information which would establish the relationship between the tested model and the installed model. Since the transmitter is located outside containment in an area away from secondary piping, it will only be exposed to the post-LOCA radiation environment. During safety injection, the environment is ambient; once recirculation is initiated the radiation dose will increase due to the recirculation fluid being utilized for containment spray. The transmitter is not required for the containment spray system to function. The radiation test reports provide some assurance that the transmitter will function properly. This forms the basis for continued operation with this transmitter.

TER No.	27 (CV 82 and 114)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPLB 8300B59
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Spray System. The valves isolate the containment spray line inside containment. Upon initiation of the containment spray system at 10 psig, the valves are automatically opened to allow the delivery of borated water to the spray nozzles. The qualification documentation for the valves and their respective solenoids is an analysis documented in Amendment 30 to the San Onofre Unit 1 FSA. The analysis for the soleniod valves demonstrates that these valves will perform their safety function even though the solenoid valves may fail. The valves would be required to operate early in the accident (i.e., seconds rather than minutes). Once they have been opened it is not necessary to reactuate the valves. This forms the basis for continued operation with these valves and their solenoids.

TER No.	28 (PT 501, 502 and 503)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	E11GM
Deficiency:	Qualification Method, Aging

These transmitters are part of the Containment Spray System. The transmitters input into the containment spray actuation signal at 10 psig to initiate containment spray. The qualification documentation for the transmitters is Foxboro test reports which demonstrate a similar model transmitter was tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material information which would establish the relationship between the tested model and the installed model. These transmitters are located outside containment and will only be exposed to a radiation environment. The transmitters are not located near secondary piping. Since these transmitters operate early in the accident, (i.e., seconds rather than minutes) they will not be exposed to the post-accident radiation environment for an extended period. The radiation test report provides some assurance that these transmitters will function properly. This forms the basis for continued operation with these transmitters.

TER No.	29 (CV 102, 104 and 106)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	8300 B61R
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the valves isolate the sphere sump pump discharge, the RCS drain tank discharge and the RCS drain tank vent inside containment. The qualification documentation for the valves and their respective solenoids is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The valves are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valves have closed, they are not required to be reactuated. The valves will be exposed to the post-accident containment environment; however, they would have performed their safety function, prior to the post-accident environment. In addition, isolation valves located outside containment on these lines are required to close and will not be exposed to the harsh containment environment. Based on the analysis performed, these valves will close, whether or not, their solenoids have failed. This forms the basis for continued operation with these valves.

TER No.	30 (CV 103, 105 and 107)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	8300B61
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the valves isolate the sphere sump pump discharge, the RCS drain tank discharge and the RCS drain tank vent outside containment. The qualification documentation for the valves and their respective solenoids is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing their safety function (i.e., closing). The analysis does not specifically address these valves and solenoids; however, the valve and solenoid operation is the same. The valves are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valves have closed, they are not required to be reactuated. The valves are located outside containment and will not be exposed to the harsh environment at the time of actuation. The valves are located on the lines for the valves identified in TER No. 29. Based on the analysis performed, these valves will close, whether or not, their solenoids have failed. This forms the basis for continued operation with these valves.

TER No.	31 (CV 146 and 147)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPLB 8300 B59
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the valves isolate the sphere sample supply and return lines inside containment. The qualification documentation for the valves and their respective solenoids is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The valves are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valves have closed, they do not need to be reactuated. The valves will be exposed to the post-accident environment; however, they would have performed their safety function prior to the environment. In addition, isolation valves located outside containment on these lines are required to close and will not be exposed to the harsh environment at the time of actuation. Based on the analysis performed, these valves will close, whether or not, their solenoids have failed. This forms the basis for continued operation with these valves.

TER No.	32 (SV 1212-8 and 1212-9)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPLB 8300 B59
Deficiency:	Qualification Information Being Developed

These solenoid valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the solenoid valves isolate the sphere sample supply and return lines outside containment. The qualification documentation for the solenoids is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will result in the solenoid failing to the closed position. The analysis does not specifically address these solenoids; however, their operation is the same. These solenoids are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once these solenoids have closed they do not need to be reactuated. The solenoids are located outside containment and will not be exposed to the harsh environment at the time of actuation. The solenoids are located on the lines for the valves identified in TER No. 31. Based on the analysis performed, these solenoids will close, whether or not they have failed. This forms the basis for continued operation with these valves.

TER No.	33 (CV 117, 118 and 119)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPLB 831735
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the valves isolate the steam generator steam sample lines outside containment. The qualification documentation for the valves and their respective solenoids is an analysis provided in Amendement 30 to the San Onofe Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The analysis does not specifically address these valves; however, the valve and solenoid operation is the same. The valves are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valves have closed, they are not required to be reactuated. The valves are located outside containment and will not be exposed to a harsh environment at the time of actuation. Based on the analysis performed, these valves will close, whether or not their solenoids have failed. This forms the basis for continued operation with these valves.

TER No.	34 (CV 120, 121 and 122)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WP 831735
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the valves isolate the steam generator blowdown sample lines outside containment. The qualification documentation for the valves and their respective solenoids is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The analysis does not specifically address these valves; however, the valve and solenoid operation is the same. The valves are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valves have closed, they are not required to be reactuated. The valves are located outside containment and will not be exposed to a harsh environment at the time of actuation. Based on the analysis performed, these valves will close, whether or not their solenoids have failed. This forms the basis for continued operation with these valves.

TER No.	35 (CV 123)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WP 8300-B61R
Deficiency:	Qualification Information Being Developed

This valve is part of the Containment Isolation System. At a containment pressure of 2 psig, the valve isolates the service air supply line outside containment. The qualification documentation for the valve and its respective solenoid is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The analysis does not specifically address this valve; however, the valve and solenoid operation is the same. The valve is required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valve has closed, it is not required to be reactuated. The valve is located outside containment and will not be exposed to a harsh environment at the time of actuation. In addition, an isolation check valve located inside containment is on this line and prevents flow of service air outside containment. Based on the analysis performed, this valve will close, whether or not the solenoid has failed. This forms the basis for continued operation with this valve.

TER No.	36 (CV 537)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPHT X 832093
Deficiency:	Qualification Information Being Developed

This valve is part of the Containment Isolation System. At containment pressure of 2 psig, the valve isolates the service water supply line inside containment. The qualification documentation for this valve and its respective solenoid is based on the analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The analysis does not specifically address this valve; however, the valve and solenoid operation is the same. This valve is required to close immediately following a LOCA or secondary line break (i.e.c seconds rather than minutes). Once the valves have closed they do not need to be reactuated. The valves are located inside containment and will see the containment post-accident environment; however, they would have performed their safety function prior to the environment. In addition, an isolation valve located outside containment on this line is required to close and will not be exposed to the containment harsh environment at the time of actuation. Based on the analysis performed, these valves will close, whether or not their solenoids have failed. This forms the basis for continued operation with this valve.

TER No.	37 (CV 115)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPLB 8300 B61RU
Deficiency:	Qualification Information Being Developed

This valve is part of the Containment Isolation System. At a containment pressure of 2 psig, the valve isolates the service water supply line outside containment. The qualification documentation for this valve and its respective solenoid is based on the analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The analysis does not specifically address this valve; however, the valve and solenoid operation is the same. The valve is required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valve has closed it does not need to be reactuated. The valve is located outside containment and will not be exposed to a harsh environment at the time of actuation. This valve is located on the line for the valve identified in TER No. 36. Based on the analysis performed, this valve will close, whether or not its solenoid has failed. This forms the basis for continued operation with this valve.

TER No. 38 (SV 702B and D)
Equipment Description: Solenoid
Manufacturer: Marotta
Model/Type: MV-583H-4A
Deficiency: Qualification Information Being Developed

These solenoid valves are part of the Containment Isolation System. At containment pressure of 2 psig, the solenoid valves isolate the safety injection vent lines inside containment. No qualification documentation is available on the solenoid valves. The solenoids are normally closed and are not required to be opened following an accident. The lines containing these valves have normally closed valves outside containment which will not be exposed to the harsh environment. We have performed an analysis on the solenoid valves which verifies their failure will not result in the valves opening. This forms the basis for continued operation with these valves.

TER No. 39 (SV 702A and C)
Equipment Description: Solenoid
Manufacturer: Marotta
Model/Type: MV-583H-4A
Deficiency: Qualification Information Being Developed

These solenoid valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the solenoid valves isolate the safety injection vent lines outside containment and will not be exposed to the harsh environment at the time of actuation. No qualification documentation is available on the solenoid valves. The solenoid are normally closed and are not required to be opened following an accident. These valves are on the lines containing the valves identified in TER No. 39. We have performed an analysis on the solenoid valves which verifies their failure will not result in the solenoid valves opening. This forms the basis for continued operation with these valves.

TER No. 40 (POV9 and 10)
Equipment Description: SOV Operator
Manufacturer: ASCO
Model/Type: 8345 C11
Deficiency: Qualification Information Being Developed

These valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the valves isolate the sphere purge supply and outlet lines outside containment and will not be exposed to the harsh environment at the time of actuation. The qualification documentation for the valves and their respective solenoids is the analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid valve will not prevent the valve from performing its safety function (i.e., closing). The valves are required to be closed during operation and are not opened until the plant is in a cold shutdown. This forms the basis for continued operation with these valves.

TER No.	41 (CV 40 and 116)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPLB 8300 B59RF
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the valves isolate the sphere equalizing and sphere instrument air vent lines inside containment. The qualification documentation for the valves and their respective solenoids is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The valves are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valves have closed, they are not required to be reactuated. The valves will be exposed to the containment post-accident environment; however, they would have performed their safety function prior to the harsh environment. In addition, an isolation valve located outside containment on this vent line is required to close and will not be exposed to the harsh environment at the time of actuation. Based on the analysis performed, these valves will close, whether or not their solenoids have failed. This forms the basis for continued operation with these valves.

TER No.	42 (CV 10)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPLB 8300 B59
Deficiency:	Qualification Information Being Developed

This valve is part of the Containment Isolation System. At a containment pressure of 2 psig, the valve isolates the sphere vent line outside containment. The qualification documentation for the valve and its repsective solenoid is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). This valve is required to close immediately following a LOCA or secondary line break (i.e. seconds rather than minutes). Once the valve has closed, it does not need to be reactuated. The valve is located outside containment and will not be exposed to a harsh environment at the time of actuation. This valve is located on the line for the valves identified in TER No. 46. Based on the analysis performed, this valve will close, whether or not the solenoid has failed. This forms the basis for continued operation with this valve.

TER No.	43 (CV 533 and 536)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPHT X 832093
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the valves isolate the primary makeup to the pressurizer relief tank and the nitrogen to the RCS drain tank lines inside containment. The qualification documentation for these valves and their respective solenoids is the analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The analysis does not specifically address these valves; however, the valve and solenoid operation is the same. The valves are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valves have closed, they do not need to be reactuated. The valves are located inside containment and will be exposed to the containment post-accident environment; however, they would have performed their safety function prior to the harsh environment. In addition, an isolation valve located outside containment on these lines is required to close and will not be exposed to the harsh environment at the time of actuation. Based on the analysis performed, these valves will close, whether or not their solenoids have failed. This forms the basis for continued operation with this valve.

TER No.	44 (CV 534 and 535)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPHT X 832093
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. At a containment pressure of 2 psig, the valves isolate the primary makeup to the pressurizer relief tank and the nitrogen to the RCS drain tank lines outside containment. The qualification documentation for these valves and their respective solenoids is the analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The analysis does not specifically address this valve; however, the valve and solenoid operation is the same. The valves are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valves have closed, they do not need to be reactuated. The valves are located outside containment and will not be exposed to a harsh environment at the time of actuation. These isolation valves are located outside containment on the lines for the valves identified in TER No. 43. Based on the analysis performed, these valves will close, whether or not their solenoids have failed. This forms the basis for continued operation with these valves.

TER No. 45 (CV 525 and 527)
Equipment Description: MOV
Manufacturer: Gulf and Western
Model/Type: EBV-D2-3006 and EBV-D3-15014
Deficiency: Qualification Information Being Developed

These valves are part of the Containment Isolation System. The valves isolate the RCS letdown and the reactor coolant pump seal water return lines inside containment. No qualification documentation is available for these valves. The isolation valves are closed by operator action following a LOCA. The valves will be exposed to the containment post-accident environment inside containment. The valves will be actuated early in the accident. These valves are designed to close on a loss of power. In addition, the lines containing these valves have isolation valves outside containment which will not be exposed to the harsh environment. This forms the basis for continued operation with these valves.

TER No. 46 (CV 526 and 528)
Equipment Description:
Manufacturer: Gulf and Western
Model/Type: EBV-D2-3006 and EBV-D3-15014
Deficiency: Qualification Information Being Developed

These valves are part of the Containment Isolation System. The valves isolate the RCS letdown and the reactor coolant pump seal water return lines outside containment. No qualification documentation is available for these valves. The isolation valves are closed by operator action following a LOCA. The valves will be exposed to a radiation environment outside containment but will be actuated early in the accident prior to the environment. These valves are designed to close on a loss of power. These valves are in the lines containing the valves identified in TER No. 46. This forms the basis for continued operation with these valves.

TER No. 47 (CV 287)
Equipment Description: SOV Operator
Manufacturer: ASCO
Model/Type:
Deficiency: Qualification Information Being Developed

This valve is part of the Containment Isolation System. The valve isolates the Excess Letdown Heat Exchanger line. The qualification documentation for this valve and its respective solenoid is provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The analysis does not specifically address this valve; however, the valve and solenoid operation is the same. The valve is normally closed. Following a

LOCA, the valve will be exposed to the containment post-accident environment, including submergence. If the valve is not closed, the operator will close the valve early in the accident. The valve is on a line that contains normally closed valves and is also isolated by the seal water return line valves identified in TER No.'s 45 and 46. This forms the basis for continued operation with this valve.

TER No.	48 (CV 202, 203 and 204)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPLB 8300 B59
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. On safety injection, these valves isolate the RCS letdown line inside containment. The qualification documentation for the valves and their respective solenoids is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will result in the valves failing to the closed position. The valves are required to close immediately following a LOCA or secondary line break (i.e., seconds rather than minutes). Once the valves have closed, they are not required to be reactuated. The valves will be exposed to the containment post-accident environment; however, they would have performed their safety function prior to the harsh environment. Based on the analysis performed, the valves will close, whether or not their solenoids have failed. This forms the basis for continued operation with these valves.

TER No.	49 (CV 532)
Equipment Description:	SOV Operator
Manufacturer:	ASCO
Model/Type:	WPHTX 8320 93
Deficiency:	Qualification Information Being Developed

This valve is part of the Containment Isolation System. The valve isolates the nitrogen supply to the pressurizer relief tank line inside containment. The qualification documentation for this valve and its repective solenoid is based on the analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. That analysis indicates that failure of the solenoid will not prevent the valve from performing its safety function (i.e., closing). The analysis does not specifically address this valve; however, the valve and solenoid operation is the same. The isolation valve is closed by operator action following a LOCA. The valve will be exposed to the containment post-accident environment. The valves will be actuated early in the accident. In addition, the line containing this valve has an isolation check valve outside containment. Based on the analysis performed, the valve will close, whether or not the solenoid has failed. This forms the basis for continued operation with these valves.

TER No.	50 (CV 515 and 516)
Equipment Description:	
Manufacturer:	Gulf and Western
Model/Type:	EBV-D-6-15018
Deficiency:	Qualification Information Being Developed

These valves are part of the Containment Isolation System. The valves isolate the turbine plant cooling water outlet and inlet lines outside containment. No qualification documentation is available for the valves. The isolation valves are closed by operator action following a LOCA. The valves will be exposed to a radiation environment outside containment but will be actuated early in the accident prior to the environment. This forms the basis for continued operation with these valves.

TER No.	51 (PT 1120A, B and C and PT 1121A, B and C)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	E11GM
Deficiency:	Qualification Method, Aging

These transmitters are part of the Containment Isolation and Safety Injection Systems. At a containment pressure of 2 psig, the transmitters input into the containment isolation and safety injection actuation system. The qualification documentation for these transmitters is Foxboro test reports which demonstrate a similar model transmitter was tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material information which would establish the relationship between the tested model and the installed model. These transmitters are located outside containment and will only be exposed to a radiation environment. These transmitters are not located near secondary piping. Since these transmitters operate early in the accident, they will not be exposed to the post-accident radiation environment for an extended period. The radiation test reports provide some assurance these transmitters will function properly. This forms the basis for continued operation with these transmitters.

TER No.	58 (CV 76, 77, 78 and 79)
Equipment Description:	Solenoid
Manufacturer:	Valvair
Model/Type:	5682-2
Deficiency:	Qualification Information Being Developed

These valves are part of the Atmospheric Steam Dump System. The valves are used to dump steam in the event the main condenser is not available. No qualification documentaton is available for the solenoid valves. This system is not required for a large break LOCA. In the event of a small break LOCA,

the valves would be exposed to radiation. The valves are outside containment shielded by the Sphere Enclosure Building and by steel enclosures designed to protect them from high energy pipe breaks and, as such, would not be expected to be exposed to the radiation levels specified for this area of the plant. However, in the event they did fail after prolonged exposure, the main steam safety valves would be available. The atmospheric steam dump valves would not be necessary following a secondary line break at any location. This forms the basis for continued operation with these valves.

TER No.	62 (TE 606)
Equipment Description:	Temperature Sensor
Manufacturer:	Foxboro
Model/Type:	DB-13V-26W
Deficiency:	Qualification Information Being Developed

This temperature sensor is part of the Component Cooling Water System. The sensor monitors the cooling water temperature. No qualification documentation is available for this sensor. The instrument is located outside containment in an ambient environment. During long term recirculation the sensor may see higher radiation doses due to recirculation equipment being in the area. It is expected that shielding from the equipment in the area would considerably reduce the recirculation loop dose to the sensor. Failure of this instrument would not affect the operability of the component cooling water system. This forms the basis for continued operation with this temperature sensor.

TER No.	64 (G10S)
Equipment Description:	Motor
Manufacturer:	Westinghouse
Model/Type:	
Deficiency:	Qualification Information Being Developed

This pump motor is part of the Auxiliary Feedwater System. The pump delivers condensate water to the steam generators. Additional information is required to establish the qualification of this motor. In the event of a secondary line break in the vicinity of the pump, the motor would be exposed to saturated steam. It is not expected that this environment would affect the operability of the motor. However, in the event the motor did fail, the steam driven auxiliary feedwater pump would be available. This forms the basis for continued operation with this pump motor.

TER No.	66 (LT 450X, 451X and 452X)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	NE13DM
Deficiency:	Qualification Method, Aging, Qualification Time

These transmitters are part of the Auxiliary Feedwater System. The transmitters provide indication of steam generator level and input to the axuiliary feedwater system on low steam generator level. The qualification documentation for the transmitters is Foxboro test reports which demonstrate a similar model transmitter was tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material information which would establish the relationship between the tested model and the installed model. In the event of a primary or secondary line break, initiation of auxiliary feedwater will occur either immediately or very early in the accident. The transmitters would have performed their safety function prior to being exposed to a harsh environment for an extended period. Since these transmitters are located at each steam generator, a break in the vicinity of one transmitter would not immediately affect the other two. Based on the qualification documentation available, it provides some assurance that these transmitters will function in the post-accident environment of the small break LOCA and secondary line break. This forms the basis for continued operation with these transmitters.

TER No.	67
Equipment Description:	Cable
Manufacturer:	GE
Model/Type:	Vulkene
Deficiency:	Qualification Information Being Developed, Aging Radiation

This cable is utilized in safety related circuits both inside and outside containment. The qualification documentation for this cable is manufacturers specifications and an analysis. This information indicates that GE Vulkene cable is capable of withstanding the San Onofre Unit 1 LOCA environment. The analysis evaluated temperature, radiation threshold and thermal aging data available for the cable insulation material. The analysis concluded that the cross-linked polyethylene material, which makes up Vulkene cable, is qualified for the plant life environment specified. This forms the basis for continued operation with this cable.

TER No. 68
Equipment Description: Cable
Manufacturer: GE
Model/Type: FR-EPR
Deficiency: Qualification Method, Submergence

This cable is utilized in safety-related circuits both inside and outside containment. The qualification documentation for this cable is a test report which indicates the cable successfully withstood a post-LOCA environment which envelopes the San Onofre Unit 1 environment. In addition, an analysis has been performed on the cable material. The analysis evaluated temperature, radiation threshold and thermal aging data available for the cable insulation material. It concluded that the cross-linked polyethylene material which makes up the cable, is qualified for the plant life environment specified. This forms the basis for continued operation with this cable.

TER No. 71
Equipment Description: Electrical Penetrations
Manufacturer: Viking
Model/Type:
Deficiency: Qualification Information Being Developed

These penetrations complete the circuits for safety-related equipment inside containment. The qualification documentation for these penetrations is an analysis which evaluates the penetrations material makeup. The analysis concludes that the degradation of the non-metallic materials of the penetration canisters due to aging and radiation would not be sufficient to compromise their individual safety related functions. It is, therefore, assumed that the penetration assemblies are capable of performing their pressure and circuit integrity functions through a postulated accident. This forms the basis for continued operation with these penetrations.

TER No. 73
Equipment Description: Electrical Penetrations
Manufacturer: Amphenol
Model/Type:
Deficiency: Aging, Chemical Spray

These penetrations complete the circuits for safety-related equipment inside containment. The qualification documentation for these penetrations is a manufacturers test report and an analysis. The test report indicates a sample penetration was tested to a post-LOCA environment which exceeds the San Onofre Unit 1 environment. The analysis evaluated the non-metallic material makeup of the penetrations. It indicated that the penetrations are qualified for at least 12 years from their installation in 1977. Additional analysis is necessary to demonstrate qualification for the life of the plant. This forms the basis for continued operation with these penetrations.

TER No.	79
Equipment Description:	Resistance Temperature Detector
Manufacturer:	Weed Instruments
Model/Type:	2004
Deficiency:	Qualification Information Being Developed

These temperature detectors are part of the RCS. The detectors are used to monitor the RCS fluid temperature. The detectors would be used to monitor the RCS for adequate core cooling in the event of a secondary line break or small break LOCA. The RTD's have been replaced as part of TMI modifications. Based on preliminary information, the detectors have successfully completed qualification testing to IEEE 323-74. Documentation which verifies this testing will be available in March, 1982. This forms the basis for continued operation with these detectors.

TER No.	81
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	E11GM
Deficiency:	Qualification Method, Aging, Qualification Time, Radiation

This transmitter is part of the RCS. It inputs to the subcooling recorder which is used to monitor the RCS for adequate core cooling following an accident. The qualification documentation for the transmitter is Foxboro test reports which demonstrate a similar model transmitter was tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material infomation which would establish the relationship between the tested model and the installed model. This transmitter would only be required for a small break LOCA or a secondary line break to monitor the adequate core cooling. The environment from a small break LOCA or a secondary line break will not be as severe as that resulting from a large break LOCA. Based on the qualifiction documentation available, it provides some assurance that the transmitter will function in the post-accident environment of the small break LOCA or secondary line break. This forms the basis for continued operation with this transmitters.

TER No.	92
Equipment Description:	Terminal Block
Manufacturer:	
Model/Type:	
Deficiency:	Qualification Information to be Developed, Aging, Qualification Method, Chemical Spray, Radiation

During the last refueling/maintenance/steam generator sleeving outage, terminal blocks in safety-related circuits were replaced with Raychem cable splices. The qualification of these splices is addressed in TER No. 74. Details regarding the terminal block replacement was provided by our letter dated May 18, 1981.

TER No.	96 (FT 602)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	E13DM
Deficiency:	Qualification Method, Aging, Qualification Time, Submergence, Radiation

This transmitter is part of the RHR System. The transmitter monitors the RHR system flow. The qualification documentation for the transmitter is Foxboro test reports which demonstrate similar model transmitters were tested to an accident environment which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain bill of material information which would establish the relationship between the tested model and the installed model. The transmitter is not required for operation of the RHR system. The RHR system is required for operation following a secondary line break to bring the RCS to a cold shutdown. In the event the break is inside containment, the transmitter may be submerged. Other means are available for shutdown if the RHR system has failed. This forms the basis for continued operation with this transmitter.

TER No.	100
Equipment Description:	Cable
Manufacturer:	Various
Model/Type:	
Deficiency:	Qualification Information Being Developed, Aging, Qualification Method, Submergence, Chemical Spray

This cable is utilized in safety-related circuits inside and outside containment. The qualification documentation for the cable is an analysis of the material makeup of the cable. The results of the analysis indicates that certain cable inside containment would perform their safety function as required; however, they may experience some degradation. During the 1980-1981 extended steam generator outage, specific cable was replaced. Details regarding this cable and the replacement was provided in our letter to the NRC dated May 18, 1981.

APPENDIX C

Equipment Considered Acceptable or Conditionally Acceptable

TER No:	2 (FT 456, 457 and 458)
Equipment Description:	Transmitter
Manufacturer:	Foxboro
Model/Type:	613DM
Deficiency:	Aging

These transmitters are part of the Reactor Protection System. They input ot reactor trip on a steam flow feedwater flow mismatch. We have been unable to obtain bill of material information on these transmitters to assess the material makeup. In the event of a steam line or feedwater line break reactor trip would occur immediately (i.e., seconds). These transmitters would have performed their safety function prior to seeing a harsh environment. If the break is in the vicinity of the transmitters, they would have performed their function or reactor trip would have occurred due to other inputs, such as, pressurizer pressure or level. For breaks in any other area, these transmitters would not be affected. This forms the basis for continued operation with these transmitters.

TER No:	69
Equipment Description:	Cable
Manufacturer:	Raychem Flamtrol
Model/Type:	
Deficiency:	Aging

This cable is utilized in safety-related circuits outside containment. The qualification documentation for the cable is a manufacturers test report which indicates the cable was tested to an environment which exceeds the San Onofre Unit 1 post-accident environment. We have also performed a material analysis on the cable. This analysis included radiation aging, thermal aging and temperature. The analysis concluded that this cable is qualified for the plant life. This forms the basis for continued operation with this cable.

TER No: 70
Equipment Description: Cable
Manufacturer: Rockbestos
Model/Type: Firewall III & SIS
Deficiency: Aging

This cable is utilized in safety-related circuits outside containment. The qualification documentation for the cable is a manufacturers test report which indicates the cable was tested to an environment which exceeds the San Onofre Unit 1 post-accident environment. We have also performed a material analysis on the cable. This analysis included radiation aging, thermal aging and temperature. The analysis concluded that this cable is qualified for the plant life. This forms the basis for continued operation with this cable.

TER No: 72
Equipment Description: Electrical Penetrations
Manufacturer: Conax
Model/Type:
Deficiency: Aging

These penetrations complete the circuits for the safety related equipment located inside containment. The qualification documentation for the penetrations is a manufacturers test report which indicates a penetration was tested in an environment which exceeds the San Onofre Unit 1 post-accident environment. We have performed a material analysis of the non-metallic materials in the penetrations for thermal and radiation aging. The analysis concludes that the penetrations are qualified for plant life. This forms the basis for continued operation with this cable.

TER No: 74
Equipment Description: Cable Splice
Manufacturer: Raychem
Model/Type: Thermofit
Deficiency: Aging

This cable splice is utilized in safety-related circuits inside containment. The qualification documentation for the cable splice is a manufacturers test report which indicates the cable splice was tested to an environment which exceeds the San Onofre Unit 1 post-accident environment. We have also performed a material analysis on the cable splice. This analysis included radiation and thermal aging. The analysis concluded that this cable is qualified for the plant life. This forms the basis for continued operation with this cable.

TER No: 78
Equipment Description: Limit Switch
Manufacturer: NAMCO
Model/Type: EA 180
Deficiency: Aging

These limit switches provide indication of valve position for the PORV's and the block valves. The qualification documentation for these valves is a manufacturers test report which indicates a limit switch was tested to an environment which exceeds the San Onofre Unit 1 post-accident environment. As indicated for TER No. 77, the PORV's are not normally required under accident conditions. However, in the event of failures in other systems, the PORV's are available to remove decay heat.

TER No: 7 (CV 875 A and B)
Equipment Description: SOV Operator
Manufacturer: ASCO
Model/Type: WPHT 8314
Deficiency: None

TER No: 8 (CV 36 and 37)
Equipment Description: SOV Operator
Manufacturer: ASCO
Model/Type: WPLB 8300B59
Deficiency: None

TER No: 23 (MOV 883)
Equipment Description: MOV
Manufacturer: Limitorque
Model/Type: SMB-00
Deficiency: None

TER No: 15 (MOV/LCV 1100 B, C, and D)
Equipment Description: MOV
Manufacturer: Limitorque
Model/Type: SMB-10
Deficiency: Aging

These valves are part of the Safety Injection and long term Recirculation Systems. Upon initiation of safety injection, the valves realign the charging pumps suction for emergency core cooling operation. The qualification documentation for the valve actuators is a Westinghouse WCAP which documents a

test performed on a similar valve actuator. That WCAP indicates the actuator operated up to eight hours while being exposed to an accident environment, which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the relationship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. Upon initiation of safety injection MOV/LCV 1100C closes and MOV/LCV 1100B and D open and are not required to be reactuated. The valves are located in the Auxiliary Building and will have operated in their normal environment (i.e., seconds rather than minutes) prior to being exposed to the long term recirculation radiation environment. This forms the basis for continued operation with these valve actuators.

TER No:	18 (MOV 18 and 19)
Equipment Description:	MOV
Manufacturer:	Limitorque
Model/Type:	SMB-00
Deficiency:	Aging

These valves are part of the Safety Injection and long term Recirculation Systems. Upon initiation of safety injection, these valves realign the charging pumps discharge for emergency core cooling operation. The qualification documentation for the valve actuators is a Westinghouse WCAP which documents a test performed on a similar valve actuator. That WCAP indicates the actuator operated up to eight hours while being exposed to an accident environment, which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the relationship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. Upon initiation of safety injection the valves open and are not required to be reactuated. The valves are located in the Piping Penetration Building and will have operated in their normal environment (i.e., seconds rather than minutes) prior to being exposed to the long term recirculation radiation environment. This forms the basis for continued operation with these valve actuators.

TER No:	24 (MOV 880)
Equipment Description:	MOV
Manufacturer:	Limitorque
Model/Type:	SMB-00
Deficiency:	Aging

These valves are part of the Safety Injection and long term Recirculation Systems. Upon initiation of safety injection, this valve is required to remain closed for emergency core cooling operation. The qualification documentation for the valve actuators is a Westinghouse WCAP which documents a test performed on a similar valve actuator. That WCAP indicated the actuator operated up to eight hours while being exposed to an accident environment,

which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the relationship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. This valve is not required to operate during the course of an accident but must remain closed. Therefore, failure of the operability of the actuator is of no significance. This forms the basis for continued operation with this valve actuator.

TER No:	60 (MOV 720 A and B)
Equipment Description:	MOV
Manufacturer:	Limitorque
Model/Type:	SMB-00
Deficiency:	Aging

These valves are part of the Component Cooling Water System. Upon initiation of safety injection, the valves are opened to provide cooling water to the component cooling water heat exchangers. The qualification documentation for the valve actuators is a Westinghouse WCAP which documents a test performed on a similar valve actuator. That WCAP indicated the actuator operated up to eight hours while being exposed to an accident environment, which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the relationship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. One valve is open during normal operation, upon initiation of safety injection the remaining valve is opened. The valves are not required to be reactuated. The valves are located on the roof of the Auxiliary Building and will have operated in their normal environment (i.e., seconds rather than minutes) prior to being exposed to the long term recirculation radiation environment. This forms the basis for continued operation with these valve actuators.

The following equipment is included in Table 5 of our October 31, 1980, submittal. This equipment was not addressed in the NRC's Safety Evaluation Report since it was deferred for later review as part of cold shutdown, TMI or mild environment. (The numbering of the items corresponds to that in Table 5 of the October 31, 1980 submittal.)

14. LC 951 (Containment Sump Level)

This instrument is part of the long term Recirculation System. The instrument provides the operator with indication of the water level in the containment sump. During the switchover from safety injection to long term recirculation, the operator utilizes this and three other instruments, two of which are located in a non-harsh environment, to initiate the switchover. In the event this instrument fails to provide the operator with adequate information, those instruments located in the non-harsh environment would provide the operator with correct information. In addition, in connection with the implementation of TMI related requirements, new containment sump level instrumentation which is qualified for operation in the specified environments will be installed. Until the new instrumentation is installed, the existence of the instrumentation in the non-harsh environments provides assurance that correct information is available to the operators.

16. G-8A and B (Charging Pumps)

The charging pumps are part of the Safety Injection and Recirculation System. The charging pumps are used to provide flow to the core during both the injection and recirculation phases of safety injection. During the injection phase the environment in the charging pump room is ambient. During the recirculation phase, the environment includes a radiation dose associated with the recirculation fluid. The qualification documentation for the pumps is the analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. We have also peformed a materials analysis on the motors and reviewed the manufacturers generic test report. The analysis of the non-metallic materials included thermal and radiation aging. Based on the results of the analysis the motors are qualified for plant life.

17. LS-73 (Containment Sump Hi-Hi Level Alarm)

This instrument is part of the long term Recirculation System. The instrument provides the operator an alarm when the water level in the sump has reached a level for initiation of recirculation. During the switchover from safety injection to long term recirculation, the opeator utilizes this and three other instruments, two of which are located in a non-harsh environment, to initiate the switchover. In the event this instrument fails to provide the operator with adequate information, those instruments located in the non-harsh environment would provide the operator with correct information. In addition, in connection with the implementation of TMI related requirements, new containment sump level

instrumenation which is qualified for operation in the specified environments will be installed. Until the new instrumentation is installed, the existence of the instrumentation in the non-harsh environment provides assurance that correct information is available to the operators.

21. G-27A and B (Refueling Water Pumps)

These pumps are part of the Containment Spray System. The refueling water pumps are used to provide containment spray when containment pressure reaches 10 psig coincident with a safety injection signal. The qualification documentation for the pumps is the analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. We have performed a materials analysis on the motors and reviewed the manufacturers generic test report. The analysis of the non-metallic materials included thermal radiation aging. Based on the results of the analysis, these motors are qualified for plant life.

24. CV 517 and 518 (Spray Flow Control Valves)

These valves are part of the Containment Spray System. The valves are used by the operator to adjust the spray flow to the containment spray isolation valves. Following a LOCA and prior to initiation of recirculation, these valves are closed by the operator (i.e., within 30 minutes) for reduced spray flow. The valves are in an area which could be exposed to radiaton associated with recirculation water, the valves are not required to operate in this radiation environment. All operations are performed during essentially ambient conditions.

51. FCV 1112 (Hot Leg Recirculation Flow Control Valve)

This valve is part of the Hot Leg Recirculation System. The valve is used to adjust hot leg recirculation flow nineteen hours after a LOCA in order to protect against the possibility of boron precipitation in the reactor for the case of a cold leg LOCA. Hot leg recirculation is not required for an MSLB, FWLB or LOCA other than in a cold leg. Qualification of components within this system has been suspended pending consideration in connection with the Systematic Evaluation Program as discussed in SCE's letter to the NRC dated August 10, 1978. The NRC Staff's response to this letter was provided by letter dated October 16, 1978. Pending completion of this qualification, an alternate hot leg recirculation path is available in the event equipment in this path fails.

52. FIT 1112 (Hot Leg Recirculation Flow)

This instrument is part of the Hot Leg Recirculation System. The instrument monitors hot leg recirculation flow. See the discussion for item 51.

53. CV 304 (Charging Line Valve)

This valve is part of the Hot Leg Recirculation System. The valve is closed when hot leg recirculation is initiated to isolate the charging path to the cold leg. See the discussion for item 51.

54. CV 305 (Pressurizer Spray Line Valve)

This valve is part of the Hot Leg Recirculation System. The valve is opened when hot leg recirculation is initiated to open a path to an RCS hot leg. See the discussion for item 51.

55. PCV 430 C and H (Loop A and B Spray Lines)

This valve is part of the Hot Leg Recirculation System. The valves are closed when hot leg recirculation is initiated to isolate the spray lines from loops A and B. See the discussion for item 51.

56. CV-410, 411 (Volume Control Tank Inlet Valves)

These valves are part of the Chemical and Volume Control System. The valves are on the sealwater return line to the volume control tank. In the event of an accident, they are required to close to prevent loss of suction to the charging pumps (i.e., seconds rather than minutes) and therefore, they receive a close signal from the Safety Injection Sequencer. The valves are located in the charging pump room of the reactor auxiliary building. Prior to initiation of recirculation this room is at ambient conditions and, therefore, the valves would close prior to being exposed to a harsh environment. The valves are not required to be reactuated and fail close on loss of air, therefore, the prolonged effects of radiation are inconsequential.

58. G15 A, B and C (Component Cooling Water Pumps)

These pumps are part of the Component Cooling Water System. The pumps deliver component cooling water to various equipment including the recirculation heat exchanger and the RHR heat exchanger. The pumps are located in an ambient environment. Also located in the same area as the pumps is equipment in the recirculation system. Therefore, the pumps could be exposed to a radiation value higher than normal. However, shielding from these components in the area should reduce the dose considerably from the 4×10^6 rads which has been assumed for the recirculation loop. It is also noted than only one of the three pumps is required for operation of the component cooling system, therefore, failure of one or even two pumps would not affect the ability to provide adequate cooling. We have performed a materials analysis on the motors and reviewed the manufacturers generic test report. The analysis of the non-metallic materials included thermal and radiation aging. The analysis concluded that the pumps were qualified for the plant life.

60. CV 737 A and B (Recirculation Heat Exchanger Valves)

These valves are part of the Component Cooling Water System. The valves isolate the recirculation heat exchanger and are located outside in an ambient environment in an area with recirculation equipment. Following an accident, the operator opens the valves for initiation of long term recirculation (within 30 minutes). The valves would have been actuated to their open position prior to being exposed to a harsh environment.

63. FT-2002 A, B, C (Auxiliary Feedwater Flow)

These transmitters are part of the Auxiliary Feedwater System. The flow transmitters were recently installed to meet TMI related requirements and were purchased to control grade requirements. These transmitters are scheduled to be replaced with qualified transmitters.

74. Motor Control Center 2A

This motor control center is located inside the Auxiliary Building and is subjected to an ambient environment until recirculation is initiated. Located in a room adjacent to the motor control center room is recirculation equipment. The doses due to recirculation could increase the radiation in the room with the motor control center. The safety related equipment receiving power through this motor control center is actuated upon initiation of safety injection and containment spray signals and do not require further actuation. During the recirculation phase, this motor control center is not required for powering any safety-related equipment.

76. CV 530 and 531 (PORV Block Valves)

These valves are upstream of the pressurizer power operated relief valves. In accordance with the plant design, these valves would not normally have to be operated under accident conditions. However, in the event of failures in other systems, the PORVs are available to remove decay heat. To ensure their operability, the solenoids on these valves will be replaced with qualified solenoids.

77. CV 545 and 546 (PORVs)

The PORVs are not normally required under accident conditions. However, in the event of failures in other systems, the PORVs are available to remove decay heat. To ensure their operability,the solenoids on these valves will be replaced with qualified solenoids.

81. PS 56, 57 and 58 (Compressor Pressure Switches)

These pressure switches are in the motor control circuits of the compressors for the instrument air system. The instrument air system equipment is located in the southwest corner of the turbine building, Area 6. A steam or feedwater line break in Area 6 would be more towards

alternate shutdown methods are available. One such method involves removal of heat through the steam generators and is described in the Loss of Coolant Operating Instruction. Another method involves use of the recirculation pumps to provide cooling and is described in Item 5 of the enclosure to SCE's letter to the NRC dated November 27, 1974. In the event of a steam or feedwater line break outside containment, the RHR system would not be affected by a hostile environment and would be available to permit operations to attain cold shutdown.

The RHR pumps provide for long-term cooling of the reactor coolant following a MSLB. These pumps will be required to operate submerged in the post-MSLB environment. In the submerged environment the RHR pumps will be subjected to a temperature and pressure lower than the containment vapor temperature and pressure resulting from a LOCA. The qualification documentation for the pumps is a test report which documents a test performed on the motors of the RHR pumps which demonstrates the motors will perform their safety function following an MSLB inside containment.

89. MOV 822 A and B (RHR Heat Exchanger Valves)

These valves are located inside containment below the containment flooding level. The qualification documentation available for the valve actuators is a Westinghouse WCAP which documents a test performed on a similar valve actuator. That WCAP indicated the actuator operated up to eight hours while being exposed to an accident environment, which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the relationship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. During normal plant operation one of the valves is normally open to provide a path for reactor coolant letdown. To initiate RHR following a secondary line break, the remaining valve is opened by the operator. All that is required for RHR cooldown is one heat exchanger. In addition, the discussion in item 88 ensures a means to provide shutdown if these valves fail.

90. HCV 602 (RHR Flow Control)

This valve provides the flow control for the RHR system. It will be subjected to the post-accident environment including submersion. The qualification documentation for this valve is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. The analysis performed indicates that the valve is capable of withstanding the environment. It also points out that failure of the electrical components to the valve will have no effect on the valve performing its safety function. In addition, the discussion in item 88 ensures a means to provide shutdown if this valve fails.

92. MOV 813 and 814 (RHR Inlet Valves)

These valves are opened by the operator to initiate RHR. The valves will be subjected to the post-accident MSLB environment including submersion. The qualification documentation for the valves is an analysis provided in Amendment 30 to the San Onofre Unit 1 FSA. The analysis provided indicates the valves are capable of withstanding the post-accident environment. Additional qualification documentation available for the valve actuators is a Westinghouse WCAP which documents a test performed on a similar valve actuator. That WCAP indicated that actuator operated up to eight hours while being exposed to an accident environment, which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the realtionship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. However, it does not address submersion of the valve motors. In addition, the discussion in item 88 ensures a means to provide shutdown if these valves fail.

93. MOV 833 and 834 (RHR Outlet Valves)

These valves are opened by the operator to initiate RHR. The valves will be subjected to the post-accident MSLB environment. The qualification documentation available for the valve actuators is a Westinghouse WCAP which documents a test performed on a similar valve actuator. That WCAP indicated the actuator operated up to eight hours while being exposed to an accident environment, which exceeds the San Onofre Unit 1 post-accident environment. We have been unable to obtain information which would establish the relationship between the tested actuator and the installed actuator or any additional testing information regarding the actuators. The WCAP provides some assurance that the actuators will operate when required. In addition, the discussion in item 88 ensures a means to provide shutdown if these valves fail.

94. TE 601 A and B (RHR Heat Exchanger Temperature Monitor)

This instrument provides the operator with the temperature of the RHR system. It will be subjected to the post-accident MSLB environment. No qualification documentation is available on these instruments. In addition, the discussion in item 88 ensures a means to shutdown if these instruments fail.