UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 125 TO PROVISIONAL OPERATING LICENSE NO. DPR-13

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS AND ELECTRIC COMPANY

SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 1

DOCKET NO. 50-206

1.0 INTRODUCTION

The licensee reported to the NRC the failure of pressure transmitter PT-459, which occurred on July 30, 1986. This failure resulted in a fluctuation in the steam flow signals to the main feedwater control system causing a reduction of feedwater flow and automatic initiation of both trains of Auxiliary Feedwater. The subsequent review of this failure and resulting consequences identified a single failure deficiency in the design of the Steam/Feedwater Flow Mismatch Reactor Trip System. As a result of these design deficiencies, the staff in its letter dated September 23, 1986 (Ref. 1) requested that the licensee perform a review of the Reactor Protection System (RPS) and Engineered Safety Features (ESF) for conformance to the applicable design basis.

The licensee in its letters dated October 16 (Ref. 2), November 6 (Ref. 3), and November 20, 1987 (Ref. 4), and June 21, 1988 (Ref. 5), provided the ESF single failure analysis. The results of this study identified several ESF single failure susceptibilities mostly in the electrical and control systems area. These deficiencies were subsequently corrected and the staff evaluation for these items is addressed in a separate staff SER.

The existing Auxiliary Feedwater System (AFWS) was previously evaluated both in response to the TMI action plan and the Systematic Evaluation Program (SEP). Several single failure susceptibilities were identified and the licensee committed to upgrade the AFWS during the Cycle X refueling outage. Therefore, the licensee evaluated the proposed upgraded AFWS configuration as part of the recent ESF single failure analysis effort.

By letters dated December 8, 1988 (Ref. 6) and February 17, 1989 (Ref. 7), the licensee proposed Technical Specifications to incorporate the necessary changes due to AFWS modification. Additional information was provided in a letter dated April 5, 1989 (Ref. 8).

2.0 EVALUATION

The upgraded AFWS consists of two redundant, electrically independent trains. Train A consists of existing motor driven pump G-10S, turbine driven pump G-10 and all associated valves and interlocks. The Train B consists of the new motor driven pump G-10W and associated valves and interlocks. The upgraded AFWS includes a lead/lag train arrangement with Train B as lead. System flow limitations for water hammer and G-10S runout considerations are achieved using the lead/lag interlocks and passive mechanical means.

The second motor-driven pump, G10W, was installed during the Cycle IX outage in order to comply with the post-fire safe shutdown requirements of 10 CFR Part 50, Appendix R. This new pump will be made automatic starting prior to startup from the Cycle X (1989) outage.

The new AFW pump will be initiated first on a steam generator low level signal with the turbine-driven pump started in the warmup (idling) mode and the Train A discharge valves closed. In the event the new pump does not start, Train A valves will open and pumps G10 and G10S will begin to deliver water to the steam generators after a preset time delay. If the Train A pumps are operating, they will stop on a flow signal from the G10 W pump discharge manifold with the turbine driven pump back in the warmup mode. Interlocks are provided to avoid operation of both trains simultaneously in the event of a single failure.

The licensee previously identified concerns regarding AFW flow initiation in that introduction of large amounts of cool auxiliary feedwater into the hot steam generator may result in a water hammer event which could damage the SG and its attendant piping. Therefore, the licensee intends to add a cavitating venturi in each auxiliary feedwater supply line which will limit AFW flow to a rate not exceeding 150 gpm.

The licensee indicated that in some accidents (certain steam line and feedwater line breaks), the original motor-driven pump, G10, will not be capable of supplying sufficient water to the steam generators for decay heat removal for those events by itself. Therefore, the licensee has arranged the original two pump AFW system into one train with the new motor driven pump in the other train.

The staff notes that the main feedwater (MFW) pumps perform a safety function by injecting water into the reactor vessel (RV) in case of a LOCA in addition to the normal feedwater function for power operation. However, the main feedwater pumps may also be used to feed the steam generators should the AFW system be unavailable in an emergency condition.

The required modifications to achieve the new configuration are discussed in detail below:

(1) Two new AFW flow control valves will be added so that the upgraded system configuration has two flow control valves per AFW line. The parallel valves on each line will be on separate electrical trains. The valves on Train B will open upon loss of control power. This failure mode was selected because if Train B power fails, no credit for flow equalization between the AFW lines is taken for Train A, inasmuch as the flow indication on each line is Train B powered. The combined flow from the Train A pumps (G-10 and G10S) can meet the required flow for all conditions with the flow control valve wide open. Conversely, the Train A

valves will fail closed upon loss of control power, so that the Train B pump (G-10W) can meet the flow requirements for all conditions with credit for flow equalization between the AFW lines.

(2) A cavitating venturi will be installed in each AFW line downstream of the flow control valves so that water hammer limits and Train A driven pump (G-10S) runout flow restrictions will be achieved for all conditions. An additional venturi will be installed in the discharge of the Train B pump (G-10W) so as to prevent exceeding the maximum flow limits to each steam generator for all conditions.

(3) The low discharge pressure trip for the motor driven Train A pump (G-10S) will be removed. This trip function does not currently meet single failure criteria. Pump runout will be prevented by passive mechanical means (cavitating venturis).

(4) The control room AFW panel will be modified to include the same controls, indications and alarms for the Train B pump (G-10W) as provided for the motor driven Train A pump (G-10S). In addition, since the Train B pump is credited for post-fire dedicated safe shutdown, a manual transfer switch will be provided outside the control room. This transfer switch will provide isolation between the normal Train B and the dedicated shutdown system power supply.

(5) The AFW auto initiation system and auto-mode control circuit of each pump and associated discharge valve will be modified to function as described below:

(a) Upon receipt of low steam generator level (either Train A or B), an AFWS auto initiation signal will be generated to the respective pump train.

(b) Upon AFWS auto initiation, the lead Train B pump (G-10W) will immediately start and provide flow. The turbine driven Train A pump (G-10) will begin turbine warm-up, if steam is available.

(c) After a set time delay, to allow the Train B pump to respond, the lag Train A pumps (both G-10 and G-10S) will begin to provide flow upon a low flow signal from the Train B pump discharge manifold. To prevent automatic operation of both pumping trains concurrently, separate flow switches will be interlocked with the Train A pumps and with the Train A pump discharge valves. Low flow signals from the Train B pump discharge manifold will be required to auto start the Train A pumps and open their discharge valves. The separate flow switches will prevent a signal failure from resulting in concurrent automatic initiation of both pumping trains.

(d) To assist the pumps in developing discharge pressure, an interlock between each AFW pump and respective discharge valve will be provided. The interlock will require pump discharge pressure in order to open the discharge valve in automatic mode.

(e) Instrument air and back-up nitrogen will be provided for the Train B pump discharge valve. The nitrogen back-up will ensure the capability to operate the control valve in the event instrument air is lost.

Some of the current Technical Specifications (TS) for San Onofre Nuclear Generating Station, Unit 1 (SONGS-1) do not have a separate "Action" statement to indicate what actions the licensee should take in the event a system or component is inoperable. Rather, the required action is often included in a section of the TS entitled, "Specification." This will be noted in the subsequent evaluation where applicable.

Technical Specification 3.4.1, "Operating Status" (of the turbine Cycle, 3.4)

Presently, this TS section contains the following statement:

"SPECIFICATION: (a) A minimum turbine cycle steam-relieving capability of 5,706,000 lb/hr (except for testing of the main steam safety valves).

(b) The auxiliary feedwater pumps OPERABLE as specified in 3.4.3.

(c) The auxiliary feedwater storage tank OPERABLE as specified in 3.4.4.

(d) System piping and valves directly associated with the above components operable."

The licensee modified this specification by deleting items (b), (c), and (d), above. In place of these statements, the licensee modified Specification 3.4.3 and 3.4.4 to include operability of the AFW system with three pumps (TS 3.4.3) and of the AFW storage tank (TS 3.4.4) under revised circumstances. Statements were also revised in those specifications to include those actions to be taken in the event of partial or complete inoperability of either the AFW system or the storage tank.

In addition, the licensee added an action statement to Specification 3.4.1 for the plant to proceed to hot standby within 6 hours and to cold shutdown within 30 hours thereafter, in the event the main steam relieving capacity were to be reduced below the value of 5,706,000 lb/hr. Note that the present Technical Specification (3.4.1) does not have any separate "Action" statements. The action statement in the proposed Technical Specification reflects the presence, in the existing specification, of Technical Specification 3.0.3 which states:

"3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

This Specification is not applicable in MODES 5 or 6."

Therefore, both the present and proposed Technical Specification (3.4.1) require the plant to proceed to cold shutdown upon indication of an inability to relieve steam at a rate of at least 5,706,000 lb/hr. The basis for this Technical Specification was also modified, in accordance with the changes discussed above. The staff finds the proposed Technical Specification 3.4.1 entitled, "Operating Status" to be consistent with staff guidance in the Westinghouse Standard Technical Specifications (STS), and therefore, acceptable.

Technical Specification 3.4.3, "Auxiliary Feedwater System"

In this TS, the licensee modified the "applicability" statement to note that the specification applies to all the auxiliary feedwater pumps and valves where previously it applied only to the original motor driven pump (G10S) and turbine driven pump (G10). The "Specification" statement was changed to require the operability of two trains of auxiliary feedwater including their associated pumps and valves. The licensee also added two action statements, as noted below:

"ACTION: A. With one Train of auxiliary feedwater inoperable, restore the inoperable train to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

B. With both Trains of auxiliary feedwater inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours."

Action Statement "A" is identical to a statement (Specification B) in the present specification with the exception that the word "train" has been substituted for the word "pump." Action statement "B", above, was not in the original specification. It is consistent with TS 3.0.3 in the present SONGS-1 Technical Specification with the exception that existing TS 3.0.3 requires that the plant proceed to cold shutdown within 24 hours, thereafter in lieu of remaining at hot shutdown as stated in the proposed TS. The proposed specification is consistent with the Westinghouse STS for two inoperable AFW pumps.

The licensee notes, in the "Basis" section of the TS that either train has the capacity to satisfy decay heat removal requirements... to three intact, pressurized SG's, to two pressurized SG's with two intact feedwater lines, and to two depressurized SG's with two intact feedwater lines. Thus, the licensee has defined the AFW system as a two train system in the "Basis" section of this TS, as follows:

"AFW System Train A pumps and valves consist of AFW pumps G-10S and G-10 and associated valves, including flow control valves FCV-2300A, FCV-2300B, and FCV-2300C.

AFW System Train B pump and valves consist of AFW pump G-10W and associated valves, including flow control valves FCV-3300A, FCV-3300B, and FCV-3300C."

Note that the Westinghouse STS for the AFW system are predicted upon a 3-pump/3-train AFW system with each train capable of mitigating all design basis transients and accidents, and assumes the AFW system is relied on for normal plant shutdown. The action statements for the AFW system in the STS are shown below:

"ACTION:

a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With two auxiliary feedwater pumps inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible."

The Westinghouse STS are not applicable to San Onofre 1 because the new SONGS-1 AFW system is not intended to be a 3-pump/3-train system nor is it relied on for normal shutdown. Maintaining a stable hot shutdown condition in lieu of proceeding the cold shutdown is a safe operating mode and is appropriate for those circumstances when both AFW trains are inoperable. In that light, the staff finds the licensee's proposed TS 3.4.3 including the change from proceeding to cold shutdown upon loss of both pumps in the present TS to that of maintaining hot shutdown upon loss of both trains in the proposed TS to be acceptable.

TS 3.4.4, "Auxiliary Feedwater Storage Tank."

The only proposed change in this TS section (this specification contains no action statements) is to require that the auxiliary feedwater storage tank (AFST) contain a usable water volume of 190,000 gallons in order to be considered operable in lieu of the 150,000 gallons presently specified. The increased limit is necessary to allow for loss of water in the event of a feedwater line break and to allow for cooling required for the AFW pump bearings. The basis section has been modified to indicate that the total water volume "...will provide sufficient margin to account for spillage during a main feedwater line break. Spillage is assumed to last no longer than one hour..." One hour is assumed because the licensee intends to use the indication of temperature difference between reactor coolant loops to determine the ruptured feedwater loop and steam generator. The licensee states that such a temperature difference is measurable within one hour. The staff agrees with the licensee and finds the change in TS 3.4.4 to be acceptable.

TS 4.1.9, "Auxiliary Feedwater System Surveillance"

The proposed change in the applicability section of this TS states that its provisions now apply to all the AFW pumps and valves in lieu of applying only to the two original AFW pumps (G10 and G10S) and valves in Modes 1, 2 and 3. In addition, the licensee proposed changes in Item C as shown below (TS 4.1.9 does not have a separate action statement):

"C. Each auxiliary feedwater Train shall be demonstrated OPERABLE at least once per 18 months by:

1. Verifying that the AFW Train B pump starts as designed automatically upon receipt of an auxiliary feedwater actuation test signal.

2. Verifying that the AFW Train A motor driven pump starts as designed automatically upon receipt of auxiliary feedwater actuation AND Train B low flow test signals. Subsequently, verify the pump stops upon receipt of a Train B positive flow test signal.

3. Within 72 hours after entering MODE 3, verifying that the AFW Train A steam driven pump enters warm-up mode upon receipt of an auxiliary feedwater actuation test signal. Subsequently, verify pump starts upon receipt of a Train B low flow test signal, and returns to warm-up mode upon receipt of Train B positive flow test signal.

4. Verifying that each automatic valve in the flow path actuates to its correct position upon receipt of actuation test signals."

The changes include 1) testing each train in lieu of testing each AFW pump, 2) testing the pump sequencing outlined in specifications C.1, C.2, and C.3 in order to initiate Train B (motor driven pump G10W), and 3) starting the motor driven pump in Train A (G10S) in the absence of flow from or failure of pump G10W. Flow testing of the turbine driven pump is delayed until entrance into Mode 3. This proposal is consistent with limitations on RCS temperature and pressure, and an available steam supply in Mode 3, and is also consistent with the Westinghouse STS. The test will also confirm that the Train B pump returns to the idle mode when the Train B pump (G10W) is in operation.

In addition, the licensee proposed a modification to specification item D, which requires testing of the emergency flow paths when the reactor coolant system pressure is less than 500 psig for a period longer than 30 days with both motor driven AFW pumps in lieu of the one previous motor driven pump.

The licensee has proposed the addition of Specification B which provides for the entrance of the plant into Mode 3 (hot standby condition, reactivity less than 0.99 plant temperature greater than or equal to 350°F) without completion of the surveillance requirements for the turbine driven pump. This is necessary in order to permit the RCS to attain temperature and pressure conditions sufficient to generate steam to allow for satisfactory operation of this pump. The licensee has also proposed to modify the second paragraph of the "Bases" section for this specification to indicate that the AFW system is capable of providing a sufficient flow of water to mitigate design basis events.

In view of the foregoing, the staff finds the changes proposed by the licensee for TS 4.1.9 to be acceptable.

TS 3.5.6 establishes limiting conditions for Operation for accident monitoring instrumentation. Currently, the requirements include a seven day ACTION for all of the accident monitoring instrumentation channels listed in Table 3.5.6-1. PCN 184 proposes to revise the ACTION requirement for the AFW flow transmitters to repair the inoperable flow transmitter within 72 hours. This ACTION requirement is revised to be consistent with that for AFW equipment and instrumentation as specified by the AFW TS. An ACTION requirement will also be provided for RCS Loop Delta-T temperature indication. The Delta-T indicators are utilized to identify the broken loop during a main feedwater line break with loss of AFW flow indication and therefore they will be added to Table 3.5.6-1. The required ACTION will be to repair the inoperable indicator within 72 hours.

In addition to the above ACTION requirements, Specification 3.5.6.E will be revised to specify that the current exemption to the provisions of Specification 3.0.4 only applies to Specifications A and D, and does not apply to the inoperability of the Auxiliary Feedwater Flow Rate Channels or RCS Loop Delta-T temperature indicators. This change is necessary because the AFW Flow Rate channels and Loop Delta-T indicators will be required for the performance of an ESF function.

Table 3.5.7-1 establishes the OPERABILITY requirements for the AFWS instrumentation channels. PCN 184 revises this table to reflect a two train configuration and includes OPERABILITY requirements for the flow switches that monitor Train B flow and provides an interlock with the Train A pumps and valves.

Two additional ACTION requirements have been included for the flow switches that monitor Train B flow to ensure the appropriate actions are taken if one or more flow switches are declared inoperable. Two sets of two flow switches monitor Train B flow. These switches provide signals to initiate Train A flow. The two ACTION requirements included in Table 3.5.7-1 for these flow switches to ensure appropriate control are implemented in the event that one or more flow switches are declared inoperable. The interlock design allows one flow switch from each set to be disconnected and still provides sufficient redundancy to perform the necessary safety functions assuming a single failure. ACTION 35 requires an inoperable flow switch to be returned to OPERABLE status within 72 hours or disconnected within the next one hour. This ACTION prevents the failure mode of an inoperable flow switch from affecting the operation of the interlocks. With one flow switch disconnected, the interlock logic for that set of flow switches is changed from 1-out-of-2 to 1-out-of-1 for initiating Train A, and from 2-out-of-2 to 1-out-of-1 for stopping flow from the Train A pump. The interlock logic for the second set of flow switches remains unaffected.

ACTION 36 is included to ensure appropriate action is taken in the event that more than one of the four flow switches become inoperable. ACTION 36 requires the number of OPERABLE flow switches to be no less than three or begin an orderly shutdown of the plant. This ACTION is conservative in that no consideration is accorded to which flow switches are inoperable, two from one set or one from each set.

Table 3.5.7-2 establishes the setpoints for the instrumentation channels shown in Table 3.5.7-1. PCN 184 revises this table to incorporate the additional instrumentation channels and setpoints associated with the flow switches that monitor Train B flow. Each flow switch utilizes its set and reset points for permissive signals for starting and stopping Train A. The set and reset points were determined from a reference point for starting Train A when there is decreasing flow in Train B. The reference, or setpoint, establishes the lower end of the flow switch "deadband". The reset point will stop Train A flow on increasing flow in Train B. The reset point is at the upper end of the deadband, or approximately 14 gpm greater than the setpoint. The licensee provided justification for applying a 15% deduction for conservatism to the "safety limit" to arrive at the upper allowable value for stopping Train A of 48 gpm of Train B flow. The set and reset points were determined with consideration to factors such as repeatability, instrument span and venturi accuracy. By letter dated April 5, 1989, the licensee confirmed that ISA Standard S67.04, "Setpoints for Nuclear Safety-Related Instrumentation Used in Nuclear Power Plants" accounts for instrument errors and drift in the channel from the sensor, including the primary element, through and including the bistable trip device.

In addition, an administrative change will also be made to incorporate the title of Table 3.5.7-2 that was mistakenly omitted from the current specification.

Table 4.1.8-1 establishes the surveillance requirements for the AFWS instrumentation channels. PCN 184 revises this table to incorporate the channel calibration and testing requirements for the flow switches that monitor Train B flow.

PCN 184 will provide editorial changes to TS 3.5.7 and 4.1.8. These specifications provide the Limiting Conditions for Operation and Surveillance requirements for the AFWS instrumentation. PCN 184 will revise the APPLICABILITY and OBJECTIVE sections of these specifications to indicate these specifications related to the operability of the auxiliary feedwater system and not only the AFW pumps. This clarification is required due to the introduction of system interlocks that impact the operability of system valves and instrumentation channels in addition to the AFW pumps.

The licensee stated that the modifications to the AFWS and steam/feedwater flow mismatch were conceptually developed based on scoping studies which included hydraulic calculations and the event-specific single failure response analyses for the integrated systems. The resulting design ensures an acceptable AFW flow into the intact feedwater lines for any applicable design basis event with or without concurrent loss of offsite power and a single active failure. Operator actions to equalize AFW flow are no longer needed outside of the control room.

During our review, the staff requested information relating to the utilization of reactor coolant system loop delta-temperature indication to identify the broken main feedwater line assuming a single failure of the AFW flow transmitters, and the basis for the assumed worst case duration for isolation of the broken loop (i.e., less than one hour). In response to the staff question, the licensee stated that the most limiting transient with respect to loss of feedwater through the broken main feedwater line and requiring isolation action was evaluated as Case D provided in Enclosure 2 of the licensee's letter dated November 20, 1987. The Case D transient assumed a main feedwater line break up stream of the check valve inside containment at 100% reactor power. This assumed break location will maintain the steam generators in a pressurized condition. A reactor trip will occur from a steam/feedwater flow mismatch signal. The results of this transient is acceptable provided that the AFW system delivers at least 125 gpm to the intact steam generators within 30 minutes. During this transient, if a single failure is one of the AFW flow transmitters, the operator will identify and isolate the broken feedwater line by using the RCS loop delta-T indicators. The RCS loop delta-T indicators will begin to show a significant difference in RCS loop delta-T between the intact loops and the broken loop prior to one hour into the event. Based on the data presented in Figures 23, 24, and 25 in the November 20, 1987 submittal, the RCS loop delta-T associated with intact feedwater lines are approximately 25°F at one hour after the event and the RCS loop associated with the broken feedwater lines shows the convergency of the hot and cold leg temperature at that point. Therefore, utilization of the RCS loop Delta-T indications will allow identification and isolation of the broken loop within one hour. This one hour time duration is used for the licensee's estimation of the maximum loss of condensate water inventory through the broken line. With the flow restrictors installed in each of the AFW discharge line, the licensee conservatively estimated maximum spillage rate of less than 200 gpm during this one hour time period. Since the spillage through the break is limited by the flow restrictors, the AFWS will deliver sufficient AFW flow into the intact steam generators for 30 minutes following the event as required by the safety analysis prior to the isolation of the broken main feedwater line.

The staff has evaluated the results of feedwater related transients provided in the licensee's November 20, 1987 submittals and concluded that the modified AFWS could reasonably deliver sufficient flow into the intact steam generators within the required time period. The most limiting single failure is considered in this staff evaluation.

The licensee proposed Technical Specifications 3.1.2, 3.5.6, and 4.1.2 intend to use actual level (in inches) in the steam generators instead of the narrow range level indications which indicates percent of the steam generator water level. This is acceptable only if the licensee modifies these proposed Technical Specifications to use wide range level in inches since the term of "actual level" is difficult to determine without the use of existing wide range level indications. The 256 inches of wide range water level in the steam generators during Mode 4 with reactor coolant loops filled will satisfy the intent of the Technical Specifications 3.1.2, 3.5.6, and 4.1.2. This is because this level corresponds to the level at the top of feed ring and it is sufficient for the steam generator to serve as a heat sink. The licensee has agreed to this editorial change.

Based on the above, the staff concludes that the proposed changes to the AFW system technical specifications are consistent with the guidelines of the Westinghouse STS and will ensure operability of the system in accordance with its design basis. The proposed TS changes are, therefore, acceptable.

The staff also concludes that the modified AFWS can deliver sufficient flow into the intact steam generators within the required time period following all postulated transients and accidents assuming a single active failure. The staff's conclusion is based on the information provided by the licensee in its submittals (Refs. 1 through 8).

3.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact have been prepared and published in the Federal Register on February 3, 1989 (54 FR 5566). Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have significant effect on the quality of the human environment.

4.0 CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

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5.0 REFERENCES

1. Letter from USNRC to Southern California Edison Company "Request to Perform a Review of the RPS and ESF for Conformance to the Applicable Design Basis," dated September 23, 1986.

2. Letter from M. Medford of Southern California Edison Company to USNRC "ESF Single Failure Analysis," dated October 16, 1987.

3. Letter from M. Medford of Southern California Edison Company to USNRC "ESF Single Failure Analysis," dated November 6, 1987.

4. Letter from M. Medford of Southern California Edison Company to USNRC "ESF Single Failure Analysis," dated November 20, 1987.

5. Letter from M. Medford of Southern California Edison Company to USNRC "ESF Single Failure Analysis," dated June 21, 1988.

6. Letter from K. Baskin of Southern California Edison Company to USNRC "Amendment Application No. 158," dated December 8, 1988.

7. Letter from K. Baskin of Southern California Edison Company to USNRC "Supplement to Amendment Application No. 158," dated February 17, 1989.

8. Letter from F. R. Nandy of Southern California Edison Company to USNRC, "Additional Information Regarding Amendment Application No. 156" (sic), dated April 5, 1989.