



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 65 TO PROVISIONAL OPERATING LICENSE NO. DPR-13

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS & ELECTRIC COMPANY

SAN ONOFRE UNIT NO. 1

DOCKET NO. 50-206

AUXILIARY FEEDWATER SYSTEMS

TMI ACTION PLAN (NUREG-0737) ITEM NO. II.E.1.1

1.0 INTRODUCTION AND BACKGROUND

The Three Mile Island Unit 2 (TMI-2) accident and subsequent investigations and studies highlighted the importance of the Auxiliary Feedwater System (AFWS) in the mitigation of severe transients and accidents. As part of the NRC staff's assessment of the TMI-2 accident and related implications for operating plants, the AFW systems for all operating plants having nuclear steam supply systems (NSSS) designed by Westinghouse (NUREG-0611) or Combustion Engineering (NUREG-0635) were evaluated. The NRC staff evaluations of these system designs are contained in the above NUREGs along with recommendations for each plant and the concerns which led to each recommendation. The objectives of the evaluation were to: (1) identify necessary changes in AFW system design or related procedures at the operating facilities in order to assure the continued safe operation of these plants, and (2) to identify other system characteristics of the AFW system which, on a long term basis, may require system modifications. To accomplish these objectives the NRC staff:

- (1) Reviewed plant specific AFW system designs in light of current regulatory requirements (SRP), and
- (2) Assessed the relative reliability of the various AFW system under various loss of feedwater transients (one of which was the initiating event of TMI-2) and other postulated failure conditions by determining the potential for AFW system failure due to common causes, single point vulnerabilities, and human error.

The staff concludes that the implementation of the following recommendations identified during this review will considerably improve the reliability of the AFW systems for each operating plant.

The following plant specific recommendations did not apply to this plant: GS-1, GS-3, GS-7 and GL-5. The basis for these recommendations can be found in Appendix III of NUREG-0611 and the system description which determined the basis for not applying these recommendations can be found in Section X of NUREG-0611.

2.0 EVALUATION

A. Short Term Recommendations

1. Recommendation GS-2 - Southern California Edison Company (the licensee) should lock open single valves or multiple valves in series in the AFW system pump suction piping and lock open other single valves or multiple valves in series that could interrupt all AFW flow. Monthly inspections should be performed to verify that these valves are locked and in the open position. These inspections should be proposed for incorporation into the surveillance requirements of the plant Technical Specifications. See Recommendations GL-2 for the longer term resolution of this concern.

In response to this recommendation, the licensee stated in a letter dated January 23, 1980, that "manual valves in the primary AFW system suction piping and the normal path from the AFW pumps to the main feedwater header that could interrupt all flow to the steam generators will be locked open and inspected monthly to assure proper system alignment." Additionally, the licensee indicated that Station Operating Instruction S-3-2.38, "Safety Related System Valve Alignment" and Station Order S-0-108, "Locking of Critical Valves" had been revised to provide for the inspection of the valves and to require the appropriate valves to be locked open, respectively. In a letter dated February 8, 1980, the licensee proposed Technical Specifications requiring monthly (31 days) inspection of the manual valves in the AFW flow path which are locked open. Subsequently, by letter dated May 7, 1981, the licensee proposed modified Technical Specifications that did not include this monthly inspection of these valves. By letter dated March 10, 1982, in response to comments by the NRC staff, the licensee revised its proposed Technical Specifications. The revised Technical Specifications require an inspection at least once per 31 days to verify that normally open manual valves in the auxiliary feedwater system suction piping and the emergency path from the auxiliary feedwater pumps to the steam generators that could interrupt all flow, are locked open. Based on its review, the staff finds that the revised Technical Specifications will provide an acceptable surveillance program for these valves to verify that they are open.

The NRC staff has reviewed the licensee's response and conclude that recommendation GS-2 is adequately met and, therefore, acceptable.

2. Recommendation GS-4 - Emergency procedures for transferring to alternate sources of AFW supply should be available to the plant operators. These procedures should include criteria to inform the operator when and in what order, the transfer to alternate water sources should take place. The following cases should be covered by the procedures:

- The case in which the primary water supply is not initially available. The procedures for this case should include any operator actions required to protect the AFW system pumps against self-damage before water flow is initiated; and,
- The case in which the primary water supply is being depleted. The procedures for this case should provide for transfer to the alternate water sources prior to draining of the primary water supply.

By a letter dated January 23, 1980, the licensee committed to providing station procedures that inform the operator when and in what order to transfer to alternate water sources. The procedures will cover the case in which the primary water supply is not initially available and the case in which the primary water supply is being depleted. The staff concludes that Recommendation GS-4 is adequately met and, therefore, acceptable.

3. Recommendation GS-5 - The as-built plant should be capable of providing the required AFW flow for at least two hours from one AFW pump train independent of any alternating current power source. If manual AFW system initiation or flow control is required following a complete loss of alternating current power, emergency procedures should be established for manually initiating and controlling the system under these conditions. Since the water for cooling of the lube oil for the turbine-driven pump bearings may be dependent on alternating current power, design or procedural changes should be made to eliminate this dependency as soon as practicable. Until this is done, the emergency procedures should provide for an individual to be stationed at the turbine-driven pump in the event of the loss of all alternating current power to monitor pump bearing and/or lube oil temperatures. If necessary, this operator would operate the turbine-driven pump in an on-off mode until alternating current power is restored. Adequate lighting powered by direct current power sources and communications at local stations should also be provided if manual initiation and control of the AFW system is needed. (See Recommendation GL-3 for the longer term resolution of this concern.

In response to this recommendation, the licensee indicated by letter dated January 23, 1980, that station procedures were being revised to manually initiate and control the AFW system flow for at least two hours by use of the steam-driven AFW pump train following a complete loss of alternating current power. The licensee indicated that a two hour test of the steam-driven AFW pump had been performed to demonstrate that the pump can be operated continuously with bearing cooling water supplied by gravity feed from the station reservoir. The licensee indicated that, based on the pump test, an individual to monitor bearing/lube oil temperature or to operate the pump in an on-off mode would not be necessary. The licensee, also, indicated that lighting powered by direct current and communication between local stations and the control room currently exist.

The staff concludes that recommendation GS-5 is adequately met and, therefore, acceptable.

4. Recommendation GS-6 - The licensee should confirm flow path availability of an AFW system flow train that has been out of service to perform periodic testing or maintenance as follows:
- Procedures should be implemented to require an operator to determine that the AFW system valves are properly aligned and a second operator to independently verify that the valves are properly aligned.
 - The licensee should propose Technical Specifications to assure that prior to plant startup following an extended cold shutdown, a flow test would be performed to verify the normal flow path from the primary AFW system water source to the steam generators. The flow test should be conducted with AFW system valves in their normal alignment.

By letter dated January 23, 1980, the licensee committed to revising Station Order S-A-133, "Safety Related Systems and Components Control" to require an operator to determine that the AFW system valves are properly aligned and a second operator to independently verify that the valves are properly aligned.

By letter dated February 8, 1980, the licensee proposed a Technical Specification change to require a flow test to verify the normal flow path from the condensate storage tank to each steam generator using the motor driven auxiliary feedwater pump when the reactor coolant system pressure remains less than 500 psig for a period longer than fourteen days. The flow test would be

conducted with auxiliary feedwater system valves in their normal alignment. Additionally, the steam driven auxiliary feedwater pump would be started to demonstrate satisfactory operation, when steam becomes available. Subsequently, by letter dated May 7, 1981, the licensee proposed modified Technical Specifications that did not include this flow test.

By letter dated March 10, 1982, in response to NRC staff comments, the licensee revised its proposed Technical Specifications. The revised Technical Specifications require that if the primary system pressure remains less than 500 psig for a period longer than 30 days, a flow test shall be performed to verify the emergency flow path. Prior to increasing reactor coolant system pressure above 500 psig, a flow test will be conducted using the motor driven auxiliary feedwater pump to verify the flow from the condensate storage tank to each steam generator. The turbine driven auxiliary feedwater pump will be tested when steam becomes available. Based on its review, the staff finds that the proposed Technical Specifications will provide an acceptable surveillance program to verify the normal flow path from the AFW water source to the steam generator.

The staff has reviewed the licensee's response and conclude that recommendation GS-6 is adequately met and, therefore acceptable.

5. Recommendation GS-8 - The licensee should install a system to automatically initiate AFW system flow. This system need not be safety-grade; however, in the short-term, it should meet the criteria listed below, which are similar to Item 2.1.7.a of NUREG-0578. For the longer term, the automatic initiation signals and circuits should be upgraded to meet safety-grade requirements as indicated in Recommendation GL-1.
 - The design should provide for the automatic initiation of the auxiliary feedwater system flow.
 - The automatic initiation signals and circuits should be designed so that a single failure will not result in the loss of auxiliary feedwater system function.
 - Testability of the initiating signals and circuits should be a feature of the design.
 - The initiating signals and circuits should be powered from the emergency buses.
 - Manual capability to initiate the auxiliary feedwater system from the control room should be retained and should be implemented so that a single failure in the manual circuits will not result in the loss of system function.

- The alternating current motor-driven pumps and valves in the auxiliary feedwater system should be included in the automatic actuation (simultaneous and/or sequential) of the loads to the emergency buses.
- The automatic initiation signals and circuits should be designed so that their failure will not result in the loss of manual capability to initiate the AFW system from the control room.

By letters dated November 21, 1979, January 23, 1980, April 29, 1980, June 10, 1980, October 16, 1980 and February 2, 1982, the licensee provided responses to this recommendation. In the April 29, 1980 submittal, the licensee provided a commitment to install safety-grade automatic auxiliary feedwater initiation. By letter dated February 2, 1982, the licensee indicated that a portion of the auxiliary feedwater automatic initiation was installed as control grade; however, these portions would be upgraded to safety grade.

The staff has reviewed the licensee's response and conclude that since the automatic initiation circuitry for the auxiliary feedwater presently meets control grade requirements, recommendation GS-8 is met, and therefore acceptable.

6. Recommendation - The licensee should propose modifications to the Technical Specifications so that manual valves that are normally closed will be tested periodically.

By letter dated February 8, 1980, the licensee proposed a Technical Specification change requiring, "at least once every eighteen months, all normally closed manual valves in the alternate auxiliary feedwater system suction line and in the emergency flow path from the auxiliary feedwater pumps to the steam generator feedwater lines shall be demonstrated operable." This provision was deleted in a subsequent revision to this proposed Technical Specification dated May 7, 1981.

Based on a review of the licensee's submittals, the staff finds that because the design of the auxiliary feedwater system with automatic initiation no longer utilizes normally closed manual valves in the emergency flow path from the auxiliary feedwater pumps to the steam generator feedwater lines, the test frequency for manual valves that are normally closed should be once per 18 months. By letter dated March 10, 1982, in response to NRC staff

comments, the licensee revised its proposed Technical Specifications to require that all normally closed manual valves in the alternate auxiliary feedwater system suction line be demonstrated operable at least once per 18 months. Based on its review, the staff finds that the proposed Technical Specifications will provide an acceptable surveillance program to verify that these normally closed valves are operable.

The staff has reviewed the licensee's response and conclude that this recommendation is adequately met and, therefore acceptable.

7. Recommendation - The licensee should install valve operators that can be controlled from the control room on all the normally closed manual discharge valves. This will reduce the time delay inherent in present manual set-up. The AFW system could then be operated from the control room until the system has been fully automated. (See Recommendation GS-8).

Because the AFW system automatic initiation modifications have been completed, this recommendation no longer applies.

8. Recommendation - To reduce dependence on a single flow path from the water sources and increase the quantity of water reserved and readily available for the AFW system, the licensee should connect temporary piping or a fire hose from the service water reservoir/fire protection system directly to the AFWS pump suction header.

In response to this recommendation, the licensee indicated in a letter dated January 23, 1980, that a temporary fire hose from the service water reservoir/fire protection system would be installed. It is staff's understanding from conversations with the licensee that a fire hose from the service water reservoir/fire protection system has been directly connected to the AFWS pump suction header. The fire hose is isolated from the AFWS by manually closed valves. The staff concludes that this recommendation is adequately met and therefore, acceptable.

B. Additional Short-Term Recommendations

1. Recommendation - The licensee should provide redundant level indications and low level alarms in the control room for the AFW system primary water supply to allow the operator to anticipate the need to make up water or transfer to an alternate water supply and prevent a low pump suction pressure condition from occurring. The low level alarm set-point should allow at least 20 minutes for operator action, assuming that the largest capacity AFW pump is operating.

In a letter dated January 23, 1980, the licensee committed to installing an additional, redundant condensate storage tank level indicator and low level alarm. The low level alarm will allow at least 20 minutes for operator action, assuming that the largest capacity AFW pump is operating.

By letter dated November 18, 1981, the licensee provided the details of the redundant level indication for the condensate storage tank. The installed level indications consist of independent redundant condensate tank level loops with each loop consisting of a transmitter, indicator and alarm switch powered by a vital bus. Each of the vital buses is backed-up by battery power supplies.

The staff has reviewed the licensee's response and conclude that this recommendation is adequately met and, therefore acceptable.

2. Recommendation - The licensee should perform a 48-hour endurance test on all AFW system pumps, if such a test or continuous period of operation has not been accomplished to date. Following the 48-hour pump run, the pumps should be shutdown and cooled down and then restarted and run for one hour. Test acceptance criteria should include demonstrating that the pumps remain with design limits with respect to bearing/bearing oil temperatures and vibration and that pump room ambient conditions (temperature, humidity) do not exceed environmental qualification limits for safety-related equipment in the room.

The licensee should provide a summary of the conditions and results of the tests. The summary should include the following: (1) A brief description of the test method (including flow schematic diagram) and how the test was instrumented (i.e., where and how bearing temperatures were measured). (2) A discussion of how the test conditions (pump flow, head, speed and steam temperature) compare to design operating conditions. (3) Plots of bearing/bearing oil temperature vs. time for each bearing of each AFW pump/driver demonstrating that temperature design limits were not exceeded. (4) A plot of pump room ambient temperature and humidity vs. time demonstrating that the pump room ambient conditions do not exceed environmental qualification limits for safety-related equipment in the room. (5) A statement confirming that the pump vibration did not exceed allowable limits during tests.

By letter dated February 14, 1980, the licensee provided the results of a 72-hour endurance test (endurance test was run before time was reduced to 48 hours) for the turbine-driven auxiliary feedwater pump and the motor-driven auxiliary feedwater pump. (1) A description of how the test was conducted and instrumented included the water source and flow path for the test and method of monitoring the pump and pump driver bearing temperatures. (2) Both AFW pumps were operated at design rated discharge pressure and flow. The turbine-driven AFW pump was operated at design rated speed with steam supplied from the steam generators at normal temperature (greater than 500°F) and pressures. (3) Plots of the bearing temperatures versus time were provided for each pump and pump driver bearing and indicated that design limits were not exceeded. (4) Actual temperatures and humidity condition of the AFW pump area were not measured. The licensee indicated that ambient conditions (temperature, humidity) are not substantially affected by AFW pump operation because the AFW pumps are located in an open area and the exhaust from the steam-driven AFW pump is piped to a remote outside location. Environmental conditions resulting from a steam line break for this area will be reviewed in long term recommendation No. 5. (5) Pump and driver bearing vibration readings remained within the acceptable criteria.

The staff reviewed the licensee's response and concludes that this recommendation is adequately met.

3. Recommendation - The licensee should implement the following requirements as specified by Item 2.1.7.b on page A-32 of NUREG-0578: "Safety-grade indication of auxiliary feedwater flow to each steam generator shall be provided in the control room. The auxiliary feedwater flow instrument channels shall be powered from the emergency buses consistent with satisfying the emergency power diversity requirements for the auxiliary feedwater system set forth in the Auxiliary Systems Branch Technical Position 10-1 of the Standard Review Plan, Section 10.4.9"

The licensee's response was provided in letters dated October 17, 1979, November 21, 1979, January 23, 1980, and October 16, 1980. The results of the staff review of this recommendation will be included in its evaluation of TMI Action Plan (NUREG-0737), Item II.E.1.2, Auxiliary Feedwater System Automatic Initiation and Flow Indication.

4. Recommendation - Licensees with plants which require local manual realignment of valves to conduct periodic tests on the AFW system train, and there is only one remaining AFW train available for operation should propose Technical Specifications to provide that a dedicated individual who is in communication with the control room be stationed at the manual valves. Upon instruction from the control room, this operator would realign the valves in the AFW system train from the test mode to its operational alignment.

In response to this recommendation, the licensee stated in a letter dated January 23, 1980, that, "Auxiliary Feedwater pump testing will be performed such that local manual realignment will not be required."

By letter dated November 18, 1981 the licensee provided a listing of the valves included in the flow testing of the modified auxiliary feedwater system. (Modifications were made to provide automatic initiation). All operation can be accomplished by remote manual control from the control room with no local manual realignment.

The staff has reviewed the licensee's response and conclude that since local manual realignment is not required for flow testing, this recommendation does not apply.

C. Long Term Recommendations

1. Recommendation GL-1 - Licensees with plant having a manual starting AFW system, should install a system to automatically initiate the AFW system flow. This system and associated automatic initiation signals should be designed and installed to meet safety-grade requirements. Manual AFW system start and control capability should be retained with manual start serving as backup to automatic AFW system initiation.

The licensee's response was provided in letters dated October 17, 1979, November 21, 1979, January 23, 1980, June 10, 1980 and October 16, 1980. The results of the staff's review of this recommendation will be included in its evaluation of TMI Action Plan (NUREG-0737), Item II.E.1.2.

2. Recommendation GL-2 - Licensees with plant in which all (primary and alternate) water supplies to the AFW system pass through valves in a single flow path should install redundant parallel flow paths (piping and valves).

Licenseses with plants in which the primary AFW system water supply passes through valves in a single flow path, but the alternate AFW system water supplies connected to the AFW system pump suction piping downstream of the above valve(s) should install redundant valves paralled to the valve(s) or provide automatic opening of the valve(s) from the alternate water supply upon low pump suction pressure. The licensee should propose Technical Specifications to incorporate appropriate periodic inspections to verify the valve positions.

By letter dated January 23, 1980, the licensee indicated that the AFW system would be modified and a Technical Specification would be proposed to meet this recommendation. By letter dated March 10, 1982, the licensee provided proposed conceptual design modifications for the auxiliary feedwater system. The conceptual design modifications include modifying the auxiliary feedwater water supply to provide automatic opening of the valves from the alternate water supply upon low pump suction pressure. The licensee proposed that the final design of the auxiliary feedwater modifications be deferred until completion of the Systematic Evaluation Program when design criteria such as seismic criteria, tornado protection, and pipe whip criteria that could affect the design requirements, would be determined.

The staff has reviewed the licensee's response and concludes that with the proposed conceptual design modifications, recommendation GL-2 will be adequately met and, therefore are acceptable. The acceptability of the proposed implementation schedule is being considered in conjunction with our review of the licensee's letter dated June 30, 1982, as supplemented by letter dated July 08, 1982, which requests exemptions from certain implementation dates specified in 10 CFR 50.48, Fire Protection. The exemption requests, if granted, would affect the date for installation of the third auxiliary feedwater system train, amongst other items.

3. Recommendation GL-3 - At least one AFW pump and its associated flow path and essential instrumentation should automatically initiate AFW system flow and be capable of being operated independently of any alternating current power source for at least two hours. Conversion of direct current power to alternating current is acceptable.

By a letter dated October 16, 1980, the licensee proposed AFW system modifications which would be installed as part of the TMI Lessons Learned Requirements. In these modifications, the licensee indicated that the operation of the steam driven pump and associated valve train would be independent of offsite and onsite AC power.

The staff has reviewed the licensee's proposed AFW system modifications and concludes that this recommendation is adequately met. The review of the automatic initiation circuitry and signals will be included in our evaluation of TMI Action Plan (NUREG-0737), Item II.E.1.2, Auxiliary Feedwater System Automatic Initiation and Flow Indication.

4. Recommendation GL-4 - Licensees having plants with unprotected normal AFW system water supplies should evaluate the design of their AFW system to determine if automatic protection of the pumps is necessary following a seismic event or a tornado. The time available before pump damage the alarms and indications available to the control room operator, and the time necessary for assessing the problem and taking action should be considered in determining whether operator action can be relied on to prevent pump damage. Consideration should be given to providing pump protection by means such as automatic switchover of the pump suction to the alternate safety-grade source of water, automatic pump trips on low suction pressure or upgrading the normal source of water to meet seismic Category I and tornado protection requirements.

In a letter dated October 16, 1980, the licensee proposed AFW system modifications which would be installed as part of the TMI Lessons Learned Requirements. In these modifications the licensee indicated that the AFW pumps would be provided with low suction pressure trips. The pumps would be tripped when in the automatic mode and a low suction pressure signal present for longer than 20 seconds.

The staff reviewed the licensee's response and concluded that the response was incomplete. The licensee should provide low suction pressure trips for both modes of operation (manual and automatic) or demonstrate that when in the manual mode of operation the operator has sufficient time and information to take action to prevent pump damage following a seismic event or a tornado.

By letter dated March 10, 1982, the licensee provided proposed conceptual design modifications for the auxiliary feedwater system which did not include low suction pressure trips. The conceptual design modifications did include upgrading the alternate water supply to provide a seismic and tornado qualified water supply. The valve from the alternate water supply will be designed to open automatically on low pump suction pressure. The licensee proposed that the final design of the auxiliary feedwater modifications be deferred until completion of the Systematic Evaluation Program when design criteria for seismic and tornado conditions would be determined.

The NRC staff has reviewed the licensee's response and concludes that with the proposed conceptual design modification, recommendation GL-4 will be adequately met and, therefore they are acceptable.

5. Recommendation - The licensee should evaluate the following concerns:
- a. A break in the main feed or main steam line outside containment or a break in the steamline to the turbine driven AFW pump may result in environmental conditions for which the main feed and AFW system components are not qualified.
 - b. The San Onofre Unit 1 AFW system design does not meet the high energy line break criteria in SRP 10.4.9 and Branch Technical Position 10-1; namely, that the AFW system should maintain the capability to supply the required AFW flow to the steam generator(s) assuming a pipe break anywhere in the AFW pump discharge lines concurrent with a single active failure.

The licensee should evaluate the postulated pipe breaks stated above and (1) determine any AFW and main feedwater system design changes including environmental qualification, or procedures necessary to detect and isolate the break and direct the required feedwater flow to the steam generator(s) before they boil dry or (2) describe how the plant can be brought to a safe shutdown condition by use of other systems which would be available following such postulated events.

In response to this recommendation, the licensee indicated, in a letter dated January 23, 1980, that this recommendation would be addressed in connection with the Systematic Evaluation Program (SEP) and any necessary modifications would be deferred pending completion of the SEP.

The licensee was informed that it is the staff position that these evaluations be completed as part of TMI Action Plan Requirements Item II.E.1.1. In response to our request for an evaluation of the postulated break in the auxiliary feedwater pump discharge line, the licensee submitted a letter dated March 10, 1982, proposing conceptual design modifications for the auxiliary feedwater system which would eliminate the concern. The proposed conceptual design includes the installation of a third auxiliary feedwater pump which would be electrically powered. The licensee proposed that the final

design of the auxiliary feedwater modifications be deferred until completion of the Systematic Evaluation Program when design criteria such as seismic and tornado conditions would be determined. As previously indicated in the staff evaluation of Long Term Recommendation GL-2, the acceptability of the proposed implementation schedule is being considered in conjunction with its review of the licensee's request for schedular exemption from the provisions of 10 CFR 50.48.

The staff has reviewed the licensee's response and concludes that with the proposed conceptual design modification, this concern regarding postulated break in the auxiliary feedwater pump discharge lines is adequately addressed.

The staff's review of the environmental qualifications of the main feed and auxiliary feedwater components is being evaluated in our review of responses to NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment" and the results of review will be reported in a separate safety evaluation report. The staff concludes that this recommendation is complete.

D. Systematic Evaluation Program Considerations

1. The San Onofre Unit 1 plant, including the AFW system, is being reevaluated during the SEP with regard to internally and externally generated missiles, pipe whip and jet impingement including main steam and main feed line breaks inside and outside containment, quality and seismic design requirements, and the effects of earthquakes, tornadoes and flood.
2. The San Onofre Unit AFW system does not have capability to automatically terminate AFW flow to a depressurized steam generator and provide flow to the intact steam generator in the event of a main steam or main feed line break. The effect of this design will be assessed in the design basis event evaluation for San Onofre Unit 1.

The above two items are under review by the Systematic Evaluation Program and will be evaluated during the Integrated Assessment of San Onofre Unit No. 1.

E. Recommendation "Basis for Auxiliary Feedwater System Flow Requirements"

In Enclosure 2 to the NRC staff letter of November 15, 1979, it requested the licensee to provide certain information regarding the design basis for AFWS flow requirements.

By letter dated March 6, 1981, the licensee provided the requested information. The licensee's response indicates that (1) for a loss of main feedwater event (LMFW), (2) for a LMFW with loss of offsite AC power, and (3) for a LMFW with loss of onsite and offsite power, the auxiliary feedwater system is capable of removing residual heat.

The staff has reviewed the licensee's response for the three loss of main feedwater events and concludes that this recommendation is adequately met and is, therefore, acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ACKNOWLEDGEMENT

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Dated: October 22, 1982