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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SEISMIC QUALIFICATION OF THE EMERGENCY FEEDWATER SYSTEM
OCONEE NUCLEAR STATION, UNITS NOS. 1, 2 AND 3
DUKE POWER COMPANY
DOCKETS NOS. 50-269, 50-270 AND 50-287

1.0 INTRODUCTION

Since the accident at Three Mile Island, attention has been focused on the ability of pressurized water reactors to provide reliable decay heat removal. While it is recognized that alternate methods may be available to remove decay heat following transients or accidents, heat removal via the steam generators is the first choice for accomplishing a safe shutdown of the plant. Therefore, there should be reasonable assurance that the emergency feedwater system (EFW) can withstand the postulated safe shutdown earthquake; the maximum hypothetical earthquake (MHE) for Oconee Nuclear Station, Units 1, 2 and 3.

To address this concern, the NRC developed and initiated Multiplant Action C-14, "Seismic Qualification of Auxiliary Feedwater Systems." The objective of this plan is to increase, to the extent practicable, the capability of those plants without seismically qualified EFW to withstand earthquakes up to the MHE level. This program was implemented with the issuance of NRC Generic Letter 81-14, "Seismic Qualification of Auxiliary Feedwater Systems" dated February 10, 1981 (Reference 1).

The enclosed Technical Evaluation Report (TER) was prepared by our consultant, Lawrence Livermore National Laboratory, as part of our technical assistance contract program. The report provides their technical evaluation of the licensee's conformance to the criteria of Generic Letter 81-14. The consultant's report indicates that the EFW may not continue to function during and following a seismic event as great as the MHE. This conclusion is based upon cited weakness in the pumps, piping, valves, initiation and control, and structures/housing. The TER also indicates that the licensee did not conduct a walkdown of the EFW system and did not describe any alternate methods currently available to remove decay heat.

Subsequent to the consultant's review, we requested the licensee, in a letter dated September 8, 1982 (Reference 2), to review the consultant's report and provide any comments relevant to our reaching a safety conclusion. The licensee's response, dated October 13, 1982 (Reference 3), emphasized their belief that the EFW does have substantial seismic capability in that it would remain functional following a design basis earthquake (i.e., half the level of the MHE). The response also requested additional consideration of a fully seismically qualified, dedicated shutdown facility, and provided specific comments and information. The staff has reviewed this plus additional supplemental information and the consultant's technical evaluation, and the staff performed its own review of the licensee's responses to Generic Letter 81-14.

2.0 EVALUATION

2.1 Pumps and Motors

The turbine-driven EFW pump could fail during a seismic event from the loss of one of its support systems. There is no retrievable documentation on the seismic capability of the turbine oil system, although the turbine, as a whole, was certified by its manufacturer. The other trains of the EFW include two full capacity seismic Category I electric motor-driven pumps per reactor. Therefore, the potential seismic failure of the turbine-driven EFW train is acceptable on the basis of sufficient unaffected redundancy. (That is, the two motor-driven pumps will be operable). The housing of the pumps in the turbine building is discussed in Section 2.6.

2.2 Piping and Isolation Between Seismic and Non-Seismic Portions of the EFW System

The piping for the EFW systems is seismically qualified to the MHE level out through the first isolation valves, which are normally closed. Piping beyond these boundary points is not currently seismically qualified. The licensee indicates that this situation is consistent with other safety-related systems at the Oconee Nuclear Station.

Generic Letter 81-14 requests licensees to consider the EFW system as including piping up to and including the second valve which is normally closed, or capable of automatic closure when the isolation function is required. This system boundary definition is intended to assure that the safety function of the EFW will not be lost during a seismic event, assuming that the seismic event causes the failure of the nonqualified piping concurrent with a single failure in the isolation valve.

By letter dated February 6, 1986 (Reference 4) and two letters dated March 5, 1986 (References 5 and 6), the licensee indicated that as a result of the seismic qualification review of the EFW system in response to the above staff concerns, a condition was identified outside the design basis for Oconee. Specifically, a) certain manually operated boundary valves are not normally closed, b) certain valves do not have complete seismic qualification documentation, and c) some piping attached to the upper surge tanks (i.e., the source of water to the EFW) is not seismically qualified. In the above letters, the licensee provided a safety evaluation which discussed the capability to safely shutdown the plant in the event of an MHE given the specifically indicated deficiencies and proposed corrective actions for assuring EFW system seismic qualification in each case. The licensee also identified a schedule for implementation of required modifications to achieve EFW system seismic qualification in accordance with the design basis.

The licensee's safety evaluation justified continued operation based on the inherent seismic resistance of non-seismically qualified piping and valves, and on the diversity of seismically qualified alternative means of decay heat removal. The licensee indicated that the results of the study of earthquake effects on power plants being performed by the

Seismic Qualification Utilities Group (SQUG) have shown non-seismically qualified piping and valves to generally remain functional in seismic events. This capability has been evaluated in depth by the staff in the resolution of Unresolved Safety Issue (USI) A-46, "Seismic Qualification of Equipment in Operating Nuclear Plants". More importantly however, as discussed in Section 2.7, the seismically qualified standby shutdown facility auxiliary service water (SSF ASW) pump and feed-and-bleed capability are available for decay heat removal should the EFW system fail following an MHE. These additional means for assuring shutdown are not only significant in the interim while the identified EFW system seismic deficiencies are corrected, but also serve as additional defense-in-depth protection against core melt in the long term given the seismically-induced flooding vulnerability of the EFW system discussed in Section 2.7.

Corrective actions identified by the licensee for EFW system seismic qualification deficiencies will be one of the following depending upon the specific circumstances:

a) Normally open boundary valves will be closed, or will be modified to be remotely operated, or analysis will demonstrate that failure of piping beyond these valves will have no impact on system function.

b) Seismically unqualified piping will be analyzed and supported to withstand an MHE.

c) Seismically unqualified valves will be shown capable of withstanding an MHE, or will be replaced, or analysis will demonstrate that failure will have no impact on system function.

The staff finds the above identified corrective actions to be in accordance with the EFW system design basis and, therefore, acceptable for assuring its seismic qualification.

The licensee is also analyzing the effects of a safe shutdown earthquake on plant heating lines, the failure of which may affect the functional capability of the EFWS. The licensee has committed to modify these heating lines as required. The staff finds this commitment acceptable.

Reference 5 stated that a schedule for implementation of the required modifications will be provided to the staff by January 5, 1987, with completion of the modifications estimated to be accomplished by January 1990. In the interim, the licensee indicated that plant procedures have been revised to instruct the operator to investigate those locations where normally open valves exist in interfaces between seismic and non-seismic portions of the EFW system following an MHE so any necessary action can be taken to isolate the boundary. Because of the above indicated alternative decay heat removal means, the staff concurs with the licensee's proposed schedule for implementation of corrective actions, however, any schedule slippage should be properly justified. The staff further concludes that adequate post-seismic event shutdown decay heat removal capability is provided for assuring continued plant safety, and the concern regarding isolation of the seismic and non-seismic boundary is resolved.

2.3 Valves and Actuators

The following are the only valves in the EFW that are not qualified for the MHE:

1. The oil valves in EFW support systems are not qualified for the MHE.

2. The air-operated valves are not fully qualified.

The licensee has indicated that the areas lacking qualification have no effect on the operability of the EFW. All the oil valves that support the EFW are related to the turbine-driven pump. These valves are acceptable on the basis that the plant can be placed in the cold shutdown condition without the turbine-driven pump.

With regard to the concern for potential failure of the air-operated valves, only two valves in the EFW system per unit change position to establish and/or control flow to the steam generators. These valves are air-operated, are normally closed, and fail to the open position. Documentation on the seismic qualification of these valves is not available. To provide assurance that these valves will be capable of operating following an MHE, the licensee plans to qualify these valves either by analysis or by replacement, as required. Based on the licensee's commitments, the staff concludes that the emergency feedwater system valves and actuators are capable of functioning after an MHE.

The air operated valve No. C-176 isolates the line that connects the suction line of the EFW pumps to the main condenser hotwell. Within thirty to forty minutes of a loss of the air supply, valve No. C-176 will open and begin to drain the upper surge tank (the primary water source for the EFWS) into the main condenser hotwell. This will result in starving the flow to the EFWS approximately eighteen minutes after valve No. C-176 opens. The operating procedures instruct the operator upon the loss of the air supply to close valve No. C-176 and align the EFWS to the alternate water supply which is the condenser hotwell. The operator has between forty-eight and fifty-eight minutes to perform the operations that prevent starving the flow to the EFWS. This is well within the operator action time requirements (thirty minutes); therefore, we conclude that the licensee's method for preventing the starving of flow to the EFWS from the loss of air supply to valve No. C-176 is acceptable.

2.4 Power Supplies

Electric power to some of the motor-operated valves and pneumatic sources for air-operated valves are not seismically qualified. For the MOVs, the licensee stated that electric power is not essential since the MOVs fail as-is and are not required to change position to establish flow. While the staff agrees that establishing EFW flow is acceptably independent of electric power, the staff remains concerned regarding control of EFW flow. The licensee has assured the staff that the motor-operated valves are not used for EFW flow control; therefore, electric power is not needed for them to perform their safety function. For the air-operated valves, which includes the normal flow control-valves (FCVs) for the EFW, the

licensee has provided an automatic bottled nitrogen system which can serve as an alternate to the air source. The licensee has committed to assure that the automatic bottled nitrogen system, including power to the solenoid valves, will withstand an MHE.

Based on the licensee's commitments, the staff concludes that the EFWS power supplies are capable of functioning after an MHE.

2.5 Initiation and Control

The control to the motor-operated valves other than those in the auto-initiation and auto-control of the EFW system is not seismically qualified. This includes the control to the branch line isolation valves off the main steam header and the electric motor-operated valves in the EFW suction and discharge line which are normally aligned for EFW operation but not normally required to operate. However, the licensee stated that no actuation is required of the motor-operated valves for the EFW flow and the valves will fail as-is upon loss of power. We find this design to be acceptable.

2.6 Structures

The turbine building which houses portions of the EFW system is seismic Class II. The licensee has reanalyzed the turbine building and determined that the structure will survive the MHE. As noted previously, however, because the EFW system is located in the basement of the turbine building, it is subject to failure as a result of flooding caused by rupture of the non-seismically qualified condenser circulating water lines. Therefore, the question of the capability of the turbine building to withstand the MHE is moot, and is not addressed further. As noted below, reliance is placed on the standby shutdown facility for plant shutdown following the MHE.

2.7 Standby Shutdown Facility and EFW System Sinole Failure Capability Following an MHE

The standby shutdown facility (SSF) system has been constructed to provide a dedicated separate train of emergency feedwater in the event the EFWS is simultaneously incapacitated on all three units by an MHE.

The SSF is designed to withstand the MHE. Structures supporting or housing the SSF system components include the SSF itself, reactor building and auxiliary building and are seismic Class 1. The licensee provided a description of the methodology and acceptance criteria used for seismic qualification of the SSF system, referring to applicable sections of the FSAR and licensee's letters.

In the TER, our consultant made the following conclusions regarding the SSF:

1. The licensee did not perform a walkdown of the currently nonseismically qualified areas of the EFW system because the SSF system is designed to withstand the MHE and to serve as the alternate decay heat removal system.

2. Both the EFW and SSF system boundaries do not fully meet the definition specified in Generic Letter 81-14.

Generic Letter 81-14 states that licensees were to demonstrate that the EFW system could perform its shutdown decay heat removal safety function following an MHE and concurrent single active failure. Alternatively, the licensee could demonstrate the availability of a seismically qualified alternative system for performing this function. The staff notes that the EFW system in each of the three Oconee units is located at the basement elevation of the turbine building and is, therefore, subject to a complete failure as a result of flooding caused by rupture of the non-seismic condenser circulating water line. In such an event, the only identified means for shutdown decay heat removal for the three units would be the seismically qualified SSF auxiliary service water (ASW) pump. However, because the SSF consists of a single ASW pump for supplying feedwater flow to all three units, a single failure in it results in a loss of decay heat removal capability through the steam generators. Consequently, we informed the licensee that we were pursuing a possible backfit of Oconee to correct this condition and satisfy the requirements of General Design Criteria (GDC) 2, Design Bases for Protection Against Natural Phenomena" and 34, "Residual Heat Removal" for decay heat removal capability following an earthquake.

By References 7 and 8, the licensee provided additional information on this concern to support their assertion that previously completed modifications will assure adequate post-seismic decay heat removal capability and no further backfit is cost-beneficial. The licensee indicated that penetration seals and waterproof doors have been installed between the turbine building and the auxiliary building in each unit to provide waterproofing to a height of twenty feet above the turbine building basement floor. Thus, the high pressure injection (HPI) system, low pressure injection (LPI) system, auxiliary service water system, and reactor building spray system pumps located in the auxiliary building would be available as an alternative to the EFW system and SSF ASW pump for shutdown decay heat removal. Further, the licensee indicated that revised operating procedures have improved the operator's ability to quickly respond to a turbine building flood by providing guidance on means to isolate the circulating water system, initiating feed-and-bleed utilizing the HPI pumps and starting the SSF ASW pump.

The staff performed a quantitative probabilistic evaluation of the above utilizing information contained in the Oconee Probabilistic Risk Assessment (PRA) study. Based on this review, a core melt frequency and an associated cost benefit were determined for the seismic flooding scenario accounting for the indicated plant improvements.

The results of this analysis indicated that adequate core melt protection has been provided and no further plant improvements to correct seismic flooding concerns are considered cost beneficial or are warranted. This determination is based on the flooding protection provided for the HPI and

LPI pumps for use in the feed-and-bleed mode along with the SSF ASW pump both of which serve as a suitable redundant alternative decay heat removal means to the EFW system since the EFW system itself is unprotected from flooding and, therefore, assumed unavailable following an MHE. The staff, therefore, concludes that the concern regarding post-seismic event decay heat removal capability and concurrent single failure is resolved, and the criteria of Generic Letter 81-14 regarding seismically qualified alternative decay heat removal means are satisfied.

Regarding the SSF system boundary, the licensee stated that some small piping vents and drains, capped lines, tank vents, and a recirculation line from the diesel fuel oil storage tank either have only one normally closed valve or are seismically designed through the first valve. The staff considers this to be suitable seismic boundary protection for the single SSF ASW train.

2.8 Walkdown of Non-seismically Qualified Areas of the EFW System

As indicated in Reference 6 which contained Licensee Event Report (LER) 269/86-02, the licensee has reviewed the seismic/non-seismic interfaces in the EFW system for all three Oconee units. We, therefore, consider the concern for a walkdown of non-seismically qualified areas to be resolved.

2.9 Conclusion and Implementation Schedule

Based on the above, the staff concludes that the licensee has demonstrated adequate post-seismic event decay heat removal capability in accordance with the criteria of Generic Letter 81-14 by committing to correct identified deficiencies in the seismic qualification of the EFW system itself, and by demonstrating adequate seismically qualified alternative capability utilizing the SSF ASW pump and HPI pump (feed-and-bleed) in the event of loss of the AFW system as a result of seismically induced flooding. We, therefore, conclude that Oconee meets the requirements of GDC 2 and 34 for post-seismic shutdown decay heat removal capability and is, therefore, acceptable. In a letter dated January 5, 1987, the licensee stated that a schedule for implementation of required modifications should be provided by March 20, 1987 with actions completed by January 1990. We consider MPA C-14, Seismic Qualification of the EFW System to be complete for Oconee Nuclear Station, Units 1, 2 and 3.

Enclosure:
Technical Evaluation Report

Dated: January 14, 1987

Principal Contributor:

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REFERENCES

1. Darrell G. Eisenhut, U. S. Nuclear Regulatory Commission, "Seismic Qualification of Auxiliary Feedwater Systems", Generic Letter 81-14, February 10, 1981.

2. John F. Stolz, U. S. Nuclear Regulatory Commission, letter to Hal B. Tucker, Duke Power Company, September 8, 1982.

3. Hal B. Tucker, Duke Power Company, letter to Harold R. Denton, U.S. Nuclear Regulatory Commission, October 13, 1982.

4. Hal B. Tucker, Duke Power Company, letter to Dr. J. Nelson Grace, U.S. Nuclear Regulatory Commission, February 6, 1986.

5. Hal B. Tucker, Duke Power Company, letter to Dr. J. Nelson Grace, U. S. Nuclear Regulatory Commission, March 5, 1986.

6. Hal B. Tucker, Duke Power Company, LER 269/86-02, March 5, 1986.

7. Hal B. Tucker, Duke Power Company, letter to Harold R. Denton, U. S. Nuclear Regulatory Commission, April 28, 1986.

8. Hal B. Tucker, Duke Power Company, letter to Harold R. Denton, U. S. Nuclear Regulatory Commission, May 7, 1986.

August 27, 1982

TECHNICAL EVALUATION REPORT
OCONEE NUCLEAR STATION UNITS 1, 2, AND 3
SEISMIC QUALIFICATION OF AUXILIARY FEEDWATER SYSTEM

1. INTRODUCTION

Since the accident at Three Mile Island, considerable attention has been focused on the capability of nuclear power plants to reliably remove decay heat. The NRC has recently undertaken Multiplant Action Plan C-14 "Seismic Qualification of AFW Systems" [Ref. 1], which is the subject of this evaluation.

To implement the first phase of Action Plan C-14, the NRC issued Generic Letter No. 81-14 "Seismic Qualificaton of AFW Systems" [Ref. 2], dated February 10, 1981, to all operating PWR licensees. This letter requested each licensee (1) to conduct a walk-down of non-seismically qualified portions of the AFW system and identify deficiencies amenable to simple actions to improve seismic resistance, and (2) to provide design information regarding the seismic capability of the AFW system to facilitate NRC backfit decisions.

The licensee of Oconee Nuclear Station responded with a letter dated January 26, 1982 [Ref. 3]. The licensee's response was found not to be complete and a Request for Additional Information was issued by the NRC, dated April 8, 1982 [Ref. 4]. The licensee provided a supplemental response in a letter dated May 25, 1982 [Ref. 5].

This report provides a technical evaluation of the information provided in the licensee's responses to the Generic Letter, and includes a recommendation regarding the need for additional analysis and/or upgrading modification of this plant's AFW system.

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2. EVALUATION

Information provided in licensee's responses included:

- o Specification of the overall seismic capability of the AFW system.
- o Identification of AFW system components that are currently non-seismically qualified for SSE.
- o Discussion of levels of seismic capability of non-seismically qualified components.
- o Specification of overall seismic capability of the Standby Shutdown Facility (SSF) system which will serve as an alternate decay heat removal system.
- o Description of methodologies and acceptance criteria for the seismic design of the SSF system, which is determined to be seismically qualified for the SSE level by the licensee.
- o Description of the AFW and SSF system boundary.
- o Status of compliance with seismic related NRC Bulletins and Information Notices.
- o Additionally, schematic sketches of the AFW and SSF systems.
- o Additionally, identification of areas of modification of the AFW system that will be performed under the SSF project.
- o Additionally, description of methodologies and acceptance criteria for seismically qualified components of the AFW system.

We have reviewed the licensee's responses, and a point-by-point evaluation of licensee's responses against Generic Letter's requirements is provided below.

(1) Seismic Capability of AFW System

Except for those items identified in the following, the AFW system has been designed, constructed and maintained to withstand an SSE utilizing methods and acceptance criteria consistent with that applicable to other safety-related systems in the plant. Presently, those items identified by the licensee as not being fully seismically qualified are evaluated below:

- o Pumps/Motors - Portions of the turbine-driven pump oil system and oil cooling system, including the oil pumps and water cooling pumps do not have retrievable seismic documentation. However, we judge by experience that the pumps/ motors possess a less than OBE level of seismic capacity.
- o Piping - The portion of all connected branch piping beyond the first valve is currently non-seismically qualified. We believe that the AFW system piping is likely to possess an OBE level of seismic capacity.
- o Valves/Actuators - (a) Oil valves in the support system. However, the licensee indicated that credit for seismic design is not necessary because they are equipped with handwheels for manual operations. (b) Pneumatic control valves and their backup nitrogen bottles. However, the licensee indicated that these valves will fail open upon loss of gas pressure or they can be bypassed by aligning the AFW flow through the main feedwater startup line into the normal or AFW steam generator nozzles on either steam generator.
(c) Certain valves do not have retrievable seismic documentation. The licensee stated, however, that such valves were built to at least the ANSI B 31.1.0 criteria and were modeled into the stress analyses as equivalent pieces of pipe for structural purposes. Based on the above information, we believe that the valves/actuators are likely to possess an OBE level of seismic capacity.
- o Power Supplies - Power to the electric motor-operated valves and pumps, except for the motor-driven AFW pumps and the lower pressure service water pumps, is currently non-seismically qualified. However, the licensee stated that seismic design credit is not necessary for the power to the electric motor-operated valves because these valves can be manually operated with handwheels. We judge that the power supplies possess a less than OBE level of seismic capacity.
- o Water Source(s) - None
- o Initiation/Control Systems - The control to the motor-operated valves other than those in the auto-initiation and auto-control of the AFW system is not seismically qualified. This includes the control to the branch line isolation valves off the main steam header and the electric motor-operated valves in the AFW suction and discharge lines which are normally aligned for AFW operation but not normally required to operate. However, the licensee stated that no actuation

it required of the motor-operated valves for the ... flow and the valves will fail as-is upon loss of power. We therefore judge that the initiation/control systems possess the capacity to wi.. stand an SSE.

- o Structures - The turbine building is seismic Class II. We therefore judge that the structures supporting or housing th. AFW system components are capable of withstanding an OBE.

Based on our evaluation, those areas of the AFW system judged not to possess an SSE seismic capability are identified below:

o	Pumps/Motors	Less than OBE
o	Piping	OBE
o	Valves/Actuators	OBE
o	Power Supplies	Less than OBE
o	Water Source(s)	None
o	Initiation/Control Systems	None
o	Structures	OBE

In summary, our evaluation indicated that the licensee's AFW system does not possess an overall seismic capability that can withstand an SSE.

Because the primary water source is seismically qualified for the SSE, a switchover to a seismically qualified secondary water source is not involved.

The Standby Shutdown Facility (SSF) system, being constructed to provide a dedicated separate train of auxiliary feedwater, will provide an alternate decay heat removal system when it becomes operational. No procedure is available at this time to switch from the AFW system to the SSF system. Such procedure will be developed on a schedule commensurate with the SSF system startup. The licensee did not indicate the completion date of the new SSF system.

The SSF system is designed to withstand the SSE. Structures supporting or housing the SSF system components include the reactor building and auxiliary building and are seismic Class I. The licensee's provided a description of the methodologies and acceptance criteria used

for seismic qualification of the SSF system, referring to applicable sections of the FSAR and licensee's letters of March 28, 1980; February 16, 1981; March 31, 1981; and April 13, 1981.

Regarding the AFW system boundary, all connected branch piping and crossover connections among the three units are seismically qualified only through the first valve. We judge that the AFW system boundary does not fully meet the requirements defined in the Generic Letter.

Regarding the SSF system boundary, some small piping vents and drains, capped lines, tank vents, and a recirculation line from the diesel fuel oil storage tank either have only one normally closed valve or are seismically designed only through the first valve. We judge that the SSF system boundary does not conform to the definition of boundary specified in the Generic Letter. Since the existing AFW system is not fully seismically qualified, we feel that this deviation needs to be evaluated and/or corrected in order to assure the required safety function of the SSF system.

The licensee stated that both the AFW and SSF systems were included within the scope of the seismic related NRC Bulletins 79-02, 79-04, 79-07, 79-14, 80-11, and IE Information Notice 80-21.

(2) Walk-Down of Non-Seismically Qualified Portions of AFW System

The licensee stated that no walk-down was performed for the non-seismically qualified items of the AFW system due to reliance on the SSF system though the walk-down is requested by GL 81-14. We feel that a walk-down is required if the new SSF system does not become operational within a reasonable period of time.

(3) Additional Information

The licensee provided a schematic sketch of the AFW and SSF systems including the water source(s), heat sink, suction and discharge piping, major mechanical equipment, and structures supporting and housing the AFW and SSF system items.

Additionally, licensee's responses provided a description of the methodologies and acceptance criteria that were used in the design of the seismically qualified portions of the AFW system, by referring to the applicable sections in the FSAR.

The licensee identified the areas of the AFW system where modification/upgrade will be performed for the tie-in between the SSF and AFW systems. Because the construction of the SSF system is underway, the licensee stated that no additional modification to the AFW system is necessary due to reliance upon the SSF system.

3. CONCLUSIONS

The information contained in licensee's responses is complete. The licensee did not perform walk-down of the currently non-seismically qualified areas of the AFW system because the SSF system, being under construction, is designed to withstand the SSE and to serve as the alternate decay heat removal system. The switchover procedure from the AFW to the SSF system will be established commensurate with the startup operation of the SSF system. Both the AFW and SSF system boundaries do not fully meet the definition specified in GL 81-14.

Based upon the submitted information, we conclude that the AFW system does not presently possess the seismic capability to withstand an SSE. The ability of the SSF system to perform the required safety function following the occurence of an SSE is also in question because the SSF system boundary does not fully conform to the boundary definition specified in GL 81-14. In conclusion, we recommend that the NRC considers requiring the licensee (a) to submit the estimated completion date of the SSF system and perform a walk-down of the existing AFW system if it is determined that the SSF system will not become operational within a reasonable period of time and (b) to evaluate and/or correct the deviation of the SSF system boundary in order to assure the required safety related function.

REFERENCES

1. D. G. Eisenhut, U.S. Nuclear Regulatory Commission, memorandum to H. R. Denton, "Multiplant Action Plan C-14: Seismic Qualification of Auxiliary Feedwater Systems," February 20, 1981.

2. U.S. Nuclear Regulatory Commission, Generic Letter No. 81-14 to all operating pressurized water reactor licensees, "Seismic Qualification of Auxiliary Feedwater Systems," February 10, 1981.

3. W. O. Parker, Jr., Duke Power Company, letter to H. R. Denton of U.S. Nuclear Regulatory Commission, January 28, 1982.

4. J. F. Stolz, U.S. Nuclear Regulatory Commission, letter to W. O. Parker, Jr., of Duke Power Company, "Request for Additional Information on Seismic Qualification of the Auxiliary Feedwater System, Oconee Nuclear Station Units 1, 2, and 3, April 8, 1982.

5. W. O. Parker, Jr., Duke Power Company, letter to H. R. Denton, U.S. Nuclear Regulatory Commission, May 25, 1982.

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