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

SAFETY EVALUATION REPORT

MILLSTONE UNIT 2

SEISMIC QUALIFICATION OF THE

AUXILIARY FEEDWATER SYSTEM

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 auxiliary feedwater system (AFWS) can withstand the postulated Safe Shutdown Earthquake (SSE), consistent with other safety-related systems in the plant.

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 AFWS to withstand earthquakes up to the SSE level. This program was implemented with the issuance of NRC Generic Letter 81-14 dated February 10, 1981. Our review of the licensee's responses to this letter is the subject of this evaluation.

Evaluation

The attached report was prepared for us 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 requirements of Generic Letter 81-14. We have reviewed the consultant's report and concur with its conclusions.

Conclusion

Based upon our review of the consultant's technical evaluation report, we conclude that there is reasonable assurance that the auxiliary feedwater system has sufficient capability to withstand a safe shutdown earthquake and accomplish its safety function. Accordingly, we are not contemplating requiring any seismic upgrading of this system under the NRC Multiplant Action C-14 program.

We consider the consultant's report to be final, in that no further technical effort is required. This safety evaluation report was prepared by Mr. J.T. Beard, Engineering Section, Operating Reactors Assessment Branch, Division of Licensing.

September 17, 1982

TECHNICAL EVALUATION REPORT
MILLSTONE NUCLEAR POWER STATION, UNIT 2
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 Qualification 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 Millstone Nuclear Power Station, Unit 2 responded with a letter dated July 24, 1981 [Ref.3]. The licensee's response was found not to be complete and a request for Additional Information (RAI) was issued by the NRC, dated April 15, 1982 [Ref.4]. The licensee provided a supplemental response in a letter dated June 4, 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 modifications of this plant's AFW system.

2. EVALUATION

Information provided in licensee's responses included:

- o Specification of the overall seismic capability of the AFW system.
- o Description of methodologies and acceptance criteria for seismic design of the AFW system, which is determined to be seismically qualified to the SSE level by the licensee.
- o Description of the AFW system boundary.
- o Status of compliance with seismic related NRC Bulletins and Information Notices.
- o Additionally, results of walk-down of the AFW system and identification of areas of modification/upgrade that have been completed or are proposed along with a schedule.

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

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. All areas of the AFW system, i.e., pumps/motors, piping, valves/actuators, power supplies, water source, instrument/control systems, and structures supporting and housing the AFW system, are seismically qualified to the SSE level.

The licensee provided a description of the methodologies and acceptance criteria used for seismic qualification of the AFW system, and referred to the applicable sections of the FSAR. The description includes seismic analysis methods, seismic input, load combinations, allowable stresses, qualification testing, and engineering evaluations performed.

A switchover procedure to a secondary water source is not involved because the primary water source and supply path is seismically qualified.

Information regarding the seismic capability of any alternate decay heat removal system is not requried because the AFW system is fully seismically qualified.

Regarding the AFW system boundary, we conclude that it fully conforms to that required by the Generic Letter. The licensee stated that the AFW system was 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

A walk-down is not required because no lack of seismic qualification of the AFW system is indicated.

(3) Additional Information

The licensee indicated that a walk-down was performed in response to IE Bulletin 79-14. In addition, licensee opted to complete a walk-down of AFW system. This walk-down included mechanical and electrical equpment, piping, cable trays, and conduit.

In walk-down related to IE Bulletin 79-14, forty-three supports were identified requiring modification. Thirty-five modifications have been completed with the remaining eight scheduled for completion by the end of the next refueling outage after July 24, 1981. Licensee also indicated that there are no major seismic related concerns which could potentially affect the operability of the AFW system during a seismic event.

3. CONCLUSIONS

The licensee's responses provided all the information that was explicitly requested by GL 81-14. Based on the information, we conclude that the AFW system at Millstone Unit 2 is able to provide the safety-related function following an SSE to assure safe shutdown of the plant. Therefore, we recommend that no further action be initiated regarding upgrading of the AFW systems of this plant under NRC Multiplant Action C-14.

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. G. Counsil, Northeast Nuclear Energy Company, letter to D. G. Eisenhut of U.S. Nuclear Regulatory Commission, July 24, 1981.

4. R. A. Clark, USNRC, letter to W. G. Counsil of Northeast Nuclear Energy Company, "Request for Additional Information on Seismic Qualification of the Auxiliary Feedwater System, Millstone Nuclear Power Station, Unit 2," April 15, 1982.

5. W. G. Counsil, Northeast Nuclear Energy Company, letter to R. A. Clark of USNRC, June 4, 1982.

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