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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

DETAILED CONTROL ROOM DESIGN REVIEW

WISCONSIN ELECTRIC POWER COMPANY

POINT BEACH NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-266 AND 50-301

1. INTRODUCTION

Item I.D.1, "Control Room Design Reviews," of Task I.D, "Control Room Design," of the "NRC Action Plan Developed as a Result of the TMI-2 Accident," (NUREG-0660--Reference 1) states that operating reactor licensees and applicants for operating licenses will be required to perform a Detailed Control Room Design Review (DCRDR) to identify and correct design discrepancies. The objective, as stated in NUREG-0660, is to improve the ability of nuclear power plant control room operators to prevent accidents or to cope with them. Supplement 1 to NUREG-0737 confirmed and clarified the DCRDR requirements in NUREG-0660. In accordance with Supplement 1 to NUREG-0737, each applicant or licensee is required to conduct its DCRDR on a schedule negotiated with the Nuclear Regulatory Commission (NRC).

By letter dated July 31, 1984, the Wisconsin Electric Power Company (WEPCO) submitted to the NRC its Program Plan (Reference 2) for a DCRDR of the Point Point Beach Nuclear Power Plant, Units 1 and 2. The results of the NRC's review of the Program Plan and the need for an inprogress audit were conveyed to the licensee by letter dated January 22, 1985 (Reference 3). The staff conducted this audit between December 2 and 6, 1985, and the audit report was forwarded to the licensee on March 12, 1986 (Reference 4).

2. EVALUATION

The staff evaluation of the Point Beach DCRDR is consistent with Section 18.1, "Control Room," Revision 0 of NUREG-0800, "Standard Review Plan," (Reference 5).

This evaluation addresses DCRDR requirements as they are identified in Supplement 1 to NUREG-0737 (Reference 6). The evaluation is based on the following:

- The licensee's Summary Report dated March 31, 1987 (Reference 7).
- The pre-implementation audit conducted by the staff and its consultants from Science Application International Corporation (SAIC) on November 30 and December 1, 1987.
- The licensee's letter of March 29, 1988, responding to the pre-implementation audit findings (Reference 8).

The technical evaluation report (TER) for the DCRDR was prepared by SAIC and is attached to this SER. The NRC agrees with technical positions and conclusions presented in the TER.

1. Establishment of a Qualified Multidisciplinary Review Team

   Based on an evaluation of the licensee's Summary Report and discussions during the pre-implementation audit, the staff concludes that the licensee has a qualified multidisciplinary review team and has satisfied this requirement of Supplement 1 to NUREG-0737.

2. Function and Task Analysis to Identify Control Room Operators Tasks and Information and Control Requirements During Emergency Operations

   Through review of the results of the function and task analysis given in the licensee's Summary Report and discussions during the pre-implementation audit, the staff concludes that the function and task analysis is acceptable and the licensee has satisfied this requirement of Supplement 1 to NUREG-0737.

3. Comparison of Display and Control Requirements With a Control Room Inventory

   From information provided in the licensee's Summary Report and discussions during the pre-implementation audit, the staff finds that the information, control, and display requirements have been compared with the controls and displays available. The staff concludes that the licensee has satisfied this requirement of Supplement 1 to NUREG-0737.

4. Control Room Survey to Identify Deviations From Accepted Human Factors Principles

   Based on review of the licensee's Summary Report and discussions during the pre-implementation audit, the staff finds that the licensee has conducted an acceptable control room survey that identifies deviations from accepted human factors principles. The staff concludes that the control room survey is acceptable and the licensee has satisfied this requirement of Supplement 1 to NUREG-0737.

5. Assessment of Human Engineering Discrepancies (HEDs) to Determine Which are Significant and Should be Corrected

   Based on review of information presented in the licensee's submittals (Summary Report and the letter of March 29, 1988) and discussions during the pre-implementation audit, the staff finds that the licensee has assessed the deviations from accepted human factors principles existing in the control room. The staff concludes that the licensee has satisfied this requirement of Supplement 1 to NUREG-0737.

6. Selection of Design Improvements

As a result of the pre-implementation audit, the NRC staff concluded that the licensee had not met the requirement of Supplement 1 to NUREG-0737 concerning the selection of design improvements. By letter dated February 24, 1988, the staff requested that the licensee (a) provide information on any changes regarding safety-significant HEDs since the Summary Report was issued, (b) indicate what actions will be taken to resolve several "pending" HEDs, and (c) verify that corrective actions for all safety-significant HEDs will be completed by 1990. The licensee responded to this request by letter dated March 29, 1988. In Attachment 1 to the letter, the licensee documented changes to all HEDs (except those classified as "pending") that had occurred since the Summary Report was submitted to the NRC. The staff reviewed these changes and finds the information to satisfactorily address all issues.

Attachment 2 to the letter of March 29, 1988, proposed resolutions for the following "pending" HEDs: 329, 497, 540, 608, 634, 647, and 809. The staff has reviewed the licensee's responses to each "pending" HED and is satisfied with all proposed resolutions and commitments.

In the letter of March 29, 1988, the licensee committed to correct all safety-significant HEDs by the end of 1990. The staff finds this commitment to be fully satisfactory.

Based on discussions during the preimplementation audit and review of the licensee's submittal, the staff finds that the modifications to correct safety-significant HEDs have been implemented or are planned on an acceptable schedule. Based on the licensee's commitments and completed actions, the staff concludes that the licensee meets this requirement of Supplement 1 to NUREG-0737.

7. Verification That Selected Improvements Will Provide the Necessary Correction

The staff finds that the licensee has an acceptable process for verifying that its proposed improvements will actually correct the HEDs. The staff concludes that the licensee has satisfied this requirement of Supplement 1 to NUREG-0737.

8. Verification That Selected Design Improvements Will Not Introduce New HEDs

The staff finds that the licensee's proposed or implemented design modifications have been or will be verified to provide the necessary corrections without introducing new HEDs. Therefore, the staff concludes that the licensee's verification process is acceptable and meets this requirement of Supplement 1 to NUREG-0737.

9. Coordination of Control Room Improvements With Changes From Other Programs Such as the Safety Parameter Display System, Operator Training, Regulatory Guide 1.97 Instrumentation, and Upgraded Emergency Operating Procedures

Based on review of the licensee's Summary Report and discussions during the pre-implementation audit, the staff finds that the licensee has coordinated the DCRDR with other improvement programs and has satisfied this requirement of Supplement 1 to NUREG-0737.

3. CONCLUSIONS

The staff has reviewed WEPCO's response to the requirements of the Detailed Control Room Design Review as stated in Supplement 1 to NUREG-0737. Based on this review, the staff therefore concludes that the licensee has satisfied the requirements of each of the nine criteria of Supplement 1 to NUREG-0737.

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Date: May 11, 1990

Attachment: Technical Evaluation Report
SAIC-87/3112

DCRDR References

1. NUREG-0660, "NRC Action Plan Development as a Result of the TMI-2 Accident," May 1980.

2. Letter from C. W. Fay (WEPCO) to H. R. Denton (NRC), "Point Beach Nuclear Plant Control Room Design Review Program Plan," July 31, 1984.

3. Letter from J. Miller (NRC) to C. W. Fay (WEPCO), "Review of Point Beach Nuclear Plant Control Room Design Review Program Plan," January 22, 1985.

4. Letter from T. Colburn (NRC) to C. W. Fay (WEPCO), "Results of In-Progress Audit of the Point Beach Nuclear Plant Detailed Control Room Design Review," March 12, 1986.

5. NUREG-0800, Revision 0, "Standard Review Plan," Section 18.1, "Control Room," and Appendix A, "Evaluation Criteria for Detailed Control Room Design Reviews (DCRDR)," NRC, September 1984.

6. NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements," NRC, December 1982.

7. Letter from C. W. Fay (WEPCO) to G. Lear (NRC), "Point Beach Nuclear Plant Control Room Design Review Summary Report," March 31, 1987.

8. Letter from C. W. Fay (WEPCO) to NRC, "Transmittal of Response to NRC Audit of DCRDR and SPDS Point Beach Nuclear Plant, Units 1 and 2," March 29, 1988.