

January 22, 1985

DCR 016

Docket Nos. 50-266
and 50-301

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Mr. C. W. Fay, Vice President
Nuclear Power Department
Wisconsin Electric Power Company
231 West Michigan Street, Room 308
Milwaukee, Wisconsin 53201

Dear Mr. Fay:

We have completed our review of your Program Plan for conducting the Detailed Control Room Design Review (DCRDR) for the Point Beach Nuclear Plant Units 1 and 2 in accordance with Supplement 1 to NUREG-0737.

Your Program Plan has been reviewed against the requirements of Supplement 1 to NUREG-0737 and the guidance contained in NUREG-0700 and Section 18.1, Rev. 0, of the Standard Review Plan. NRC staff comments are enclosed.

Attached to the staff comments is an evaluation of your Program Plan prepared by our contractor, Science Applications International Corporation.

Our review has identified concerns the staff feels, if resolved, would increase the benefits of the DCRDR and the likelihood that the Supplement 1 requirements would be met. These concerns are listed in the staff comments.

Based on our review of the Program Plan, the staff plans to perform an in-progress audit of the PBNP Unit 1 and 2 DCRDRs.

We would like to schedule the audit for the May 1985 time frame. Please contact us so that we can arrange a mutually acceptable date for our audit. If you have any questions, contact your NRC Project Manager, T. G. Colburn at 301-492-4709.

Sincerely,

JRM
James R. Miller, Chief
Operating Reactors Branch No. 3
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
See next page

ORB#3:DL
PKreutzer
1/24/85

PK
ORB#3:DL
TColburn;ef
1/18/85

JRM
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1/24/85

Wisconsin Electric Power Company

cc:

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Mr. Gordon Blaha
Town Chairman
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NUCLEAR REGULATORY COMMISSION
STAFF COMMENTS
ON THE
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2
DETAILED CONTROL ROOM DESIGN REVIEW
PROGRAM PLAN

BACKGROUND

Licensees and applicants for operating licenses shall conduct a Detailed Control Room Design Review (DCRDR). The objective is to "improve the ability of nuclear power plant control room operators to prevent accidents or cope with accidents if they occur by improving the information provided to them" (NUREG-0660, Item I.D.). The need to conduct a DCRDR was confirmed in NUREG-0737 and Supplement 1 to NUREG-0737. DCRDR requirements in Supplement 1 to NUREG-0737 replaced those in earlier documents. Supplement 1 to NUREG-0737 requires each applicant or licensee to conduct a DCRDR on a schedule negotiated with the Nuclear Regulatory Commission (NRC).

NUREG-0700 describes four phases of the DCRDR and provides applicants and licensees with guidelines for its conduct. The phases are:

1. Planning
2. Review
3. Assessment and implementation
4. Reporting

Criteria for evaluating each phase are contained in Section 18.1, Rev. 0, of NUREG-0800, (Standard Review Plan) and Appendix A to Section 18.1.

A Program Plan is to be submitted within two months of the start of the DCRDR. Consistent with the requirements of Supplement 1 to NUREG-0737, the Program Plan shall describe how the following elements of the DCRDR will be accomplished:

1. Establishment of a qualified multidisciplinary review team
2. Function and task analyses to identify control room operator tasks and information and control requirements during emergency operations
3. A comparison of display and control requirements with a control room inventory
4. A control room survey to identify deviations from accepted human factors principles
5. Assessment of human engineering discrepancies (HEDs) to determine which are significant and should be corrected
6. Selection of design improvements
7. Verification that selected design improvements will provide the necessary correction
8. Verification that improvements will not introduce new HEDs
9. Coordination of control room improvements with changes from other programs such as the safety parameter display system, operator training, Reg. Guide 1.97 instrumentation, and upgraded emergency operating procedures

Licensees and applicants are expected to schedule Element 1 for accomplishment during the planning phase, Elements 2 through 4 for accomplishment during the review phase, and Elements 5 through 8 for accomplishment during the assessment and implementation phase. Scheduling of Element 9 is expected to cut across the planning, review, and assessment and implementation phases.

Program plans are not approved by the NRC, but staff comments will be provided per the requirements of Supplement 1 to NUREG-0737. These comments will, among other things, provide the staff's judgment as to whether the Program Plan will result in a successful DCRDR. Staff comments on the Program Plan do not require response and may be used as the licensee or applicant chooses.

A Summary Report is to be submitted at the end of the DCRDR. As a minimum it shall:

1. Outline proposed control room changes
2. Outline proposed schedules for implementation
3. Provide summary justification for HEDs with safety significance to be left uncorrected or partially corrected

The NRC will evaluate the organization, process, and results of the DCRDR. Evaluation will include review of required documentation (Program Plan and Summary Report) and may also include reviews of additional documentation, briefings, discussions, and on-site audits. In-progress audits may be conducted after submission of the Program Plan but prior to submission of the Summary Report. The staff will prepare a report following an in-progress audit. That report will be transmitted to licensees and applicants for their use. Pre-implementation audits may be conducted after submission of the Summary Report. Results of a pre-implementation audit will be included in

the NRC evaluation of the DCRDR which follows receipt of the Summary Report. NRC evaluation will be in accordance with the requirements of Supplement 1 to NUREG-0737. Additional guidance for the evaluation is provided by NUREG-0700 and Section 18.1, Rev. 0, of the Standard Review Plan.

Supplement 1 to NUREG-0737 requires that significant HEDs be corrected. Improvements which can be accomplished with an enhancement program may be done promptly. Other control room upgrades may begin following publication of the SER (or SER Supplement), resolution of any open issues, and approval of a schedule for upgrade.

A human factors evaluation of the design of the remote shutdown capability provided to meet 10 CFR Part 50, Appendix A, GDC-19 and 10 CFR Part 50, Appendix R is not specifically identified as a requirement in Supplement 1 to NUREG-0737. NRC staff review of this issue is not complete. In the interim, the NRC staff recommends that the scope of the DCRDR include a human factors evaluation of the design of the remote shutdown capability. To the extent practicable, without delaying completion of the DCRDR, the NRC staff also recommends that the DCRDR address any control room modifications and additions (such as controls and display for inadequate core cooling and reactor system vents) made or planned as a result of other post-TMI actions, as well as the lessons learned from operating reactor events such as the

Salem ATWS events. Implications of the Salem ATWS events are discussed in NUREG-1000 and required actions are described in Section 1.2, Post Trip Review - Data and Information Capability, of the enclosure to Generic Letter 83-28.

DISCUSSION

Wisconsin Electric Power Company submitted a Program Plan for conducting a DCRDR at Point Beach Nuclear Plant (PBNP) Units 1 and 2 by letter dated July 31, 1984. The Program Plan did not mention the capability for remote shutdown. As a result, the staff assumes that the DCRDR will be limited to the control room (shared by Units 1 and 2). The DCRDR Program Plan for PBNP was reviewed against the requirements of Supplement 1 to NUREG-0737. Consultants from Science Applications International Corporation (SAIC) assisted in the review. The SAIC report on the PBNP Program Plan is attached. That report contains the detailed discussion of Wisconsin Electric's Program Plan for the PBNP DCRDRs. Comments of the NRC staff member responsible for evaluation of the PBNP DCRDR have been integrated into that report to provide the consolidated observations, conclusions and recommendations of the NRC staff and its consultants.

CONCLUSION

The Program Plan addressed all of the DCRDR requirements in Supplement 1 to NUREG-0737. Information in the Program Plan indicated general understanding and intent to satisfy the requirements. The review did, however, identify several concerns. The concerns are:

1. The systems function review and task analysis, control room inventory, verification of instrumentation, and validation of control room functions appear to have been assigned solely to the human factors consultant (HFC) rather than to some appropriate combination of PBNP and HFC personnel (i.e., persons with direct knowledge of PBNP systems and operations do not appear to be involved in the day-to-day conduct of the above activities).
2. A plant orientation for review team members unfamiliar with PBNP (e.g., the HFC) did not appear to be part of the proposed orientation program.
3. The Program Plan does not address the DCRDR review team validation of EOPs that are revised as a result of the Validation activity.
4. Use of the survey checklists provided with the Program Plan, which rely heavily on INPO 83-042, will probably not result in a successful control room survey because, 1) staff has determined that INPO 83-042 has either dropped or relaxed many of the human factors principles identified in NUREG-0700, and 2) PBNP has not applied all of the elements of the INPO document to the conduct of it's DCRDR.
5. The PBNP Program Plan assessment methodology does not describe what criteria will be used to determine the accident related potential of an HED.
6. The assessment process does not appear to consider the aggregate effects of HEDs.
7. It appears that several of the criteria for determining the validity of an HED could remove HEDs from consideration for correction without adequate assessment.
8. It appears that a cost/benefit analysis may be used as the sole basis for determining whether some HEDs should be corrected.
9. An HED-by-HED approach to selection of design improvements may result in piecemeal improvement of the control room.
10. Mechanisms for verifying that selected design improvements will provide the necessary corrections and will not introduce new HEDs were not described.

In the staff's judgment, resolution of the above concerns would increase the likelihood that the requirements for the DCRDR will be met and increase the benefits of the DCRDR.

Several recommendations also resulted from the Program Plan review. The recommendations are not intended as additional requirements. They are intended to encourage the fullest possible benefit from the DCRDR. They do not appear to require major changes to the current organization and process of the DCRDR. Those recommendations are:

1. Inclusion of a specific methodology for documenting and analyzing repeated tasks in the SFRTA
2. To take the fullest advantage of mock-up techniques to refine the total correction package
3. Pretesting of the questionnaire
4. Development of a plan for analyzing open-ended responses
5. Development of protocols for conduct of semi-structured rather than structured interviews

Based on the review of the Program Plan, the staff plans an in-progress audit of the PBNP DCRDR. Appropriate arrangements will be made to perform the in-progress audit in the May 1985 time frame. A proposed topic agenda is provided with the attachment. An updated version of that agenda will be provided several weeks prior to the audit if needed.

REFERENCES

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

NUREG-0700, "Guidelines for Control Room Design Review," September 1981.

NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980; Supplement 1, December 1982.

NUREG-0800, "Standard Review Plan," Section 18.1, Rev. 0, September 1984.

NUREG-0801, "Evaluation Criteria for Detailed Control Room Design Reviews," October 1981, draft report.

NUREG-1000, "Generic Implications of ATWS Events at the Salem Nuclear Power Plant," April 1983.

Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events," July 8, 1983.

Letter from C.W. Fay to H.R. Denton. Subject "Submission of the Control Room Design Review Program Plan, Point Beach Nuclear Plant, Units 1 and 2,": July 31, 1984.

ATTACHMENT