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Docket Nos: 50-329
and 50-330

MAR 26 1982

Mr. James W. Cook
Vice President
Consumers Power Company
1945 West Parnall Road
Jackson, Michigan 49201

Dear Mr. Cook:

Subject: Review of the Midland Plant Control Room Design Program Plan

Enclosed for your information and action is a draft report containing the results of our review of the Midland Plant Control Room Design Review Program Plan which was submitted by Consumers Power Company on January 15, 1982.

The program plan documents your intention to perform a Detailed Control Room Design Review (DCRDR) to implement acceptable human factors corrective actions on a schedule to meet NRC's regulatory objectives. The program plan indicates that you intend to generally follow the guidance of NUREG-0700 and NUREG-0801. The enclosed report, prepared by the staff's consultant in this area, identifies those areas in the program plan that we feel need additional amplification. Even though this report is considered to be a draft report, we do not foresee major changes between it and the final version.

The Midland Safety Evaluation Report (SER) is scheduled to be issued in May 1982. The SER will discuss the status of the Midland control room design review and will contain an open item relating to completion of this review. Should you feel the need for additional meetings on this matter in Bethesda, you should contact the Licensing Project Manager.

Sincerely,

Original signed by
Robert L. Tedesco

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
As stated

cc: See next page

E FOR CONCURRENCE

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DATE	3/18/82	3/18/82	3/19/82	3/ /82			

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Vice President
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Jackson, Michigan 49201

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Subject: Review of the Midland Plant Control Room Design Program Plan

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The Midland Safety Evaluation Report (SER) will be issued in May 1982. This report will discuss the status of the Midland control room design review and will contain one composite outstanding open item relating to completion of this review. Your January 15, 1982, program plan estimated that the Midland control room will be 90% complete in October 1982. Should Consumers Power feel the need for additional meetings in Bethesda after we have finalized our review report, you should contact the Licensing Project Manager.

Sincerely,

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
As stated

cc: See next page

OFFICE	DL:LB #4	LA:DL:LB #4	DL:LB #4	AD:L/DL			
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DATE	3/18/82	3/18/82	3/19/82	3/ /82			

MIDLAND

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REVIEW OF THE MIDLAND PLANT
PLANT CONTROL ROOM DESIGN REVIEW PROGRAM PLAN

Description of DCRDR Program

The applicant began to plan and execute a program to review Midland's control panels early in 1980, prior to publication of NUREG-0700. A preliminary review called Phase 1 was commenced on February 1980 on Unit 2 and common panel (OC10). This preliminary review identified 1116 detailed HED's, which were subsequently categorized into 194 HED summaries. Phase 1 included construction of a full scale Unit 2 control room mockup which was used to complete a control room inventory, to conduct a preliminary control room survey, and to validate normal and emergency procedures with walkthroughs and talkthroughs.

Additional analyses that follow the DCRDR guidelines of NUREG-0700 will be performed in Phases 2 and 3 of the applicant's review. Phase 2 will complete the comprehensive task analysis, identify additional discrepancies, and perform validations remaining from Phase 1. Phase 3 will be devoted to the survey of all items that could not be accomplished in Phase 1 because of the incomplete construction status of the control room when the Phase 1 review was performed.

The assessment of reported HED's and the implementation of corrective actions will be coordinated with the completion of the Phase 2 and Phase 3 reviews. The completeness of the Phase 1 review will allow enhancements to begin immediately on the mockup for evaluation of corrective actions.

Detailed Analysis of Program Plan Sections

The following detailed comments identify areas of the applicant's Program Plan that deviate from the guidance provided in NUREG-0700 and NUREG-0801 or that are not described in sufficient detail in the submitted Plan to permit an adequate review.

The applicant's Program Plan for their detailed control room design review (DCRDR) was reviewed using the guidelines of Section 2 of the draft of NUREG-0801 that was published in October 1981.

The numbers without parentheses refer to the NUREG-0801 sections. The numbers inside parentheses refer to the section numbers used in the applicant's Program Plan submittal (i.e., xxx = NUREG-0801 section, and (Sec. yyy) = Applicant's Program Plan section).

2.1 - ACCEPTANCE GUIDELINES FOR THE LICENSEE'S DCRDR TEAM

2.1.1 - Team Composition and Qualifications.

(Sec. 2.2) The applicant is using the recommended multidisciplinary team approach to conduct the DCRDR. The DCRDR team includes a human factors specialist, a reactor operator,

and an instrumentation and control engineer as recommended in NUREG-0801, Section 2.1. Other disciplines and educational backgrounds suggested in NUREG-0801 are not specifically included in the the applicant's staffing plan.

The applicant's descriptions of the education and experience of team members are general. Specific qualifications of individual team members are vague.

The applicant's DCRDR team structure is not clearly defined. The core of the applicant's DCRDR team consists of a project director and 2 others who have engineering degrees and 4 to 10 years of experience. One of the engineers (the project director) is experienced in instrumentation and control, one is a systems engineer, and one is a shift technical advisor. A fourth member of the DCRDR team is a reactor operator with 13 years of Navy and PWR operating experience.

Human factors engineering support will be provided by consultants. The human factors director is an engineer with 10 years experience and is a candidate for an advanced degree in human factors/psychology. His role as a DCRDR team member is not well defined. The participation of additional human factors consultants also is not adequately described. The reviewers could not determine from the information provided if the human factors director is qualified as a human factors specialist or if the total human factors support is adequate.

The applicant states that additional people will be used as required. The NSS supplier (B&W) will be used to supply information on procedures and design information. The A/E will also be consulted. It is not clear whether these additional people will be participating members of the DCRDR team or will be independent sources of information for the team.

2.1.2 - Structure and Management of the Review Team

(Sec. 2.1) It is not clear whether the human factors consultant was involved in the project planning phase or whether he will share in the overall technical leadership of the entire project, as recommended in the NUREG-0801 guidance.

(Sec. 2.1) (Sec. 4) No schedule is provided showing how team members will be assigned to the various review procedures and tasks. It is not clear whether all team members will participate in most team activities as recommended.

2.1.3 - Team Responsibilities

(Sec. 4) The report implies, but does not specifically state, that the DCRDR team has full authority to gain access to any records, facilities, people, and equipment it feels is necessary to accomplish its purposes. It not clear whether the DCRDR team or individual team members will have freedom to document dissenting opinions.

2.1.4 - Team Orientation

There is no statement of intent to formally orient the team members in human factors and to provide them with guidance information as recommended in NUREG-0801.

2.2 - ACCEPTANCE GUIDELINES FOR THE DCRDR AND HED ASSESSMENT METHODOLOGY

(Sec. 5) The Plan states that proposed changes will be implemented on the control room mockup. A final assessment using shift teams, improved procedures, and real time walkthroughs will be used to evaluate and validate the final selection of procedures and corrective actions. Some followup verification and validation in the actual control room will be needed to confirm assessments and validations performed on the mockup.

(Sec. 4) There is no direct statement which describes how the selection and implementation of the best HED corrective actions will be kept independent of potential conflicts with construction schedules or original-designer influences. Neither is there a description of a formal process to resolve any conflicts which may occur.

2.3 - DCRDR SCHEDULE

(Sec. 2.1) The applicant's task phasing chart (Figure 4 in the Plan) describes the time schedule and integration of the major DCRDR, SPDS, and ATOG phases of the applicant's Plan. It does not break them into more detailed tasks within each phase or identify skills required for each task as is illustrated in the milestone chart of NUREG-0801, Exhibit 2.3

2.4 - DCRDR INFORMATION MANAGEMENT

(Sec. 3) The Plan indicates that the objectives of the guidelines can
(Sec. 4) be met by using a data system and data forms which are similar to those suggested in NUREG-0700, Section 3 and NUREG-0801, Appendix A. The examples given appear suitable for the applicant's DCRDR.

It is stated that the applicant will require any consultants to implement their own document data management procedures. It is not clear that the applicant's and their consultant's data

management procedures will be compatible or coordinated. Specific details are not included for either the applicant's or the consultant's systems.

(Sec. 3.3) It is implied, but not completely described, how the implementation of actual Control Room changes will be adequtely documented and scheduled, and how the systems will function to update plant documents and procedures as changes are made.

(Sec. 1.4) While the applicant's Program Plan states in Section 1.4 that
(Sec. 3) a final report will be submitted upon completion of Phase 3, no description of the final report and its contents or of DCRDR summary documentation is provided in the documentation section of the Plan.

Conclusions

The format and content of the Midland Program Plan indicate that the applicant is planning to perform a Detailed Control Room Design Review (DCRDR) to identify Human Engineering Deficiencies (HEDs) and to implement acceptable HED corrective actions on a schedule that will meet NRC regulatory objectives. Although the applicant's Plan is not exhaustively detailed, the Plan shows that the applicant will generally follow the guidance of NUREG-0700 and NUREG-0801.

The Review Plan, Review Procedures, and Assessment Procedures sections provided in the applicant's Midland Plant Control Room Design Review Program Plan conform to the intent of the DCRDR process and the guidelines of NUREG-0700 and NUREG-0801. The Documentation and Document Control section describes a good program for documentation while conducting the DCRDR but does not adequately define the summary documentation and final reports for the DCRDR. The Management and Staffing section is weak in identification of the exact composition of the DCRDR team, in describing the specific qualifications of DCRDR team members, and in describing the team responsibilities and authority to conduct and implement an objective DCRDR.

The applicant will use a mock-up of the control panels to facilitate the identification and evaluation of HEDs. The Program Plan describes processes for HED assessment and selection processes for enhancements and corrective actions which are essentially in accord with NUREG-0700, Section 4, guidance. The Plan states that proposed changes will be implemented on the control room mockup. A final assessment using shift teams, improved procedures, and real time walkthroughs will be used to evaluate and validate the final selection of procedures and corrective actions. Use of the mockup for evaluation and validation of HED corrective actions is a useful technique. Some followup verification and validation in the actual control room will be needed to confirm assessments and validations performed on the mockup.

The planned use of the mockup to validate corrective actions prior to the scheduled completion dates of Unit 2 (July 1983) and Unit 1 (December 1983) should allow time for the Control Room HED corrections to be implemented and validated before plant operation begins.

Based on our review, and pending the resolution of the deviations and deficiencies identified in the Detailed Analysis section of this report, the Midland Plant Control Room Design Review Program Plan describes a DCRDR program that should meet the objectives described in NUREG-0700 and NUREG-0801.