

JUN 10 1987

Docket Nos. 50-315
and 50-316

Mr. John Dolan, Vice President
Indiana and Michigan Electric Company
c/o American Electric Power Service Corporation
1 Riverside Plaza
Columbus, Ohio 43216

Dear Mr. Dolan:

By letters dated December 29, 1983 and December 30, 1986, the Indiana and Michigan Electric Company (IMEC) submitted information on the Detailed Control Room Design Review (DCRDR) for the Donald C. Cook Nuclear Plant, Units Nos. 1 and 2. As a result of our latest discussions and audit during February 24-26, 1987, the IMEC submitted more detailed completion schedules and other information requested during the audit. We have completed our review of the Cook information and schedules and find that the DCRDR activities of IMEC for D. C. Cook meet all the requirements of Supplement 1 to NUREG-0737.

For your information, our Safety Evaluation with the attached contractor's Technical Evaluation Report is enclosed.

Sincerely, *LS*

David L. Wigginton, Project Manager
Project Directorate III-3
Division of Reactor Projects

Enclosure:
As Stated

cc: See next page

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8706190254 870610
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P PDR

Office: LA/PDIII-3 PD/PDIII-3
Surname: *PKreutzer* DWigginton
Date: 06/11/87 06/10/87

Mr. John Dolan
Indiana and Michigan Electric Company

Donald C. Cook Nuclear Plant

cc:

Mr. M. P. Alexich
Vice President
Nuclear Operations
American Electric Power Service
Corporation
1 Riverside Plaza
Columbus, Ohio 43215

Region Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Attorney General
Department of Attorney General
525 West Ottawa Street
Lansing, Michigan 48913

J. Feinstein
American Electric Power
Service Corporation
1 Riverside Plaza
Columbus, Ohio 43216

Township Supervisor
Lake Township Hall
Post Office Box 818
Bridgeman, Michigan 49106

W. G. Smith, Jr., Plant Manager
Donald C. Cook Nuclear Plant
Post Office Box 458
Bridgman, Michigan 49106

U.S. Nuclear Regulatory Commission
Resident Inspectors Office
7700 Red Arrow Highway
Stevensville, Michigan 49127

Gerald Charnoff, Esquire
Shaw, Pittman, Potts and Trowbridge
2300 N Street, N.W.
Washington, DC 20037

Mayor, City of Bridgeman
Post Office Box 366
Bridgeman, Michigan 49106

Special Assistant to the Governor
Room 1 - State Capitol
Lansing, Michigan 48909

Nuclear Facilities and Environmental
Monitoring Section Office
Division of Radiological Health
Department of Public Health
3500 N. Logan Street
Post Office Box 30035
Lansing, Michigan 48909



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INDIANA AND MICHIGAN ELECTRIC COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT NOS.1 AND 2

DOCKET NOS. 50-315 AND 50-316

DETAILED CONTROL ROOM DESIGN REVIEW

BACKGROUND

By letter dated December 29, 1983, Indiana & Michigan Electric Company (IMEC) submitted its Program Plan (PP) for a Detailed Control Room Design Review (DCRDR) of the D.C. Cook Nuclear Power Plant, Units 1 and 2 (D.C. Cook). NRC staff comments on that plan were forwarded to IMEC by letter dated March 13, 1984, and the staff met with the licensee at the NRC on May 8, 1984, to discuss these comments.

IMEC submitted a Summary Report (SR) for the D.C. Cook DCRDR by letter dated December 30, 1986. The SR was reviewed by NRC consultants from Science Applications International Corporation (SAIC). The results of the staff and SAIC review of the licensee's SR indicated a need for additional information and recommended that a Pre-Implementation Audit (PIA) be conducted to obtain this information and resolve several concerns.

This audit was conducted during February 24-26, 1987. Subsequent to the audit, the licensee submitted a letter to the NRC, dated March 13, 1987, which provided more detailed completion schedules for control room modifications and other information requested during the audit. This letter satisfactorily resolves the staff's concerns.

DISCUSSION

The staff evaluation of the D.C. Cook DCRDR is provided below. This evaluation is based on all information available to date and is arranged in order of the DCRDR elements identified in Supplement 1 to NUREG-0737. The staff was assisted in its evaluation by SAIC. A copy of the SAIC Technical Evaluation Report (TER) is attached. The NRC staff agrees with the evaluations and conclusions as presented in the TER.

Establishment of a qualified multidisciplinary review team

Based on the licensee's Program Plan, SR, and discussions during the PIA, the staff concludes that IMEC established a qualified multidisciplinary review team and has, therefore, satisfied this requirement of Supplement 1 to NUREG-0737.

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P PDR

Function and task analyses to identify control room operators' tasks and information and control requirements during emergency operations

Based upon review of the function and task analyses results contained in the licensee's SR, discussions during the PIA, and the results provided in their submittal dated March 13, 1987, the staff finds: (1) that IMEC has identified the functions to be accomplished by operators in the main control room and remote shutdown areas under emergency operating conditions; and (2) that the licensee has defined the tasks which need to be performed for emergency operations and has analyzed them to identify the information, control, and display requirements and their pertinent characteristics. The licensee also confirmed during the audit that none of the problems reported in IE Information Notice 86-64 exist at D.C. Cook and, therefore, there is no impact on their task analysis. The staff, therefore, concludes that the licensee's function and task analyses are acceptable and satisfy the requirement of Supplement 1 to NUREG-0737.

Comparison of display and requirements with a control room inventory

Based upon the results presented in the licensee's SR and the additional information provided during the PIA and their March 13, 1987, submittal, the staff finds that the information, control and display requirements have been compared with the controls and displays available. The licensee identified 93 Human Engineering Discrepancies (HED's) and will be implementing design modifications for most of them. Missing or inappropriate controls and displays have been identified. In fact, numerous equipment will be added to the control boards covering seven missing parameters. The staff, therefore, concludes that IMEC has satisfied this requirement of Supplement 1 to NUREG-0737.

Control room survey to identify deviations from accepted human factors principles

Based on the licensee's PP and SR submittals and discussions during the PIA, the staff finds that the licensee has conducted a comprehensive control room survey which identified numerous deviations from accepted human factors principles and, therefore, concludes that the control room survey, including the remote shutdown panel, is acceptable and satisfies this requirement of Supplement 1 to NUREG-0737.

Assessment of HED's to determine which are significant and should be corrected

Based upon the results presented in the licensee's SR and the additional information provided during the PIA, the staff finds that the licensee has assessed the deviations from accepted human factors principles existing in the control room and at the remote shutdown panel and, therefore, concludes that IMEC has satisfied this requirement of Supplement 1 to NUREG-0737.

Selection of design improvements

Based upon the licensee's SR and the information provided during the PIA and in the licensee's March 13, 1987 submittal, the staff finds: (1) that modifications to correct significant HED's have been implemented or are planned to be implemented on an acceptable schedule; and (2) that acceptable justification has been provided for not correcting or only partially correcting some safety-significant HED's. Therefore, the staff concludes that IMEC has satisfied this requirement of Supplement 1 to NUREG-0737. It should be noted that the licensee has committed to fix over 50% of all identified HED's including numerous nonsafety-significant HED's.

Verification that selected improvements will provide the necessary correction and will not introduce new HED's

Based on the licensee's PP and SR submittals and discussions during the PIA, 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 additional HED's and, therefore, concludes that the IMEC verification program is acceptable and meets this requirement of Supplement 1 to NUREG-0737.

Coordination of control room improvements with changes from other programs such as the Safety Parameter Display System (SPDS), operator training, Reg. Guide 1.97 instrumentation and upgraded emergency operating procedures

Based on the PP and SR submittals and discussions during the PIA, the staff finds that the licensee has or will coordinate control room improvements with changes resulting from other improvement programs and, therefore, concludes that the IMEC coordination program is acceptable and meets this requirement of Supplement 1 to NUREG-0737.

In summary, the staff concludes that the DCRDR activities of IMEC for D.C. Cook meet all the requirements of Supplement 1 to NUREG-0737.

Attachment:
SAIC TER SAIC-87/3027

Principal Contributor: J.J. Kramer

Date: JUN 10 1987

EVALUATION OF
INDIANA & MICHIGAN ELECTRIC COMPANY'S
DETAILED CONTROL ROOM DESIGN REVIEW OF
D.C. COOK NUCLEAR PLANT UNITS 1 AND 2
TAC 51150/51151

Technical Evaluation Report

May 20, 1987



Science Applications International Corporation

Prepared for:

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Contract: NRC-03-82-096

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FOREWORD

This Technical Evaluation Report documents the findings from a review of the Indiana & Michigan Electric Company's (IMEC) Detailed Control Room Design Review (DCRDR) of its D.C. Cook Nuclear Plant Units 1 and 2. Science Applications International Corporation (SAIC) conducted the evaluation in support of the NRC under Contract NRC-03-82-096, Technical Assistance in Support of Reactor Licensing Actions: Program III. SAIC previously participated in the review of the licensee's Program Plan and in a meeting held in Bethesda, Maryland, with the licensee on May 8, 1984. The licensee submitted the Summary Report for D.C. Cook Units 1 and 2 on December 30, 1986. A review of this submittal indicated that a Pre-Implementation Audit of the DCRDR being conducted by IMEC at its D.C. Cook Nuclear Plant Units 1 and 2 was required. The Pre-Implementation Audit was conducted during the week of February 23, 1987, with the licensee and NRC representatives in attendance. Subsequent to the audit, the licensee submitted a letter to the NRC, dated March 13, 1987, providing the information requested at the audit. This evaluation report is based on the Summary Report, the subsequent Pre-Implementation Audit and letter to the NRC, and all previous information submitted to NRC concerning the D.C. Cook DCRDR.

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EVALUATION OF
INDIANA & MICHIGAN ELECTRIC COMPANY'S
DETAILED CONTROL ROOM DESIGN REVIEW OF
D.C. COOK NUCLEAR PLANT UNITS 1 AND 2

INTRODUCTION

This report documents the findings from an evaluation of Indiana & Michigan Electric Company's Detailed Control Room Design Review (DCRDR) of D.C. Cook Nuclear Plant Units 1 and 2. A DCRDR Program Plan was submitted to the Nuclear Regulatory Commission (NRC) on December 29, 1983 (Reference 1). NRC comments on the Program Plan were forwarded to the licensee on March 13, 1984 (Reference 2), and a meeting was held in Bethesda, Maryland, on May 8, 1984 to discuss the comments. Subsequently, the licensee submitted a Summary Report (Reference 3) dated December 30, 1986. Based on a preliminary review of this submittal, conducted by Science Applications International Corporation (SAIC), the NRC recommended a Pre-Implementation Audit to clarify the Human Engineering Discrepancy (HED) assessment process and to determine the adequacy of proposed design improvements and the justifications for leaving HEDs uncorrected. The Pre-Implementation Audit was conducted on February 24-26, 1987 (Appendix A contains a list of attendees). The NRC audit team consisted of a representative of the NRC Staff, a representative of SAIC, and a representative of SAIC's subcontractor, the COMEX Corporation. Subsequent to the audit, the licensee submitted a letter to the NRC, dated March 13, 1987 (Reference 4), providing the information requested at the audit. This report reflects the consolidated observations, findings, and conclusions of the review team.

1. Establishment of a Qualified, Multidisciplinary Review Team

It is the review team's judgment that the licensee has established a multidisciplinary and qualified review team as required by NUREG-0737, Supplement 1 (Reference 5). In response to previous NRC comments, the licensee has paid particular attention to augmenting the level of participation of the human factor specialist (HFS) in the assessment and implementation phases of the DCRDR program.

2. System Function and Task Analysis

The licensee has performed a System Function and Task Analysis (SFTA) that was based on the generic Westinghouse Owners' Group (WOG) Emergency Response Guidelines (ERGs) and supplemented it with plant-specific Emergency Operating Procedures (EOPs). A review of the Summary Report indicates that the licensee has provided adequate information detailing a process for developing information and control requirements, identifying information and control characteristics independent of the existing control room, and incorporating differences between generic and plant-specific information into the task analysis. Based on the information provided, it is the review team's judgment that the licensee has successfully met this requirement of Supplement 1 to NUREG-0737. IE Information Notice No. 86-64, dated August 14, 1986 (Reference 6), indicates that many utilities may not have appropriately developed or implemented upgraded EOPs. The licensee stated during the audit that problems with EOPs identified in this Information Notice are not applicable to D.C. Cook Units 1 and 2 and, thus, the SFTA was not affected by these problems.

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

According to the Summary Report, the licensee conducted a control room inventory. The licensee compared the information and control requirements and their associated characteristics established during the SFTA to the information gathered during the inventory. This comparison was performed during the verification and validation (V&V) phase of the licensee's DCRDR program.

In order to confirm that the process was adequate, the audit team traced the identification of an HED through the paper trail, beginning with the EOPs. The HED selected was No. V1-16, "No steam generator pressure recorders in the control room." For each EOP step, the operator function(s) that the step supported were identified. Next, operator actions necessary to implement each EOP step were identified. Finally, the instrumentation and control requirements necessary to perform the operator actions were defined and compiled in Instrumentation Requirements Tables and Control/Indication Requirements Tables, respectively. Using these requirements

tables, the review team was able to compare the needed characteristics to the control room inventory and control board mock-up, thus generating HEDs from the mismatches. Based on the documentation reviewed, the process was deemed thorough and accurate.

Also, during the V&V phase, the licensee conducted a validation of the control room functions using walk-through and talk-through techniques. This V&V effort resulted in the identification of 93 HEDs. Based on the information provided, the review team concluded that the licensee has met this requirement of NUREG-0737, Supplement 1.

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

A control room survey was conducted as part of the DCRDR program at D.C. Cook. Based on NUREG-0700 guidelines (Reference 7), a static survey of the control room and operator interviews were conducted as part of the survey effort. All identified deviations from the guidelines were recorded as checklist observations (CLOs), and most were later converted to HEDs. A review of the Summary Report indicated that the control room survey, which resulted in the identification of 257 CLOs, was complete and thorough.

In order to verify the thoroughness and accuracy of D.C. Cook's survey, the audit team conducted a sample survey in the control room. In particular, the audit team needed to check the area of control-display integration, which was not specifically addressed in D.C. Cook's survey but, instead, was covered in the validation activity. The sample survey was conducted in the Unit 1 control room since fewer design improvements had been implemented in Unit 1. As a result of the sample survey, the audit team identified several potential HEDs and presented them to the licensee. The licensee had previously identified all except two of these HEDs. The licensee explained that these two HEDs did not exist when D.C. Cook conducted its survey, and committed to evaluating both of them. These HEDs are :

- o Turbine control knob on Delta Temp/Steam Dump/Unit Panel has a handwritten scale taped around it.

- o "Seismic-qualified" shades implemented above several meters to reduce glare; shades cause shadowing problems resulting in difficulty reading the shadowed portions of the meter.

In conclusion, the licensee conducted a control room survey using NUREG-0700 guidelines. Although a sample survey conducted by the audit team identified two HEDs not found in D.C. Cook's survey, the audit team found the process and overall results to be adequate. Furthermore, the licensee committed to evaluating these HEDs. Based on the information provided in the Summary Report and obtained during the Pre-Implementation Audit, the NRC review team determined that a complete control room survey that satisfies this requirement of Supplement 1 to NUREG-0737 has been conducted.

The licensee indicated at the audit that the hot shutdown panel was also surveyed, using the guidance contained in NUREG-0700, even though such a survey was not explicitly required in Supplement 1 to NUREG-0737.

5. Assessment of HEDs

The licensee assessed the HEDs identified during the review phase of the DCRDR program. As noted above, all guideline deviations were recorded as CLOs rather than as actual HEDs. This approach raised concern during the review of the licensee's Program Plan. In the Summary Report, the licensee indicated that all CLOs were treated as HEDs and were assessed accordingly, except for those that were found to have resulted from a misinterpretation of the guidelines or a duplication of another HED. A review of the assessment process indicated that only a few (14 out of 387) CLOs were not considered HEDs due to the above reasons.

Each HED was assessed for its potential for error (PFE) and consequence of error (COE) and then was ranked high, medium, or low, based on these factors. The criteria used to assess the PFE and COE were based on the probability of committing the error and the impact on plant and public safety, and were listed in Tables 5.1 and 5.2 of the Summary Report, respectively. A review of these criteria indicated that they are appropriate for this assessment process.

However, a concern regarding the PFE and COE ranking process resulted from the review of the Summary Report. It appeared that there were no real guidelines for relating criteria being violated to the ranking scale of high, medium, or low. At the audit, the licensee indicated that, regarding the PFE assessment, there was, in fact, no specific guideline for relating the criteria to the ranking scale. All six PFE criteria were important; thus it was difficult to rank the criteria in terms of importance. Instead, the ranking for PFE was reached by consensus. As for the COE assessment, a general rank ordering of the criteria was possible. For example, if one of the first four criteria were violated, the HED received a high ranking for COE. Again, the ranking was reached by consensus. This explanation adequately resolved the issue.

Once the HED had been assessed, it was categorized (as Cat. I, II, III, IV) according to a combination of PFE and COE ranking. A review of the categorization process indicated that it was adequate. It was also noted that the licensee considered the cumulative or interactive effects of HEDs during the assessment process.

In conclusion, the review team received ample clarification to resolve concern over the method used to assess the safety significance of HEDs. The criteria and process applied were thorough and rigorous and resulted in identification of the most serious HEDs. Thus, it was concluded that this requirement of Supplement 1 to NUREG-0737 has been satisfied.

6. Selection of Design Improvements

The licensee provided information during the audit on the process used to select design improvements for HEDs identified during the review phase of the DCRDR. After the assessment of the HEDs, the assessment team (AT) developed solutions for the HEDs using enhancement techniques such as demarcation, mimics, or color coding, and engineering panel modifications. The potential HED solutions were developed and tested on a full-scale photomosaic mock-up of the control room that was available to the licensee's review team. This approach was used until the best overall solutions were achieved.

With regard to the disposition of the HEDs, the licensee employed an iterative process that involved both the AT and the project review team (PRT), representing management. The AT developed HED solutions and submitted them to the PRT for review. The PRT made the decision as to whether the resolutions should be used as recommended. If the resolution was rejected, it was returned to the AT for further consideration. The AT then reached a consensus to either concur with the management position, to reiterate the original resolution, or to develop an alternative solution.

This iterative process helped increase the role of the DCRDR review team in the HED disposition decision-making process.

Extensive discussions were held during the Pre-Implementation Audit to clarify HED corrective actions and justifications for no or partial corrective actions. The discussion encompassed a list of HEDs outlined in SAIC's preliminary evaluation of the licensee's DCRDR Summary Report. All questions were answered by the licensee, and through its clarification the NRC audit team concurred with the licensee's response for corrective action or the explanation for not providing a design solution on all but three items.

The first of these items concerned HED No. 1.3-8 which described the lack of written instructions for operator-protective equipment. The licensee stated that, because operators receive radiological retraining twice a year and practice dressing out frequently, there is no need to post written instructions. While the audit team accepted this explanation for most protective equipment, it was decided that the licensee should post written instructions for the breathing apparatus.

The second item concerned HED No. 6.1-49, missing component labels. The licensee committed to correcting this deficiency and indicated that the labeling in Unit 2 has already been completed. However, the labeling fixes in Unit 1 may not be finished for several months. The audit team decided that in the interim, temporary labels should be implemented for missing component labels. The licensee committed to providing these labels promptly.

The final item concerned HED No. V1-21, which indicated that containment ambient temperature indication was not available in the control room. The licensee explained that containment ambient temperature indication is one of four means of detecting leakage and is not the primary means. However, it was determined that the method of determining ambient temperature from the many readings available was not defined. The licensee agreed to change the EOPs to specify how this temperature is to be determined.

The audit team and the licensee also discussed the schedule for implementation of HED corrective actions. The licensee answered most of the audit team's questions; however, the specific implementation schedule for Category I and II HEDs was not provided at the time of the audit. The licensee indicated that it would submit the requested schedule to the NRC.

While discussing the implementation schedule, the audit team pointed out that there will be a time when Unit 1 and Unit 2 control rooms are dissimilar due to the phased implementation schedule. Likewise, at some point in time the simulator will not be consistent with either control room. During this time, problems with negative transfer of training are possible. The audit team recommended that the licensee begin now to plan and develop a comprehensive training program in order to prevent or minimize negative transfer. The licensee committed to this.

Subsequent to the audit, the licensee submitted a letter to the NRC responding to the comments of the audit team. In the letter, the licensee confirmed that three open HEDs will be resolved as discussed at the audit. The licensee also indicated that the D.C. Cook Training Department is planning the development of a training and operator working schedule to minimize the impact of differences between the configurations of Unit 1, Unit 2, and the simulator. Finally, the licensee provided the specific implementation schedule for Category I, II, and III HEDs. A review of this schedule indicated that the dates proposed for correcting safety significant HEDs is acceptable. However, one inconsistency was noted between the supplementary information in the letter and the Summary Report. The Summary Report indicated that HED No. 6.1-7 was to be corrected; however, the letter indicated that no action was required. To resolve this discrepancy, a conference call was held on May 12, 1987 between the licensee and a

representative of both the NRC and SAIC. The licensee explained that further analysis after submittal of the Summary Report revealed that corrective action was not necessary. The reviewers found the licensee's explanation and justification for no corrective action to be acceptable.

Based on the information provided in the Summary Report and supplemental letter and obtained during the Pre-Implementation Audit and conference call, it was concluded that the licensee has met the selection of design improvements requirement of Supplement 1 to NUREG-0737.

7. Verification That Selected Improvements Will Provide the Necessary Correction

As mentioned above, the solutions for HEDs were developed and tried on the full-scale photomosaic of the control room available to the AT. During this selection process, all potential design improvements for HEDs were fully analyzed and criticized before the best solutions were obtained. This "run and try" process also entailed a verification that the solutions proposed would correct the existing HEDs and would not introduce new HEDs. The guidelines used for this verification effort were those of NUREG-0700. Additionally, a D.C. Cook operating crew was invited to review the mocked-up HED resolutions and was solicited for comments. When appropriate, the operator inputs were incorporated into the final HED resolution recommended for implementation. Based on this information, the review team concluded that the licensee has implemented a process for verifying that selected improvements will provide the corrections necessary to meet the requirements of NUREG-0737, Supplement 1.

8. Verification That Selected Improvements Will Not Introduce New HEDs

Based on the information described above, the review team concluded that the licensee has met 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 (SPDS), Operator Training, Reg. Guide 1.97 Instrumentation, and Upgraded Emergency Operating Procedures (EOPs)**

The licensee provided information during the audit detailing the interaction between the DCRDR project and other control room upgrade programs, such as the upgrade of EOPs, SPDS, Reg. Guide 1.97 instrumentation, and the Emergency Operating Facility. Based on this information, the licensee has established a process that meets the NUREG-0737, Supplement 1 requirement for integration of the DCRDR with other upgrade programs.

CONCLUSION

An evaluation has been conducted of the DCRDR Summary Report for Indiana & Michigan Electric Company's D.C. Cook Nuclear Plant Units 1 and 2. As part of the evaluation, a Pre-Implementation Audit was conducted at D.C. Cook. The audit afforded the licensee an opportunity to respond to questions and concerns that had been raised in SAIC's preliminary review of the Summary Report. As a result of extensive discussions and review of documentation, the NRC review team concluded that the licensee has accomplished a thorough and effective DCRDR resulting in numerous modifications and improvements to its control room. SAIC concludes that the licensee has satisfied all the DCRDR requirements of Supplement 1 to NUREG-0737.

1. The licensee has established a multidisciplinary and qualified review team that meets the requirement of Supplement 1 to NUREG-0737.
2. The licensee performed a system function and task analysis that meets the requirement of Supplement 1 to NUREG-0737.
3. The licensee performed a comparison of display and control requirements to a control room inventory that meets the Supplement 1 to NUREG-0737 requirement.
4. The licensee conducted a complete control room survey that satisfies the requirement of Supplement 1 to NUREG-0737.

5. The licensee performed an assessment of HEDs identified during the review phase of the DCRDR program that satisfies the requirement of Supplement 1 to NUREG-0737.
6. The licensee implemented a process for selecting design improvements that satisfies the Supplement 1 to NUREG-0737 requirement.
7. The licensee implemented a process for verifying that selected improvements will provide the modifications necessary to correct the HEDs that meets the Supplement 1 to NUREG-0737 requirement.
8. The licensee implemented a process for verifying that selected improvements will not introduce new HEDs that meets the requirement of Supplement 1 to NUREG-0737.
9. The licensee established a process for integrating the DCRDR program with other upgrade programs that meets the requirement of Supplement 1 to NUREG-0737.

REFERENCES

1. Program Plan Report for a Detailed Control Room Design Review for the Indiana & Michigan Electric Company, Donald C. Cook Nuclear Power Plant Units 1 and 2, December 29, 1983.
2. NRC Staff Comments on the Donald C. Cook Nuclear Power Plant Units 1 and 2, Detailed Control Room Design Review Plan, March 13, 1984.
3. D.C. Cook Nuclear Plant Units 1 and 2, Detailed Control Room Design Review Summary Report, December 30, 1986.
4. Detailed Control Room Design Review Audit Response Letter, Donald C. Cook Nuclear Plant Unit Nos. 1 and 2, March 13, 1987.
5. NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements - Requirements for Emergency Response Capability (Generic Letter No. 82-33)," December 17, 1982.
6. IE Information Notice No. 86-64, "Deficiencies in Upgrade Programs for Plant Emergency Operating Procedures," August 14, 1986.
7. NUREG-0700, Guidelines for Control Room Design Reviews. U.S. Nuclear Regulatory Commission, 1981.

APPENDIX A

DCRDR AUDIT MEETING ATTENDEES

February 24, 1987

<u>Name</u>	<u>Position</u>	<u>Affiliation</u>
Jim Feinstein	Manager, NS&L	AEPSC
Russ Stephens	Production Supv. Engr.	D.C. Cook
David N. Turnberg	Sr. Eng. EGS-N	AEPSC
James A. Schlunt	Eng, EGS-N	AEPSC
Robert G. Orendi	Sr. Engr.	Westinghouse
R.F. Shoemaker	Sr. Engr.	AEPSC
R.F. Kroeger	Manager, QA	AEPSC
K.J. Toth	NS&L	AEPSC
Joel Kramer	DCRDR Team Leader	USNRC
Bethany H. Drum	NRC HF Contractor	USNRC/SAIC
Whitney Hansen	Ops Contractor	USNRC/SAIC/Comex
Milton Alexich	VP Nuclear Ops	AEPSC
Allen Elliff	Dir., Industrial Services Div.	Essex
T.J. Voss	Dir., Process Control Sys.	Essex
John C. Jeffrey	Manager, I&C	AEPSC