



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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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.



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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

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Date: JUN 10 1987