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

August 14, 1984

Docket No. 50-219
LS05-84-08-016

Mr. P. B. Fiedler
Vice President and Director
Oyster Creek Nuclear Generating Station
Post Office Box 388
Forked River, New Jersey 08731

Dear Mr. Fiedler:

SUBJECT: DETAILED CONTROL ROOM DESIGN REVIEW - SUPPLEMENT 1, NUREG-0737

Re: Oyster Creek Nuclear Generating Station

GPU Nuclear Corporation (GPU) is required by Supplement 1 to NUREG-0737 to conduct a Detailed Control Room Design Review (DCRDR) for the Oyster Creek Nuclear Generating Station in accordance with a schedule negotiated with the NRC. The staff has now completed its evaluation of the Oyster Creek DCRDR Summary Report submitted April 30, 1984, and based on this review has determined that GPU has demonstrated a commitment to meet the DCRDR requirements of Supplement 1 to NUREG-0737. However, the summary report lacks sufficient detail in describing the methodologies, processes, and procedures used in conducting the DCRDR which prevents the staff from making a complete assessment of GPU's efforts. A Technical Evaluation Report (TER) prepared by our contractor, SAI, which addresses all of the inadequacies of the GPU DCRDR summary report is being transmitted to you as an attachment to the Safety Evaluation Report (SER) contained in the Enclosure. The technical positions and conclusions stated in the TER have been adopted by the NRC staff.

The additional information required by the staff to complete its evaluation of the Oyster Creek DCRDR is identified in the enclosed SER and attachment. In order to expedite completion of our evaluation, the staff plans to conduct an on-site preimplementation audit of the GPU DCRDR program anytime after September 24, 1984. Your assigned NRC project manager will coordinate plans for the on-site visit.

For the audit, the staff requests the following: (1) that GPU arrange to have personnel, who participated and contributed significantly to the conduct of the DCRDR, present during the audit and, (2) that GPU have prepared written responses to all of the items identified in the SER and attachment.

DSU use Code
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The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by

Walter A. Paulson, Acting Chief
Operating Reactors Branch #5
Division of Licensing

Enclosure:
As stated

cc w/enclosure
See next page

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ENCLOSURE 1

HUMAN FACTORS ENGINEERING BRANCH

DETAILED CONTROL ROOM DESIGN REVIEW

SAFETY EVALUATION REPORT

FOR

OYSTER CREEK NUCLEAR GENERATING STATION

POSITION

Item I.D.1, "Control Room Design Reviews," of Task I.D, "Control Room Design," of the Nuclear Regulatory Commission (NRC) Action Plan developed as a result of the TMI-2 accident (NUREG-0660), states that operating 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 or cope with accidents if they occur by improving the information provided to them. Supplement 1 to NUREG-0737, dated December 17, 1982, confirmed and clarified the DCRDR requirement in NUREG-0660. As a result of Supplement 1 to NUREG-0737, each applicant or licensee is required to conduct their DCRDR on a schedule negotiated with the NRC.

BACKGROUND

NUREG-0700 describes four phases of the DCRDR to be performed by the applicant and licensee. The phases are:

1. Planning

2. Review

3. Assessment and implementation, and

4. Reporting.

NUREG-0801, Draft "Evaluation Criteria for Detailed Control Room Design Review," provides the necessary criteria for evaluating each phase.

As a requirement of Supplement 1 to NUREG-0737, the applicants and licensees are required to submit a program plan that describes 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 HEDs 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, and

9. Coordination of control room improvements with changes from other programs such as SPDS, operator training, Reg. Guide 1.97 instrumentation, and upgrade of emergency operating procedures.

The NRC requires each applicant and licensee to submit a summary report at the end of the DCRDR. The report should describe the proposed control room changes, implementation schedules, and provide justification for leaving safety significant HEDs uncorrected or partially corrected.

The NRC will evaluate the organization, process, and results of each DCRDR. The evaluation of the applicant's and licensee's DCRDR efforts will consist of the following, as described in NUREG-0801:

1. An evaluation of the program plan report submitted by the licensee/applicant

2. A visit to some of the plant sites to audit the progress of the DCRDR programs

3. An evaluation of the licensee/applicant DCRDR summary report

4. A possible preimplementation audit, and

5. The preparation of a Safety Evaluation Report (SER) that will present the results of the NRC evaluation.

Significant HEDs should be corrected. Improvements which can be accomplished with an enhancement program without interfering with operation of the plant should be done promptly.

DISCUSSION

General Public Utilities (GPU) submitted a Summary Report on the Oyster Creek Control Room Design Review dated April 30, 1984. The NRC and its Technical Assistance Contractor, SAI, reviewed the summary report against the requirements of Supplement 1 to NUREG-0737 and the guidance contained in NUREG-0700 and draft NUREG-0801.

The summary report submitted for evaluation by GPU Nuclear describes completed tasks and findings from its control room design review which was initiated in late 1980 at Oyster Creek prior to issuance of DCRDR requirements

contained in Supplement 1 to NUREG-0737 and the guidance provided in NUREG-0700 and draft NUREG-0801. A Control room mockup was constructed and in early 1981 guidelines and objectives were formulated to provide a framework for the control room design review. A major review of the alarm system was undertaken and other planned modifications affecting plant controls and displays were subjected to human factors evaluation. Review of the control room as a whole was conducted between 1982-1983 and included preparation of a program plan and analysis of tasks associated with executing symptom-oriented emergency operating procedures.

DCRDR EVALUATION

The evaluation of the Oyster Creek DCRDR as presented in the Technical Evaluation Report (TER) prepared by SAI dated July 2, 1984, and based on reviews of GPU's program plan and summary report has been adopted by the NRC. The TER is an attachment to this SER.

CONCLUSION

GPU Nuclear's Summary Report for the DCRDR demonstrates a commitment towards meeting many of the requirements of Supplement 1 to NUREG-0737. The summary report submitted provides documentation and discussion relevant to the Review Team Organization and Structure, the Functions and Task Analysis, a Summary of Conclusions, and the Corrective Action Program or the manner in which

deficiencies are to be resolved. A table attached to the report contains a summary of the review findings classified according to the nature of the corrective action. GPU Nuclear has made reference to their program plan for the DCRDR for those areas of the review not discussed in the summary report.

Based on the documentation contained in both the summary report and the program plan, we conclude that the licensee has attempted to meet the DCRDR requirements specified in Supplement 1 to NUREG-0737. However, the lack of detail in describing the methodologies, processes and procedures used in meeting a majority of the requirements has prevented a complete assessment of the licensee's efforts. Requirements which were not adequately addressed include: 1) function and task analysis; 2) control room survey; 3) assessment of human engineering discrepancies (HEDs); 4) verification of improvements; and 5) coordination of improvements with other programs required by Supplement 1 to NUREG-0737. Because of the brevity of the licensee's discussion of each requirement in its summary report, including the disposition of HEDs, we conclude that additional information is required to establish that the requirements of Supplement 1 to NUREG-0737, for conducting a DCRDR, have been complied with. The additional information required by staff to complete its review of the Oyster Creek DCRDR is as follows:

- Identification of task assignments and levels of effort for DCRDR team members and supplemental staff.

- A description of the scope and procedures used for performing the operating experience review.

- A description of the purpose and content of the control room inventory.

- A description of the control room survey guidelines, procedures, sample checklists and data collection forms used.

- Identification of the scope of the function and task analysis; clarification of differences between the "first-cut" procedures and finalized EOPs; a description of the process used to identify plant-specific information and control needs and to establish the characteristics required of needed instruments and controls; a description of the auditable record that contains the data generated from the functions and task analysis.

- A description of the HED assessment process; the manner in which HEDs were assigned to categories; definition of importance categories to assess HED significance; and the rationale used for including safety significant HEDs in relatively low importance and scheduling categories.

- A description of the process used to select design improvements and to ensure the integration of design modifications/changes.

- A description of the process used to verify that design improvements will provide the necessary corrections without introducing new HEDs.

- A description of the system or the methodology used for coordinating the DCRDR with other improvement programs required by NUREG-0737.

- A description of the analysis used to develop proposed design changes and the justification for HEDs to be left uncorrected. (Various inadequacies with respect to proposed corrective actions, importance, and scheduling categories for certain HEDs, and justifications for HEDs left uncorrected are identified in the TER).

REFERENCES

1. "Summary Report on the Oyster Creek Control Room Design Review," GPU Nuclear, NRC Accession Number 8405150216, April 1984.

2. "Program Plan for the Control Room Human Factors Review at Oyster Creek Nuclear Generating Station," GPU Nuclear, June 1983.

3. NUREG-0660, Vol 1. "NRC Action Plan Developed as a Result of the TMI-2 Accident," U.S. Nuclear Regulatory Commission, May 1980, Revision 1, August 1980.

4. NUREG-0737, "Clarification of TMI Action Plan Requirements," U.S. Nuclear Regulatory Commission, November 1980.

5. NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements," U.S. Nuclear Regulatory Commission, December 1982.

6. NUREG0700, "Guidelines for Control Room Design Reviews," U.S, Nuclear Regulatory Commission, September 1981.

7. NUREG-0801 Draft, "Evaluation Criteria for Detailed Control Room Design Review," U.S. Nuclear Regulatory Commission, October 1981.

8. DCRDR Program Plan Acceptance Review for Oyster Creek Nuclear Generating Station, SAI, September 23, 1983.

9. Military Standard MIL-STD-1472B, Human Engineering Design Criteria for Military Systems Equipment and Facilities, Dept. of Defense, Washington, D.C., December 1974.

10. NRC Staff Review of the BWROG Control Room Survey Program (Generic Letter 83-18), April 19, 1983.

11. Memo to Voss Moore from S. Weiss, May 14, 1984. Subject: Meeting summary of task analysis requirements for the BWR Owners Group.

12. VanCott, H.P. and Kinkade, R.G., Editors, "Human Engineering Guide to Equipment Design," Revised Edition, Government Printing Office, 1972.

13. Woodson, W.G., and Conover, D.W., "Human Engineering Guide for Equipment Design," University of California Press, 1964.

14. Memorandum from William T. Russell to Gus C. Lainas, "Review of Oyster Creek Nuclear Generating Station Detailed Control Room Design Review Program Plan Submittal," February 1, 1984.