



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

DETAILED CONTROL ROOM DESIGN REVIEW

GPU NUCLEAR CORPORATION

JERSEY CENTRAL POWER AND LIGHT COMPANY

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

1.0 INTRODUCTION

On October 31, 1980, the NRC staff issued NUREG-0737 which incorporated in one document all TMI-related items approved by the Commission for implementation at that time. Supplement 1 to NUREG-0737, Requirements for Emergency Response Capability (NRC Generic Letter No. 82-33) dated December 17, 1983, provided additional clarification regarding the Detailed Control Room Design Reviews (DCRDR) as well as for the Safety Parameter Display Systems (SPDS), Regulatory Guide 1.97 (Revision 2), Emergency Response Facilities, Emergency Operating Procedures upgrade and Meteorological Data. As required by Supplement 1, the licensee submitted a DCRDR Program Plan and a DCRDR Summary Report.

By letter dated July 1, 1983, GPU Nuclear (the licensee) submitted its Program Plan for the human factors review of the control room at Oyster Creek Nuclear Generating Station (Oyster Creek). This program plan was reviewed by the staff. The staff issued its evaluation on the program plan in its Safety Evaluation dated February 6, 1984, concluding the program plan was acceptable.

By letters dated April 30, 1984, and April 8, 1985, the licensee submitted its Summary Report and its supplement on the Oyster Creek DCRDR. These submittals have been reviewed by the staff and its contractor. The staff requested by letter dated August 14, 1984, additional information (RAI) needed by the staff to complete its review of DCRDR. In order to expedite completion of the staff's review, the staff with its contractor conducted a pre-implementation audit of the licensee's DCRDR program. This audit was held on November 1-2, 1984, at the licensee's DCRDR contractor's place of business and on November 28, 1984, at the Oyster Creek site. These audits were held partially to help the licensee understand the staff's RAI of August 14, 1984.

8603100558 860227  
PDR ADOCK 05000219  
P PDR

## 2.0 DISCUSSION

Item I.D.1, "Control Room Design Reviews," of the Nuclear Regulatory Commission (NRC) Action Plan NUREG-0660 developed as a result of the TMI-2 accident states that operating licensees and applicants for operating licenses will be required to perform a DCRDR to identify and correct design discrepancies. The objective 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 confirmed and clarified the DCRDR requirement in NUREG-0660.

The DCRDR has the following elements:

1. Establishment of a qualified multidisciplinary review team
2. Function and task analysis 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
9. Coordination of control room improvements with changes from other programs such as SPDS, operator training, Regulatory Guide 1.97 instrumentation, and upgrade of emergency operating procedures (EOP).

Supplement 1 to NUREG-0737 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.

## 3.0 EVALUATION

As required by Supplement 1 to NUREG-0737, the licensee submitted for Oyster Creek its DCRDR Program Plan dated June 1983, its DCRDR Summary

Report in April 1984, and a supplement to the DCRDR Summary Report dated April 1985. The staff and its consultants have reviewed these submittals and have participated in a meeting on November 1-2, 1984, and an on-site audit at the Oyster Creek plant on November 28, 1984, to evaluate the licensee's DCRDR program. The staff's consultants from Science Applications International Corporation (SAIC) have prepared a Technical Evaluation Report (TER) which is attached to this SE. The NRC staff concurs with the technical evaluations and conclusions contained in the TER except for the conclusion that the application of Revision 3 of the BWR Owner's Group Emergency Procedure Guidelines (EPG) to the Oyster Creek control room must be submitted for review to the staff. The use of the phraseology "It appears that..." in the TER should be interpreted as a statement that the licensee meets the requirements.

The information discussed below which is needed by the staff to complete its evaluation of your DCRDR Summary Report was the subject of a meeting held in Bethesda, Maryland. The meeting minutes dated December 17, 1985, document in detail what is needed by the staff. Contrary to the conclusion stated in these meeting minutes that the licensee will submit the detailed results of its application of Revision 3 of the EPG to the Oyster Creek control room, the staff has concluded that this will not be required. The licensee must only document that it will apply Revision 3 of the EPG to the control room and submit at a later date samples of the task analysis data sheets described in the meeting minutes dated December 17, 1985, and a description of the HEDs, if any, that result from this application of the EPG and a schedule for the implementation of the HEDs. The staff concludes that its detailed review of the implementation of Revisions 1 and 2 of the EPG to Oyster Creek will be sufficient.

#### 4.0 CONCLUSION

The staff concludes that the licensee has satisfied the majority of the requirements needed for the satisfactory completion of a DCRDR for Oyster Creek. The evaluations of these elements of the DCRDR are summarized below. Additional information is provided in the attached TER.

##### Multidisciplinary Review Team

A qualified multidisciplinary team was established to conduct the DCRDR activities.

##### Control Room Inventory

The licensee has satisfactorily described the results of the comparison of the control room inventory with the display and control requirements identified in Revisions 1 and 2 of the EPG for the Oyster Creek control room.

##### Control Room Survey

A human factors survey of the control room was conducted in what appears to be a thorough manner. GPUN used guidelines which it derived from several sources. A control room survey was conducted as required by Supplement 1 to NUREG-0737.

### Assessment of Human Engineering Discrepancies

The process the licensee described to assess the significance of HEDs fulfills the requirements of Supplement 1 to NUREG-0737.

### Verification of Improvements

The licensee implemented an acceptable process to verify that improvements could be introduced into the control room without creating new HEDs.

### Coordination with Other Programs

Based on information provided at a meeting and in documents submitted, the licensee is satisfying the requirement to coordinate control room improvements with changes resulting from other improvement programs.

In order to satisfactorily complete the DCRDR required by Supplement 1 to NUREG-0737, the licensee must submit, for staff review and approval, a supplemental DCRDR Summary Report containing the information for the DCRDR elements described below.

### Function and Task Analysis

The licensee needs to provide written documentation of those processes it has described at meetings to determine information and controls required for emergency operations and their requisite characteristics during its implementation of Revisions 1 and 2 of the EPG.

### Control Room Inventory

The licensee shall compare the control room with the display and control requirements in Revision 3 of the EPG for the Oyster Creek control room to identify any additional instruments or controls required in the control room. At the completion of this comparison, the licensee will submit the description of the resulting HEDs, if any, and the schedule for their implementation.

### Selection of Design Improvements

The process implemented and criteria used by the licensee to select design improvements to resolve HEDs fulfill the requirement of NUREG-0737, Supplement 1. The licensee has corrected many identified HEDs. Some, however, have not been corrected at this time. The licensee should provide proposed modifications and/or implementation schedules for those HEDs listed below:

Group I: HED No. 1-16  
Group II: HED No. 21, 42, 49, 56, 66, 67, 69, 70, 71, 74, 75  
Group IV: HED No. 17, 37, 39, 43, 45, 58, 59, 60, 61, 62, 63, 64  
Group VI: HED No. 10, 12

In conclusion, the staff has reviewed the licensee's DCRDR activities to date and concludes that the greater majority of the DCRDR Program has been completed. With the acceptable completion of those remaining activities noted above, the licensee will have completed the requirements of Supplement 1 to NUREG-0737 for a DCRDR.

Principal Contributors: A. Ramey-Smith and J. Donohew.

Dated: February 27, 1986