

SAIC-89/1127

PREIMPLEMENTATION AUDIT REPORT FOR  
THE DETAILED CONTROL ROOM DESIGN REVIEW  
AT GEORGIA POWER COMPANY'S  
EDWIN I. HATCH NUCLEAR POWER PLANT, UNITS 1 AND 2  
APRIL 24 - 26, 1989

TAC NOS. 56129 and 56130

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## 1.0 INTRODUCTION

This report documents the findings of a preimplementation audit of the Georgia Power Company's Detailed Control Room Design Review (DCRDR) results at the Hatch Nuclear Power Plant, Units 1 and 2. The audit was conducted by the Nuclear Regulatory Commission (NRC) during a site visit between April 24 and April 26, 1989.

The purposes of the audit were:

- o To assess the licensee's progress toward completing the nine DCRDR requirements stated in NUREG-0737, Supplement 1 (Reference 1).
- o To discuss the licensee's plans and projected schedules for completing the DCRDR program at the Hatch Nuclear Power Plant, Units 1 and 2.

The audit agenda is provided in Attachment 1 to this report and a list of audit meeting participants is provided in Attachment 2. The licensee's presentation slides are provided in Attachment 3.

### 1.1 Background

The following is a chronological list of milestones in the Hatch Nuclear Power Plant, Units 1 and 2 DCRDR:

- 10/84 Program plan for conducting the DCRDR submitted to NRC by licensee (Reference 2)
- 12/86 DCRDR Summary Report submitted to NRC (Reference 3)

- 12/87 Final DCRDR Report submitted to NRC (Reference 4)
- 1989 Completion of lighting modifications
- 1990 Completion of surface enhancements on both units
- 1991 Completion of instrument regrouping designs, relocation and heating, ventilation and air conditioning modifications.

## 1.2 Audit Agenda and Participants

The licensee provided an opening summary of DCRDR program status, work in progress and work to be done (see Attachment 3). Thereafter, each of the nine DCRDR requirements of NUREG-0737, Supplement 1, were reviewed using the guidance provided in Section 18.1 of NUREG-0800, The Standard Review Plan (Reference 5) and NUREG-0700 Guidelines for Control Room Design Reviews (Reference 6). A technical discussion of findings was conducted with the licensee's DCRDR project team. In addition, the findings were summarized in a formal exit briefing given by the NRC audit team leader.

The audit team consisted of an NRC team leader, a Spanish Nuclear Regulatory Commission staff member, and an NRC contractor from Science Applications International Corporation (SAIC), representing the disciplines of human factors engineering, nuclear operations, and instrument and control systems engineering. The licensee team included members from several divisions within Georgia Power Company and representation from General Physics Corporation, the licensee's human factors engineering contractor.

## 2.0 EVALUATION

In the following sections the status of the Hatch Nuclear Power Plant, Units 1 and 2 DCRDR is evaluated with respect to each of the nine DCRDR requirements stated in NUREG-0737, Supplement 1.

### 2.1 Establishment of a Qualified Multidisciplinary Review Team

The organization for conduct of a successful DCRDR can vary widely but is expected to conform to some general criteria. Overall administrative

leadership should be provided by a utility employee, who should be given sufficient authority to ensure that the DCRDR team is able to carry out its mission. A core group of specialists in the fields of human factors engineering, nuclear operations, and engineering are expected to participate with assistance as required from personnel in other disciplines. Human factors expertise should be included in the staffing for most, if not all, technical tasks. Finally, the DCRDR team should receive an orientation briefing on DCRDR purpose and objectives which contributes to the success of the DCRDR. NUREG-0800, Section 18.1, Appendix A describes criteria for the multidisciplinary review team in more detail.

The DCRDR team was managed by a licensee representative. Human factors engineering contractor support was provided by General Physics Corporation. The DCRDR team consisted of individuals with expertise in the areas of instrumentation and control engineering, nuclear systems engineering, nuclear power plant operations, and human factors engineering. A control room design review organization chart is provided in Attachment 3.

It was the review team's judgment that the licensee met the NUREG-0737, Supplement 1 requirement for establishment of a qualified multidisciplinary review team.

## 2.2 System Function and Task Analysis

The purpose of the system function and task analysis is to identify the control room operator's tasks during emergency operations and to determine the information and control capabilities the operators need in the control room to perform those tasks. An acceptable process for conducting the task analysis is as follows:

1. Analyze the functions performed by systems in responding to transients and accidents in order to identify and describe those tasks operators are expected to perform.
2. For each task identified in Item 1 above, determine the information (e.g., parameter, value, and status) which signals the need to perform the task, the control capabilities needed to

perform the task, and the feedback information needed to monitor task performance.

3. Analyze the information and control capability needs identified in Item 2 above to determine appropriate characteristics for displays and control to satisfy those needs.

The licensee conducted a system function and task analysis that was based on plant specific emergency operating procedures that were derived from Revision 2 to the Boiling Water Reactor Owner's Group generic Emergency Procedures Guidelines. In addition, the DCRDR team conducted a function and task analysis of the plant specific event based emergency operating procedures that included the tasks identified in the Revision 3 to the Boiling Water Reactor Owner's Group Emergency Procedures Guidelines including, Radioactivity Release Control and Secondary Containment Control.

It was the review team's judgment that the licensee met the NUREG-0737, Supplement 1 requirement for a system function and task analysis.

### 2.3 Comparison of Display and Control Requirements with a Control Room Inventory

The purpose of comparing display and control requirements to a control room inventory is to determine the availability and suitability of displays and controls required to perform the emergency operating procedures. The success of this element depends on the quality of the function and task analysis and the control room inventory. The control room inventory should be a complete representation of displays and controls currently in the control room. The inventory should include appropriate characteristics of current displays and controls to allow meaningful comparison to the results of the function and task analysis. Unavailable or unsuitable displays and controls should be documented as human engineering discrepancies (HEDs).

The licensee's DCRDR team compared the operator information and control requirements identified during the task analysis to the actual control room to determine the availability and suitability of controls and displays. The availability and suitability findings were documented on task analysis

worksheets. In cases where instruments or controls were found to be unavailable or unsuitable, HEDs were written on HED forms.

In order to test the licensee's results, the audit team conducted a sample control room walkdown of the reactor pressure vessel control procedure to identify potential HEDs that should have been identified by the DCRDR team. The walkdown was conducted in Unit 2 because it had not been changed to reflect DCRDR modifications. Unit 1 already had many DCRDR modifications installed. The audit team identified about fifteen potential HEDs during the sample walkdown. The licensee was able to demonstrate that they had documented all but 2 of the HEDs identified by the audit team.

It was the review team's judgment that the licensee met the NUREG-0737, Supplement 1 requirement for a comparison of display and control requirements with a control room inventory.

#### 2.4 Control Room Survey

The key to a successful control room survey is a systematic comparison of the control room to accepted human engineering guidelines and human factors principles. One accepted set of human engineering guidelines is provided in NUREG-0700; however, other accepted human factors standards may be chosen. Discrepancies should be documented as HEDs.

The DCRDR team performed a control room survey utilizing NUREG-0700 guidelines. Also included in the program were HEDs identified during the 1981 survey utilizing the Boiling Water Reactor Owner's Group Guidelines. Each control room panel was reviewed against the criteria for each unit and each unit was compared against the other. The entire control room was surveyed.

It was the review team's judgment that the licensee met the NUREG-0737, Supplement 1 requirement for a control room survey.

#### 2.5 Assessment of Human Engineering Discrepancies (HEDs) to Determine Which Are Significant and Should Be Corrected

Based on the guidance of NUREG-0700 and the requirements of NUREG-0737, Supplement 1, all HEDs should be assessed for significance. The potential

for operator error and the consequence of that error in terms of plant safety should be systematically considered in the assessment. Both the individual and aggregate effects of HEDs should be considered. The result of the assessment process is a determination of which HEDs should be corrected because of their potential impact on plant safety. Decisions on whether HEDs are safety-significant should not be compromised by consideration of such issues as the means and potential costs of correcting HEDs.

The DCRDR team assessed all HEDs and categorized them according to safety significance and probability of occurrence. Items that received several HEDs were upgraded to a higher priority. The audit team reviewed the assessment of a sample set of HEDs and determined that the assessment was performed adequately.

It was the audit team's judgment that the licensee met the NUREG-0737, Supplement 1 requirement for an assessment of HEDs to determine which are significant and should be corrected.

## 2.6 Selection of Design Improvements

The purpose of selecting design improvements is to determine corrections to HEDs identified from the review phase of the DCRDR. Selection of design improvements should include a systematic process for the development and comparison of alternative means of resolving HEDs. Furthermore, according to NUREG-0737, Supplemental 1, the licensee should document all of the proposed control room changes.

The selection of DCRDR improvements at the Hatch Nuclear Power Plant, Units 1 and 2, has resulted in surface enhancements, design changes, procedure revisions, and training program modifications. The total number of HEDs to be corrected is approximately 530. In addition, the licensee provided justification for leaving approximately 230 HEDs uncorrected.

Approximately 68 panels were identified for surface enhancements on Unit 1, with 22 panels completed at the time of the audit. The same numbers were estimated for Unit 2. The implemented surface enhancements on Unit 1 were evaluated by the audit team and found to be acceptable.



Approximately 82 design changes for the overall program were required. Nine design changes were completed at the time of the audit.

Approximately 906 procedure changes were required as part of the overlay program. The overlay program refers to prefabricated enhancement overlays with labels attached before the overlay is applied to a panel. Many procedure changes were required by this effort because the licensee went to a verbatim match between procedures and panel labeling.

The only concern regarding the selection of design improvements, was schedule for correction of safety significant HEDs. The licensee was planning to correct HEDs on an integrated panel-by-panel basis. As a result, safety significant and non-safety significant HEDs will be corrected at the same time. However, the licensee had no breakdown of safety significant HEDs that will remain to be corrected after the first refueling outage.

In summary, it was the review team's judgment that the proposed and implemented DCRDR modifications were appropriate. However, the review team could not determine how many safety significant HEDs will remain after the first refueling outage in each unit. Therefore, the NUREG-0737, Supplement 1 requirement for selection of design improvements is unresolved until the licensee provides an HED correction schedule.

## 2.7 Verification that Selected Design Improvements Will Provide the Necessary Correction

A key criterion of DCRDR success is a consistent, coherent, and effective interface between the operator and the control room. This criterion may be met by effectively executing the processes of selection of design improvements, verification that selected improvements will provide the necessary correction, and verification that the improvements will not introduce new HEDs. According to NUREG-0800, techniques for the verification process might include resurveys of panels, applied experiments, engineering analyses, environmental surveys, and operator interviews. The consistency, coherence, and effectiveness of the entire operator-control room interface are important to operator performance. Thus, evaluation of

both the changed and unchanged portions of the control room is necessary during the verification process.

The changes resulting from DCRDR were reviewed by the architect engineer, Bechtel, to determine if the changes to correct the HEDs introduced new HEDs. In addition, the licensee developed a control room design standard that was used to verify that the modifications were implemented as designed.

It was the review team's judgment that the licensee met the NUREG-0737, Supplement 1 requirement for a verification that selected design improvements will provide the necessary correction.

## 2.8 Verification that the Improvements Will Not Introduce New HEDs

As discussed in Section 2.7 above, the licensee did have a formal process for verifying that the proposed improvements will not introduce new HEDs when implemented. Therefore, it was the review team's judgment that the licensee has met the NUREG-0737, Supplement 1 requirement for a verification that the improvements will not introduce new HEDs.

## 2.9 Coordination of Control Room Improvements With Changes from Other Programs, Such as the Safety Parameter Display System (SPDS), Operator Training, Regulatory Guide 1.97 Instrumentation, and Upgraded Emergency Operating Procedures

Improvement of emergency response capability requires coordination of the DCRDR with other activities. Satisfaction of Regulatory Guide 1.97 requirements and the addition of the SPDS necessitate modifications and additions to the control room. The modifications and additions should be specifically addressed by the DCRDR. Exactly how the modifications are addressed depends on a number of factors including the relative timing of the various emergency response capability upgrades. Regardless of the means of coordination, the result should be integration of Regulatory Guide 1.97 instrumentation and SPDS equipment into a consistent, coherent, and effective control room interface with the operators.

The SPDS was included in the 1985 survey and design modifications to the plant to determine if the SPDS was affected. Operator training and procedure revisions were provided prior to DCRDR modification implementation.

Regulatory Guide 1.97 instrumentation requirements have not been coordinated with the DCRDR. The licensee has verbally committed to investigate the need for integrating DCRDR results with Regulatory Guide 1.97 instrumentation requirements.

It was the review team's judgment that the licensee appropriately coordinated the SPDS, upgraded emergency operating procedures, and operator training with the DCRDR. However, this NUREG-0737, Supplement 1 requirement is unresolved pending the coordination of Regulatory Guide 1.97 instrumentation requirements with the DCRDR.

### 3.0 CONCLUSION

The conclusion of the April 24 through April 26, 1989 preimplementation audit of Georgia Power Company's Hatch Nuclear Power Plant, Units 1 and 2, DCRDR is that the licensee has, with two exceptions, completed an acceptable program. The two exceptions include Requirements 6 and 9. With regard to NUREG-0737, Supplement 1, DCRDR Requirement 6, the licensee should provide NRC with a list of safety significant HEDs, if any, that will remain after the first refueling outage. With regard to Requirement 9, the licensee should define how the DCRDR will be coordinated with the Regulatory Guide 1.97 instrumentation requirements.

#### 4.0 REFERENCES

1. NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements," U.S. Nuclear Regulatory Commission, December 22, 1982.
2. Edwin I. Hatch Nuclear Power Plant Units 1 and 2, Detailed Control Room Design Review Program Plan, Georgia Power Company, October 23, 1984.
3. Edwin I. Hatch Nuclear Power Plant Units 1 and 2, Detailed Control Room Design Review Summary Report and Implementation Schedule, Georgia Power Company, December 23, 1986.
4. Edwin I. Hatch Nuclear Power Plant Units 1 and 2, Detailed Control Room Design Review Final Report, Georgia Power Company, December 30, 1987.
5. NUREG-0800, "Standard Review Plan," Section 18.1, "Control Room," and Appendix A, "Evaluation Criteria for Detailed Control Room Design Review (DCRDR)," September 1984.
6. NUREG-0700, "Guidelines for Control Room Design Reviews," Nuclear Regulatory Commission, September 1981.

**ATTACHMENT 1**  
**AUDIT AGENDA**

**TENTATIVE AGENDA  
FOR  
DETAILED CONTROL ROOM DESIGN REVIEW PREIMPLEMENTATION AUDIT  
AT  
GEORGIA POWER COMPANY'S  
EDWIN I. HATCH NUCLEAR POWER PLANT, UNIT 1 AND 2**

**April 24-26, 1989**

**Day 1, Monday, April 24, 1989**

- 1:00 pm NRC entrance briefing
- 2:00 pm Corporate briefing on DCRDR Program
- 2:30 pm Control room walkdown of Reactor Pressure Vessel Control or Radioactivity Release Control procedure
- 4:00 pm Documentation of walkdown human engineering discrepancies
- 4:45 pm Presentation to licensee of human engineering discrepancies identified by audit team
- 5:00 pm End Day 1.

**Day 2, Tuesday, April 25, 1989**

- 8:30 am Walkdown of remote shutdown panel
- 9:30 am Review of proposed and implemented DCRDR modifications
- 12:00 Lunch
- 1:00 pm Review of the licensee's process for verifying that DCRDR modifications correct the original human engineering discrepancies and do not introduce new discrepancies
- 1:30 pm Review of schedules for DCRDR modification implementation
- 2:00 pm Licensee discussion of how audit team findings were identified in the DCRDR. (Comparison of information and control requirements to control room inventory or control room surveys)
- 3:00 pm NRC caucus
- 4:00 pm NRC and licensee technical issue discussion and resolution
- 5:00 pm End Day 2.

**Day 3, Wednesday, April 26, 1989**

- 8:30 am NRC/Georgia Power Company management exit briefing

**ATTACHMENT 2  
LIST OF AUDIT PARTICIPANTS**

NAMETITLE

Garmon West	NRC Team Leader
Rafael Cid	NRC/Spanish Nuclear Regulatory Commission
Joseph DeBor	NRC/SAIC
Dawn Wilson	Project Manager - Corporate
Dave Tennant	Former Project Manager
Lothar Schroeder	General Physics
Jerry Hanlon	General Electric
Jonn Yee	Bechtel Power
Dave Moman	Southern Company Services
Bill Klein	OCR Implementation
Jim Myers	DCR Implementation
Steve Russell	Procedures
A.W. Anthony	Operations
Steve Bethay	Licensing
Ken McElroy	Corporate
Steve Tipps	Nuclear Safety and Compliance
Steve Grantham	Training
John Lewis	Operations
Glenn Gosde	MGR Engineering and Support
Pierre Fornel	MGR Maintenance



**ATTACHMENT 3**  
**LICENSEE PRESENTATION SLIDES**

**DETAILED CONTROL ROOM DESIGN REVIEW  
(DCRDR)**

**OBJECTIVE:**

**TO MAKE THE CONTROL ROOM MORE  
FUNCTIONAL DURING EMERGENCY AND NORMAL  
OPERATIONS**

**TO COMPLY AS CLOSE AS POSSIBLE TO  
NUREG 0700 AND EPRI HUMAN FACTORS  
GUIDELINES**

**TO ASSURE THAT FUTURE CHANGES COMPLY  
WITH NUREG 0700 AND EPRI GUIDELINES**

## DETAILED CONTROL ROOM DESIGN REVIEW

### MAGNITUDE OF PROGRAM

APPROXIMATELY 906 PROCEDURE REVISIONS REQUIRED FOR UNIT 1 OVERLAY PROGRAM, THE SAME AMOUNT ARE EXPECTED TO BE REQUIRED FOR UNIT 2

APPROXIMATELY 82 DCR'S FOR THE OVERALL PROGRAM REQUIRED, 9 HAVE BEEN IMPLEMENTED TO DATE

APPROXIMATELY 68 PANELS IDENTIFIED FOR SURFACE ENHANCEMENTS ON UNIT 1, 22 HAVE BEEN COMPLETED, THE SAME AMOUNT ARE ESTIMATED TO BE REQUIRED FOR UNIT 2

SIMULATOR - MUST LOOK THE SAME AS MAIN CONTROL ROOM

TRAINING - OPERATORS UPDATED, TRAINING PROGRAM REVISED

ENVIRONMENT - LIGHTING, HVAC AND COMMUNICATIONS IMPROVED

ENGINEERING - DRAWINGS MUST BE REVISED

DOCUMENTATION - DCRDR METHODOLOGY AND PROGRAM MUST BE MAINTAINED

DESIGN PROCEDURES - REVISED TO REQUIRE HUMAN FACTORS REVIEW

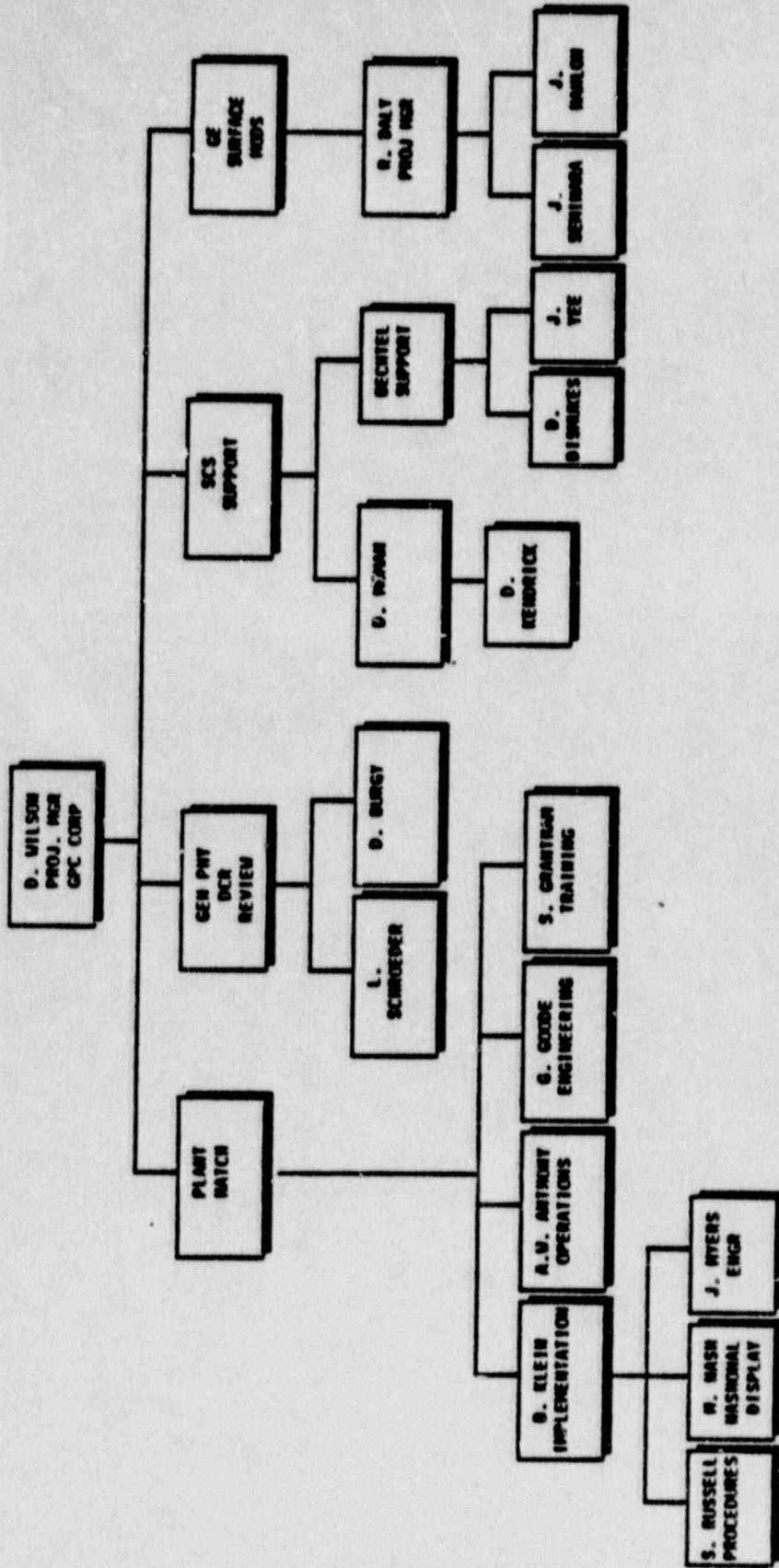
**DCRDR  
PROJECT OVERVIEW  
CONTROL ROOM SURVEY RESULTS**

**TWO CONTROL ROOM SURVEYS, THE FIRST USING BWROG GUIDELINES, THE SECOND USING NUREG 0700 GUIDELINES, DISCOVERED 760 PROBLEMS IN THE HATCH UNIT 1&2 CONTROL ROOM AND REMOTE SHUTDOWN PANELS.**

**THESE ARE BROKEN INTO THE FOLLOWING CATEGORIES:**

	<b>NO. OF HED'S</b>	<b>%</b>
<b>CORRECTED AFTER 1981 SURVEY</b>	<b>106</b>	<b>14</b>
<b>NO ACTION</b>	<b>230</b>	<b>30</b>
<b>SURFACE ENHANCEMENTS</b>	<b>289</b>	<b>38</b>
<b>INSTRUMENTATION</b>	<b>51</b>	<b>7</b>
<b>- PANEL REGROUPING</b>		
<b>- NEW &amp; RELOCATED</b>		
<b>ANNUNCIATORS</b>	<b>43</b>	<b>5</b>
<b>MISCELLANEOUS</b>	<b>29</b>	<b>4</b>
<b>TRAINING, ADMIN., etc.</b>	<b>22</b>	<b>2</b>
	<hr/>	<hr/>
<b>TOTALS</b>	<b>760</b>	<b>100</b>

CONTROL ROOM REVIEW - DCRRR  
ORGANIZATION CHART



# NUREG 0737 SUPPLEMENT 1

## SECTION 5.1

### REQUIREMENTS (b.1)

The establishment of a qualified multidisciplinary review team and a review program incorporating accepted human engineering principles.

### HATCH RESPONSE:

The Hatch DCRDR team consisted of individuals with expertise in the areas of instrumentation and control engineering, nuclear systems engineering, operations and human factors engineering. The review program utilized NUREG 0700 guidelines.

# NUREG 0737 SUPPLEMENT 1

## SECTION 5.1

### REQUIREMENTS (b.11)

The use of function and task analysis to identify control room operator tasks and information and control requirements during emergency operations.

### HATCH RESPONSE:

A task analysis was performed along with operator surveys. These surveys were performed during simulated emergency conditions.

# NUREG 0737 SUPPLEMENT 1

## SECTION 5.1

### REQUIREMENTS (b.111)

A comparison of the display and control requirements with a control room inventory to identify missing displays and controls.

### HATCH RESPONSE:

The operator information and control requirements identified during the task analysis were compared to the actual control room to determine the availability and suitability of control and displays. The availability and suitability is documented on the task analysis worksheets. An HED was written for any displays/controls which were determined to be unavailable or unsuitable.



# NUREG 0737 SUPPLEMENT 1

## SECTION 5.1

### REQUIREMENTS (b.iv)

A control room survey to identify deviations from accepted human factors principles. This survey will include an assessment of the control room layout, the usefulness of audible and visual alarm systems, the information recording and recall capability, and the control room environment.

### HATCH RESPONSE:

The DCRDR team performed a control room survey utilizing NUREG 0700 criteria. Also included in the program were the HED's identified in the 1981 survey utilizing the BWROG guidelines. Each panel was reviewed against the survey criteria for each unit and each unit compared against the other. The entire control room was surveyed for layout, lighting, HVAC and audible problems.

# NUREG 0737 SUPPLEMENT 1

## SECTION 5.1

### REQUIREMENTS (c)

Assess which Human Engineering Deficiencies (HED's) are significant and should be corrected. Select design improvements that will correct those discrepancies. Improvements that can be accomplished with an enhancement program should be done promptly.

### HATCH RESPONSE:

The survey team assessed all HED's and categorized them according to safety significance and probability of occurrence. Items which received several HED's were upgraded to a higher priority (also referred to as category). HED's that could be corrected with surface enhancements were identified and a surface enhancements program was initiated. The design for the surface enhancements is complete and modifications are currently being implemented.

# NUREG 0737 SUPPLEMENT 1

## SECTION 5.1

### REQUIREMENTS (d)

Verify that each selected design improvement will provide the necessary correction, and can be introduced in the control room without creating any unacceptable human engineering discrepancies because of significant contribution to increased risk, unreviewed safety questions, or situations in which a temporary reduction in safety could occur. Improvements that are introduced should be coordinated with changes resulting from other improvement programs such as SPDS, operator training, new instrumentation and upgraded emergency operating procedures.

# NUREG 0737 SUPPLEMENT 1

## SECTION 5.1

### HATCH RESPONSE (d):

HED's that were not previously corrected, scheduled to be corrected by the surface enhancements program, or insignificant were reviewed by the Architect Engineer to determine a course of action. This review included considerations for; required divisional separation, determining if new HED's result from proposed modifications and if the benefits outweigh the risks.

The SPDS system was included in the 1985 survey and design modifications to the plant include a review to determine if SPDS is affected. Operator training and procedure revisions are provided prior to modification implementation. The training department has been informed of the DCRDR program and been involved when required since its' initiation.

# DETAILED CONTROL ROOM DESIGN REVIEW

## MAJOR PROGRAM EVENTS

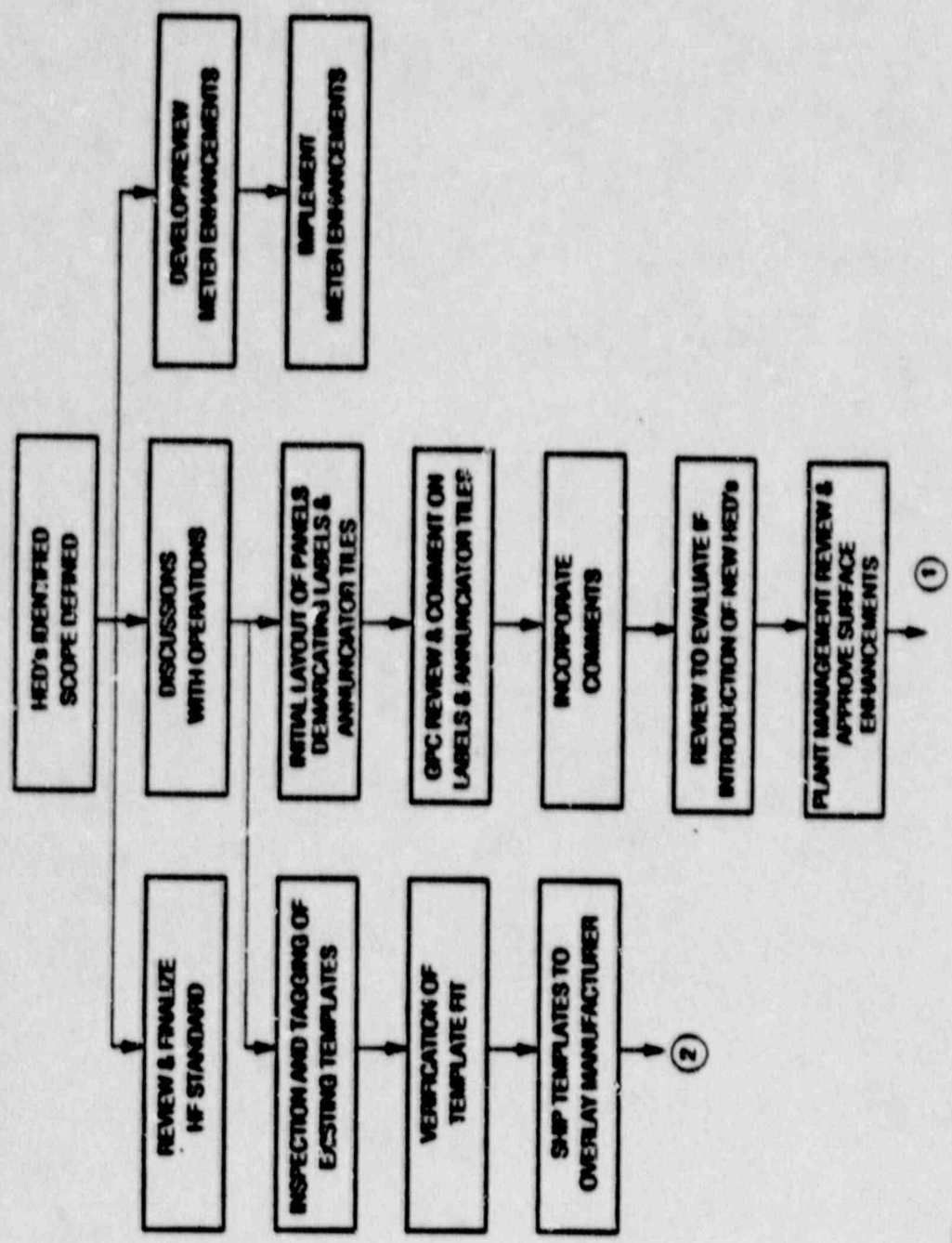
<u>EVENTS</u>	<u>STATUS</u>
PERFORM INITIAL CONTROL ROOM SURVEY	COMPLETE
FORM DCRDR MULTIDISCIPLINARY TEAM	COMPLETE
PERFORM CONTROL ROOM SURVEY - IDENTIFY HED'S	COMPLETE
PERFORM FUNCTION AND TASK ANALYSIS, OPERATOR INTERVIEWS	COMPLETE
CATEGORIZE HED'S, IDENTIFY HED'S TO BE CORRECTED BY SURFACE ENHANCEMENTS	COMPLETE
SURFACE ENHANCEMENTS DESIGN (GENERAL ELECTRIC)	COMPLETE

# DETAILED CONTROL ROOM DESIGN REVIEW

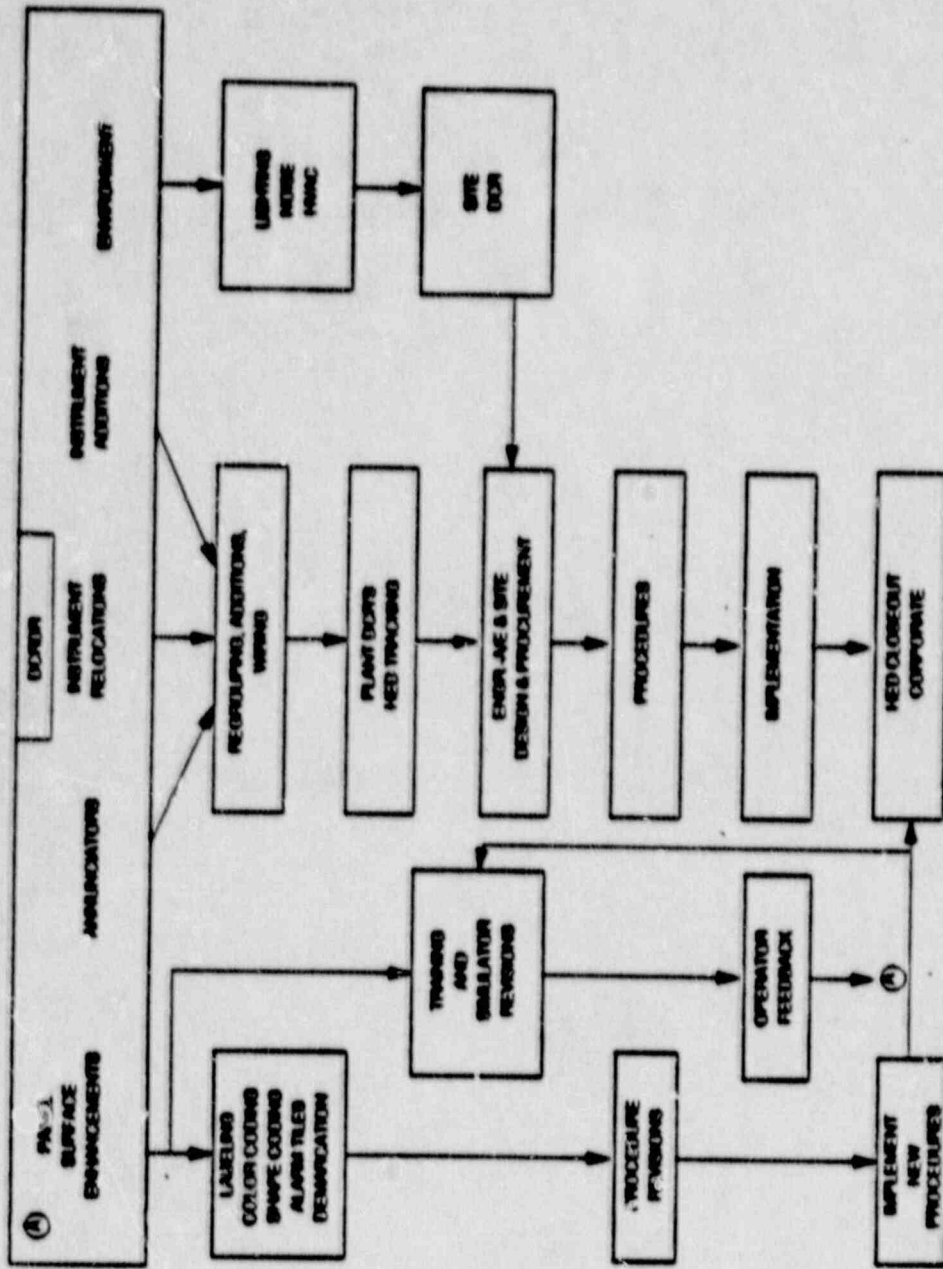
## MAJOR PROGRAM EVENTS

<u>EVENTS</u>	<u>STATUS</u>
SUBMIT SUMMARY REPORT TO NRC	COMPLETE
PERFORM ENGINEERING STUDY TO DETERMINE COURSE OF ACTION FOR NON SURFACE ENHANCEMENT HED'S (SCS)	COMPLETE
SUBMIT FINAL REPORT TO NRC	COMPLETE
IMPLEMENT SURFACE ENHANCEMENTS	1988-1990
DESIGN INSTRUMENT REGROUPING, RELOCATIONS AND HVAC MODIFICATIONS	1988-1991
IMPLEMENT INSTRUMENT REGROUPING, RELOCATION AND HVAC MODIFICATIONS	1988-1992
COMPLETE LIGHTING MODIFICATIONS	1989

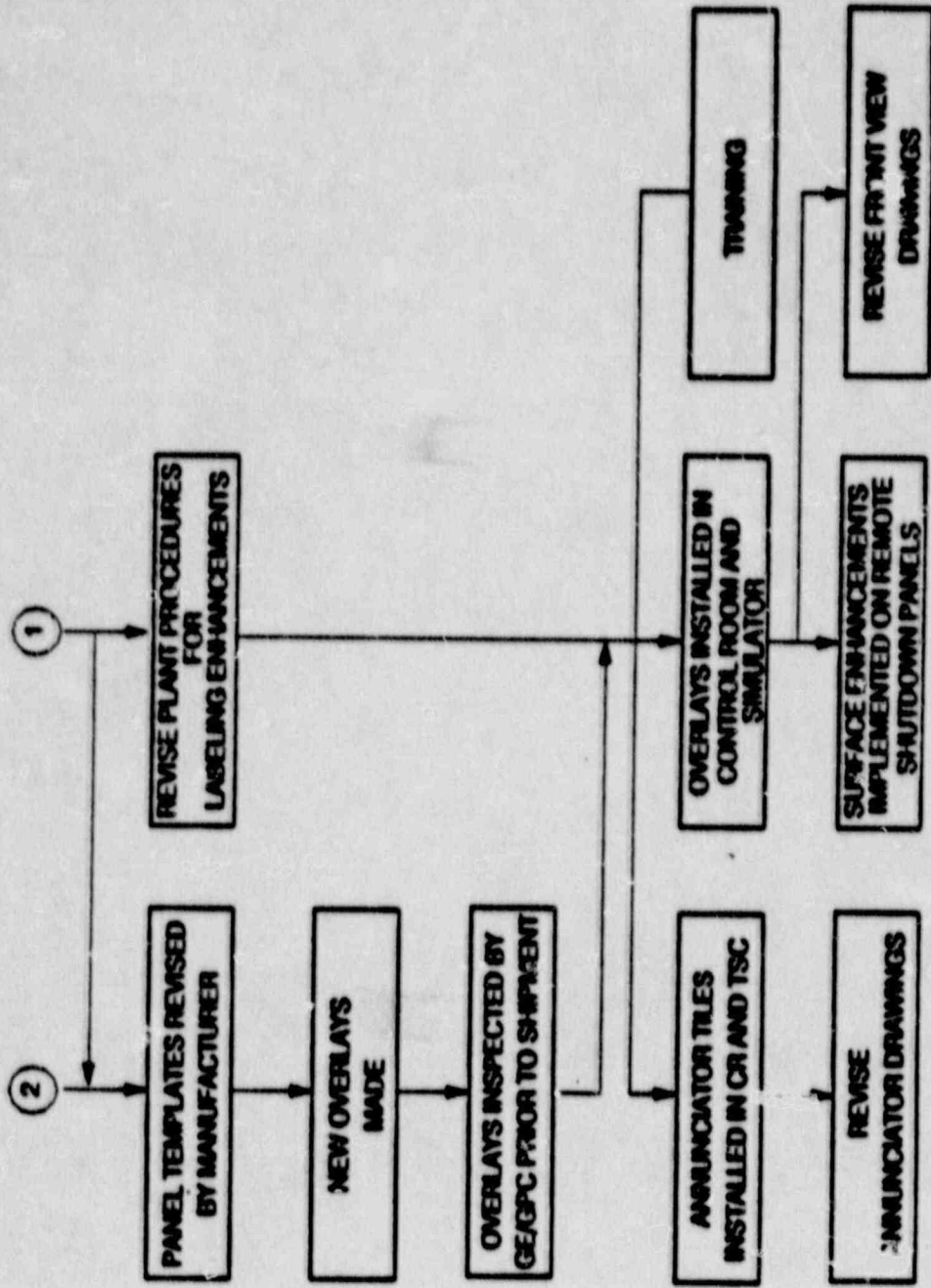
**DCRDR SURFACE ENHANCEMENTS WORK FLOW**



# DCRDR PROGRAM - PLANT IMPACT MATCH - UNITS 1 & 2







**DETAILED CONTROL ROOM DESIGN REVIEW  
AUDIT QUESTION FORM**

**AUDITOR**

<b>REVIEW DOCUMENT</b>	<b>QUESTION</b>
<b>LOG NUMBER:</b> <b>DATE RECEIVED:</b> <b>TIME RECEIVED:</b>	
<b>REVIEWER:</b> <b>RESPONSE:</b>	