

Philadelphia Electric Company's  
Peach Bottom Atomic Power Station  
Control Room Design Review Final Report

February 28, 1986

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## EXECUTIVE SUMMARY

The Detailed Control Room Design Review (DCRDR) was conducted on the Peach Bottom plant in two phases: the first phase completed by the BWROG was reported in February 1982; the second phase is covered by this report.

This second phase, based upon the work done in the first phase, updated and amplified surveys, performed a task analysis and validation of emergency (TRIP) procedures, assessed and prioritized all discrepancies, developed corrections as appropriate, and establishes implementing schedules.

While the original control room design was suitable in many aspects, changes resulting from this DCRDR represent a significant upgrade of the control room operability. A full scale mockup has been used to integrate the design of improvements, and it features an extensive design for enhancements and hierarchal labeling. The new design relabels most controls and instruments on the panels throughout the control room. Within this coordinated design, some instruments have been relocated to better relate them to functional grouping, some instruments and alarms have been added or modified, and some have been removed. The new design has been implemented in the control room for the Unit 2 Off-Gas and Recombiner Panel as part of a modification to that system.

There were 262 Human Engineering Discrepancies (some with multiple resolutions and priorities) identified. Each HED was assigned a priority with respect to safety using a significance scale of 1 to 6, indicating the overall likelihood of the HED causing operator error. The HED Priority Categories and numbers of HEDs assigned to each follow.

<u>Priority</u>	<u>Number of Assigned HEDs</u>
1 High Safety Significance	10
2 Low Safety Significance	44
3 Operational Reliability	26
4 No Significant Improvement	94
5 Previously Corrected	52
6 Not a Discrepancy	39

The schedule for correction of HEDs was a direct result of the priority assigned that HED. Schedules have been identified for high priority improvements. Priority 1 pertains to HEDs that should be corrected as soon as possible. These HEDs are to be corrected during the 1st or 2nd refuel outage. Priority 2 pertains to HEDs scheduled for correction in the near future. Priority 3 and 4 HEDs have either no safety significance or would not result in significant improvement. Thus, those HEDs were given no definitive schedule for implementation. Priority 5 and 6 HEDs have been resolved, or did not constitute a discrepancy, and as a result needed no schedule for implementation.

## INTRODUCTION

This document is Philadelphia Electric Company's (PECo) Detailed Control Room Design Review (DCRDR) Report for the Peach Bottom Atomic Power Station. In October, 1983, PECo submitted to the Nuclear Regulatory Commission the Detailed Control Room Design Review Program Plan for Philadelphia Electric Company's Peach Bottom Plant. That plan described control room design review efforts that had formally commenced with the General Electric Boiling Water Reactor Owner's Group (BWROG) review. The Summary Report of that survey, dated February 1982, is included as Appendix B of this report. Incorporating those results and guidelines from NUREG 0700, the Program Plan discussed a schedule and methodology from which the subsequent review efforts were to proceed.

This report documents the results of the review effort and consists of three major sections: Methodology, General Findings, and Implementation. The Methodology section includes these subsections.

- BWROG Human Factors Design Review Summary. This summary provides a synopsis of Owner's Group survey efforts and identifies items to be included in the supplementary review.
- Peach Bottom Supplemental Review/Assessment and Implementation Phase. This subsection provides a synopsis and status of survey efforts subsequent to the Owner's Group Survey.
- Management and Staffing. Discussed in this subsection are any modifications in utility support members that have occurred since submittal of the Program Plan.

- Documentation. Included here are changes that have occurred since Program Plan submittal.
- Review Phase. This subsection provides a synopsis of the procedures and methodology used in the design review effort.

Section 2, General Findings, defines and discusses major categories. An overview discussion provides a perspective of the types of discrepancies identified.

Section 3, Implementation, discusses any modifications to the control room for improvement of the man-machine interface. Such modifications are the results of the review team's assessment of all Human Engineering Discrepancies (HEDs) (Appendix A). -----

## Section 1

### METHODOLOGY

#### 1.1 OVERVIEW

The DCRDR was partially addressed by the BWROG's Control Room Survey (CRS) completed in October 1981. That program dealt only with the planning and review phases of the CRDR. The balance of the CRDR was concluded by means of a Supplemental Control Room Survey (SCRS), which verified items from the CRS, and addressed the assessment and implementation phase of the CRDR. The supplemental survey incorporated the BWROG data and any items not included in that data. All phases of the surveys are discussed below and are illustrated in Figure 1-1. More detailed information relative to the BWROG survey is contained in the Program Plan Report of October 1983. In addition, Appendix B contains the BWROG Summary Report.

#### 1.2 BWROG HUMAN FACTORS DESIGN REVIEW SUMMARY

This review was performed by operations and engineering personnel from four utilities, human factors consultants, and representatives of General Electric. Efforts of this review, included:

- BWROG CRS - A panel by panel evaluation of the Peach Bottom control room by operations, engineering, and human factor personnel, addressing only the CRDR planning and review phases, and the assessment of procedural HEDs; the balance of the HED assessment, implementation, and reporting phases remained for completion in the supplemental review.



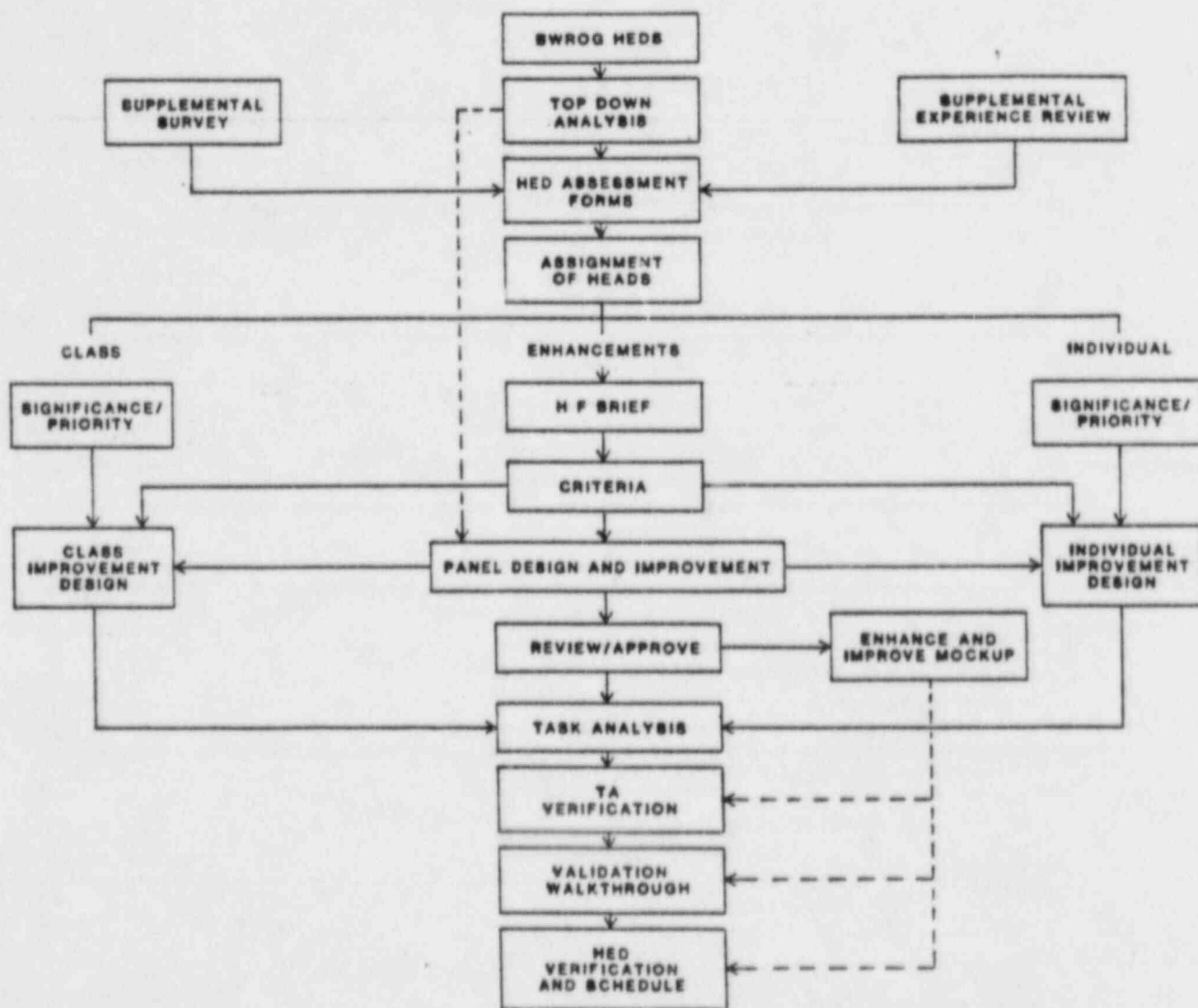


Figure 1-1. Peach Bottom CRDR Process



- BWROG Operator Experience Review - The survey team interviewed eight operators of varying experience levels using questionnaires developed by the BWROG and follow-up interviews. LERS and scram reports for the two years preceding the survey were also reviewed.
- BWROG Task Analysis - Task analyses and walkthroughs of emergency operating procedures were performed and evaluated against the Emergency Procedure Guidelines developed by the BWROG.
- BWROG Supplemental Survey - Items previously reviewed by the CRS were verified by the Owner's Group Supplemental Survey. Also included in this supplemental survey was a review of the Safety Parameter Display System (SPDS).

### 1.3 PEACH BOTTOM SUPPLEMENTAL REVIEW/ASSESSMENT AND IMPLEMENTATION PHASE

Those activities listed below were undertaken and completed after submittal of the Peach Bottom Program Plan report.

- Analysis of human engineering discrepancies (HEDs) generated in the original BWROG survey.
- Update of CRS using BWROG checklists.
- Generation and documentation of HEDs using the BWROG supplemental survey.
- Performance of human engineering suitability analysis.
- Performance of a supplementary experience review LER analysis to update the original review.
- Assessment of significance and prioritization of HEDs relative to safety significance.
- Construction of full-scale, Unit 2 and common plant specific mockup, and design and implementation of panel enhancements on mockup.
- Development of resolutions for HEDs.

- Performance of a verification of resolved HEDs to ensure they adequately addressed the discrepancy and that they did not create another HED.
- Performance of a Task Analysis and Verification of tasks.
- Performance of a Final Validation walkthrough of emergency operation procedures.

#### 1.4 MANAGEMENT AND STAFFING

The Program Plan discussed the multi-disciplined review teams employed in the BWROG's survey and the subsequent supplemental review. In general, the teams functioned as presented in the Program Plan.

The core CRDP team consisted of the following people: ---

M. Leahy *	Project Engineer (until July 29, 1985) IC Systems Engineer (after July 29, 1985)
T. Cabrey *	Nuclear and IC Systems Engineer (until July 29, 1985) Project and Nuclear Engineer (July 29, 1985 and following)
R. Betz	Former Senior Reactor Operator (16 years), Electrical Supervisor
B. Stambaugh	Reactor Operator (8 years)
G. Gelrich	Shift Technical Advisor
R. Chidley	Lead Human Factors Consultant
A. Macris	Human Factors Consultant
R. Morrison	Human Factors Consultant
B. Clark	Senior Reactor Operator, Senior Engineer, Special Projects Nuclear

\*Both were members of the team throughout the entire review (DCRDR) and both were members of the Limerick DCRDR.

All of the above were extensively involved in team deliberations and review of solution designs. Other engineering personnel were consulted, as required, in relation to analyzing and resolving HEDs.

The team met to develop criteria and establish procedures, to review each phase of the supplementary review, and to design proposed solutions. Leadership and guidance were provided by human factors consultants.

Possible solutions to HEDs were proposed by the human factors consultants. The team reviewed the possible solutions, considered other solutions, and assigned follow-up action where necessary. Specific investigations of HEDs were performed by individual team members or groups of team members. All work was presented to the appropriate team members for discussion, review, revisions, and final approval. All team members had the right to formally register a dissenting opinion.

#### 1.5 CRDR DOCUMENTATION

A significant number of reference documents were required to conduct the CRDR. For the purpose of consistency with NUREG 0700, those reference documents are referred to as Input Data.

During the course of the total review process, documentation of findings, analysis, and results were developed. This documentation is referred to as Output Data. Both Input and Output Data are discussed below.

#### 1.5.1 Input Data

The Peach Bottom CRDR utilized the latest revision of the below listed materials as they existed since August 1983 until October 1985.

- System descriptions
- Piping and instrumentation drawings
- Control room floor plans
- Panel arrangement drawings
- Panel mockup
- Lists of acronyms and abbreviations used in the control room
- Plant design guide providing limited descriptions of coding conventions
- Operator training materials
- NUREG 0700
- BWROG CRDR Program Methodology
- BWROG Human Factors Engineering Control Room Survey
- BWROG Human Factors Engineering Control Room Survey Supplement

### 1.5.2 Output Data

Output data is primarily comprised of the documentation generated as a result of the review process. The data forms are discussed in Section 1.6 with sample forms included therein.

- Human Engineering Discrepancy (HED) Assessment Form - Figure 1-2 (form) and Appendix A (completed forms).
- HED Significance Lists - Figure 1-3.
- Determination of Safety Significance of a HED-Figure 1-4.
- HED Verification Checklist- Figure 1-5.
- Task Analysis and Verification data sheets - Figure 1-6
- Final Validation Walkthrough Operator Activity Sheet-Figure 1-7.

## 1.6 REVIEW PHASE

This section describes the procedural process used in the supplemental control room review and subsequent assessment and implementation phases of the program. This information is provided in sections as follows:

- Supplemental control room survey
- Human engineering suitability verification
- Operator experience review
- Control Room function validation

### 1.6.1 Supplemental Control Room Survey

A supplemental CRS was done using checklists developed by the BWROG in order to verify and update the existing survey data generated during the initial CRS. The BWROG designed the checklists to incorporate criteria included in NUREG 0700. The survey process is outlined below:

- Panels which had undergone design changes since the initial survey were reviewed using the original BWROG checklist to determine if the changes affected any of the initial HED results or checklist criteria.
- All panels were evaluated using the BWROG Supplemental Checklists.

The HEDs from the original BWROG Control Room Survey were documented as a report that listed HEDs in an abbreviated format. In many cases, the exact nature of the discrepancy was not clear without further investigation. Therefore, it was necessary to elaborate on the nature of the discrepancy and to put each in a format that would allow further processing and analysis.

Therefore, each BWROG discrepancy was converted to a HED Assessment Form as shown in Figure 1-2. This form was used to assign specific HED numbers (cross-referenced to the BWROG report), identify the criteria used and the source, and to further expand on the specific discrepancy. Discrepancies discovered during Supplemental Surveys and Supplemental Experience Reviews were recorded directly on the HED Assessment forms. A complete accounting of all discrepancies was thereby compiled in the HED Assessment format. The form also served to organize the overall process of assessment and resolution of HEDs.

#### 1.6.2 Human Engineering Suitability

A thorough analysis of human engineering suitability of the control room panels was performed as an independent review by human factors personnel, experienced in nuclear operations, and who have conducted previous DCRDRs. A top down analysis was conducted for all panels, examining functional and spatial arrangement both within each panel and between panels. A panel-by-panel analysis was conducted on panel arrangement drawings by identifying instruments by functional groups, and blocking in the groups using arbitrary color codes so that grouped relationships could be clearly understood. Where the groups were difficult to relate, or were spread out and intermixed, additional analyses were performed to show functional flow among controls and indicators. In the process of performing these analyses, it was necessary to consult piping and instrumentation diagrams (P&ID),

PEACH BOTTOM  
HED ASSESSMENT

HED No. \_\_\_\_\_

EP = \_\_\_\_\_/PRI

Code \_\_\_\_\_

TITLE: \_\_\_\_\_

COMMENT: \_\_\_\_\_

Item: \_\_\_\_\_ Ref.: \_\_\_\_\_ Source: \_\_\_\_\_

IDENTIFICATION: Panel: \_\_\_\_\_  
Component Name: \_\_\_\_\_  
ID or Number: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

MITIGATING CONSIDERATIONS: \_\_\_\_\_

POSSIBLE SOLUTIONS: \_\_\_\_\_

RESOLUTION: \_\_\_\_\_ (Sched: \_\_\_\_\_)

TRAINING REQUIREMENTS: \_\_\_\_\_

PROCEDURE REQUIREMENTS: \_\_\_\_\_

Team Approval Signature: \_\_\_\_\_ Date: \_\_\_\_\_

( ) Additional page(s) attached

Figure 1-2. HED Assessment Form



and in many cases, schematic diagrams were used to understand the purpose of installed controls and indicators.

This analysis process provided the ideal vehicle for clarifying many of the BWROG discrepancies. This information was used to further identify, and in some cases expand on, the initial identification of the discrepancy. The analysis served to place the discrepancies in context and allowed a better understanding of the inter-relational problems that existed on the panels. In addition, analysis revealed other discrepancies. Items that were identified in the top down analysis as not conforming to general human suitability guidelines were recorded on HED assessment forms.

#### 1.6.3 Licensee Event Report Review

Plant specific LER data generated since the BWROG review of the Peach Bottom plant were reviewed. Emphasis was placed on LERs resulting from plant procedural/operational deficiencies such as violation of plant technical specifications; inadequacies in operator training; and inadequate or improper instrumentation, such as a missing display or alarm. Problems identified were recorded and assessed as HEDs.

## 1.7 HED Assessment Phase

All HEDs were initially sorted into three categories:

- Enhancements - those that could be resolved by enhancements (paint, tape, and label).
- Class - those that form a class of problems that could be part of a common resolution.
- Individual - those that must be considered individually because of their unique nature.

Enhancement design was commenced as the first step of the assessment phase. The human factors consultants briefed the CRDR team on the human factors approach and methodology. As part of this session, the team discussed specific examples as they related to the Peach Bottom plant.

The first step in the entire correction process was to have the team define the criteria for the enhancement design of the control room. This criteria was developed interactively with the team, and was agreed to by the entire team. The attached summary of criteria (Appendix C), while labeled Enhancement Criteria because it was first discussed with the team in relation to commencing the enhancement effort, represented the basis for the entire correction effort for Class and Individual HEDs as well as Enhancements.

### 1.7.1 Enhancements

The enhancement design of the control room proceeded directly from the Top-Down Analysis (see Figure 1-1). Because the enhancement effort commenced first, and consisted of a major revision to appearance of the control room, it set the context in

which all other changes in response to HED Assessments would be made.

Based upon the enhancement criteria, a proposed sample panel enhancement was developed and reviewed by the team. It was based upon the human factors criteria provided by the NUREG 0700 and included an in-depth analysis of the purpose of each control and indication on the panel as well as the system configuration. Also, proposed terminology to be used on the control room panels was submitted for review. After a full team review of the proposed enhancements, an enhancement methodology was established. All panel enhancements and new label terminology was reviewed by the team and by additional operating personnel. Revisions were made as directed by the team, and the resulting enhancements were placed on the full scale mockup.

The initial panel enhancement design consisted of not only enhancements, but suggested physical changes that involved moving controls and indicators as necessary to better group functions and allow the addition of more effective mimics. All suggested changes were documented as HEDs. The enhancement design also included a complete revision of all panel labels, including hierarchal labeling to reduce wording and use of a consistent set of terminology. The terminology was prepared from a list of standard names and abbreviations developed during the Limerick plant DCRDR, and was modified to include additional terms and revisions as appropriate for Peach Bottom. The new terminology list was prepared as a manual entitled "Nomenclature for Control Room," and kept updated through the enhancement design effort.

Extensive use was made of available reference data such as original panel prints, label data, and P&IDs. This data was augmented by a photo mosaic prepared to support analysis and preparation of the full scale mockup. In addition to available data, it was necessary to visit the control room to make additional lists of instrument identification and nomenclature.

The CRDR team reviewed the initial control room enhancement design in great detail. Each control and indication label was reviewed, as were the groupings and relationships. Colors were assigned by general systems and were used to help relate functions on the panels. Colors were used only as aids, in addition to hierarchal labeling and mimics, and do not require the operator to memorize color codes. The team made on-the-spot revisions, and talked through the conventions used in order to establish the methods to be used for all panels. To facilitate review and acceptance at all levels of Philadelphia Electric Company, the enhancement design for the initial panels was implemented on a full scale mockup for review by higher management. Upon approval of the design approach, color drawings were then prepared for all pertinent control room panels and the Remote Shutdown Panel.

#### 1.7.2 Review/Approve Panel Design

Panel designs were submitted to the team during regular review sessions. The drawings were reviewed in great detail and marked up with the team decisions. Recommended location changes were considered at this time and if approved (per enhancement drawing) documented on HED Assessment Forms.

The marked drawings were then used to implement enhancements on the full scale mockup. The purpose of a mockup was to try proposed designs and arrangements before implementation in the control room. Therefore, the enhancement and arrangements were subjected to continual review on the mockup throughout the remainder of the CRDR. Frequent changes were made as a result of the HED assessment process.

#### 1.7.3 HED Significance/Priority

The team then met to determine the significance of the HEDs, and to assign a priority with respect to safety. The methodology described in the draft NUREG 0801 (Oct 1981), Section 4.2 was followed. Exhibits 4-1 and 4-2 in that document were reorganized for better team understanding, and a description of the process to be used by the team was given to the team prior to the starting process (see Appendix D). The items were discussed among team members, and the procedure explained. A trial use of the HED significance list was then completed and the process was further discussed until all members understood the methodology.

The HED significance list, shown in Figure 1-3, is a condensation of the explanation provided to the team and was used as a reminder list. Each team member had the more detailed list for reference as necessary. The method used was to have each member review the statement of the HED discrepancy, and then independently review the significance list to identify which

# HED SIGNIFICANCE

HED NO. \_\_\_\_\_

## A. PHYSICAL PERFORMANCE

1. Reduction of effectiveness of the operator's body and mind caused by:
  - a. Undue fatigue:
    - (1) Duration of operation \_\_\_\_\_
    - (2) Frequency of demands \_\_\_\_\_
    - (3) Environmental conditions \_\_\_\_\_
  - b. Discomfort \_\_\_\_\_
  - c. Injury \_\_\_\_\_
2. Restriction of the operator's ability to perform:
  - a. Control suitability \_\_\_\_\_
  - b. Availability \_\_\_\_\_

## B. SENSORY/PERCEPTUAL PERFORMANCE

1. Reduction in visual sensing:
  - a. Visibility of instrument or information \_\_\_\_\_
  - b. Readability of information \_\_\_\_\_
  - c. Visual distractions \_\_\_\_\_
2. Impairment of audio reception:
  - a. Audibility \_\_\_\_\_
  - b. Noise level \_\_\_\_\_
3. Perception of information received visually or audibly:
  - a. Identification of information sought \_\_\_\_\_
  - b. Understandable information \_\_\_\_\_

## C. MENTAL PERFORMANCE

1. The degree of stress:
  - a. Rapidity of response required \_\_\_\_\_
  - b. Severity of situation (emergency procedure) \_\_\_\_\_
  - c. Accuracy of response required \_\_\_\_\_
2. The tendency to cause confusion:
  - a. Misleading information or arrangement \_\_\_\_\_
  - b. Complexity \_\_\_\_\_
3. Mental workload:
  - a. The degree of information collection requirements \_\_\_\_\_
  - b. Correlation of information \_\_\_\_\_
  - c. Mental manipulations \_\_\_\_\_
  - d. Evaluation and decision \_\_\_\_\_
4. Coordination with others in or outside control room:
  - a. Absence/remote location of information or controls \_\_\_\_\_
  - b. Delay of feedback information \_\_\_\_\_

SIGNIFICANCE RATING:	Indicate	Highly	Possibly	Not
the overall likelihood of this	Likely			Likely
discrepancy causing operator error.	5	4	3	2

Figure 1-3. HED Significance List

factors applied to that discrepancy. Each member presented his own point of view. The team then discussed the items suggested by each member. The reasons for selecting the applicable items from the list were explained and discussed by the team. Much interchange was involved in these discussions. The team recorder completed a list by checking those items that were agreed upon by the team; no items were omitted that any member felt should be included. With this agreement on the human factors involved, the team then discussed and agreed by consensus as to an overall statement of the significance of a HED. This was indicated on a significance scale of 1 to 6, indicating the overall likelihood of the HED causing operator error. This was an agreed upon, subjective estimation by the team of experts.

The BWROG developed a prioritization system that was applied during the original control room survey (CRS). The system, called the Evaluation Product (EP), relates to the "relative likelihood that non-compliance with that checklist item could cause or contribute to operator error," multiplied by the degree of compliance with specific criterion:

$$EP = \text{Potential for error} \times \text{Degree of compliance.}$$

The potential for error was determined by a task force of 30 GE and utility engineers, and pre-assigned to each checklist item, rating them 1, 2, or 3. (See BWROG Summary Report enclosed as Appendix B, section 2.0 page 2-1) This rating is therefore very generic in nature because it does not deal with specific circumstances of each HED. In addition, the GE rating for



"potential of causing an error" did not include any rating with respect to safety. The DCRDR team considered each item in context for its potential for causing an error (HED significance), and then considered the safety implications prior to assigning a priority. The assignment of a priority contained a much more thorough and specific analysis than the EP.

The degree of compliance used in the checklist was a rating of 1 through 4 given by the reviewer during the review of the control room, and did generally represent the specific condition. However, the generic potential for error multiplier was frequently not appropriate, so that the final EP was of limited help in this review.

The team noted when the EP differed from its own estimation of the significance level and discussed the difference. The assigned significance level in all cases considered the EP. At the time the significance level was determined, the team had a great deal of knowledge of each HED and therefore was qualified to determine the level for that specific discrepancy.

To establish the priority, the team referred to a list of safety related systems and other criteria, again used as a reference list, to consider the safety significance of that HED (see Figure 1-4). Finally, the team considered the definitions of priorities with respect to safety as listed in Table 1-1. The first two priorities are safety related and are taken from Section 4.2.2. of the draft NURG 0801. The Priority 1 definition is a summary of categories IA,B,C, IIA, and III. This category



In determining the safety significance of a HED, the combined judgement of the team is needed in consideration of the specific condition caused by the HED or a combination of HEDs. The team members should consider the following:

1. HEDS that cause errors on systems that directly affect safety such as:
  - a. Engineered safety features
  - b. Reactor coolant and protection systems
  - c. Containment isolation and control systems
  - d. Emergency core cooling systems and their support systems
  - e. Auxiliary feed systems
  - f. Reactor control systems
  - g. Off gas isolation systems
2. The potential for violation of technical specifications.
3. HEDs that are known to have caused errors that will lead to unsafe operation.
4. HEDs that could cause the inadvertent activation or de-activation of a safety related system or a system needed to safely shut down the plant.

Figures 1-4. Determination Of Safety Significance Of HED

TABLE 1-1. HED PRIORITY CATEGORIES

- Priority 1 (High Safety Significance)  
HEDs that are documented or judged likely to adversely affect the management of emergency conditions by the control room operators. This priority includes all HEDs that have high safety significance that could result in unsafe operation, any that have resulted in unsafe operation, and any that could result in errors of serious consequences. (8801 Cat.IA,B,C, Cat.IIA, Cat.III.)
- Priority 2 (Low Safety Significance)  
HEDs that have caused problems or appear likely to cause problems during normal and off-normal operations that could not result in unsafe operations. (8801 Cat.ID, Cat.IIB,C.)
- Priority 3 (Operational Reliability)  
HEDs that are not safety significant but could degrade operational efficiency and reliability, either singularly or in combination with other HEDs. This priority includes HEDs that are individually of minor consequence, but in combination with other HEDs or other conditions could degrade operator effectiveness under stress.
- Priority 4 (No Significant Improvement)  
HEDs judged by the review team to have no significant effect on operations and are not documented as causing problem during operation. This priority includes all HEDs that do not fit into any of the other categories.
- Priority 5 (Previously Corrected)  
HEDs that have already been corrected in the control room since the original survey was completed by the BWROG.
- Priority 6 (Not a Discrepancy)  
HEDs that were found not to violate human factors criteria. These are not discrepancies and no correction is required.

pertains to HEDs that should be corrected as soon as possible. Priority 2 summarizes categories ID, IIB,C and pertains to HEDs that should be corrected in the near future. Priority 3 HEDs are not safety significant, but could result in reduced operational reliability. Priority 4 HEDs are those that would not result in significant improvement. Note that most Priority 4 HEDs are assigned resolutions. New priority numbers 5 and 6 have been added to the original list shown in the Program Plan. Priority 5 HEDs have already been resolved by changes in the control room since the original BWROG CRS and therefore need no priority for implementation. Priority 6 represents HEDs that, upon investigation by the team, were found not to violate human factors criteria. (These HEDs were, in most cases, written by a reviewer who did not correctly interpret what he observed.) The selection of a priority was done in the same manner as the selection of the significance levels: each team member made his own decision based upon his particular expertise, then the team discussed the selections thoroughly and arrived at a consensus.

#### 1.7.4 HED Resolutions

The methodology for analysis of design alternatives described in Section 4.2.2.2 of NUREG 0700 was used. As suggested in that methodology, the human factors experts analyzed all HEDs and prepared proposed resolutions based on human factors criteria in NUREG 0700. Designs were integrated with the panel redesigns being developed under the enhancement effort. Not all proposed resolutions conformed to all human factors criteria because

compromises sometimes had to be made with other HEDs. Very often separation criteria for safety systems prevented full compliance with all human factors criteria. Where all criteria could not be met, the factors were pointed out to the team.

Where the ideal resolutions for different HEDs resulted in conflict with engineering requirements, the best overall resolution was developed, using the mockup as reference, to best suit the needs of the operator.

HED resolution deliberations were conducted at the mockup. The mockup thus became much more than a display of enhancements. It represented the major integrating mechanism for all design improvements. This was true whether or not the actual resolution to a HED discrepancy appeared on the mockup. The mockup still set the context and standards for the design.

The CRDR team considered the proposed resolution, discussed other possible solutions, and designated the approved resolution. This was by no means a perfunctory approval. Each HED was thoroughly reviewed and discussed. At this time, the relationship of the proposed resolution was considered with respect to other resolutions and the overall panel design as displayed on the mockup. Members were by this time thoroughly familiar with the panel enhancement design plans and HED resolution efforts. This enabled design considerations to be discussed from many points of view. In many cases, the resolution was revised to meet system requirements. In some cases, the proposed resolution was found to cause new problems and was revised to ensure compatibility.

These discussions were led by the human factors experts. All members of the team represented decision making levels in their area of expertise, so that decisions by the team could be considered to be grounds for proceeding with preparation for implementation.

The design of HED resolutions usually required extensive technical investigation and team analysis. This was accomplished by many references to the control room installation to identify design details, and referral to the engineering staff for additional design information and review. Often, an informal functional analysis was conducted by members of the team using operational experience to analyze the specific use and sequence of events in the use of equipment identified in the discrepancies being investigated. To coordinate these investigations, an action item tickler system was maintained to ensure follow-up and resolution of technical questions. Status lists and cross-reference lists were maintained on the computer to keep track of HED resolutions and to coordinate their completion.

A technique of assigning resolution codes imposed a discipline on the team. These ensured that the degree of compliance with the human factors guidelines in NUREG 0700 was understood by all members. The code was designed to identify the type of solution to be implemented, and served to clarify the methods and degree to which the HED will be resolved. These codes are defined in Table 1-2. The codes were assigned by the team members. Where compliance was not complete, the rationale for deviation was

TABLE 1-2. HED RESOLUTION CODES

<u>Code</u>	<u>Description</u>
A	Meets Human Factors Engineering (HFE) guidelines originally or as improved.
B	Minor deviation, but satisfies the underlying performance principle implied by HFE guidelines.
C	Meets HFE guidelines through a combination of solutions.
D	Meets HFE guidelines through other means that are judged to satisfy the intent of the guidelines.
E	Acceptable but does not meet HFE guidelines; a correction may increase potential for error.
F	Solutions do not meet all guidelines, but are judged to be acceptable for safe operation for the reason stated.



addressed in the resolution. This ensured that the team was completely aware of any deviations from human factors guidelines and understood the reasons for deviation.

The main emphasis of this review was to ensure that the HED resolution solved the identified problem and that it did not create a new HED. During this review, the team also identified any special additional requirements that existed for training or operational procedures. This review resulted in being a major step toward the verification required by Supplement 1 to NUREG 0737.

#### 1.7.5 Class Improvement Design

All HEDs assigned to class improvements were further arranged in groups so that similar improvements could be designed as a class. These groups contained several HEDs that were similar or interrelated and needed to be considered together. They also included a single discrepancy that applied in several places on the panels or annunciators. In all cases, it was important to consider these HEDs as a group to ensure the resolution was consistent and did not cause additional HEDs.

#### 1.7.6 Individual Improvement Design

This step dealt with the design of resolutions to HEDs that represented unique problems, not directly related to other HEDs. Comparisons with other HED resolutions were made through examination of the mockup. All design changes from both individual HEDs and Class HEDs that could be represented on the mockup were included on the mockup.

### 1.7.7 HED Verification

Finally, a verification of each HED was performed by the team. This process consisted of joint discussion of each item of the HED Verification Checklist shown in Figure 1-5. Each item on the checklist was individually discussed by the team, which arrived at a decision on each item, designating it either satisfactory, or requiring revision. If revisions were required, these were made immediately, if possible. This checklist procedure resulted in some revisions to the various aspects of HEDs considered. These checklists were completed for all HEDs.

The review was conducted at the mockup so that each resolution could be reviewed as implemented. Reference was made to supporting data as necessary. Item 5 specifically considered compounding effects with other HEDs and the possibility of creating a new HED with the resolution chosen, as required by NUREG 0737, Supplement 1.

This verification effort was supported by the final validation walkthrough conducted on the mockup (see section 1.9.). By conducting the walkthrough near the end of the review, full advantage could be taken of the enhanced mockup to verify the integrity of the many changes. The validation walkthrough was a key method of determining that the various HEDs were corrected in a satisfactory manner, and that they did not cause other HEDs, or combine with other resolutions to cause a HED.



# HED VERIFICATION

HED No(s) \_\_\_\_\_

VERIFICATION STATUS:

Approved \_\_\_\_\_ Code \_\_\_\_\_  
 Safety priority \_\_\_\_\_  
 Unit: #2 #3  
 Applicable \_\_\_\_\_  
 Schedule \_\_\_\_\_

<u>RESOLUTION</u>	<u>ANALYSIS</u>	<u>SAT</u> / <u>REV</u>
1. Code correct?	Should be:	_____
2. Addresses discrepancy?		_____
3. Meets human factors requirements?		_____
4. Safety considerations:		
a. Safety questions not addressed?		_____
b. Cause temporary reduction in safety?		_____
c. Increase risk of failure or misoperation?		_____
5. Compounding effect:		
a. Causes another discrepancy?		_____
b. Adversely combines with other resolutions?		_____
6. Cause negative training?		_____

## SCHEDULING

1. Circle applicable unit:	Unit #2	Unit #3
2. Assigned priority:	_____	_____
3. Schedule:		
First refueling outage	_____	_____
Second refueling outage	_____	_____
Not implemented	_____	_____

-----  
 Team Review Action

Figure 1-5. HED Verification Checklist

## 1.8 TASK ANALYSIS AND VERIFICATION OF TASKS

The task analysis process used the approved TRIP procedures as the functional analysis. The plant specific procedures developed from the BWROG EPGs are satisfactory for use as a functional analysis per the BWROG meeting with the NRC on May 4, 1984. These procedures provided the definition of functions from which the task analysis was conducted. The task analysis was performed in accordance with NUREG 0700, paragraph 3.4.2.4., and SRP 18.1, Appendix A, Sections 2.2 and 2.3. The analysis commenced in early September, 1985 and was completed in October 1985. The CRDR team had ready access to, and used, other licensed operators and engineering personnel for support as required.

The process was performed in two separate steps. The first was to determine the display and control requirements for the control room instruments. In order to do this, an analysis of tasks required to accomplish the functions was performed. This step included defining the parameters necessary for the operators to (1) determine the need to perform an action, (2) perform the action as directed by the TRIP procedure, (3) determine that the action had been performed successfully. The second step was to conduct a verification that the control room inventory met the stated display and control requirements that resulted from the analysis of tasks and if not, to identify missing displays and controls. The form used to record the information generated from these two steps appears as Figure 1-6.

## Page \_\_\_\_\_ of \_\_\_\_\_

157:1

[illegible]

## Section

Figure 1-6. Task Analysis and Verification Data Sheet

In the first step, the analysis was conducted in a location where the team would be less likely to think about the existing controls and displays on the control panels. A written briefing of task analysis was provided to the team by the Task Analysis Expert to educate the team on what was to be done and how it was to be done. This briefing is enclosed as Appendix E. The team then discussed the written briefing. All questions and key points were explained. During this step of the analysis, only the left half of the Task Analysis Worksheet, labeled Task and Requirements, was completed. The information was recorded in accordance with the Key to Task Analysis Worksheet, which is enclosed in Appendix F. All 11 TRIP procedures were talked through in this manner.

TRIP Procedures:

T-100's

T-99	Post Scram Restoration
T-100	Scram
T-101	RPV-Control
T-102	Containment Control
T-111	Level Restoration
T-112	Emergency Blowdown
T-113	Blowdown Cooling
T-114	Spray Cooling
T-115	Alternate Shutdown Cooling
T-116	RPV Flooding
T-117	Level/Power Control

After the completion of the requirements section of the Task Analysis, the team filled in the verification section. The entries in this section were then reviewed for Human Engineering suitability at the high fidelity mockup. The mockup was used as the control room inventory. A photo mosaic of the control room was also available for reference.

The team reviewed the verification procedure provided in the written briefing, and the key points were discussed. Using the task steps and the display and control requirements, the availability section of the form was completed by talking through each step, having the operators indicate which instruments and controls would be used to accomplish the steps, and recording the characteristics of the designated existing instruments. The team then performed a comparison of the designated instrument with the display and control requirements of the task analysis. Any verification entry that did not meet the display and control requirements section was documented as a note at the bottom of the Task Analysis form and subsequently written as a HED.

During this verification process, the team also addressed the suitability of those designated instruments. This included a consideration of the relationship of control and displays. To aid the team in assessing human factors considerations for the suitability of the instruments, each team member was provided with a copy of the Task Analysis Guidelines during the briefing for the Verification phase. A copy of the Guidelines is included in Appendix G. The final overall suitability of each entry was then determined by the team to be either satisfactory, or to require preparation of a Human Engineering Discrepancy (HED) Assessment sheet. Information was recorded on the form in accordance with the Verification section of the Key to Task Analysis Work Sheet (Appendix F).

This process for the determination of the control and display requirements, HED assessment, and verification was reviewed by the NRC during the In-Progress Audit for Peach Bottom on February 19 to 22, 1985. The NRC Audit Report for Peach Bottom on April 19, 1985 letter from J.F. Stolz to E.G. Bauer, Jr., found this process to be satisfactory.

The T-200 procedure series supports the TRIP Procedures. The T-200 procedures were reviewed and found to contain mostly system lineup instructions for both control room and floor operators. Since the lineup instructions called for specific controls in the control room, the availability of these controls was verified. (These procedures were also used during the validation walkthroughs described below.) For each of the T-200 Procedures that pertain to control room operators, a task analysis similar to that conducted on the TRIPs was performed to identify information needed, actions required, and feedback information required to determine that the action was performed successfully. These actions typically involved only one or two steps after a system lineup had been completed. For these entries, characteristics were identified and the verification section was completed as previously described.

During the analysis of TRIP procedure tasks described above, there were certain system lineups for specific operations that were lengthy and were required in several procedures. These involved merely providing controls with appropriate feedback for accomplishing these system lineups. These sections were referred



to a separate lineup analysis for the specified operations. The analysis consisted of using existing lineup sheets also used for Peach Bottom Units 2 and 3 identifying those controls that were required to be in the control room. Availability of these controls was verified as having appropriate indicating lights, which provide appropriate feedback to the operator. This completed the task analysis of emergency procedures and supporting procedures.



## 1.9 VALIDATION

The objective of the Peach Bottom Control Room Design Review Validation was to determine whether functions allocated to the control room operating crew could be effectively accomplished within the structure of the Emergency Procedures, termed Transient Response Implementation Plan (TRIP), and the improved design of the control room. As part of the Validation of the control room improvements, it was possible to determine if improvements created additional discrepancies, and to identify discrepancies not previously noted.

The validation methodology involved three phases: Preparation, Walkthrough/Talkthrough, and Documentation.

### 1.9.1 Preparation

This phase involved developing the validation and the data collection guidelines, in addition to analyzing the TRIP procedure flow diagrams. The guidelines were developed to ensure that the participants (control room licensed operators) were aware of why the validation was being done, what was expected of them, and how the CRDR team would be conducting the validation. As part of this, guidelines were developed for the observers to ensure appropriate data collection was accomplished. The requisite forms for collecting data are included in Appendix H.

An analysis of the TRIP procedures was done to ensure that the validation effort examined the appropriate steps and contingencies of the procedures while minimizing the

redundancies. This ensured that the main flow and branches to a particular TRIP were examined, and also provided for the appropriate crossing between particular TRIPs in a walkthrough context. Table 1-3 lists the TRIP procedures analyzed.

TABLE 1-3. TRIP PROCEDURES ANALYZED

T-100	SCRAM
T-99	Post SCRAM Restoration
T-101	Reactor Pressure Vessel Control
	Reactor Power (including ATWS)
	Reactor Level
	Reactor Pressure
T-102	Containment Control
	Torus Temperature
	Torus Level
	Drywell Pressure
	Drywell Temperature
T-101	Reactor Level Restoration
T-112	Emergency Blowdown
T-113	Blowdown Cooling
T-114	Core Spray Cooling
T-115	Alternate Shutdown Cooling
T-116	Reactor Pressure Vessel Flooding
T-117	Reactor Level/Power Control

The above TRIP procedures occasionally referred to additional technical procedures (T-200 series as shown in Table 1-4.) These procedures were reviewed for control room actions, and those applicable to the control room were also walked through.

TABLE 1-4. T-200 SERIES PROCEDURES

T-200	18 Inch Drywell Vent
T-201	Containment Vent By Way of Sumps
T-210	CRD System SBL Injection
T-211	CRD System B Boric Acid-Sodium Tetraborate Injection
T-212	RWC System SBL Injection
T-220	Control Rod Select Block Bypass
T-221	Main Steam Isolation Valve Bypass
T-222	Secondary Containment Ventilation Bypass
T-223	Drywell Cooler Fan Bypass
T-224	ADS Auto Initiation Bypass
T-230	Torus To CST By Way of HPCI-RCIC
T-231	HPSW To Torus
T-232	Torus Filter Pump Isolation Bypass

#### 1.9.2 Walkthrough/Talkthroughs

The actual validation activity was conducted via walkthroughs and talkthroughs using the enhanced control room mockup. The mockup had been previously verified against prints ensuring all controls and indications were properly labeled, scaled, and identified, and all enhancements and other improvements as a result of HED resolutions identified in this report. The method used for the walkthrough was as described in NUREG 0700, Section 3.8.2. Although the Program Plan indicated that audio and video recordings would be made, they were not used for these walkthroughs. NUREG 0700 suggests the use of audio and video recordings only for real time exercises where it is not possible to stop activity to clarify points during the run.

possible to stop activity to clarify points during the run. Recordings taken for Limerick CRDR walkthroughs were found to be unnecessary. No data collection was specified or intended from such recordings.

Prior to starting the runs for the walkthroughs/talkthroughs, the operators and CRDR team members were briefed on the purpose of the validation. In addition, the operators were briefed on the mockup enhancements, philosophy of the design, and changes from the present control room configuration. The mockup contained the final configuration intended for the control room. The approach to enhancements altered the appearance of the panels, such that the operators were not totally familiar with the new arrangement. As a result, the lack of familiarity with the new design served to determine how easily the operators would be able to adapt to the new configuration and label terminology.

Walkthroughs were performed by the operators in near real time, but were interrupted from time to time to allow clarifications for the review team members. In addition, operators were encouraged to comment on anything they noticed during the exercise. In some cases, runs were repeated in order to obtain a more 'real time' environment for observation purposes. Recognizing the constraints of a static mockup, this uninterrupted run proved useful.

Data was taken by human factors consultants who have worked on the CRDR. The team leader also completed a comment sheet for each run. Operations personnel performed as a three person team,

of two operators and an SRO supervisor, which is normal minimum staffing for one unit operation during emergencies. Each operator was accompanied by a data taker using an Operator Activity Sheet (Figure 1-7) to record movements from station to station, and a comment sheet to record comments by the operator and observer notes. An example of a completed activity sheet is enclosed in Appendix I.

Time lines were not prepared for these walkthroughs because the TRIP procedures being used have been thoroughly evaluated by PECO and approved by the NRC Procedures Branch as described in the Program Plan. The extensive evaluation process included the use of the Limerick simulator, which, while not plant specific, is similar to the Peach Bottom plant. All operators participating in the walkthroughs had been trained on these procedures on the simulator, and have many years of control room operations experience at Peach Bottom. Therefore, the operator's evaluation was considered to be the best source of timing, phasing, frequency, and duration of actions.

Communications between operators within the control room and from control room operators to floor operators was also acted out and observed. Operators simulated using internal communications equipment and identified what circuits they were using. Teamwork and operator coordination was observed during all runs.

The organization of the exercise runs was in three segments. First, all TRIP procedures were walked through using

# OPERATOR ACTIVITY

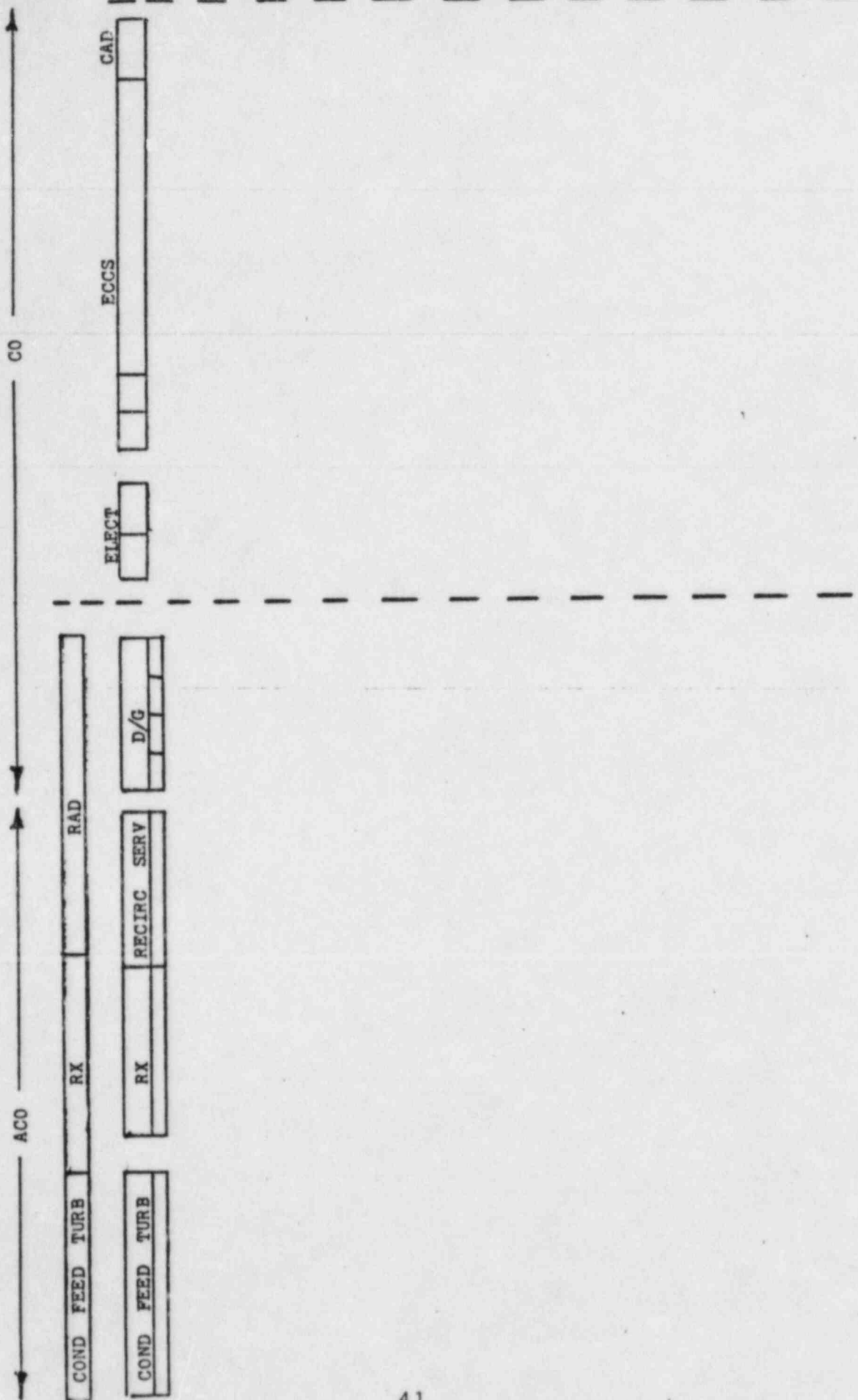


Figure 1-7. Operator Activity Sheet



the procedures listed in Table 1-3. For this segment, the runs were arranged in logical sequences that would take the operators through all steps of all task branches. In some cases, a minor deviation to the logical process was made to pick up an alternative short branch that would otherwise be skipped. This ensured that all task actions were covered in this series of runs. Each of these runs were conducted in a serial format, that is, if concurrent branch actions were required by the procedure, the run executed them in series. This was done to ensure that the whole team was able to follow all steps. Even though some DCRDR team members were assigned to following one particular operator, each was expected to follow all operations, maintain overall continuity, and to provide additional observations on every action.

Secondly, because the TRIP procedures occasionally require the operators to follow several branches concurrently, the preceding series operations did not fully indicate the operator loading conditions. Therefore, upon completion of the first segment of exercise runs, a second segment of runs was conducted to demonstrate concurrent branch operations. For these, the most difficult concurrent exercises were chosen. Because the observers and operators had already been through all branches in the first segment, the overall flow of actions and communications during these runs was easier to follow and record.

Finally, a walkthrough/talkthrough of the T-200 series supporting procedures that contained control room functions was conducted to satisfy the observers that procedures referenced in the TRIPs



would be satisfactorily accomplished. These procedures required the control room operators to make a particularly complex lineup of systems. Since these procedures simply required a single operator to follow the procedure in performing a specific series of individual steps, each procedure was accomplished by subteams of operators and observers.

#### 1.9.3 Documentation.

Each run was documented on the forms indicated previously. Subsequent to the walkthrough/talkthrough, these forms were reviewed and analyzed. The operation was critiqued and any further comments or questions were clarified and recorded. To aid in the review of the run, a copy of the Human Factors Guidelines used for task analysis were provided to team members for reference. They consist of statements drawn from NUREG 0700 Section 6 items that apply to task analysis and walkthrough operations.

The potential discrepancies noted during the walkthrough/talkthroughs were subsequently reviewed and analyzed to determine human factor discrepancies to be documented as HEDs.

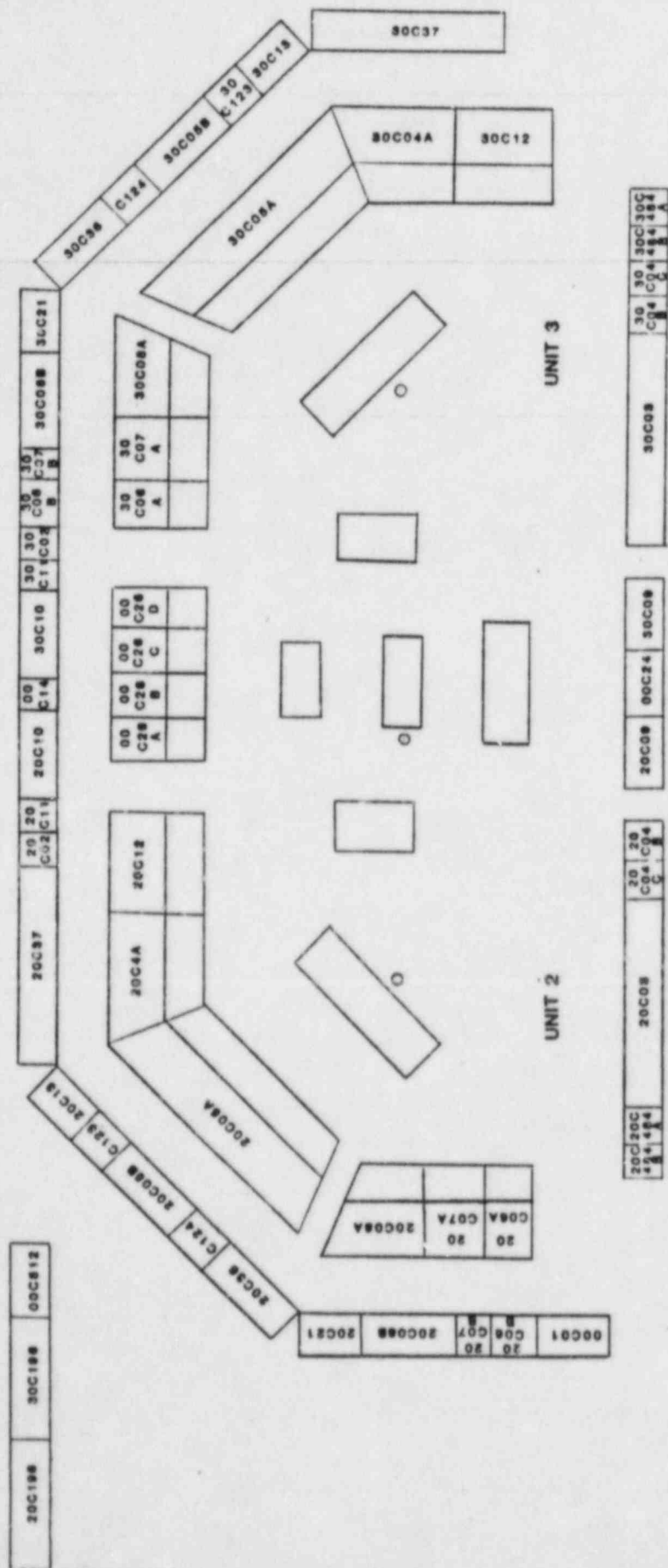
## Section 2

### GENERAL FINDINGS

#### 2.1 CONTROL ROOM WORKSPACE

This section discusses overall functional relationships between control panels and the integral nature of operations. The design of the control room for both Unit 2 and 3 features three low back consoles arranged in a curved shape, with vertical back panels behind them (facing the operator), and vertical panels forming the back wall of the primary control area behind the operator. (See Figure 2-1 for the layout of Unit 2 and 3.) The two units are located side by side and are essentially identical in layout and arrangement of controls and indications (not a mirror image arrangement). Common panels are located between the two units. All these panels are located in the primary controls area and are visible and easily accessible to the operators. The Off Gas/Recombiner panel is located in the control room but is behind the vertical boards, not in the primary control area. This panel is easily accessed by the operator, but is not directly visible from normal operating stations. There are no summary alarms in the primary control area for Unit 3, but summary alarms have been added to Unit 2 as part of an Off-Gas/Recombiner modification.

The depth of consoles exceeded the reach distance for the 5th percentile female, but are within extended reach with slight torso flexion. Controls at the back of consoles are infrequently used. These consoles are intended for the standing operator.



PEACH BOTTOM APS  
CONTROL ROOM PANELS

PANEL #	DESCRIPTION
00C01	FIRE PROTECTION
2(3)0C02	AREA AND PROCESS RADIATION MONITORING
2(3)0C03	RHR, CS, AND ISOLATION SYSTEM
2(3)0C04A	RECIRC AND REACTOR WATER CLEANUP
2(3)0C04B	HIGH PRESSURE COOLANT INJECTION
2(3)0C04C	REACTOR CORE ISOLATION COOLING
2(3)0C05A	REACTOR CONTROL
2(3)0C05B	FULL CORE DISPLAY
2(3)0C06A	FEEDWATER
2(3)0C06B	FEEDWATER AUX
2(3)0C07A	CONDENSATE AND CIRC WATER
2(3)0C07B	COND AND CIRC WATER AUX
2(3)0C08A	MAIN TURBINE
2(3)0C08B	MAIN TURBINE AUX
2(3)0C09	MAIN GENERATOR
2(3)0C10	PROCESS RADIATION MONITORING
2(3)0C11	AREA RADIATION MONITORING
2(3)0C12	PLANT SERVICES
2(3)0C13	TIPS
00C14	COMMON PLANT RADIATION MONITORING
2(3)0C21	CRITICAL PLANT TEMPERATURES
00C24	STARTUP POWER
00C26A-D	DIESEL GENERATORS
2(3)0C36	SRM AND IRM
2(3)0C37	LPRM, APRM, AND RBM
00C123	EMERGENCY COOLING TOWER
2(3)0C124	FEEDWATER TURBINE TEST
2(3)0C196	OFF-GAS RECOMBINER
2(3)0C484A,B	CONTAINMENT ATMOS. DILUTION
00C512	SITE WEATHER STATION

Figure 2-1. Control Room Layout (cont'd)

Viewing angles of the vertical back panels are restricted below 48 inches from the floor. Some instruments and controls are located below that level.

Annunciators are located above the vertical back panels and above the vertical panels forming the back wall of the control area. They are tilted at 15 degrees. The viewing angles and reading distance meet criteria. Alarm tiles are large and easily identified.

The central console is intended as the primary operating station for the plant. It contains the reactor controls and indications, the feed water pump controls, and emergency (SBLC) reactivity controls. The right console contains the recirculation systems immediately adjacent to the central console. The rest of the right console provides the necessary controls for primary support systems. The left hand console is for feedwater, condensate, circulating water, and turbine controls and indications. Additional controls for this system are on the back panel behind the left console, and are used for system startup and shutdown. The arrangement of the consoles was found to provide good concentration of frequently used controls at the prime operating station, requiring a minimum of operator movement. There were no instances of finding controls on a back vertical panel that should have been on a console.

Control of electrical systems, ECCS, and containment is contained on vertical panels that are directly behind the operator when standing at the control consoles. They are easily

visible and accessible from the operator station. Organizationally, the electrical, ECCS, and containment panels are assigned to the Chief Operator during emergencies, while the Assistant Chief Operator takes station at the center console.

The necessary emergency equipment, including breathing apparatus, is adequate. Storage is adequate and has been further addressed in a general control room upgrade separate from the CRDR currently in progress. This upgrade includes major revisions to control room lighting, including the addition of more effective light diffusion materials. While the overall lighting in the control room met human factors criteria, some glare was noted on instruments located high on vertical panels. The new lighting will control this problem. Acoustics in the control room met requirements and were further improved by carpeting the control room.

## 2.2 CONTROL PANEL ARRANGEMENTS

The control panels are logically arranged with instruments and controls grouped by functions. The functional groupings are generally very good, although not visually differentiated by demarcations. Because of the lack of demarcations and hierarchal labeling, groupings are somewhat difficult to identify.

Mimics were not used in the original design of the panels except the electrical panels. Some mimics had been added on Unit 2 ECCS and Containment Isolation Systems on an experimental basis. Generally, the mimics on the electrical panels were excellent. The experimental mimics were somewhat congested and too complex



to be helpful to the operator.

Because of the large number of controls and instruments in a relatively condensed space, the overall anthropometric guidelines for maximum and minimum height of controls and instruments were exceeded on the vertical panels. This has resulted in some controls being at a height difficult to reach by the 5th percentile female, and the necessity for all operators to bend or squat to reach some controls on the vertical panels. The height of these vertical panels thereby caused the annunciator panels above them to be higher than recommended, and when the operator is located between the consoles and the vertical back panel, he is required to tilt his head at an uncomfortable angle to read the annunciators above the panels. However, these panels are used only during deliberate operations, and all alarms are acknowledged from the control consoles, from which they can be read easily. This was not considered to be a significant problem. The viewing angles of annunciators from normal operating stations were within guidelines and fully adequate. The reach distance on the benchboards slightly exceeded the maximum reach distance for the 5th percentile female, but was found to be acceptable.

The panels are not identified by system names. Only the numbering system used by the plant designers is used for identifying panels.

## 2.3 ANNUNCIATORS

There are approximately 1100 annunciator alarms for Unit 2 and



common. These are located around the periphery of the control room, above the vertical panels. They are divided into annunciator panel matrices of less than or equal to 50 alarms each. Because of the large number of alarms and the limited space available for panel mounting, it has not always been possible to mount the alarms directly over the panel to which they relate. The double density of panel arrangement with consoles in front of back panels means that the annunciator related to the console must vie with the annunciator related to the back panel for the prime space directly above or in front of each. This means that there is no way to rearrange panels without massive elimination of alarms. Task analysis, verification, and walkthroughs revealed that most of the alarms were adequately placed.

The windows flash only for the initial unacknowledged alarm. They do not reflash on clearing the alarm. The operator must determine, on his own, that the alarm has cleared. Each window has an internal slide switch that can be set for the alarm to go out automatically when the alarm condition clears, or to remain lighted when the alarm condition clears. In the latter case, the operator must push the reset button to determine that the alarm condition has cleared. This is consistent with the operating philosophy requiring aggressive follow-up on alarms. However, there is no procedure for determining in which position the slide switch is to be set; it is left to the operator to decide. While this flexibility is very useful in some operations and with some alarms, it is not desirable for some alarms related to emergency operations.

The annunciator alarm, acknowledge, reset sequence is shown in Table 2-1.

TABLE 2-1. ANNUNCIATOR ALARM, ACKNOWLEDGE, RESET SEQUENCE

<u>CONDITION</u>	<u>WINDOW STATE</u>	<u>AUDIBLE SIGNAL</u>
NORMAL	NON ILLUMINATED	SILENT
ALARM	FLASHING	ALARM TONE
ACKNOWLEDGED	ILLUMINATED STEADY	SILENT
ALARM CLEAR	ILLUMINATED STEADY (Manual Mode) OFF (Auto Mode)	SILENT
RESET	OFF	SILENT
TEST	FLASHING	ALARM TONE

There are no silence pushbuttons or switches to control the noise caused by a large number of alarms. The alarms are bells and buzzers. They were reported to be excessively loud by the original owners group survey, but have since been reduced in volume and are now completely adequate and meet the applicable criteria. However, the lack of a method of reducing alarm intensity during an emergency may hamper recovery operations. Controls for acknowledge, reset, and test of alarms are conveniently placed around the control room; however, these controls are not consistently arranged top to bottom or left to right. The acknowledge buttons are palm-actuated mushroom-type buttons for blind operation, but they are not consistently colored. Test pushbuttons do not have guards to prevent accidental operation in high stress situations.

Some prioritization has been used on annunciators. This consists of the use of red lights for top priority alarms, yellow for intermediate priority, white for low priority, and blue for violations of secondary containment. Alarms are generally arranged in a red-yellow-white-blue order, from top to bottom. However, this arrangement not used consistently throughout the control room. The panels mix high priority alarms with informational alarms. All priorities use the same audio alarms. In addition, tiles which are normally "on" during power operation are colored green. Very few green tiles are used.

The annunciators use the dark board concept. Large tiles are used so that labeling can be easily read. A limited first out feature has been added to the control room for key alarms.

There are many multi-input alarms. Some of them have convenient control panel indications near the alarm window, to quickly clarify the meaning of the alarm. However, there are many less important alarms that do not have information immediately available for the control room operator to determine the cause of the alarm. Alarm operator response cards, which specify operator actions for safety related alarms, are located in the control room.

Annunciator matrices are not conveniently numbered, requiring the operator to count tiles to determine the number for reference to response cards. No matrix numbering system is used.

Because annunciator panels are located above vertical panels, there is no difficulty in reaching individual tiles for

maintenance and bulb replacement. Bulbs are simply replaced from the front of each individual tile without affecting other tiles.

Temporary labels had been used on some alarm tiles, but since the original owners group survey these have all been replaced with permanent tiles.

#### 2.4 CONTROLS

The equipment for controls and controllers generally meets human factors standards. There are, however, 40 controller units that have 11 different variations in combinations of controls and meters contained in each unit. The exact functions of these controls and meters are not always clear, and in some cases it is difficult to determine how the controlled parameter will be affected.

The large variety of handles used for controls resulted in some types of handles being rather large, thereby tending to obstruct the view of labels and legends for the control on the benchboards, particularly the back row of controls. Some J-handles located at the bottom of benchboards are too close to the edge and could be inadvertently activated. Most J-handles in this position were previously reversed so that they pointed up and therefore are not subject to being brushed against. There are no other major problems with controls

#### 2.5 DISPLAYS

Visual displays are primarily of three types: vertical analog indicators, roll chart recorders, and vertical drum recorders. All recorders have corresponding scales for direct

reading. Multipoint recorders are also used in some support applications, but in two cases, important operating parameters are included on the multipoint recorders. This has made it difficult to read these specific parameters with the rapidity and accuracy required. However, the instruments generally meet human factors standards. With a few exceptions, the scales used on visual displays are properly designed, are not enhanced to indicate operating zones, limits, or set points on key indications. Many meters use non-standard scale markings and progressions, but they are generally consistent throughout the plant. There was glare noted on meters located high on vertical panels. Color coding of lights was found to be consistent and to meet human factors criteria.

## 2.6 LABELS

Hierarchal labeling has not been used on any panels. Some label inconsistencies were found on instruments and controls in type, size, placement, nomenclature and use of abbreviations. Temporary labels were found in places throughout the control panels, indicating that better labeling is required. All temporary labels have been removed and replaced with permanent labels where appropriate.

## 2.7 PROCESS COMPUTER

The existing process computer has limited capability and is used only for backup information. It is not required to support operation of the plant. Therefore, it was not reviewed in detail and is not considered a plant requirement. Plans are being made



for the installation of a more advanced computer that will include a Safety Parameter Display System (SPDS). (As discussed in the August 9, 1985 letter from John S. Kemper to Mr. Hugh L. Thompson, Jr. Director NRC Division of Licensing.)

## 2.8 COMMUNICATIONS

Communication was found to be generally adequate for plant operation. The only major problem is the lack of a priority break-in method on the plant announcing system for the control room operator. The initial survey identified problems with excessively loud PA speakers, but this has been corrected since the original owners group survey.

## 2.9 PANEL/WORK STATION FINDINGS

This section discusses findings with respect to the major panel groupings and their facing vertical back panels. The consoles are discussed from left to right. Then the Electrical, ECCS, and Off Gas Panels will be covered.

### 2.9.1 Condensate, Feed, Turbine Console and Back Panel

The console consists of a benchboard section for controls and a low back section for meters and recorders. The benchboard is grouped by systems, but uses few demarcation lines. The groupings are well arranged in a sequential relationship with the exception of the feed pump valves. These valves are not arranged in proper sequential order. There is not adequate room for mimics, but generally the effective grouping of controls tends to minimize difficulty in following flow paths. The indications on the slanted back have been generally arranged over the controls

to which they are related.

The feed, condensate, and turbine back panel provide a good complement to the console controls and indications. The many rows of like switches for the extraction and feed heaters, however, are not well organized, so that controls for different aspects of this operation are difficult to understand. This problem is made more difficult by misleading nomenclature. These controls are used only in deliberate startup and shutdown operations.

The turbine controls use the standard layout provided by General Electric and are well grouped.

#### 2.9.2 Reactor Control Console and Back Panel

This is the center console and is the primary operator station for plant operation. It contains the rod control systems and standby boron injection system. It also includes the controllers for the feed system along with appropriate instrumentation for controlling the reactor water level.

The left-hand portion contains the feed controls, and indications are placed directly over the controls to which they relate.

The center portion contains the rod drive controls and a core map, which is a Rod Select Matrix for individual rod control. The associated indications are located immediately above these controls. This section is adequately laid out. On each side on the rod control section are the meters and controls for source range, intermediate range, and average power range monitors.



Again, instruments are located generally above their associated controls. The center section does not use demarcation lines to help differentiate the various functions related to monitoring power. The reactor mode switch is located near the back of the benchboard and it is difficult to read the switch position labels.

The right portion of this center console contains the Standby Liquid Control system, the Control Rod Drive system, and other support controls. It is functionally arranged, but the groupings are difficult to differentiate.

Directly in back of this console is a large-core map on the vertical back panel. It contains numerous indications for each rod. The combination of all these indicators in the arrangement of the core installation is adequate because each rod is easily identifiable by a digital rod height indicator. To the left of the core map is the TIP panel; controls for the emergency cooling towers are on the right.

#### 2.9.3 Recirculation, Reactor Cleanup, and Plant Services and Back Panels

The right-hand console contains primary and balance of plant auxiliaries. The left portion, immediately adjacent and at an angle to the center console, has the controls and indications for the recirculation system, an important means of controlling reactivity in the reactor. Next to that is the Reactor Cleanup system and then the Drywell drains. These sections are neatly grouped and separated. The Cleanup System controls are not

arranged logically for the sequence of system operation and would benefit from the use of mimics.

The right portion of this console contains balance of plant systems. There controls are arranged by functions, with indications directly over the controls, but are so tightly packed that it is difficult to distinguish groups. Some controls are separated from the main grouping in similar controls.

The back panels behind the console contain channel flux indications and the radiation monitoring instruments for Unit 2 and common. These instruments are well grouped, but no demarcation lines have been used to help identify the groups. These panels are used for backup controls and indications.

#### 2.9.4 Electrical Panels

The four diesel generator controls and associated 4kv distribution are on a common console between Unit 2 and Unit 3. The 13kv and startup electrical distribution panels are vertical panels opposite the diesel generator consoles. The electrical panels use mimics to relate the controls to the system. Generally, the mimics are well arranged. The electrical distribution panels for Unit 3, Common, and Unit 2 are side by side and use integrated mimics that make their relationships very clear.

#### 2.9.5 Emergency Core Cooling Systems

The ECCS systems, the Containment Isolation Systems, and the Automatic Depressurization System are located on the vertical

panels behind the control room operator. Some experimental mimics have been added to these panels on Unit 2, indicating that mimicking is desirable. The density of controls makes comprehensive mimicking difficult. Therefore, the mimics are very congested and difficult to follow. The displays at the top of the HPCI and RCIC panels are not functionally grouped and they intermix parameters from different systems. On other ECCS panels, displays are appropriately grouped, but run together so that the groupings are not always discernable.

#### 2.9.6 Containment Atmosphere

The Drywell Purge and Ventilation Systems are mimicked but difficult to follow. The containment isolation status panel is arranged by systems and uses mimics in some cases. The purpose of this display is to rapidly determine what group isolations have occurred and whether the isolation was completed properly. There is no way to determine to which isolation group each set of lights belongs. Therefore, the panel does not satisfy the purpose for which it was intended.

#### 2.9.7 Off Gas

The Off Gas System is located behind the back panel, out of sight of the operators at their normal control stations. It is easily accessible if required. The annunciator alarms for Off Gas are positioned over the related panel. Summary alarms in the "at controls" area of the control room have been added for Unit 2, and will be added for Unit 3 as part of a modification package. In conjunction with the modifications being made to this system,

several components are being added. Consequently, the control panel has been redesigned. This redesign coincided with the DCRDR panel review and enhancement design, and therefore human factors designs were included in the panel rearrangement. This represented a major redesign of the panel resulting in significant improvements in arrangement, grouping, enhancing, and labeling.

#### 2.9.8 Remote Shutdown Panel

This panel combines many systems on one panel. The controls are arranged in configurations quite different from the control room panels. The lack of demarcations, mimics, and hierarchal labeling make it very difficult to locate controls and displays.

#### 2.9.9 Procedures

The owners group criteria included a review of procedures and documentation. Generally, discrepancies concerning emergency procedures have been corrected by the new TRIP procedures that have been prepared in accordance with NRC guidelines. Other procedural items have also been corrected, as described in individual HEDs.

#### 2.9.10 NRC Human Engineering Discrepancies

An in-progress audit was conducted early in the DCRDR process. At the time of the in-progress audit, only a few panel configurations had been placed on the mockup shells. These had not yet been proofed for accuracy and were known to have several errors. The enhancements included did not represent the final

approved enhancement configuration. For these reasons, the comments in the audit report concerning the mockup were somewhat premature, but they were, however, taken into consideration by the team as described below. —

After the time of the audit, the mockup was subjected to five review processes before the final enhancements and configuration were approved. The mockup was reviewed by the DCRDR team for accuracy and appropriateness of enhancements. The mockup was used during the HED assessment and HED resolution phase, where further review and changes were made. (Also during this review, in-progress audit comments about the mockup were considered.) Operators, as part of the team, reviewed and commented up on the mockups. The mockup was used for the walkthrough of TRIP procedures. Finally, the mockup was used for the verification that design improvements provide ~~the~~ necessary correction and do not introduce new HEDs. Only after all these reviews were completed were the enhancements and arrangements considered to be approved for the preparation of new panel arrangement drawings. Throughout this overall process, every effort was made to make the mockup a high fidelity representation of the desired control room. The mockup was a valid representation of the control room for each phase of the DCRDR process.

The in-progress audit identified several HEDs. One of these was not yet identified by the review process, and it is included in this report as HED NRC1-01. In a separate review by the NRC,

in conjunction with a PECO proposal to use certain meters and recorders as an SPDS, 12 human factors discrepancies were listed. These discrepancies are included as the NRC series HEDs. Each was treated as a human factors discrepancy without consideration for possible use as an SPDS.



### Section 3

#### IMPLEMENTATION

This implementation plan involves a significant upgrade of the Peach Bottom Unit 2 and 3 control rooms. The approach has been to use a full scale, high fidelity mockup to perform a thorough and integrated enhancement design of the control room. Based upon specifically established criteria, extensive enhancements have been designed and implemented on the mockup. Each human engineering discrepancy (HED) was carefully considered, and the solution integrated into the design approach of the mockup. Strong and enthusiastic support from operating personnel as members of the DCRDR team, in support of the team, and in review of the mockup design, enabled the inclusion of all reasonable and effective improvements into a very workable design.

Concurrent with the DCRDR, a major improvement in the control room has been undertaken. This includes the arrangement of desks, storage, and traffic patterns, complete revision of lighting, and better use of supporting spaces. These improvements will result in better use of space and a reduction of traffic in the primary control areas. In addition, blue lines on the floor define areas that must be kept clear of support personnel and ensure unobstructed access by operators to all operating panels.

#### 3.1 OVERALL APPROACH TO PANEL DESIGN

The full scale mockup of the control room formed the heart of the design process. Preparations for enhancement designs involved

much more than drawing lines. Each instrument was researched using piping and instrumentations drawings (P&ID) along with operator experience to determine the exact function and relationship to other instruments. In many cases, the seeming relationship was not correct because existing labels were misleading. Some instruments were relocated to better group them with related instruments, or to obtain the correct order of operation.

With the shift to hierarchal labeling, all labels were changed. Using this technique, it has been possible to design labels that are succinct and meaningful in operator terminology. A manual of terminology and abbreviations was developed and used to obtain consistency in labeling throughout. The complete enhancement design eliminates temporary and non-standard labels throughout, and ensures that all components are labeled correctly.

The result has given the effect of a completely redesigned control panel. This entire process used the continued input of very experienced senior reactor operators. The most dramatic improvements were made on the ECCS panels. Flow paths on these panels were not easy to follow and were conducive to making errors in lineups. The enhancement, labeling, and simplified mimics have been well received by operators.

With the approved enhancements applied to the mockup, including the relocation of some instruments, the mockup became the major integrating factor in designing resolutions to class HEDs and individual HEDs. Those solutions that could be displayed on the

mockup were added to the mockup. Other solutions were designed in the context of the enhanced and improved mockup. This proved to be an ideal method of designing control room improvements.

Colors were used in enhancement design to represent various types of systems such as torus water, feed water, cooling water, steam drains and exhaust, lube oil, and hydraulics. These were chosen to suggest the type of system being represented. Demarcation outlines were used to group normal operation systems in appropriate system colors, and emergency instrument groupings were color-padded in system colors. To provide a better background to all these colors and to improve the overall appearance of the control room, all panels will be repainted a light beige.

Using the criteria developed for the overall program, enhancements were designed and have been implemented on the Off-Gas Panel in the actual control room. These improvements are proving to be beneficial to operations

### 3.2 COMPONENT IMPROVEMENTS

This part of the discussion is divided into two sections. The first discusses classes of problems. In that category, are discrepancies that appear in many places, perhaps on several panels in the control room, and that are dealt with as a class problem. An overall solution to each class of discrepancies has been developed and will be applied to all applicable locations in the control room. These are called class improvements.

The second category is individual solutions to specific problems applicable to one situation. These are called individual improvements.

### 3.2.1 Class Improvements

#### 3.2.1.1 Annunciator Arrangement

The placement of annunciators around the perimeter of the control room has resulted in having some annunciators not located over the associated panel, or in front of the associated console. Investigation of this problem revealed that the arrangement of the annunciator panels is logical within the spaces allowed for their placement. There is no way to change the location of these panels in order to obtain a better arrangement without a whole-scale deletion of alarms. Neither the task analysis/verification, or the walkthrough of emergency procedures showed location to be a problem.

While annunciator panels are prioritized by the use of red and amber lights, some alarms have not been prioritized. The use of red and amber colors have been defined, and all appropriate alarms will be given colors. A matrix system of identifying alarm windows will be used. This system will use alpha-numerics around the periphery of each annunciator panel.

#### 3.2.1.2 Annunciator Alarm Sequence

Annunciator visual alarm sequences provide a flashing alarm and audio bell or buzzer until the alarm is acknowledged. When acknowledged, the bell is silenced and the window is on steady. For resetting alarms when the alarm condition is cleared, two

options are available. Each window can be set by means of a switch located behind the window to be manual or automatic. In the automatic mode, the light will go out without an alert when the alarm condition has cleared. In the manual mode, the alarm tile will remain lighted when the alarm condition has cleared, but will not sound and alert. The window can be darkened only when the operator pushes the reset button. The position of this slide switch is now left to individual shift operators. While this is desirable for most of the alarms, some of the more important alarms must be set in a specific position. The alarms will be analyzed and guidelines will be prepared for setting these switches. Alarms that must have a specific setting will have a small "A" or "M" engraved in the corner of the tile to indicate that the switch must be left in the indicated position.

Annunciator controls provide an acknowledge button, a reset button, and a lamp test button. These are located in several places around the control room. One set is arranged in different order, backward from the others. These will all be made to conform to one sequence. All acknowledge pushbuttons will be colored yellow and will have a large mushroom-type palm-actuated handle for blind operation. Finger operated pushbuttons are used for reset and test. Raised guards will be used on all test pushbuttons to protect against inadvertent operation.

The bells used for annunciator alarms will be modified to have an automatic tone-down feature that will reduce their intensity after a few seconds. This will tend to reduce the noise level

during abnormal or emergency operations, when all alarms cannot be acknowledged immediately.

The multi-input alarms that do not have convenient instruments to resolve the meaning of the alarm condition were thoroughly investigated. It was found that these alarms are adequate as multi-input alarms because of the nature of the alarms. (HED Al-06 in Appendix A list these alarms and the resolutions for each.)

A plant modification has added a first-out feature on selected annunciator alarms since the original owners group survey.

#### 3.2.1.3 Controls

Several types of controllers are used throughout the control room. There are 11 different variations in the combinations of controls and meters used on 40 controllers. While these generally meet human factors criteria, the specific functions of each control and meter in each controller unit is not always clear, nor is the final effect on the controlled parameter always clear. Controllers will have labels added to clarify functions as appropriate. In addition, some controllers indicate open on the left and close on the right, the opposite of control conventions. These will be changed to conform to conventions.

Although there are many different shapes used for control handles, generally there is no consistent coding. With the



elaborate enhancements and the use of mimics, there is no operational need to define handle codes. Since the existing handles do not cause any confusion, no changes will be made.

#### 3.2.1.4 Displays

The primary display used throughout the control room is the vertical analog meter. This meter meets human factors criteria. Very few of these meter scales are enhanced to aid the operator in determining cautionary and danger areas. Those scales determined to require enhancements during the task analysis/verification process will be marked with color zones as required, to help the operators identify key plant conditions during emergency operations. See individual task analysis (TA) HEDs. (Appendix A)

Recorders use both single pens and multiple pens. Where multiple pens are used, the colors are distinct and easily distinguishable. Multipen recorders will have legends to identify pen colors. The recorder will use the same hierarchal labeling system as the vertical meters. Each recorder has paper designed to match its scale. The number of the paper is identified inside the door of each recorder, so that the correct paper will be used for replacement.

Displays and controls that are located above or below recommended heights were individually reviewed by the team. These were found to be instruments that were easily identified and read, and posed no problem to operators. The use of hierarchal labeling improved the identification of the lower instruments because larger fonts

were used and labels were moved to the top of instruments. The higher instruments are not so high that they are not easily read (see HED D3-05).

Many of the meter scales use the progression 3, 6, 9, 12, instead of an even number progression. Because these scale divisions are well marked, easily read, and are used consistently, the team found no reason to change them. However, some other scales were not well marked, used inconsistent divisions, and were difficult to read. These scales will be changed to meet standards.

The Remote Shutdown Panel contains many different types of systems. This factor caused more restrictions on rearranging components because of separation criteria. Operators found the panel to be very difficult to understand. Enhancement designs were used to relate this panel to the applicable portions of control room panels, so that they would be immediately recognizable to an operator who normally does not use the remote panels. The mockup of the Remote Shutdown Panel was located with the control room mockup in order to ensure similarity of enhancements.

### 3.2.2 Individual Improvements

The resolutions selected for one-of-a-kind discrepancies were based upon the priority assigned and the practical needs of the operators. Each resolution was carefully coordinated with the overall design concepts of the control panels. On several

occasions, proposed solutions were found to conflict with other design features and would have caused another discrepancy. The final resolutions were made compatible with the panels. Refer to individual HEDs enclosed for details.

## Appendix A

### HUMAN ENGINEERING DISCREPANCIES

The HEDs have a complex numbering system that was used to directly relate to the original owner's group control room survey (CRS) discrepancies which were divided into groups but not numbered. The initial letters indicate groups: A-annunciator, D-layout design, I-instrumentation and hardware, P-procedures, E-environment, T-training. The supplemental survey uses the same lettering system, with a preceding "S". Task Analysis HEDs are lettered TA; Operating Experience HEDs are lettered LER; NRC instigated HEDs lettered NRC; Validation HEDs are labeled VW.

NOTE: Equipment identified in this appendix are for Unit 2 and Common plant equipment. Unit 3 equipment would be similar equipment.

PEACH BOTTOM  
HED ASSESSMENT

HED No. A1-01

EP = 4/PRI 4

Code B

TITLE: Annunciator Color/Location Coding

COMMENT: Inconsistent use of annunciator color/location coding.

Item: 4.3.1 Ref.: Cl.3 Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Annunciator Tiles  
ID or Number: N/A

DESCRIPTION:

Alarms are generally arranged in a red-yellow-white-blue order from top to bottom. However, this coding is not consistently used throughout the control room.

MITIGATING CONSIDERATIONS:

Coding the alarms is in the process of being completed.

RESOLUTION: (Sched: None )

Define annunciator window color coding. Ensure coding is applied consistently throughout control room. Due to operating experience the use of color and location prioritization is not considered beneficial to operations.

TRAINING REQUIREMENTS:

Brief operators on panel design improvements.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Carney Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. A1-02

EP = 4/PRI 4

Code A

TITLE:

Annunciator Legend Consistency

COMMENT:

Terminology used inconsistently on some annunciator tiles.

Item: 4.3.2

Ref.: C2.1

Source: CRS

IDENTIFICATION: Panel: 20C203, 20C204

Component Name: Annunciator Tile

ID or Number: 20C203D-4, 20C204B-14

DESCRIPTION:

"Torus" and "Suppression Chamber" are used interchangeably in annunciator legends.

RESOLUTION:

(Sched: None )

Window 20C204B-14 will be changed to TORUS instead of Suppression Chamber.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

Update alarm cards and procedures (TRIPs, OT's, Off Normals, SE's, ST/EP) accomplished by A-36 Periodic Procedure Review (administrative procedure).

Team Approval Signature: *J. Cahoy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. A1-03

EP = 4/PRI 4

Code F

TITLE:

Annunciator Type Style

COMMENT:

Inconsistent application of type style and size on some annunciator panels.

Item: 4.3.3

Ref.: C2.2

Source: CRS

IDENTIFICATION: Panel: See attached.

Component Name: Annunciator Legends

ID or Number: See attached.

DESCRIPTION:

Temporary annunciator legends use varying type styles and sizes (some are handwritten). The five panel annunciator legends use smaller type and are difficult to read. This could cause an error during emergency situations.

RESOLUTION:

(Sched: None )

All temporary labels have been replaced by permanent labels. The team reviewed all annunciators for readability and found them to be satisfactory. Some style variation is required to accomodate information needed on the windows. The window labels are now acceptable. See HED A1-05.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Al-04

EP = 6/PRI 4

Code A

TITLE:

Incorrect Annunciator Legend

COMMENT:

Window 20C204B-14 is incorrect.

Item: 4.3.4

Ref.: C2.5

Source: CRS

IDENTIFICATION: Panel: 20C204

Component Name: Annunciator Tile

ID or Number: 20C204B-14

DESCRIPTION:

The legend reads "SUPPRESSION CHAMBER HI LEVEL" when it should signify a transfer of HPCI Suction.

RESOLUTION:

(Sched: None )

The signal to the window is Torus HI Level, not HPCI Suction Transfer. To change the label would mislead the operator. "Suppression Chamber" will be changed to "TORUS."

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Al-05

EP = 4/PRI 5

Code A

TITLE:

Annunciator Markings

COMMENT:

Temporary markings have been added to some annunciators.

Item: 4.3.5

Ref.: C2.6

Source: CRS

IDENTIFICATION: Panel: See attached.

Component Name: Annunciator Tile

ID or Number: See attached.

DESCRIPTION:

Setpoint indications have been added to several annunciators with tape and grease pencil. No standard method for changes appears to exist.

RESOLUTION:

(Sched: N/A )

All temporary labels have been removed and replaced by permanent labels where required.

TRAINING REQUIREMENTS:

None

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Al-06

EP = 6 PRI 4

Code F

TITLE:

Multi-choice Alarms

COMMENT:

Some multi-choice alarms exist.

Item: 4.3.6

Ref.: C2.7

Source: CRS

IDENTIFICATION: Panel: See attached.

Component Name: Annunciator Tile

ID or Number: See attached.

DESCRIPTION:

Several multi-choice alarm windows exist (e.g., HI/LO, etc.).  
These should be avoided wherever possible.

RESOLUTION:

(Sched: None )

Each multi-choice alarm was reviewed for action required. No  
changes were found to be necessary. See attached list.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *[Signature]*

Date: FEB 28 1986

(11) Additional page(s) attached

HED A1-06 - Multi-Choice Alarms - w/out Backup Control Room  
Indication

CATEGORY - SIGNIFICANT TO OPERATIONS:

ANNUNCIATOR

u/2 RFPT Oil Reservoir 20C206R - 19, 24, 29  
u/3 Hi - Lo level  
(A, B, C)

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exists.

u/2 Reactor Bldg Cooling 20C212R - 35  
u/3 Water Header Tank Hi - Lo  
level

**Related Instrumentation:** Process Computer will print out on Lo.

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exists.

u/2 RPS/PCIS Trip Units Card 20C205L - 20  
u/3 out of file or power  
failure

**Related Instrumentation:** Related alarms are available.

**Resolution:** Related alarms allow operator to identify which condition exists.

u/2 RPC/PCIS Trip Units in 20C205L - 19  
u/3 Calibration or Gross  
Failure

**Related Instrumentation:** LAB should notify if calibration.

**Resolution:** Alarm will indicate gross failure. Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exists.

HED A1-06 - Multi-Choice Alarms - w/out Backup Control Room  
Indication

CATEGORY - SIGNIFICANT TO OPERATIONS:

ANNUNCIATOR

u/2 RFPT Oil Reservoir 20C206R - 19, 24, 29  
u/3 Hi - Lo level  
(A, B, C)

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exists.

u/2 Reactor Bldg Cooling 20C212R - 35  
u/3 Water Header Tank Hi - Lo  
level

**Related Instrumentation:** Process Computer will print out on Lo.

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exists.

u/2 RPS/PCIS Trip Units Card 20C205L - 20  
u/3 out of file or power  
failure

**Related Instrumentation:** Related alarms are available.

**Resolution:** Related alarms allow operator to identify which condition exists.

u/2 RPC/PCIS Trip Units in 20C205L - 19  
u/3 Calibration or Gross  
Failure

**Related Instrumentation:** LAB should notify if calibration.

**Resolution:** Alarm will indicate gross failure. Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exists.



CATEGORY - FAIRLY IMPORTANT TO OPERATIONS

ANNUNCIATOR

u/2 Condensate Drain Tank 20C207L - 20  
u/3 Hi-Lo Level

**Resolution:** Floor operator will shift controllers. Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Centrifuge Trouble or 20C208R - 5  
u/3 Barrel Overflow

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 A,B,C Condensate Pump 20C207L - 25  
u/3 High Vibration

**Related Instrumentation:** Other pump parameters in control room

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 A,B,C Circ Water Pump 20C207R - 31  
u/3 High Vibration

**Related Instrumentation:** Other pump parameters in control room

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Nitrogen Compressor 20C203BB - 22  
u/3 A or B Trouble

**Related Instrumentation:** Back-up Compressor should take over until able to investigate.

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

HED A1-06

CATEGORY - FAIRLY IMPORTANT TO OPERATIONS:

ANNUNCIATOR

u/2	A&C RHR Heat Exchanger	
u/3	High Conductivity	20C208L - 17
	B&D RHR Heat Exchanger	
	High Conductivity	20C208L - 18

**Resolution:** Isolate heat exchanger set (A&C or B&D) from control room, chemistry to determine which is leaking, floor operator manually isolates.

u/2	Clean-up Filter Demin	20C204R - 2
u/3	Inlet Hi - Lo PH	

**Resolution:** Change to another Demin whether Hi or Lo condition exists.

u/2	Clean-up Drain Header	20C204R - 7
u/3	Hi - Lo Press	

**Resolution:** Operator will know whether the alarm is HI or low by the system mode of operation.

u/2	Rad. waste discharge	20C212L - 54
u/3	to Canal Hi-Lo flow	

**Resolution:** Automatic valve stops discharge on high or low flow. Floor followup.

HED A1-06

CATEGORY - GENERAL TROUBLE ALARMS

ANNUNCIATOR

Recombiner Trouble

OOC196

Related Instrumentation: Will install unit specific and Common Trouble Alarms w/Recombiner Mod

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

$\frac{u/2}{u/3}$  Isophase Bus Trouble

20C208R - 30

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

$\frac{u/2}{u/3}$  CRD Hydraulic Hi Temp

20C205R - 35

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

$\frac{u/2}{u/3}$  Condensate Filter Demin  
Trouble

20C207L - 2

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

$\frac{u/2}{u/3}$  Service Water Screens  
Trouble

20C207L - 30

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

CATEGORY - GENERAL TROUBLE ALARMS

ANNUNCIATOR

u/2 Outer Screen Structure 20C207R - 19  
u/3 Screen Stopped

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Circ Water Traveling 20C207R - 23  
u/3 Screens Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Turbine Bldg. Sampling 20C207R - 26  
u/3 Stat. 1 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Reactor Bldg. Sampling 20C207R - 28  
u/3 Stat. 3 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

Fire System:

2 Turbine Centrel CO Deluge  
Sprinkler Systems Ckt. Trouble 20C205LL - 19  
3 Turbine Central Ckt. Trouble 30C205LL - 22  
2 Turbine South Ckt. Trouble 20C205LL - 20  
3 Turbine North Ckt. Trouble 30C205LL - 25

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

CATEGORY - GENERAL TROUBLE ALARMS (cont.'d)

ANNUNCIATOR

u/2 Drywell Radiation Monitor 20C203B - 20  
u/3 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Clean-up Filter/Demin 20C204R - 6  
u/3 Sys. Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Excess Flow Check Valve 20C203BB - 3  
u/3 Operated Panel 220 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Excess Flow Check Valve 20C203BB - 4  
u/3 Operated Panel 221 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Excess Flow Check Valve 20C203BB - 5  
u/3 Operated Panel 222 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Fuel Pool Filter/Demin 20C204R - 16  
u/3 System Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.



HED A1-06

CATEGORY - GENERAL TROUBLE ALARMS (cont'd.)

u/2 Fuel Pool Cooling & 20C204R - 21  
u/3 Cleanup System Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

Auxiliary Boiler Trouble 20C212L - 8

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Raw Water System Trouble 20C212L - 21  
u/3

Related Instrumentation: DST Level

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Chlorination System 20C212L - 22  
u/3 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Moisture Monitoring 20C212L - 28  
u/3 System Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Moisture Monitoring System 20C212L - 27  
u/3 High Coolant Leakage

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 Turb Bldg. Vent Panel 20C212L - 46  
u/3 20C131 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.



HED A1-06

CATEGORY - GENERAL TROUBLE ALARMS (cont'd)

ANNUNCIATOR

u/2 Intake Structure Vent 20C212L - 48  
u/3 Panel 20C139 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

Shop & Whse Vent Panel 20C212L - 49  
00C138 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

u/2 React Bldg. Vent Panel 20C212L - 51  
u/3 20C132 Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

Sewage Treatment Plant 20C212L - 55  
Trouble

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

D - E Clg. Twr. System 39C212R - 3

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

HED A1-06

CATEGORY - ELECTRICAL

ANNUNCIATOR

E (4kV) Bus Differential or OOC226  
overcurrent relays

Related Instrumentation: Will lose effected bus in control room.  
Diesel w/ 1 start.

Resolution: Alarm must be investigated by floor operator before  
action can be taken. Therefore, it doesn't matter  
which of the multiple choice conditions exist.

30C209R & 209L  
Misc. Alarms on Relays

Related Instrumentation: Electrical distribution center will  
lose power on effected circuit.

Resolution: Alarm must be investigated by floor operator before  
action can be taken. Therefore, it doesn't matter  
which of the multiple choice conditions exist.

North 500 kV Sub. Sta. OOC224 - 5  
General Alarm

Resolution: Alarm must be investigated by floor operator before  
action can be taken. Therefore, it doesn't matter  
which of the multiple choice conditions exist.

Unit 1 Trouble OOC224 - 15

Resolution: Alarm must be investigated by floor operator before  
action can be taken. Therefore, it doesn't matter  
which of the multiple choice conditions exist.

North 220 kV Sub. Sta. OOC224 - 25  
General Alarm

Resolution: Alarm must be investigated by floor operator before  
action can be taken. Therefore, it doesn't matter  
which of the multiple choice conditions exist.

South 500 kV Sub. Sta. OOC224 - 45  
General Alarm

Resolution: Alarm must be investigated by floor operator before  
action can be taken. Therefore, it doesn't matter  
which of the multiple choice conditions exist.

HED A1-06

CATEGORY - GENERAL

ANNUNCIATOR

Diesel Bldg. CO Sys.      OOC226B - 1  
Inactivated

Related Instrumentation: Fire watch signs to identify bay

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

Diesel Gen. Room Flooded      OOC226C - 1

Related Instrumentation: No way to determine which bay

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

Seismic Trig Activation      30C212L - 4  
or Loss of Seismic Power

**Resolution:** Alarm must be investigated by floor operator before action can be taken. Therefore, it doesn't matter which of the multiple choice conditions exist.

PEACH BOTTOM  
HED ASSESSMENT

HED No. Al-07

EP = 6/PRI 4

Code B

TITLE:

Annunciator Priority Coding

COMMENT:

Incomplete use of priority color coding.

Item: 4.3.7

Ref.: C2.8

Source: CRS

IDENTIFICATION: Panel: All

Component Name: Annunciator Tiles

ID or Number: N/A

DESCRIPTION:

Priority coding of annunciators by use of a red, yellow, green, blue color system is incomplete. This could confuse an operator trying to identify priority alarms.

RESOLUTION:

(Sched: None )

Define annunciator window color coding. Ensure coding is applied consistently throughout control room. Due to operating experience and the use of color, location prioritization is not considered beneficial to operations.

TRAINING REQUIREMENTS:

Brief operators on panel design improvements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Al-08

EP = 8/PRI 4

Code A

TITLE:

Annunciator Identification

COMMENT:

No alpha-numeric identification code exists.

Item: 4.3.8

Ref.: C2.9

Source: CRS

IDENTIFICATION: Panel: All

Component Name: Annunciator Tiles

ID or Number: All

DESCRIPTION:

No alpha-numeric matrix system exists for identifying individual annunciator tiles. At present the operator must count in order to locate the window in a panel. This causes identification delays.

RESOLUTION:

(Sched: None )

Add alpha-numeric matrix located around the perimeter of the annunciator panel to identify alarms.

TRAINING REQUIREMENTS:

Provide training in use of annunciator matrix identification.

PROCEDURE REQUIREMENTS:

Update alarm cards.

Team Approval Signature: *Jf Calkins*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. A1-09

EP = 6/PRI 1

Code B

TITLE:

Annunciator Silence Control

COMMENT:

No separate silence button exists.

Item: 4.3.9

Ref.: C5.1

Source: CRS

IDENTIFICATION: Panel: All

Component Name: Annunciator Acknowledge Pushbutton

ID or Number: N/A

DESCRIPTION:

At present, a separate annunciator audible alarm silence button does not exist. Alarms are silenced automatically when the acknowledge pushbutton is depressed. This could be a problem if more than one alarm came up at once.

RESOLUTION:

(Sched: 1st Refuel )

The acknowledge button silences each alarm. Install a tone-down system to reduce the sound level of the bell after initially ringing. After acknowledging previous alarm, new alarms from same audio annunciator panel will again initially be loud and then tone-down in order to clearly identify new alarms.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JF Carney*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. A1-10

EP = 4/PRI 3

Code B

TITLE:

Annunciator Control Arrangement

COMMENT:

Annunciator controls not consistently arranged.

Item: 4.3.10

Ref.: C5.5

Source: CRS

IDENTIFICATION: Panel: 20C207A

Component Name: Annunciator Controls

ID or Number: N/A

DESCRIPTION:

Annunciator controls are arranged horizontally on all consoles except the Condensate console where they are arranged vertically.

RESOLUTION:

(Sched: None )

Coding of the annunciator controls by shape and color enhancements will allow easy identification.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. J. Carling*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. A1-11

EP = 8/PRI 5

Code A

TITLE:

Annunciator First-Out Feature

COMMENT:

No dual reset capability or first-out feature exists.

Item: 4.3.11

Ref.: C5.6

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

Annunciator tiles apparently have no first-out feature or dual reset capability for high priority alarms.

RESOLUTION:

(Sched: N/A)

A modification has added a first-out feature on selected annunciator alarms.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Carney

Date: FEB 23 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Al-12

EP = 8/ PRI 2

Code D

TITLE:

"Alarm Clear" Indication

COMMENT:

No indication exists for a cleared alarm.

Item: 4.3.12

Ref.: C6.4

Source: CRS

IDENTIFICATION: Panel: All

Component Name: Annunciators

ID or Number: N/A

DESCRIPTION:

No special cue is available to an operator (e.g. a slower blink rate) to indicate when an alarm input clears. The operator must determine, on his own, that the alarm has cleared.

RESOLUTION:

(Sched: 2nd Refuel )

The operating philosophy is to require aggressive follow up on alarms. To aid the operator in clearing alarms, each window has an internal slide switch that can be set for the alarm to go out automatically when the alarm condition clears, or to remain lighted when the alarm condition clears. The desired setting depends upon the type of alarm and the operating conditions. For certain alarms of greater importance, the position of the slide switch should be specified. The position will be specified by putting a small "A" or "M" in the annunciator windows that need a required position to be set. Revise alarm cards to indicate the required setting. Provide guidelines for setting slide switches to Auto, Manual, or Optional.

TRAINING REQUIREMENTS:

Train operators in system for required settings.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Cl-01

EP = 4/PRI 6

Code A

TITLE:

Printer Use

COMMENT:

One printer used between two units.

Item: 4.4.1

Ref.: D2.4

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Process Computer Printer

ID or Number: N/A

DESCRIPTION:

Only one printer is used. It must handle information for both Unit 2 and 3. As such it is subject to possible overload, as well as delay in printing when both units request data at the same time.

RESOLUTION:

(Sched: N/A )

The described problem does not exist. The subject printer was Balance of Plant (BOP) which has been removed from the control room, and placed in the computer room. These printers are not used for control room operations. Each unit has its own separate printer pertinent to that particular unit (which prints information.)

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. C1-02

EP = 4/PRI 6

Code A

TITLE:

Auto-restart Capability

COMMENT:

No auto-restart capability exists.

Item: 4.4.2

Ref.: D2.5

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Process Computer

ID or Number: N/A

DESCRIPTION:

Drum memory is often compromised during transients causing the computer to go down. No auto-restart capability exists, therefore creating the possibility that the computer will not be available during post-transient periods.

RESOLUTION:

(Sched: N/A )

This computer not involved in operations; not used in transient operations. Therefore, this is not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. C1-03

EP = 4/PRI 6

Code A

TITLE:

Processor Redundancy

COMMENT:

No backup processor exists.

Item: 4.4.3

Ref.: D2.7

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Process Computer

ID or Number: N/A

DESCRIPTION:

Only one processor exists in each unit. If a processor failure occurs, no backups are available to provide an automatic or manual switch over.

RESOLUTION:

(Sched: N/A )

This is not a discrepancy. These are two processors (one on line, one backup) with manual switchover.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calkins*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. D1-01

EP = 8/PRI 6

Code B

TITLE:

Annunciator Heights

COMMENT:

Annunciator panels higher than recommended.

Item: 4.1.1.1

Ref.: A1.1

Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Annunciators  
ID or Number: N/A

MITIGATING CONSIDERATIONS:

Annunciator panels are angled down to facilitate reading. No operator comments on difficulty of reading legends. Operating experience of over 12 years does not include any LERS or noted operational difficulties.

DESCRIPTION:

All control room annunciators exceed the recommended height of 88 inches. This creates difficulties in reading and identifying alarms.

RESOLUTION:

(Sched: N/A)

No physical change needed as annunciator panel is angled in such a way that reading the annunciator legend is not difficult. The Review Team considered the BWR Owner's Group EP number and did not agree with it for the reason stated.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D1-02

EP = 4/PRI 4

Code F

TITLE:

Console Control Reach Distances

COMMENT:

Controls on all consoles exceed maximum reach distance.

Item: 4.1.1.2

Ref.: A1.1

Source: CRS

IDENTIFICATION: Panel: 20C04A, 20C05A, 20C06A, 20C12

Component Name: See attached.

ID or Number: See attached.

DESCRIPTION:

Controls on all consoles 2" over maximum reach distance. Depth on panel 20C05A is 5" over maximum.

MITIGATING CONSIDERATION:

Most controls are within the extended reach (28"-NUREG 0700 of 5% female. Temp. selector on C06A at end of console so operators can reach from side of console.

RESOLUTION:

(Sched: None )

Most controls appear within the functional reach of control personnel (23.6"), those exceeding this distance are not frequently used and do not require maintained contact by the operator.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Carney*

Date: FEB 28 1986

(2) Additional page(s) attached

20C04A -

"EQUALIZE VALVE TEST" pushbuttons (2)

"A SCOOP TUBE POWER" pushbuttons

"PUMP VIBRATION MONITOR" pushbuttons

"B SCOOP TURB POWER" pushbuttons

WATER SYSTEM SELECTOR control

20C05A -

DISCH VOLUME HI WTR BYPASS keyswitch

RHR SAMPLE LINE OUTBOARD ISOL SIGNAL BYPASS keyswitch

RHR SAMPLE LINE INBOARD ISOL SIGNAL BYPASS keyswitch

RAD GAS SAMPLER OUTBOARD VALVE ISOL BYPASS keyswitch

RAD GAS SAMPLER INBOARD VALVE ISOL BYPASS keyswitch

DRYWELL INSTR N2 VLV ISO-BYPASS (AO-2969B, AO-2969A) keyswitch

ROD WORTH MINIMIZER INTERLOCKS BYPASS keyswitch

SCRAM RESET control

ROD DRIFT ALARM TEST pushbutton

REACTOR SCRAM A pushbutton

REACTOR SCRAM B pushbutton

APRM CHAN SELECT RED PEN pushbutton

APRM CHAN SELECT BLACK PEN pushbutton

APRM ROD BLOCK pushbutton

APRM/RBM CHAN SELECT RED PEN pushbutton

APRM/RBM CHAN SELECT BLACK PEN pushbutton

APRM/RBM ROD BLOCK pushbutton

TURBINE STEAM FLOW/REACTOR SHUTDOWN LEVEL selector switch

REACTOR LEVEL SELECT switch

VESSEL LEVEL CONTROL MODE selector switch

20C06A -

PLANT TEMP READOUT (TI-2100)

20C12 -

REFUELING FLOOR VENTILATION SUPPLY (AO-20453) 6 controls

VENTILATION TEMPERATURES (TI-2501)

A DRYWELL COOLER FAN A (2AV26-A)

B DRYWELL COOLER FAN A (2BV26-A)

C DRYWELL COOLER FAN A (2CV26-A)

D DRYWELL COOLER FAN A (2DV26-A)

E DRYWELL COOLER FAN A (2EV26-A)

F DRYWELL COOLER FAN A (2FV26-A)

G DRYWELL COOLER FAN A (2GV26-A)

A DRYWELL PURGE SUPPLY FAN (2AV19)

PEACH BOTTOM  
HED ASSESSMENT

HED No. D1-03

EP = 8/PRI 6

Code A

TITLE:

Console Height

COMMENT:

Console is too high.

Item: 4.1.1.3

Ref.: A1.1

Source: CRS

IDENTIFICATION: Panel: 20C05A  
Component Name: Console  
ID or Number: N/A

DESCRIPTION:

The 20C05A Reactor Panel is 56" high, exceeding the maximum recommended 42" (of a sit down console) by 14" and may be difficult to see over.

RESOLUTION:

(Sched: N/A )

This console, under normal and emergency conditions, is operated in a stand up position. The 56" is within stand up console guidelines. The seated position is used during controlled rod movement operations where the only display is on 20C05B necessary to view in the seated position which is acceptable. This is not a discrepancy. Therefore the EP is mischaracterized.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D1-04

EP = 6/PRI 4

Code F

TITLE:

Mirror-Imaging of Panels

COMMENT:

Some Unit 2 and 3 panels are mirror-imaged.

Item: 4.1.1.4

Ref.: A1.2

Source: CRS

IDENTIFICATION: Panel: 20C09, 30C09

Component Name: Gen. & Aux. Power Inst. & Control

ID or Number: N/A

DESCRIPTION:

The Generator and Auxiliary Power Instrumentation and Control Panels for Unit 2 and 3 are mirror-images of each other and could cause operator errors.

RESOLUTION:

(Sched: None )

These panels are arranged on either side of the Start Up Power panel (00C24). This arrangement is to indicate the distribution network of start up power to each unit. The mirror imaging effects are minimized and compensated for by the design of the enhancements, which include integrated mimics that tie the three panels together. They clearly indicate the load centers and instrument groupings. The arrangement is not considered a detriment to operator performance.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calkins*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. D1-05

EP = 6/PRI 4

Code A

TITLE: Uncovered Panel Holes

COMMENT: Several panels have uncovered holes in them.

Item: 4.1.1.5

Ref.: A1.3

Source: CRS

IDENTIFICATION: Panel: 20C04A,B,C; 20C06A,B; 20C07B, 20C08B,  
20C12, 20C13, 20C43, 20C42  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

These panels have unplugged, uncovered holes in them which allow dirt and other foreign materials in.

RESOLUTION:

(Sched: None )

All surface defects (holes, scratches) will be corrected when panels are repainted.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Cahy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D2-01

EP = 4/PRI 4/6

Code A

TITLE:

Control Distinction

COMMENT:

Common and unit specific controls are not clearly distinguishable.

Item: 4.1.2.1

Ref.: A2.1

Source: CRS

IDENTIFICATION: Panel: 00C123, 00C14

Component Name: See attached.

ID or Number: See attached.

DESCRIPTION:

Controls devoted to individual units and those common to both units are not easily distinguished on the Emergency Cooling Water, and Common Area and Process Monitoring panels. No use of demarcation lines.

RESOLUTION:

(Sched: See attached.)

See attached.

TRAINING REQUIREMENTS:

Provide training to operators on enhancement scheme prior to implementation in the control room and during licensing training. See HED ST1-01.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1986

(1) Additional page(s) attached

00C123

HP SERV WTR PUMP BAY INLET VALVES	(MO-3804A, MO-3804B) (MO-2804A, MO-2804B)
HPSE DISCHARGE VALVE TO POND	(MO-2486) (MO-3486)
"A" EMERG SERV WTR INLET VALVE	(MO-0501A)
"B" EMERG SERV WTR INLET VALVE	(MO-0501B)
"C" EMERG SERV WTR INLET VALVE	(MO-0501C)
"A" HP SERV WTR INLET VALVE	(MO-0502A)
"B" HP SERV WTR INLET VALVE	(MO-0502B)
"C" HP SERV WTR INLET VALVE	(MO-0502C)
"A" COOLING TOWER FAN	(OAK32)
"B" COOLING TOWER FAN	(OBK32)
"C" COOLING TOWER FAN	(OCK32)

a. RESOLUTION: Code A PRI 4 Sched: None

Enhancements will be added to distinguish between unit related instruments and common instruments.

-----

00C14

STACK GAS RADIATION MONITOR A

STACK GAS RADIATION MONITOR B

b. RESOLUTION: Code A PRI 6 Sched: N/A

This is a common panel for both units and it contains no unit related instruments. Monitors A and B are common to both plants. Not a discrepancy.

PEACH BOTTOM  
HED ASSESSMENT

HED No. D2-02

EP = 12/PRI 3

Code A

TITLE:

Demarcation and Mimic Lines

COMMENT:

Generally demarcation lines and mimics are not used.

Item: 4.1.2.2

Ref.: A2.2  
A2.3

Source: CRS

IDENTIFICATION: Panel: All  
Component Name: All  
ID or Number: N/A

DESCRIPTION:

Unit 2 uses few or no demarcation lines or mimics. Unit 3 has a few mimics, but these are not considered adequate.

MITIGATING CONSIDERATIONS:

Current panel configuration has demarcations lines between major systems.

RESOLUTION:

(Sched: None )

Overall enhancement design will rectify these discrepancies through use of demarcation, mimic standardization, and color enhancement.

TRAINING REQUIREMENTS:

Train personnel in enhancements.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D2-03

EP = 8/PRI 4

Code A

TITLE: Demarcation Line Contrast

COMMENT: Demarcation lines that exist are difficult to see.

Item: 4.1.2.3 Ref.: A2.5 Source: CRS

IDENTIFICATION: Panel: 20C06  
Component Name: Demarcation Lines  
ID or Number: N/A

DESCRIPTION:

The gray demarcation lines on a pale green background are difficult to distinguish and provide poor contrast.

MITIGATING CONSIDERATIONS:

Existing demarcations are raised silver metal. The team does not agree that they are a problem to see.

RESOLUTION: (Sched: None)

The enhancement scheme has established appropriate colors for demarcation lines.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Carby

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D2-04

EP = 6/PRI 3

Code A

TITLE:

Mimic Flowpaths

COMMENT:

Mimic flowpaths are not clear.

Item: 4.1.2.4

Ref.: A2.7

Source: CRS

IDENTIFICATION: Panel: All with mimics

Component Name: Mimic Lines

ID or Number: N/A

DESCRIPTION:

Mimics used in the Unit 3 control room are ambiguous and difficult to follow. This can hamper operations by confusing the control room personnel.

RESOLUTION:

(Sched: None )

Simplify and reorganize mimic flow arrangements to allow for easy recognition as part of overall enhancement program. In the interim, arrows have been placed on existing mimics.

TRAINING REQUIREMENTS:

Provide training in new mimic configurations.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Sy Calby*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. D2-05

EP = 8/PRI 1

Code A

TITLE:

Mimic Flow Direction

COMMENT:

Flow direction on panel mimics not clear.

Item: 4.1.2.5

Ref.: A2.9

Source: CRS

IDENTIFICATION: Panel: All with mimics  
Component Name: Mimic Lines  
ID or Number: N/A

DESCRIPTION:

The mimics used in both control rooms do not clearly indicate flow direction. This could be confusing for the operator in time-critical operations.

MITIGATING CONSIDERATIONS:

Flow directional arrows will be marked on existing mimics.

RESOLUTION:

(Sched: 2nd Refuel )

Simplify mimic arrangements, add more directional arrows to indicate flow direction as part of overall enhancement design.

TRAINING REQUIREMENTS:

Provide training in new mimic patterns.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Cahy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D2-06

EP = 8/PRI 4

Code A

TITLE:

Mimic Consistency

COMMENT:

No documented mimic standard exists.

Item: 4.1.2.6

Ref.: A2.4, A2.9,  
A2.10, A2.12

Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Mimics  
ID or Number: N/A

DESCRIPTION:

Standard mimic color, symbol, and graphics coding does not exist for either Unit.

MITIGATING CONSIDERATIONS:

Since there are no present standards, operators do not attempt to interpret mimic meanings. Electrical bar mimics have a color standard.

RESOLUTION:

(Sched: None )

Implement mimic color, symbols, and bar width standards as part of overall enhancement effort. Differ from EP of 8 because present mimics are adequate to guide operator and operators do not interpret mimic meanings.

TRAINING REQUIREMENTS:

Incorporate in requalification and licensing training and upon initial implementation.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D3-01

EP = 6/PRI 4

Code A

TITLE:

Control/Display Grouping

COMMENT:

Some controls and displays are not grouped together.

Item: 4.1.3.1

Ref.: A3.1

Source: CRS

IDENTIFICATION: Panel: 20C484A,B; 20C43

Component Name: Torus & Drywell Indicators/RCIC Control/Displays

ID or Number: O I-4963B, O I-4963D

RCIC TURBINE SPEED, FLOW, TURBINE STOP  
VALVE TRIP, STOP VALVE CONTROL, STOP  
VALVE TRIP

DESCRIPTION:

Torus and Drywell Indicators are not grouped by system on the Cad. System Panel. Controls are not grouped by system on the Remote Shutdown Panel.

RESOLUTION:

(Sched: None )

20C484 - Exchange Torus/Drywell indicators, and controls (see HED SD3-25).

20C43 - Add enhancements to clarify groupings (see HED SD3-23).

TRAINING REQUIREMENTS:

Train personnel in meaning of enhancements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D3-02

EP = 6/PRI see  
attached

Code: see attached

TITLE:

Component Arrangement

COMMENT:

Some components are not arranged in the expected manner.

Item: 4.1.3.2

Ref.: A3.2

Source: CRS

IDENTIFICATION: Panel: 20C12, 30C12, 20C123, 20C43, 30C43

Component Name: See below

ID or Number: See below

DESCRIPTION:

"B" chilled water drywell isolation valves are above the "A" valves (C12); "B" recirculation pump chilled water flow indicator is left of "A" indicator (C12); valve MO-3972 for Unit 3 is above the corresponding valve for Unit 2 (C123); components on 20C43 and 30C43 are not ordered identically.

RESOLUTION:

(Sched: None )

See attached.

TRAINING REQUIREMENTS:

Provide training to operators on enhancement scheme prior to implementation in the control room and during licensing training. See HED ST1-01.

PROCEDURE REQUIREMENTS:

None

Team Approval Signature: *Sp. Caling*

Date: FEB 28 1986

(1) Additional page(s) attached

Resolution:

20C12-30C12 Code: F PRI 4

- a. These values are in series and must be operated together. Changing location will not improve operation. A plant modification has removed the indications.

20C123 Code: F PRI 4

- b. These are ESW isolation valve controls. They will both be operated at the same time. They are located on the same panel common to both plants. This arrangement is considered to be adequate. The panel will be enhanced to clarify relationships.

20C43-30C43 Code: A PRI 4

- c. Controls and displays are ordered identically, however, 20C43 has two controls (OAP57, OBP57) and two displays (PI0236AX, PI0236BX) not found on 30C43. There are no ESW controls or indication on the Unit 3 Remote Shutdown Panel. This is a common system to both units. A note will be added to Unit 3 RSP to remind the operator that they are located on the Unit 2 panel.

PEACH BOTTOM  
HED ASSESSMENT

HED No. D3-03

EP = 9/PRI 1

Code A

TITLE:

Component String and Matrix Arrangement

COMMENT:

Some panels contain undivided strings and matrices of components.

Item: 4.1.3.3

Ref.: A3.4

Source: CRS

IDENTIFICATION: Panel: C03, C04A, C06A, C07A, C08A, C09, C12, C14, C43, C123, C442, C484

Component Name: N/A

ID or Number: N/A

DESCRIPTION:

No demarcation lines, spacing, color coding, or hierarchal labeling is used to group components on many panels.

MITIGATING CONSIDERATIONS:

Interim mimics and/or demarcations have been added to all safety related panels.

RESOLUTION:

(Sched: C43 Panel - 1st Refuel )  
Remainder - 2nd Refuel

Apply panel enhancements according to overall enhancement philosophy where appropriate. Apply mimics and enhancements to remote shutdown panels as soon as possible. (C43).

TRAINING REQUIREMENTS:

Incorporate in requalification and licensing training.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Casey*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. D3-04

EP = 9/PRI 3

Code A

TITLE: Color Coding Consistency

COMMENT: Control coding not consistent with panel mimics.

Item: 4.1.3.4 Ref.: A3.5 Source: CRS

IDENTIFICATION: Panel: 20C03, 00C123  
Component Name: Containment Isolation Mimic  
ID or Number: N/A

DESCRIPTION:

The controls on the ECCS panels are not color coded consistently with the color used in the Containment Isolation mimic. This could confuse the operator during abnormal operations.

MITIGATING CONSIDERATIONS:

Containment isolation controls do have a consistent color code and they can be related to the present summary panel by virtue of mimics.

RESOLUTION: (Sched: C03 Panel - 2nd Refuel )  
C123 Panel - None

20C03: The summary panel will be rearranged by isolation groups and enhanced. The colors will directly relate the summary panel to the control handle colors for isolation valves. (See HED SD2-03)

00C123: This panel does not have containment isolation valves: not a discrepancy.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D3-05

EP = 9/PRI See Attached

Code (see attached)

TITLE:

Control/Display Height

COMMENT:

Panels have controls/displays mounted above/below accepted limits.

Item: 4.1.3.5

Ref.: A3.6

Source: CRS

IDENTIFICATION: Panel: See attached.  
Component Name: See attached.  
ID or Number: See attached.

DESCRIPTION:

Most vertical panels have controls and displays mounted both above and below recommended heights.

RESOLUTION:

(Sched: None )

While a number of components violated height criteria, most were infrequently operated or were not involved in safety operations. Consequently, the Team disagreed with the BWROG EP assigned. See attachments for detailed resolutions; related HEDs 11-01, 15-04, D7-04.

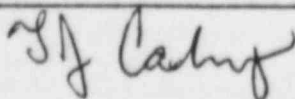
TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:



Date: FEB 28 1996

(4) Additional page(s) attached

OOC124

THRUST BEARING WEAR TEST key switches (low)

Resolution: These are infrequently operated; only prior to starting a feedwater pump. Operators are not under immediate time pressure. Consequently, the safety significance is minimal.

Code: F PRI: 4

OOC123

COOLING TOWER FANS (OAK32, OBK32, OCK32) (low)

Resolution: These would be operated only in the event of major flooding or excessively low river water level. In either case, the operator has sufficient time to manipulate them. Minimal safety significance.

Code: F PRI: 4

20C37

All APRM, LPRM, RBM indicator lights (high)

Resolution: These are mounted as to be easily viewed from the Reactor Console by a seated operator.

Code: F PRI: 4

20C02/20C11

OFF LINE RAD MONITORS (20C02) (high)  
POWER SUPPLY AREA MONITOR (20C11) (low)  
REFUELING BRIDGE COUNTER (20C11) (low)

Resolution: These instruments are alarmed, and are easily read from the break between consoles.

Code: F PRI: 4

20C10

BETA SCINT modules (low)  
REAC BLDG VENT IND/TRIP A POWER SUPPLY (high)  
REAC BLDG VENT IND/TRIP A REAC ZONE counter (high)  
REAC BLDG VENT IND/TRIP A REFUEL FLOOR counter (high)

Resolution: These instruments are easily read by the operator from the break between consoles.

Code: F PRI: 4

OOC14

POWER SUPPLY MONITOR (low)  
RADWASTE FILTER WATER AREA counter (low)  
WASTE SAMPLE TANK AREA counter (low)  
ADMIN BLDG counter (low)  
SOURCE VAULT U Rx BLDG EL 195 counter (low)

Resolution: These instruments are alarmed and have indicator lights that light when a problem occurs and are visible to operators.

Code: D Pri: 4

20C09

13.8 KV AUX BUS AMM FROM S.U. FDRS (high)  
13.8 KV AUX BUS WATT FROM S.U. FDRS (high)  
#2 UNIT AUX TRANS #1 BUS AMM (high)  
#2 UNIT AUX TRANS #1 BUS WATT (high)  
#2 UNIT AUX XFER WM (high)  
#2 GEN A 0 AM (high)  
#2 GEN WATT METER (high)  
#2 GEN FREQ METER (high)

Resolution: These instruments are easily read from the operators' station.

Code: F Pri: 4

20C03-2

AO-8098B (low)  
AO-8099B (low)  
AO-8098D (low)  
AO-8099D (low)

Resolution: These instruments are used either during a post-LOCA or when investigating a possible leak in the RHR system. In each case, personnel are not involved in time sensitive operations.

Code: F Pri: 4

20C03-1

MO-12-18	MO-10-32	MO-2-74	AO-8099A	AO-8098A
MO-12-08	MO-12-08	MO-2-86A	AO-8099B	AO-8098B
MO-10-33	MO-2-80A	MO-2-86B	AO-8099C	AO-8098C
MO-2-38A	MO-2- B	MO-2-86C	AO-8099D	AO-8098D
MO-10-17	MO-2-80C	MO-2-86D	2-3-32A	2-3-35A
MO-12-15	MO-2-80D	MO-2-77		

(ALL TOO HIGH)

Resolution: These lights are being reorganized and enhanced to improve grouping and readability. (HED D3-04)

Code: B Pri: 4

20C03-4

AO-8099A & C (low)  
AO-8099A & C (low)

Resolution: These instruments are used either during a post-LOCA or when investigating a possible leak in the RHR system. In each case, personnel are not involved in time sensitive operations.

Code: F Pri: 4

2BC43

152-1801 (low)  
152-1701 (low)

Resolution: These controls are infrequently operated, consequently, safety significance is minimal.

Code: F Pri: 4

20C13

Modular Units (low)

Resolution: These instruments are used during system calibration only, and are not used during emergency situations.

Code: F Pri: 4

20C03-3

BACKUP INST N<sub>2</sub> (low) - normally closed, used infrequently  
DRYWELL ISOL (low) - normally open, used infrequently  
TORUS ISOL (low) - normally open, used infrequently  
O ANALYZER (low) - normally open, used infrequently  
DRYWELL VENT (low) - infrequently used during purging and  
shutdown, low safety significance  
TORUS VENT (low) - infrequently used during purging and  
shutdown, low safety significance  
TORUS VACUUM BKR (low) - these are automatic valves and require  
no operator manipulation

Code: F Pri: 4

20C04B & C

HPCI ISOL (low)  
RCIC ISOL (low)  
TORUS SUCTION (low)

Resolution: These instruments are alarmed and are normally set  
up for automatic operation. They are easily viewed and are  
infrequently operated.

Code: F Pri: 4

20C06B

RFPT LUBE OIL CLR COOLING WATER controllers (CV-2532A,B,C) (low)

Resolution: These instruments are infrequently operated in  
situations which are not immediately time sensitive.

Code: F Pri: 4

OOC24

#3 STARTUP AND EMERG. REG. TRANS. INST.  
#2 STARTUP TRANS. INST.  
252-043, 252-041, 252-036, 252-0313

Resolution: The indicators are easily read from the operators'  
station. The controls are operated infrequently.

Code: F Pri: 4



PEACH BOTTOM  
HED ASSESSMENT

HED No. D4-01

EP = 9/PRI 4

Code A

TITLE:

Color Standards

COMMENT:

No plant mimic color standards exist.

Item: 4.1.4.1

Ref.: A4.1

Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Mimics  
ID or Number: N/A

DESCRIPTION:

No plant color standards for existing or backfit mimics.

RESOLUTION:

(Sched: None )

Implement mimic color, symbols, and bar width standards as part of overall enhancement effort. Priority differs from the EP because present mimics are adequate to guide operator, and operators do not have to interpret mimic meanings.  
(See ST-01)

TRAINING REQUIREMENTS:

Incorporate in requalification and licensing training and upon initial implementation.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-01

EP = 8/PRI 2

Code A

TITLE:

Operation Limits and Warnings

COMMENT:

Operational limit, warning, or zone indications do not exist.

Item: 4.1.5.1

Ref.: A5.2

Source: CRS

IDENTIFICATION: Panel: All  
Component Name: All Displays  
ID or Number: N/A

DESCRIPTION:

There are no official limits, warnings, or zones indicated of control room displays.

RESOLUTION:

(Sched: See TA HEDs )

Those instruments identified in the task analysis (see TA HEDs) will be enhanced through the application of zone markings or alarm points.

TRAINING REQUIREMENTS:

Train personnel in meaning of zone markings.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-02

EP = 8/PRI 2

Code A

TITLE:

Hierarchal Labeling

COMMENT:

No system for hierarchal labeling exists.

Item: 4.1.5.2

Ref.: A5.3

Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Labels  
ID or Number: N/A

DESCRIPTION:

Lack of hierarchal labeling has resulted in labels which are cramped and contain redundant information.

MITIGATING CONSIDERATIONS:

Emergency panels will always be manned by a Chief Operator.

RESOLUTION:

(Sched: 2nd Refuel )

Use hierarchal labeling system with standard font, type style, terminology, and locations.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-03

EP = 8/PRI 4

Code A

TITLE: Panel Identification

COMMENT: Panels not identified.

Item: 4.1.5.3 Ref.: A5.4 Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Panel Labels  
ID or Number: N/A

DESCRIPTI/N:

All panels are not identified by number or function.

RESOLUTION: (Sched: None. )

All panels and consoles will be labeled with names and numbers.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: JJ Cahy Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-04

EP = 6/PRI 4

Code A

TITLE:

Inconsistent Nomenclature and Abbreviations

COMMENT:

Many labels were inconsistent in the use of nomenclature and abbreviations.

Item: 4.1.5.4

Ref.: A5.5

Source: CRS

IDENTIFICATION: Panel: See attachment.

Component Name: Same as above.

ID or Number: Same as above.

DESCRIPTION:

Examples of inconsistencies include: XMFR and XFMR appear on 00C26 for transformer; indicator labels on panel 20C04A do not always have the instrument number; 20C08B uses an unclear label "70% FSNL ACCPTBL"; 20C03 and 20C09 use AMM to represent amperes; 20C24 uses both TRANS and XMFR to denote transformer. See attached.

RESOLUTION:

(Sched: None )

Use standard acronyms and abbreviations in nomenclature list as part of hierarchal labeling system. See attached list for specific resolution.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. J. Cahy*

Date: FEB 28 1986

(1) Additional page(s) attached

RESOLUTION:

All PSIG/VAC scales should read INCHES Hg VAC, not INCHES H<sub>2</sub>O VAC. All dual scales will read "PSIG" near top of scale and "IN xHg VAC" near bottom of scale. H<sub>2</sub>O applies only to differential pressure.

20C08A - "INCHES HG VAC" missing; add to scale - (PI-2866).  
PI-2404 reads in "INCHES H<sub>2</sub>O VAC" and change to read  
"INCHES Hg VAC."

20C04B - Scales use PSI; change to PSIG (PI-23-116).

20C04C - Scales use PSI; change to PSIG (PI-13-96).

20C12 - the following use "INCHES W.C." where W.C. = Water  
Column:       DPI-20003-1  
                  DPI-20003-2  
                  DPI-30003-1  
                  DPI-30003-2

- DPI-30003-1 and DPI-30003-2 also use temporary labels  
"IN W.C."

- DPI-20001 uses "INCHES H<sub>2</sub>O"  
DPI-20002 uses "INCHES H<sub>2</sub>O"

Change all of the above to IN W.C. See HED SI2-04.



PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-05

EP = 4/PRI 4

Code A

TITLE: Label Type and Style

COMMENT: Inconsistent use of label type and style.

Item: 4.1.5.5 Ref.: A5.6 Source: CRS

IDENTIFICATION: Panel: 20C21, 20C03, 20C09, 20C24, 20C43  
Component Name: Labels  
ID or Number: N/A

DESCRIPTION:

Labeling was found to vary in type, style, and appearance on several panels.

RESOLUTION: (Sched: None )

Use specified standard label type and style in accordance with hierarchal labeling techniques.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Cahy Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-06

EP = 8/PRI 2

Code A

TITLE:

Redundant Label Information

COMMENT:

Many labels contained redundant information.

Item: 4.1.5.6

Ref.: A5.7

Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Labels  
ID or Number: N/A

DESCRIPTION:

Label descriptions often contain redundant information which causes labels to be difficult to read and makes it more difficult for the operator to identify components.

RESOLUTION:

(Sched: 2nd Refuel )

Reduce amount of unnecessary or redundant information from labels as part of overall hierarchal labeling program.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. J. Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-07

EP = 6/PRI 4

See attached

TITLE:

Low Label Height

COMMENT:

Some labels placed too low on the panels.

Item: 4.1.5.7

Ref.: A5.9

Source: CRS

IDENTIFICATION: Panel: See attached.

Component Name: Labels

ID or Number: See attached.

DESCRIPTION:

Some labels on vertical panels are placed too low for the operator to read easily, and are often obscured by controls.

RESOLUTION:

(Sched: None )

Relocate labels in accordance with hierarchal labeling system. See attachment for specific comments. Related HED: SD4-01.

TRAINING REQUIREMENTS:

Train personnel in meaning of enhancements.

PROCEDURE REQUIREMENTS:

Update procedural terminology to match labels.

Team Approval Signature: *Jf Carney*

Date: FEB 28 1986

(2) Additional page(s) attached

20C06B

"A", "B", "C" RFPT LUBE OIL CLR COOLING WATER controllers  
"C3", "C4", "C5", FEEDWATER HEATER BLEEDER TRIP VALVE POSITION  
indicators  
"C", "F" MOIS SEP DRNTK CONTR VLV POSITION indicators

Resolution: These are not safety items and are therefore not a  
problem. Code: F

20C36

CHANNEL F IRM  
CHANNEL D SRM  
CHANNEL H IRM

Resolution: Approximately 40 inches high and are easily read.  
These are used only for NI tests. Code: F

00C124

RFPT LOW SPEED SW  
RFPT THRUST BEARING WEAR TEST

Resolution: Blocking info. tags - not required for operator.  
Code: A

00C123

"A", "B", "C" COOLING TOWER FAN and associated dynotape labels

Resolution: Labels are easily read; dymotape has been removed.  
Code: F

20C13

VALVE CONTROL CHANNEL 1  
VALVE CONTROL CHANNEL 2  
VALVE CONTROL CHANNEL 5

Resolution: TIP not used by plant operators, therefore this is  
not a problem. Code: F

20C02

GAMMA SCINT - RADWAST EFFLUENT

Resolution: Adequate information above meter - this label  
identifies type of meter. Code: F

20C11

POWER SUPPLY AREA MONITOR  
2.10 REFUELING BRIDGE

Resolution: Label moved to top. Code: A

20C10

U2 ROOF VENT "A" BETA SCINT  
U2 ROOF VENT "A" VENT STACK EXH  
U2 ROOF VENT "A" CONTROL ROOM SUPPLY  
U2 ROOF VENT "B" BETA SCINT  
U2 ROOF VENT "B" VENT STACK EXH  
U2 ROOF VENT "B" CONTROL ROOM SUPPLY  
OFF GAS HOLDUP TIMER  
LOOP SEAN AND STACK FILTER ISO VALVE

Resolution: These are covered by indication higher on the panel and alarm. Labels are readable as presently installed and are infrequently used. Code: F

00C14

POWER SUPPLY AREA MONITOR  
RADWAST FILTER HATCH AREA  
WASTE SAMPLE TANK AREA  
ADMIN BLDG  
SOURCE VAULT U2 RX BLDG EL 195

Resolution: Labels moved to location above instruments.  
Code: A

20C02-3

RHR SAMPLE LINE INBOARD ISOL VALVE B & D  
RHR SAMPLE LINE OUTBOARD ISOL VALVE B & D

Resolution: Not obscured; easily read. Code: F

20C03-4

RHR SAMPLE LINE INBOARD ISOL VALVE A & C  
RHR SAMPLE LINE OUTBOARD ISOL VALVE A & C

Resolution: Not obscured; easily read. Code: F

2BC43

RCIC PUMP DISCH FLOW CONTROL (2)

Resolution: Blind control modules; no labels required.  
Code: A

PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-08

EP = 6/PRI 6

Code A

TITLE:

Incorrect Label

COMMENT:

Control switch mislabeled.

Item: 4.1.5.8

Ref.: A5.10

Source: CRS

IDENTIFICATION: Panel: 20C05A

Component Name: Annunciator Acknowledge Switch

ID or Number: N/A

DESCRIPTION:

The annunciator acknowledge button on the C05A console is labeled "Rod Sequence Control System".

RESOLUTION:

(Sched: N/A )

None required. Observer incorrectly identified this pushbutton: it is labeled correctly. Not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. C. Cady*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-09

EP = 6 PRI 2

Code A

TITLE: Incomplete Labels

COMMENT: Controller labels incomplete.

Item: 4.1.5.9 Ref.: A5.10 Source: CRS

IDENTIFICATION: Panel: All.  
Component Name: Controllers.  
ID or Number: All.

DESCRIPTION:

Controller labels do not clearly specify what a change in output will do to the process being altered. See attached.

RESOLUTION: (Sched: 2nd Refuel )

Controllers will be labeled to clearly indicate what a change in output will do to the process being altered.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

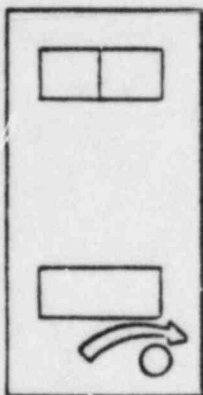
Team Approval Signature: *Jf Carby*

Date: FEB 28 1986

(6) Additional page(s) attached

There are 40 controllers on Unit 2. They have 11 different variations. Some variations look similar to others but are different. There are no labels that indicate the function of meters. Some controls are labeled with functions, some are not. The 11 variations are described below and have been given arbitrary type numbers 1 through 11.

#1

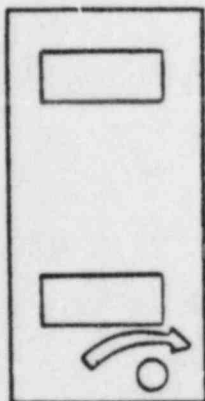


Block line center scale, no numbers,  
no units, no function identified.

Scale 0-100, no units, no function identified.

Knob marked INC

#2

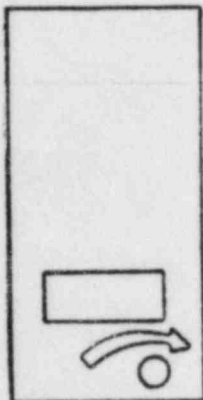


Scale 0-100, no units, no function identified.

Scale 0-100, no units, no function identified.

Knob marked INC

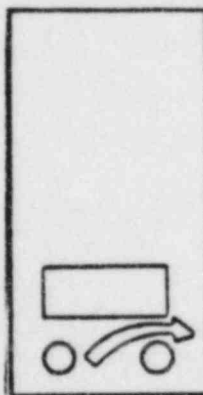
#3



Scale 0-100, no units, no function identified.

Knob marked INC

#4



Scale 0-100, no units, no function identified.

Left knob marked Auto and Manual  
Right knob marked INC

#5

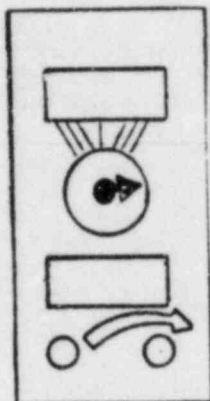


Vertical scale 0-100, no units, no function identified.

Scale 0-100, no units, no function identified

Left unmarked pushbutton  
Right knob marked INC

#6



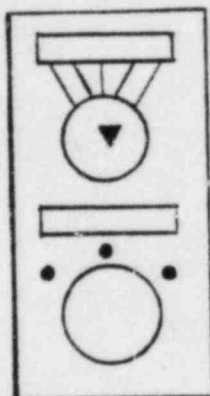
Black line center scale, no numbers, no units, no function identified. 7 reference lines connecting 2 scales.

Circular scale with knob to control printer. Scale numbered, no units, no function identified.

Scale 0-100, no units, no function identified.

Left knob labeled Auto and Manual.  
Right knob labeled INC

#7



Scale with 10,5,0,5,10, no units, no function identified.

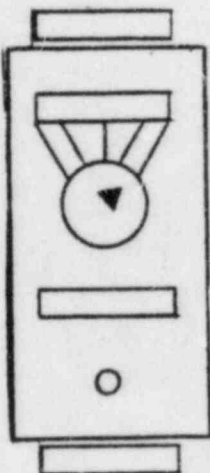
5 References lines connecting 2 scales.

Small circular scale with knob to control pointer. Scale numbered, specifies units, and is labeled SET POINT.

Scale 0-100, no units, no function identified.

Large knob with three positions labeled Auto, Balance, Manual. Appears to be a dual function knob; second function not identified.

#8



Scale above controller 0-1.0, no units function not identified.

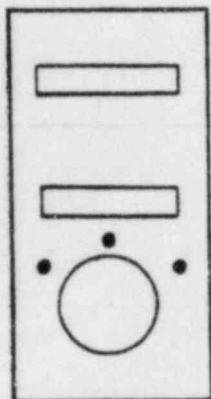
Scale with center marked 0, no units, function not identified.

Small circular scales with knob to control pointer. Scale numbered, specifies units, and is labeled SET POINT.

Scale 0-100, no units, no function identified

Small knob, no function indicated.  
Slide switch marked Auto and Manual.

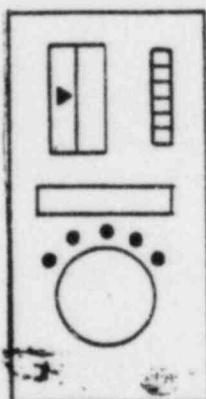
#9



Scale with 10,5,0,5,10, no units, no function identified.

Large knob with three positions labeled Auto, Balance, Manual. Appears to be a dual function knob; second function not identified.

#10

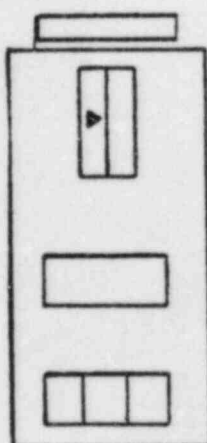


Left scale has pointer, no graticules, a narrow green band at center scale, no units, no function identified. Center scale is rotating drum with numbers, no units, no function identified.

Right vertical thumbwheel controls drum scale, no indication of direction of movement. Drum rotates opposite direction from thumbwheel.

Similar to #7 except knob has five positions: 0-100, Auto, Balance, Manual, 0-100.

#11



Scale above controller 0-100, no units, no function identified.

Left scale has pointer, no graticules, no numbers, no function identified. Right scale 0-16 with units indicated, no function indicated. Knob to left of scales labeled "SP."

Scale 0-100, no units, no function identified.

Three pushbuttons labeled with standard symbols for manual control, Manual/Auto Transfer, Auto control (left to right). Order of Auto and Manual is opposite from other controllers.

PANEL20C07A:

- 2 Air Ejector Steam Pressure CV-2468 B,C  
Type 1, Lower scales marked, Open on left, Close on right
- 3 Condensor Dearating Steam CV-2468 A,B,C
- 1 Hotwell Level, Course LC-2087  
Type 4, Scale marked "REJ" on left, "MO" on right
- 1 Hotwell Level, FINE LC-2086  
Type 6, Lower scale marked "REJ" on left, "MO" on right
- 1 Recirc Flow FR-2210  
Type 6

20C05A:

- 1 Feed Pump Bypass CV-2558  
Type 8 Knob marked CLOSE, OUTPUT, OPEN  
(see HED SD5-01)
- 3 Reactor Feed Pump Controls A,B,C  
Type 7 Lower scale marked CLOSE on left, OPEN on right
- 1 Master Flow  
Type 10 Lower scale marked CLOSE on left, OPEN on right
- 1 C FD PP Disch Bypass  
Type 11 Lower scale marked CLOSE on left, OPEN on right
- 1 Recirc Master Flow  
Type 9 Lower scale marked "C" on left, "O" on right
- 1 CRD Flow control  
Type 10 Lower scale marked "C" on left, "O" on right

20C04A:

- 2 Recirc Pump Speed A,B  
Type 9 Lower scale marked "C" on left, "O" on right
- 1 Dump Flow CV-12-55  
Type 3 Scale has "C" on left, "O" on right

20C07B:

- 3 RFPT LO CW CV-2532 A,B,C  
Type 2 Parameter being controlled is not indicated



20C08B

1

Turbine Lube Oil Cooling Water CV 2483  
Type 2 Upper scale has "O" on left, "C" on right  
Lower scale not marked

00C123:

4

Sluice Gates Bay Level  
Type 6

20C09:

2

Gen H Cooling HCS-2485  
Starter Cooling HCS-2487  
Type 2

20C04B:

1

HPCI Pump Flow FC 8-23-108  
Type 10 Lower scale has "C" on left, "O" on right

20C04B:

1

RCIC Pump Flow FC 2-13-91  
Type 10 Lower scale has "C" on left, "O" on right

20C03:

2

RHR Pump Discharge CV-2677 A,B  
Type 6

1

Head Spray Flow CV-43  
Type 10

2

Containment N2 Supply HCS FI 4947 A,B  
Type 2 Lower scale has "O" on left, "C" on right

1

Bleed Flow Torus HCS FI 4954  
Type 2 Lower scale has "C" on left, "O" on right

00C196:

1

Jet Comp Steam Pressure PC-4018  
Type 6

20C43:

1

RSP RCIC Pump Flow  
Type 10

PEACH BOTTOM  
HED ASSESSMENT

HED No. D5-10

EP = 4/PRI 4

Code A

TITLE:

Vertical Label Orientation

COMMENT:

Some labels oriented vertically.

Item: 4.1.5.10

Ref.: A5.13

Source: CRS

IDENTIFICATION: Panel: 20C12, 00C123, 20C05A

Component Name: See attached.

ID or Number: See attached.

DESCRIPTION:

Labels are generally ordered horizontally from left to right, however, some labels have been attached vertically. See attached.

RESOLUTION:

(Sched: None )

See attached.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cadney*

Date: FEB 28 1986

(1) Additional page(s) attached

RESOLUTION:

20C05A

"A", "B" and "C" TURNING GEAR MOTOR controls have the Pull-to-Lock position label mounted vertically.

Resolution: Provide new eschutcheon plate using Hierarchal labels. (CodeA)

REACTOR FW STARTUP RECIRC VALVES have "585 PSIG" labels adjoining them mounted vertically.

Resolution: This label is not required and will be eliminated. (Code A)

20C12

DRYWELL COOLER FANS switches all have electrical labels mounted vertically to their right.

Resolution: As part of the hierarchal labeling scheme, the appropriate information has been placed on the standardized label. This eliminates the need for vertical labels. (Code A)

CHILLED W A and B CW HDR TRANSFER VALVES and the DRYWELL SUMP COOLER CHILLED WATER switches also have electrical labels mounted vertically to their right.

Resolution: As part of the hierarchal labeling scheme, the appropriate information has been placed on the standardized label. This eliminates the need for vertical labels. (Code A)

00C123

UNIT 3 "A" and "B" SLUICE GATE switches and the UNIT 2 & 3 CROSS TIE SLUICE GATE switch have electrical labels mounted vertically on their left. (Code A)

Resolution: As part of the hierarchal labeling scheme, the appropriate information has been placed on the standardized label. This eliminates the need for vertical labels. (Code A)

PEACH BOTTOM  
HED ASSESSMENT

HED No. D6-01

EP = 8/PRI 5

Code A

TITLE:

Temporary Labels

COMMENT:

Temporary labels are inconsistently used.

Item:	4.1.6.1	Ref.:	A6.1	Source:	CRS
	4.1.6.2		A6.2		
	4.1.6.3, 4.1.6.4		A6.6		

IDENTIFICATION: Panel: All

Component Name: Temporary Labels

ID or Number: N/A

DESCRIPTION:

Temporary labels and informational notes on the panels are not applied consistently, do not conform to nomenclature, font, and color codes, appear makeshift, tend to clutter the panels and are excessively used.

RESOLUTION:

(Sched: N/A )

A surveillance test has been written to perform periodic review of panels.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *By Cathy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D6-02

EP = 8/PRI 5

Code A

TITLE:

Temporary Label Application

COMMENT:

No control over application of temporary labels.

Item: 4.1.6.2

Ref.: A6.2

Source: CRS

IDENTIFICATION: Panel: All

Component Name: Temporary Labels

ID or Number: N/A

DESCRIPTION:

Temporary labels are applied on tape, paper, dymotape, and other materials. No standard material for application appears to exist.

RESOLUTION:

(Sched: N/A )

A surveillance test has been written to perform periodic review of panels.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D6-03

EP = 8/PRI 5

Code A

TITLE: Temporary Label Standards

COMMENT: No color, abbreviation, or nomenclature standards for temporary labels.

Item: 4.1.6.3 Ref.: A6.2 Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Temporary Labels  
ID or Number: N/A

DESCRIPTION:

No standards for color, font, abbreviations, or nomenclature appear to exist for temporary labels. This results in very confusing labels.

RESOLUTION: (Sched: N/A)

A surveillance test has been written to perform periodic review of panels. Although standards have been developed for permanent changes, these are not required for temporary application.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Cahy Date: FEB 28 1996

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. D6-04

EP = 8/PRI 5

Code A

TITLE:

Temporary Label Location

COMMENT:

Temporary labels have no standard location.

Item: 4.1.6.4

Ref.: A6.6

Source: CRS

IDENTIFICATION: Panel: All

Component Name: Temporary Labels

ID or Number: N/A

DESCRIPTION:

Temporary labels are makeshift and placed where convenient with no apparent standards. This makes the panels appear cluttered and confusing.

RESOLUTION:

(Sched: N/A)

A surveillance test has been written to perform periodic review of panels. Although standards have been developed for permanent changes these are not required for temporary application.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carling*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D6-05

EP = 8/PRI 5

Code A

TITLE:

Temporary Label Administrative Procedure

COMMENT:

No administrative procedure for use and review of temporary labels exists.

Item: 4.1.6.5

Ref.: A6.7

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Administrative Procedure

ID or Number: N/A

DESCRIPTION:

There is no formal administrative procedure for applying and reviewing temporary changes to control room panels.

RESOLUTION:

(Sched: N/A )

A surveillance test has been written to perform periodic review of panels. Although standards have been developed for permanent changes, these are not required for temporary application.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Casey*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D7-01

EP = 9/PRI 4

Code A

TITLE:

Control Panel Access

COMMENT:

Panel access obstructed by consoles.

Item: 4.1.7.1

Ref.: A7.1

Source: CRS

IDENTIFICATION: Panel: C06B, C07B, C08B, C21, C36, C124, C05B,  
C123, C13, C37, C02, C11, C10, 00C14

Component Name: N/A

ID or Number: N/A

DESCRIPTION:

Direct access to vertical panels behind consoles is difficult due to the location of the benchboard consoles.

RESOLUTION:

(Sched: None )

Access is adequate for purpose intended. Instruments on back panels provide operational support and do not require immediate operator action. Therefore, the team disagrees with EP value of 9.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D7-02

EP = 9/PRI 5

Code A

TITLE:

ECCS Panel Access

COMMENT:

Access to the ECCS panel can be obstructed.

Item: 4.1.7.2

Ref.: A7.1

Source: CRS

IDENTIFICATION: Panel: 20C203

Component Name: ECCS

ID or Number: N/A

DESCRIPTION:

Operator access to the ECCS panel can be obstructed by control room traffic and non-essential personnel.

RESOLUTION:

(Sched: N/A

)

Operating personnel have been informed to pay increased attention to personnel in the control room. Operators have the ability to remove individuals from the control room rapidly when access to these panels is needed. In addition, a sign is available that restricts entry to control room that can be used during a transient. No change in present practice is recommended. A designated control room supervisor has been added to ensure proper personnel management. See also HED E3-01.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D7-03

EP = 6/PRI 4

Code A

TITLE:

Moveable Obstructions

COMMENT:

Modular panel units obstruct panel access.

Item: 4.1.7.3

Ref.: A7.1

Source: CRS

IDENTIFICATION: Panel: 20C36, 20C13, 20C02, 20C10, 00C14

Component Name: Modular Drawers

ID or Number: N/A

DESCRIPTION:

Several panels use modular drawer-like components that, when pulled out for maintenance, obstruct access to other panels. Also, the portable cooling fans used by operators impede panel access.

RESOLUTION:

(Sched: None )

Modifications 983 and 831 are in progress to provide adequate cooling to allow these components to remain in their proper position. The temporary fans will be removed and an additional modification will be developed for the following: Unit 2: RIS-2979 A&B, Common: RIS-0760 A&B, Unit 3: RIS-3979.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D7-04

EP = 9/PRI 4

Code: F

TITLE:

Low Control/Display Visibility

COMMENT:

Controls and displays on lower portions of panels behind benchboards cannot be viewed.

Item: 4.1.7.4

Ref.: A7.2

Source: CRS

IDENTIFICATION: Panel: 20C06B, 20C07B, 20C08B, 20C21, 20C036, 20C124, 00C123, 20C13, 20C37, 20C02, 20C11, 20C10, 00C14, 20C048, 20C04C

Component Name: See D3-05 attachment.

ID or Number: See D3-05 attachment.

DESCRIPTION:

Controls and displays on the lower portions of the vertical panels located behind benchboard consoles are not visible from the primary operating area.

RESOLUTION:

(Shed: None )

Most controls and displays mounted below 48" are not safety related and, as such, do not constitute an operational problem, no changes recommended. Those that are safety related are alarmed to alert operators (see D3-05 attachment). Therefore, the team disagreed with an EP value of 9.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JF Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. D7-05

EP = 6/PRI 6

Code A

TITLE:

Panel Visibility

COMMENT:

TV cameras and posts obscure panels.

Item: 4.1.7.5

Ref.: A7.2

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: TV Camera & Post

ID or Number: N/A

DESCRIPTION:

Cameras and posts located in control room partially obscure the operator's view of control panels and annunciators.

MITIGATING CONSIDERATIONS:

Obstruction is minimal. Operators can move slightly to see around posts and cameras.

RESOLUTION:

(Sched: N/A )

There is no significant obstruction of visibility. This is not considered to be a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. D7-06

EP = 6/PRI 4

Code D

TITLE:

Annunciator Location

COMMENT:

Some annunciators not located in control room.

Item: 4.1.7.6

Ref.: A7.3

Source: CRS

IDENTIFICATION: Panel: 00C196  
Component Name: Annunciators  
ID or Number: Recombiner

DESCRIPTION:

Recombiner Panel and Annunciators are not visible from the control room. Operator must leave control room to identify alarms.

RESOLUTION:

(Sched: None )

The 00C196 panel is in the control room. Master annunciators have been added by Mod 967 to Unit 2 in the primary operating area to alert the chief operator who can leave the primary area to acknowledge it. Until the Mod is performed on Unit 3, a loud buzzer will sound at 00C 196, which is audible in the primary operating area.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carling*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. El-01

EP = 6/PRI 5

Code A

TITLE:

Panel Access and Communication

COMMENT:

Panels difficult to access while using the PA system.

Item: 4.6.1.1

Ref.: Fl.3

Source: CRS

IDENTIFICATION: Panel: All Back Walls and Vertical Panels  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

Only the consoles are easily accessible to an operator using the P.A. System.

RESOLUTION:

(Sched: N/A )

PA System phones have been added so that all panels are accessible using PA phones.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. El-02

EP = 9 /PRI 1

Code A

TITLE:

P.A. System Access

COMMENT:

Difficult to access P.A. System during busy periods.

Item: 4.6.1.2

Ref.: Fl.4

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: P.A. System

ID or Number: N/A

DESCRIPTION:

It is difficult for operators to get priority access to the P.A. System during busy periods such as outages. This could cause problems by delaying important directives and reports.

RESOLUTION:

(Sched: 2nd Refuel )

A modification is planned to provide an operator cut in capability.

TRAINING REQUIREMENTS:

None..

PROCEDURE REQUIREMENTS:

None.

Approval Signature: JJ Calmy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E1-03

EP = 8/PRI 6

Code A

TITLE: Auditory Alarm Prioritization

COMMENT: No auditory alarm prioritization.

Item: 4.6.1.3 Ref.: F2.2 Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Auditory Alarms  
ID or Number: N/A

DESCRIPTION:

Auditory alarms are not prioritized and this could cause confusion if more than one audible tone sounded simultaneously.

RESOLUTION: (Sched: N/A)

There are four different audio alarms: 1) Bell for plant annunciators 2) Bell with different tone for ECCS 3) Buzzer for Electrical and Rad monitoring panel 4) Electronic sound for Off-Gas panel. These alarms are used to identify source, not priority. No priority is required since priority depends upon situation. This is not considered to be a discrepancy.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Cahy

Date: FEB 28 1986

( ) Additional pages (s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E1-04

EP = 6/PRI 6

Code A

TITLE:

Phone/Radio Audibility

COMMENT:

Difficult to hear phones and radios.

Item: 4.6.1.4

Ref.: F2.4

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Plant Telephones/Radios

ID or Number: N/A

DESCRIPTION:

From the unit operators desk it is difficult to hear the phones and radios located in the center of the control room.

RESOLUTION:

(Sched: N/A )

The center control console is manned by the chief operator and the unit operator is not required to hear these phones or radios. Not considered to be a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahng*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. E1-05

EP = 4/PRI 5

Code A

TITLE:

P.A. System Audibility

COMMENT:

P.A. System excessively loud.

Item: 4.6.1.5

Ref.: F2.5

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: P.A. System

ID or Number: N/A

DESCRIPTION:

While the P.A. System sound measurements were acceptable, the operators and CRS team members felt the volume to be excessively loud.

RESOLUTION:

(Sched: N/A )

Volume control has been installed. Volume has been adjusted to obtain best balance between PA and other auditory sounds.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Carling*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E2-01

EP = 12/PRI 3

Code A

TITLE:

Illumination Levels

COMMENT:

Control room too dark.

Item: 4.6.2.1

Ref.: F3.1

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: N/A

ID or Number: N/A

DESCRIPTION:

Control room lighting is kept below recommended illumination levels by the operators.

MITIGATING CONSIDERATIONS:

The lower light level allows easy identification of indicator light status and annunciator alarms.

RESOLUTION:

(Sched: None )

Modification and in-planning phase to upgrade lighting levels to 60 ft. candles (dimable). (Reference: Facilities Planning Report, dated April 17, 1985) The Review Team agrees that it is desirable to improve lighting levels, but do not agree with an EP of 12 since operating experience has not indicated lighting related operational difficulties.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. J. Cathey*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E3-01

EP = 6/PRI 5

Code B

TITLE:

Control Room Traffic

COMMENT:

Excessive traffic in control room.

Item: 4.6.3.1

Ref.: F6.1

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: N/A

ID or Number: N/A

DESCRIPTION:

While access to the control room is controlled by a key-card door, operators feel the amount of traffic in the control room must be further reduced.

RESOLUTION:

(Sched: N/A )

Operating personnel have been informed to pay increased attention to personnel in the control room. Operators have the ability to remove individuals from the control room rapidly when access to these panels is needed. In addition, a sign is available that restricts entry to control room that can be used during a transient. No change in present practice is recommended. A designated control room supervisor has been added to ensure proper personnel management. See also HED D7-02

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *JJ Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E3-02

EP = 12/PRI 4

Code F

TITLE:

Protective Clothing

COMMENT:

No protective clothing located in the control room.

Item: 4.6.3.2

Ref.: F6.2

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Anti-contamination Clothing

ID or Number: N/A

DESCRIPTION:

No protective clothing for operators is accessible within the control room. This could be problematical if the building air supply system became contaminated.

MITIGATING CONSIDERATIONS:

Most probable difficulties in control room would involve chemical contamination, not radioactive contamination. Respirators are available for operators. Anti-C clothing is available in the Turbine building where contamination is more likely.

RESOLUTION:

(Sched: None )

Control room has a continually monitoring self-contained ventilation system. Use of protective clothing is not considered to be necessary within the control room under any conditions. This equipment is available in the Turbine Bldg., which is not expected to be contaminated easily, or have significant airborne problems. Storing protective clothing in the control room is unnecessary and will increase the congestion in a already over crowded area. Not considered to be a valid requirement because of control room design. Therefore, the team disagrees with an EP of 12.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. J. Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E3-03

EP = 6/PRI 4

Code A

TITLE: Breathing Apparatus Location

COMMENT: Operators not aware of breathing apparatus location.

Item: 4.6.3.3 Ref.: F6.3 Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Breathing Apparatus  
ID or Number: N/A

DESCRIPTION:

Emergency breathing apparatus is available in the control room but operators are not aware of its location as it is poorly marked.

MITIGATING CONSIDERATIONS:

Chlorine system has been removed from site, and the control room has an emergency air supply.

RESOLUTION: (Sched: None)

Operators know location of breathing apparatus. Door to room containing apparatus will be labeled appropriately.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Approval Signature: *JJ Cahney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E3-04

EP = 12 PRI 5

Code A

TITLE:

Portable Radiation Monitoring Equipment

COMMENT:

Radiation monitors not available in control room.

Item: 4.6.3.4

Ref.: F6.4

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Portable Radiation Monitors

ID or Number: N/A

DESCRIPTION:

Portable radiation monitors are not stored in the control room.

MITIGATING CONSIDERATIONS:

Control room personnel have access to qualified HP personnel at all times. The HP's have appropriate monitoring equipment.

RESOLUTION:

(Sched: N/A )

A portable radiation monitor is now stored in the control room area.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*TJ Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. E3-05

EP = 12 / PRI 4

Code A

TITLE: Control Operation

COMMENT: Operators have no experience operating plant while in protective clothing.

Item: 4.6.3.5 Ref.: F6.5 Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

Protective clothing limits operator vision, maneuverability, and communication. At present operators have no experience in operating the plant while wearing protective clothing. This could be a problem should operators be in a situation where protective clothing is required.

RESOLUTION: (Sched: None )

Operators are trained yearly in the operation and use of breathing apparatus. A demonstration will be conducted on the simulator using emergency procedures in order to determine whether any additional training is required. A previous test was conducted demonstrating that no additional training is required, but the test was not documented. Additional training will be conducted if necessary. No protective clothing is required in this control room.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Approval Signature:

*Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E3-06

EP = 2/PRI 6

Code A

TITLE:

Fountain Locations

COMMENT:

No water fountain in control room.

Item: 4.6.3.6

Ref.: F6.6

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Fountain  
ID or Number: N/A

DESCRIPTION:

At present operators must be relieved in order to leave the control room for a drink or to use the toilet. This appears inconvenient.

RESOLUTION:

(Sched: N/A)

None needed: toilet and kitchenette are provided within the control room confines and administrative procedures exist to allow operators to use these facilities at their convenience

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E3-07

EP = 12 /PRI 3

Code A

TITLE:

Emergency Lighting

COMMENT:

Emergency lighting levels are too low.

Item: 4.6.3.7

Ref.: F6.8

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Emergency Lighting

ID or Number: N/A

DESCRIPTION:

Emergency lighting levels are below the recommended 20 ft. candles (between 5 and 8 ft. candles).

RESOLUTION:

(Sched: N/A )

Emergency lighting has been upgraded in the control room and levels have been verified. Lighting now meets requirements.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature:

*J. J. Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E4-01

EP = 6/PRI 5

Code A

TITLE:

Ambient Noise Levels

COMMENT:

Noise levels appear high.

Item: 4.6.4.1

Ref.: F7.1

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

Ambient noise levels are acceptable, but the PA system appears somewhat loud.

RESOLUTION:

(Sched: N/A )

Volume control has been installed. Volume has been adjusted to obtain best balance between PA and other auditory sounds.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*JJ Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. E4-02

EP = 2/PRI 4

Code: A

TITLE: Telephone Cords

COMMENT: Telephone cords are hazardous.

Item: 4.6.4.2

Ref.: F7.6

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Telephones  
ID or Number: N/A

DESCRIPTION:

Telephone cords in the control room are long and may cause a tripping hazard when phones are in use.

MITIGATING CONSIDERATIONS:

Must be long so operator can go behind consoles to view controls and indicators on vertical boards.

RESOLUTION:

(Sched: None )

Control room operations personnel are the only individuals in the control room during plant emergencies and control room traffic is kept to a minimum. No sudden or rapid movements are desirable in any case.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature:

*JJ Cadby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 11-01

EP = 9/PRI 4

Code: F

TITLE:

Controller Height Low

COMMENT:

Some controllers are excessively low.

Item: 4.2.1.1

Ref.: Bl.1

Source: CRS

IDENTIFICATION: Panel: 20C06B, 20C09

Component Name: See below.

ID or Number: See below.

DESCRIPTION:

RFPT LUBE OIL controllers on C06B and GEN H COOLING WATER controllers on C09 are located below minimum recommended height and are difficult to operate.

RESOLUTION:

(Sched: None )

As these components are not safety related and are within the reach of an operator using torso flexion, this is not considered a problem. (See HED D3-05.) The team disagreed with the EP value 9 for these particular controls.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JF Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. 11-02

EP = 6/PRI 6

Code A

TITLE:

Controller Markings

COMMENT:

Some controller markings are obscured.

Item: 4.2.1.2

Ref.: B1.3

Source: CRS

IDENTIFICATION: Panel: 20C123, 00C196

Component Name: Controller

ID or Number: Unit 2 & 3 "A" and "B" HPSW PUMP BAY  
LEVEL controllers

DESCRIPTION:

The "auto" and "manual" controller select positions are obscured by visual obstructions on the recombiner and emergency cooling water panels.

RESOLUTION:

(Sched: N/A )

Controller selector positions are clearly visible and readable. Not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 11-02A

EP = 6/PRI 5

Code A

TITLE: Inappropriate Control Positions

COMMENT: Controller has excessive control positions.

Item: 4.2.1.2 Ref.: Bl.3 Source: CRS

IDENTIFICATION: Panel: 20C03  
Component Name: Flow Control Drag Valve  
ID or Number: RHR System

DESCRIPTION:

Two controllers on the ECCS panel have "auto" and "manual" selector positions while the controllers are entirely manual. This could cause operators to become confused.

RESOLUTION: (Sched: N/A)

The auto/manual switch is not installed on this controller. The "auto" position labels have been removed.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I2-01

EP = 12/PRI 2

Code A

TITLE: Indicator Zone Markings

COMMENT: Scales have no apparent zone markings.

Item: 4.2.2.1 Ref.: B2.1 Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Indicators  
ID or Number: N/A

DESCRIPTION:

Indicator scales have not been marked or coded to indicate normal and abnormal zones and ranges.

RESOLUTION: (Sched: see TA HEDs )

Those instruments identified in task analysis will be enhanced through the application of zone markings or alarm points (see HED D5-01).

TRAINING REQUIREMENTS:

Train personnel in meaning of zone markings.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: JJ Cahy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 12-02

EP = 6/PRI 3

Code A

TITLE:

Display Glare

COMMENT:

Some displays suffered from glare and parallax.

Item: 4.2.2.2

Ref.: B2.2

Source: CRS

IDENTIFICATION: Panel: 20C06A, C07A, C08A, C43, C123, C196  
Component Name: See attached.  
ID or Number: See attached.

DESCRIPTION:

Glare and parallax were observed on several displays - especially on those located higher up on the benchboards and panels.

RESOLUTION:

(Sched: None )

The control room remodeling project will result in more diffuse lighting with reduced glare (see HED SE2-02). The type of meters used in this plant do not have parallax.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *Jf Calmy*

Date: FEB 28 1986

(1) Additional page(s) attached

00C123

LI-2804A  
LI-2804B  
PI-0550  
PI-0850  
LI-0503  
LI-3804A  
LI-3804B

20C06A

FR-2132  
FR-2050

20C07A

02R-2556  
PR-2154  
LR-2217  
LR-2085  
FR-2709

20C08A

PI-2410  
PI-2408  
PI-2407  
~~PI-2324~~  
PI-2404  
PI-2403  
DPI-2176A  
DPI-2176D  
CV-2013A  
PI-2008A  
PI-2117A  
PI-2176A  
PI-2179A  
PI-2180  
PI-2656A  
FI-2-86A  
FI-2-86B  
FI-2-86C  
FI-2-86D

20C43

DRYWELL PRESSURE  
TORUS TEMP  
REACTOR WATER LEVEL  
REACTOR PRESSURE  
REACTOR WATER LEVEL  
REACTOR PRESSURE  
TORUS LEVEL  
TORUS PRESSURE  
RCIC FLOW  
RCIC TURBINE SPEED  
CONDENSATE STACK LEVEL  
RCIC PUMP SUCTION PRESSURE  
RCIC PUMP DISCHARGE PRESSURE  
RCIC TURBINE SUPPLY PRESSURE  
RCIC TURBINE EXHAUST PRESSURE

00C196

PI-2771A  
PI-2771B  
FI-4020  
PI-4018  
TI-4023  
TI-4024  
TI-4029  
H<sub>2</sub>I-4029  
FI-4042  
PI-4043  
H<sub>2</sub>I-4083  
TI-0783

PEACH BOTTOM  
HED ASSESSMENT

HED No. I2-03

EP = 6/PRI 4

Code F

TITLE:

Scale Units

COMMENT:

Scales have no specified units of measure.

Item: 4.2.2.3

Ref.: B2.3

Source: CRS

IDENTIFICATION: Panel: 20C09

Component Name: Controller Displays

ID or Number: GEN H2 COOLING WATER

DESCRIPTION:

Indicator scales associated with the GEN H2 COOLING WATER controllers on the Generator and and Auxiliary Power panel are scaled 0-100 with no units of measure identified.

RESOLUTION:

(Sched: None )

These meters are standard on all controllers throughout the control room and indicate command signal for valve position in percent. Operators are adequately trained in use and interpretation of these controllers. Not considered to be a significant discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *JJ Carby*

Dat : FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. 12-04

EP = 4/PRI 4

Code F

TITLE: Pointers Obscure Markings

COMMENT: Pointers on several indicators obscure the scale markings.

Item: 4.2.2.4

Ref.: B2.5

Source: CRS

IDENTIFICATION: Panel: 20C09, 20C36  
Component Name: Circular Analog Meters  
ID or Number: All

DESCRIPTION:

The pointers on the circular analog meters on the Generator and Auxiliary power and the Start-up Range Neutron Monitoring panels obscure the scale markings making it difficult to read the scales accurately. These are GE meters typically used on electrical panels.

RESOLUTION: (Sched: None )

The pointers are narrow and only partially obscure the numbers. Operators have no trouble reading the numbers. Values to be read on these meters are stable. This is not a significant problem.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *JJ Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I2-05

EP = 4 / PRI 5

Code A

TITLE:

Recorder Scale Compatability

COMMENT:

Some recorders use different scales from associated indicators.

Item: 4.2.2.5

Ref.: B2.8

Source: CRS

IDENTIFICATION: Panel: 00C196

Component Name: Recorder

ID or Number: FR-4020, FR-4023

DESCRIPTION:

The recorders are scaled 0-100, x100 while the associated indicators are scaled 0-10,000 on the Off-gas Recombiner panel.

RESOLUTION:

(Sched: N/A )

The indicator has been moved to panel C07A and is scaled the same as the recorder on the off-gas panel.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *JJ Calby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 12-06

EP = 4/PRI 4

Code A

TITLE: Scale Compatability

COMMENT: Several scales used for comparative readings use varying scales.

Item: 4.2.2.6 Ref.: B2.10 Source: CRS

IDENTIFICATION: Panel: 20C05A, 20C08A  
Component Name: See below.  
ID or Number: 05A: PI-2-06-90A,B,C  
08A: PI-2177A, 2178A, 2179A

DESCRIPTION:

In several instances, indicating devices used scales that did not facilitate comparative readings: for example, RX PRESSURES A & B on the reactor panel are in actual values while RX PRESSURE C uses a x100 scale.

RESOLUTION: (Sched: None )

1. 20C05A: See HED SI2-03.
2. 20C08A: These scales measure different stages of the LP turbine and cover different ranges. They cannot use the same scales. Not considered a discrepancy.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Approval Signature: Jf Calmy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I2-06A

EP = 4/PRI 3

Code A

TITLE:

Display Grouping

COMMENT:

Displays not grouped for comparative reading.

Item: 4.2.2.6

Ref.: B2.10

Source: CRS

IDENTIFICATION: Panel: (Various Panels)

Component Name: See above.

ID or Number: See above.

DESCRIPTION:

In several cases, displays are not grouped for easy comparison: for example, on the Remote Shutdown Panel the RPV TEMP and LEVEL displays are separated.

RESOLUTION:

(Sched: None )

Panels will be enhanced through the use of color pads, demarcation, mimic, and hierarchal labeling to better identify functional and related component grouping. Related HEDs: D2-03. SD3-01.

TRAINING REQUIREMENTS:

Train personnel in meaning of enhancements.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 12-07

EP = 4/PRI 3

Code A

TITLE:

Scale Subdivisions

COMMENT:

Scale subdivisions are not accurate enough for the task.

Item: 4.2.2.7

Ref.: B

Source: CRS

IDENTIFICATION: Panel: 00C196  
Component Name: Hydrogen Indicator  
ID or Number: H2I-4083

DESCRIPTION:

The H2I-4083 indicator on the Off-Gas Recombiner panel uses a handwritten scale with units 1 inch apart reading 0, 1.25, 2.50, 3.75, 5.0. This is not accurate enough for monitoring H<sub>2</sub> levels.

2

RESOLUTION:

(Sched: None )

Provide new scales that meet guidelines.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *Jf Cahoy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 12-08

EP 8/PRI 4

Code F

TITLE:

Excessive Scale Graduations

COMMENT:

A number of indicators had excessive scale graduations.

Item: 4.2.2.8

Ref.: B2.12

Source: CRS

IDENTIFICATION: Panel: C03, C04, C05A, C06A, C07A, C08A, C09,  
C13, C37, C196, C484

Component Name: See attached.

ID or Number: See attached.

DESCRIPTION:

Several scales had more than nine intermediate scale graduations between major markings. (Also see HEDs SI2-04, I2-09.)

RESOLUTION:

(Sched: None )

Many scales have more than nine graduations between numbered markings. All these scales have been reviewed by the team (see comments on attached list). Nevertheless, these scales have clear and appropriate subdivisions within the intermediate graduations and were found to be easily read. In most cases, the scale is numbered 30, 60, 90, and each has three major subdivisions of equal markings, but are not numbered to reduce scale clutter. No changes required (see HED I2-09).

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. J. Calhoun*

Date: FEB 28 1986

(2) Additional page(s) attached



20C07A (the following are readable, no change)

LI-2278B  
LI-2278C  
"A", "B", "C" Circ. Wtr. Pumps

20C08A (the following are readable, no change)

PI-2403  
PI-2004  
PI-278A,B,C  
PI-2179A,B,C

20C05A

"A", "B", "C" RFP DISCH PRESS - 15 grads, but readable as these  
are subdivided every 5 grads by  
a heavy, longer line.

20C04A (the following are 15 grads, but readable as these are  
subdivided every 5 grads by a heavy, longer line)

"A" PUMP SEAL NO. 1  
"A" PUMP SEAL NO. 2  
"A" REACT. RECIRC. M/G SET GEN. AMM.  
"B" PUMP SEAL NO. 1  
"B" PUMP SEAL NO. 2  
"B" REACT RECIRC. M/G/ SET GEN. AMM.  
HEAD COOL FLOW  
REGEN HEAT EXCHANGE INLET PRESS

20C12

PI-2429A,B,C - 15 grads, but easily readable as these are  
subdivided every 5 grads by a heavy, longer line  
PI-2286 - 25 grads, but subdivision every 5 grads, readable

20C06B

PI-2472A,B - 15 grads, but easily readable, subdivision every 5  
grads  
TR-2492 - 25 grads, but subdivision every 5 grads, readable

00C24 (the following are 15 grads, but readable, subdivided every 5 grads)

#3 S.U. & EMERG. REG. TRANS. WATT  
NORTH SUB NO. 1 TR. TERTIARY  
#3 S.U. BUS VM  
#2 S.U. TRANS. WATT  
#2 S.U. A BUS VM  
#2 S.U. BUS VM  
#2 S.U. B BUS VM

20C43 (the following are 15 grads, but readable subdivided every 5 grads)

RCIC TURBINE SUPPLY PRESSURE  
RCIC PUMP DISCHARGE PRESSURE  
RCIC PUMP SUCTION PRESSURE

20C04B (the following are 15 grads, but readable, subdivided every 5 grads)

PI-116  
PI-109  
PI-111

20C04C (the following are 15 grads, but readable, subdivided every 5 grads)

PI-93  
PI-94  
PI-96

PEACH BOTTOM  
HED ASSESSMENT

HED No. 12-09

EP = 2/PRI 4

Code A/F

TITLE:

Scale Subdivision Multiples

COMMENT:

Indicators do not use accepted subdivisions.

Item: 4.2.2.9

Ref.: B2.13

Source: CRS

IDENTIFICATION: Panel: See attached.

Component Name: See attached.

ID or Number: See attached.

DESCRIPTION:

Some indicator scales use subdivisions other than multiples of 1, 2, or 5, which can be confusing to the operator. (Also see HED SI2-04, I2-08)

RESOLUTION:

(Sched: None )

The progression 30, 60, 90 has been used extensively throughout the control room. These scales use clearly marked divisions and subdivisions and are easily read. They are used throughout the control room for pressure scales. These do not require change. Other scales that have major discrepancies will be changed as noted on attached sheets. For dual scale indicators (pressure/vac) see HED SI1-02.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. J. Cahy*

Date: FEB 28 1986

(3) Additional page(s) attached

The following indicators have scales that use multiples other than those of 1, 2, or 5.

20C06B Resolution: Acceptable as is. Code: F

PI-2472A,B (0, 30, 60...)

00C26A Resolution: Frequency shows variation each side of 60 HZ. These are non-linear scales. Acceptable as is. Code F

OAG12 (55, 58, 60, 62, 65) Resolution: Same as 00C26A.

0026B Resolution: Same as 00C26A.

OAG22 (55, 58, 60, 62, 65) Resolution: Same as 00C26A.

00C26C Resolution: Same as 00C26A.

OCG12 (55, 58, 60, 62, 65) Resolution: Same as 00C26A.

20C43 (the following all: -30, 0, 15, 30, 45 ...)  
Resolution: Dual scale. See HED D5-04.

93X  
94X  
95X  
96X  
PI-0236AX  
PI-0236BX

00C24 (the following all: 0, 3, 6, 9, 12...)  
Resolution: Acceptable as is. Code F

NORTH SUB NO. 1 TR TERTIARY  
#3 S.U. BUS VM  
#2 S.U. A BUS VM  
#2 S.U. BUS VM  
#2 S.U. B BUS VM

00C123 (the following all: 90, 95, 100, 105, 109) These scales are level of elevation, are always steady - The odd number is an end-of-scale number.  
Resolution: Acceptable. Code B

LI-2804A,C LI-3804A  
LI-2804B,D LI-3804B

20C12 Resolution: Acceptable as is. Code F

PI-2429A,B,C (0, 15, 30, 45...)  
PI-2425A,B (0, 15, 30, 45...)  
PI-2286 (0, 30, 60, 90...)

20C12

TI-2228 (0, 27.5, 55, 80, 105, 130, 154, 178.5, 200 )  
Resolution: Replace with permanent scale and proper graduation  
and number progression. Code A

20C07A

LI-2278A,B,C (97, 100, 105, 110, 113.6) - these scales refer to  
level of elevation above sea level.  
Resolution: Acceptable as is. Code F

"A","B","C" Circ. Wtr. Pumps Amps (0, 30, 60, 90)  
PI-2771 - (-30, -20, -10, 0, 5, 10, 15)  
Resolution: Dual scale. See HED D5-04.

20C08A

PI-2403 (0, 300, 600, 900)  
PI-2004 (0, 300, 600, 900)  
PI-2178A,B,C (0, 30, 60, 90)  
Resolution: Acceptable as is. Code F

PI-2179A,B,C (-30, 0, 15, 30...)  
PI-2866 (-30, 0, 15, 30...)  
Resolution: Dual scale. See HED D5-04.

20C04A

RWCU DUMP FLOW (0, 135, 180, 225, 270, 315, 360, 405, 450)  
Resolution: Redesign scale with proper graduations and number  
progressions - mark 180 and 360. Code A

A,B Pump Seal #1, #2 (0, 3, 6, 9...)  
A,B Pump Ammets (0, 30, 60, 90...)  
HEAD COOL FLOW (0, 300, 600, 900...)  
REGEN HEAT EXCHANGE INLET PRESSURE (0, 3, 6, 9...)  
Resolution: Acceptable as is. Code F

REACTOR BLDG EQUIP SUMP TEMP (0, 43, 84, 124, 161, 198, 233, 267,  
300 - handwritten)  
RWCU FILTER FLOW FI-12-141A/B (0, 43, 84, 124, 161, 198, 233,  
267, 300 - handwritten)  
Resolution: Replace with proper graduations and number  
progressions. Code A

20C04B

PI-109 (0, 3, 6, 9...)

PI-111 (0, 3, 6, 9...)

Resolution: Acceptable as is. Code F

PI-116 (-30, 0, 15, 30...)

Resolution: Dual scale. See HED D5-04.

20C04C

PI-93 (0, 3, 6, 9...)

PI-94 (0, 3, 6, 9...)

Resolution: Acceptable as is. Code F

PI-96 (-30, 0, 15, 30, 45...)

Resolution: Dual scale. See HED D5-04.



PEACH BOTTOM  
HED ASSESSMENT

HED No. I3-01

EP = 12/ PRI 1

Code A

TITLE: Recorder Values

COMMENT: Printed recorder values difficult to read.

Item: 4.2.3.1 Ref.: B3.1 Source: CRS

IDENTIFICATION: Panel: All panels with multi-point recorders  
Component Name: Multipoint Recorders  
ID or Number: All panels

DESCRIPTION:

Multipoint recorders have printed numerals that are small, overlapping, and indistinct. Colors are faded and difficult to distinguish from each other and from the chart paper when green ink is used (green ink/green paper).

RESOLUTION: (Sched: 2nd Refuel )

The team reviewed all multipoint recorders to determine any parameters that require better definition. TR-2-2-3-89, Reactor Vessel Skin Temp. was identified as critical and too difficult to read. This recorder will be replaced to provide point select and high speed capability (also see HED I3-05).

TRAINING REQUIREMENTS:

Mod package.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: *J. J. Carling*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I3-02

EP = 6/PRI 4

Code A

TITLE:

Incorrect Chart Paper Scales

COMMENT:

Several recorders use chart paper which does not match the scale graduations.

Item: 4.2.3.2

Ref.: B3.2

Source: CRS

IDENTIFICATION: Panel: 20C124, 00C196

Component Name: Recorders

ID or Number: FR4020

DESCRIPTION:

The two recorders on the Reactor Feed Pump Turbine Test panel have scales that read 0-6, while the chart paper uses a scale of 0-100. On the Recombiner panel recorder FR4020 uses both a 0-5 and a 0-600 scale, while the chart paper reads 0-300.

RESOLUTION:

(Sched: N/A )

Recorders on the Reactor Feed Pump Turbine Test panel have been removed. FR4020 recorder on 00C196 will be supplied with the proper chart paper. Responsibility for maintaining chart paper has been assigned.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I3-03

EP = 12/PRI 2

Code A

TITLE: Recorder Alarm Points

COMMENT: Alarm points are not identified.

Item: 4.2.3.3 Ref.: B3.3 Source: CRS

IDENTIFICATION: Panel: All  
Component Name: Recorders  
ID or Number: All

DESCRIPTION:

Recorder scales do not indicate alarm points.

RESOLUTION: (Sched: see TA HEDs )

Those instruments identified in task analysis will be enhanced through the application of zone markings or alarm points (See HED D5-01).

TRAINING REQUIREMENTS:

Train personnel in meaning of zone markings.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I3-04

EP = 6/PRI 5

Code A

TITLE:

Recorder Ink

COMMENT:

Many recorders are without ink.

Item: 4.2.3.4

Ref.: B3.4

Source: CRS

IDENTIFICATION: Panel: All not yet identified - Supplementary  
Survey item.

Component Name: Same as above.

ID or Number: Same as above.

DESCRIPTION:

Some recorders have no pen ink; other recorders have faded ink,  
which makes reading them difficult.

RESOLUTION:

(Sched: N/A )

A well established work practice for replacing pens exists. Pens  
are available in Control Room area. Replacement is the  
responsibility of the operator who reviews all recorders at  
least once per shift. A lab technician is now available 24 hours  
a day to resolve all problems.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I3-05

EP = 6/PRI A: 3  
PRI B: 1

Code A

TITLE:

Multipoint Recorder Speed

COMMENT:

Few recorders have point-select or high speed capabilities.

Item: 4.2.3.5

Ref.: B3.5  
B3.6

Source: CRS

IDENTIFICATION: Panel: 20C08B, 20C21  
Component Name: Same as above.  
ID or Number: Same as above.

DESCRIPTION:

Multipoint recorders make little use of high speed or point-select capabilities.

RESOLUTION:

(Sched: A: None; B: 2nd Refuel )

A review of multipoint recorders was made to determine which require point select and/or high speed capabilities. Two were identified.

- A. 20C08B - VR-2657: Turbine Vibration recorder will be replaced to provide point select capability.  
B. 20C21 - TR2-2-3-89: Reactor Vessel Skin Temp. recorder will be replaced to provide both point select and high speed select. (see HED I3-01)

TRAINING REQUIREMENTS:

Mod package.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cahney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I3-06

EP = 4/PRI 6

Code A

TITLE:

Recorder Chart Paper

COMMENT:

Type and size of chart paper is not identified.

Item: 4.2.3.6

Ref.: B3.7

Source: CRS

IDENTIFICATION: Panel: 20C124, 00C196

Component Name: Recorders

ID or Number:

DESCRIPTION:

Recorders on the Recombiner Panel and the Reactor Feed Pump Turbine Test Panel do not specify the type and size of the chart paper to be used.

RESOLUTION:

(Sched: N/A )

All recorders have chart paper requirements specified on the recorder itself. This is not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. 13-07

EP = 8 PRI 2

Code E

TITLE:

Recorder Pen Colors

COMMENT:

Recorder pen color associations are not specified.

Item: 4.2.3.7

Ref.: B3.10

Source: CRS

IDENTIFICATION: Panel: All not yet identified - Supplementary Survey item.

Component Name: Same as above.

ID or Number: Same as above.

DESCRIPTION:

Multipen recorder labels do not specify pen color associations. This makes it difficult to determine which parameter is which.

RESOLUTION:

(Sched: 2nd Refuel)

All three pen recorders have pen colors - green, blue, red, from top to bottom. The labels being added at the bottom to identify pen colors will read green, blue, red from top to bottom to match the pen order. Two pen recorders will be red, black from top to bottom on labels. In a few cases, this will not meet HFE criteria of arranging parameters from top to bottom in order (A,B,C, or 1,2,3). Recorders have a fixed pen order and the manufacturer specifies the order of connection - it cannot be changed. Therefore, the best human factors solution is to arrange labels in the same order as the colored pens and the associated scales, as specified above.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I3-08

EP = 8/PRI 4

Code F

TITLE: Recorder Marking Procedure

COMMENT: Recorders not marked as recommended.

Item: 4.2.3.8 Ref.: B3.12 Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: Administrative Procedures

DESCRIPTION:

Chart recorders are marked only once a day by operators rather than once a shift as recommended. No administrative procedures exist for recorder marking.

RESOLUTION: (Sched: None )

Do not agree that recorders need to be marked once per shift (see HED P5-02). Procedure exists for once a day. This is sufficient.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: *Jf Cashy* Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. I3-09

EP = 4 PRI 5

Code A

TITLE:

Chart Retention Procedure

COMMENT:

No recorder marking or retention procedures exist.

Item: 4.2.3.9

Ref.: B3.13

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: N/A

ID or Number: Administrative Procedure

DESCRIPTION:

There are no apparent administrative procedures for marking or retaining recorder chart papers.

RESOLUTION:

(Sched: N/A )

A procedure was placed in effect subsequent to the original survey to specify responsibilities and procedures for chart paper.

TRAINING REQUIREMENTS:

None

PROCEDURE REQUIREMENTS:

See Above

Team Approval Signature:

*JJ Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 13-10

EP = 6/PRI 3

Code A

TITLE:

Recorder Glare

COMMENT:

Glare on several recorders.

Item: 4.2.3.10

Ref.: B3.14

Source: CRS

IDENTIFICATION: Panel: See HED 12-02.

Component Name: Westronic Recorders

ID or Number: All not yet identified - Supplementary  
Survey item.

DESCRIPTION:

Westronic chart recorders displayed glare and parallax problems, making them difficult for operators to read.

MITIGATING CONSIDERATIONS:

This is primarily a problem on recorders located on the upper portion of the vertical panels in the control room.

RESOLUTION:

(Sched: None )

The control room remodeling project will result in more diffuse lighting with reduced glare (see HED SE2-02). The type of meters used in this plant do not have parallax.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. Calvey*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 13-11

EP = 12/PRI 2

Code A

TITLE: Recorder Zone Markings

COMMENT: Recorders have no zone markings.

Item: 4.2.3.11

Ref.: B3.15

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Recorders  
ID or Number: All

DESCRIPTION:

Recorders are not marked to indicate normal, abnormal, safe, unsafe zones.

RESOLUTION:

(Sched: see TA HEDs )

Those instruments identified in task analysis will be enhanced through the application of zone markings or alarm points (see HED D5-01).

TRAINING REQUIREMENTS:

Train personnel in meaning of zone markings.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Cahmy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 14-01

EP = 8/PRI 6

Code A

TITLE:

Lamp Testing

COMMENT:

No lamp test feature exists.

Item: 4.2.4.1

Ref.: B4.4

Source: CRS

IDENTIFICATION: Panel: All

Component Name: Indicator Lights

ID or Number: N/A

DESCRIPTION:

Indicator lights presently have no lamp test feature to identify failed bulbs.

RESOLUTION:

(Sched: N/A )

See attached.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1986

(1) Additional page(s) attached

**Resolution:**

The requirement is to have a positive indication of failed lights. The following are positive indications. An overall lamp test is not necessary due to the following conditions:

**Safety Systems:**

Normal position full open/full closed valves with red or green light with redundant lights or process indication. All controls are tested monthly.

**Non-Safety:**

two categories:

- Full open/full closed: one light (red or green) always lit - failure indicated immediately.
- Normally, intermediate position - secondary indication available to alert to a failed bulb via process indication.

**Breakers:**

- Two position only - red or green indications; one light always lit.
- White and amber indicating lights (ECCS initiation status) have Annunciator alarm redundancy.



PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-01

EP = 9/PRI 4

See attached

TITLE:

Control Sequence

COMMENT:

Switch sequence does not follow expected conventions.

Item: 4.2.5.1

Ref.: B5.1

Source: CRS

IDENTIFICATION: Panel: 20C12, 00C124, 20C43, 00C196

Component Name: See attached.

ID or Number: See attached.

DESCRIPTION:

The sequence of switch positions is not in accordance with general control room conventions.

RESOLUTION:

(Sched: None )

See attached.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Calby*

Date: FEB 28 1986

(1) Additional page(s) attached

Resolution:

20C12

- Off Gas Stack Dilution: Positions are acceptable since there is an annunciator alarm to alert the operator if one fan is not in standby (Auto). Code: F
- Chilled Water Pump: Switch positions are correct. Code: A

00C124

- This is a test panel, not used in operations. All operations are by specific procedure. This is considered to be acceptable. Code: F

20C43

- Switch position indications are especially arranged on the Remote Shutdown Panel so that the 12 o'clock position is required to make the transfer from the control room. Therefore, this convention, unique to this panel, is acceptable. Code: A

00C196

- These are in the process of being changed through MOD 967 of the Off Gas panel. Code: A

PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-02

EP = 9/PRI 3

Code A

TITLE: Position Indication Labels

COMMENT: Many switches are unlabeled or labeled temporarily.

Item: 4.2.5.2 Ref.: B5.2 Source: CRS

IDENTIFICATION: Panel:

Component Name: Same as above.  
ID or Number: Same as above.

DESCRIPTION:

Switch labels and position indication labels were missing on several switches. Other switches had temporary position labels made of tape.

RESOLUTION: (Sched: None )

All control positions will be clearly identified on either the escutcheon plate or the immediately surrounding panel surface.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-03

EP = 9/PRI 3

Code A

TITLE: Position Markings

COMMENT: Some switches have unidentified positions.

Item: 4.2.5.3

Ref.: B5.2

Source: CRS

IDENTIFICATION: Panel:

Component Name: Same as above.

ID or Number: Same as above.

DESCRIPTION:

Some switches have positions which are unmarked. This makes it difficult to determine control status.

RESOLUTION: (Sched: None )

All control positions will be clearly identified on either the escutcheon plate or the immediately surrounding panel surface.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-04

EP = 9/PRI 4

Code (see D3-05)

TITLE:

Control Height

COMMENT:

Switches above or below specified height.

Item: 4.2.5.4

Ref.: B5.3

Source: CRS

IDENTIFICATION: Panel: See HED D3-05.

Component Name: Same as above.

ID or Number: Same as above.

DESCRIPTION:

Some switches are below or above the anthropometric guidelines of 34 and 70 inches respectively. This makes it difficult to operate the controls.

e

RESOLUTION:

(Sched: None )

See HED D3-05.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-05

EP = 9/PRI 2

Code: D

TITLE:

Inadvertent Control Activation

COMMENT:

Handles near edge of consoles subject to inadvertent activation.

Item: 4.2.5.5

Ref.: B5.4

Source: CRS

IDENTIFICATION: Panel: All not yet identified - Supplementary Survey item.

Component Name: Same as above.

ID or Number: Same as above.

DESCRIPTION:

Some switch handles on the primary benchboard consoles are located within three inches of the edge of the console and may be accidentally bumped by personnel.

RESOLUTION:

(Sched: 2nd Refuel )

The only control handles that are considered to be a problem are the J-Handle at bottom edge of benchboards. Of these, most J-Handles have been reversed to avoid this problem since 1972. This solution has proven to be satisfactory. The remaining J-Handle switches will be reversed on the bottom row. The reversed J-Handle does partially obscure the flag. Observation of this flag is used only in post event analysis and is not considered to be a significant problem for operation.

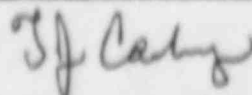
TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:



Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-06

EP = 6/PRI 4

Code: A

TITLE:

Label and Indicator Visibility

COMMENT:

Some labels and indicators obscured by switch manipulation.

Item: 4.2.5.6

Ref.: B5.8

Source: CRS

IDENTIFICATION: Panel: See HED D5-07 attachment.

Component Name: Same as above.

ID or Number: Same as above.

DESCRIPTION:

Some control labels and associated indicators are completely or partially obscured by switch manipulation. This is primarily a problem on those components mounted below 48" on the vertical panels.

RESOLUTION:

(Sched: None.)

Use of hierarchal labeling provides larger labels and places them above displays and controls to ensure all labels are easily read. Maintenance tags have been changed so that they do not obscure labels or indications (also see HEDs D3-05, D5-07 for evaluation of these controls). These labels will be removed during enhancement and relocated to the top of controls.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-07

EP = 8/PRI 4

Code F

TITLE:

Control Shape Coding

COMMENT:

No control shape coding conventions

Item: 4.2.5.7

Ref.: B5.10

Source: CRS

IDENTIFICATION: Panel: All not yet identified - Supplementary  
Survey item.

Component Name: Same as above.

ID or Number: Same as above.

DESCRIPTION:

No shape coding has been used to distinguish between pump and valve control handles.

RESOLUTION:

(Sched: None. )

Hierarchical labeling will clearly identify pumps and valves. Additional shape coding is not felt to be necessary. Twelve years of operation have shown this not to be a problem.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cadney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-08

EP = 6/PRI 4

Code F

TITLE:

Label and Pointer Visibility

COMMENT:

Large control knobs and handles obscure adjoining labels.

Item: 4.2.5.8

Ref.: B5.11

Source: CRS

IDENTIFICATION: Panel: Consoles.

Component Name: See above

ID or Number: See above.

DESCRIPTION:

The large control knobs and handles located toward the rear of the benchboards tend to obscure the control pointers as well as the control labels.

RESOLUTION:

(Sched: None. )

Hierarchal labeling developed to enhance the identification of components will eliminate this discrepancy. In addition, slight torso flexion by operators allows the labels to be read. Twelve years of operating the plant has not revealed this to be a problem.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. J. Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-09

EP = 6/PRI 4

Code A

TITLE:

Emergency Control Identification

COMMENT:

Emergency controls are not highlighted.

Item: 4.2.5.9

Ref.: B6.1

Source: CRS

IDENTIFICATION: Panel: 20C43 Remote Shutdown Panel

Component Name: Emergency Controls.

ID or Number: See above.

DESCRIPTION:

The controls for emergency or abnormal operations have not been highlighted on the Remote Shutdown Panel.

RESOLUTION:

(Sched: None )

Enhance the Remote Shutdown Panel to allow operators to more easily identify emergency controls and displays (see HED SD3-23).

TRAINING REQUIREMENTS:

Train personnel in meaning of enhancements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Casey*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. 15-10

EP = 12 PRI 6

Code A

TITLE:

Key-lock Switches

COMMENT:

Keys are left in key-lock switches.

Item: 4.2.5.10

Ref.: B7.4  
B7.5

Source: CRS

IDENTIFICATION: Panel: See HED SI4-01  
Component Name: See HED SI4-01  
ID or Number: See HED SI4-01

DESCRIPTION:

Keys for key-lock switches are left permanently in the switches.  
No administrative procedure for key access is used.

RESOLUTION:

(Sched: N/A )

Key switches are controlled by procedures. In most cases keys remain in the switches during normal operations.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. M1-01

EP = 4/PRI 5

Code A

TITLE:

Print Modifications

COMMENT:

Updated prints not always available.

Item: 4.7.1

Ref.: G3.1

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

Equipment changes in the control room are recorded as "as-built" drawings attached to existing prints. This process is often delayed and operators must use out-dated prints to trace circuits and systems.

RESOLUTION:

(Sched: N/A )

Administrative procedures A-14 and A-6 have been revised to correct this problem.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

See Above.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. M1-02

EP = 6/PRI 5

Code 1

TITLE:

Procedure Modifications

COMMENT:

Procedures are not updated in a timely fashion.

Item: 4.7.2

Ref.: G3.2

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

Modifications in the control room are incorporated into operational procedures, but delays in this occur due to the time involved to assemble all the pertinent data.

RESOLUTION:

(Sched: N/A )

All modifications are explained during requalification training conducted prior to start up. Actual completion of this training was verified prior to recent start up after refueling outage.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. Calhoun*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. M1-03

EP = 6/PRI 5

Code: A

TITLE: Maintenance Tagouts

COMMENT: Tags obscure adjacent displays.

Item: 4.7.3

Ref.: G4.3

Source: CRS

IDENTIFICATION: Panel:  
Component Name:  
ID or Number:

DESCRIPTION:

Pushbutton switches have tagouts that sometimes obscure adjacent displays. This makes it difficult for operators to monitor plant status.

RESOLUTION: (Sched: N/A)

New tags are in use that do not obscure adjacent displays.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Cahy

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. Pl-01

EP = 9/PRI 5

Code B

TITLE: Procedure Availability

COMMENT: Control rooms must share set of procedures.

Item: 4.5.1.1 Ref.: E1.2 Source: CRS  
E2.1

IDENTIFICATION: Panel: N/A  
Component Name: Plant Procedures  
ID or Number: N/A

DESCRIPTION:

While two sets of procedures exist in the control room, one is permanently stationed at the chief operator's station. The other is shared between units on a roll-cart. This could cause a problem if both units simultaneously required procedurers.

RESOLUTION: (Sched: N/A)

A complete set of TRIP procedures has been provided for each unit; the sharing of general procedures is considered optimum as it reduces control room congestion.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Calmy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Pl-02

EP = 6/PRI 5

Code A

TITLE:

Procedure Use

COMMENT:

Limited space provided for procedure use.

Item: 4.5.1.2

Ref.: El.7

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Plant Procedures

ID or Number: N/A

DESCRIPTION:

Limited laydown space exists for the operator to use procedures and reference materials. No space at all is available at the control panels themselves.

RESOLUTION:

(Sched: N/A )

Additional laydown space has been provided for TRIP procedures and P&ID drawings. A roll around cart is provided for procedures. No longer a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Pl-03

EP = 6/PRI 6

Code A

TITLE:

Annunciator Response Procedure Location

COMMENT:

Annunciator response procedures inconveniently stored.

Item: 4.5.1.3

Ref.: E2.1

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Plant Procedures

ID or Number: N/A

DESCRIPTION:

Annunciator response procedures are stored in a centrally located desk. This is inconvenient for use by operators as they must share the procedures between units, and must leave their stations to get them.

RESOLUTION:

(Sched: N/A )

Significant annunciators which alarm due to equipment failures during plant transients are immediately evident to the operator and emergency procedures cover his response to these annunciators. Other annunciators do not require immediate operator action and the operator has sufficient time to consult the annunciator card if he is not knowledgeable of the appropriate corrective action. Not considered a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Pl-04

EP = 4/PRI 4

Code A

TITLE:

Annunciator Response Card Identification

COMMENT:

The annunciator response card box is not clearly identified.

Item: 4.5.1.4

Ref.: E2.2

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Annunciator Response Card Box

ID or Number: N/A

DESCRIPTION:

The box containing the annunciator response cards is not identified in a distinctive manner. It does not stand out from the other boxes at the desk.

RESOLUTION:

(Sched: None )

Card drawers will be labeled. All operators know location and use them.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. C. Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Pl-05

EP = 6/PRI 5

Code A

TITLE:

Procedures Index

COMMENT:

"S" procedures lack individual indexes.

Item: 4.5.1.5

Ref.: E2.3

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: System Operating Procedures

ID or Number: N/A

DESCRIPTION:

A complete index to the series "S" procedures is located only in the first volume, not in subsequent volumes. This makes it difficult to locate procedures as several volumes are not required.

RESOLUTION:

(Sched: N/A )

Each binder now contains an index for each section within each binder. Edges of binders indicate what sections are included. Each section is tabbed in the binders.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Pl-06

EP = 6/PRI 5

Code A

TITLE: Coding of Emergency Procedures

COMMENT: Emergency procedure index tabs not color coded.

Item: 4.5.1.6

Ref.: E2.4

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Emergency Procedures  
ID or Number: N/A

DESCRIPTION:

Emergency procedures are indexed by number on clear tabs. Color coding them as well would reduce search time.

RESOLUTION:

(Sched: N/A)

All procedures have been clearly identified in separate binders and color coded.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: JJ Carby

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. Pl-07

EP = 9/PRI 5

Code A

TITLE:

Procedure Indexing

COMMENT:

Procedures not indexed sufficiently.

Item: 4.5.1.7

Ref.: E2.6

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: N/A

ID or Number: N/A

DESCRIPTION:

Procedures are grouped according to classification, but the current indexing does not make it easy to locate specific procedures within binders and folders.

RESOLUTION:

(Sched: N/A )

Each binder now contains an index for each section within each binder. Edges of binders indicate what sections are included. Each section is tabbed in the binders.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cadby*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. P2-01

EP = 8/PRI 5

Code A

TITLE:

Administrative Procedure Specificity

COMMENT:

Document preparation procedures excessively general.

Item: 4.5.2.1

Ref.: E3.1, E3.4, E3.8 Source: CRS  
E3.2, E3.5,  
E3.3, E3.7

IDENTIFICATION: Panel: N/A

Component Name: Administrative Procedures

ID or Number: All

DESCRIPTION:

Procedures for document preparation are not specific concerning type and style, nomenclature, terminology, abbreviations, use of as-labeled designations, numbering of steps and paragraphs, spacing and layout, entry and exit conditions, and use of cross-references. This makes it difficult to standardize documents.

RESOLUTION:

(Sched: N/A )

Since this HED was written, the use of the ATMS system has been fully implemented. This system eliminates logistical irregularities such as type, size, style, paragraph spacing, page layout. Emergency procedure (TRIP, OT, and T), nomenclature, terminology, abbreviations, numbering (procedures, paragraphs, steps) and entry/exit condition are formalized via procedure A-94. Other procedures are written oriented to day-to-day operations and do not require an extensive formalization beyond what ATMS provides and what procedure generation procedures cover.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-01

EP = 8/PRI 5

Code A

TITLE:

Procedural Wording

COMMENT:

Procedures generally lacking in succinctness.

Item: 4.5.3.1

Ref.: E4.2

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Procedures - GP2, TRIP

ID or Number: All

DESCRIPTION:

Operating procedures showed a general lack of succinctness, particularly in caution notes and discussions used in emergency procedures.

RESOLUTION:

(Sched: N/A )

Implementation of upgraded TRIP procedures has resolved this problem. GP-2 is not an emergency procedure - it is a guide for startup and has proven to be satisfactory.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-02

EP = 8/PRI 5

Code A

TITLE:

Procedure Notes Consistency

COMMENT:

Notes and cautions inconsistent in use of script, letters.

Item: 4.5.3.2

Ref.: E4.3

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: All Procedures

ID or Number: N/A

DESCRIPTION:

Script, boxes, and letters used to identify cautions and notes within plant procedures are inconsistently applied.

RESOLUTION:

(Sched: N/A )

Since this HED was written, the use of the ATMS system has been fully implemented. This system eliminates logistical irregularities such as type, size, style, paragraph spacing, page layout. Emergency procedure (TRIP), nomenclature, terminology, abbreviations, numbering (procedures, paragraphs, steps) and entry/exit condition are formalized via procedure A-94. Other procedures are written oriented to day-to-day operations and do not require an extensive formalization beyond what ATMS provides and what procedure generation procedures cover.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. J. Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-03

EP = 9/PRI 5

Code A

TITLE: Procedure Discriminability

COMMENT: Some procedural steps are not discernable from others.

Item: 4.5.3.3 Ref.: E4.4 Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Procedures  
ID or Number: GP-6, OT-35

DESCRIPTION:

Cautions, like those applying to follow-up Step 2 of GP-6 and immediate action Step 7 of OT-35, sometimes appear written as part of the previous step. This may be somewhat confusing for the operator.

RESOLUTION: (Sched: N/A)

All procedures have been revised and new upgraded TRIP procedures implemented which more clearly describe operator actions.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: JJ Calmy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-04

EP = 9/PRI 5

Code A

TITLE:

Procedure Clarity

COMMENT:

Emergency and transient procedures sometimes unclear.

Item: 4.5.3.4

Ref.: E4.8

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Plant Procedures

ID or Number: Emergency and Transient Procedures (E,T)

DESCRIPTION:

Diagnostic, symptomatic, and entry event guidance in the transient and emergency procedures is not always clear.

RESOLUTION:

(Sched: N/A )

Resolved through implementation of upgraded TRIP procedures which include diagnostic, symptomatic information where appropriate.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. J. Calmy*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-05

EP = 8/PRI 4

Code A

TITLE:

Procedural Results Descriptions

COMMENT:

Procedures do not clearly identify results of actions.

Item: 4.5.3.5

Ref.: E4.13

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Procedures

ID or Number: All

DESCRIPTION:

Procedures do not describe the results, parameter valves attained, or expected upon operator completion of a step.

MITIGATING CONSIDERATIONS:

Significant problems have been repaired after BWROG Survey, hence EP and Safety Significance difference.

RESOLUTION:

(Sched: None )

TRIP procedures have been re-written and this information added. Remaining procedures will have the proper information added during periodic reviews. A directive has been issued to ensure these areas are covered.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-06

EP = 12/PRI 5

Code A

TITLE:

Annunciator Alarm Setpoints

COMMENT:

Procedures do not list applicable alarm setpoints.

Item: 4.5.3.6

Ref.: E4.14

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Procedures

ID or Number: Emergency and Transient

DESCRIPTION:

No annunciator alarm setpoints are included in either emergency or transient operating procedures.

RESOLUTION:

(Sched: N/A)

Resolved through the implementation of upgraded TRIP, Operational Transient (OT), and Off Normal (ON) procedures which specify alarm setpoints.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-07

EP = 8/PRI 4

Code A

TITLE:

Operating Limit Specifications

COMMENT:

Equipment and administrative operating limits are not specified.

Item: 4.5.3.7

Ref.: E4.15

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Procedures  
ID or Number: All

DESCRIPTION:

Generally procedures do not specify operating limits, administrative limits, or technical specifications. "S" procedures include technical specifications, but not the numerical limits.

RESOLUTION:

(Sched: None. )

Trip procedures have been re-written and this information added. Remaining procedures will have the proper information added during periodic reviews. A directive has been issued to ensure these areas are covered.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-08

EP = 9/PRI 5

Code A

TITLE: Procedural Contingency Actions

COMMENT: No contingency actions provided.

Item: 4.5.3.8 Ref.: E4.16 Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Procedures  
ID or Number: All

DESCRIPTION:

In the event that an action does not achieve the expected results, no contingency operator actions are specified in most procedures. "E" and "GP" procedures include actions for minor discrepancies, but not for major deviations.

RESOLUTION: (Sched: N/A)

This problem has been resolved through the implementation of upgraded TRIP procedures which include the information described above.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Cahy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-09

EP = 6/PRI 5

Code A

TITLE:

Procedure References

COMMENT:

Procedures require additional references.

Item: 4.5.3.9

Ref.: E4.19

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Emergency Procedures

ID or Number: N/A

DESCRIPTION:

Emergency procedures require the operator to use additional references in order to complete a task. The steps are not included in the procedures themselves. This appears awkward as operator must leaf through two volumes at once.

RESOLUTION:

(Sched: N/A )

TRIP procedures have been updated to include this information. No longer a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P3-10

EP = 6/PRI 5

Code A

TITLE: Manual Over-ride

COMMENT: Manual over-ride procedures not included.

Item: 4.5.3.10 Ref.: E4.20 Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Emergency Procedures  
ID or Number: All

DESCRIPTION:

Emergency procedures do not explain how to manually over-ride automatic systems and controls after automatic initiation has occurred, or reference the procedures that cover this area.

RESOLUTION: (Sched: N/A)

Trip procedures have been upgraded to include appropriate information for manual-overide.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: J. J. Cochran Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P4-01

EP = 8 PRI 2

Code A

TITLE:

Feedback to Operator

COMMENT:

Feedback to operator's procedural changes not required.

Item: 4.5.4.1

Ref.: E6.3

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Administrative Procedures

ID or Number: N/A

DESCRIPTION:

Administrative procedures involved with procedural revisions do not require feedback to the operators on resolution of suggested changes.

RESOLUTION:

(Sched: 12/87 )

Feedback will be provided to the originator on resolution of suggested changes to procedures.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

(See Above Resolution.)

Team Approval Signature: *Jf Calmy*

Date: **FEB 28 1986**

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P4-02

EP = 8/PRI 5

Code A

TITLE:

Operator Changes

COMMENT:

Operator changes not included in procedural updates.

Item: 4.5.4.2

Ref.: E6.10

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Administrative Procedures

ID or Number: N/A

DESCRIPTION:

Changes made by operators to the control panels are not included as part of procedural revisions.

RESOLUTION:

(Sched: N/A )

A surveillance test has been written to perform periodic review of panels. Although standards have been developed for permanent changes, these are not required for temporary application.

TRAINING REQUIREMENTS:

Provide training in new procedure.

PROCEDURE REQUIREMENTS:

Develop new procedure.

Team Approval Signature: *Jf Cady*

Date: FEB 28 1995

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P5-01

EP = 4/PRI 5

Code B

TITLE: Recording Log Entry Time

COMMENT: Recording the time of log entries not required.

Item: 4.5.5.1 Ref.: E7.1 Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Administrative Procedures  
ID or Number: N/A

DESCRIPTION:

Administrative procedures do not require recording the time on all log entries. It is left to the operator's discretion.

RESOLUTION: (Sched: N/A )

Appropriate directives re-emphasizing to operators the importance of specifying that entry time be included on all log entries have been issued.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Cady

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. P5-02

EP = 8/PRI 5

Code A

TITLE:

Chart Marking

COMMENT:

Chart marking not required.

Item: 4.5.5.2

Ref.: E7.2

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Administrative Procedure

ID or Number: N/A

DESCRIPTION:

Marking charts or graphs regularly is not required according to administrative procedures.

MITIGATING CONSIDERATIONS:

This impacts post-accident analysis, but has no significant impact on the safety of control room operations.

RESOLUTION:

(Sched: N/A )

Appropriate Plant Standing Order to direct personnel to mark charts and graphs regularly during the third shift has been implemented.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cadmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. P5-03

EP = 4 PRI 5

Code A

TITLE:

Log Retention Time

COMMENT:

No log or chart retention time specified.

Item: 4.5.5.3

Ref.: E7.8

Source: CRS

IDENTIFICATION: Panel: N/A

Component Name: Administrative Procedures

ID or Number: N/A

DESCRIPTION:

No retention time for used log books and recorder charts is specified in administrative procedures.

RESOLUTION:

(Sched: N/A )

A procedure was placed in effect subsequent to the original survey to specify responsibilities and procedures for chart paper.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

See Above.

Team Approval Signature: *Jf Casey*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. T1-01

EP = 6/PRI 5

Code: A

TITLE:

Computer Training

COMMENT:

Computer training not given to operators.

Item: 4.8.1

Ref.: H1.4

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Training  
ID or Number: N/A

DESCRIPTION:

Operator requalification training does not include training in the plant computer.

RESOLUTION:

(Sched: N/A )

Computer training is now included in the requalification training program.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. T1-02

EP = 6/PRI 5

Code: A

TITLE: Administrative Guidelines

COMMENT: No administrative procedures exist for mental evaluation.

Item: 4.8.2

Ref.: H2.2

Source: CRS

IDENTIFICATION: Panel: N/A  
Component Name: Procedures  
ID or Number: N/A

DESCRIPTION:

No procedures for on-coming operator physical and mental condition evaluation exist at this time.

RESOLUTION:

(Sched: N/A )

Fitness for duty guidelines and training have been developed and are being implemented.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD1-01

EP = 4/PRI 4

Code F

TITLE:

Opposing Surfaces Close

COMMENT:

Space between consoles and panels is narrow.

Item: N/A

Ref.: SA1.2

Source: SCRS

IDENTIFICATION: Panel: Vertical Panels/Consoles

Component Name: N/A

ID or Number: N/A

DESCRIPTION:

Space between the backs of the consoles and the vertical panels is only 36". This makes it difficult for operators to read/operate low displays/controls.

RESOLUTION:

(Sched: None)

Access is adequate for purpose intended. Instruments on back panels provide operational support and do not require immediate operator action.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JF Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD2-01

EP = 4/PRI 6

Code A

TITLE: Supervisor's Station

COMMENT: Supervisor's station blocked.

Item: N/A Ref.: SA2.1 Source: SCRS

IDENTIFICATION: Panel: N/A  
Component Name: Shift Supervisor's Office  
ID or Number: N/A

DESCRIPTION:

The shift supervisor's office was blocked by a metal rollaway stepladder when the survey was conducted, thus inhibiting direct access to the control room.

RESOLUTION: (Sched: N/A )

Portable ladder removed. The location of the office is convenient to control room. SS now stationed in control room. This is not considered to be a discrepancy.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Calmy

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD2-02

EP = N/A/PRI 3

Code A

TITLE:

Containment Purge Mimic Arrangement

COMMENT:

Mimics are unclear and difficult to interpret.

Item: N/A

Ref.: TDA  
A2.7

Source: SCRS

IDENTIFICATION: Panel: 20C 03 3

Component Name: Containment Purge Mimics

ID or Number: N/A

DESCRIPTION:

The existing mimics follow a non-functional control arrangement on the board, and as a result are difficult to follow.

RESOLUTION:

(Sched: None )

Mimics will be added to clarify flow paths as part of the enhancement process.

TRAINING REQUIREMENTS:

See HED ST1-01

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*JJ Calby*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. SD2-03

EP = N/A/PRI 1

Code A

TITLE:

Containment Isolation Mimic Arrangement

COMMENT:

Mimic appears cramped and confusing.

Item: N/A

Ref.: TDA  
A2.7

Source: SCRS

IDENTIFICATION: Panel: 20C 03 01  
Component Name: Containment Isolation Mimic  
ID or Number: N/A

DESCRIPTION:

The small spaces between indicator lights on this panel make it difficult to follow the mimics. The lights are not arranged by function to allow simplified interpretation.

RESOLUTION:

(Sched: 2nd Refuel )

This section is used to indicate isolation completion. Rearrange and enhance groupings without using mimics. Arrange by isolation groups for rapid identification of group isolation completion.

TRAINING REQUIREMENTS:

Train operators in arrangement of panel and the interpretation of terms "Inboard" and "Outboard."

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-01

EP = 6/PRI 3

Code A

TITLE:

Control/Display Grouping

COMMENT:

Some control/display groupings not obvious.

Item: N/A

Ref.: SA3

Source: SCRS

IDENTIFICATION: Panel: 20C07B, 20C123, 20C06A, 20C07A, 20C08A,  
20C06C, 20C05A, 20C04A, 20C12

Component Name: Demarcation, Mimics

ID or Number: N/A

DESCRIPTION:

No mimics or demarcation lines used to enhance control/display relationships on 20C07B or 20C123 panels. Demarcation was used on 20C06A, 07A, 08A, 06C, 04A, 05A, and C12 panels, but only around controls, not the related displays.

RESOLUTION:

(Sched: None )

Panels will be enhanced through the use of color pads, demarcation, mimics, and hierarchal labeling to better identify functional and related component grouping. Related HEDs: D2-03, I2-06A.

TRAINING REQUIREMENTS:

Train personnel in meaning of enhancements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-02

EP = N/A/PRI 3

Code A

TITLE:

Feedwater Controls

COMMENT:

Controls for feed valves not in expected order.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C06A  
Component Name: Feedwater Controls  
ID or Number: 49,50,58,59,67,68

DESCRIPTION:

The order of controls is Check - Suction - Disch, but the order of valves in the system is Suction- Recirc - Check - Disch.

RESOLUTION:

(Sched: None )

Reverse the order of Check and Suction valve controls.

TRAINING REQUIREMENTS:

Provide training in new control locations.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. J. Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-03

EP = N/A/PRI 4

Code B

TITLE:

Air Ejector Indications

COMMENT:

Indications for air ejectors 1st and 2nd stages are not in the expected order.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C06B  
Component Name: Air Ejector Pressure  
ID or Number: 2,3,4,5

DESCRIPTION:

The meters are arranged in the order 2nd Stage - 1st Stage. The expected order is 1st Stage - 2nd Stage from left to right. This should be coordinated with recommended change to controls on panel 20C07A.

RESOLUTION:

(Sched: None )

These are arranged in the order system is put in service, 2nd stage 1st; 1st stage 2nd. See also SD3-04, SD3-05.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1985

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-04

EP = N/A/PRI 4

Code B

TITLE:

Air Ejector Controls

COMMENT:

Controls for air ejector 1st and 2nd stages are not in the expected order.

Item: N/A

Ref.: A 2  
TL

Source: SCRS

IDENTIFICATION: Panel: 20C07A

Component Name: Air Ejector Controls

ID or Number: 140, 141, 154, 155

DESCRIPTION:

The controls are arranged in the order 2nd Stage - 1st Stage. The expected order is 1st Stage - 2nd Stage from left to right. This should be coordinated with recommended change to indications on Panel 20C06B.

RESOLUTION:

(Sched: None )

These are arranged in the order system is put in service, 2nd stage 1st; 1st stage 2nd. See also SD3-03, SD3-05.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-05

EP = N/A/PRI 3

Code C

TITLE:

Air Ejector Controls/Indications

COMMENT:

Controls and indications on different panels separated by a distance of approximately eight feet.

Item: N/A

Ref.: A3.7  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C6B/7A

Component Name: Air Ejector

ID or Number: 6B - 2,3,4,5      7A - 140,141,154,155

DESCRIPTION:

As above.

RESOLUTION:

(Sched: None )

Enhance grouping by use of color fields. This will allow operators to readily associate both groups of components. Steam jet air ejector discharge pressure gauges have been added to 07A above the controls.

TRAINING REQUIREMENTS:

Provide training in meaning of color fields.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-06

EP = N/A/PRI 4

Code A

TITLE:

Condensate Panel Control Grouping

COMMENT:

Controls for the steam seal packing exhauster are separated by condensate system controls.

Item: N/A

Ref.: A3.3  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C07A

Component Name: Controls

ID or Number: 144,145,157A,158,159,171,170,172,173

DESCRIPTION:

These controls are not grouped for easy recognition of function and relationship. The condensate controls are not well arranged and the steam packing controls are split into two groups.

RESOLUTION:

(Sched: None )

Enhance and rename to make relationship clear. The steam packing controls are part of the condensate system flow and are properly placed.

TRAINING REQUIREMENTS:

Provide training in new labeling nomenclature.

PROCEDURE REQUIREMENTS:

Update procedures to include new nomenclature.

Team Approval Signature:

*Jf Cadney*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-07

EP = N/A/PRI 4

Code A

TITLE:

Condensate Recirc Indication

COMMENT:

Position indication lights not grouped with related controls.

Item: N/A

Ref.: A3.1  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C07A  
Component Name: Cond Recirc  
ID or Number: 148

DESCRIPTION:

The Condensate controls are located on the right side of the benchboard. The recirculation valve indicating lights are located on the left side with Screen Wash and Circ Water valve controls.

RESOLUTION:

(Sched: None )

These lights are not wired in and are not required. A recirc flow meter adequately indicates recirc status. Remove lights.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-08

EP = N/A/PRI 4

Code D

TITLE:

Turbine Drain Controls

COMMENT:

Seat drains and line drains are reversed in order from each other.

Item: N/A

Ref.: A3.3  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C08A

Component Name: Turbine Drains

ID or Number: 252,253,258,259,264,265,269,270,275,276

DESCRIPTION:

The two top controls are arranged in proper system order from left to right. The above seat drains (8) directly below are arranged in reverse order, right to left, conflicting with the line drains above them.

RESOLUTION:

(Sched: None )

These valves are operated as a block and the order of operation is not important. They are properly labeled and will be enhanced.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1985

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-09

EP = N/A/PRI 4

Code B

TITLE:

Drain Tank Dump Indications

COMMENT:

Indicating lights are arranged in incorrect order top to bottom

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C08A

Component Name: Drain Tank Dump Lights

ID or Number: 243,244,245,290,291,292

DESCRIPTION:

These light sets are arranged from top to bottom in the following order: D and A, E and B, F and C. The associated Moisture Separator indications next to them are arranged in two columns top to bottom: A, B, C, and D, E, F. Correlation between the two is difficult.

RESOLUTION:

(Sched: None )

These valves are paired as presently installed. Labels are correct as indicated. It is not important which order the lights are lettered and therefore correlation is not difficult.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JF Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-10

EP = N/A/PRI 4

Code B

TITLE:

Drain Tank Drains

COMMENT:

Indications located on separate boards.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C06B/08A

Component Name: Drain Tank Drains

ID or Number: 06B - 80, 81, 82, 86, 87, 88, 10, 17, 24  
08A - 243, 244, 245, 290, 291, 292

DESCRIPTION:

These groups of drain tank indicators display level in the Moisture Separator Drain Tank, and are located on two different boards. The lower grouping on board 06B cannot be seen from Console 08A.

RESOLUTION:

(Sched: None )

The drain tank indicators on 06B have annunciator high and low level alarms. No action is required from the control room as a result of these indications. The indications on 08A are on the control console in clear view of the operator. Enhance identification of related controls/displays through use of color fields and demarcation. This is acceptable because the dump drain open light on the front console cues the operator to check the indication light on the back panel.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cadney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-11

EP = N/A/PRI 4

Code E

TITLE:

RECIRC Indications not Grouped

COMMENT:

Grouping of indications is not consistent in the A and B loops.

Item: N/A

Ref.: A3.3  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 04A  
Component Name: Recirc Indications  
ID or Number: 418, 419, 426, 427

DESCRIPTION:

Loop recirc pump parameters and jet pump parameters are intermixed. Total jet pump flow is grouped with loop flow, and individual jet pumps are grouped with recirc pump  $\Delta P$ . The loop flow (recirc pump discharge) uses different units from jet pump total flow and is not directly comparable.

RESOLUTION:

(Sched: None )

Arrangement is preferable in present location so that the Recirculation Pump  $\Delta P$  meter is next to the pump generator demand meter and generator speed. To change this could cause another HED. Panel will be enhanced to improve grouping relationships.

TRAINING REQUIREMENTS:

Train personnel in meaning of enhancements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-12

EP = N/A/PRI 4

Code: B

TITLE:

CRD Indications

COMMENT:

Indicators are inverse in order from controllers.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 05A

Component Name: CRD Cooling Water and Drive Water

ID or Number: 449, 450, 453, 454

DESCRIPTION:

Meters at the top of the board are arranged Cooling Water and Drive Water top to bottom. Pressure controllers at the bottom of the board are arranged Drive Water and Cooling Water top to bottom which is opposite from the meters.

RESOLUTION:

(Sched: None )

This variation in arrangement is not significant. These valves are not used except in startup; not in casualty operations. In addition, the panel will be enhanced to improve component relationships.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-13

EP = N/A/PRI 4

Code D

TITLE:

HPCI Controls

COMMENT:

Torus suction controls not in correct order for flow.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 04B  
Component Name: Torus Suction  
ID or Number: 428, 434

DESCRIPTION:

Flow on this panel is from bottom to top. These two isolation valve controls are arranged top to bottom, counter to flow direction.

RESOLUTION:

(Sched: None )

These are 2 valves in series. Both are either open or closed so the order is unimportant. The panel will be enhanced and relabeled to better identify this relationship.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cady*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-14

EP = N/A/PRI 2

Code A

TITLE:

HPCI Indications

COMMENT:

Water and steam indications are not grouped by function.

Item: N/A

Ref.: A3.3  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 04B

Component Name: Pump and Turbine indications

ID or Number: 405, 403, 401, 404, 400 and un-numbered temp ind.

DESCRIPTION:

The indications intermix water and steam indications and are not arranged in the best order for comparative readings.

RESOLUTION:

(Sched: 2nd Refuel )

Swap locations of meters to improve functional groupings and comparative readings, and enhance.

TRAINING REQUIREMENTS:

Mod package.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-15

EP = N/A/PRI 4

Code A

TITLE: Control Arrangement

COMMENT: Controls are not arranged in expected order.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C07A  
Component Name: Annunciator Controls  
ID or Number: N/A

DESCRIPTION:

The annunciator controls are arranged in the reverse of the expected order with the Acknowledge button on bottom and the Test button on top.

RESOLUTION: (Sched: None)

Swap positions of the controls.

TRAINING REQUIREMENTS:

Mod package.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Carls

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-16

EP = N/A/PRI 3

Code B

TITLE:

Display Arrangement

COMMENT:

Meters are not arranged in expected order.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 09

Component Name: Aux. Bus Volt Meters

ID or Number: N/A

DESCRIPTION:

The Aux. Bus 2 Volt Meter is located to the left of the Aux. Bus 1 Volt Meter on panel 20C-09, while the mimic busses are arranged with Bus 1 on top and Bus 2 on the bottom. This arrangement does not conform with what is expected by the operator.

RESOLUTION:

(Sched: None )

Panel will be enhanced to clearly identify relationships. Changing locations of meters left to right vice right to left would not provide a significant improvement.

TRAINING REQUIREMENTS:

Train personnel in meaning of enhancements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cahy*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-17

EP = N/A/PRI 3

Code: A

TITLE:

Display Arrangement

COMMENT:

Meters are not arranged in the expected order.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 00C 24  
Component Name: Startup Bus 3 Meters  
ID or Number: N/A

DESCRIPTION:

The four Bus 3 Watt and Ampere meters are arranged with line 2 to the left of line 1, opposite of what is expected as the controls are arranged with line 1 to the left of line 2.

RESOLUTION:

(Sched: None )

The location of meters will be reversed to match arrangement of controls.

TRAINING REQUIREMENTS:

Train personnel in new locations.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. C. Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-18

EP = N/A/PRI 2

Code A

TITLE: Control Grouping

COMMENT: Controls are not functionally grouped.

Item: N/A Ref.: A3.3 Source: SCRS  
TDA

IDENTIFICATION: Panel: 20C 12  
Component Name: Drywell Chill Water and Stack Dilution  
controls  
ID or Number: N/A

DESCRIPTION:

Controls for Drywell Chill Water and Stack Dilution (ventilation) systems are intermingled on the panel and no clear functional grouping exists.

RESOLUTION: (Sched: 2nd Refuel )

Enhance to aid in functional grouping.

TRAINING REQUIREMENTS:

Train personnel in enhancements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Cahy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-19

EP = N/A/PRI 2

Code A

TITLE:

Control Grouping

COMMENT:

Controls are separated from functional group.

Item: N/A

Ref.: A3.3  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 12

Component Name: Standby Gas Treatment Controls

ID or Number: PO-20465, PO-20466

DESCRIPTION:

The four Chill Water controls on this panel separate two Standby Gas Treatment controls from the remainder of their group. This prevents a good functional group.

RESOLUTION:

(Sched: 2nd Refuel )

Enhance the grouping relationship.

TRAINING REQUIREMENTS:

Provide training in enhancements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-20

EP = N/A/PRI 4

Code F

TITLE:

Containment Ventilation Control Arrangement

COMMENT:

Controls are mirror-imaged.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 12

Component Name: Reactor Building Isolation Valves

ID or Number: AO-20453, AO-20461, AO-20458, AO-20463,  
AO-20459, AO-20467, AO-20469-1, AO-  
20470-1, AO-20462, AO-20452, AO-20464,  
AO-20457

DESCRIPTION:

The two groups of valves are arranged in mirror-images of each other around an additional group of controls. This may be confusing for operators.

RESOLUTION:

(Sched: None )

These controls are operated in pairs, and must all be open for the system to operate. Consequently, operating out of order would not result in any problems. No change needed. Panel will be enhanced.

TRAINING REQUIREMENTS:

Train personnel in meaning of enhancements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*JJ Cashy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-21

EP = N/A/ PRI 2

Code A

TITLE:

RHR Indicator Arrangements

COMMENT:

Meters are not functionally grouped and are partly mirror-imaged.

Item: N/A

Ref.: A3.3  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 03 2  
Component Name: AC Amperes, PSIG Analog Indicators  
ID or Number: 1308, 10-A18, PI-2330B, 1CA-A2B,  
10A-A20, 10-AIC, 1300

DESCRIPTION:

Meters are not arranged by function to facilitate comparative readings and are mirror-imaged around flow meters.

MITIGATING CONSIDERATIONS:

Key indications for RHR Loop Flow and Reactor Level are now highlighted.

RESOLUTION:

(Sched: 2nd Refuel )

Exchange locations of the meters to eliminate mirror-imaging and improve function grouping. Enhance to make relationships clear.

TRAINING REQUIREMENTS:

Provide training to operators on enhancement scheme and new locations prior to implementation in the control room and during licensing training. See HED ST1-01.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-22

EP = N/A PRI 4

Code F

TITLE:

Drywell Pressure Indicator Arrangement

COMMENT:

Meters and recorders are not arranged consistently.

Item: N/A

Ref.: A3.2  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 03 3

Component Name: Pressure Indicators

ID or Number: PI-2508, PI-2667, FR-2522, PR-2508

DESCRIPTION:

Recorders are not arranged with Nitrogen Makeup Pressure on the left and Drywell Pressure on the right. The associated meters are reversed.

RESOLUTION:

(Sched: None )

The panel will be enhanced and labels will be improved. The present arrangement is considered acceptable because during emergency operations, only the drywell pressure recorder will be used. This recorder will be highlighted by enhancements. The drywell pressure indicator is a narrow range (-2, 0, +2 PSIG) used during normal operations.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-23

EP = 6/PRI 1

Code: D

TITLE:

Control/Display Relationships

COMMENT:

Control/Display relationships not obvious by grouping or enhancement.

Item: N/A

Ref.: SA3

Source: SCRS

IDENTIFICATION: Panel: Remote Shutdown Panel

Component Name: N/A

ID or Number: N/A

DESCRIPTION:

Association of related controls and displays is not obvious by their location or aided by mimics and demarcation lines. This is especially true of the RCIC TURBINE SPEED and FLOW indications and the RCIC TURBINE STOP VALVE TRIP and STOP VALVE CONTROL switches which are located in three different areas of the board.

RESOLUTION:

(Sched: 1st Refuel )

Relocating instruments would be extremely difficult because of separation requirements. Enhancements including mimics and demarcation lines will be added to clearly identify relationships and groupings.

TRAINING REQUIREMENTS:

Train personnel in meaning of enhancements.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-24

EP = N/A/PRI 6

Code: A

TITLE:

Control Consistency

COMMENT:

Controls do not use similar backing plates.

Item: N/A

Ref.: TDA

Source: SCRS

IDENTIFICATION: Panel: Remote Shutdown Panel

Component Name: "J" Handle Controls

ID or Number: All

DESCRIPTION:

Controls on this panel use white backing plates/escutcheons, while all other control panels have controls with black backing plates. (Exceptions on this panel are three INSTRUMENT TRANSFER SWITCHES.)

RESOLUTION:

(Sched: N/A)

These switches are different from those used in the control room because they must be pulled to transfer control from the control room to the remote panel. The different color serves to remind operator of the additional control operation. The black switches are operated in the same manner as the control room switches and are the same color as the control room switches. This is not a discrepancy. (See HED SD3-27)

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-25

EP = N/A/PRI 3

Code A

TITLE:

Indicator Arrangement

COMMENT:

Indicators are arranged in a mirror-image.

Item: N/A

Ref.: TDA

Source: SCRS

IDENTIFICATION: Panel: 20C484A & B

Component Name: Torus and Drywell O Indicators

ID or Number: O I-4963B, O I-4963D

DESCRIPTION:

Torus and Drywell indicators are arranged with Torus on the left and Drywell on the right except for O I-4963B and O I-4963D which are arranged in a mirror image with Torus on the right and Drywell on the left.

RESOLUTION:

(Sched: None)

Exchange the locations of the two indicators.

TRAINING REQUIREMENTS:

Provide training in new indicator locations.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-26

EP = N/A/PRI 4

Code D

TITLE: Control Grouping

COMMENT: Controls for Nitrogen supply are not arranged properly.

Item: N/A

Ref.: TDA

Source: SCRS

IDENTIFICATION: Panel: 20C484A & B  
Component Name: Torus/Drywell N<sub>2</sub> Supply Valves  
ID or Number: SV-4950A, SV-4948A, SV-4951A, SV-4949A,  
SV-4950B, SV-4948B, SV-4951B, SV-4949B

DESCRIPTION:

The N<sub>2</sub> Supply valves for Torus and Drywell are intermixed preventing clear functional grouping and the use of mimics. Other valves on this panel are grouped properly. This disparity could result in operator error.

RESOLUTION:

(Sched: None )

The panel will be enhanced to more clearly demonstrate relationships. This system would not be operated unless plant was far into a LOCA with no time pressure on the operator. In addition, operation of this system follows a detailed procedure which the operator would have in front of him.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Calmy

Date: FEB 26 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-27

EP = N/A/PRI 4

Code: A

TITLE:

Control Color Coding

COMMENT:

Transfer switches are not coded identically.

Item: N/A

Ref.: TDA

Source: SCRS

IDENTIFICATION: Panel: Remote Shutdown Panel, Unit 2

Component Name: Transfer Switches

ID or Number: 13A-S60

DESCRIPTION:

Three INSTRUMENT TRANSFER switches are mounted on black backing plates, while one is mounted on a white backing plate. This makes it difficult to locate the fourth switch as it blends in with all the other controls on the panel (all use white plates).

RESOLUTION:

(Sched: None )

Exchange the white backing plate for a black one to allow all transfer switches to stand out on the board by being coded identically.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. SD3-28

EP = N/A PRI 2

Code A

TITLE:

Reactor Mode Switch Location

COMMENT:

Location of the Mode Selector Switch makes it difficult to identify mode position.

Item: N/A

Ref.: N/A

Source: CRDR  
Team

IDENTIFICATION: Panel: 20C05A

Component Name: Reactor Mode Switch

ID or Number: N/A

DESCRIPTION:

The Reactor Mode Switch has a pointer to designate which mode the reactor is in. The location of the switch high on the benchboard causes the handle and pointer to obscure the positions on the backing plate.

RESOLUTION:

(Sched: 2nd Refuel )

Add labels around the J-Handle switch so that they are easily visible.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD4-01

EP = 6/PRI 4

Code: F

TITLE: Label Location

COMMENT: Label locations sometimes too low, sometimes obscured.

Item: N/A Ref.: SA4.2 Source: SCRS

IDENTIFICATION: Panel: See HED D5-07 attachments.  
Component Name: See HED D5-07 attachments.  
ID or Number: See HED D5-07 attachments.

DESCRIPTION:

Labels located low on the vertical panels and back wall panels are difficult to read. Often maintenance tags obscure labels.

RESOLUTION: (Sched: None)

Use of hierarchal labeling provides larger labels and places them above displays and controls to ensure all labels are easily read. Maintenance tags have been changed so that they do not obscure labels or indications (see HEDs D3-05, D5-07 for evaluation of these controls).

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: JJ Cahy Date: FEB 28 1985

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD5-01

EP = N/A/PRI 3

Code A

TITLE:

Feedwater Pump Bypass Controller

COMMENT:

Controller not clearly labeled.

Item: N/A

Ref.: TDA  
A5.1

Source: SCRS

IDENTIFICATION: Panel: 20C 05A

Component Name: Feed Pump Bypass

ID or Number: 466

DESCRIPTION:

This controller has three indicators and two controls. The function of each is not clearly indicated.

MITIGATING CONSIDERATIONS:

RESOLUTION:

(Sched: None )

Provide labels for controller indications and controls as appropriate.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *Jf Calby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SD5-02

EP = N/A/PRI 3

Code A

TITLE:

Control Position Escutcheons

COMMENT:

Chilled Water System controls missing position labels.

Item: N/A

Ref.: TDA  
A5.1

Source: SCRS

IDENTIFICATION: Panel: 20C 12

Component Name: Chilled Water System Controls

ID or Number: MO-20246, MO-20245, AO-20268-1

DESCRIPTION:

These four thumbknob controls do not have escutcheons to mount position labels. As a result, labels are attached to the panel for three of the controls and AO-20268-1 is not labeled.

RESOLUTION:

(Sched: None )

Provide escutcheon plates with proper position labels.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*J. J. Calmy*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SE2-01

EP = 6 / PRI 5

Code A

TITLE: Illumination Levels

COMMENT: Lighting not uniform over panel.

Item: N/A Ref.: SF2.2 Source: SCRS

IDENTIFICATION: Panel: RSP  
Component Name: Lighting  
ID or Number: N/A

DESCRIPTION:

The lighting levels over the RSP vary, bright at the top (two 80 ft. candles) and dark at the bottom (45-50 foot candles).

MITIGATING CONSIDERATIONS: Lighting on lowest controls on panel is adequate (60 ft. candles).

RESOLUTION: (Sched: N/A )

New lighting has been installed and the team considers it to be adequate.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Approval Signature: *Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SE2-02

EP = 4 / PRI 5

Code A

TITLE: Illumination and Shadowing

COMMENT: Lights above panel shadow lower controls.

Item: N/A Ref.: SF2.3 Source: SCRS

IDENTIFICATION: Panel: RSP  
Component Name: Lighting  
ID or Number: N/A

DESCRIPTION:

Controls on the lower portion of the RSP are somewhat shadowed by controls located above them.

RESOLUTION: (Sched: N/A )

The new lighting is placed so that lower portions are not shadowed. The team considers it to be adequate.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Approval Signature: *Jf Calby*

Date: FEB 28 1985

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. SE2-03

EP = 6 /PRI 5

Code A

TITLE:

Display Glare

COMMENT:

Glare on all displays.

Item: N/A

Ref.: SF2.4

Source: SCRS

IDENTIFICATION: Panel: RSP  
Component Name: Indicators  
ID or Number: All

DESCRIPTION:

Lighting on this panel causes excessive glare on all analog indicators, making it difficult to read up-scale indications.

RESOLUTION:

(Sched: N/A )

New lighting has diffusers installed which has reduced glare. The team considers it to be adequate.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. SIL-01

EP = 6/PRI 4

Code F

TITLE:

High Module Location/Readability

COMMENT:

Module of displays too high.

Item: N/A

Ref.: SB1.1

Source: SCRS

IDENTIFICATION: Panel: 20C08B

Component Name: N/A

ID or Number: N/A

DESCRIPTION:

A new module added to the C08B panel is located very high on the board (more than 80"). The displays are very small and appear difficult to read. Also, the scales are in red ink.

RESOLUTION:

(Sched: None )

This is a support display and is not safety related. It is adequate for its purpose. The monitor is read once per shift and does not require rapid operator action. Also, this system is alarmed, and will annunciate if a problem develops.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JF Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SIL-02

EP = 4/PRI 4

Code: A

TITLE: Multi-Scale Indicators

COMMENT: A multi-scale indicator is used.

Item: N/A Ref.: SBl.2 Source: SCRS

IDENTIFICATION: Panel: Remote Shutdown Panel  
Component Name: PSI/VAC meter  
ID or Number: 96X

DESCRIPTION:

The PSI/VAC indicator uses a 0,15,30, etc. to measure pressure and an 0,-30 scale to measure vacuum. This is potentially confusing. The 0,-30 vacuum scale is missing a "-15" graduation.

RESOLUTION: (Sched: None )

Terminology differences are acceptable as negative pressure is referred to as vacuum. This is consistent with similar gauges in the control room. Alter display face to include appropriate graduations and engineering units.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Cahy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SI2-01

EP = 4/PRI 4

Code F

TITLE: Recorder Location Low

COMMENT: Some recorders located low.

Item: N/A Ref.: SB2.1 Source: SCRS

IDENTIFICATION: Panel: 20C08B, 20C21  
Component Name: Recorders  
ID or Number: C08B - TR 2402, TR 2411, TR 2658, TR 2401  
C21 - TR 2-2-3-31, TR 2-2-184-26

DESCRIPTION:

Several recorders are located low enough on the vertical panels that reading them may be difficult due to the limited room between consoles and vertical boards.

RESOLUTION: (Sched: None )

Access is adequate for purpose intended. Instruments on back panel provide operational support and do not require immediate operator action.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: J. J. Cahy Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SI2-02

EP = N/A/PRI 3

Code A

TITLE:

Feedwater Startup Bypass Controller

COMMENT:

Controller valve position indicates closed at 100% on the scale.

Item: N/A

Ref.: B2.7  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 05A  
Component Name: Pump C Discharge Bypass  
ID or Number: 444

DESCRIPTION:

Controller has a valve position meter that indicates 0 and 100% left to right. The left side at 0% scale is marked OPEN, and the right side at 100% is marked CLOSE. These are contradicting. Open and close are also opposite to convention of closed on left and open on right.

RESOLUTION:

(Sched: None )

Reverse open and close pushbuttons to make them consistent with the standard arrangement. Meter will be corrected so that 0% is closed and on the left, 100% is open on the right.

TRAINING REQUIREMENTS:

Mod package.

PROCEDURE REQUIREMENTS:

None.

Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SI2-03

EP = N/A/PRI 4

Code A

TITLE:

Reactor Pressure Indication

COMMENT:

Meter scale not properly numbered.

Item: N/A

Ref.: B2.10  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 05A

Component Name: Reactor Pressure C

ID or Number: 483

DESCRIPTION:

Meter C is same range as meters A and B but uses different scale numbers. Meters A and B read 0 to 1200 PSIG but meter C reads 0-12 x 100 PSIG.

RESOLUTION:

(Sched: None )

Rescale Meter C to be the same as meters A and B.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SI2-04

EP = N/A PRI 4

Code A/F

TITLE:

Recorder Scale Markings

COMMENT:

Scales use non-standard markings/graduations.

Item: N/A

Ref.: TDA

Source: SCRS

IDENTIFICATION: Panel: See attached

Component Name: See attached

ID or Number: See attached

DESCRIPTION:

The scales on these indicators use graduations of 3's (i.e., 3, 6, 9, 12, etc.). Recommended human factors guidelines specify multiples of 1, 2, or 5.

RESOLUTION:

(Sched: None )

See attached sheet for resolutions and codes (see HEDs I2-08 and I2-09).

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cadiz*

Date: FEB 28 1986

(3) Additional page(s) attached



The following recorder and indicator scales do not meet human factors guidelines for reasons other than those discussed in 12-08, 12-09:

20C07A

LR-2085: The three scales on this recorder use different increments (0, 5, 10, 15...30 and 0, 10, 20, 30).

Resolution: They will be standardized (0, 5, 10... recommended).  
Code A

O R-2556: scales 0 - 100 is not correct; 0 - 20 is correct.

Resolution: Change both to 0 - 20. Code A

20C08A

PI-2404: reads in INCHES H<sub>2</sub>O VAC, should read INCHES Hg VAC. Words "Steam Exhauster Vacuum" appear where engineering units should be.

Resolution: Delete words. Add IN Hg VAC. Code A

00C24

XMFR-00X05 Tap Changer: (1, 3, 5...33 scale)

XMFR-00X03 Tap Changer: (1, 2, 3, 4...33 scale)

Resolution: Tap changers indicate discrete steps. Not used under transient conditions. Acceptable as is.  
Code F

20C09

2 GEN A 0AM: Phase amp.

3 GEN A 0AM: Phase amp.

Resolution: Phase amp scales are difficult to read due to small print. These scales are not used in time sensitive situations. They have dual scales with a selection switch. Smaller numbers are used to fit in two scales. Team considered numbers readable. Acceptable as is. Code B



20C04C

LR-8123A  
TR-8123A  
PR-8102A  
REACT PRESSURE

These instruments are difficult to read due to small print on scales. However, they duplicate scales on the Reactor Control Console 20C05A console.

**Resolution:** These recorder/indicators are used to determine trends while ECCS system is operating. Discrete readings are not required. Acceptable as is. Code F

20C03-2

LR-8123B                      PR-8102B  
TR-8123B                      LR-2-2-3-110B

These instruments are difficult to read due to small print on scales. However, they duplicate scales on the Reactor Control Console 20C05A console.

**Resolution:** These recorder/indicators are used to determine trends while ECCS system is operating. Discrete readings are not required. Acceptable as is. Code F

00C196

H I-4029: the H scale is handwritten  
TRS-7451: temporary labels need to be replaced

**Resolution:** Provide permanent scales and labels. Code A

20C484A,B

H R-4965A,C  
H R-4965B,D  
O R-4963A,C  
O R-4963B,D

The numbers on the scales are difficult to distinguish from the scale graduations due to small size and crowding.

**Resolution:** The team reviewed these recorders and found them to be readable without difficulty. Code F

20C12

DPI-20001, DPI-20002; INCHES H<sub>2</sub>O  
DPI-20003-2, DPI-20003-1: measures INCHES W.C.  
DPI-30003-2, DPI-30003-1: temp. labels use IN. W.C.  
These need to be standardized. In addition, W.C. = water column;  
should be INCHES H<sub>2</sub>O.  
TI-2228 - handwritten scale - should be made permanent.

Resolution: Change engineering units all these to IN H<sub>2</sub>O.  
Replace handwritten scale with permanent scale.  
Code A

20C04A

REACT BLDG. TEMP - handwritten scale, should be made permanent.

Resolution: Replace with permanent scale. Code A

FI-141A,B (0, 75, 100, 125...250)

Resolution: Change scales, see HED I2-09.

PEACH BOTTOM  
HED ASSESSMENT

HED No. SI2-05

EP = N/A PRI 4

Code A

TITLE:

Selector Light Color

COMMENT:

Generator Range Selector Light is currently green.

Item: N/A

Ref.: B2.14

Source: SCRS

IDENTIFICATION: Panel: 20C09

Component Name: Generator AMPS Range Select Light

ID or Number: N/A

DESCRIPTION:

The green Generator Range Selector Light does not conform to standards. All other range selector lights are white.

RESOLUTION:

(Sched: None )

The Generator Range Selector Light will be changed to white.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SI3-01

EP = N/A/PRI 4

Code A

TITLE:

Recorder Pen Colors

COMMENT:

Cleanup filter outlet conductivity recorder pen colors  
not in expected order.

Item: N/A

Ref.: B3.10  
TDA

Source: SCRS

IDENTIFICATION: Panel: 20C 04A

Component Name: Filter Outlet Conductivity

ID or Number: 435

DESCRIPTION:

Normally Red is A loop and Black is B loop. They are switched on  
this recorder.

RESOLUTION:

(Sched: None )

Exchange pen inputs.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. SI4-01

EP = 4/PRI 6

Code A

TITLE:

Key Switches

COMMENT:

Keys left in switches.

Item: N/A

Ref.: SB4.2

Source: SCRS

IDENTIFICATION: Panel: 00C124, 20C05A, 20C09, 20C03-1, 2, 3, 4  
Component Name: Key Switch  
ID or Number: See attached.

DESCRIPTION:

See attached.

RESOLUTION:

(Sched: N/A )

Key switches are controlled by procedures. In most cases keys remain in the switches during normal operations

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carling*

Date: FEB 28 1996

(1) Additional page(s) attached

20C09

SYNCHRO CHECK RELAY BYPASS SWITCH

20C05A

DSCH VOLUME HI WTR BYPASS (key in normal)  
RHR SAMPLE LINE OUTBOARD  
RHR SAMPLE LINE INBOARD  
RAD GAS SAMPLER OUTBOARD (SV-8101)  
RAD GAS SAMPLER INBOARD (SV4966ABCD)  
DRYWELL INST N<sub>2</sub> (AO-2969A,B)

00C124

THRUST BEARING WEAR TEST (key in normal position, not test)

20C03-2

TORUS SUCTION (MO-10-138, MO-10,130) (keys in)

20C03-4

HIGH PRESS SERV. WTR PUMPS AUTO (10A-519A)  
TORUS SUCTION (MO-10-13A, MO-10-13C)  
HPSW/RHR EMERG INTER TIE (MO-10-174, MO-10-176)  
HPSW HEADERS TIE (MO-10-186)

20C03-3

O ANALYZER INBOARD/OUTBOARD (SV-2671, SV-2978)  
HPSW/RHR EMERG. INTER TIE (MO-10-174, MO-110-176)  
HPSW HEADERS (MO-10-186)  
SUPP. POOL SUCTION (MO-14-78, MO-14-70)

PEACH BOTTOM  
HED ASSESSMENT

HED No. SPI-01

EP = 6/PRI 4

Code: A

TITLE:

Remote Shutdown Panel Procedures

COMMENT:

Procedures not easily accessible while at panel.

Item: N/A

Ref.: SE1

Source: SCRS

IDENTIFICATION: Panel: Remote Shutdown Panel

Component Name: Procedures

ID or Number: N/A

DESCRIPTION:

Procedures to be used for RSP operation are chained shoulder high to the panel and are difficult to read. Even if removed from chain, no lay-down space exists for the operator to place the procedures.

RESOLUTION:

(Sched: None )

Procedures' location and availability are adequate. They are bound in a light pamphlet that can be easily removed from chain holder and held in hand. Not considered a significant problem.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. J. Calby*

Date: FEB 28 1986



PEACH BOTTOM  
HED ASSESSMENT

HED No. SPI-02

EP = N/A / PRI 2

Code A

TITLE: Procedure Terminology Update

COMMENT: Procedures need to be updated to include terminology used in panel enhancements.

Item: N/A

Ref.: N/A

Source: Assessment

IDENTIFICATION: Panel: All  
Component Name: All  
ID or Number: N/A

DESCRIPTION:

A revised nomenclature manual was developed in conjunction with the design of enhancements and use of hierarchal labeling on panels. Procedures must be updated to reflect these changes.

RESOLUTION:

(Sched: See VW HEDs )  
for Schedule

Update procedures using the standard nomenclature and abbreviations developed during enhancement design. Emergency procedures (TRIP T-100 and T-200 series) will be revised to coincide with implementation of enhancement. All other procedures will be revised during the normal review cycle.

TRAINING REQUIREMENTS:

Provide operator training in nomenclature.

PROCEDURE REQUIREMENTS:

Update procedures (See Resolution).

Approval Signature: Jf Calmy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. ST1-01

EP = N/A PRI 3

Code A

TITLE: Training Update on Enhancements

COMMENT: Designs for panel enhancements need to be explained to operators.

Item: N/A

Ref.: N/A

Source: Assessment

IDENTIFICATION: Panel: All  
Component Name: All  
ID or Number: N/A

DESCRIPTION:

Enhancements to panels have been added using general rules and specifications. Operators must be trained in the concept of enhancements for initial implementation in the control room and for new operators during licensing training.

RESOLUTION:

(Sched: None )

Provide training to operators on enhancement scheme prior to implementation in the control room and during licensing training.

TRAINING REQUIREMENTS:

Provide training to operators on enhancement scheme prior to implementation in the control room and during licensing training.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Cahy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC1-01

EP = /PRI 6

Code A

TITLE: Torus Recorders Scales

COMMENT: Scale characters are very small and difficult to read.

Item: N/A Ref.: B2.4 Source: NRC Audit

IDENTIFICATION: Panel: C03  
Component Name: Torus Level and Temp. Recorder  
ID or Number: LR-8123B, TR-8123B

DESCRIPTION:

Scale characters do not conform to guideline of NUREG 0700, 6.5.1.3.a.

RESOLUTION: (Sched: N/A)

These recorders meet NUREG 0700 requirements for a reading distance of 3 feet. This is a manned station during emergency operations and therefore meets the guidelines. The CRDR team reviewed these recorder scales and found them to be fully satisfactory for the purpose intended. Not a discrepancy.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Calmy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-01

EP = N/A PRI 4

Code B

TITLE:

Duel Grid Chart Recorder

COMMENT:

Duel grid on charts make it difficult to read values.

Item: N/A

Ref.: B3.1

Source: SPDS  
Review

IDENTIFICATION: Panel: ECCS 20C-03  
Component Name: Duel Channel Recorders  
ID or Number: LR-2-2-3-110B, TR-4805, LR-8102B,  
TR-8123B, NR-2-07-046A-D

DESCRIPTION:

In order to identify some values on the recorder, it is often necessary to pull out paper to find the proper grid. This makes reading difficult.

RESOLUTION:

(Sched: None )

These recorders are used to indicate direction of change to the operator. It is not necessary to read absolute values from the trend line. The recorders have analog scales to accurately read the current parameter value. Chart scales are used for historical information.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-02

EP = N/A PRI 4

Code B

TITLE:

Extra Scale on Chart

COMMENT:

Drywell temperature recorder chart has a grid scale that is not used.

Item: N/A

Ref.: B3.1

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03

Component Name: Drywell Temp. Recorder

ID or Number: TR-4805

DESCRIPTION:

Extra scale is unnecessary and could be confusing.

RESOLUTION:

(Sched: None )

These recorders are used to indicate direction of change to the operator. It is not necessary to read absolute values from the trend line. The recorders have analog scales to accurately read the current parameter value. Chart scales are used for historical information.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. C. Cady*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-03

EP = N/A PRI 4

Code A

TITLE:

Label Terminology

COMMENT:

The terms "containment" and "drywell" are used interchangeably.

Item: N/A

Ref.: A5.5

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03

Component Name: Drywell Pressure Recorder

ID or Number: PR-8102B

DESCRIPTION:

The terms "containment" and "drywell" are used interchangeably.

RESOLUTION:

(Sched: None )

Labeling will be made consistent as part of the overall enhancement and hierarchal labeling improvements.  
(See HED D5-02.)

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-04

EP = N/A PRI 3

Code A

TITLE:

Different Engineering Units on Recorder

COMMENT:

The dual scale pressure recorder uses different engineering units for the two pressure scales.

Item: N/A

Ref.: B2.3

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03

Component Name: Drywell Pressure Recorder

ID or Number: PR-8102B

DESCRIPTION:

The recorder has a wide range and narrow range scale. The wide range reads in PSIG, the narrow in PSIA. This is potentially confusing.

MITIGATING CONSIDERATIONS:

The critical high and low pressures on the narrow range are backed up by annunciator alarms.

RESOLUTION:

(Sched: None )

Change the narrow range scale to read in PSIG, like the units of the wide range scale.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Calby*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-05

EP = N/A PRI 3

Code A

TITLE:

Scale Increments Too Large

COMMENT:

Scales cannot be read to the necessary accuracy.

Item: N/A

Ref.: B2.3, B2.11

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03

Component Name: Drwell Pressure, APRM Recorder

ID or Number: PR-8102B, NR2-07-046B

DESCRIPTION:

The wide range scale can only be read to 5 PSIG accuracy, but must be read to 2 PSIG. The APRM scale can be read to 5% accuracy, but it is necessary to identify the 3% power level.

RESOLUTION:

(Sched: None )

Drywell Pressure: The narrow range scale provides readings to .1 pounds in the range required. (See HED NRC2-04.)

APRM: The APRM down-scale lights energize at 3% power. This is clear indication for reaching that power level. This is not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. J. Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-06

EP = N/A PRI 5

Code A

TITLE:

Drywell Pressure Chart Paper

COMMENT:

Chart paper scale does not match indicator scale.

Item: N/A

Ref.: B3.1

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03

Component Name: Drywell Pressure Recorder

ID or Number: PR-8102B

DESCRIPTION:

Chart paper scale does not match indicator scale.

RESOLUTION:

(Sched: N/A )

MOD 1248 replaced this recorder with a new recorder. The scale and paper have been matched.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-07

EP = N/A PRI 5

Code A

TITLE: Missing Engineering Unit

COMMENT: Scales do not have engineering units indicated.  
@

Item: N/A Ref.: B2.1 Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03  
Component Name: Torus Temp. Recorder, Torus Level  
Recorder  
ID or Number: TR-8123B, LR-8123B

DESCRIPTION:  
Scales do not have engineering units indicated.

RESOLUTION: (Sched: N/A )  
MOD 1248 replaced these recorders with new recorders. The scale  
has engineering units.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: *Jf Calby* Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-08

EP = N/A PRI 6

Code A

TITLE:

Terminology

COMMENT:

The terms "Suppression Pool" and "Torus" are used interchangeably.

Item: N/A

Ref.: A5.5

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03  
Component Name: Torus Temp. Recorder/FSAR  
ID or Number: TR-8123B

DESCRIPTION:

The FSAR refers to Suppression Pool. The control room instruments refer to TORUS. This could be confusing.

RESOLUTION:

(Sched: N/A )

The TORUS is technically the Suppression Pool and therefore the term Suppression Pool is acceptable for the FSAR. The control room uses the term TORUS throughout and this term will be used as part of the hierarchal labeling scheme and procedure updating. (See HE D5-02.)

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-09

EP = N/A PRI 6

Code A

TITLE:

Containment Isolation Panel Labels

COMMENT:

The labels on the containment isolation summary display panel are too small.

Item: N/A

Ref.: A5.9

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03

Component Name: Containment Isolation Summary Display

ID or Number: 20C-03-1

DESCRIPTION:

The letters on labels for this panel are too small to be seen from the operators desk.

RESOLUTION:

(Sched: N/A )

This station is manned by the Chief Operator for any plant condition that involves group isolation. The labels are an adequate size to be read by an operator at this station. Not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-10

EP = N/A PRI 6

Code A

TITLE:

Colors Are Reversed

COMMENT:

Scale colors do not match selector switch colors.

Item: N/A

Ref.: A3.5

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-05A  
Component Name: APRM/IRM Recorders  
ID or Number: APRM/IRM Recorders

DESCRIPTION:

The selector switches for APRM/IRM scales on the recorder is red for the red pen and black for the black pen, but the APRM scale is black and the IRM scale is red.

RESOLUTION:

(Sched: N/A )

The description of the deficiency is not correct. The black scales are used for both the APRM and IRM ranges. A supplementary red scale provides a special dual scale for the IRM ranges only. The operators are thoroughly trained in the use of these scales for the IRM range since it is critical to the startup process. The scale colors are coordinated with the IRM range selector switches. This has not caused a problem in 12 years of operation.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calley*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-11

EP = 8/PRI 2

Code A

TITLE:

Torus Level Zone Marking

COMMENT:

Torus level scale has no zone markings.

Item: N/A

Ref.: B2.1  
A5.2

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03

Component Name: Torus Level Recorder

ID or Number: LR-8123B

DESCRIPTION:

Although the scale resolution is adequate for the use with TRIP procedures, the lack of zone markings make the meter difficult to read from a distance or for rapid scan during emergencies.

RESOLUTION:

(Sched: Completed )

The Torus Level scales will be enhanced through the application of zone markings or alarm points. (See HEDs D5-01, I2-01.)

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1988

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. NRC2-12

EP = N/A PRI 2

Code A

TITLE:

Reactor Level Accuracy

COMMENT:

The reactor water level meters cannot be read to the required accuracy.

Item: N/A

Ref.: B2.1  
A5.2

Source: SPDS  
Review

IDENTIFICATION: Panel: 20C-03

Component Name: Reactor Water Level Recorder

ID or Number: LR-2-2-3-110B

DESCRIPTION:

The scale is graduated in 5 inch increments. Procedures require the identification of -48 inches. The scale cannot be easily interpreted to the required accuracy.

RESOLUTION:

(Sched: Completed )

The reactor water level recorder scale will be enhanced through the application of zone markings or alarm points. (See HEDs I2-01, D5-01.)

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *WJ Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-01

EP = N/A PRI 5

Code A

TITLE:

Main Steam Rad. Monitor Drift

COMMENT:

Main Steam Line Radiation Monitor instrument error due to zero drift.

Item: N/A

Ref.: 3-81-7/3L  
2-81-12/3L  
2-81-15/3L

Source: LER  
Review

IDENTIFICATION: Panel: 20C10

Component Name: Rad. Monitor

ID or Number: Main Steam Line Rad. Monitor "A" and "D"

DESCRIPTION:

Routine inspection of the main steam line radiation monitors revealed that the "A" monitor indicated levels about 15 percent lower (two times) and the "D" monitor indicated levels about 50 percent lower than technical specifications require. Instrument error was due to zero drift. Three previous occurrences.

RESOLUTION:

(Sched: N/A )

Labels have been added to the panels next to meters to record the expected background readings. Reactor Operator round sheets have been revised to facilitate comparing readings.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-02

EP = N/A PRI 4

Code A

TITLE:

Inappropriate Operation of Feedwater Inlet Valve

COMMENT:

Feedwater Inlet valve was not properly closed.

Item: N/A

Ref.: 3-81-14/1T

Source: LER  
Review

IDENTIFICATION: Panel: 20C06B

Component Name: Feedwater Inlet Valve

ID or Number: RO-3-2-29B

DESCRIPTION:

While attempting to maintain reactor vessel level, improper use of the Feedwater Inlet Valve caused vessel level to increase above the main steam lines resulting in reactor pressurization.

MITIGATING CONSIDERATIONS:

Operation of these valves are restricted by mechanical devices. These are required prior to startup.

RESOLUTION:

(Sched: None )

Add caution near Feedwater Inlet Valve controls to indicate that these valves will not fully seat under pressure.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-03

EP = N/A PRI 6

Code A

TITLE: Coordination of Operations and Maintenance Activities

COMMENT: Reactor coolant temperature exceeded technical specifications due to lack of coordination between operations and maintenance activities.

Item: N/A Ref.: 2-81-31/3L Source: LER Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

Same as above.

RESOLUTION: (Sched: N/A)

Adequate information and knowledge were available at time of event. No corrective action in control room design is required.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Cahy Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-04

EP = N/A PRI 6

Code A

TITLE:

Technical Specification Violation

COMMENT:

Operator failed to shut down plant following a violation of technical specifications.

Item: N/A

Ref.: 2-81-37/1T

Source: LER  
Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

With reactor at power, HPCI turbine exhaust drain valve failed closed. Operator failed to initiate cold shut down as required under these conditions.

RESOLUTION:

(Sched: N/A )

Operations personnel were counseled about initiating shutdowns as required by Technical specifications. No corrective action in control room design is required.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carney*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-05

EP = N/A PRI 5

Code A

TITLE:

Instrument Operability Requirements

COMMENT:

Operator failed to comply with operability requirements of APRM's.

Item: N/A

Ref.: 2-81-39/1T

Source: LER  
Review

IDENTIFICATION: Panel: 20C10  
Component Name: APRM Monitor  
ID or Number: All

DESCRIPTION:

Operating personnel failed to recognize that APRM did not have required LPRM inputs to be operable.

RESOLUTION:

(Sched: N/A )

Placards have been installed on reactor consoles stating that APRM's must have at least two LPRM inputs per level to be operable.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-06

EP = N/A PRI 2

Code A

TITLE: Diesel Generator Restart Procedural Requirements

COMMENT: Operator failed to follow procedure for starting diesel generator.

Item: N/A Ref.: 2-81-44/3L Source: LER Review

IDENTIFICATION: Panel:  
Component Name: Diesel Generator  
ID or Number: All

DESCRIPTION:

Operator failed to allow sufficient time to expire prior to attempting a restart of a diesel generator. Procedures required a sixty second delay.

RESOLUTION: (Sched: 2nd Refuel )

Reword information tags on the panel.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: *J. C. Cady* Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-07

EP = N/A PRI 5

Code A

TITLE:

Technical Specification Modifications Availability

COMMENT:

Updated technical specifications not available in control room.

Item: N/A

Ref.: 2-81-46/1T

Source: LER  
Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

Operator confusion resulting from pending changes to technical specifications that had not yet been approved.

RESOLUTION:

(Sched: N/A )

Operators are no longer provided pending changes to technical specifications.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-08

EP = N/A PRI 2

Code A

TITLE:

Valve Alignment Procedural Requirements

COMMENT:

Operator failed to properly align valves as specified in procedure.

Item: N/A

Ref.: 3-82-27/3L

Source: LER  
Review

IDENTIFICATION: Panel: 20C04C  
Component Name: RCIC Suction Valve  
ID or Number:

DESCRIPTION:

While performing a surveillance test, operators left the RCIC suction valve closed following the stroking section of the test.

RESOLUTION:

(Sched: 2nd Refuel )

Enhancements will be designed to assist operator in aligning valves properly.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calhoun*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No LER-09

EP = N/A PRI 6

Code N/A

TITLE:

Valve Status Procedural Requirements

COMMENT:

Operators personnel failed to properly log valve status as required by procedure.

Item:

Ref.: 2-82-27/1T

Source: LER  
Review

IDENTIFICATION: Panel: N/A

Component Name: N/A

ID or Number: Service Air Locked Valve

DESCRIPTION:

Operations personnel failed to enter the service air valves status in the locked valve log book when the valves were opened.

RESOLUTION:

(Sched: N/A)

The error was made by floor operators. Not part of control room review.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Calmy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-10

EP = N/A PRI 6

Code N/A

TITLE: Coordination Between Operations and Testing Activities

COMMENT:

Lack of Coordination between operations and testing activities resulted in a LOCA signal.

Item: Ref.: 3-83-07/1T Source: LER  
Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

A pressure surge in the reference leg of the 2B Yarway Instrumentation loop during surveillance testing initiated a LOCA signal.

RESOLUTION: (Sched: N/A )

Error was caused by maintenance personnel. Reactor Operator reacted correctly. No corrective action in control room design is required.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-11

EP N/A PRI 6

Code N/A

TITLE:

Valve Blocking Procedural Requirements

COMMENT:

Operator failed to properly block reactor water cleanup system as required by procedures.

Item:

Ref.: 2-83-02/1T

Source: LER  
Review

IDENTIFICATION: Panel: 20C04C

Component Name: RCIC System Steam Supply Isolation Valve  
Feed

ID or Number:

DESCRIPTION:

Operator mistakenly removed the feed from the RCIC system steam supply isolation valve while performing blocking operations on the reactor water cleanup system.

RESOLUTION:

(Sched: N/A )

Error was caused by maintenance personnel blocking wrong valve. No corrective action in control room design is required.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-12

EP = N/A PRI 6

Code N/A

TITLE:

Test Equipment Isolation Procedural Requirements

COMMENT:

Instrument technician failed to isolate test equipment after completing calibration as required by procedure.

Item:

Ref.: 2-83-06/1T

Source: LER  
Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

Instrument Technician failed to close torus drain valve and remove testing apparatus after completion of valve calibration.

RESOLUTION:

(Sched: N/A )

Error was caused by maintenance personnel. No corrective action in control room design is required.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-13

EP = /PRI. 5

Code A

TITLE:

Selector Switch Labeling

COMMENT:

Drywell air sampling system rendered inoperable  
because of mispositioned selector switch.

Item: N/A

Ref.: 2-82-40/3L

Source: LER  
Review

IDENTIFICATION: Panel: 20C484-A & 20C484-B  
Component Name: Drywell air sampling system inlet and  
outlet valves  
ID or Number: 4966 A,B,C,D,E,F

DESCRIPTION:

Operator discovered that the Drywell Air Sampling System Inlet and Outlet Valves had been left closed as a result of testing. The system was inoperable because of a mispositioned control room sample selector switch.

RESOLUTION:

(Sched: N/A )

The switches have been marked with green dots to indicate the normal position for each. The use of the green dot is consistent in meaning with the switch positions and is consistent with the use of green dot normal position indication throughout the control room.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

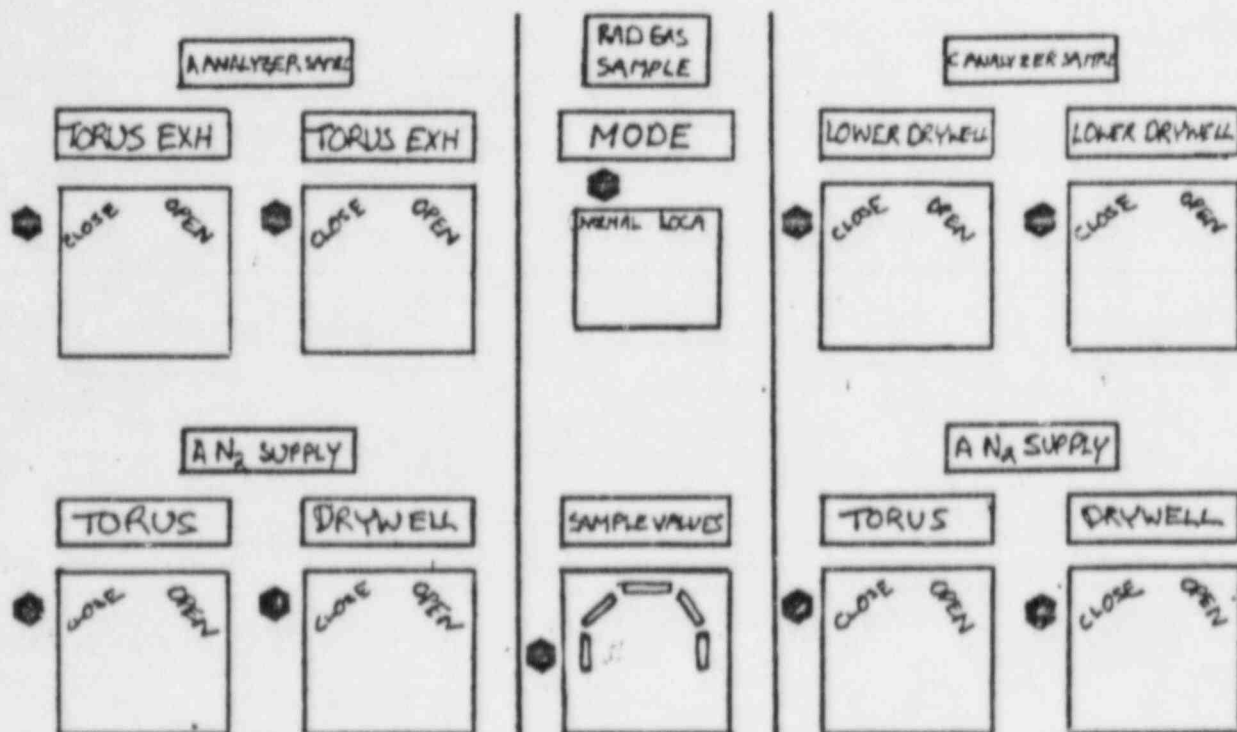
Team Approval Signature: *Jf Calix*

Date: FEB 28 1986

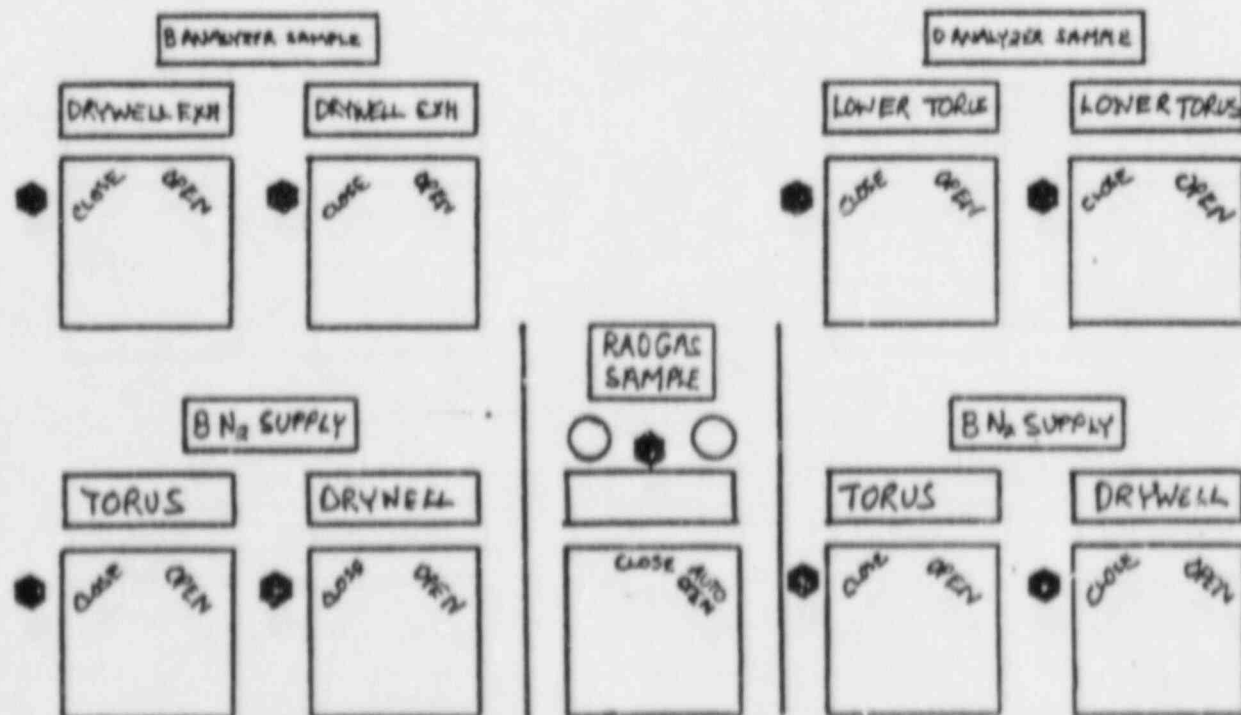
(1) Additional page(s) attached



## 20C484-A



## 20C484-B



● - Indicates "NORMAL" switch position

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-14

EP = PRI 2

Code A

TITLE:

Reactor Vessel Heat-up Rate

COMMENT:

Reactor Vessel heat-up rate exceeded technical specifications on two occasions due to operator error.

Item: N/A

Ref.: 2-84-03  
3-84-02

Source: LER  
Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

On two separate occasions, operators miscalculated Reactor Vessel heat-up rates and exceeded technical specifications. The recorder used to read heat-up-rate is a multipoint recorder and is very difficult to read.

RESOLUTION:

(Sched: 2nd Refuel )

Replace recorder with one that has point select and speed select. (See HED I3-05).

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Cahy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-15

EP = /PRI 5

Code A

TITLE:

Insufficient IRM Input

COMMENT:

IRM's were operating with less than the required two input channels.

Item: N/A

Ref.: 2-85-05

Source: LER  
Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

IRM input channels were improperly blocked and removed from service causing a violation of technical specifications.

RESOLUTION:

(Sched: N/A )

A blocking procedure has been written to ensure that when an IRM is blocked, the permit will require the insertion of a half scram signal.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Carly*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-16

EP = /PRI 4

Code A

TITLE:

Improper Valve Alignment

COMMENT:

Operator failed to close feedwater inlet valves according to procedure for long path recirculation.

Item: N/A

Ref.: 3-84-04

Source: LER  
Review

IDENTIFICATION: Panel: N/A

Component Name: N/A

ID or Number: N/A

DESCRIPTION:

In setting up feedwater system for long path recirculation, operator failed to close Feedwater Inlet Valves according to procedure. This led to injecting condensate into the reactor vessel and increasing reactor pressure.

MITIGATING CONSIDERATIONS:

Operation of these valves are restricted by mechanical devices. These are required prior to startup.

RESOLUTION:

(Sched: None )

Add a caution tag near long path recirculation valves.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cady*

Date: FEB 28 1984

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-17

EP = /PRI 6

Code A

TITLE:

Improper System Operation

COMMENT:

HPCI system was removed from service with reactor pressure greater than 105 PSIG.

Item: N/A

Ref.: 3-84-07

Source: LER  
Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

HPCI system was removed from service for maintenance with reactor pressure greater than 105 PSIG, violating technical specifications. Operations personnel were unaware their action would violate technical specifications.

RESOLUTION:

(Sched: N/A )

This was an operator error and the individual was counseled. There is no specific control room improvement that will prevent this error.

TRAINING REQUIREMENTS:

Training does emphasize adherence to Technical Specification.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-18

EP = /PRI 2

Code A

TITLE:

Improper Switch Position

COMMENT:

Reactor Mode Switch was in the Refuel mode while the ECCS system was inoperable.

Item: N/A

Ref.: 3-85-02

Source: LER  
Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

During maintenance operations on the ECCS system, the Reactor Mode Switch was left in the Refuel position instead of the Shutdown position, violating technical specifications.

MITIGATING CONSIDERATIONS:

Manual start of ECCS is still available.

RESOLUTION:

(Sched: 1st Refuel )

Special Procedure 779 applies to this plant configuration. The procedures will be revised to issue a safety permit against mode switch in the shutdown position, and to clear the permit when ECCS is restored.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

See above.

Team Approval Signature:

*Jf Carby*

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-19

EP = /PRI 2

Code A

TITLE:

Improper Valve Operation

COMMENT:

Torus test bypass valve was opened causing an increase in torus water level.

Item: N/A

Ref.: 3-85-08

Source: LER  
Review

IDENTIFICATION: Panel: HPCI

Component Name: Torus test bypass valve

ID or Number: MO-3-23-31

DESCRIPTION:

Operator mistakenly opened Torus Test Bypass Valve during HPCI Turbine Test Slow Start allowing torus water level to increase above technical specifications.

RESOLUTION:

(Sched: 2nd Refuel )

The HPCI system will be enhanced with color demarcation, mimics, and hierarchal labeling to guide operator in performing lineups correctly.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carley*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. LER-20

EP = PRI 5

Code A

TITLE:

Recirculation pump startup.

COMMENT:

Startup of a recirculation pump initiated a SCRAM because of insufficient SCRAM margin.

Item: N/A

Ref.: 3-84-14

Source: LER  
Review

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: N/A

DESCRIPTION:

During waterbox testing, startup of the recirculation pump generated a power spike because of the cold water, initiating a SCRAM.

RESOLUTION:

(Sched: N/A )

Procedure has been rewritten to verify that sufficient SCRAM margin exists prior to placing second recirculation pump in service.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None. (see above)

Team Approval Signature:

*Jf Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-01

EP = 2/PRI 2

Code A

TITLE:

Reactor Cooldown Rate

COMMENT:

Cooldown rate cannot be read directly.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel: 20C04 A, 20C21

Component Name: TR-2-2-3-90, TR-2-2-3-89

ID or Number: T-99 PSR, Step 19

DESCRIPTION:

A cooldown rate of less than 100 degrees F/hr is required. It is desirable to stay close to 100 degrees F/hr. Cooldown must not exceed this rate over any one hour interval. There is no way of reading rate; it must be calculated. (Deliberate Action)

MITIGATING CONSIDERATIONS:

Deliberate calculation over a long period of time.

RESOLUTION:

(Sched: with process )  
computer replacement

Replacement process computer will provide temperature rate of change information for operator use in determining cooldown rate. (See HED 13-05)

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *J. C. Cady*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-02

EP = PRI 2

Code A

TITLE: Reactor Level -48 inches

COMMENT: Cannot read discrete level -48 inches as required by procedure.

Item: N/A Ref.: N/A Source: TA

IDENTIFICATION: Panel: 20C05A  
Component Name: LI2-2-3-85A&B  
ID or Number: T-101 RC/Q, Step 0a

DESCRIPTION:

There is no line at -48 inches on scale.

MITIGATING CONSIDERATIONS:

There is an annunciator alarm at -48 inches.

RESOLUTION: (Sched: 2nd Refuel )

Zone mark the meter to show -48 inches.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Calmy

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-03

EP = PRI 6

Code A

TITLE:

Reactor Power 3%

COMMENT:

Cannot read discrete 3% on scales.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel: 20C05A  
Component Name: NR-2-07-46A-D  
ID or Number: T-101 RC/Q

DESCRIPTION:

Procedure requires determining when reactor power is at 3%.  
There is no line on scale at 3%.

(Rapid Action)

MITIGATING CONSIDERATIONS:

Down scale lights energize in an APRM downscale trip.

RESOLUTION:

(Sched: N/A)

The requirement to enter this procedure is to determine if, after a SCRAM, the reactor power is greater than the APRM down scale trip setting. The downscale lights energize at the downscale trip setting and therefore indicate the desired point. This is not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-04

EP = /PRI 1

Code A

TITLE:

Isolation Summary Display

COMMENT:

There is no quick reference display showing completion of isolation groups.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel: 20C03  
Component Name: PCIS Display  
ID or Number: T-101 RC/Q, Step 1a and T-100 SCRAM,  
Step 2c

DESCRIPTION:

Lights that show primary containment isolation are arranged so that it is very difficult to determine the isolation groups to which they belong.

(Rapid Action)

RESOLUTION:

(Sched: 2nd Refuel )

This section is used to indicate isolation completion. Rearrange and enhance groupings without using mimics. Arrange by isolation groups for rapid identification of group isolation completion.

(See HED SD2-03)

TRAINING REQUIREMENTS:

Train operators in arrangement of panel and the interpretation of terms "Inboard" and "Outboard."

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-05

EP = PRI 2

Code B

TITLE:

HPCI Initiation Signal

COMMENT:

No indication that ECCS initiation signal has been generated.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel:

Component Name:

ID or Number: T-101 RC/Q, Step 1b

DESCRIPTION:

No indication that ECCS initiation signal has been generated.

(Rapid Action)

MITIGATING CONSIDERATIONS:

Annunciator alarms exist for Reactor Low Level and Drywell High Pressure, both initiating conditions for HPCI.

RESOLUTION:

(Sched: 2nd Refuel )

The Reactor Low Level and Drywell High Pressure are the only two conditions that initiate HPCI. These annunciator windows will be colored Red as such, they serve as a definitive condition for HPCI initiation.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carling*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-06

EP = PRI 2

Code A

TITLE:

LPCI Flow Resolution

COMMENT:

LPCI Flow indication cannot be read to accuracy required.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel: 20C03-4  
Component Name: FR-2-10-143  
ID or Number: T-101 RC/Q, Step 1B(3)(b)

DESCRIPTION:

Scale resolution of +500 GPM does not meet +200 GPM requirement.

(Rapid Action)

RESOLUTION:

(Sched: 2nd Refuel )

Change the instrument scale to a range that provides a scale resolution of + 200 GPM.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calby*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-07

EP = PRI 1/2

Code C

TITLE:

Reactor Level -172 inches

COMMENT:

Cannot read discrete level of -172 inches as required by procedure.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel: 20C03, 20C04C  
Component Name: LI-2-3-91A&B, LR-2-3-110  
ID or Number: T-101 RC/L, Step 3

DESCRIPTION:

There is no line on scale at -172 inches which is the top of active fuel. In addition, the level may not be correct when flow is present in jet pumps (e.g., Recirc or LPCI injection).  
(Rapid Action)

RESOLUTION:

(Sched: A: 1st Refuel )  
B: 2nd Refuel

Zone mark scales to indicate -172 inches. Add a caution tag to panels to indicate that there will be a level error when flow is present in jet pumps. A. Caution Tag PRI 1  
B. Zone Mark PRI 2

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-08

EP = PRI 2

Code A

TITLE:

HPCI and RCIC Manual Initiation

COMMENT:

There is not a single control that manually indicates HPCI.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel: 20C05A,B

Component Name:

ID or Number: T-101 RC/L, Step 4c

DESCRIPTION:

HPCI is started by opening steam supply valve and opening pump discharge valve.

(Deliberate Action)

RESOLUTION:

(Sched: 2nd Refuel )

Add a manual initiation button with appropriate protection from inadvertent initiation.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carby*

Date: **FEB 28 1986**

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-09

EP = PRI 2

Code A

TITLE:

CS Manual Initiation

COMMENT:

There is not a single control to manually initiate Core Spray.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel:

Component Name:

ID or Number: T-101 RC/L, Step 4f

DESCRIPTION:

Core Spray is started by starting Core Spray pump and opening discharge valve.

(Rapid Action)

RESOLUTION:

(Sched: 2nd Refuel )

Add a manual initiation button with appropriate protection from inadvertent initiation.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-10

EP = PRI 2

Code A

TITLE:

LPCI Manual Initiation

COMMENT:

There is no single control that manually initiates LPCI.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel:

Component Name:

ID or Number: T-101 RC/L, Step 4g

DESCRIPTION:

Operator must start the LPCI pump and open the pump discharge.

(Rapid Action)

RESOLUTION:

(Sched: 2nd Refuel )

Add a manual initiation button with appropriate protection from inadvertent initiation.

TRAINING REQUIREMENTS: None.

PROCEDURE REQUIREMENTS: None.

Team Approval Signature:

*Jf Carling*

Date: FEB 23 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-11

EP = PRI 2

Code A

TITLE:

ADS Timer Reset

COMMENT:

The alarm window slide switch must be set in Auto.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel: 20C03A

Component Name:

ID or Number: T-101 RC/L, Step 7

DESCRIPTION:

There must be a means of ensuring the slide switch is in the Auto position in order to satisfy this requirement as feedback when the reset pushbutton is depressed.

(Rapid Action)

RESOLUTION:

(Sched: 2nd Refuel )

Set the alarm slide switch in the Auto position in accordance with the method developed for all annunciators. (See HED A1-12)

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calhoun*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-12

EP = PRI 6

Code A

TITLE: Reactor Pressure Resolution

COMMENT: The scale that covers the range between 1050-1090 PSIG cannot be read to the accuracy needed.

Item: N/A Ref.: N/A Source: TA

IDENTIFICATION: Panel: 20C05A  
Component Name: PI-2-6-90A,B, PR/FR-2-06  
ID or Number: T-101 RC/P, Step 3

DESCRIPTION:

Two scales are available for the range requirements: 950-1050 PSIG, and 0-1200 PSIG. The 0-1200 can be read to +10 PSIG which does not meet the requirement of +5 PSIG.

(Rapid Action)

MITIGATING CONSIDERATIONS:

The 1090 PSIG requirement is to ensure the operator takes manual control of relief valves.

RESOLUTION:

(Sched: N/A)

There is positive indication of relief valve status and the operator will take action to control relief valves. Therefore, it is not necessary to read pressure more accurately than +10 PSIG in the high end of this scale and this is not a problem.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Carley Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-13

EP = PRI 6

Code A

TITLE:

Reactor Pressure 950 PSIG.

COMMENT:

Cannot read a discrete 950 PSIG on the scale to be used as required by the procedure.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel:

Component Name: PPR2-2-3-404B

ID or Number: T-101 RC/P, Step 6

DESCRIPTION:

The reactor pressure recorder/indicator at the station that controls the SRVs for depressurization does not have a mark at 950 PSIG.

(Rapid Action)

RESOLUTION:

(Sched: N/A )

The pressure 950 PSIG is not critical. It indicates the approximate pressure at which the operator should take positive control. The scale can be read to ~~read~~ <sup>+10</sup> PSIG which is adequate for this step. This is not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-14

EP = PRI 6

Code D

TITLE:

RHR Discharge Pressure

COMMENT:

There is no indication of RHR discharge pressure.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel:

Component Name:

ID or Number: Caution #1

DESCRIPTION:

When initiating RHR injection, the operator should observe the pump discharge pressure in order to determine if LPCI is ready to inject.

(Deliberate Action)

MITIGATING CONSIDERATIONS:

There is an annunciator alarm based upon RHR pumps running with a discharge sufficient to cause injection.

RESOLUTION:

(Sched: N/A )

The annunciator alarm indicating sufficient pressure along with other indications that the RHR system is running is sufficient to satisfy this information requirement.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-15

EP = /PRI 4

Code B

TITLE: Reactor Pressure 1090 PSIG

COMMENT: Cannot read discrete value of 1090 PSIG as required by the procedure.

Item: Ref.: Source: TA

IDENTIFICATION: Panel: 20C05 A, 20C05 C  
Component Name: PR-2-6-96, PI-2-6-90 B  
ID or Number: T-101 RC/P, Step 9A

DESCRIPTION:

Neither the indicator nor the recorder has a mark at 1090 PSIG.

(Deliberate Action)

RESOLUTION: (Sched: None )

The scale will be zone marked for the lowest setting of relief valves at 1105 PSIG. The 1090 PSIG is a conservative number to keep plant below the relief valve setting, and does not represent a specific critical pressure. Consequently, the scale readability is considered to be satisfactory.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: Jf Cady

Date: FEB 29 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-16

EP = /PRI 2

Code D

TITLE:

SRV Instrument N2 Alarm

COMMENT:

The alarm is too far away from the SRV control panel.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C209 L

Component Name: ADS NITROGEN HI/LOW Pressure

ID or Number: T-101 RC/P, Step 9b

DESCRIPTION:

The SRV controls are on Panel 20C03(2). To operate the SRVs, instrument N2 must be available. The absence of instrument N2 is announced by an alarm over Panel 20C09 approximately 28 feet away in the same plane.

(Deliberate Action)

RESOLUTION:

(Sched: 2nd Refuel )

This alarm could be energized at any time during the procedure and action must be taken. Therefore, the alarm window will be colored amber to alert operators to take immediate action. This will be sufficient to draw operator's attention to the alarms.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Carley*

Date: **FEB 28 1986**

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-17

EP = /PRI 2

Code A

TITLE: TORUS Level Range

COMMENT: TORUS level between 21 and 25 feet is not covered.

Item: REL: Source: TA

IDENTIFICATION: Panel:  
Component Name:  
ID or Number: T-102 T/L, Step 8

DESCRIPTION:

The available instrument covers the range 1-21 feet.

RESOLUTION: (Sched: 2nd Refuel )

Revise T-102 procedure to 21 feet instead of 25 feet. (21 to 25 feet on the curve is excessive and not needed.)

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
See above resolution.

Team Approval Signature: Jf Carby Date: FEB 28 1986  
( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-18

EP = /PRI 6

Code B

TITLE:

TORUS Level 12.5 feet

COMMENT:

Cannot read a discrete level of 12.5 feet as required by the procedure.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C03-2

Component Name: LR-8123A,B

ID or Number: T-102 T/L, Step 9

DESCRIPTION:

TORUS level covers the range 0-21 feet  $\pm$  .1foot. There is no mark at 12.5 feet.

(Deliberate Action)

RESOLUTION:

(Sched: N/A )

The number 12.5 feet is an approximate number. The scale has marks at 12.4 and 12.6 and can be easily read at 12.5 feet. This meets the intent of the procedure and therefore is not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *JJ Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-19

EP = PRI 6

Code A

TITLE:

TORUS Level Range

COMMENT:

TORUS level between 21 and 30 feet is not covered.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel: 20C03-2, 20C04C

Component Name: LR-8123A,B

ID or Number: T-102 T/L, Step 14

DESCRIPTION:

The TORUS level recorder covers the range 0-21 feet. The procedure table T/L-3 requires a range up to 30 feet.

RESOLUTION:

(Sched: N/A )

This step requires using a graph, printed in the TRIP procedures, having a level range between 12 and 30 feet. However, the curve on the graph goes only to 21 feet with the safe zone below 21 feet. Therefore this is not a discrepancy.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Cady*

Date:

FEB 28 1985

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-20

EP = /PRI 2

Code A

TITLE:

TORUS Level 18.5 feet

COMMENT:

Cannot read the discrete value 18.5 feet as required by the procedure.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C03-3

Component Name: LR-8123 A,B

ID or Number: T-102 T/L, Step 22

DESCRIPTION:

The scale covers the range 1-21 feet  $\pm$  .1 foot.

(Deliberate Action)

RESOLUTION:

(Sched: 2nd Refuel )

The scale will be zone marked to indicate the level fo 18.5 feet.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carby*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-21

EP = /PRI 2

Code A

TITLE: TORUS Air Space Temperature

COMMENT: There is no indication of TORUS air space temp.

Item: \_\_\_\_\_ Ref.: \_\_\_\_\_ Source: TA

IDENTIFICATION: Panel: N/A  
Component Name: N/A  
ID or Number: T-102 T/L, Step 26

DESCRIPTION:

There is no indication of TORUS air space temp.

MITIGATING CONSIDERATIONS:

Present method of determining TORUS temperature to initiate TORUS spray to allow air space to come into equilibrium with spray temperature, then read spray temperature.

RESOLUTION: \_\_\_\_\_ (Sched: 2nd Refuel )

Install TORUS air space temperature indicator.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Calby

Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-22

EP = /PRI 2

Code A

TITLE:

TORUS Pressure Range

COMMENT:

The pressure range of 70-100 PSIG is not covered.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel:

Component Name:

ID or Number: T-102 DW/P, Step 16

DESCRIPTION:

Procedures require maintaining pressure less than 100 PSIG. The indication range is 0-70 PSIG.

RESOLUTION:

(Sched: 2nd Refuel )

Revise T-102 procedure to maintain pressure less than 70 psig instead of 100 psig.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

See above resolution.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-23

EP = /PRI 3

Code A

TITLE:

Chill Water Flow Range

COMMENT:

The range between 1000 and 1400 GPM is not covered.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C 12

Component Name: FI-20243

ID or Number: T-102 DW/T, Step 5a (1)

DESCRIPTION:

The meter range is 0, 300-1000. Flow rate with all pumps on can be approximately 1400 GPM.

(Deliberate Response)

MITIGATING CONSIDERATIONS:

The scale reading of 1000 GPM is adequate to verify system flow for plant safety.

RESOLUTION:

(Sched: None )

A range up to 1400 GPM is needed to verify maximum system operation. Change range of instrument to include 1400 GPM.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-24

EP = /PRI 4

Code F

TITLE:

HPSW to RHR Drain

COMMENT:

There is no drain position indication in control room.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C 03

Component Name: N/A

ID or Number: T-111 LR, Step 3a

DESCRIPTION:

This drain valve should be closed when the HPSW to RHR flow path is opened.

MITIGATING CONSIDERATIONS:

The drain line is 3/4 inches. The HPSW to RHR line is 18 inches.

RESOLUTION:

(Sched: None )

The potential loss through an open drain line is negligible compared to the supply flow path. Therefore the present configuration is acceptable.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-25

EP = /PRI 4

Code B

TITLE:

Reactor Pressure 330 PSIG.

COMMENT:

The discrete pressure 330 PSIG cannot be read as required by the procedure.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C05A

Component Name: PI-2-6-90B

ID or Number: T-111 LR, Step 5

DESCRIPTION:

There is no mark on the scale at 330 PSIG. The scale is 0-1200 PSIG  $\pm$  10 PSIG.

RESOLUTION:

(Sched: None )

This is an approximate number that is used to designate the procedural difference between high pressure and intermediate pressure. The scale accuracy does allow the operator to read 330 PSIG. Therefore, the scale is acceptable. A mark at this point on the scale would unnecessarily clutter the scale.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAI-26

EP = /PRI 6

Code A

TITLE: ADS Solenoid Energized

COMMENT: There is no indication in the control room that the ADS valve solenoids are energized.

Item: Ref.: Source: TA

IDENTIFICATION: Panel: 20C03-1  
Component Name: N/A  
ID or Number: T-112 EB, Step 6

DESCRIPTION:

The procedure calls for energizing opening solenoids prior to reaching the 50 PSIG differential pressure. When the  $\Delta P$  reaches 50 PSIG the ADS valves will open automatically.

RESOLUTION: (Sched: N/A )

Feedback required for this step is the indication of whether the ADS valves are open or closed. Red and green lights are provided for this feedback. Therefore, this is not a discrepancy.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: J. J. Calvey

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-27

EP = /PRI 4

Code B

TITLE:

Reactor Pressure 150 PSIG

COMMENT:

The discrete pressure of 150 PSIG cannot be read as required by the procedure.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C03-1

Component Name: AR-2-2-3-404B

ID or Number: T-115 AK, Step 11

DESCRIPTION:

There is no mark of the scale at 150 PSIG. The scale is 0-1500 PSIG +10 PSIG.

RESOLUTION:

(Sched: None )

This pressure is an approximate number and is not critical. The scale can be read to the accuracy needed. A mark on the scale at this point would unnecessarily clutter the scale.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-28

EP = /PRI 4

Code F

TITLE:

Reactor/TORUS  $\Delta P$

COMMENT:

There is no indicator that reads in  $\Delta P$  between the reactor and TORUS.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: N/A

Component Name: N/A

ID or Number: T-116 RF, Step 14

DESCRIPTION:

The operator must inject water until reactor pressure exceeds TORUS pressure by more than 80 PSIG. Operator must calculate differential pressure while injecting water. Scales: Reactor Pressure 0-1500 PSIG  $\pm 10$ ; TORUS pressure 0-70 PSIG  $\pm 5$ .  
(Deliberate Action)

RESOLUTION:

(Sched: None )

With the large variety of pumps and paths available to inject water there will be no difficulty in greatly exceeding 80 PSIG. Therefore, the operator will be able to quickly note a greater than 80 PSIG using the two gages available. A special  $\Delta P$  meter is not required.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-29

EP = /PRI 4

Code A

TITLE:

Reactor Pressure 210, 270, 630

COMMENT:

Cannot read discrete pressures 210, 270, 630 PSIG as required by procedure.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C03-1, 20C05 A, 20C04 C

Component Name: PR-2-2-3-404 B, PR-2-6-96, PI-2-6-90 B,  
PI-2-13-94

ID or Number: T-117 LQ, Step 9

DESCRIPTION:

Scale 0-1500 PSIG +10 PSIG has no marks at the specified pressure.

RESOLUTION:

(Sched: None )

Enhance scales to indicate pressures of 210, 270, and 630 PSIG.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA 1-30

EP = /PRI 4

Code A

TITLE:

Procedural Reference

COMMENT:

The procedure does not refer to support procedure T-224.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: N/A

Component Name: N/A

ID or Number: T-117 LQ, Step 16

DESCRIPTION:

The appropriate procedure to be used is not referenced on the procedure flow chart.

(Analyze)

RESOLUTION:

(Sched: None )

Add reference to procedure T-224 on the flow chart for step 16.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

As above.

Team Approval Signature: *J. Carby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TA1-31

EP = /PRI 4

Code A

TITLE:

Procedural Reference

COMMENT:

The recorder point select is not given in the procedure for Reference Leg Temperature.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C12  
Component Name: TI-2501  
ID or Number: Note 16

DESCRIPTION:

The multi-point indicator has many points. The operator should be given a reference indicating which point to select.

RESOLUTION:

(Sched: None )

Add point to be selected to Note 16.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

As above.

Team Approval Signature:

*Jf Calby*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-32

EP = /PRI 4

Code F

TITLE:

Generator Load 5%

COMMENT:

Cannot read generator load of 5% as required by procedure.

Item:

Ref.:

Source: TA

IDENTIFICATION: Panel: 20C08 B

Component Name: JR 2157

ID or Number: T-100 SCRAM, Step 7a

DESCRIPTION:

Generator load is indicated in mega watts and 5% is not marked on scale.

MITIGATING CONSIDERATIONS:

A reverse power relay has been installed that will automatically trip the generator at 0% load.

RESOLUTION:

(Sched: None )

The 5% is an approximate load that occurs prior to 0%. The operator is instructed to trip the generator manually in order to not rely on the reverse power trip. The approximate 5% load is easily estimated on the megawatt scale. Therefore, this scale is satisfactory.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. TAL-33  
EP = PRI 4

Code F

TITLE:

Core Map Green Light

COMMENT:

Core map green lights are difficult to scan.

Item: N/A

Ref.: N/A

Source: TA

IDENTIFICATION: Panel: 20C05B

Component Name: Core Map

ID or Number: T-100 SCRAM, Step 2a

DESCRIPTION:

To verify reactor scram, operator must scan the large core map display for 185 small green lights that indicate each rod fully inserted. The lights are difficult to see from the control station. This requires excessive time and disciplined scanning during high stress operations. (Rapid Action)

MITIGATING CONSIDERATIONS:

Each rod has a large digital display that indicates rod notch position. A reading of 04 or less indicates rods are in. These are more easily read. The computer has backup indication of rod position.

RESOLUTION:

(Sched: None )

The primary indication of adequate rod insertion is power decreasing below 3%. There is adequate instrumentation for power indication. Individual rod position indication is a backup to power decreasing. Therefore, present rod indication is adequate.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature:

*Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-01

EP = /PRI 2

Code A

TITLE: ADS Numbers

COMMENT:

Purpose of numbers was not clear to operator

Item:

Ref.:

Source:

Validation

IDENTIFICATION: Panel: ADS  
Component Name: Relief Valves  
ID or Number:

DESCRIPTION:

Numbers are white and become confused with valve labels. It is not clear to the operator that they represent sequence of use to the operator.

RESOLUTION:

(Sched: 2nd Refuel )

Change color of sequence numbers to color of information tags.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carlin*

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-02

EP = /PRI

Code A

TITLE: 13 KV Manual Transfer

COMMENT:

Procedure does not indicate magnitude of disruption to plant.

Item:

Ref.:

Source:

Validation

IDENTIFICATION: Panel: Procedure

Component Name: Scram

ID or Number: T-100 Step 6

DESCRIPTION:

A loss of 13 KV without an automatic transfer will lose many major equipments and disrupt the plant. This is not allowed for in the procedure.

RESOLUTION:

(Sched: N/A)

The manual transfer step is intended to accomplish manual transfer before automatic transfer occurs to prevent loss of a recirc pump. If automatic transfer fails to occur, manual follow-up is desirable. The procedure provides for exit to T-101 if conditions dictate. Therefore, the procedure is satisfactory.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Calmy*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-03

EP = /PRI 4

Code A

TITLE: Turbine Speed Label

COMMENT: Label not consistent with similar groupings.

Item:	Ref.:	Source:
		Validation

IDENTIFICATION: Panel: C04C  
Component Name: RCIC  
ID or Number: SPI4505

DESCRIPTION:

Meter is labeled "Turbine" under the hierarchal label "Turbine". This is redundant and not the same as HPCI, which uses "Speed" for a label.

RESOLUTION: (Sched: None )

Change label to read "SPEED"

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Calry

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-04

EP = /PRI 2

Code A

TITLE: Orifice Bypass Valve Tag

COMMENT: Requires caution tag on mockup.

Item:	Ref.:	Source:
		Validation

IDENTIFICATION: Panel: C04A  
Component Name: Orifice Bypass Valve, RWCU  
ID or Number:

DESCRIPTION:

This valve should be closed when Rx pressure is greater than 200 psig. The caution tag in control room is needed on mockup.

RESOLUTION: (Sched: 2nd Refuel )

Put caution tag on enhancement design.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Calby

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-05

EP = /PRI 6

Code A

TITLE: Add Water to Vessel

COMMENT: Lineup requirements not clear.

Item:	Ref.:	Source:
		Validation

IDENTIFICATION: Panel: Procedure  
Component Name: Alternate Shutdown Cooling  
ID or Number: T-115 AK, Step 6

DESCRIPTION:

Procedure should specify that flow is to vessel.

RESOLUTION: (Sched: N/A )

The procedure T-115 is for alternate shutdown cooling. Therefore the operator is fully aware of the intent of the step to add water to the vessel. The team considers this procedure satisfactory.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: *Jf Calh*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-06

EP = /PRI 2

Code A

TITLE: Torus Pressure Instrument Number

COMMENT: Procedure and Mockup do not agree.

Item:	Ref.:	Source:
		Validation

IDENTIFICATION: Panel: Procedure  
Component Name: Containment Control-Torus Level  
ID or Number: T-102 T/L Step 28

DESCRIPTION:

Torus Pressure is numbered 4952 on mockup and 4592 on procedure.

RESOLUTION: (Sched: 2nd Refuel )

The procedure will be changed to list correct instrument numbers.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
Correct procedure.

Team Approval Signature: *Jf Carley*

Date: FEB 28 1985

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-07

EP = /PRI 4

Code A

TITLE: Torus Instrument Color Pads

COMMENT: Wrong color is used.

Item:	Ref.:	Source:
		Validation

IDENTIFICATION: Panel: C03  
Component Name: Torus Level  
ID or Number: LI 8027, LR 8027

DESCRIPTION:

Torus instrument color pads are dark blue, should be light blue.  
(102 DW/P)

RESOLUTION: (Sched: None )

Change color pads to light blue.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Calby

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-08

EP = /PRI 4

Code A

TITLE: HPSW to LPCI Mimic

COMMENT: Mimic missing in mockup.

Item: \_\_\_\_\_ Ref.: \_\_\_\_\_ Source: Validation

IDENTIFICATION: Panel: CO3-2  
Component Name: HPSW to LPCI  
ID or Number: \_\_\_\_\_

DESCRIPTION:

Lack of mimic caused operator considerable difficulty in locating valves.

RESOLUTION: \_\_\_\_\_ (Sched: None )

Mimic section to be incorporated in enhancement design.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Calry

Date: FEB 28 1986

( ) Additional page(s) attached



PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-09

EP = /PRI 4

Code A

TITLE: HPCI Turbine PB Color

COMMENT: Pushbutton wrong color.

Item:	Ref.:	Source:
		Validation

IDENTIFICATION: Panel: C04-B  
Component Name: HPCI Turbine  
ID or Number:

DESCRIPTION:

Pushbutton does not meet color standards.

RESOLUTION: (Sched: None )

Make pushbutton red.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Carby

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-10

EP = /PRI 4

Code C

TITLE: Location of Rx Instruments

COMMENT:

Indications on different panels.

Item:

Ref.:

Source:

Validation

IDENTIFICATION: Panel: C04B/C03

Component Name: Rx Level, Rx Power

ID or Number: T-117 Step 11 (Level/Power Control)

DESCRIPTION:

When adding water to reactor using ECCS systems with level below -165 inches, there is no Rx power level available at ECCS station. This requires a coordinated effort to monitor effects of adding water.

RESOLUTION:

(Sched: None )

These are two normally manned stations during emergency procedures. At this stage of the procedure, coordinated action is feasible and is considered to be satisfactory.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carney*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-11

EP = /PRI 2

Code A

TITLE: ECCS Instrument Color Pads

COMMENT: Drywell Temp and Torus Pressure not color padded.

Item: \_\_\_\_\_ Ref.: \_\_\_\_\_ Source: \_\_\_\_\_  
Validation

IDENTIFICATION: Panel: CO3, ADS  
Component Name: Drywell Temp, Torus Pressure  
ID or Number: \_\_\_\_\_

DESCRIPTION:

Operators had difficulty locating these instruments.

RESOLUTION: \_\_\_\_\_ (Sched: 2nd Refuel )

Color pad Drywell Temp and Torus Pressure.

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Cahy Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-12

EP = /PRI 2

Code A

TITLE: T-200 Series Nomenclature

COMMENT:

Procedures use nomenclature inconsistent with mockup.

Item:

Ref.:

Source:

Validation

IDENTIFICATION: Panel: All Panels

Component Name: All T-200 Procedures

ID or Number:

DESCRIPTION:

The mockup relabeled many controls and instruments to more clearly indicate their functions. The procedures do not reflect these changes.

RESOLUTION:

(Sched: see resolution)

Update procedures using the standard nomenclature and abbreviation developed during enhancement design. Emergency procedures (TRIP T-100 and T-200 series) will be revised to coincide with implementation of enhancement. All other procedures will be revised during the normal review cycle.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

None.

Team Approval Signature: *Jf Carley*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-13

EP = /PRI 4

Code A

TITLE: T-200 Series Information

COMMENT:

Procedures sometimes omit information that could help operator.

Item:

Ref.:

Source:

Validation

IDENTIFICATION: Panel:

Component Name:

ID or Number: All Procedures

DESCRIPTION:

Procedures sometimes give only valve or instrument numbers without including names. Also adding panel names would help the operator to locate valves.

MITIGATING CONSIDERATIONS:

Valve numbers are a common cross-reference.

RESOLUTION:

(Sched: None )

Revise procedures to include names of panels and names of valves and instruments.

TRAINING REQUIREMENTS:

None.

PROCEDURE REQUIREMENTS:

Revise procedures as indicated.

Team Approval Signature: *Jf Calvey*

Date: FEB 28 1986

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-14

EP = /PRI 4

Code A

TITLE: T-220 Step Not Clear

COMMENT: Intention of step not clear.

Item: \_\_\_\_\_ Ref.: \_\_\_\_\_ Source: \_\_\_\_\_  
Validation

IDENTIFICATION: Panel: Procedures  
Component Name:  
ID or Number: T-220 Step 4

DESCRIPTION:

Step calls for use of emergency in notch over-ride switch to drive in selected rods. It appears that the words "in" and "notch" are reversed.

RESOLUTION: \_\_\_\_\_ (Sched: None )

Change label to read: "EM IN NOTCH OVERRIDE"  
Change procedure to read: "Emergency in/NOTCH OVERRIDE."

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
None.

Team Approval Signature: Jf Calmy Date: FEB 28 1996

( ) Additional page(s) attached

PEACH BOTTOM  
HED ASSESSMENT

HED No. VW-15

EP = /PRI 2

Code A

TITLE: T-221 Valves Not Found

COMMENT: Valve identified in procedure could not be found.

Item: \_\_\_\_\_ Ref.: \_\_\_\_\_ Source: Validation

IDENTIFICATION: Panel: \_\_\_\_\_  
Component Name: A,B SJAE Steam Supply, SJAE Steams Header  
ID or Number: AO-2466, AO-2634 Drain

DESCRIPTION:

T-221, Step 11 valves could not be located on mockup or prints.

RESOLUTION: \_\_\_\_\_ (Sched: 2nd Refuel )

1. For A0-2466 A & B revise procedure name to read, "Cond inlet/outlet HS to SJAE Cond and SPE."
2. For A0-2634 revise procedure name to read "STEAM HDR DRAIN" and add note, "(Local control at C157 panel.)"

TRAINING REQUIREMENTS:  
None.

PROCEDURE REQUIREMENTS:  
Revise procedures as indicated.

Team Approval Signature: Jf Carby Date: FEB 28 1986

( ) Additional page(s) attached



Appendix B

BWROG SUMMARY REPORT

## APPENDIX A

3.9  
The following is a complete list of all operator comments (see Section 11 for discussion of common operator concerns). Where duplicate responses were received, the frequency has been indicated in parentheses. While responses have been abbreviated where possible and as such are not verbatim, the intent of the reply has been adhered to as closely as possible. Refer to actual comment sheets for detailed responses.

No attempt has been made in this section to judge the validity of the operators' criticisms or to make any suggestions for improvement. All comments are repeated here as a means of transmitting operator concerns to plant management for further review and should not be interpreted as survey team recommendations.

### Control Panel Layout and Design

The recombiner panel is inconveniently located. (5)

The meteorological panel should be in the control room.

The separation of the ECCS panel from the other consoles is undesirable.

Condensate system and feed system controls are divided between several panels. Consequently, it takes two people to start these systems.

Some indicators are inconveniently located. (2)

The recirculation pump temperature recorder is inconveniently located. (2)

Some displays are placed too high or too low upon the panels.

Color coding should be limited.

The ventilation system panel is confusing.

Some components are poorly labeled.

### Control Room Workspace

More workspace should be provided for supervisory personnel. (2)

Control room furniture is in need of repair. (3)

TV cameras should be suspended from the ceiling rather than mounted on the floor.

### Control Room Access

Control room access should be limited to avoid crowding and distractions. (7)

### Instrumentation and Hardware

Multipoint recorders are difficult to read. (4)

Process units should be consistent throughout the control room.

The following controls were thought difficult to operate:

- Reactor mode switch
- Feed pump controllers
- HPCI controller
- RCIC controller
- CRD selector switches

The following instruments and controls were thought necessary in the control room, but are not presently available:

- Scoop tube lockup
- Fire alarm
- Jet pump indication
- Ground detector

The following components were thought to be unnecessary:

Electrical system CRT's

BOP printer

#### Annunciators

Window groupings could be improved.

The number of normally-on annunciators should be reduced. (2)

#### Procedures

Some procedures are rather lengthy.

The clarity of some procedures could be improved.

#### Communication Systems

Tamper-proof speakers and locked phone boxes should be installed.

More PA channels would be desirable. (4)

The PA is difficult to hear in certain areas of the plant. (2)

A PA channel dedicated to operations should be provided. (4)

The PA system is too often used unnecessarily.

The chief operator has too many phones.

#### Heating, Ventilation and Air Conditioning

The control room is cold in winter. (3)

### Lighting and Noise Levels

The control room is noisy (many people). (4)

Equipment noise is present in the control room.

There is glare on the control panels.

### Maintenance Activities

There needs to be better control of special equipment.

Special test equipment is not always available.

There is no storage space for special test equipment.

Surveillance tests are performed too frequently. (3)

### Training

Training should be more in accordance with the needs of operators. (7)

The requalification program should be improved.

More system training should be included. (2)

More training should be provided in routine evolutions.

More training time should be allotted.

Better training facilities should be provided. (4)

### Shift Manning and Turnover

The chief operator should not be used for reliefs.

Extra people are required for surveillance tests.

More operators on each shift would be helpful. (4)

Two shift supervisors would be desirable.

Overtime hours should be minimized.

More time should be allotted for shift turnover. (4)

More detailed shift turnover checklists should be used. (3)

### Operator Responsibilities

The chain of command is not always clearly understood.

Job responsibilities need to be more clearly defined.

Information flow could be improved. (3)

More bulletins than necessary are distributed.

Operators felt the following responsibilities burdensome:

Communication duties (3)

Paperwork (4)

APPENDIX B

LER'S



The following LER's were identified as possibly caused by design-related operator error. All events occurring in the preceding two years were considered in compiling this list. Where a significant concern was apparent, the investigation included the preceding five years.

<u>LER Number</u>	<u>Date</u>	<u>Operator Error</u>	<u>Checklist Items</u>
2-76-23/3L	5/4/76	Misaligned Valves	G6.1, G6.5
2-76-2/1T	1/20/76	Misaligned Valves	G6.1, G6.5
3-77-25/3L	7/1/77	Misaligned Valves	G6.1, G6.5
2-77-39/3L	9/30/77	Misaligned Valves	G6.1, G6.5
3-77-45/1T	10/11/77	Misaligned Valves	G6.1, G6.5
77-056/03L-O	11/15/77	Misaligned Valves	G6.1, G6.5
77-061/3L-O	11/23/77	Misaligned Valves	G6.1, G6.5
78-017/01T-O	3/3/78	Misaligned Valves	G6.1, G6.5
78-008/01T-O	3/3/78	Misaligned Valves	G6.1, G6.5
78-007/01T-O	3/27/78	Misaligned Valves	G6.1, G6.5
3-78-013/03L-O	7/7/78	Misaligned Valves	G6.1, G6.5
3-78-014/3L	7/18/78	Misaligned Valves	G6.1, G6.5
3-79-3/3L	2/8/79	Misaligned Valves	G6.1, G6.5
2-79-007/1T-O	2/15/79	Misaligned Valves	G6.1, G6.5
2-81-11/3L	3/4/81	Misaligned Valves	G6.1, G6.5
2-79-2/1T	1/22/79	Firewatch not posted	G6.2, G6.4
2-79-006/1T-O	2/14/79	Firewatch not posted	G6.2, G6.4
2-79-29/3L-O	6/22/79	Firewatch not posted	G6.2, G6.4
2-79-40/1T	9/5/79	Firewatch not posted	G6.2, G6.4
2-79-39/3L	9/27/79	Inadvertent control actuation	B6.2
2-79-41/3L-O	10/5/79	Inadvertent control actuation	B6.2
2-80-20/1T-O	10/10/80	Inadvertent control actuation	B6.2
2-80-30/1T-O	12/9/80	Inadvertent control actuation	B6.2
2-76-18/1T	4/12/76	Misaligned Systems	A2.2, 2.7, 3.3, 5.2
2-77-073/03L-O	12/27/77	Misaligned Systems	A2.2, 2.7, 3.3, 5.2
2-78-025/3L	5/12/78	Misaligned Systems	A2.2, 2.7, 3.3, 5.2
2-79-45/1T-O	10/24/79	Misaligned Systems	A2.2, 2.7, 3.3, 5.2
2-81-22/1T	4/14/81	Misaligned Systems	A2.2, 2.7, 3.3, 5.2
2-79-26/1T	6/8/79	Failure to respond to alarm	C2.8, C9

Appendix C

PHILADELPHIA ELECTRIC ENHANCEMENT CRITERIA FOR PEACH BOTTOM APS

PHILADELPHIA ELECTRIC  
ENHANCEMENT CRITERIA  
FOR PEACH BOTTOM APS

This criteria has been prepared for the team to use as reference documentation and guidance when reviewing and commenting on control panel enhancement designs. In addition, it should be used when discussing team approved enhancements with other operators. It provided the background rational for the designs as they exist.

DESIGN CRITERIA

The objective of any design improvement is to help the operator. However, since each operator represents a different set of characteristics in terms of knowledge, skills, and experience, it is necessary to define a specific level of operator experience, towards which the improvements are primarily directed.

- Criteria:

From the point of view of safety, the panels must be designed for that licensed operator with the least experience who will be performing operations in the control room.

DESIGN IMPROVEMENTS (ENHANCEMENTS)

While no particular enhancement can be said to directly affect plant safety, the total ease of operation of the control system can have a significant effect on the errors and omissions of the operator, and the identification and correlation of information which, in turn, directly affect his mental workload and decision making in high stress emergency operations.

- Criteria:

1. Safety: Those functions performed under high stress, emergency conditions should be supported by enhancements that reduce the mental workload of the operator.

2. Reliability: Those functions performed under less stressful conditions that could result in degraded plant performance should be enhanced.

3. Deliberate Operation: Those functions that are performed only under no stress, as deliberate actions, require minimal enhancement.

## PANEL TERMINOLOGY

Terminology refers to the words used on labels and annunciator window legends. Panel terminology must be consistent with the operating procedures.

- Criteria:

1. Clarity: The words used must clearly indicate the component and function involved.
2. Meaning: The words used must be meaningful to the operator without interpretation; words should not be in code.
3. Simplicity: Use as few words as possible, consistent with 1 and 2 above.
4. Spoken clarity: Operators must use terminology in communications, particularly during noisy, high stress periods of emergency operations. The words selected must not be easily confused under these conditions.
5. Use: Operators use names rather than component ID numbers when communicating during emergency operations.

## GROUPINGS

Demarcations are used in various forms to group instruments of like functions. When consoles are designed with the majority of controls located on benchboards and indicators on upright portion and vertical boards, the eye coordination between controls and displays is more difficult than with immediately adjacent controls and indicators. Emergency operations require rapid and accurate coordination between decisions made, actions taken, and feedback received under stressful conditions. Demarcation enhancements, when done in conjunction with hierarchal labeling, can greatly improve this coordination.

In many cases groups of functionally related components are not set off by blank spacing; one group runs into another without any visual distinction. Because of changes after the original design and layout, some instruments are not well located with respect to their related group. In order to highlight a group, some rearrangement is necessary. Sometimes it is possible to swap like components, if separation criteria can be met, to obtain better grouping. This eliminates the need to cut new holes and install inserts.

- Criteria:

1. Instrument location: Grouping should help the operator to locate meters and controls quickly and accurately, without resorting to searching labels.
2. Coordination: The operator should be aided in identifying controls and corresponding modification on another part of the panel or on different panels.
3. Logical Arrangements: Instruments should be grouped in logical arrangements that facilitate an understanding of the intent of the group and thereby locating of the proper instrument.

## MIMICS

- Criteria:

1. Simplicity: Mimics should stress simplicity so that they provide the most straightforward reminder to the operator.
2. Rapid scan: Operators should be able to rapidly scan mimics and discern the status, particularly when the systems are performing their primary emergency function.
3. Alignment: The operator should be aided by the mimic in determining proper system lineup.
4. Relationships: The relationships between mimics, where appropriate, should be enhanced by the mimic arrangement.
5. Changes: Enhancements should emphasize improvements to mimic lines and labels, and should minimize changes in locations of controls and indications.

- Applications:

1. Used only where needed due to complexity of system or arrangement of controls.
2. Paths go through center of controls.
3. Arrangement shall be physically correct.
4. Same elevation and referencing required for discontinuities.
5. Mechanical systems shall be black.
6. Electrical bus colors listed in COLOR CONVENTION document.
7. Symbols made from engraved lamicaid.



## COLORS

Colors can be used effectively to help tie together similar components on a given panel or on different panels. The design of Peach Bottom panels spreads some systems between consoles and vertical panels. Also, some systems are located on more than one console.

- **Criteria:**

1. Consistency: The use of color should be consistent throughout the control room. The same color can, however, have different meanings in different applications so long as operator confusion does not result.
2. Color Codes: Colors will not generally be used as specific codes. Colors will not stand alone as the identifier of function but will be used in conjunction with hierarchical labeling and instrument recognition.
3. Color Selection: Colors should have been selected and designated for specific systems they represent.

- **Applications:**

- A. Color Fields

- 1) used to highlight instrumentation & controls used during emergencies
- 2) pastel colors
- 3) approved colors listed in COLOR CONVENTION document

- B. Colored Outlines

- 1) used to highlight systems important to normal operations
- 2) color selections same as for color fields

- C. Black Outlines

- 1) used to define functionally related items
- 2) used as needed for highlighting

- D. Brackets

- 1) used as needed to define groupings of related I & C
- 2) black

E. Dividing Lines (Demarcations)

- 1) used as needed to create subgroups
- 2) used as needed to separate unrelated items located in close proximity to each other
- 3) black



Appendix D

PHILADELPHIA ELECTRIC CRITERIA FOR SIGNIFICANCE OF A HED

PHILADELPHIA ELECTRIC  
CRITERIA FOR SIGNIFICANCE OF A HED

Assess Impact Upon Operator's Ability To Perform

Each HED must be assessed based upon its potential for causing error by operators, and the resulting potential impact upon safety. The listed criteria identify the more common categories and causes of human error, but the team is not limited to only these items in its considerations.

Assessment Process

The significance can best be determined by the combined professional judgement of the team applying their specific areas of expertise. Each team member will make his own judgement using the attached checklist. The checklist is an abbreviation of the criteria, discussed below, including an overall significance rating for the HED. This criteria is intended to help team members in evaluating the potential operational significance and seriousness of a HED. Each HED should be considered for possible interactions with other HEDs as well as individually.

The team will then review the member's impacts and obtain a consensus. If no consensus can be obtained, the team should vote. The resulting rating of significance and seriousness of the HED will then be used in conjunction with the four priority statements listed under Determination of Safety Significance when assigning a priority to the HED.

Criteria

The list is divided into three major categories: Physical Performance, Sensory/Perceptual Performance, Mental Performance. Each category is subdivided into the areas of performance that make up each category. In turn, each subcategory indicates typical contributors to degraded performance. In evaluating the impact of a discrepancy, any one cause may have a major impact or it may have a very minor impact. Minor impacts in more than one area of performance, however, may combine to cause a discrepancy having a greater impact on operator performance. When major categories combine, there is a potential for greater seriousness.

## A. PHYSICAL PERFORMANCE

1. Reduction of effectiveness of the operator's body and mind caused by:

- a. Undue fatigue:
  - (1) Duration of operation
  - (2) Frequency of demands
  - (3) Environmental conditions
- b. Discomfort:
  - (1) Working conditions
  - (2) Resting conditions
- c. Injury

2. Restriction of the operator's ability to perform:

- a. Control suitability
- b. Availability

## B. SENSORY/PERCEPTUAL PERFORMANCE

1. Reduction in visual sensing:

- a. Visibility of instrument or information:
  - (1) Meters and controls
  - (2) Labels and legends
  - (3) Scales and units
  - (4) Displays
- b. Readability of information:
  - (1) Labels and legends
  - (2) Scales and units
  - (3) Displays
- c. Visual distractions:
  - (1) Cluttered presentations
  - (2) Lack of differentiation
  - (3) Excessive information

2. Impairment of audio reception:

- a. Audibility
- b. Noise level

3. Perception of information received visually or audibly:

- a. Identification of information sought:
  - (1) Easily recognizable
  - (2) Differentiated from other information
  - (3) Expected location or arrangement
- b. Understandable information:
  - (1) Terminology succinct
  - (2) Useful form

C. MENTAL PERFORMANCE

1. The degree of stress:

- a. Rapidity of response required
- b. Severity of situation (emergency procedure)
- c. Accuracy of response required

2. The tendency to cause confusion:

- a. Misleading information or arrangement
- b. Complexity:
  - (1) Manipulations
  - (2) Displays
  - (3) Procedures

3. Mental workload:

- a. The degree of information collection requirements:
  - (1) Proximity to operator's location
  - (2) Organization for easy identification

b. Correlation of information:

- (1) Status of systems/components
- (2) Alignment of systems
- (3) Effects of one system on another

c. Mental manipulations:

- (1) Recall of detailed information
- (2) Perform calculations
- (3) Transposition/conversion of units

d. Evaluation and decision:

- (1) Effective guidance
- (2) Sequential or parallel

4. Coordination with others in or outside control room:

- a. Absence/remote location of information or controls
- b. Delay of feedback information
- c. Interaction with other systems

## DETERMINATION OF SAFETY SIGNIFICANCE

In assigning the safety significance of a HED found to be significant, the combined judgement of the team is needed in consideration of the specific condition caused by the HED or a combination of HEDs. The team members should consider the following:

1. HEDs that cause errors on systems that directly effect safety such as:
  - a. Engineered safety features
  - b. Reactor coolant and protection systems
  - c. Containment isolation and control systems
  - d. Emergency core cooling systems and their support systems
  - e. Auxiliary feed systems
  - e. Systems for monitoring the course of accidents and the availability of safety related systems
  - f. Reactor control systems
  - g. Off gas isolation systems
2. The potential for violation of technical specifications.
3. HEDs that are known to have caused errors that will lead to unsafe operation.
4. HEDs that could cause the inadvertant activation or deactivation of a safety related system or a system needed to safely shutdown the plant.



Appendix E

TEAM BRIEF FOR TASK ANALYSIS



## TEAM BRIEF FOR TASK ANALYSIS

The task analysis will be performed by the team using the Peach Bottom Transient Response Information Plan (TRIP) procedures. The analysis is divided into two distinct phases. The first phase determines the REQUIREMENTS for panel instruments and controls to support the TRIP. The second is a VERIFICATION that the available panel instruments and controls meet the requirements of the first phase.

### REQUIREMENTS PHASE

In this phase of the analysis, the team must establish the requirements for control room panels to support TRIP. To do this, team members are asked not to think of the controls and instruments that exist in the control room, but to concentrate on systems requirements and actions. Think in terms of what the systems are doing and what is required to be done in the systems. Operators will find it difficult not to think of the control room components, with which they are familiar, but should understand that the existing components might not be exactly what is needed for a specific step. Not all indications provided are used for a particular operation, and sometimes additional indications could help in controlling the plant. Do not limit your contribution to what is available.

The team should realize that what is said during the task analysis is not final. Although the analysis lists a requirement not now provided on the panels, this does not necessarily mean that it will be provided later. Further study may show that a listed requirement is not needed. On the other hand, not specifying the need for an instrument on a particular operation does not mean that an existing instrument will be removed. This analysis must be a best attempt to specify the CHARACTERISTICS of instruments required for each specific step, based upon the team's combined experience and expertise. This analysis phase must be independent of what already exists.

### VERIFICATION

In this phase the team is asked to reverse its previous approach, and think of what exists in the control room. For this phase, the team will have control panel prints and other information and listings for reference. The team may have access to the control room for this phase. The intent in the VERIFICATION phase is to ensure that what does exist in the control room meets all the REQUIREMENTS specified in the first phase of the analysis. By comparing what exists with what is required, we can identify any problems with the control room instrumentation and controls in support of performing the TRIP procedures.

## PROCEDURE FOR ANALYSIS

The method to be used in the first phase of the task analysis will consist of reading each step of the TRIP and then specifying what actions must be taken to carry out the step. Where the operator will need information, the team will specify the characteristics of the information needed. For example, each TRIP sequence has initiating cues, all of which must be specified. Each action consists of two parts: taking the action that alters the system, and receiving the feedback indication that lets the operator know that the action was successful. Both parts must be discussed for each action.

Because the TRIP procedures give only general direction, the team must fill in the specific actions to be taken in performing each TRIP step. This will involve recording each valve that must be manipulated, each pump that must be controlled, and each indication that must be read in order to perform the operation specified in the TRIP sequence. Any other procedures referred to in the TRIP will be reviewed to determine if they must also be included in the analysis.

As each step is listed on the form, the team will assume there are only two types of activities for the operator: either he must obtain information, or he must take action. Decision points usually require the operator to obtain information. Also, the word "verify" will be assumed to mean action, since any verification process that reveals a control or parameter not in the correct state, then requires the operator take the action that will put it in the correct state. For an item verified not correct, the action to be taken must be stated.

In general, decision points in the flow diagram will take the NO option. In some cases, there will be a short branch where an action is required under the YES and NO options. In order to be thorough, the team will first assume a YES and take that action, then backtrack and assume a NO to continue the worst case flow path.

When specifying the range required for meters, the team should address only the range of readings expected for that specific step, not the whole range of the meter. The term "resolution" refers to how accurately the operator must be able to read the scale. Generally, if a fairly wide range of readings are acceptable, the scale will not require high resolution. In other cases, a fine resolution may be required. The scale should provide enough resolution to allow the operator to perform the specific step under consideration. The resolution is usually given in + or - numbers. If an absolute limit is involved so that the operator must know when that limit is reached, it must be made clear in our response.

During the verification, the team will determine the availability of specific controls and instruments in the control room that meet defined requirements. In addition, the team will consider the suitability of the component identified. The component must be suitable in location, type, and arrangement. For example, some controls might be separated from the necessary feedback display so that the operator cannot reasonably observe the results of his actions. Or, because of angle of view, it may be difficult to read some displays. In some cases the needed information may be widely dispersed making the operation difficult. To aid the team in recognizing some of these suitability considerations, Task Analysis Guidelines are attached. These guidelines are intended for frequent reference by team members during the verification phase.

After the team considers the availability and suitability of control room components for each requirement established in the first phase, a final judgement will be made. Either the selected component will be marked as satisfactory, or a human engineering discrepancy (HED) will be written. The HED will then be investigated and processed in the same manner as all other HEDs generated during the Control Room Design Review.

Appendix F

KEY TO TASK ANALYSIS WORK SHEET

KEY TO  
TASK ANALYSIS WORK SHEET

TASK

The task being analyzed will be identified at the top left of the worksheet (TASK:     ) using Peach Bottom procedure titles.

The Step Number (STEP NO.), and DESIRED ACTION for each task being analyzed will also be taken from the actual Peach Bottom procedure. The team will first list the step numbers under STEP NO., and the primary actions in the Desired Action column. The team will then fill in any secondary actions, or substeps, that are required to perform the step.

A sample entry for this section, with "a" and "b" indicating substeps, is:

<u>STEP NO.</u>	<u>DESIRED ACTION</u>
1	Entry condition for T-101 detected? (No)
2	Verify Scram a. verify control rod insertion b. verify power decreasing

This section might also include such information as:

- Regulate feed flow to reactor
- Obtain level between 12" & 54"
- Stop pump; Start pump
- Initiate flow; Stop flow
- De-energize bus; Energize bus

REQUIREMENTS

CHARACTERISTICS:

This section lists the characteristics of actions or information for each task item. The headings and example entries are listed below:

CODE will be one of the following:

- I - Information the operator must have to determine the need to perform the task step.
- A - Action taken by operator to control the systems.
- F - Feedback information the operator must have to verify the step was performed successfully.



TYPE ACTION or PARAMETER: (select one as appropriate)

Action: Discrete, Continuous, Adjust, Set  
Parameter: Level, Flow, Pressure, Temperature,  
Position, etc.

STATE or DYNAMIC characteristics of parameters or actions:  
(select one as appropriate)

Action State: Closed, Open, Trip, Run, Stop  
Parameters: Fast Increase, Slow Decrease, Steady, Long  
Term Trend, Monitor

INDICATION of POSITION or RANGE refers to the immediate  
action indication or parameter range of readings required:  
(select one as appropriate)

Action Indication: Open, Closed, On, Off, etc.  
Parameters: Range between which the parameter may vary  
for this specific step.

SCALE RESOLUTION (SCALE RESOL.) refers only to the parameter  
reading resolution of the scale, usually expressed in +/-  
units.

RESPONSE refers to the speed of response required of the  
operator in determining the parameter or taking the action:

Rapid - Under time pressure  
Deliberate - Considered but timely action or reading required  
Analyze - No time constraints to consider reading or action

NOTES:

Notes will be numbered consecutively for each page and  
filled in below.

## VERIFICATION

This phase of the task analysis is used to verify that the requirement characteristics defined in the first phase have corresponding instruments in the control room, and that the instruments are suitable for use by the operator. This phase continues the entries on the form under the headings Availability and Suitability. The following entries are made on this form.

### AVAILABILITY:

COMPONENT TYPE (COMP. TYPE) will identify the kind of instrument that has been selected from the control room inventory, such as:

- Meter, analog
- Meter, digital
- Control switch
- Control pushbutton
- Annunciator alarm
- Light

INDICATION POSITION or RANGE lists the actual position indication or meter range on the panel.

SCALE RESOLUTION (SCALE RESOL.) indicates the actual resolution available on the existing scale.

ID # will list the component identification number.

PNL # will list the panel on which the instrument is located.

### SUITABILITY:

In the Suitability section, the team will record its judgement on the suitability of the instrument for use by the operator. Location and relationship to other instruments and between controls and associated indications. If coordination of control room team members is required, the review will determine if that interaction is consistent with control room organization and mode of operation. (Such information is appropriately noted in the Comments and Note sections.) The attached guidelines will be referred to by the team to aid them in performing the suitability deliberations. The team will reach a conclusion on each item and the last column will be checked either Satisfactory or indicate the need for a HED. If any aspect of suitability is considered not acceptable, a HED must be prepared.



A check in the satisfactory column will also indicate that the availability is considered to be satisfactory. Therefore, this column indicates overall verification for each line entry.

Comments will be entered if appropriate. Numbers in parenthesis will refer to notes below. A note is mandatory for all entries requiring a HED.

Appendix G  
TASK ANALYSIS GUIDELINES

## TASK ANALYSIS GUIDELINES

The primary purpose of the task analysis is to ensure that all controls and displays needed to perform the Emergency Operating Procedures are present and suitable.

6111ab  
6511bc  
6512ab

The word "suitable" means:

- They facilitate operator actions by location, arrangement, and identifiability, and design.
- The operators are not overloaded by the requirements of controls and indications in performing the procedures under stressful conditions.

A secondary purpose of the task analysis is to analyze certain minor operational sequences that require operator and engineering judgement to determine their suitability for either normal or emergency operations.

(The numbers in the right hand column are NUREG 0700 references.)

### GUIDANCE

The following general guidance is provided for reference by the team during the task analysis.

### GENERAL PANEL PRINCIPLES

- The controls and displays minimize operator movement by appropriate grouping. 6811  
6821  
6921a  
6511d
- No redundancy unless required for backup or to avoid excess movement.
- Controls and displays are in the primary work area if required for continuous monitoring or critical timing. 6111b
- Manning provides timely coverage of controls during emergency operations - no extra personnel needed. 6112
- Procedures terminology should be consistent with panel labels. 6514e  
6633c

General dimensions of work station:

- lateral viewing angle 45 deg. 6122e2
- lateral spread no more than 6 ft. 6122f
- Vertical panels - instruments frequently used or require precise reading or setting:
  - Controls - 34-53 inches above floor 6125a
  - Displays - 50-65 inches above floor 6125b

## CONTROL/DISPLAY RELATIONSHIPS

- The arrangement of controls and related displays is clearly identifiable. 6911c
- Controls and displays that are normally used together are located in close proximity. 6911a
- Control movement should have apparent display feedback in sufficient time under expected dynamic conditions. 6932a
- Controls that have a display response lag should have an immediate feedback of the process and direction of parameter change. 6931c
- Annunciator windows are located above related controls and indications. 6331a

## CONTROL PRINCIPLES

- Provides sufficient range of control. 6422a
- Provides sufficient precision (but not excess precision) within limits of dexterity, coordination, and reaction time. 6932ac
- Multiple controls related to the same function grouped together. 6921a
- Controls used in the blind are identifiable visually and tactually and have separation. 6422c  
6441c

## DISPLAY PRINCIPLES

- Scales consistent with accuracy needed. 6512a
- Operator does not have to convert readings. 6512b
- Scales cover the range needed. 6512d
- Multipliers should be avoided if possible. 6512e
- Multiple displays related to the same general function should be grouped together. 6921a
- Displays to be compared should have compatible numerical progression and organization. 6515d
- Recorders:
  - Generally should show trends or provide information for later reference. 6541c
  - Channels clearly identified. 6542b  
6638a
  - Located in operating area if required. 6541b

Appendix H

VALIDATION DATA COLLECTION FORMS

## VALIDATION PROCEDURE

The validation is a final check on the overall control room design review (CRDR) process. It will be conducted as a real time walkthrough using the mockup with the proposed changes and enhancements that resulted from the CRDR. The validation brings together all aspects of the control room improvement program to determine how they all work together and to ensure that all improvements are integrated.

The Peach Bottom emergency TRIP procedures will be used as the walkthrough procedures. The prescribed number of qualified operators will work together using the normal team operating organization for TRIP procedures. They will walk through the procedures in a controlled manner under the direction of the CRDR team.

Operators and observers will be briefed prior to the start of the validation process to familiarize them with the methodology of a walk/talkthrough. The following major points will be covered:

1. Operators should describe each of their actions they take including any mental calculations or conversion. (See attached.)
2. Emphasis must be placed on describing how plant status is determined and how transients are recognized.
3. Operators or CRDR team members should stop the validation at any time to identify and discuss any difficulties or confusion factors with any aspect of the procedures, panels, and displays or how they all fit together to support safe operation of the plant.
4. CRDR team members can stop the action at any time to clarify a point, determine the reason for an action, or to ask "what if" questions.

The performance of each procedure should be conducted as near to real time as possible to obtain a realistic understanding of the physical and cognitive loading, recognizing that there will be interruptions. While this process cannot duplicate actual plant operations, the experience of the operators will be brought out more effectively if there is some time factor involved.

#### DATA COLLECTION PROCEDURE

Each operator will be observed by a dedicated member of the CRDR team to record movements and comments. Members of the CRDR team will follow all the action and will record their own observations. Records will be kept during the course of the procedure walkthrough. After each walkthrough the operators and CRDR team will assemble to critique the walkthrough. The emphasis of the critique will be to draw out the operator's thoughts regarding the adequacy of the panel arrangements/interrelationships, and to identify the difficulties noted but not already mentioned. The CRDR team members will also have the opportunity to ask any other questions they may have.

The data will be collected using the operator activity and comment sheets (see attached). The activity sheet will record the movement patterns of all operators, identify the relative length of time spent on each group of activities, record coordination among operators, and record communications with other plant operators. The comment sheet will be a chronological record of comments by the CRDR team observer. Comments and notes will be recorded at any time on any subject desired by the team member. Comments are not limited to discrepancies, but are



intended to be rough notes to be used for later interpretation. Both these sheets will be cued to the procedure by step number as listed on the TRIP procedures.

A checklist will be used following each walkthrough to guide the critique (see attached). Discussions are not limited to the items on the checklist, but the list will be use to ensure that some key items from the NUREG 0700 checklists are covered. Critique comments will be recorded at the bottom of the checklist.

# CRITIQUE CHECKLIST

Procedure# \_\_\_\_\_

For the following statements indicate whether they were satisfactory (SAT) or a problem (PROB) in this procedure. Comment at the end of the checklist on any statements marked as a problem:

SAT/PROB

1. Control room manning provides timely coverage of controls and displays.
2. Control and display arrangements minimize operator movement.
3. Required controls and displays are in the primary work area.
4. Controls and displays:
  - a. Clearly and easily identifiable.
  - b. Related functions grouped together.
  - c. Easy to relate groups of displays with related groups of controls.
  - d. Functions are clearly related between panels.
  - e. Feedback from display should be apparent for a deliberate control movement.
5. Display scales:
  - a. Consistent with precision and accuracy needed.
  - b. Cover ranges needed.
  - c. Easy to read.
  - d. Readings do not have to be converted.
  - e. Easy to make comparative readings.
6. Mimics and symbols aid in finding controls.
7. Procedures:
  - a. Easy to follow.
  - b. Branch instructions clear.
  - c. Action requirements clear and with adequate detail.
  - d. Next step is clearly indicated, no dead ends.
  - e. Cautions and notes provided where needed.

COMMENTS:

WALK THROUGH COMMENTS

PEACH BOTTOM UNIT 2

TRIP Task: \_\_\_\_\_

Date: \_\_\_\_\_

Step No.

Comment

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## INSTRUCTIONS FOR OPERATOR ACTIVITY FORM

Fill out one sheet for each operator job position for each procedure walkthrough. Mark the starting location of the operator with numeral one, corresponding to step one in the procedure. Put the numeral in the column that is under the panel he first moves to in performing that step. When the operator moves to another panel, draw a horizontal line to the column under the panel to which he moves, and list the number of the step(s) performed at that location. Continue to trace his motion between panels back and forth across the sheet, moving down as necessary to avoid overlapping lines. At each panel, indicated the steps performed at that time.

If the operator moves to a panel only momentarily, and then moves to another panel, merely trace his path and note the step number at the panel or panels performed. If the operator dwells at a panel to make adjustments, obtain feedback, or to perform more involved manipulations, circle the step number(s) performed at that location to indicate a relatively longer period of time. A circle on this form will indicate a longer activity period (in excess of one minute.) Where several steps are performed at the same location without movement away, circle all the step numbers to indicate a longer period of time.

Annotate the activity diagram whenever the operator coordinates with another operator to perform a step by listing the operator's code with whom he coordinated. If the coordination is lengthy, more than a few words, circle the code to indicate longer involvement. If the operator uses an intercom or other

OPERATOR ACTIVITY

ACO → → → → → CO

COND FEED TURB	RX	RAD
COND FEED TURB	RX	RECIRC SERV
		D/G

ELECT		
ECCS		
CAD		
OFF GAS		

communication to talk to an operator outside the control room, use a code to indicate the operator with whom he coordinated. Again, if the communication is relatively lengthy, circle the code.

Operator Codes:	CO	Chief Operator
	ACO	Assistant Chief Operator
	SUP	Supervisor
	PO	Any Plant Operator
	HP	Health Physics
	CHM	Chemistry

Normal direction from the supervisor reading out the procedure steps need not be recorded. The results of the activity recording should resemble a graph from a pen recorder.