PHILADELPHIA ELECTRIC COMPANY'S

LIMERICK PLANT

CONTROL ROOM DESIGN REVIEW

SUPPLEMENTAL REPORT NUMBER 1

FINAL REPORT OF JUNE 1984

OCTOBER 1984

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INTRODUCTION

This document constitutes Philadelphia Electric Company's (PECo) Detailed Control Room Design Review (DCRDR) Supplemental Report for the Limerick Unit 1 Nuclear Generating Station. On June 25, 1984, PECo submitted to the Nuclear Regulatory Commission (NRC) the DCRDR Final Report, which documented results of both the original Boiling Water Reactor Owner's Group (BWROG) review and the formal DCRDR per the Limerick Program Plan of August, 1983.

This report documents the results of DCRDR activities that have been completed subsequent to the submittal of the Final Report. These activities are, DCRDR Validation, disposition/resolution of Outstanding Control Room Survey (CRS) items, implementation of actual control room enhancements, and results of a follow-on meeting between the NRC, with Lawrence Livermore National Laboratory (LLNL), and PECo/Interlock.

As indicated in the Final Report, a formal task analysis would be completed for Limerick. Completion and evaluation of the SPDS, a subset of displays off the ERFDS, system has also been deferred. Both the task analysis and SPDS efforts are scheduled for completion by June 30, 1985 and will be reported on at that time. (Reference PECo letter from Mr. J.S. Kemper to Mr. A. Schwencer, dated August 16, 1984.)

As was the Final Report, this document is configured with three major sections: Methodology, Findings, and Implementation.

Section 1, Methodology, includes three subsections:

- DCRDR Validation
- Outstanding CRS items
- NRC/LLL, PECo/Interlock meeting

Section 2, Findings, discusses in general terms, the types of Human Engineering Discrepancies (HEDs) (see Appendix A) identified during the Validation and CRS activities.

Section 3, Implementation, discusses the actual control room enhancement effort indicating how the overall DCRDR process culminated into actual panel enhancements. Also included in this section is a discussion of how the new HEDs identified were resolved.

Section 1

METHODOLOGY

1.1 Overview

This section discusses the Methodology used in conducting the DCRDR Validation and the CRS of outstanding items. In addition, the purpose and objectives of the NRC/LLL and PECO/Interlock meeting of August 7, 8, and 9 will be discussed.

It should be recognized that this report is a supplement to the Final Report and does not contain historic and/or background information. This report documents only those items indicated in the Introduction.

1.2 Validation

The objective of the Limerick 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 Transient Response Implementation Procedures (TRIP) and the improved design of the control room. As indicated in the Program Plan and referenced in the Final Report, the TRIPs are the BWROG plant specific symptom-based emergency operating procedures. 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.

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 B.

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 1.1. 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
T-112	Suppression Pool Temperature
	Suppression Pool Level
	Drywell Pressure
T-116	Drywell Temperature

T-101	Reactor Level Restoration Emergency Blowdown Blowdown Cooling Core Spray Cooling Alternate Shutdown Cooling Reactor Pressure Vessel Flooding
T-117	Reactor Level/Power Control

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

TABLE 1.2. T-200 SERIES PROCEDURES

T-221	Main Steam Line Low Level Isolation Valve Bypass Procedure
T-230	Remote manual Primary Containment Isolations
T-231	RHR to Suppression Pool Procedure
T-233	Dumping Suppression Pool Inventory to Radwaste via RHR LOOP "A"
T-243	Alternate Injection via RHRSW to RHR LOOP "B"
T-250	Suppression Pool to CST via HPCI or RCIC
T-251	Establish HPCI Injection Flow Path via either Feedwater or Core Spray

Walkthroughs/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 the CRDR Final Report were as reported. The method used for the walkthrough was as described in NUREG 0700, Section 3.8.2. Although 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, recordings were taken of all runs (activities) only as backup information if required during follow-up analysis. No data collection was specified or intended from these recordings.

Prior to starting the runs for the walkthroughs/talk-throughs, 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 familiar with the new arrangement. As a result, the lack of familiarity with the new design would serve 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 one instance, 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 two human factors consultants who have been regular members of the CRDR core team, augmented by another human factors specialist who has worked extensively on the CRDR.

The team leader also completed a comment sheet for each run. Operators performed as a three-person team, which is normal minimum staffing for one unit operation. Each operator was accompanied by a data taker using an Operator Activity sheet 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 B.

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 plant specific simulator exercises. All operators participating in the walkthroughs had been trained on these procedures on the simulator. Therefore, the operator's evaluation was considered to be the best source of timing, phasing, frequency, and duration of actions.

Although the SPDS (ERFDS) implementation has been delayed, proposed ERFDS computer displays were available and were used in a black and white hard copy format during the walkthroughs. The TRIP procedures include many graphs for manual plotting. These same graphs are included in the ERFDS displays and are therefore readily related to the immediate operating problem. Operators were asked to identify when they would use the displays and to refer to the hard copy as they would refer to the ERFDS display. They simulated obtaining readings from the appropriate displays and comparing them with panel indications. As the operators

became comfortable with their role as actors, this turned out to be a reasonably effective validation of the integration of ERFDS displays with the operational procedures and the improved control room panels.

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 the procedures listed in Table 1-1. 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 pickup an alternative 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 more than one branch 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 concurrent runs was easier to follow and record.

Finally, a walkthrough/talkthrough of the T-200 series procedures, with control room functions, was conducted to satisfy the observers that procedures referenced in the TRIPs could 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. Although simple from a team coordination standpoint, this effort reinforced already identified discrepancy P1-01 as reported in the Limerick Final Report.

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 Critique Checklist was used. It

consists of statements drawn from NUREG 0700 Section 6 items that applied to walkthrough operations. One checklist was filled in for each run. Comments were made on the run comment sheets rather than on the critique checklist. A copy is included in Appendix B.

The potential discrepancies noted during the walkthroughs/talkthroughs that were subsequently reviewed and analyzed to be discrepancies were documented as HEDs on HED Assesment Forms.

1.3 Outstanding Control Room Survey Items

The Final Report indicated that several items had not been completed due to the construction status of the control room. Those outstanding items included:

- Illumination
- Atmosphere
- Noise
- Communications
- Emergency equipment
- Portable furnishings
- Computers

The survey was completed using the BWROG CRS checklists (original and supplemental). For the purposes of accountability, the below listed checklists were administered:

BWROG CRS Category	BWROG CRS Item No.'s
• COMPUTERS	
- Consoles	(D & SD)
- Capability	(D1 & SD1)
- CRTs	(D2 & SD2)
- Printers	(D3 & SD3)
	(D4 & SD4)
• PROCEDURES	(E & SE)
- Availability	(E1 & SE2)
- Access	(E2)
- Standardization	(E3)
- Format	(E4 & SE1)
- Reference material	(E5)
- Revisions	(E6)
- Administrative	(E7)

BWROG CRS Category	BWROG CRS Item No.'s
• CONTROL ROOM ENVIRONMENT	(F & SF)
- Communciations systems	(F1 & SF1)
- Audible signals	(F2)
- Lightings	(F3 & SF2)
- Control Room Heating and Ventilation	(F4)
- Fire	(F5)
- Emergency situations	(F6)
- General	(F7)
- Emergency Response Equipment	(SF3)
• MAINTENANCE and SURVEILLANCE	(G & SG)
- Responsibilities	(G1)
- Jumpers and lifted leads	(G2)
- Permanent modifications	(G3)
- Tagouts	(G4 & SG1)
- Spare parts	(G5 & SG2)
- Procedures	(G6)
• TRAINING & MANNING	(H)
- Training and Requalification	(H1)
- Administrative Guideline	(H2)
- Shift change	(H3)

No BWROG (original/supplemental) checklist survey items are outstanding. All checklists have been administered.

1.4 NRC/LLL and PECo/Interlock Meeting

On August 7, 1984, a meeting was held at the NRC in Bethesda, Maryland. This meeting included representatives from the Human Factors Safety Branch of the NRC, Lawerence Livermore Laboratory (NRC consultant), the Philadelphia Electric Company, and The Interlock Group (PECo Consultant). The major thrust of the meeting was to gain a clearer understanding of specific methodologies used during the formal Limerick DCRDR. The Bethesda meeting was continued at Limerick, August 8 and 9, primarily in the mockup room and training center.

Throughout the discussions the NRC and LLL became more familiar with the details of each step of the DCRDR as documented in both the Limerick Program Plan and Final Report. The enhanced mockup provided the forum to visually verify the 'product' of the DCRDR. Discussions between LLL and PECo/Interlock indicated that the issues of methodology and procedure for the Limerick DCRDR were acceptable.

Section 2

FINDINGS

This section highlights the findings resulting from the Validation effort and CRS of outstanding items. In summary, 36 HEDs have been identified as a result of the above. The HEDs have been categorized as follows:

• Validation	
- Panel Design	15
- Instrumentation	5
- Procedural	7
• Computer	7
• Procedures	2
TOTAL	36

2.1 Validation

As discussed previously in the Final Report, the control room was designed to be compact. This design resulted in a high density of instruments on the panels, but also contributed to less movement by the operators. Control room staffing was initially based upon a three man team performing emergency (TRIP) procedures. Consequently, operator movement was, in fact, minimal and duties were well distributed among the three-man team. There were no instances of excessive movement with respect to distance or time required to perform the operation. Some duplication of instruments at different stations for key parameters appeared to be beneficial because it reduced the need for operator-to-operator communication and allowed one operator to back up the other. No excessive duplication of instruments was observed.

The improved design of the control room panels was also validated. Operators had no difficulty in locating controls and indicators, even when locations had changed from the current control room. Often the rearranged groups were not noticed to be different. As a result of the enhancements and hierarchal labeling, the operator found no difficulty identifying panel components (with the exception of those noted below). The hierarchal labeling received frequent favorable comments. The highlighting of control groupings, particularly in the emergency core cooling systems, was found to be effective. The validation did, however, reveal the need for modifications. Some new nomenclature was found to be less than optimum. As an example, the label "Reactivity Control" on panel 10C-603 was ambiguous, therefore, "Redundant" was added to clarify the label. Other changes were made based upon operator comments during the execution of TRIP procedures. Also, some additions to mimics were suggested.

The selection of prospective displays for the ERFDS seemed to be well suited to the needs of the operators. The location of ERFDS displays might be better arranged so that the supervisor who is directing the execution of TRIP procedures will have direct access to the displays. Considering the team approach to operations and the redundancy/availability of ERFDS displays, this is not considered a detriment to operations.

Communications were found to be adequate for emergency conditions. This conclusion is supported by a separate analysis of communications circuits as part of the DCRDR survey. It

appears that the concept of the Operations Support Center would provide the necessary flexibility in later portions of complex accidents, although this feature was not exercised.

The TRIP procedures were found to be effective. Some additional notes referencing the ERFDS display that relates to a particular step could be incorporated in the procedure when the ERFDS is finalized. The technical procedures (T-200 series) require some updating to reflect some new control room nomenclature. Generally, these procedures were adequately related by component ID numbers and similar nomenclature, but in some cases nomenclature was missing or misleading in the procedures.

It is concluded that the Final Validation process effectively consolidated the four major initiatives that effect control room operation: the CRDR, the emergency procedure upgrade, the addition of an SPDS capability, and identification of Reg. Guide 1.97 instrumentation. The validation was effective in identifying refinement of control panel redesign. Finally, the process indicated that communications with Technical and Operational Support Centers will be effective.

2.2 Control Room Survey of Outstanding Items

Section 1.3 indicated specific surveys which were conducted subsequent to submission of the Final Report. As indicated above, seven computer-related HEDs resulted from this survey. In summary, these discrepancies included keyboard design, terminology and visibility items; and minor software terminology inconsistencies with overall CRDR established terminology. Of the seven HEDs, five are dispositioned per stated resolution, and two are not discrepancies.

In addition to the computer HEDs, two procedures-related HEDs were identified. The discrepancies were concerned with component identification and related procedure referencing. The team's assessment was that these were not discrepancies.

The surveying of the control room environment, maintenance and surveillance, and training and manning revealed no discrepancies. All BWROG (original/supplemental) checklists survey items have been administered, and the CRS effort is completed.

Section 3

IMPLEMENTATION

This section reports on the implementation of enhancements on the actual control room panels, and discusses the status and plans for the implementation of improvements resulting from the validation and outstanding CRS efforts.

3.1 Control Room Panel Enhancements

The Final Report discussed, in detail, the types and methods of improvements to the panels. These methods and techniques were used and the actual panel enhancement effort was completed in mid-September 1984. Subsequent refinements to the enhancements are currently ongoing. Figures 1 and 2 show photographs of the control room panels before and after enhancement. Additional improvements will be implemented as dictated by the schedule as indicated on individual HED Assessment sheets.

3.2 Implementation of Additional Improvements

As indicated in Section 2, 36 new HEDs were identified subsequent to submission of the Final Report. Of those 36. 9 relating to computers are discussed in Section 2.2. Fifteen concerned panel design. Eleven of those HEDs have either been corrected or scheduled for correction, four were judged by the teams not to be discrepancies. Five HEDs were identified as instrumentation problems. Of those five, three have either been rectified or are scheduled for correction, two were judged as not being discrepancies. Finally, seven procedural HEDs were

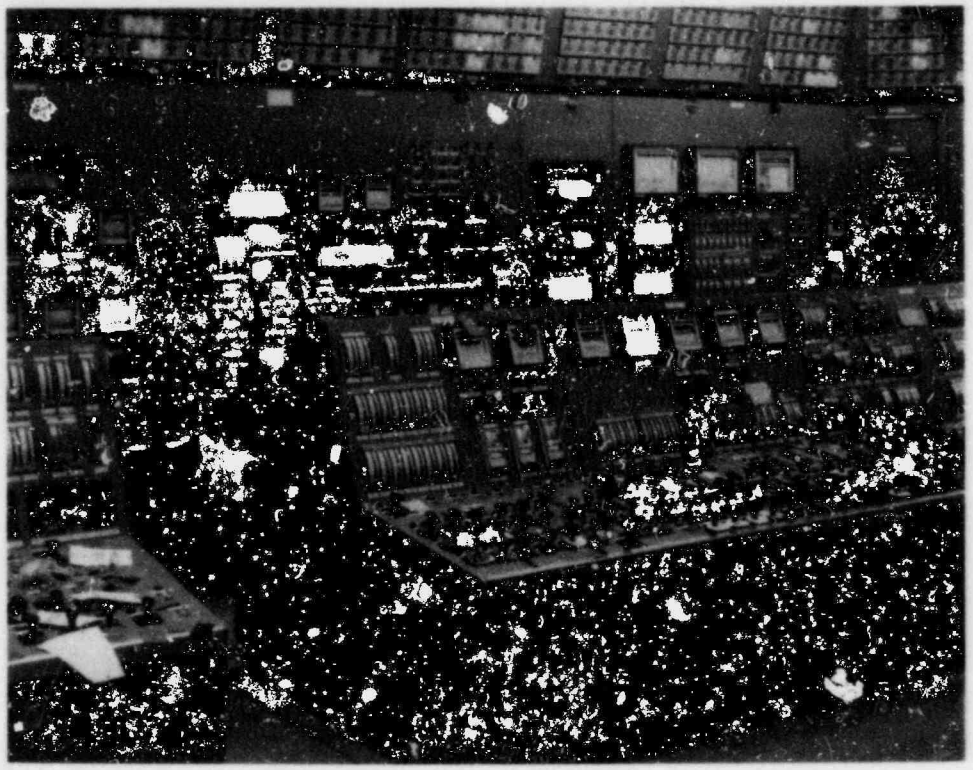


Figure 1. Control Room Panels Before Enhancements

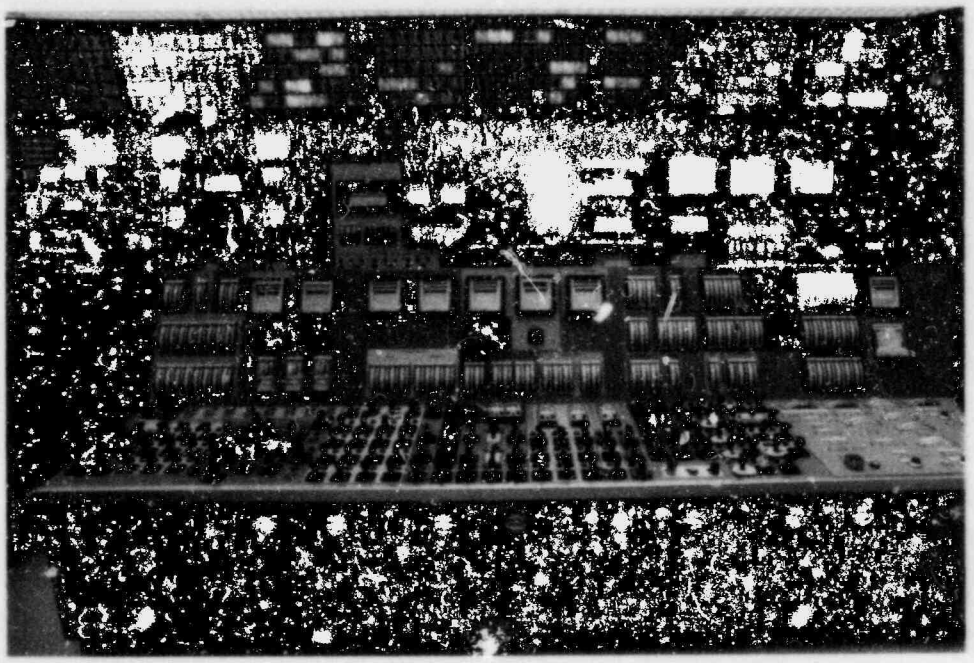


Figure 2. Control Room Panels After Enhancements

identified. Five are scheduled for correction, one requires additional investigation, and one was judged not to be a discrepancy.

In summary, none of the 36 new HEDs were assessed as Priority 1 safety significant, 15 were assessed as Priority 2, 7 were Priority 4, and 14 were assessed as not being discrepancies. All 36 HEDs are included in Appendix A.

APPENDIX A

HUMAN ENGINEERING DISCREPANCIES

HED ASSESSMENT

HED No. SC1-01

EP = 4

TITLE: Process Computer Key Arrangement

COMMENT: Functional keys difficult to understand.

Item: N/A Ref.: SD1.3 Source: SCRS

IDENTIFICATION: Panel: N/A
Component Name: Process Computer
ID or Number: Keyboard

DESCRIPTION:

Keys used by operator are mixed with keys used only by programmers. Keys are not grouped by function, and the color coding of keys is not consistent or effective in clarifying functions. Keyboard differences are not highlighted.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: C) (Priority: 4) (Sched: N/A)

Block color programmer function keys and delete any words on those keys. In a different color, block operational function keys. Common keys should be a neutral color. Replace keys to proper color arrangement.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SC1-02

EP = 4

TITLE: Process Computer Key Identification

COMMENT: Function keys are not clearly identified.

Item: N/A Ref.: SD1.5 Source: SCRS

IDENTIFICATION: Panel: N/A
Component Name: Process Computer
ID or Number: Keyboards

DESCRIPTION:

Operational and non-operational keys use conflicting terminology. Some keys are incorrectly labeled.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 4) (Sched: N/A)

Consistent with color blocking, label operational keys to be as consistent as possible with CRDR terminology. Blank non-operator keys.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SC2-Ø1

EP = 6

TITLE: Computer Data-Save Capability

COMMENT: Data not saved during periods where the printer is down.

Item: N/A Ref.: SD2.2 Source: SCRS

IDENTIFICATION: Panel: N/A
Component Name: Process Compiter
ID or Number: Software

DESCRIPTION:

Data is not saved if printer is not operating, no auto-file function. Backup printers are available.

MITIGATING CONSIDERATIONS:
Computer automatically switches to backup printer if main printer is down. Backup printers are available in the event the main printer goes down.

RESOLUTION: (Code: D) (Priority: N/A) (Sched: N/A)

Due to main printer redundancy and automatic printer selection, this is not a discrepancy.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SC3-01

EP = 4

TITLE: Process Computer Keyboard Glare

COMMENT: Glare makes keys difficult to read.

Item: N/A Ref.: SD3.1 Source: SCRS

IDENTIFICATION: Panel: N/A
Component Name: Process Computer
ID or Number: Keyboard

DESCRIPTION:

Keys are glass finish and are concave so they reflect the overhead lights. The operator must move his/her head from side to side to read the various keys.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 4) (Sched: N/A)

Treat keyboard with a matte finish to eliminate glare.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SC3-02

EP = 6

TITLE: Process Computer Alarm Display

COMMENT: Alarm display not complete.

Item: N/A Ref.: SD3.2 Source: SCRS

IDENTIFICATION: Panel: N/A
Component Name: Process Compute
ID or Number: Alarm Display

DESCRIPTION:

Not all alarms that are printed out are displayed on the CRT screen.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: N/A) (Sched: N/A)

All alarms displayed are printed therefore this is not a discrepancy.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SC3-Ø3

EP = 4

TITLE: Process Computer Error Messages

COMMENT: Error messages not clear.

Item: N/A Ref.: SD3.3 Source: SCRS

IDENTIFICATION: Panel: N/A
Component Name: Process Computer
ID or Number: Software

DESCRIPTION:

Error messages are mis-leading and are unclearly and insuccinctly worded making it difficult for the operator to understand them.

MITIGATING CONSIDERATIONS:
24 character fields only.

RESOLUTION: (Code: A) (Priority: 4) (Sched: N/A)

Rewrite error messages to be clearly written in consistent CRDR terminology within the limits of the computer character field.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/2/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SC3-04

EP = 8

TITLE: Process Computer Terminology

COMMENT: Terminology used on CRT is not consistent with control panel terminology.

Item: N/A Ref.: SD3.4 Source: SCRS

IDENTIFICATION: Panel: N/A
Component Name: Process Computer
ID or Number: Software

DESCRIPTION:

Nomenclature, acronyms, and abbreviations used on CRT displays are not consistent with those used on the control panels.

MITIGATING CONSIDERATIONS:
24 character fields only.

RESOLUTION: (Code: A) (Priority: 4) (Sched: N/A)

Review and rewrite terminology to be consistent with CRDR design improvements and CRDR terminology within the limits of the computer character field.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/2/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-01

EP = N/A

TITLE: Residual Heat Mimic

COMMENT: Points where condensate and stay fill lines enter RHR are difficult to remember.

Item: Run 3 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 601
Component Name: Mimic
ID or Number: N/A

DESCRIPTION:

The mimic does not show points where these support systems enter. It would be helpful to the operator to have the points marked on the mimic.

MITIGATING CONSIDERATIONS:

POSSIBLE SOLUTIONS:

Add appropriate mimic.

RESOLUTION: (Code: D) (Priority: 4) (Sched: N/A)

These support systems are controlled external to the control room. To properly mimic these would require nine additional lines and labels in an already densely mimicked board. It is the team's judgement to not include these mimics.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-Ø2

EP = N/A

TITLE: Injection Flow

COMMENT: Enhancement label "Injection A" for flow is misleading.

Item: Run 5 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 6Ø1
Component Name: Label
ID or Number: N/A

DESCRIPTION:

This indication is total loop flow, not just injection flow.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: 1st Refuel)

Change name to LOOP A, LOOP B, LOOP C, LOOP D for four flow indications.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-Ø3

EP = N/A

TITLE: ERFDS Locations

COMMENT: An ERFDS display is not conveniently located for use by the shift supervisor.

Item: Run 2 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: Supervisor Station while using TRIP procedures
Component Name: ERFDS Display and Control
ID or Number: N/A

DESCRIPTION:

The shift supervisor is responsible for directing the execution of TRIP procedures. This includes determining plant conditions and making decisions. The manual plots required to be used by him are on the TRIP procedures and are also automated on the ERFDS, yet the ERFDS cannot be observed from his station.

MITIGATING CONSIDERATIONS:
TRIP procedures are based upon communications between operators (team) whether it's information from control panel indications or ERFDS display.

RESOLUTION: (Code:) (Priority: 2) (Sched: w/ERFDS turnover)
The reactor operator has an ERFDS monitor at his station to provide required information to the shift supervisor. Also a 2nd senior licensed operator or STA is available to monitor ERFDS at the command console to rectify these relationships.

TRAINING REQUIREMENTS:
During training, it will be emphasized that ERFDS should be monitored during TRIPs.

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/22/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-Ø4

EP = N/A

TITLE: Instrument Line Isolation Labels

COMMENT: Hierarchy label does not stand out clearly.

Item: T-25Ø Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 6Ø1
Component Name: Instrument Isolation
ID or Number: N/A

DESCRIPTION:

Hierarchy labels are not large enough.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: Done)

Increased size to 24 pt.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-05

EP = N/A

TITLE: Redundant Reactivity Control

COMMENT: Hierarchy label "Reactivity Control" is ambiguous.

Item: Run 11 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 603
Component Name: Label
ID or Number: N/A

DESCRIPTION:

Initiation and reset buttons are for redundant reactivity control.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: Done)

Added word "Redundant" to hierarchy label.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-06

EP = N/A

TITLE: Standby Liquid Component IDs

COMMENT: Panel enhancements use the wrong set of component ID numbers.

Item: T-250 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 603
Component Name: Standby Liquid
ID or Number: N/A

DESCRIPTION:

Labels used are from GE list C41 series instead of Bechtel list HV48 series.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: 1st Refuel)

Change numbers to 48 series.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-Ø7

EP = N/A

TITLE: HPCI/RCIC Return to CST

COMMENT: Enhancement labels are not clear.

Item: T-23Ø Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 647, 648
Component Name: HPCI, RCIC Test Isolation
ID or Number: HV55-IFØ71, HV55-IFØ22

DESCRIPTION:

Labels are ambiguous. They relate to Full Flow Test return to CST.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: J) (Priority: N/A) (Sched: N/A)

Test Isolation is acceptable since primary concern is to have test lines shut off under emergency conditions.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-08

EP = N/A

TITLE: ESW Nomenclature

COMMENT: The use of "Train" is not normal in this plant.

Item: Run 1 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 00C-667
Component Name: ESW
ID or Number: N/A

DESCRIPTION:

There are two loops A and B. Each loop is subdivided. These have been labeled Train A, C, B, D. The word "Train" is not normally used in this plant and is therefore confusing in meaning.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: Done)

Changed labels to "DIV A", "DIV C", etc.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-09

EP = N/A

TITLE: RHRSW Labels

COMMENT: Labels do not clearly identify function.

Item: Run 2 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 00C-667
Component Name: ESW
ID or Number: 559,560,579,581,580,582

DESCRIPTION:

Control numbers 559, 560 are Pump Trip Bypasses.
Control numbers 579-582 are INLET/OUTLET Isolation Bypasses

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: 1st Refuel)

Changed labels to include "Trip" and "Isol" as indicated above.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-1Ø

EP = N/A

TITLE: ADS Valve Enhancements

COMMENT: Not sufficiently highlighted.

Item: Run 4 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 1ØC-626
Component Name: ADS Valves
ID or Number: 481,482,483,484,485

DESCRIPTION:

These controls must be quickly located visually from a distance. They do not stand out sufficiently.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: Done)

Enclosed five ADS valve controls in a solid red background.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-11

EP = N/A

TITLE: Containment Isloation Light Matrix

COMMENT: Lights labeled only with valve identification numbers.

Item: Run 4 Ref.: R.E.C. Source: Validatio

IDENTIFICATION: Panel: 601 Center
Component Name: Light located above 527,528,529,530
ID or Number:

DESCRIPTION:

This light matrix is used to verify proper containment isolation. Operators must take action if a light is not on when isolation occurs. No name labels appear on the panel.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: N/A) (Sched: N/A)

This light matrix duplicates position indi- tion of hand switches below operator sight lines when stationed c consoles. With an isolation this light matrix should light up all green. Those valves which did not operate would remain red. A redundant position indication exists at the hand switch on the lower part of the vertical board, identifying the control to be manipulated. As a result, this is not a discrepancy.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-12

EP = N/A

TITLE: Testable Check Valve Nomenclature

COMMENT: These valves are not clearly labeled.

Item: Run 8 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 601 R and L
Component Name: RHR
ID or Number: 463,467,469,763,767,769

DESCRIPTION:

Controls are labeled "Test". They are used to bypass the valves to which they are related by mimic. Terminology is confusing.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: N/A) (Sched: N/A)

The term BYPASS in operational terminology refers to a full flow capability around a process component. These lines discussed above are used to equalize pressure around a check valve for test purposes and could not physically bypass required flow for system operation. This is not a discrepancy.

TRAINING REQUIREMENTS:

Training will reinforce the purpose and functioning of these test valves.

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-13

EP = N/A

TITLE: RHR Crossconnect to Heat Exchanger

COMMENT: The mimic for this crossconnect line is not correct for C and D loops.

Item: Run 8 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 601 L and R
Component Name: RHR
ID or Number: Mimic from above 493 and 805 to below 488 and 788

DESCRIPTION:

This mimic discharges to the PHR Heat Exchanger line downstream of the isolation valves 491 and 791.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: Done

Revised mimic to show correct discharge point.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-14

EP = N/A

TITLE: Off Gas Label Incorrect

COMMENT: Adsorber incorrectly identified.

Item: N/A Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 10C-673
Component Name: Off Gas
ID or Number: Mimic Component

DESCRIPTION:

Large mimic component to right of "Cooler" should be "ADSORBER".

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: Done)

Relabeled "ADSORBER".

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SDV-15

EP = N/A

TITLE: Off Gas Mimic

COMMENT: Main steam supply mimic not easily distinguished.

Item: N/A Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 10C-673
Component Name: Off Gas
ID or Number: Mimic to 31 and 32

DESCRIPTION:

Main steam supply and auxiliary steam supply mimic are the same size giving them same importance.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 4) (Sched: N/A)

Increase size of main steam mimic; leave Aux Steam as is.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SIV-01

EP = N/A

TITLE: Cooldown Rate

COMMENT: Cooldown rate must be calculated.

Item: Run 2 Ref.: T.J.C. Source: Validation

IDENTIFICATION: Panel: 602, 603
Component Name: N/A
ID or Number: N/A

DESCRIPTION:

The rate of normal plant cooldowns must not exceed 100 degrees per hour. This rate must be estimated by the operator from the recorder chart which moves one inch per hour. The computer gives only instantaneous cooldown rate.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: Done)

A Surveillance Test (ST) has been written to verify this cooldown rate. This ST checks cooldown rate every 15 minutes to ensure that 25 F is not exceeded in any 15 minute interval. It directs the operator to take action to avoid 100 F cooldown rate in one hour if 25 F is exceeded in any 15 minute interval.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SIV-Ø2

EP = N/A

TITLE: RHR System Flow Indication

COMMENT: Difficult to determine spray flow or flow to suppression pool.

Item: Run 3 Ref.: T.J.C. Source: Validation

IDENTIFICATION: Panel: 6Ø1
Component Name: See below.
ID or Number: See below.

DESCRIPTION:

Only the RHR total system flow has an indicator. This indication includes all flow through that system. It is difficult to determine individual flows to suppression pool and drywell spray. Operator must manipulate system and mentally compute flow from difference readings.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: D) (Priority: N/A) (Sched: N/A)

This particular mode of operation is infrequent. The flow is determined by computing a simple differential. The procedure is clear and the control/display arrangement facilitates the operation. (Reference LGS FSAR section 7.5.2.5.1.1.2.4.6 Rev. 35 August '84.) This is not a discrepancy.

TRAINING REQUIREMENTS:

It will be emphasized in training; the use of the LOOP FLOW indicator in different RHR modes of operation.

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SIV-03

EP = N/A

TITLE: RHR Discharge Pressure

COMMENT: There is no direct indication of RHR discharge pressure.

Item: Run 3 Ref.: T.J.C. Source: Validation

IDENTIFICATION: Panel: 601
Component Name: See below.
ID or Number: See below.

DESCRIPTION:

Operators used heat exchanger steam supply pressure indication (if heat exchanger inlet valve is open) to determine this pressure.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: D) (Priority: N/A) (Sched: N/A)

RHR discharge pressure is not of primary operational concern. RHR flow into the reactor is the primary parameter monitored. This is accomplished using the flow indicator and check valve disc position indication on the injection line. These indications are currently available on the control panels. In the steam condensing mode, heat exchanger steam supply pressure indication is used which is acceptable in that context. This is not a discrepancy.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SIV-Ø4

EP = N/A

TITLE: Critical Plant Variable Comparison

COMMENT: Suppression Pool Press (SP/P)/Reactor Pressure comparison and ERFDS display of SP/P.

Item: Run 6 Ref.: T.J.C./A.C.M. Source: Validation

IDENTIFICATION: Panel: Display: Critical Plan Variables
Component Name: ERFDS
ID or Number: 312

DESCRIPTION:
Comparison between Suppression Pool pressure (PR57-1Ø1, PI42-17Ø-1) versus Reactor pressure XR42-IR623A (6Ø1) and PI42-IR6Ø5 (6Ø3) requires operator verbal coordination. In addition, the requirement is 72 psig difference. The nominal range on indications is Ø-1ØØØ psig, 72 psig is very difficult to determine, hence the need to incorporate SP/P into ERFDS. This parameter is improtant in TRIP procedure T-116, Step 2Ø.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: C) (Priority: 2) (Sched: 1st Refuel)

Add suppression pool pressure readout on ERFDS display Top Level Display.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SIV-05

EP = N/A

TITLE: Recombiner Ready Lights

COMMENT: These lights are yellow on control panels indicating abnormal condition of unit.

Item: Run 4 Ref.: REC Source: Validation

IDENTIFICATION: Panel: 601 Center
Component Name: Isolation
ID or Number: 754, 755

DESCRIPTION:

These lights are intended to indicate when the recombiner is ready for operation. Even though a recombiner is used only in an emergency condition, a unit ready to operate light should be white.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: N/A) (Sched: Done)

Changed color of light to white.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SPV-Ø1

EP = N/A

TITLE: Rapid Depressurization Procedure

COMMENT: Need to reference support procedures in TRIP procedures.

Item: Run 5 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: N/A
Component Name: TRIP Procedures T-112, Step EB-11
ID or Number: N/A

DESCRIPTION:

Rapid depressurization can be accomplished by several systems. The lineup for some of these systems is not clear. TRIP procedures should reference procedure numbers of less used systems in this mode.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: N/A) (Sched: N/A)

Methods for rapid depressurization are commonly used systems and lineups. Operators are familiar with them and use them frequently. Procedures become overburdened if too many references are used, particularly in familiar evolutions. This is not a discrepancy.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SPV-Ø2

EP = N/A

TITLE: SRV Opening Sequence

COMMENT: SRV opening sequence not specified.

Item: Run 7 Ref.: R.E.C./A.C.M. Source: Validation

IDENTIFICATION: Panel: 626
Component Name: Safety relief valve controls
ID or Number: N/A

DESCRIPTION:

TRIP procedure T-1Ø1 Step RC/P-9 and note 24 specify using SRV opening sequence. The proper sequence is not specified in the TRIP procedure or on the panel.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: 5% Power)

List appropriate SRV sequence in procedure and include sequence of operation on hierarchal labeling.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/2/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SPV-Ø3

EP = N/A

TITLE: CTMT Isolation Procedure

COMMENT: Nomenclature should be updated to reflect new panel labels.

Item: T-25Ø Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: T-25Ø
Component Name: Remote Manual Primary Containment Isolations
ID or Number: See below.

DESCRIPTION:

Step 4.2.A Recirc.	HV41-1Ø9 A,B are now called "Long Path". HV41-133 A,B (Safeguard Fill System to FW) are not named in the procedure.
Step 4.7.B	Should list all core spray injection valves, not just A loop.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority:N/A) (Sched: Fuel Load)

Operations will be provided with the manual of standard nomenclature and abbreviations used in the enhanced control room. Also, a list of names that have been changed substantially from the original control room labeling will be provided. Training will be provided with the manual of standard nomenclature and a description of the enhancement conventions used.

TRAINING REQUIREMENTS:

Provide nomenclature and enhancement convention.

PROCEDURE REQUIREMENTS:

Provide nomenclature and list of major changes in labels.

Approval Signature: Date: 1Ø/22/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SPV-Ø4

EP = N/A

TITLE: Drywell Outboard Isolation Valves

COMMENT: Numbers in procedure do not agree with panel numbers.

Item: T-25Ø Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: 1ØC-681
Component Name: Drywell Chill Water
ID or Number: HV87-12Ø A,B HV87-121 A,B

DESCRIPTION:

As described above.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: N/A) (Sched: Fuel Load)

Operations will be provided with the manual of standard nomenclature and abbreviations used in the enhanced control room. Also, a list of names that have been changed substantially from the original control room labeling will be provided. Training will be provided with the manual of standard nomenclature and a description of the enhancement conventions used.

TRAINING REQUIREMENTS:

Provide nomenclature and enhancement convention.

PROCEDURE REQUIREMENTS:

Provide nomenclature and list of major changes in labels.

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SPV-05

EP = N/A

TITLE: Suppression Pool to CST Procedure

COMMENT: Procedure T-230 should be updated with new panel names.

Item: T-230 Ref.: R.E.C. Source: Validation

IDENTIFICATION: Panel: See procedure.
Component Name: N/A
ID or Number: See procedure.

DESCRIPTION:

Same as above.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: N/A) (Sched: Fuel Load)

Operations will be provided with the manual of standard nomenclature and abbreviations used in the enhanced control room. Also, a list of names that have been changed substantially from the original control room labeling will be provided. Training will be provided with the manual of standard nomenclature and a description of the enhancement conventions used.

TRAINING REQUIREMENTS:

Provide nomenclature and enhancement convention.

PROCEDURE REQUIREMENTS:

Provide nomenclature and list of major changes in labels.

Approval Signature: Date: 10/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SPV-Ø6

EP = N/A

TITLE: Procedure/ERFDS Correlation

COMMENT: ERFDS should be appropriately referenced within procedures to indicate display formats as backups.

Item: Run 1Ø Ref.: A.C.M. Source: Validation

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

DESCRIPTION:
The TRIPs provide plots of various parameters to determine "safe & unsafe" regions. The parameter values must be determined from panel instrumentation. ERFDS provides the same plots via CRT displays. These displays are not referenced within the procedure and would be valuable to the ACO to confirm actual readings. Appropriate ERFDS display numbers should be referenced in the TRIPs.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: w/ERFDS turnover)
Include ERFDS plot identification number in TRIP appropriately as referenced.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/3/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SPV-07

EP = N/A

TITLE: T-200 Series Procedures

COMMENT: Inconsistencies between panel ID numbers/nomenclature and procedures valve numbers/nomenclature.

Item: T-200 series Ref.: A.C.M. Source: Validation

IDENTIFICATION: Panel: N/A
Component Name: See attached.
ID or Number: See attached.

DESCRIPTION:

See attached.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: 2) (Sched: 1st Refuel)

Make all procedure nomenclature and identification numbering consistent with CRDR Improvement Design.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 10/3/84

(2) Additional page(s) attached

DESCRIPTION:

T-221

HS41-186/187 is HV41-1F084/IF085 on mockup.

HS57-183 is SV57-183 & 191 on mockup

HS51-179A/B is HV51-179A on mockup

HS57-133 is SV57-133 on mockup

HS43-119 is HV43-119 on mockup

HS57-132 is SV57-132/134/150 on mockup

HS57-181 is SV57-181 on mockup

HS51-180A/B is HV51-180A/B on mockup

HS43-120 is HV43-120 on mockup

HS57-187 is SV57-184/185/186/190/195 on mockup

HS57-153 is SV57-141/142/143/144/145/159 on mockup

T-243

Containment Spray in procedure should be DRYWELL SPRAY

Inter-tie in procedure should be CROSS-TIE

Full Flow Bypass in procedure should be FULL FLOW TEST

T-231

Intertie in procedure should be CROSS-TIE

Full Flow Test Valve in procedure is Suppression Pool Cooling B - correct nomenclature to be determined

T-233

Step 4.4 "Drain valves HV-51-IF049 and IF040 are indicated as "INBOARD & OUTBOARD" on mockup.

PROCEDURE/MOCKUP

T-241

HV-51-1F015A,B Shutdown Cooling Injection is Shutdown Outboard

HV-51-1F017A,B,C,D LPCI Injection is LPCI Outboard

HV-52-1F037 Core Spray Isolation is Inboard

HV-52-1F005 Core Spray Isolation is Outboard

HV-55-1F006 HPCI Isolation is Injection

HV-49-1F013 RCIC Isolation is Feed

HV-55-1F007 HPCI Isolation is Discharge

HV-49-1F012 RCIC Loop Isolation is Discharge

HV-52-1F004A,B Core Spray Isolation is Discharge

HV-51-1F003A,B RHR Htx Outlet is Outboard (note: Further investigation indicated mockup was incorrect, actual control panel reads "OUTLET")

HED ASSESSMENT

HED No. SP1-Ø1

EP = 6

TITLE: Procedural Instrumentation References

COMMENT: Procedures do not provide locations of instrumentation.

Item: N/A Ref.: E4.12 Source: SCRS

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

DESCRIPTION:

Procedures involving the operation of infrequently used controls do not specify the physical location of the control. This could lead to difficulties in time sensitive situations.

MITIG. TING CONSIDERATIONS:
Additional textual matter in procedures or additional matrixing on the boards would confuse and clutter both procedures and board.

RESOLUTION: (Code: A) (Priority: N/A) (Sched: N/A)

Procedures as written direct operators to the appropriate panel. This in conjunction with the hierarchal labeling aids the operator in timely response. This is not discrepancy.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/11/84

( ) Additional page(s) attached

HED ASSESSMENT

HED No. SP1-Ø2

EP = 6

TITLE: Procedure Reference Material

COMMENT: Procedures require use of additional reference material.

Item: N/A Ref.: E4.19 Source: SCRS

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

DESCRIPTION:

Trip procedures refer to specific standard procedures to complete an operation, but do not describe the procedure. Operators must get a copy of the procedure - it is not included in the trip.

MITIGATING CONSIDERATIONS:

RESOLUTION: (Code: A) (Priority: N/A) (Sched: N/A)

As a result of the TRIP procedure flow diagram format, which is designed to not overburden the procedure or operators, and the fact that the TRIPs are designed to result in a stabilized plant status, procedure referencing refers to those operations conducted subsequent to the TRIPs. All referenced procedures are resident in the control room. This is not a discrepancy.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature: Date: 1Ø/11/84

( ) Additional page(s) attached

APPENDIX B

DATA COLLECTION FORMS

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. Terminology consistent with panels and CRT displays.

f. Cautions and notes provided where needed.

8. CRT displays:

a. Easy to find desired information.

b. Needed information clearly presented, not confusing.

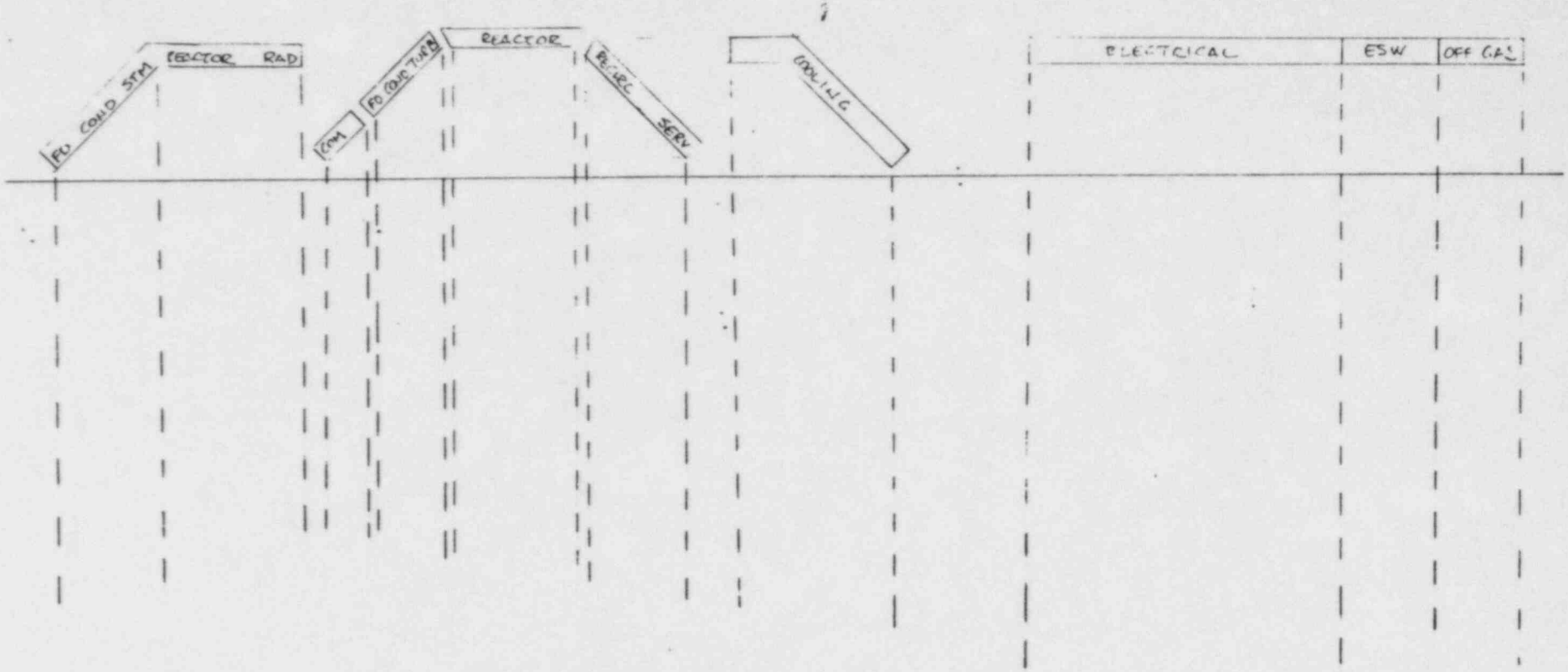
c. Activated screen area should not exceed 25% total screen area.

d. No mental translation of data into other unit or numerical basis necessary.

COMMENTS:

OPERATOR ACTIVITY

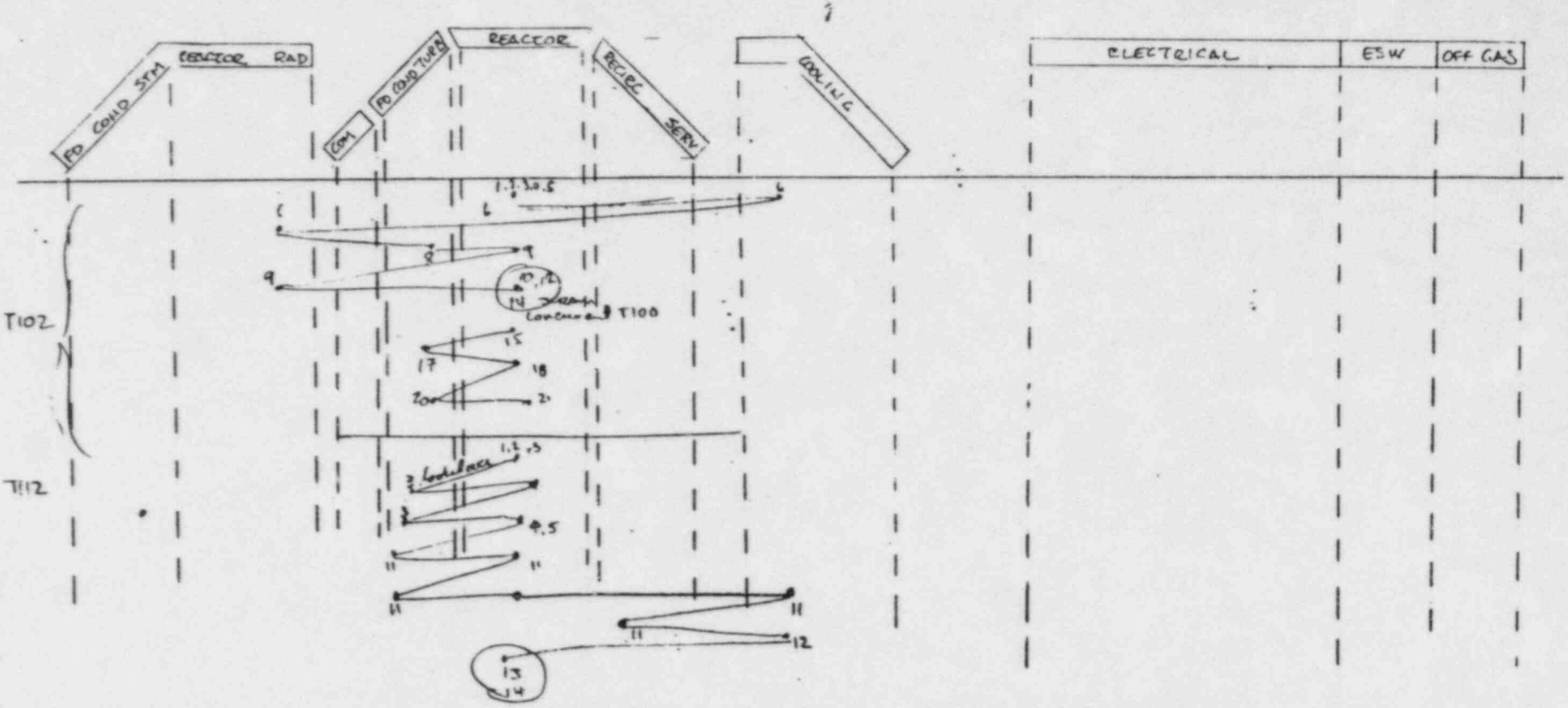
LIMERICK UNIT 1 TRiP Task:_____ Date: _____ Operator Position: _____



Sample Activity Sheet

OPERATOR ACTIVITY

LIMERICK UNIT 1 TRIP Task: T102 SP TEMP / T112 Date: 8-2-84 Operator Position: ACO



Sample Completed Activity Sheet

REDUCED COPY

WALK THROUGH COMMENTS

LIMERICK UNIT 1 TRIP Task:_____ Date:

Step No.	Comment

Sample Walkthrough Form